Rio Tinto

Annual Report 2023



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Our operations are located on land and waters that have belonged to Indigenous Peoples for thousands of years. We respect their ongoing deep connection to, and their vast knowledge of, the land, water and environment. We pay respects to Elders, both past and present, and acknowledge the important role Indigenous Peoples play within our business and the communities where we live and work.

Cover | The BlueSmelting™ project in Sorel-Tracy, Canada. BlueSmelting™ involves a completely new ilmenite reduction technology that could generate 95% less greenhouse gas emissions than the current reduction process, enabling the production of titanium dioxide, steel and metal powders with a significantly lower-carbon footprint.

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2023 year in review

We are finding better ways™ to provide the materials the world needs. In 2023, our teams around the world sought opportunities to reduce our carbon footprint, to partner to develop technologies to decarbonise steel and aluminium production, to find more efficient ways to supply copper and critical minerals essential for the energy transition, and to create new products from waste. We explore, we mine, we process, and our ambition continues to be a business with a commodity mix aligned with evolving customer demand in a decarbonising world. But we cannot do it on our own. So we strive to create partnerships that solve problems and create solutions with lower societal and environmental impact. The approach applies as much to large-scale, transformational innovation as it does to incremental everyday progress, such as our safety and operational performance.

All-injury frequency rate

0.37

(2022: 0.40)

Women in our workforce

24.3%

(2022: 22.9%)

Scope 1 and 2 greenhouse gas emissions

32.6Mt

(equity CO_2e)
(2022: 32.7Mt)[2]

Increase in spend with Indigenous businesses in Australia

28%

(2023 A$725 million increased from A$565 million in 2022)

Completion rate of "Building Everyday Respect" employee learning module

83.5%

(2022 comparative dataset is not available due to new program)

For more information about our environmental, social and governance (ESG) performance see page 43.

Consolidated sales revenue

$54.0bn

(2022: $55.6bn)

Profit after tax attributable to owners of Rio Tinto

$10.1bn

(net earnings)
(2022: $12.4bn)[1]

Net cash generated from operating activities

$15.2bn

(2022: $16.1bn)

Underlying EBITDA[3]

$23.9bn

(2022: $26.3bn)

Total dividend per share

435 cents

(2022: 492 cents)

For more information about our financial review see page 24.

1. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 "Income Taxes". Refer to page 166 for details.
2. In 2023, we improved our carbon emissions reporting and now use the market-based method as our primary measure for assessing performance against our targets. We have restated prior year numbers and our 2018 baseline accordingly. We exclude reductions achieved by divesting assets and increases associated with acquisitions from our target and so also adjust our 2018 baseline to take this into account. For comparison purposes, we have disclosed our 2022 emissions on the same basis. Our adjusted 2022 figures are 32.7Mt CO_2e and our actual 2022 emissions (unadjusted for acquisitions) are 32.3Mt CO_2e.
3. Underlying EBITDA is a non-IFRS measure. A definition of underlying EBITDA and a reconciliation to its closest IFRS measure is presented in note 1 (pages 174-175).

Our 2023 reporting suite

Our *Annual Report* is part of our broader 2023 reporting suite. You can find this report and others, including our *2023 Climate Change Report*, *Sustainability Fact Book*, *2023 Addendum - Scope 1, 2 and 3 Emissions Calculation Methodology* and *Industry Association Disclosure*, on our website. Some of our reports are published on our website later in the year, including our *2023 Taxes Paid Report*, *Country-by-Country Report*, *Modern Slavery Statement*, and our *Voluntary Principles on Security and Human Rights* report.

To view and download these documents see riotinto.com/reports.



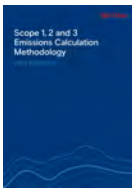
2023 Annual Report



2023 Climate Change Report



2023 Sustainability Fact Book



2023 Addendum - Scope 1, 2 and 3 Emissions Calculation Methodology



2023 Industry Association Disclosure

At a glance

Our business

We operate in 35[1] countries where our 57,000 employees[2] are working to find better ways to provide the materials the world needs. Our portfolio includes iron ore, copper, aluminium and a range of other minerals and materials needed for people, communities and nations to grow and prosper, and for the world to cut carbon emissions to net zero. We continuously search for new projects that can support the energy transition, currently exploring for eight commodities in 18 countries.

We have more than 150 years of mining and processing experience guiding our work. Today, our business relies on technology such as automation and artificial intelligence to help us run safer, more efficient operations and leave a lighter footprint.

Iron Ore

Segmental revenue
$32.2bn
(2022: $30.9bn)

Underlying EBITDA
$20.0bn
(2022: $18.6bn)

Production (100% basis)
331.5Mt
Pilbara iron ore
(2022: 324.1Mt)

Employees[2]
16,000
(2022: 15,000)

Aluminium

Segmental revenue
$12.3bn
(2022: $14.1bn)

Underlying EBITDA
$2.3bn
(2022: $3.7bn)

Production (our share)
54.6Mt
bauxite
(2022: 54.6Mt)

3,272kt
aluminium
(2022: 3,009kt)

Employees[2]
15,000
(2022: 15,000)

Our products

Our portfolio includes iron ore, aluminium, bauxite, alumina, copper, diamonds, titanium dioxide, lithium, salt and borates.

For more information see pages 32-39.

Operations and projects[3]



Iron Ore
Aluminium
Copper
Minerals

- Mines
- Projects
- Smelters, refineries, processing plants and power and shipping facilities remote from mine
- Non-managed operations

1. Includes our mines and production facilities, main exploration activities and countries where we have a significant presence through activities including research and development, commercial, sales, and corporate functions.
2. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 215 for more information.
3. The map indicates the location of our global operations and projects, however it does not identify all individual facilities included in an operation. It does not include our offices, research and development centres and some processing and shipping facilities. Operations and projects are indicated according to their product group. The Iron Ore Company of Canada is an iron ore operation but is reported under Minerals due to the management structure. The dots on the map are indicative and in some locations we have more assets than visually represented due to the size of the map.
4. 2022 underlying EBITDA for Copper has been adjusted to reflect a change in management responsibility for the Simandou iron ore project from Copper to the Chief Technical Officer. As a result, we have moved Simandou outside of reportable segments and accordingly adjusted prior period comparatives.

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Outlook

We have a strong portfolio of assets across six continents. Our focus is on growing our business while decarbonising, providing products to our customers that support the transition to a low-carbon economy, and delivering attractive returns to our shareholders.

Many of our products are essential for the energy transition: we expect this new source of demand, combined with traditional sources, to drive significant volume growth in our products over the coming decades. In developed markets, customer demand for low-carbon and recycled materials is growing with supply security top of mind. In developing economies, reliable access to raw materials for domestic processing is critical. We have the people, orebodies, technology, processing capabilities, access to capital and relationships to meet these diversifying needs.

Copper

Segmental revenue
$6.7bn
(2022: $6.7bn)

Underlying EBITDA
$1.9bn
(2022: $2.6bn)[4]

Production (consolidated basis)
620kt
mined copper
(2022: 607kt)

Employees[2]
8,000
(2022: 8,000)

Minerals

Segmental revenue
$5.9bn
(2022: $6.8bn)

Underlying EBITDA
$1.4bn
(2022: $2.4bn)

Production (our share)
1,111kt
titanium dioxide slag
(2022: 1,200kt)

9.7Mt
iron ore pellets and concentrate
(2022: 10.3Mt)

Employees[2]
10,000
(2022: 9,500)



Chair's statement

Very sadly, I must begin by acknowledging the tragic deaths of our four Diavik colleagues and two airline crew members in a plane crash near Fort Smith, in the Northwest Territories, Canada, on 23 January 2024. They will all be dearly missed, and our thoughts are very much with their loved ones, everyone in Fort Smith, and our team at Diavik.

Our focus in 2023, and as we move into 2024, has been on embedding an empowering culture and on delivering consistent operational performance to progress our four key strategic objectives.

We recognise that creating and maintaining a culture where everyone can be at their best requires constant effort but, two years since we started learning from the findings of the *Everyday Respect Report*, there is positive momentum. Our executive team is driving this change, with the full support of the Board, reinforcing the importance of mindsets and behaviours that ensure everyone, everywhere in our operations feels safe, valued and empowered.

The Group has also made progress on our four key objectives of becoming best operator, excelling in development, having impeccable environmental, social and governance (ESG) credentials and strengthening Rio Tinto's social licence. There have been real improvements in our Pilbara iron ore operations; we are ramping up underground copper production at Oyu Tolgoi; we are significantly closer to unlocking the Simandou project; and we have made strategic and exciting investments in our aluminium business, such as the Matalco recycling joint venture.

Our strong results in 2023 demonstrate our continued progress towards our four objectives, with a continued focus on financial discipline. This discipline has enabled us to invest in the future health of our business while at the same time delivering attractive returns to investors, with the Board recommending a final dividend of 258 US cents, taking total dividends declared to $7.1 billion.

Growing and deepening connections

We are committed to deepening connections with our stakeholders to earn trust, resolve conflicts, and strengthen our social licence. This is constant work in progress, but there were many bright spots in the way our relationships with governments, communities and Indigenous Peoples evolved in 2023.

Our partnership with the Mongolian Government highlights the mutual benefits when we get this right. We are now deepening our connection to Mongolia, most recently forming a partnership with UNESCO to support its sustainable development. In Canada, we are growing our aluminium business, including expanding the use of AP60 low-carbon smelting technology, with the continued support of the national and local governments.

More broadly, we are embedding and replicating the learnings from a shift to co-management and co-development at our operations, such as working closely with the Nyiyaparli and Ngarlawangga people as we progress the Rhodes Ridge project in the Pilbara. As we get closer to unlocking Simandou in Guinea, we are doing so in close partnership with communities, in a way that will support further economic development beyond the mine.

This commitment to ESG and a stronger social licence does not end with the life of a mine. At Le Thoronet in south-east France, a rehabilitated former bauxite mine we have handed back to the French authorities, I saw evidence of how we are thinking about the full lifecycle of our assets, beyond our time as their custodians.

An important part of our engagement is with non-governmental organisations (NGOs). Taking part in our civil society roundtables in the US, UK and Australia provided opportunities to listen to the concerns of leading civil society voices, what we can learn to do better, and understand how we can better work with these groups. They encouraged us to forge ahead on establishing nature and biodiversity targets and helped me understand further how we can better engage with our communities.

Since becoming Chair almost two years ago, I have been fortunate to spend a lot of time with our talented people across the organisation. In our 150th anniversary year, we reflected together on how we can reinvigorate the core parts of our DNA and be successful in the 150 years to come. With every person I meet and every site I visit, I grow in confidence that we are heading in the right direction. This was clearly illustrated when the Board saw our four objectives in action at Oyu Tolgoi. We were deeply impressed by the productivity, the use of cutting-edge technology and the connection to the community; a blueprint for what we can achieve everywhere.

Meetings with stakeholders have also reinforced the important societal role we have to play. As a Board, we spent time in China with our customers, partners, and government to better understand how combining our knowledge and technology can create win-win opportunities and help address the climate challenge. Similarly, in conversations with officials in Washington D.C., Canberra, Ottawa, London, Brussels, Ulaanbaatar and more, we have discussed the critical role of mining for energy security, in addition to providing the basis for resurgent manufacturing.

What is very clear to me, is Rio Tinto's strategic importance in helping societies resolve their most urgent challenges. Rio Tinto can be fundamental to the energy transition. Our industry has been and will continue to be relied upon to provide the vast quantities of metals and minerals needed to build the infrastructure for the generation, transmission, and storage of renewable power. The need to repower our own assets with renewable power can also support investment in renewables – our Gladstone aluminium operations being a recent example of this.

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Innovation and growth

Innovation and technology are key to driving our progress, while helping us to simplify and automate for safer and more efficient operations. There is real momentum in our project pipeline and our Chief Scientist's office is steering us towards more breakthroughs in sustainable mining and processing, including BlueSmelting™, ELYSIS™ and Biolron™.

We are also working towards our ambitious targets of a 50% reduction in Scope 1 and 2 emissions by 2030 and achieving net zero by 2050. This is a physically challenging task that will require great imagination, collaboration, and technological advances that do not yet exist. However, we have now progressed to a disciplined and detailed roll-out program, providing greater definition to what an economical pathway to decarbonisation looks like. At the same time, we are exploring more ways to help our customers accelerate their own decarbonisation to tackle our Scope 3 emissions.

We are also seeking to further embed these targets by introducing a decarbonisation scorecard into our long-term incentive plan as part of our 2024 Remuneration Policy proposals. More detail on these proposals is set out on page 135.

Our partnerships are key to how we are developing the technologies to grow and reduce emissions. Highlights include working with China Baowu to explore projects to decarbonise the steel value chain, a multi-year supply agreement between Iron Ore Company of Canada and H2 Green Steel in Sweden, and teaming up with Sumitomo at our Aluminium Pacific Operations to build a first-of-a-kind hydrogen plant in Gladstone to trial lower-carbon alumina refining, with support from the Australian Government.

Board changes

In the summer of 2022, we evaluated the mix of skills and experience on the Board and concluded that we needed to refresh our composition, with a particular focus on deepening our mining, operations and projects experience, as well as our renewable energy and sustainability capabilities. We also needed to prepare for future transitions in our Audit and Risk Committee. I am pleased that we have made significant progress in this, with the announcement of six new Non-Executive Directors.

Dean Dalla Valle, who joined the Board in June, has vast operational and technical expertise, and wide experience developing complex mining projects. Susan Lloyd-Hurwitz, who also joined in June, is a highly respected leader and brings deep CEO experience across large projects, cultural change, diversity and inclusion, and sustainability. Joc O'Rourke joined the Board in October and brings 25 years of mining industry experience and a passion for improving operational performance. In December, we announced the appointments of Martina Merz, who joined the Board on 1 February 2024, and Sharon Thorne, who will join the Board in July 2024. Both are exceptional leaders, Martina with deep CEO experience in handling cyclical businesses, research and development and decarbonisation initiatives, and Sharon with deep industry knowledge gained over 30 years of auditing and advising multinational companies.

As part of that phased transition, Simon McKeon has agreed to step down as a Director at the conclusion of our annual general meetings in 2024, and will not therefore seek re-election by shareholders. I am extremely grateful to Simon for his invaluable contribution. Having regard for his roles as Rio Tinto Limited's Senior Independent Director and the Designated Director for workforce engagement, Simon has taken a particular interest in Rio Tinto's revitalised approach to engagement with the broader Australian community as well as the company's cultural reset. On behalf of the Board, I wish him well for the future.

In December, we also said goodbye to a colleague who will be greatly missed. Dr Megan Clark stepped down after 9 years on the Board. Her experience and wise counsel were invaluable, and we wish her well for the future.

I am excited to lead a Board with such depth and breadth of insight, who I know share a commitment to help Rio Tinto capture opportunities and achieve its full potential. For more information on the Board, please see the Directors' report on pages 90 to 145.

Looking ahead

There is no doubt we are living through turbulent times. Politics is becoming increasingly polarised, the geopolitical landscape has become more complex and volatile, and the economic backdrop remains challenging.

Nevertheless, our purpose, "Finding better ways to provide the materials the world needs", drives everything your company does.

I look to the future with optimism – there has never been greater demand for what we do, and the capability of our people, and the quality of our partnerships, assets, technology, and innovation give me great confidence we can deliver for all of our stakeholders.

Once again, I want to thank the leadership team and the thousands of employees, contractors and partners around the world who are bringing Rio Tinto's purpose and values to life.



Dominic Barton
Chair

21 February 2024

From the Chief Executive

Q&A with Jakob Stausholm

2023 highlights

0.37

All-injury frequency rate
(2022: 0.40)

$15.2bn

net cash generated from operating activities
(2022: $16.1bn)

$10.1bn

profit after tax attributable to owners of Rio Tinto
(2022: $12.4bn)

$7.1bn

total dividend declared
(2022: $8bn)

What are your reflections on 2023?

We approached the year with confidence in our strategy, a deep commitment to safety and financial discipline, and a continuous improvement mindset. By continuing to focus on our four objectives, we have put Rio Tinto in a stronger position to capture traditional and emerging opportunities. In 2023, we returned to investing in profitable growth with an eye to the future. Of course, we have a lot more to do. But that is the best part; there is so much ahead of us.

While we had zero fatalities at our managed operations in 2023, four team members from our Diavik Diamond Mine in the Northwest Territories in Canada and two crew members lost their lives when a charter flight crashed on its way to the mine in January 2024.

We are devastated by this tragic incident and are working with the authorities to understand the full facts of what happened. Nothing is more important than the safety of our employees, contractors and communities and we remain committed to evolving our culture and processes to ensure everyone goes home safely every day.

We made encouraging progress improving our operations, including the Pilbara, where we achieved guidance for iron ore shipments. We also hit project milestones including first underground copper production at Oyu Tolgoi in Mongolia. Despite continued uncertainty in the operating environment, we delivered another set of robust financial results. We generated underlying earnings of $11.8 billion (2022: $13.4 billion) and net cash generated from operating activities of $15.2 billion (2022: $16.1 billion). Profit after tax attributable to owners of Rio Tinto was $10.1 billion (2022: $12.4 billion) and our balance sheet remains strong with net debt of $4.2 billion (2022: net debt of $4.2 billion). As a result, the Board has recommended a final ordinary dividend of 258 US cents per share, resulting in total shareholder returns declared this year of $7.1 billion. This represents a pay-out ratio of 60%, in line with our policy.

2023 was another year of extreme weather and broken temperature records. In December, I attended the UN climate summit (COP28) and came away concerned the world is not on track with the Paris Agreement goal to limit warming to 1.5°C by 2100. National targets are not in line with the overall goal, and current climate policies in many countries are not yet aligned with their stated ambitions.

Many 1.5°C scenarios now overshoot the long term temperature goal and rely on significant deployment of carbon dioxide removals to get to net zero that may not be plausible. No single company or country can halt the course of climate change alone, so partnering to reduce emissions is vital. This is why we put the low-carbon transition at the heart of our business strategy and are working with governments, customers, communities and others to decarbonise our operations and value chains.

Rio celebrated its 150th anniversary in 2023. What did reaching this milestone mean to you?

Rio Tinto's strength is built upon its rich history, and it has been important to explore our past in our anniversary year to inform our future. Our story is full of achievements and failures we must learn from, but there is one consistent theme: the spirit of innovation and continuous improvement. This is what our purpose – finding better ways to provide the materials the world needs – is all about. Our people have been doing this from the beginning, and reaching this milestone has reinvigorated our commitment to our purpose. It has also been a reminder that we are a long-term business. We are laying the groundwork to ensure Rio Tinto is successful not just today but for another 150 years.

We remained focused on our four objectives in 2023. How are we doing on our journey to best operator?

We need to be in the best shape possible to capture the opportunities ahead of us, which is why we are investing in the long-term health of our people, assets, and ore bodies. By prioritising these areas, we are creating the conditions for consistent operational and financial performance.

Evolving our culture is fundamental to how we unlock performance. We have continued to implement the 26 recommendations of the *Everyday Respect Report*, and we are embedding best practices and empowering our people by deepening the rollout of the Safe Production System (SPS). This is a multi-year process, but it is already having a profound impact. SPS has delivered real improvements in our Pilbara iron ore operations, realising a 5 million tonne production uplift in 2023 and on target to deliver another 5 million tonnes in 2024. At the same time, Oyu Tolgoi is an example of what becoming best operator looks like. Less than a year since we started underground production, we are well on track to ramp up to 500,000 tonnes of copper per annum, from 2028 to 2036 from this world-class operation.

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"Nothing is more important than the safety of our employees, contractors and communities. We remain committed to evolving our culture and processes to ensure everyone goes home safely every day."



Our Chief Operating Officer Arnaud Soirat was instrumental to the success of SPS and Oyu Tolgoi. Arnaud stepped down at the end of January 2024 ahead of his retirement, and I want to thank him for his incredible contribution and dedication to Rio Tinto for more than a decade.

How is striving for impeccable ESG helping us meet customer expectations?

Our customers increasingly tell us they want sustainable, traceable, and transparent low-carbon materials, as well as help decarbonising their own value chains. Our strategy and commitment to the highest environmental, societal and governance standards positions us to meet these aims.

Our Boron operation became the first open pit mine to fully transition its heavy machinery to renewable diesel, and we had breakthroughs including piloting our BlueSmelting™ technology, which reduces emissions from processing ilmenite into titanium dioxide.

More broadly, our approach to environmental, social and governance (ESG) is informing our decision-making as we develop projects including Oyu Tolgoi and Simandou. We are working closely with communities in areas such as biodiversity and water management, and to help realise the full opportunities for economic development at a national and local level. By working to the highest ESG standards and utilising our START™ blockchain technology, we are providing customers with the sustainable and traceable products they expect.

How is progress on excelling in development positioning the business for the future?

Excelling in development is all about shaping our portfolio for the future. We have an attractive pipeline and considerable momentum to grow in the materials essential for the energy transition. We are further strengthening our Iron Ore business with key projects in the Pilbara, and in Guinea we hit major milestones to help us unlock Simandou, the world's largest known untapped source of high-grade iron ore. I visited Guinea in October and was impressed by how quickly early works are progressing as we move closer to full sanction.

In our Aluminium business, we announced an investment of $1.1 billion to expand our state-of-the-art AP60 smelter, replacing the Arvida smelter. We also launched into the rapidly growing North American market for recycled aluminium with Matalco, a joint venture that develops our position further along the value chain. We remain on track to deliver 1 million tonnes of copper per annum by the end of the decade, with considerable progress at Oyu Tolgoi underground, expansion pathways at Kennecott, the continued development of Resolution, and further options with La Granja and Winu. Further down the pipeline, we have finalised Nuevo Cobre, a joint venture with Codelco, to actively explore for copper in Chile.

Critical minerals are vital to achieving a net zero future, and we continue to explore opportunities in this area. Highlights from 2023 include steadily advancing the Rincon lithium project in Argentina, and the acquisition of the Burra™ Scandium Project in New South Wales, Australia, a high-grade scalable resource that could produce up to 40 tonnes per annum of scandium oxide.

How have we strengthened our social licence this year?

Our social licence underpins all our objectives – we cannot function as a business without it and our understanding of this is deepening across our teams. My conversations with stakeholders this year suggest we have come a long way to rebuild trust. However, this is an ongoing journey, and it is ultimately up to others to judge how we are performing. We need to continue to listen to voices from the communities where we operate and engage with civil society organisations to understand what we can do better.

Part of this development is having greater transparency. In March we published an independent report based on an audit of our Cultural Heritage Management performance. The report helped us identify target areas for improvement, such as a sustained focus on community engagement throughout the life of our operations. We have started taking a more community-led approach, with co-management and co-development of sites becoming an embedded part of our process from the beginning.

We continued to work closely with Indigenous Peoples this year to ensure better outcomes for all stakeholders. This has involved partnering for economic prosperity, such as increasing opportunities for Pilbara Aboriginal Businesses as construction progresses at Western Range. Other highlights include working with the Yindjibarndi Energy Corporation to explore opportunities for renewable energy projects and signing the Aganow agreement to enable greater participation by the Naskapi Nation of Kawawachikamach in Iron Ore Company of Canada activities.

What are your main focus areas for 2024?

Rio Tinto is at the heart of the energy transition and facing an opportunity-rich world. At the same time, we are still seeing powerful traditional drivers of demand and our core markets are growing. Global trends such as re-industrialisation and a renewed emphasis on supply-chain security are presenting even more opportunities. As both a mining company and a processing company with a global footprint and a portfolio built for the future, we are well-positioned to capture these over the long-term.

Our focus will remain on securing the enduring health and success of the business, with an emphasis on disciplined growth, improving operational performance, exploring options along the value chain, and investing in the technologies that will allow us to reach our decarbonisation targets.

We'll continue our journey of culture change, building an environment of trust where everyone feels safe, respected and empowered to deliver results. This is what will drive our performance and enable us to keep delivering for all our stakeholders in 2024.



Jakob Stausholm
Chief Executive

21 February 2024

Creating value by living our purpose

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Our purpose is at the core of everything we do. It inspires our efforts and guides our decisions.

Finding better ways™ to provide the materials the world needs.

Our strategy will move our business, customers, partners and the world forward.

Grow in materials essential for the energy transition

Aim to grow in commodities such as copper, aluminium, high-grade iron ore, lithium and other critical minerals.

Accelerate the decarbonisation of our assets

Switch to renewable power, electrifying processing and running electric mobile fleets.

Develop products and technologies that help our customers decarbonise

Partner with customers and suppliers and invest in R&D to reduce emissions across our value chains.

Our objectives guide our everyday work to achieve our strategy and drive progress.

Become the best operator

Expand our capabilities and empower our people to improve our operational performance.

Excel in development

Grow and develop our pipeline of opportunities, and build our capabilities and partnerships for capital-efficient delivery.



Achieve impeccable ESG

Align our priorities with community expectations and consider sustainability in all decisions.

Strengthen our social licence

Earn trust by building meaningful relationships and partnerships, continuing to listen and learn.

Our people, culture and values create an environment where everyone feels safe, respected and empowered, so we can continue to find better ways together.

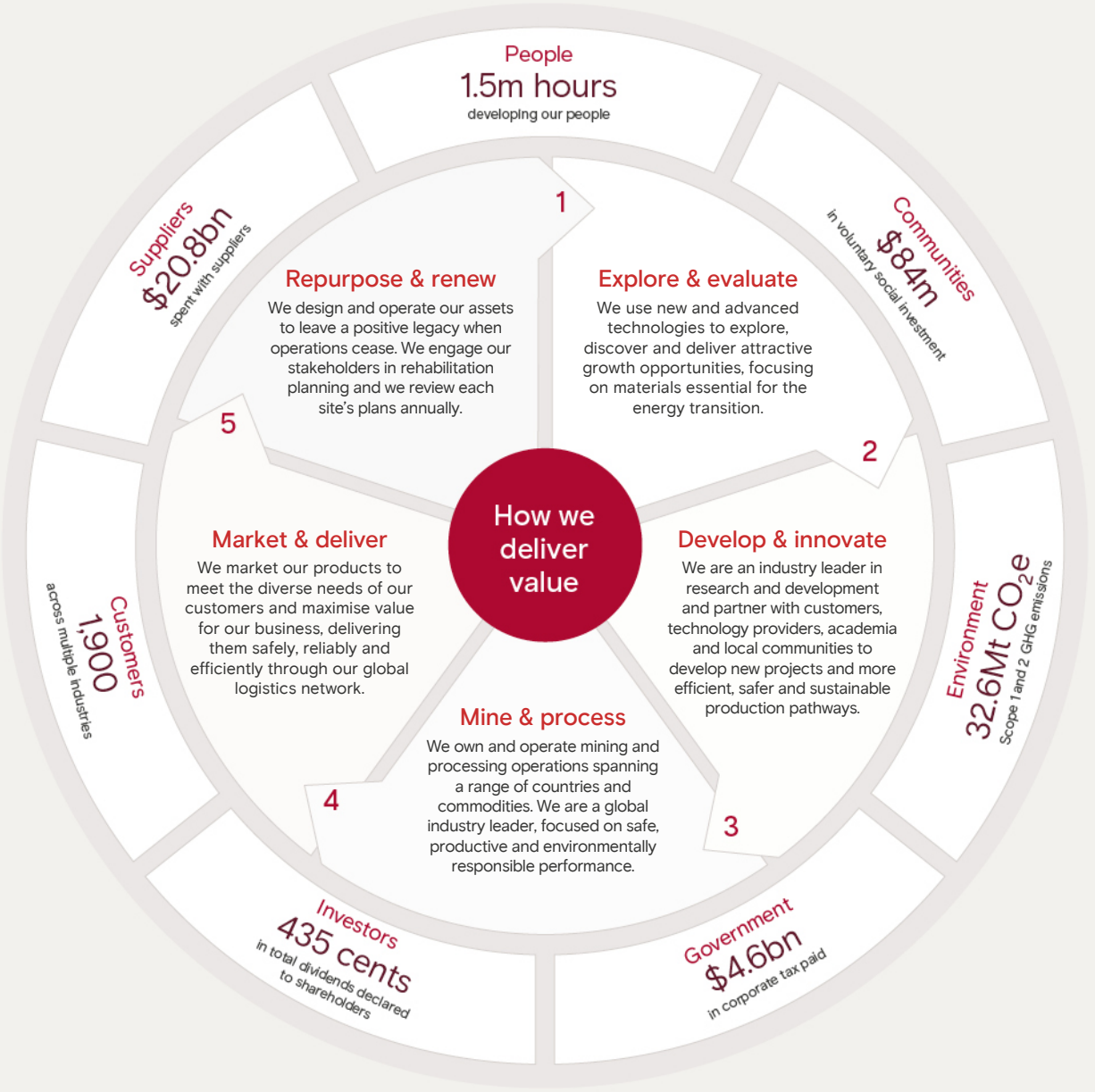
Care about the safety of ourselves and others, creating an environment of trust, and the impact we have on our colleagues and others, communities and the environment.

Courage to show vulnerability, speak up and challenge when we can do better, and take ownership of our actions and outcomes to drive performance.

Curiosity to learn and grow in our fields of expertise, look for opportunities to solve problems with everyday innovation, and be open to different perspectives.

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Our business model helps us deliver value that matters to our stakeholders.



Most importantly, effective and responsive corporate governance manages our performance.

Tracked and measured

We measure our strategic progress through a mix of financial and non-financial key performance indicators (KPIs) that align with our purpose and strategy. In addition to key financial, operational and safety performance metrics, we track progress across ESG themes including gender diversity and greenhouse gas (GHG) emissions.

Overseen by our Board

Our success depends on effective and responsive corporate governance. Our Board oversees how we deliver on our purpose and strategy and monitors our culture to make sure it aligns with our values. The Board also oversees how we manage social and environmental risks and monitors our performance to ensure we generate value for shareholders while our business contributes to wider society.

Reflected in remuneration

Our Remuneration Policy is designed to support the delivery of our strategy in a responsible and sustainable way that reflects our purpose and values. It considers our financial and safety performance, our culture and our ESG measures, such as accelerating decarbonisation and strengthening our social licence. The main elements include base salary, short-term incentive plan (STIP) and long-term incentive plan (LTIP).

For more information
about our business model see riotinto.com/ourbusiness.

Finding better ways™ in 2023

Our purpose in action

Continuous improvement and innovation are part of our DNA. Right across the business, we are finding better ways to provide the materials the world needs while reducing our carbon footprint, developing technologies needed to make net zero a reality, and continuing to support our people and the communities where we live and work.

For more highlights from 2023 see our end-of-year video at riotinto.com/annualreport.



Biolron™ – pioneering breakthrough technologies

In 2023, we continued developing Biolron™, which has the potential to reduce CO_2 emissions by more than 95% during steelmaking.

Biolron™ uses raw biomass produced from agricultural by-products (instead of metallurgical coal) and microwave energy, to convert Pilbara iron ore to metallic iron during steel making. It also uses approximately 65% less electricity during steel making when compared to other green hydrogen[1] technologies.

We have proved Biolron™ works on a small scale through a successful collaboration with the University of Nottingham and Metso Corporation. Now we have secured a site to continue testing on a larger scale, and are progressing regulatory approvals for the Biolron™ Continuous Pilot Plant which will have the capacity of one tonne per hour.

1. Green hydrogen is produced using renewable energy.

For more information about Biolron™ see riotinto.com/bioiron.



Connecting with Country

In 2023, we commenced cultural immersion secondments with Jawun™, a non-profit partnership program with Indigenous organisations and communities across Australia.

Every year, 24 of our people will contribute their skills to support Aboriginal economic development as part of the program, while also learning about Aboriginal culture and history. This two-way learning opportunity has already deepened our cultural understanding and contributes to a more culturally aware workplace.

"You have an opportunity to provide back to an Indigenous organisation, and in return you get to explore this beautiful Country and learn a lot of things from the local Indigenous Peoples." Travis Creed, Superintendent Capability Development.



Accelerating innovation: bringing the outside world in

In 2023, we established an Innovation Advisory Committee, bringing together experts in innovation and research and development.

The Committee is helping us accelerate our innovation portfolio and offers guidance on emerging technologies in areas such as health and safety, environmental, social and governance, growth, carbon abatement and productivity.

To help us find innovative ways to provide the materials the world needs for the energy transition, we have also committed $150 million over ten years to create a Centre for Future Materials led by Imperial College London.

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Becoming best operator with our Safe Production System

We are implementing lessons from our own pockets of excellence. We continue to see improved production efficiency, safety and engagement at the sites where we have deployed our Safe Production System (SPS).

Global

25%

improvement in AIFR[1] in the second half of 2023 at SPS sites, when compared to the first half

Aluminium

8%

year-on-year increase in casting operating time at Grande Baie (excluding shutdowns)

Iron Ore

5Mt

year-on-year production uplift at Pilbara iron ore sites, attributable to SPS

Iron Ore

34%

decreased variability in processing operating time year-on-year at Hope Downs

Copper

90%

record performance of concentrator effective utilisation at Kennecott across Q3 and Q4

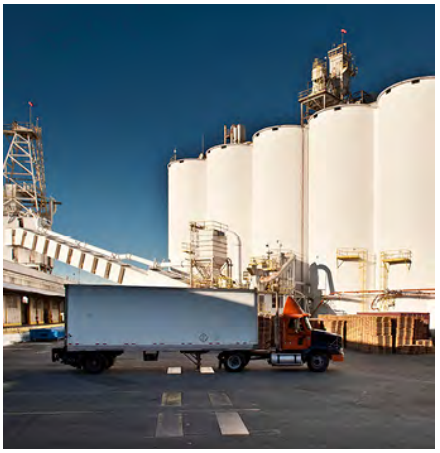
Minerals

32%

year-on-year improvement in AIFR[1] at Iron Ore Company of Canada

1. All-injury frequency rate.

For more information about SPS see riotinto.com/innovation.



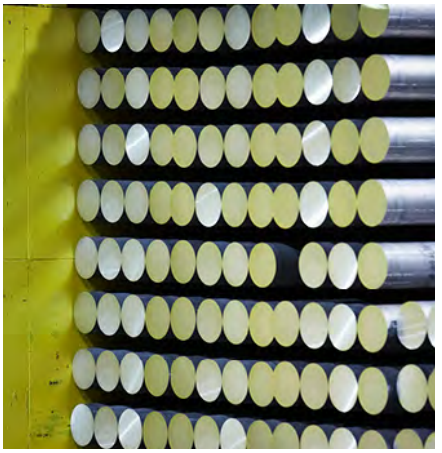
First open pit mine in the world to move to renewable diesel

Our Boron operation in California has fully transitioned their heavy machinery from fossil diesel to renewable diesel.

We expect this to reduce our CO_2 equivalent by up to 45,000 tonnes per year, similar to eliminating the emissions of 9,600 cars.

In the first quarter of 2024, we will begin to replace our entire fossil diesel consumption with renewable diesel at our Kennecott copper operation in Utah. It will reduce emissions by around 495,000 tonnes of CO_2 equivalent per year, similar to eliminating the emissions of more than 107,000 cars.

Note: emissions-to-cars conversion source – *Greenhouse Gas Equivalencies Calculator | US EPA.*



Investing in recycled aluminium

We have formed a joint venture with Giampaolo Group to purchase a 50% stake in Matalco.

Aluminium is an essential metal needed to decarbonise, but its production requires vast amounts of electricity and accounts for about 3% of the world's CO_2.

The partnership will help us provide a broader range of high-quality and low-carbon, primary, recycled, and blended aluminium products, at a time when customers are looking for solutions to lower their carbon footprint.

This move follows other recent investments in our aluminium business in North America, including $1.1 billion to expand AP60 smelter equipped with low-carbon technology at Complexe Jonquière in Canada, and $107 million to install a new alumina conveyor at Kitimat.

Our stakeholders

Through partnerships and collaboration, we gain the benefit from the expertise and insight of others. Our stakeholders give us a competitive edge and encourage us to work more thoughtfully and responsibly. By engaging with them and listening to their views, we can make a more meaningful contribution to society while becoming a more sustainable company.

Section 172(1) statement

This stakeholder section, together with our stakeholder pages in the Governance section (pages 96–100), explains how the Board takes account of stakeholder interests. These comprise our "Section 172(1) statement".

Workforce

We are creating an environment of trust, where our people feel safe, respected and empowered to be their best, to help us attract, retain and grow great talent and deliver results. In 2023, we focused on initiatives to help our people better align with our strategy and culture journey; we updated our incentive and performance management framework, refreshed our Code of Conduct and continued to develop our leaders.

Our people survey is one of the tools that helps us understand how our employees experience working for us. In our most recent survey conducted in October 2023, our employee satisfaction rating (eSAT) increased by 1 point (73 to 74).

55,000[1]

Employees across six continents
(2022: 52,000)

74

Employee satisfaction score (eSAT)
(2022: 73)

Communities

Communities are the places and the people who make up where we live, work and call home – from the Gobi Desert in Mongolia, to KwaZulu-Natal, South Africa, and Saguenay–Lac-Saint-Jean, Quebec, Canada. We strive to partner consistently and honestly with communities on a range of issues, such as jobs and local procurement, as well as the impact of our operations on the local environment. Over the past few years, we have focused on our own standards of open and transparent engagement. We are targeting for all sites to co-manage cultural heritage with communities and the knowledge holders, by 2026.

$84.0m

Voluntary social investment in 2023
(2022: $62.6m)

A$725m

Spent with Indigenous businesses in Australia in 2023
(2022: A$565m)

Civil society organisations

One way we can help address the world's many complex environmental, social and governance challenges, such as climate change, human rights violations, bribery and corruption, is through collaboration with civil society organisations (CSOs) and other stakeholders. Our senior leaders regularly engage with CSOs, and although our opinions may differ from time to time, we respect their views and value the challenges they set for us to improve performance across our business. We hold yearly roundtable discussions with CSOs in Australia, Europe and North America.

28

Organisations participated in our 2023 CSO roundtable discussions in person

3

Roundtables held in Washington D.C., London and Sydney in 2023. A wide range of topics was discussed, including nature targets; free, prior and informed consent (FPIC); community support; our operations in Madagascar; and Resolution Copper.

Governments

Governments – national, state and provincial, and local – are important stakeholders for our business. They regulate our operations, are among our commercial partners, and receive revenue from our taxes and royalties. Our economic contribution can be significant for national budgets and local development priorities, such as job creation and skills training. We engage with officials on issues such as how we explore, mine and process ore; conditions of land tenure; health, safety and environment; taxation; intellectual property; competition and foreign investment; data privacy; conditions of trade and export; and infrastructure access.

$76bn

Paid in taxes and royalties globally over the past ten years

$4.6bn[2]

Corporate tax paid in 2023
(2022: $6.9bn)

$4.1bn[2]

Corporate tax paid in Australia in 2023
(2022: $6.1bn)

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2023 rounded to nearest 1,000.
2. When combined with royalties and other taxes, and with our share of taxes and royalties paid by equity accounted units, this resulted in payments to governments of around $8.5 billion (2022: $10.8 billion), including around $6.5 billion paid in Australia (2022: $8.5 billion).

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Investors

Our investors include pension funds, global fund managers, bondholders, and tens of thousands of individuals around the world, including approximately 34,000 Rio Tinto employees.

It is important that we understand our investors' needs and their vision for the company. We therefore communicate and engage extensively with them throughout the year, both in person and through virtual forums across multiple jurisdictions. In addition to our annual general meetings in the UK and Australia, we also held our 2023 Investor Seminar in Sydney, where our Executive Committee provided an update on our progress against our strategy, our Simandou project and how we are advancing our decarbonisation program.

Customers

Our customers' needs are central to our operational decision making. Using the insights generated from everything we buy, sell and move around the world, our Commercial team works closely with customers to ensure we deliver products that meet their specific requirements. Periodically, we ask our customers for their feedback via a survey and the insights help us deliver new and better products and services. Where possible, we partner to co-develop solutions that support our environmental, social and governance commitments. For example, in 2023 we significantly expanded our low-carbon portfolio by forming the Matalco joint venture to produce and market recycled aluminium in North America.

Suppliers

Engaging with suppliers is an important way in which we can have a positive impact on communities. We partner with, and help develop, local businesses where we operate, so they can share in our success. Having good relationships with our suppliers also helps us take part in technological and market developments, and we continually strive to improve our supplier experiences. As with our customers, we periodically ask our suppliers to share their feedback in a survey to better understand how we can develop our collaboration. We work closely with our suppliers to create innovative partnerships, such as our partnership with Neste and Rolls-Royce that resulted in our Boron site in California becoming the first open pit mine to operate heavy machinery running entirely on renewable diesel.

$7.1bn

Total dividends declared to shareholders
(2022: $8.0bn)

34,000

Rio Tinto employees own shares in the company[1]
(2022: 30,000)

1,900

Customers across multiple industries and countries

$54.0bn

Consolidated sales revenue in 2023
(2022: $55.6bn)

543Mt CO_2e

Scope 3 emissions from the processing of our products
(2022: 549Mt CO_2e)

$20.8bn

Spent with suppliers globally in 2023
(2022: $22.5bn)

26Mt CO_2e

Scope 3 emissions from all procurement
(2022: 26Mt CO_2e)

1. Shareholders, primarily through myShare, our global employee share plan.



Western Range spends A$1 billion with WA businesses

We spend billions of dollars with local suppliers across Western Australia and the Pilbara every year, helping support thriving communities across the State by providing local jobs for local people.

Western Australian businesses have so far been awarded contracts totalling A$1 billion as construction progresses at our Western Range mine in the Pilbara, a joint venture together with China Baowu Steel Group.

Construction at Western Range, which will help sustain production from our existing Paraburdoo mining hub, started in 2023 and is expected to support around 1,600 jobs.

For more information about our local procurement strategy see riotinto.com/sustainableprocurement.

Strategic context

Our strategy is informed by a deep analysis of the interplay of global megatrends, explored through the lens of plausible scenarios. These set the context for our industry and underpin our portfolio choices and how we operate. Our success relies on our ability to strengthen our resilience while building partnerships and capabilities that enable us to grow profitably.

Our scenario approach

We use global scenarios in our strategy and capital allocation processes to stress test our portfolio and investment decisions under alternative macroeconomic settings. Our scenario framework focuses on two prevailing forces: the speed of global economic growth and the trajectory of climate action, each heavily influenced by global geopolitics and governance.

Our central reference case commodity forecasts and valuations are informed by a blend of our two core scenarios (Competitive Leadership and Fragmented Leadership). These are used to derive critical accounting estimates and are included as inputs for impairment testing; estimating remaining economic life for units of production, depreciation and discounting; and closure and rehabilitation provisions. Further detail is provided in the "Impact of climate change on the Group" section to the financial statements on pages 162-165.

We use additional scenarios (including our Aspirational Leadership scenario, which provides our view of a pathway aligned with 1.5°C by 2100) to further stress test decisions and assess potential risks to our portfolio.

Our two core scenarios

Competitive Leadership reflects a world of high growth and stronger climate action, particularly after 2030, with change driven by policy and competitive innovation. A proactive reform environment encourages business innovation and helps boost investment and productivity. This allows global GDP to continue growing at near recent historical levels with an increasing contribution from India and other developing countries.

Fragmented Leadership represents a world where economic growth and climate action are constrained by ineffective policy and rising social and geopolitical tensions. In this world, investment in new technologies slows and their global adoption is highly inconsistent. This, combined with more significant climate damage, results in weaker long-term productivity growth.

For more information about our scenarios, methodology and portfolio implications see pages 47-48.

New industrial policies and regional competition

In the last two years, we have entered a new era of industrial policies characterised by increasing government intervention in the market and unprecedented levels of subsidies and policy support, specifically tailored towards de-risking supply chains and supporting the energy transition.

Faced with inflationary pressures and macroeconomic uncertainty, regional and national governments are attempting to balance different societal choices, from accelerating decarbonisation to strengthening local manufacturing and enhancing supply security. This has created an increasingly fragmented and competitive industrial and climate policy landscape.

Industrial policies are becoming an increasingly important determinant of commodity prices, regional premiums and project economics.

Policies designed to accelerate the energy transition are bolstering demand growth for essential materials such as aluminium, copper and lithium. To mitigate supply bottleneck risks and support reindustrialisation, governments are also promoting the development of new mining and processing (smelting and refining) projects via financing or regulatory support. While this is creating new growth opportunities for existing producers, it is also incentivising competition and could result in increasing risks, such as tighter trade barriers and resource nationalisation, as value chains reconfigure.



Oyu Tolgoi copper-gold mine, Mongolia.

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Energy transition and climate action

While global efforts to tackle climate change have continued, the long-term pledges made by governments and companies still fall short of what is required to reach net zero emissions by 2050, to limit the global temperature rise to 1.5°C above pre-industrial levels.

In response, new government policies and initiatives, such as the US's *Inflation Reduction Act* (IRA), the EU's *Carbon Border Adjustment Mechanism* (CBAM) and Australia's *Safeguard Mechanism*, have been implemented to support decarbonisation and tackle climate change.

While these policies are helping accelerate regional deployment of renewables and fossil fuel alternatives, several industries still face significant technology and capital constraints. This is particularly apparent for continuous, energy-intensive processes requiring both large-scale renewables and grid-scale firming solutions.

As the energy transition progresses, long-standing materials supply chains will be reconfigured, creating opportunities and risks for metals and mining participants. Given current technology and regulatory hurdles, processes requiring firm power, such as aluminium and steel production, will prize access to hydroelectricity or continue to rely on nuclear or fossil fuel-based electricity to offset variability in wind and solar energy. Existing operations with access to hydropower could see significant cost advantages, particularly if carbon penalties increase. By contrast, industries that can use intermittent power or green hydrogen[1] will have an advantage in areas rich in solar and wind resources.

ESG priorities and evolving customer needs

Consumers are becoming more ESG-conscious in their purchasing behaviours, taking into consideration a range of themes beyond carbon, including biodiversity, water, supplier ethics and integrity, transparency and impacts of operations and broader value chains on local communities and society.

With the technology challenges and long development timelines associated with decarbonising large-scale processes, customers in developed markets are increasingly focusing on securing recycled materials as they look to reduce their value chain emissions as well as their environmental and social footprints.

This trend is being further supported by new industrial policies that have set recycled content targets and ESG performance hurdles to access government support.

While recycling presents a direct risk to primary metal demand growth, it also offers unique growth and commercial opportunities for mining companies that have downstream processing capabilities. These companies can meet customers' diverse needs by providing both high-quality primary products (essential for some applications) and recycled products with reduced footprints.

1. Green hydrogen is produced using renewable energy.



Community engagement, Simandou, Guinea.

Our strategy

Climate change and the low-carbon transition are at the heart of our strategy. We aim to strengthen our resilience to the physical effects of climate change and secure new opportunities and partnerships created by changing market fundamentals. Our strategy is designed to deliver strong returns and growth options while reducing the environmental and social impacts of our business and broader value chains.

Our strategy has three pillars

Grow in materials essential for the energy transition

The energy transition will create significant additional demand for copper, aluminium, lithium and a range of other critical minerals. We aim to grow in these commodities as well as in the supply of high-grade, high-quality iron ore, essential for low-carbon steel production.

Accelerate the decarbonisation of our assets

Due to the scale of our mining and processing activities, we have significant Scope 1 and 2 emissions (32.6Mt CO_2e). We are working with stakeholders to find commercial and technological solutions to reduce these by 50% (relative to 2018 levels) by 2030. We anticipate a total capital spend on decarbonisation of $5-6 billion by 2030[1].

Develop products and technologies that help our customers decarbonise

Our Scope 3 emissions were 578Mt CO_2e in 2023, over 94% of which was from the downstream processing of our products. We are partnering with our customers and suppliers and investing in research and development to decarbonise our broader value chains and bring forward their targets, to achieve net zero processing emissions by 2050.

1. Excluding the purchase of offsets.

Our four objectives

Our strategy is centred around our four objectives: to be the best operator, to achieve impeccable ESG credentials, to excel in development and to strengthen our social licence. These essential components will help improve our productivity, reduce capital intensity and assist us in becoming a partner of choice for a range of stakeholders globally.

Our culture is a key enabler of our strategic ambitions. It guides us on the journey to best operator, makes us a better partner and helps us solve problems as we work towards net zero.

By building an environment of trust where everyone feels safe, respected and empowered, we can attract and retain curious people who care about their work and colleagues and are courageous about finding better ways to do things. This is how we will deliver on our purpose.



Best operator

We aim to improve our operational performance by identifying and replicating best practices across our portfolio and empowering our people to make positive changes.

Impeccable ESG

We will strive to align our business priorities with society's expectations and ensure sustainability considerations are at the core of every decision we make.

Excel in development

We will expand and progress our pipeline of growth opportunities and build capabilities and partnerships to execute projects and establish a strong track record of capital-efficient delivery.

Social licence

We will build meaningful and enduring relationships and partnerships with our stakeholders by listening, learning and respecting diverse perspectives.

Forward-looking statements

Progressing our strategy

Grow in materials essential for the energy transition

High-grade iron ore

- Progressed the Simandou high-grade iron ore project in Guinea with our partners. We announced plans to invest $6.2 billion[1] (Rio Tinto share) on mine, port and rail infrastructure development. Production is expected to ramp up over 30 months from 2025 to a capacity of 60 million dry tonnes[2] annually (27 million dry tonnes Rio Tinto share).
- Approved $77 million for a pre-feasibility study to progress the development of the Rhodes Ridge project in the East Pilbara in Western Australia, one of the world's most attractive undeveloped iron ore deposits.

Aluminium

- Acquired a 50% equity stake in Matalco from Giampaolo Group for $738 million. The Matalco joint venture combines the strengths of North America's largest primary and secondary aluminium producers to meet growing demand for low-carbon products.
- Announced we will invest $1.1 billion to expand our AP60 aluminium smelter equipped with low-carbon technology at the Complexe Jonquière with financial support from the Quebec government.

Copper

- Started production from the Oyu Tolgoi underground mine in Mongolia, which will make Oyu Tolgoi one of the most important producers of copper in the world.
- Approved investment to significantly increase production from underground mining at Kennecott. Production is expected to deliver around 250 thousand tonnes[3] of additional mined copper over the next ten years (2023-2033).
- Formed a joint venture with First Quantum Minerals to unlock the development of the La Granja project in Peru, one of the largest undeveloped copper deposits in the world.

Minerals

- Progressed development of a three thousand tonne per annum lithium carbonate starter plant at the Rincon lithium project with production expected by the end of 2024.
- Acquired the high-grade Burra™ Scandium Project in New South Wales, Australia. The project could produce up to 40 tonnes of scandium oxide per year.

Accelerate the decarbonisation of our assets

Decarbonisation spend

- Spent a total of $425 million on decarbonisation in 2023 (2022: $299 million). We estimate a total capital spend of $5-6 billion over the period 2022-2030, including $1.5 billion cumulative spend over the period 2024-2026.

Pacific Operations repowering

- Signed a power purchase agreement (PPA) to buy 1.1GW of renewable energy from the Upper Calliope Solar Farm project which could provide part of a solution to repower our three Gladstone production assets.

Renewable energy

- Constructed a 5MW solar plant pilot project at Kennecott Copper.
- Approved, subject to regulatory approvals, a 12.4MW solar photovoltaic system and a 2.1Mwh battery storage system via long-term PPA for Amrun operations.
- Signed a memorandum of understanding (MoU) with the Yindjibarndi Energy Corporation (YEC) to explore opportunities to collaborate on renewable energy projects on Yindjibarndi Country in the Pilbara.

Diesel transition

- Advanced our diesel transition at Boron and Kennecott. Boron became the world's first open-cut mine to fully transition 100% of its heavy machinery to renewable diesel.

Alumina processing

- Approved the Yarwun Hydrogen Calcination Pilot Demonstration Program.
- Progressed a double digestion pre-feasibility study at Queensland Alumina Limited (QAL).

Minerals processing

- Commissioned the BlueSmelting™ demonstration plant at Rio Tinto Iron and Titanium Quebec Operations, with the first tonne of pre-reduced ore produced. The project is part of a partnership with the Government of Canada.

Nature-based solutions

- Continued to develop pilot projects in Madagascar and progressed pre-feasibility and feasibility work for opportunities in South Africa, Guinea, US and Argentina.

Develop products and technologies that help our customers decarbonise

Steel value chain decarbonisation

- Progressed partnerships on various low-carbon pathways, including our collaboration with the world's largest steel producer – Baowu.
- Completed a feasibility study for the Biolron™ Continuous Pilot Plant and secured a location, completed an Electric Smelting Furnace concept study with BlueScope, and progressed design of the Baowu Meishan microwave lump drying pilot plant.

Shipping decarbonisation

- Lowered shipping emissions intensity by 37% (relative to 2008 baseline) and introduced five liquified natural gas vessels into the fleet in 2023.
- Completed a 12-month biofuel trial.

Aluminium value chain decarbonisation

- ELYSIS started commissioning activities following completion of construction work and expects to start the first 450kA cell in 2024.
- Defined potential areas of collaboration to help decarbonise alumina refining with customers, representing 47% of global bauxite sales.

Procurement

- Completed a study to understand the sources of our procurement-related emissions.

1. Subject to the remaining conditions being met including receipt of regulatory approvals.
2. The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the Australian Securities Exchange (ASX) dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.
3. The production target of around 250 thousand tonnes of additional mined copper over the next ten years (2023 to 2033) at Kennecott was previously reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 titled "Rio Tinto invests to strengthen copper supply in US". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.

For more information
about our projects see the Portfolio management section on pages 30-31.

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Progressing our four objectives

Best operator

Focus

Safety and operational performance.

Progress in 2023

Safety

Safety is our top priority. Our focus is on eliminating fatalities, preventing catastrophic events and reducing injuries. While we had zero fatalities at our managed operations in 2023, tragically four colleagues died in a plane crash while travelling to our Diavik mine in January 2024. Our all-injury frequency rate (AIFR) was 0.37 in 2023 (compared to 0.40 in 2022). We are strengthening our safety maturity model (SMM) by including health and environment risks, and we are gaining greater insight into the culture at each site so we can take actions to improve.

Operational performance

We continued rolling out the Safe Production System (SPS) across our assets, engaging our people to identify issues and improvement opportunities and develop and share best practices across the Group.

We have deployed SPS at ~60% of our sites to date, with implementation at various stages of maturity. Key performance highlights include a 5 million tonne uplift in iron ore production and a 25% improvement in AIFR globally in the second half of 2023 (when compared to the first half), at sites where SPS has been deployed.

In 2023, we announced plans to increase annual iron ore capacity at Gudai-Darri in Australia by seven million tonnes to 50 million tonnes at a cost of $70 million through incremental productivity gains.

We also initiated a number of projects designed to improve the Group's asset management performance. These included building up capabilities in our Asset Management Centre of Excellence, improving critical risk maintenance plans and spare parts programs and bolstering shutdown support.

Future priorities

Safety

In 2024, we will strengthen the way we manage our critical risks, our primary fatality elimination tool which helps ensure that controls are in place and working where there is a fatal risk. We will continue to enhance the understanding and impact of critical risk management by focusing on quality conversations and verifications at our global operations.

We have strong standards and processes to approve air operators, including regular audits and engagements to make sure aviation safety systems match our expectations of safety and care for our people. In 2024, we will continue to work with all our sites to actively review compliance with aviation safety tools and controls to provide further assurance on top of our existing processes.

We will also evolve SMM and evaluate its impact on individuals' mindsets, rather than simply verifying safety systems and processes. This will be strengthened through assessor training, and how we perform SMM assessments at our sites.

Operational performance

The rollout of the SPS will continue in 2024. Our focus will be on working with our product groups to double down on impacts at existing high-value sites, rather than new deployment launches. We will also work on significant maturity uplift of best practices, specifically problem solving, and completion of site-wide deployment and end-to-end systems. We will continue to work with asset management to integrate efforts to rapidly bring assets back to health so they can deliver industry-best performance.

Relevant KPIs
All-injury frequency rate
Underlying earnings & underlying EBITDA
Net cash generated from operating activities
Underlying return on capital employed
Free cash flow
Net (debt)/cash
Scope 1 and 2 greenhouse gas emissions
Gender diversity
Total shareholder return

Impeccable ESG

Focus

Decarbonisation, nature, water and waste management, closure, communities, workforce diversity, culture and leadership.

Progress in 2023

Environment

We continued to progress our six large carbon abatement programs focused on repowering our Pacific Aluminium operations, renewables, ELYSIS™, alumina process heat, minerals processing and diesel transition. We also formed new partnerships with our customers to reduce value chain emissions.

We also identified several opportunities for investment in large-scale nature-based solutions with the potential to halt and reverse nature loss, support positive, sustainable change for communities and address climate change.

In 2023, we progressed a number of innovative projects designed to reduce our environmental footprint and create new revenue streams through the adoption of more circular practices. These spanned the extraction of by-products, recycling and finding new life for our closure sites.

Social

Our work in 2023 focused on delivering our new communities and social performance strategy, underpinned by updated standards, targets and vision for the business. We continued to work on improving our approach to engage and partner with our host communities and better manage cultural heritage. In 2023, we completed an independent Cultural Heritage Audit, providing a systematic review of all the heritage sites that we manage worldwide.

Governance

In 2023, we continued to drive leadership, management and ethics and compliance improvements, with a focus on building a thriving culture, implementing the learnings from the *Everyday Respect Report*, and improving our transparency and practices.

In 2023, the Business Conduct Office (BCO) launched Care Hub, an independent care unit providing support, care and resolution options to anyone affected by harmful behaviours. Care Hub currently supports matters reported through myVoice.

72% of senior leaders have now completed Voyager, our senior leadership program. We also increased the offering of the Leading Sustainable Corporations and Leader as Coach programs to further support development and our cultural journey.

Future priorities

Environment

We will define our next round of climate and nature targets in 2024, drawing on knowledge and experience from across the business and from our external partners, to develop more holistic commitments across these key areas.

We will continue to progress our emissions reduction targets to build upon those currently in place, considering learnings from the approach we have taken with our water targets.

Social

Guided by our 2026 Communities and Social Performance Targets, a core 2024 focus is for our people in high human rights risk roles to complete job-specific and general human rights training. We will also continue to work together with communities to manage and protect heritage and find ways to deepen the impact of our social investment through strategic, outcomes-focused partnerships.

Governance

We will continue our cultural journey towards an inclusive and diverse workplace led by our values of care, courage and curiosity focusing in particular on safety, leadership and employee listening. In 2024, we will be working to clarify our measures to demonstrate progress.

For more information about our ESG progress see pages 40–77.

Relevant KPIs
All-injury frequency rate
Total shareholder return
Scope 1 and 2 greenhouse gas emissions
Gender diversity

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Excel in development

Focus

Project development, future options (pipeline projects, exploration and M&A), technology development and deployment.

Progress in 2023

Project development

We have continued to advance a number of projects across the business (see page 17), including making significant progress at the Simandou iron ore project in Guinea in collaboration with our joint venture partners.

In our iron ore business, Gudai-Darri reached nameplate capacity in the second quarter with the current wave of replacement mines like Robe Valley in production and Western Range commencing construction.

In our aluminium business, we announced investment in a significant AP60 expansion. We also acquired a 50% equity stake in Matalco from Giampaolo Group for $738 million to become a leader in recycled aluminium supply in North America.

In our copper business, we achieved first sustainable production from the Oyu Tolgoi underground mine with associated infrastructure ramping up on schedule. Work has also progressed to expand underground operations at Kennecott.

Pipeline projects

We advanced studies and permitting at a range of greenfield projects including Resolution and Winu, and formed a joint venture with First Quantum to help unlock the La Granja copper project.

Exploration

We also continued to fill and progress our pipeline of exploration opportunities. We entered a joint venture (Nuevo Cobre) with Corporación Nacional del Cobre de Chile (Codelco) to explore and potentially develop copper assets in Chile's prospective Atacama region.

Technology

We continued to progress our technology roadmap while building our technical capabilities and partnership networks. In 2023, we progressed 130 priority research and development projects, including 32 growth-focused projects on discovering new ore bodies, reducing capital intensity and unlocking new revenue streams.

Future priorities

We will continue to explore new approaches, technologies and partnership opportunities to discover, progress and develop projects to support future growth in close consultation with communities.

We will manage our pipeline of opportunities to deliver high-quality growth options, with a strong focus on materials needed in a decarbonising world.

Future priorities include development of the mine, rail and port infrastructure for Simandou in Guinea in collaboration with our partners, construction of the Rincon lithium starter plant in Argentina, management of key closure projects at Argyle and Gove and optimisation of the next tranche of replacement mines in the Pilbara.

We will continue to explore and evaluate new mining, processing, technology and renewable energy opportunities to ensure we maintain a high-quality portfolio of short-, medium- and long-term growth options that can deliver strong and resilient cash flows throughout the cycle.

For more information about our capital projects and future options see pages 30–31.

Relevant KPIs
Total shareholder return
Underlying return on capital employed
Free cash flow
Net (debt)/cash
Scope 1 and 2 greenhouse gas emissions

Social licence

Focus

Adopting a multi-stakeholder approach for external engagements to deepen connections and build mutually beneficial partnerships. Building cultural capability and competency across the Group to ensure we fully understand, value and partner with our host communities.

Progress in 2023

Communities and partners

In 2023, we piloted a Group-wide approach to community perception monitoring that brings the voices of communities into the business, supporting deeper, more effective and data-driven social performance.

We also signed an MoU with the YEC to explore opportunities to collaborate on renewable energy projects on Yindjibarndi Country in the Pilbara region of Western Australia.

The Iron Ore Company of Canada (IOC) and the Naskapi Nation of Kawawachikamach signed an agreement to establish a mutually beneficial relationship based on dialogue, collaboration and trust over the coming decades. This socio-economic agreement aims to create opportunities for greater participation by the Naskapi People in IOC's activities through training and development, employment, collaboration on environmental projects, and procurement.

Future priorities

Communities and partners

Our future priorities are informed by our 2026 Communities and Social Performance (CSP) targets which help us monitor progress toward the core objectives of our CSP strategy. Our targets guide progress across the business as well as for individual assets, which will continue to maintain local targets and metrics, developed in consultation with local communities.

In 2024, a core focus is on ensuring all employees in high human rights risk roles complete job-specific and general human rights training. We will also continue to progress longer term targets including by 2026 for:

- all sites to co-manage cultural heritage with communities and knowledge holders
- 70% of total community investment to be through strategic, outcomes-focused partnerships.

Understanding and acting on the perceptions of communities who host our operations is essential. We will roll out our new community perception monitoring program that we piloted in 2023 to all our assets throughout 2024 and 2025.

We continue to find better ways to work with communities and Indigenous Peoples, particularly in how we protect heritage. Our approach aims to enhance our understanding and appreciation of cultural heritage and ensure the voices of communities inform our planning and decision making.

For more information about our community engagement see pages 66–70.

Relevant KPIs
Total shareholder return
Scope 1 and 2 greenhouse gas emissions
Gender diversity

Key performance indicators

We use a range of financial and non-financial metrics to measure Group performance against our four objectives: to be best operator; to achieve impeccable environmental, social and governance (ESG) credentials; to excel in development; and to strengthen our social licence.

Alignment to our four objectives and associated risks key

Best operator · Impeccable ESG · Excel in development · Social licence

All-injury frequency rate (AIFR)

per 200,000 hours worked



Alignment to our four objectives and associated risks

Definition

We define AIFR as the number of injuries per 200,000 hours worked by employees and contractors at the operations that we manage. It includes medical treatment cases, restricted workday and lost-day injuries.

Relevance to strategy

The safety and wellbeing of our employees and contractors is our number one priority.

We are committed to having a safe work environment and our focus is on eliminating fatalities, preventing catastrophic events and reducing injuries. We continue to implement our safety maturity model (SMM). By implementing our systems, including SMM, critical risk management (CRM) and the Safe Production System (SPS), we are ensuring we advance our safety culture and foster both physical and psychological safety.

We continue to share learnings and strengthen our partnerships with industry and associated committees (such as the International Council on Mining and Metals), contracting partners and local communities to improve health, safety and wellbeing outcomes.

Link to executive remuneration

AIFR and SMM are included as performance metrics in the safety component of the short-term incentive plan (STIP) (see page 130-133).

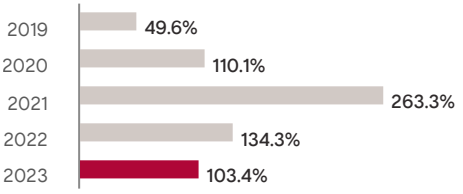
Our performance in 2023 and forward plan

Our AIFR was 0.37 in 2023, an improvement from 2022 (2022: 0.40). While we had no fatalities at managed operations in 2023, tragically four colleagues died in a plane crash travelling to our Diavik mine in January 2024.

We will renew focus on our critical risk management program. We will also work on embedding enhancements to the SMM.

Total shareholder return (TSR)[1]

measured over the preceding five years (using annual average share price)



Alignment to our four objectives and associated risks

Definition

TSR is a combination of share price appreciation (using annual average share price) and dividends paid and reinvested to show the total return to the shareholder over the preceding five years.

Relevance to strategy

Our strategy aims to maximise shareholder returns through the commodity cycle, and TSR is a direct measure of that.

Link to executive remuneration

TSR is reflected in the long-term incentive plan (LTIP), measured equally against a mining based index (the EMIX Global Mining Index historically and from 1 August 2023 the S&P Global Mining Index) and a broader-based index of large global corporates (the MSCI World Index) (see page 134-135).

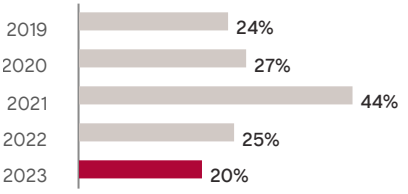
Our performance in 2023 and forward plan

TSR performance over the five-year period was driven principally by movements in commodity prices and changes in the global macro environment. Rio Tinto significantly outperformed both the EMIX Global Mining Index and the MSCI World Index over the five-year period.

We will continue to focus on generating free cash flow from our operations. This allows us to return cash to shareholders (short-term returns) while investing in the business (long-term returns).

Underlying return on capital employed (ROCE)

%



Alignment to our four objectives and associated risks

Definition

Underlying ROCE is a non-IFRS measure defined as underlying earnings excluding net interest divided by average capital employed (operating assets). For more information and a reconciliation of underlying ROCE to the nearest comparable IFRS measure, see Alternative Performance Measures (pages 289-294).

Relevance to strategy

Our portfolio of low-cost, long-life assets delivers attractive returns throughout the cycle and has been reshaped significantly in recent years. Underlying ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

Link to executive remuneration

Underlying earnings, as a component of underlying ROCE, is included in the STIP. In the longer term, underlying ROCE also influences TSR, which is included in the LTIP (see pages 134-135).

Our performance in 2023 and forward plan

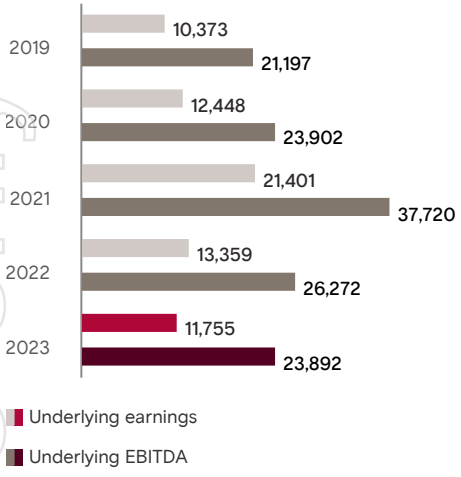
Underlying ROCE decreased five percentage points to 20% in 2023, reflecting the decrease in underlying earnings driven by lower commodity prices, and an increase in capital employed due to capital expenditure and acquisitions.

We will continue to focus on maximising returns from our assets over the short, medium and long term. We will invest with discipline to strengthen our operations while delivering growth in a decarbonising world.

1. The TSR calculation for each period is based on the change in the calendar-year average share prices for Rio Tinto plc and Rio Tinto Limited over the preceding five years. This is consistent with the methodology used for calculating the vesting outcomes for Performance Share Awards (PSA). The data presented in this chart accounts for the dual corporate structure of Rio Tinto.

Underlying earnings[1] and underlying EBITDA

$ millions



Alignment to our four objectives and associated risks

●

Definition

Underlying earnings and underlying EBITDA are non-IFRS measures.

Underlying earnings represents net earnings attributable to the owners of Rio Tinto, adjusted to exclude items that do not reflect the underlying performance of the Group's operations. For more information on these exclusions and a reconciliation to the nearest IFRS measures refer to Alternative Performance Measures (pages 289-294).

Underlying EBITDA is a segmental performance measure and represents profit before tax, net finance items, depreciation and amortisation. Exclusions from underlying EBITDA and a reconciliation to the nearest IFRS measures can be found in note 1.

Relevance to strategy

These financial KPIs measure how well we are managing costs, increasing productivity and generating the most revenue from each of our assets.

Link to executive remuneration

Underlying earnings are reflected in the STIP. In the longer term, both measures influence TSR, which is the primary measure for the LTIP (see pages 134-135).

Our performance in 2023 and forward plan

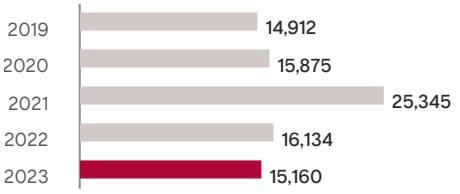
Underlying earnings of $11.8 billion were $1.6 billion lower than in 2022. Underlying EBITDA of $23.9 billion was $2.4 billion lower than in 2022. The 9% decrease in underlying EBITDA resulted from lower commodity prices and higher operating unit costs partially offset by improvements in sales volumes across our portfolio.

We remain focused on cost control, in particular maintaining discipline over fixed costs to drive attractive margins and returns across our portfolio.

1. Comparative information for year 2021 and 2022 has been restated to reflect the adoption of narrow scope amendments to IAS12 "Income Taxes"; refer to page 166 for details.

Net cash generated from operating activities

$ millions



Alignment to our four objectives and associated risks

●

Definition

This KPI refers to cash generated by our operations after tax and interest, including dividends received from equity accounted units and dividends paid to non-controlling interests in subsidiaries.

Relevance to strategy

This KPI measures our ability to convert underlying earnings into cash.

Link to executive remuneration

Net cash generated from operating activities is included in the STIP. In the longer term, the measure influences TSR, which is included in the LTIP (see pages 134-135).

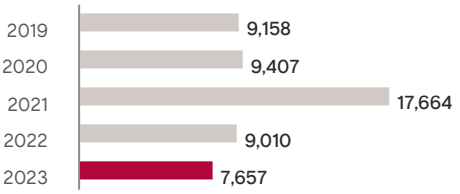
Our performance in 2023 and forward plan

Net cash generated from operating activities of $15.2 billion was 6% lower than 2022. This was primarily driven by price movements for our major commodities and a modest rise in working capital.

We continue to focus on effectively delivering strong and stable cash flows while optimising the health and performance of our assets.

Free cash flow

$ millions



Alignment to our four objectives and associated risks

●●

Definition

Free cash flow is a non-IFRS measure defined as net cash generated from operating activities minus purchases of property, plant and equipment, intangibles, and payments of lease principal, plus proceeds from the sale of property, plant and equipment, and intangible assets. For more information and a reconciliation of free cash flow to the nearest comparable IFRS measure see Alternative Performance Measures (pages 289-294).

Relevance to strategy

This KPI measures the net cash returned by the business after the expenditure of sustaining and growth capital. This cash can be used for shareholder returns, reducing debt and other investment.

Link to executive remuneration

Free cash flow is included in the STIP. In the longer term, the measure influences TSR, which is included in the LTIP (see pages 134-135).

Our performance in 2023 and forward plan

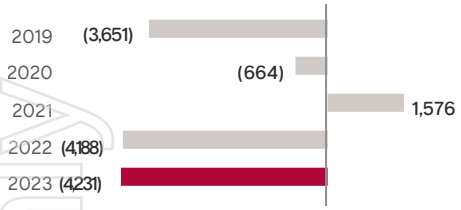
Free cash flow decreased by $1.3 billion to $7.7 billion in 2023, primarily due to the decrease in net cash generated from operating activities and increases in sustaining and growth capital expenditure.

We continue to focus on effectively delivering strong and stable cash flows while optimising the health and performance of our assets.

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Net (debt)/cash

$ millions



Alignment to our four objectives and associated risks

Definition

Net (debt)/cash is a non-IFRS measure defined as total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net (debt)/cash (see note 19 of the financial statements). For more information and a reconciliation of net (debt)/cash to the nearest comparable IFRS measure, see Alternative Performance Measures (pages 289-294).

Relevance to strategy

This KPI measures how we are managing our balance sheet and capital structure. A strong balance sheet is essential for giving us the flexibility to take advantage of opportunities as they arise, and for returning cash to shareholders.

Link to executive remuneration

Net (debt)/cash is, in part, an outcome of free cash flow, which itself is reflected in the STIP. In the longer term, net (debt)/cash influences TSR, which is reflected in the LTIP (see pages 134-135).

Our performance in 2023 and forward plan

Net debt remained stable at $4.2 billion. This included free cash flow of $7.7 billion, offset by dividends of $6.5 billion and the $0.7 billion acquisition of Matalco[1].

We continue to focus on effectively delivering strong and stable cash flows while optimising the health and performance of our assets.

Scope 1 and 2[2] greenhouse gas emissions

(equity Mt CO_2e)



Alignment to our four objectives and associated risks

Definition

We measure our Scope 1 and 2 greenhouse gas emissions on an equity basis. It includes the equity share of Scope 1 and 2 emissions from managed and non-managed operations expressed in million metric tonnes of carbon dioxide equivalent.

Relevance to strategy

Climate risks and opportunities have formed part of our strategic thinking and investment decisions for over two decades. The low-carbon transition is at the heart of our business strategy. We focus on growth in the materials that enable the transition, decarbonising our operations and partnering with our customers to decarbonise our value chains.

Link to executive remuneration

Climate change is included in our ESG metrics for executive remuneration with a weighting of 10% of the STIP (see page 130). The carbon abatement target set for 2023 was 10Mt CO_2e. A total of 29 projects progressed though a development stage during the year, leading to an above target performance of 12Mt CO_2e abatement expected by 2030. We have put forward proposals to incorporate decarbonisation related performance measures into our LTIP as part of our 2024 Remuneration Policy. See page 134-135 for further information.

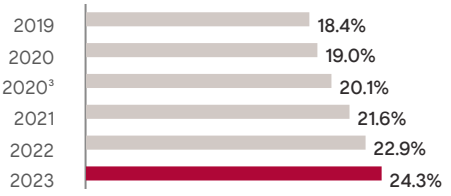
Our performance in 2023 and forward plan

Our Scope 1 and 2 emissions were 32.6Mt CO_2e in 2023. This is 6% below our adjusted 2018 baseline of 34.5Mt CO_2e and slightly below our 2022 adjusted emissions of 32.7Mt CO_2e (adjusted for acquisitions). Abatement delivered by our projects in 2023 exceeded emissions growth from higher production giving a slight reduction in emissions on a like for like basis. Our 2023 emissions were slightly higher than our actual 2022 emissions total of 32.3Mt CO_2e due to the recent acquisitions of additional equity in OT and MRN. By 2025, we expect to have made financial commitments to abatement projects that will achieve more than 15% of Group emissions. However, it is expected our actual emissions abatement will lag this.

A summary of our Climate Action Plan can be found on pages 52-55 of this *Annual Report* as well as in our *2023 Climate Change Report*.

Gender diversity

representation of women within our workforce



Alignment to our four objectives and associated risks

Definition

Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures)[4].

Relevance to strategy

Inclusion and diversity are imperative for the sustainable success of the business. Our sustained performance and growth rely on having workforce diversity that is representative of the communities in which we operate and having a workplace where people are valued for who they are and encouraged to contribute to their full potential.

Link to executive remuneration

In 2023, our aspiration was to increase the proportion of women in our workforce by two percentage points. This aspiration was included in our strategic scorecard for executive remuneration, with a 5% weighting of the STIP. For more information see pages 130-131.

Our performance in 2023 and forward plan

In this first year of the target, our representation of women at Rio Tinto increased from 22.9% to 24.3%, a 1.4 percentage point increase. We saw improvements across all levels of the organisation with senior leaders increasing from 28.3% to 30.1%, and operations and general support increasing from 16.2% to 17.7%.

Our target to increase the proportion of women in our workforce year-on-year creates an important focus.

We are focused on implementing the recommendations from the *Everyday Respect Report* and we are confident that this will improve both the attraction and retention of women and other diverse groups to Rio Tinto. For more information about the Everyday Respect initiative see riotinto.com/everydayrespect.

1. Subject to usual closing adjustments.
2. In 2023, we improved our carbon emissions reporting and now use the market-based method as our primary measure for assessing performance against our emissions targets. Further detail on this change in reporting and the implications for our emissions baseline is available in our *2023 Addendum - Scope 1, 2 and 3 Emissions Calculation Methodology*. Our adjusted scope 1 and 2 emissions (adjusted for acquisitions) have been disclosed for 2022.
3. In 2020, we updated our definition of our total workforce to include those employees who were unavailable for work (eg on parental leave) and temporary contractors. Note: less than 1% of the workforce gender is undeclared.
4. Baseline reset with definition for 2020 to 2023 gender diversity.

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Chief Financial Officer's statement



"In 2023, our financial results were resilient, driven by an improvement in our operational performance. As we shape our portfolio for the future, we will continue to allocate capital with discipline."

Uplift in operational performance drives resilient financial results

In 2023, the Group's total copper equivalent production increased by just over 3% from 2022. This reflected the Gudai-Darri mine in the Pilbara reaching its nameplate capacity and deployment of our Safe Production System. In addition, we benefited from our increased ownership in Oyu Tolgoi as the underground ramps up and the Kitimat aluminium smelter returned to full capacity. In a year in which average commodity prices declined compared to the prior period, we maintained our discipline on cost and capital, leading to net cash generated from operating activities of $15.2 billion, underlying earnings of $11.8 billion and profit after tax attributable to owners of Rio Tinto of $10.1 billion.

We maintained our financial strength, ending the year with net debt of $4.2 billion, just 1% higher than the position at the start of the year. Our balance sheet strength enables us to run our business consistently and maintain investment, regardless of where we are in the cycle. We have chosen not to have a net debt target, but have a principles-based approach to anchor the balance sheet around a single A credit rating.

Consistent capital allocation, balancing essential capex with shareholder returns and growth

We will continue to allocate the capital generated by our operations with discipline and remain committed to attractive shareholder returns. We have consistently applied our financial framework, which has been in place for more than a decade. It is straightforward and serves us well, underpinned by our three priorities. Essential capex remains the first priority - sustaining capex to ensure the integrity of our assets, high-returning replacement projects and investment for decarbonisation. The second priority is the ordinary dividend within our well-established returns policy, where we now have an eight-year track record of paying out at 60% of underlying earnings. The third involves testing investment in compelling growth against debt management and further cash returns to shareholders.

In 2023, capital expenditure rose by 5% to $7.1 billion, reflecting the impact of inflation, in particular on our sustaining capital. We foresee a disciplined increase in capital expenditure over the coming years as our growth projects accelerate and decarbonisation advances. This is critical to ensure we have the right portfolio to keep creating value for decades to come, so we can benefit from increased demand from both traditional sources and from the energy transition. And we have more to come: exploration and evaluation spend increased to $1.2 billion, with greenfield spend mainly focused on copper and lithium, while evaluation prioritised projects with near-term investment decisions, including the Simandou iron ore project in Guinea. We expect Simandou to become our largest capital project over the coming years. It will be constructed and funded by a co-development partnership that will share the risk and deliver higher returns than our cost of capital. We believe that Simandou's high grade, high quality product will position us well for the decarbonisation of the steel industry.

Our financial strength means that we can reinvest for growth, accelerate our decarbonisation and continue to pay attractive dividends through the cycle. For 2023, we are returning 60% of underlying earnings to shareholders, which equates to a full-year ordinary dividend of 435 US cents per share, or $7.1 billion.

Outlook underpins a strong Rio Tinto for the long term

We are well positioned in an opportunity-rich world where there has never been greater demand for what we do, from mining to processing. The work we are doing today is creating a stronger Rio Tinto for years to come.

Net cash generated from operating activities

$15.2 billion

(2022: $16.1 billion)

Profit after tax attributable to owners of Rio Tinto (net earnings)

$10.1 billion

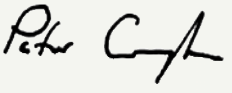
(2022: $12.4 billion)

Underlying earnings

$11.8 billion

(2022: $13.4 billion)

This is why our strategy is about growing in the materials the world needs. A strategy that will ensure Rio Tinto remains strong in the short, medium and long term with the ability to invest while always paying attractive returns.



Peter Cunningham
Chief Financial Officer

21 February 2024

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Financial review

Key financial highlights

At year end	2023	2022	Change
Net cash generated from operating activities (US$ millions)	**15,160**	16,134	(6)%
Purchases of property, plant and equipment and intangible assets (US$ millions)	**7,086**	6,750	5 %
Free cash flow[1] (US$ millions)	**7,657**	9,010	(15)%
Consolidated sales revenue (US$ millions)	**54,041**	55,554	(3)%
Underlying EBITDA[1] (US$ millions)	**23,892**	26,272	(9)%
Profit after tax attributable to owners of Rio Tinto (net earnings)[2] (US$ millions)	**10,058**	12,392	(19)%
Underlying earnings per share (EPS)[1, 2] (US cents)	**725.0**	824.7	(12)%
Ordinary dividend per share (US cents)	**435.0**	492.0	(12)%
Underlying return on capital employed (ROCE)[1, 2]	**20%**	25%	
Net debt[1] (US$ millions)	**4,231**	4,188	1 %

1. This financial performance indicator is a non-IFRS (as defined below) measure which is reconciled to directly comparable IFRS financial measures (non-IFRS measures). It is used internally by management to assess the performance of the business and is therefore considered relevant to readers of this document. It is presented here to give more clarity around the underlying business performance of the Group's operations. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APMs) and the detailed reconciliations on pages 289 to 294. Our financial results are prepared in accordance with IFRS — see page 158 for further information.
2. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.

Financial performance

Income Statement

Underlying EBITDA

To provide additional insight into the performance of our business, we report underlying EBITDA and underlying earnings. Underlying EBITDA and underlying earnings are non-IFRS measures. For definitions and a detailed reconciliation of underlying EBITDA and underlying earnings to the nearest IFRS measures, see pages 289 to 291, respectively.

The principal factors explaining the movements in underlying EBITDA are set out in this table.

	US$bn
2022 underlying EBITDA	26.3
Prices	(1.5)
Exchange rates	0.6
Volumes and mix	0.4
General inflation	(0.4)
Energy	0.4
Operating cash unit costs	(1.4)
Higher exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects)	(0.3)
Non-cash costs/other	(0.2)
Change in underlying EBITDA	**(2.4)**
2023 underlying EBITDA	**23.9**

Resilient financial results, primarily impacted by commodity price movements

In general, we saw lower prices for our commodities, as supply improved, outpacing modest demand growth.

Movements in commodity prices resulted in a $1.5 billion decline in underlying EBITDA overall compared with 2022. This was primarily from lower pricing for our Aluminium business, driven by London Metal Exchange (LME) prices, lower premiums and lower alumina pricing. Higher realised pricing in our Iron Ore business was offset by lower pricing for copper, diamonds and industrial minerals.

The monthly average Platts index for 62% iron fines converted to a Free on Board (FOB) basis was 0.5% higher, on average, compared with 2022.

The average LME price for copper was 3% lower, the average LME aluminium price was 17% lower while the gold price was 8% higher compared with 2022.

The Midwest premium duty paid for aluminium in the US averaged $512 per tonne, 22% lower than in 2022.

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Benefit from weaker local currencies in 2023

Compared with 2022, on average, the US dollar strengthened by 4% against the Australian dollar and by 4% against the Canadian dollar. Currency movements increased underlying EBITDA by $0.6 billion relative to 2022.

Improvement in sales volumes but weaker mix

Higher sales volumes across the portfolio increased underlying EBITDA by $0.7 billion compared to 2022. This was mostly attributable to a 3% increase in Pilbara iron ore shipments, with the Gudai-Darri mine reaching full capacity, partly offset by lower portside sales volumes (down 4%). Higher copper sales were driven by the ramp-up of the Oyu Tolgoi underground mine. This was partly offset by lower margins achieved due to our product mix (-$0.3 billion) mainly associated with a reduced proportion of Aluminium VAP sales and following high quality diamond sales in 2022.

Impact of inflation offset by lower energy prices

We saw a $0.4 billion benefit to underlying EBITDA on the easing of energy prices compared to 2022, mainly related to lower diesel prices at our Pilbara iron ore operations, lower energy prices at our alumina refineries and aluminium smelters, along with lower fuel prices in our Marine business. General price inflation across our global operations resulted in a net $0.4 billion reduction in underlying EBITDA, which includes a $0.2 billion year-on-year benefit from the impact of inflation on closure provisions.

Unit cost pressures persist due to temporary operational factors and weaker markets: some easing of market-linked raw material prices in second half

We remain focused on cost control, in particular maintaining discipline on fixed costs, which are expected to be broadly flat in 2024. While inflation has eased, we continued to see lag effects in its impact on our third party costs, such as contractor rates, consumables and some raw materials; we expect this to stabilise in 2024.

In the second half of 2023, we started to see some easing of market-linked prices for key raw materials such as caustic, coke and pitch: these benefited underlying EBITDA by $0.2 billion.

Temporary operational issues reduced underlying EBITDA by $0.6 billion. We saw a 20% rise in Copper C1 unit costs, primarily driven by lower refined volumes at Kennecott following the planned rebuild of the smelter and refinery. In Minerals, fixed unit cash costs increased at Iron Ore Company of Canada (IOC), driven by lower production following the wildfires in Northern Quebec in June as well as extended plant downtime and conveyor belt failures in the third quarter.

Other cost pressures and weaker market demand lowered underlying EBITDA by $1.0 billion. In Minerals, we experienced market weakness for many of our products, in particular for TiO_2 feedstock, which gave rise to lower volumes and resulting higher unit costs. In the Pilbara, a higher mine work index and investment in mine maintenance and system health were in part offset by cost efficiencies on delivering increased volumes. In Aluminium, we invested in improving the integrity across our integrated operations.

Overall, we continue to experience tightness in our key labour markets, in Western Australia, Quebec and Utah, which raised costs above general inflation. We also entered into a new collective bargaining agreement at IOC and applied the new labour law in Mongolia.

We have also increased our investment in decarbonisation, research & development, technology, along with communities and social investment to deliver on our four objectives.

Increasing our global exploration and evaluation activity

Our ongoing exploration and evaluation expenditure in 2023 was $0.9 billion, compared with guidance of $1.0 billion and $0.7 billion in 2022. The increase was mainly attributable to increased activity at the Rincon lithium project in Argentina and across the other product group projects. We also expensed costs associated with the Simandou iron ore project in Guinea (included in underlying EBITDA on a 100% basis): these increased from $0.2 billion to $0.5 billion, with qualifying Simandou costs being capitalised from the fourth quarter of 2023. These expenditures were partly offset by a $0.2 billion gain on disposal of 55% of our interest in the La Granja copper project in Peru to First Quantum Minerals in 2023, leading to a net charge to the Income Statement of $1.2 billion (2022: $0.9 billion).

Net earnings

The principal factors explaining the movements in underlying earnings and net earnings are set out below.

	US$bn
2022 net earnings	**12.4**
Changes in underlying EBITDA (see above)	**(2.4)**
Increase in depreciation and amortisation (pre-tax) in underlying earnings	(0.1)
Decrease in interest and finance items (pre-tax) in underlying earnings	0.2
Increase in tax on underlying earnings	(0.2)
Decrease in underlying earnings attributable to outside interests	0.8
Total changes in underlying earnings	**(1.6)**
Changes in items excluded from underlying earnings (see below)	(0.7)
2023 net earnings	**10.1**

Financial figures are rounded to the nearest million, hence small differences may result in the totals. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.

Increase in tax on underlying earnings

The effective tax rate on underlying earnings in 2023 was 30% compared with 26% in 2022. Consequently the tax on underlying earnings increased by $0.2 billion despite a decrease in underlying EBITDA. The rate in 2023 was in line with guidance, whereas the 2022 rate was lower due to the recognition of additional deferred tax assets in respect of Oyu Tolgoi and adjustments in respect of prior periods.

Decrease in underlying earnings attributable to outside interests

We completed the acquisition of Turquoise Hill Resources' non-controlling interests in December 2022, which resulted in a reduction of Oyu Tolgoi's earnings being attributable to outside interests and therefore a higher share of income being attributable to Rio Tinto. The ramp-up of exploration and evaluation spend at Simandou resulted in greater charges attributable to outside interests given our 45.05% effective interest in the project.

Items excluded from underlying earnings

The differences between underlying earnings and net earnings are set out in this table (all numbers are after tax and exclude amounts attributable to non-controlling interests).

Year ended 31 December	2023 US$bn	2022 US$bn
Underlying earnings	**11.8**	13.4
Items excluded from underlying earnings		
Net impairment charges	**(0.7)**	(0.1)
Change in closure estimates (non-operating and fully impaired sites)	**(1.1)**	(0.2)
Foreign exchange and derivative gains on net debt and intragroup balances and derivatives not qualifying for hedge accounting	**(0.3)**	(0.1)
Deferred tax arising on internal sale of assets in Canadian operations	**0.4**	–
Gains recognised by Kitimat relating to LNG Canada's project	**–**	0.1
Loss on disposal of interest in subsidiary	**–**	(0.1)
Gain on sale of Cortez royalty	**–**	0.3
Write-off of Federal deferred tax assets in the United States	**–**	(0.9)
Total items excluded from underlying earnings	**(1.7)**	(1.0)
Net earnings	**10.1**	12.4

Financial figures are rounded to the nearest million, hence small differences may result in the totals. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.

On pages 290 to 291 there is a detailed reconciliation from net earnings to underlying earnings, including pre-tax amounts and additional explanatory notes. The differences between profit after tax and underlying EBITDA are set out in the table on page 175.

We recognised net impairment charges of $0.7 billion (after tax), mainly related to our alumina refineries in Queensland, taken in the first half of 2023. This was triggered by the challenging market conditions facing these assets, together with our improved understanding of the capital requirements for decarbonisation and the recently legislated cost escalation for carbon emissions. For a detailed explanation of the impairment process, refer to note 4 to the Financial Statements in the 2023 Annual Report. The signing of key agreements with the Government of Guinea and other joint venture partners for co-development of the infrastructure for the Simandou iron ore project gave rise to an impairment reversal trigger, for amounts which had been fully impaired in 2015. Previously capitalised exploration and evaluation costs associated with the mine and retained items of property, plant and equipment totalling $0.2 billion (after tax and outside interests) have therefore been reversed.

We excluded $1.1 billion of closure cost charges from underlying earnings, of which $850 million related to the closure update announced by Energy Resources of Australia (ERA) on 12 December 2023. This was considered material and was therefore aggregated with other closure study updates in the second half of 2023 which were similar in nature. These other updates were at legacy sites and at the Yarwun alumina refinery, which was expensed due to the impairment earlier in the year.

We recognised an exchange and derivative loss of $0.3 billion (2022: loss of $0.1 billion). The exchange losses are largely offset by currency translation gains recognised in equity. The quantum of US dollar debt is largely unaffected and we will repay it from US dollar sales receipts.

Our Canadian aluminium business completed an internal sale of assets. This resulted in the utilisation of previously unrecognised capital losses and an uplift in the tax depreciable value of assets on which a deferred tax asset of $0.4 billion has been recognised.

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2023 was $10.1 billion (2022: $12.4 billion). We recorded a profit after tax in 2023 of $10.0 billion (2022: $13.0 billion) of which a loss of $0.1 billion was attributable to non-controlling interests (2022 profit: $0.7 billion).

Underlying EBITDA and underlying earnings by product group

	Underlying EBITDA			Underlying earnings		
Year ended 31 December	2023 US$bn	2022 US$bn	Change %	2023 US$bn	2022 US$bn	Change %
Iron Ore	**20.0**	18.6	7 %	**11.9**	11.2	6 %
Aluminium	**2.3**	3.7	(38)%	**0.5**	1.5	(64)%
Copper	**1.9**	2.6	(26)%	**0.1**	0.7	(81)%
Minerals	**1.4**	2.4	(42)%	**0.3**	0.9	(63)%
Reportable segment total	**25.6**	27.3	(6)%	**12.9**	14.3	(10)%
Simandou iron ore project	**(0.5)**	(0.2)	185 %	**(0.2)**	(0.1)	10 %
Other operations	**–**	–	— %	**(0.3)**	(0.3)	(28)%
Central pension costs, share-based payments, insurance and derivatives	**0.2**	0.4	(55)%	**–**	0.4	(87)%
Restructuring, project and one-off costs	**(0.2)**	(0.2)	10 %	**(0.1)**	(0.1)	32 %
Other central costs	**(1.0)**	(0.8)	29 %	**(0.9)**	(0.7)	29 %
Central exploration and evaluation	**(0.1)**	(0.3)	(60)%	**(0.1)**	(0.2)	(71)%
Net interest				**0.3**	0.1	130 %
Total	**23.9**	26.3	(9)%	**11.8**	13.4	(12)%

Financial figures are rounded to the nearest million, hence small differences may result in the totals and period-on-period change. Underlying EBITDA and underlying earnings are non-IFRS measures used by management to assess the performance of the business and provide additional information which investors may find useful. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APMs) and the detailed reconciliations on pages 289 to 294.

Simandou iron ore project

Costs attributable to the Simandou project in Guinea increased from $0.2 billion to $0.5 billion (100% basis at underlying EBITDA level) on ramp-up of project activity in 2023. We commenced capitalising qualifying spend on Simandou from the fourth quarter of 2023, with $0.3 billion included in capital expenditure (100% basis).

Central and other costs

Pre-tax central pension costs, share-based payments, insurance and derivatives were a $0.2 billion credit compared with a $0.4 billion credit in 2022, reflecting movement on derivatives in the two years.

On a pre-tax basis, restructuring, project and one-off central costs were mainly associated with corporate projects and were comparable to 2022.

Other central costs of $1.0 billion were 29% higher than 2022, reflecting increased investment in decarbonisation, research & development and technology. Our core central costs increased in line with inflation.

On an underlying earnings basis, net interest was a credit of $0.3 billion (2022: credit of $0.1 billion), reflecting Rio Tinto's increased interest in Oyu Tolgoi and the related financing items following the acquisition of Turquoise Hill minorities in 2022.

Continuing to invest in greenfield exploration

We have a strong portfolio of greenfield exploration projects in early exploration and studies stages, with activity in 18 countries across eight commodities. This is reflected in our pre-tax central spend of $0.3 billion. The bulk of this expenditure in 2023 focused on copper in Australia, Chile, Colombia, Namibia, the United States and Zambia; diamonds in Canada; nickel in Brazil, Canada and Peru; heavy mineral sands in South Africa; and potash in Canada. We recently partnered with Codelco on the Nuevo Cobre copper project in the prospective Atacama region in Chile and with Charger Metals on the Lake Johnston lithium project in the Yilgarn, Western Australia. This spend is offset by the gain recognised on disposal of 55% of our interest in the La Granja copper project ($0.2 billion, pre-tax).

Cash flow

Year ended 31 December	2023 US$bn	2022 US$bn
Net cash generated from operating activities	**15.2**	16.1
Purchases of property, plant and equipment and intangible assets	**(7.1)**	(6.8)
Lease principal payments	**(0.4)**	(0.4)
Free cash flow[1]	**7.7**	9.0
Dividends paid to equity shareholders	**(6.5)**	(11.7)
Acquisitions	**(0.8)**	(0.9)
Purchase of the minority interest in Turquoise Hill Resources Ltd	**–**	(3.0)
Disposals	**–**	0.1
Cash receipt from sale of Cortez royalty	**–**	0.5
Other	**(0.4)**	0.2
Movement in net debt/cash[1]	**–**	(5.8)

Financial figures are rounded to the nearest million, hence small differences may result in the totals.

1. This financial performance indicator is a non-IFRS (as defined below) measure which is reconciled to directly comparable IFRS financial measures (non-IFRS measures). It is used internally by management to assess the performance of the business and is therefore considered relevant to readers of this document. It is presented here to give more clarity around the underlying business performance of the Group's operations. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APMs) and the detailed reconciliations on pages 289 to 294. Our financial results are prepared in accordance with IFRS — see page 158 for further information.

- $15.2 billion in net cash generated from operating activities, 6% lower than 2022, primarily driven by price movements for our major commodities and a $0.9 billion rise in working capital, partly offset by lower taxes paid. The cash outflow from the working capital increase was driven by healthy stocks in the Pilbara, still elevated in-process inventory at Kennecott following the extended smelter rebuild and higher working capital at Iron & Titanium, reflective of weaker market conditions. Receivables also reflected a 20% higher iron ore price at 2023 year end (vs 2022) that will be monetised in 2024. Operating cash flow was also impacted by lower dividends, primarily from Escondida ($0.6 billion in 2023; $0.9 billion in 2022).
- Taking into account the timing of payments in Australia, taxes paid of $4.6 billion in 2023 were at a similar level to 2022, which included around $1.5 billion of payments related to prior years.
- Our capital expenditure of $7.1 billion was comprised of $1.0 billion of growth ($0.9 billion on a Rio Tinto share basis), $1.6 billion of replacement, $4.3 billion of sustaining and $0.2 billion of decarbonisation capital (in addition to $0.2 billion of decarbonisation spend in operating costs). We expect to spend around $4.0 billion each year on sustaining capital; spend in 2023 included the smelter and refinery rebuild at Kennecott ($0.3 billion) and targeted investment in asset health in Iron Ore and Aluminium. We funded our capital expenditure from operating activities and generally expect to continue funding our capital program from internal sources.
- $6.5 billion of dividends paid in 2023, being the 2022 final ordinary and the 2023 interim ordinary dividends.
- $0.8 billion of acquisitions related to the Matalco recycling joint venture and the Nuevo Cobre exploration joint venture with Codelco.
- The above movements, together with $0.4 billion of other movements, resulted in net debt[1] remaining stable year-on-year at $4.2 billion at 31 December 2023.

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Balance sheet

Net debt[1] of $4.2 billion was unchanged at 31 December 2023 compared to the prior year end.

Our net gearing ratio[1] (net debt/(cash) to total capital) was 7% at 31 December 2023 (31 December 2022: 7%). See page 294.

Our total financing liabilities excluding net debt derivatives at 31 December 2023 (see page 205) were $14.4 billion (31 December 2022: $12.3 billion) and the weighted average maturity was around 12 years. At 31 December 2023, approximately 68% of these liabilities were at floating interest rates (75% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year is $1.65 billion, which matures in 2033.

On 7 March 2023, we priced $650 million of 10-year fixed rate SEC-registered debt securities and $1.1 billion of 30-year fixed rate SEC-registered debt securities. The 10-year notes will pay a coupon of 5.000 per cent and will mature 9 March 2033 and the 30-year notes will pay a coupon of 5.125 per cent and will mature 9 March 2053.

We had $10.5 billion in cash and cash equivalents plus other short-term cash investments at 31 December 2023 (31 December 2022: $8.8 billion).

Provision for closure costs

At 31 December 2023, provisions for close-down and restoration costs and environmental clean-up obligations were $17.2 billion (31 December 2022: $15.8 billion). The increase was largely due to revised closure estimates following new studies at certain operations and legacy sites, including ERA, together with the amortisation of discount ($1.0 billion), which includes the effect of elevated inflation for the year. This was partly offset by a revision of the closure discount rate to 2.0% (from 1.5%), reflecting expectations of higher yields from long-dated bonds, which resulted in a $1.1 billion decrease in the provision. $0.8 billion of the provision was also utilised through spend in 2023.

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Our shareholder returns policy

The Board is committed to maintaining an appropriate balance between cash returns to shareholders and investment in the business, with the intention of maximising long-term shareholder value.

At the end of each financial period, the Board determines an appropriate total level of ordinary dividend per share. This takes into account the results for the financial year, the outlook for our major commodities, the Board's view of the long-term growth prospects of the business and the company's objective of maintaining a strong balance sheet. The intention is that the balance between the interim and final dividend be weighted to the final dividend.

The Board expects total cash returns to shareholders over the longer term to be in a range of 40% to 60% of underlying earnings in aggregate through the cycle. Acknowledging the cyclical nature of the industry, it is the Board's intention to supplement the ordinary dividend with additional returns to shareholders in periods of strong earnings and cash generation.

60% payout ratio on the ordinary dividend delivers an eight-year track record

	2023 US$bn	2022 US$bn
Ordinary dividend		
Interim[1]	**2.9**	4.3
Final[1]	**4.2**	3.7
Full-year ordinary dividend	**7.1**	8.0
Payout ratio on ordinary dividend	**60%**	60%

1. Based on weighted average number of shares and declared dividends per share for the respective periods and excluding foreign exchange impacts on payment.

We determine dividends in US dollars. We declare and pay Rio Tinto plc dividends in pounds sterling and Rio Tinto Limited dividends in Australian dollars. The 2023 final dividend has been converted at exchange rates applicable on 20 February 2024 (the latest practicable date before the dividend was declared). American Depositary Receipt (ADR) holders receive dividends at the declared rate in US dollars.

Ordinary dividend per share declared	**2023**	2022
Rio Tinto Group		
Interim (US cents)	**177.00**	267.00
Final (US cents)	**258.00**	225.00
Full-year (US cents)	**435.00**	492.00
Rio Tinto plc		
Interim (UK pence)	**137.67**	221.63
Final (UK pence)	**203.77**	185.35
Full-year (UK pence)	**341.44**	406.98
Rio Tinto Limited		
Interim (Australian cents)	**260.89**	383.70
Final (Australian cents)	**392.78**	326.49
Full-year (Australian cents)	**653.67**	710.19

The 2023 final ordinary dividend to be paid to our Rio Tinto Limited shareholders will be fully franked. The Board expects Rio Tinto Limited to be in a position to pay fully franked dividends for the foreseeable future.

On 18 April 2024, we will pay the 2023 final ordinary dividend to holders of ordinary shares and holders of ADRs on the register at the close of business on 8 March 2024 (record date). The ex-dividend date is 7 March 2024.

Rio Tinto plc shareholders may choose to receive their dividend in Australian dollars or New Zealand dollars, and Rio Tinto Limited shareholders may choose to receive theirs in pounds sterling or New Zealand dollars. Currency conversions will be based on the pound sterling, Australian dollar and New Zealand dollar exchange rates five business days before the dividend payment date. Rio Tinto plc and Rio Tinto Limited shareholders must register their currency elections by 26 March 2024.

We will operate our Dividend Reinvestment Plans for the 2023 final dividend (visit riotinto.com for details). Rio Tinto plc and Rio Tinto Limited shareholders' election notice for the Dividend Reinvestment Plans must be received by 26 March 2024. Purchases under the Dividend Reinvestment Plan are made on or as soon as practicable after the dividend payment date and at prevailing market prices. There is no discount available.

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Portfolio management

Capital projects

Project (Rio Tinto 100% owned unless otherwise stated)	Total capital cost (100% unless otherwise stated)	Status/Milestones
Ongoing		
Iron ore		
Investment in the Western Range iron ore project, a joint venture between Rio Tinto (54%) and China Baowu Steel Group Co. Ltd (46%) in the Pilbara to sustain production of the Pilbara Blend™ from Rio Tinto's existing Paraburdoo hub. First production is anticipated in 2025.	$1.3bn (Rio Tinto share)[1]	Approved in September 2022, the mine will have a capacity of 25 million tonnes per year. The project includes construction of a primary crusher and an 18 kilometre conveyor connection to the Paraburdoo processing plant. Construction is currently on schedule with civil work well advanced, while we continue to progress primary crusher works, bulk earthworks and mine pre-strip.
Investment in the Simandou iron ore project in Guinea in partnership with CIOH, a Chinalco-led consortium (the Simfer joint venture) and co-development of the rail and port infrastructure with Winning Consortium Simandou[2] (WCS), Baowu and the Republic of Guinea (the partners). Overall, the co-developed infrastructure represents more than 600 kilometres of new multi-user (including passenger and general freight services) rail together with port facilities to be co-developed by the partners to allow the export of up to 120 million tonnes per year of iron ore mined by Simfer's and WCS's respective mining concessions.[3]	$6.2bn[4] (estimated Rio Tinto share)	Announced in December 2023, the Simfer joint venture[5] will develop, own and operate a 60 million tonne per year[6] mine in blocks 3 & 4. First production at the mine is expected in 2025, ramping up over 30 months to an annualised capacity of 60 million tonnes per year (27 million tonnes Rio Tinto share). WCS will construct the project's ~536 kilometre dual track main line as well as the WCS barge port, while Simfer will construct the ~70 kilometre spur line, connecting its mining concession to the main rail line. Pending completion and commissioning of its 60 million tonne per year transhipment vessel port, Simfer will be able to export its ore using WCS's barge port. The Rio Tinto Board has approved the project, subject to the remaining conditions being met, including joint venture partner approvals and regulatory approvals[7] from China and Guinea.
Aluminium		
Investment to expand the low-carbon AP60 aluminium smelter at the Complexe Jonquière in Quebec. The investment includes up to $113 million of financial support from the Quebec government.	$1.1bn	Approved in June 2023, the investment will add 96 AP60 pots, representing 160,000 tonnes of primary aluminium per year, replacing the Arvida smelter which is set to gradually close from 2024. We continued early works for the expansion of the AP60 smelter. Commissioning is expected in the first half of 2026, with the smelter fully ramped up by the end of that year. Once completed, it is expected to be in the first quartile of the industry operating cost curve.
Copper		
Phase two of the south wall pushback to extend mine life at Kennecott in Utah by a further six years.	$1.8bn	Approved in December 2019, the investment will further extend strip waste rock mining and support additional infrastructure development. This will allow mining to continue into a new area of the orebody between 2026 and 2032. In March 2023, a further $0.3 billion was approved to primarily mitigate the risk of failure in an area of geotechnical instability known as Revere, necessary to both protect open pit value and enable underground development.
Investment in the Kennecott underground development of the North Rim Skarn (NRS) area.	$0.5bn	Approved in June 2023, production from NRS[8] will commence in the first quarter of 2025 (previously 2024) and is expected to ramp up over two years, to deliver around 250,000 tonnes of additional mined copper over the next 10 years[9] alongside open cut operations.
Development of the Oyu Tolgoi underground copper-gold mine in Mongolia (Rio Tinto 66%), which is expected to produce (from the open pit and underground) an average of ~500,000 tonnes[10] of copper per year from 2028 to 2036.	$7.06bn	We delivered first sustainable underground production from Panel 0 in March 2023. The commissioning of infrastructure for ramp-up to full capacity remains on target: we expect shafts 3 and 4 and the conveyor to surface in the second half of 2024, while the concentrator conversion is expected to be progressively completed from the fourth quarter of 2024 through to the second quarter of 2025. Construction of primary crusher 2 commenced in December 2023 and is due to be complete by the end of 2025.

1. Rio Tinto share of the Western Range capital cost includes 100% of funding costs for Paraburdoo plant upgrades.
2. WCS is currently a consortium of Singaporean company, Winning International Group (50%), Weiqiao Aluminium (part of the China Hongqiao Group) (50%) and United Mining Supply Group (nominal shareholding). WCS is the holder of Simandou North Blocks 1 & 2 (with the Government of Guinea holding a 15% interest in the mining vehicle and WCS holding 85%) and associated infrastructure. Baowu Resources has entered into an agreement to acquire a 49% share of WCS mine and infrastructure projects through a Baowu-led consortium, subject to conditions including regulatory approvals. In the case of the mine, Baowu has an option to increase to 51% during operations.
3. WCS holds the mining concession for Blocks 1 and 2, while Simfer SA holds the mining concession for blocks 3 and 4. Simfer and WCS will independently develop their mines.
4. Estimated numbers, subject to approval by the Simfer board and government authorities. Spend incurred on the project in 2023 was $0.9 billion of which $539 million was charged to the Income Statement and $330 million was capitalised ($266 million on a cash basis). All qualifying costs are being capitalised from the fourth quarter of 2023.
5. Simfer Jersey Limited is a joint venture between the Rio Tinto Group (53%) and Chalco Iron Ore Holdings Ltd (CIOH) (47%),a Chinalco-led joint venture of leading Chinese SOEs (Chinalco (75%), Baowu (20%), China Rail Construction Corporation (2.5%) and China Harbour Engineering Company (2.5%)). Simfer S.A. is the holder of the mining concession covering Simandou Blocks 3 & 4, and is owned by the Guinean State (15%) and Simfer Jersey Limited (85%). Simfer Infraco Guinée S.A.U. will deliver Simfer's scope of the co-developed rail and port infrastructure, and is, on the date of this notice, a wholly-owned subsidiary of Simfer Jersey Limited, but will be co-owned by the Guinean State (15%) after closing of the co-development arrangements.
6. The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the Australian Securities Exchange (ASX) dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.
7. Co-development of the rail and port infrastructure remains subject to a number of conditions, including regulatory approvals in Guinea and China, the entry into a number of legal agreements, ratification of the investment framework for co-development by the Republic of Guinea, and agreement between Simfer, WCS and the Republic of Guinea regarding the budget for the rail and port infrastructure.
8. The NRS Mineral Resources and Ore Reserves, together with the Lower Commercial Skarn (LCS) Mineral Resources and Ore Reserves, form the Underground Skarns Mineral Resources and Ore Reserves.
9. The 250 thousand tonne copper production target for the Kennecott underground mines over the years 2023 to 2033 was previously reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 "Rio Tinto invests to strengthen copper supply in US". All material assumptions underpinning that production target continue to apply and have not materially changed.
10. The 500 thousand tonne per year copper production target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 was previously reported in a release to the Australian Securities Exchange (ASX) dated 11 July 2023 "Investor site visit to Oyu Tolgoi copper mine, Mongolia". All material assumptions underpinning that production target continue to apply and have not materially changed.

Future options

	Status
Iron Ore: Pilbara brownfields	
Over the medium term, our Pilbara system capacity remains between 345 and 360 million tonnes per year. Meeting this range, and the planned product mix, will require the approval and delivery of the next tranche of replacement mines over the next five years.	In addition to Western Range (Greater Paraburdoo), which is under construction, we continue to progress studies for Hope Downs 1 (Hope Downs 2 and Bedded Hilltop), Brockman 4 (Brockman Syncline 1), Greater Nammuldi and West Angelas. We continue to work closely with local communities, Traditional Owners and governments to progress approvals for these new mining projects.
Iron Ore: Rhodes Ridge	
In October 2022, Rio Tinto (50%) and Wright Prospecting Pty Ltd (50%) agreed to modernise the joint venture covering the Rhodes Ridge project in the Eastern Pilbara, providing a pathway for development utilising Rio Tinto's rail, port and power infrastructure.	A resource-drilling program is currently underway to support future project studies. In December 2023, we announced approval of a $77 million pre-feasibility study (PFS). This follows completion of an Order of Magnitude study that considered development of an operation with initial capacity of up to 40 million tonnes per year, subject to relevant approvals. Completion of the PFS is expected by the end of 2025 and will be followed by a feasibility study, with first ore expected by the end of the decade. Longer term, the resource could support a world-class mining hub with a potential capacity of more than 100 million tonnes of high-quality iron ore a year.
Lithium: Jadar	
Development of the greenfield Jadar lithium-borates project in Serbia will include an underground mine with associated infrastructure and equipment, including electric haul trucks, as well as a beneficiation chemical processing plant.	The Board committed funding in July 2021, subject to receiving all relevant approvals, permits and licences. We are focused on consultation with all stakeholders to explore all options following the Government of Serbia's cancellation of the Spatial Plan in January 2022.
Lithium: Rincon	
We completed the acquisition of the Rincon Lithium project in Salta province, Argentina in March 2022. Development of a 3,000 tonne per year battery-grade lithium carbonate starter plant is ongoing with first saleable production expected at the end of 2024. Studies are continuing on the full-scale plant, which will have benefits of economies of scale, with the capital intensity, based on current stage of studies, forecast to be in line with regional lithium industry benchmarks.	In July 2022, we approved $140 million of investment and $54 million for early works to support a full-scale operation. To date, the majority of costs have been expensed through exploration and evaluation expenditure. In July 2023, we approved a further $195 million to complete the starter plant: the increase was driven by the project now being fully defined (previously conceptual), scope adjustments to design (including column performance improvements and changes to waste and spent brine disposal facilities), rising capital costs across the lithium industry, particularly for processing equipment and from broad cost escalation in Argentina.
Mineral Sands: Zulti South	
Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%).	Approved in April 2019 to underpin RBM's supply of zircon and ilmenite over the life of the mine. The project remains on full suspension.
Copper: Resolution	
The Resolution Copper project is a proposed underground copper mine in the Copper Triangle, in Arizona, US (Rio Tinto 55%). It has the potential to supply up to 25% of US copper demand.	The United States Forest Service (USFS) continued work to progress the Final Environmental Impact Statement and complete actions necessary for the land exchange. We continued to advance partnership discussions with several federally-recognised Native American Tribes who are part of the formal consultation process. We are also monitoring the Apache Stronghold versus USFS case held in the US Ninth Circuit Court of Appeals. While there is significant local support for the project, we respect the views of groups who oppose it and will continue our efforts to address and mitigate these concerns.
Copper: Winu	
In late 2017, we discovered copper-gold mineralisation at the Winu project in the Paterson Province in Western Australia. In 2021, we reported our first Indicated Mineral Resource. The pathway remains subject to regulatory and other required approvals. In parallel, we continue to explore options aimed at enhancing project value, including further optimisation of the current pathway and alternative development models and partnerships.	In 2023, Project Planning Agreements were executed with the Nyangumarta and Martu groups, the Traditional Owners of the land on which the proposed Winu mine and airstrip will be located. Study activities, drilling and fieldwork progressed sufficiently to commence Winu's formal Western Australian Environmental Protection Authority approval process. The environmental approval deliverables and Project Agreement negotiations with both Traditional Owner groups remain the priority.
Copper: La Granja	
In August 2023, we completed a transaction to form a joint venture with First Quantum Minerals that will work to unlock the development of the La Granja project in Peru, one of the largest undeveloped copper deposits in the world, with potential to be a large, long-life operation.	First Quantum Minerals acquired a 55% stake in the project for $105 million and will invest up to a further $546 million into the joint venture to sole fund capital and operational costs to take the project through a feasibility study and toward development. All subsequent expenditures will be applied on a pro-rata basis in line with shared ownership.
Aluminium: ELYSIS	
ELYSIS, our joint venture with Alcoa, supported by Apple, the Government of Canada and the Government of Quebec, is developing a breakthrough inert anode technology that eliminates all direct greenhouse gases from the aluminium smelting process.	ELYSIS has started commissioning activities following completion of the construction of the first commercial-scale prototype cells. ELYSIS expects to start the first 450kA cell in 2024.

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Iron Ore

We are one of the world's leading producers of iron ore, the primary raw material in steelmaking. In the Pilbara region of Western Australia, we operate a network of 17 iron ore mines, four port terminals and a rail network spanning 1,900 kilometres. Steel remains essential for ongoing urbanisation and will support the global shift to decarbonise.

Snapshot of the year

0.61
AIFR
(2022: 0.68)

69%
Pilbara underlying FOB EBITDA margin
(2022: 68%)

$20.0bn
Underlying EBITDA
(2022: $18.6bn)

$32.2bn
Segmental revenue
(2022: $30.9bn)

$2.6bn
Capital expenditure
(2022: $2.9bn)

$14.0bn
Net cash generated from operating activities
(2022: $14.0bn)

3.2Mt
Scope 1 and 2 GHG emissions (equity Mt CO_2e)
(2022: 3.1Mt)

16,000
Employee numbers[1]
(2022: 15,000)

Safety

The number of potentially fatal incidents (PFIs) in Iron Ore decreased 48% to 13 with falling objects and vehicle collisions/rollovers accounting for the majority of these incidents. Our all-injury frequency rate (AIFR) decreased 10% to 0.61, compared to 0.68 in 2022.

These improvements are the result of consistently using the safety maturity model (SMM) for the past four years across our operations. SMM encourages best practices across our business in leadership, team engagement and learning to improve our safety culture. We also re-engaged our workforce on critical risk management (CRM), a safety program that makes sure frontline workers are focused on the critical safety risks in their work.

We continued our journey to mature our workplace safety culture and create an environment where our people are both physically and psychologically healthy and safe. We completed the first year in our five-year Mentally Healthy Iron Ore Strategy, with a focus on building capability in our leaders to manage psychosocial risks in the workplace.

Our focus remains on creating a safe, respectful and inclusive workplace where our people can bring their whole selves to work.

For more information
about our global health and safety initiatives see pages 71-72.

In April 2023 the Radiological Council, an independent statutory authority, found Rio Tinto did not breach the Radiation Safety Act in relation to the loss of a radioactive capsule while in transit from our Gudai-Darri mine site. We also conducted a thorough review and identified opportunities to further improve the selection of radiation gauges, and how the items are packaged and transported.

Market Insights

Iron ore market fundamentals were well-supported in 2023. Steelmakers in China maintained elevated operating rates as domestic demand rose 1.5% year-on-year. Infrastructure and other government-backed construction surpassed residential property as the largest steel consuming sectors, while manufacturing continued to contribute substantial volumes of demand.

A 47% increase in net steel exports further supported China's crude steel production which exceeded one billion tonnes for the fourth consecutive year. China's steel exports also resulted in higher contestable iron ore demand globally since they in part displaced steel, which would have been produced in other regions using captive iron ore or higher scrap rates. This resulted in a 6.6% year-on-year increase in China's iron ore imports, reaching a record 1.18 billion tonnes, which helped absorb the 5% year-on-year increase in seaborne supply (to 1.5 billion tonnes). At the same time, China's port inventories declined to a three-year low.

Enabling the low-carbon transition

In 2023, our Iron Ore business's absolute greenhouse gas (GHG) emissions were 3.2Mt CO_2e (on an equity basis), an increase of 0.57Mt CO_2e compared to the 2018 emissions baseline (2.64Mt CO_2e). This was driven by an increase in production.

Approximately one-quarter of Iron Ore emissions are from the gas used to generate power. To reduce our reliance on gas we are progressing development of 600 to 700MW of renewable energy capacity and preparing for early fleet electrification from 2030. We continue to progress the potential development of a Pilbara coastal solar farm and are partnering with the Yindjibarndi Energy Corporation to explore opportunities to collaborate on renewable energy projects.

For more information
about our decarbonisation efforts in the Iron Ore product group, see our *2023 Climate Change Report* at riotinto.com/climatereport.

From customer to strategic partner

In 2023, we extended a key climate partnership with our largest customer, China Baowu, to accelerate efforts to decarbonise the steel value chain and reduce our Scope 3 emissions. This is the result of a coordinated approach across our sales, marketing, and research and development teams based on decades of deep relationship building with the world's biggest steelmaker, who is also a joint venture partner in the Western Range and Simandou projects.

For more information
see riotinto.com/baowu.

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 215 for more information.

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Iron Ore

Year ended 31 December	2023	2022	Change
Pilbara production (million tonnes — 100%)	**331.5**	324.1	2%
Pilbara shipments (million tonnes — 100%)	**331.8**	321.6	3%
Salt production (million tonnes — Rio Tinto share)[1]	**6.0**	5.8	4%
Segmental revenue (US$ millions)	**32,249**	30,906	4%
Average realised price (US$ per dry metric tonne, FOB basis)	**108.4**	106.1	2%
Underlying EBITDA (US$ millions)	**19,974**	18,612	7%
Pilbara underlying FOB EBITDA margin[2]	**69%**	68%	
Underlying earnings (US$ millions)[3]	**11,882**	11,213	6%
Net cash generated from operating activities (US$ millions)	**14,045**	14,005	–%
Capital expenditure (US$ millions)[4]	**(2,588)**	(2,940)	(12%)
Free cash flow (US$ millions)	**11,374**	11,033	3%
Underlying return on capital employed[3, 5]	**64%**	61%	

Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result in the year on year change.

1. Dampier Salt is reported within Iron Ore, reflecting management responsibility. Iron Ore Company of Canada continues to be reported within Minerals. The Simandou iron ore project in Guinea reports to the Chief Technical Officer and is reported outside the Reportable segments.
2. The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara segmental revenue, excluding freight revenue.
3. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.
4. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
5. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of $20.0 billion was 7% higher than 2022, with a 2% improvement in realised prices ($0.8 billion) and higher volumes, following the ramp-up of Gudai-Darri.

Unit costs of $21.5 per tonne were $0.2 per tonne lower than 2022. Cost escalation from inflation was offset by a weaker Australian dollar and gains on derivative contracts. Higher iron ore volumes offset a higher mine work index and mine maintenance costs.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 69%, compared with 68% in 2022, largely due to the iron ore price.

We price the majority of our iron ore sales (79%) by reference to the average index price for the month of shipment. In 2023, we priced approximately 10% of sales with reference to the prior quarter's average index lagged by one month with the remainder sold either on current quarter average, on the spot market or other mechanisms. We made approximately 74% of sales including freight and 26% on an FOB basis.

We achieved an average iron ore price of $99.7 per wet metric tonne on an FOB basis (2022: $97.6 per wet metric tonne) across our product suite. This equates to $108.4 per dry metric tonne, assuming 8% moisture (2022: $106.1 per dry metric tonne), which compares with the monthly average Platts index for 62% iron fines converted to an FOB basis of $110.3 per dry metric tonne (2022: $109.8 per dry metric tonne). The 2% lower realised price compared to the Platts index was mainly due to the lower average grades of our portfolio compared to the 62% index.

Segmental revenue for our Pilbara operations included freight revenue of $2.1 billion (2022: $2.2 billion).

Net cash generated from operating activities of $14.0 billion was on a par with 2022. Benefits from higher realised prices and higher volumes offset a build in working capital to ensure healthy stocks across the system and an increased receivables balance due to strong iron ore prices at year end. Free cash flow of $11.4 billion was $0.3 billion higher than 2022, mostly driven by a $0.4 billion reduction in capital expenditure to $2.6 billion due to lower spend on replacement capital.

Review of operations

Pilbara operations produced 331.5 million tonnes (100% basis) of iron ore, 2% higher than 2022. Shipments, on a 100% basis, were 3% higher (+10 million tonnes) than in 2022, making 2023 the second highest shipment year on record. Improved system performance supported by a 5 million tonne uplift from implementation of the Safe Production System, and ramp-up of Gudai-Darri to its 43 million tonne nameplate capacity, offset mine depletion. SP10 volumes accounted for 47.5 million tonnes of 2023 shipments (or 14%).

We continue to see strong demand for our portside product in China, with sales totalling 23.3 million tonnes in 2023 (2022: 24.3 million tonnes). At the end of 2023, inventory levels were 6.4 million tonnes, including 3.9 million tonnes of Pilbara product. In 2023, approximately 86% of our portside sales were either screened or blended in Chinese ports.

In January 2024, Dampier Salt Limited entered into a sales agreement for the Lake MacLeod salt and gypsum operation in Carnarvon, Western Australia with privately-owned salt company Leichhardt Industrials Group for $251 million (A$375 million). Completion of the sale is subject to certain commercial and regulatory conditions being satisfied. The transaction is subject to capital gains tax.

For more information about our capital projects and future growth options, see pages 30–31.

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Aluminium

As a global leader in low-carbon aluminium, we are uniquely positioned to further decarbonise our business and support the world's transition towards a lower-carbon footprint. A critical material – lightweight and highly recyclable – aluminium is found in diverse products ranging from solar panels and transmission lines to jet engines, electric vehicles and smartphones.

Snapshot of the year

0.33
AIFR
(2022: 0.35)

21%
Underlying EBITDA margin (integrated operations)
(2022: 29%)

$2.3bn
Underlying EBITDA
(2022: $3.7bn)

$12.3bn
Segmental revenue
(2022: $14.1bn)

$1.3bn
Capital expenditure
(2022: $1.4bn)

$2.0bn
Net cash generated from operating activities
(2022: $3.1bn)

24.2Mt
Scope 1 and 2 GHG emissions (equity Mt CO_2e)
(2022: 23.3Mt)

15,000
Employee numbers[1]
(2022: 15,000)

Safety

In 2023, we continued to focus on building resilience within our safety systems and processes. We implemented actions to improve our safety culture for our employees and our contractors, by identifying areas of organisational improvement, strengthening our control environment, and leveraging our safety maturity model to analyse and address the root causes of all our potentially fatal incidents (PFIs).

The improvement in our safety maturity translated into a decrease of almost 6% in our all-injury frequency rate (AIFR) from 0.35 in 2022 to 0.33 in 2023. Increased incident identification and proactive PFI[2] reporting have been key elements in enhancing our safety culture. However, despite this improvement, five workers were injured in PFI incidents in 2023; three of these injuries occurred in vehicle-related incidents. We continue to progress our program to reduce vehicle-pedestrian risks, focusing on fatigue and work scheduling as primary factors contributing to this trend. Ongoing work will be needed in 2024 to help re-emphasise the importance of working together to build and sustain a strong safety culture.

For more information
about our global health and safety initiatives, see pages 71–72.

Market Insights

Aluminium prices came under pressure in 2023, mainly driven by weaker demand outside of China. This impact on operating margins was partly offset by lower operating costs. Supply was volatile, with hydropower-integrated smelters in China only able to fully resume production in the third quarter following low precipitation in the first half, yet production was curtailed once again in the fourth quarter due to the oncoming dry season. Global demand was similarly uneven through the year.

While China's electric vehicle and solar panel manufacturers significantly increased their consumption, the US, Europe and Japan recorded historically low levels of aluminium semi-fabricated orders and shipments. Primary aluminium inventory remained low in China due to strong demand and seasonal disruptions to domestic production, which required high levels of aluminium primary imports, mainly from Russia. Meanwhile, aluminium inventories outside the Chinese market remain below average historical levels.

Enabling the low-carbon transition

In 2023, our Aluminium business's absolute greenhouse gas emissions (24.2Mt CO_2e) were 1.4% lower than the 2018 equity baseline (24.5Mt CO_2e). This reduction includes improvements in processing efficiency, increased use of hydroelectric boilers in refining instead of natural gas boilers, and reduced aluminium production at the Kitimat smelter. Following a strike in 2021, the Kitimat smelter resumed its operations and reached full operating capacity in September 2023.

The 2023 emissions intensity of our managed Canadian smelters, powered by hydroelectricity, was 2.28Mt CO_2e per tonne of aluminium. Our Vaudreuil alumina refinery continues to have one of the lowest carbon footprints of any metallurgical alumina refinery in the world today.

For more information
about our decarbonisation efforts in the Aluminium product group, see our *2023 Climate Change Report* at riotinto.com/climatereport.

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 215 for more information.
2. A proactive PFI is one where there was neither injury nor property damage. Proactive PFIs are leading indicators of safety performance and offer the opportunity to learn from near miss incidents. They reflect a psychologically safe culture.

Aluminium

Year ended 31 December	2023	2022	Change
Bauxite production ('000 tonnes — Rio Tinto share)	**54,619**	54,618	—%
Alumina production ('000 tonnes — Rio Tinto share)	**7,537**	7,544	—%
Aluminium production ('000 tonnes — Rio Tinto share)	**3,272**	3,009	9%
Segmental revenue (US$ millions)	**12,285**	14,109	(13%)
Average realised aluminium price (US$ per tonne)	**2,738**	3,330	(18%)
Underlying EBITDA (US$ millions)	**2,282**	3,672	(38%)
Underlying EBITDA margin (integrated operations)	**21%**	29%	
Underlying earnings (US$ millions)[1]	**538**	1,504	(64%)
Net cash generated from operating activities (US$ millions)	**1,980**	3,055	(35%)
Capital expenditure — excluding EAUs (US$ millions)[2]	**(1,331)**	(1,377)	(3%)
Free cash flow (US$ millions)	**619**	1,652	(63%)
Underlying return on capital employed[1, 3]	**3%**	10%	

1. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.
2. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).
3. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Although global primary aluminium demand rose by ~1% in 2023, falling costs and an increase in global supply led to a 17% reduction in the LME price and lower market and product premiums. Market-related costs for key materials such as caustic, coke and pitch moderated with some of this benefitting underlying EBITDA in the second half. Operating costs particularly in our mines and refineries increased year on year with a focus on improved operational stability and asset health. Overall there was significant margin compression for our Aluminium business with a 38% decrease in underlying EBITDA to $2.3 billion. Underlying EBITDA margin fell eight percentage points to 21%.

We achieved an average realised aluminium price of $2,738 per tonne, 18% lower than 2022.

Average realised aluminium prices comprise the LME price, a market premium and a value-added product (VAP) premium. The cash LME price averaged $2,250 per tonne, 17% lower than 2022, while in our key US market, the Midwest premium duty paid, which is 57% of our total volumes (2022: 57%), decreased by 22% to $512 per tonne (2022: $655 per tonne). Our VAP sales represented 46% of the primary metal we sold (2022: 50%) and generated product premiums averaging $354 per tonne of VAP sold (2022: $431 per tonne).

Our conversion of underlying EBITDA to cash remained relatively strong, with net cash generated from operating activities of $2.0 billion. Free cash flow of $0.6 billion reflected investment in the business of $1.3 billion.

Review of operations

Bauxite production of 54.6 million tonnes was unchanged from 2022. Operations saw a continued improvement in the fourth quarter, following the challenges of higher-than-average rainfall at Weipa in the first quarter and equipment downtime at both Weipa and Gove in the first half.

We shipped 37.3 million tonnes of bauxite to third parties, 2% lower than 2022. Segmental revenue for bauxite was also unchanged at $2.4 billion. This includes freight revenue of $0.5 billion (2022: $0.6 billion).

Alumina production of 7.5 million tonnes was unchanged from 2022, with the Yarwun and Queensland Alumina Limited (QAL) refineries showing improved operational stability.

For the 2023 calendar year, as the result of QAL's activation of a step-in process following sanction measures enacted by the Australian Government in 2022, we continued to take on 100% of capacity for as long as the step-in continues. We have used Rusal's 20% share of capacity under the tolling arrangement with QAL. This additional output is excluded from our production results as QAL remains 80% owned by Rio Tinto and 20% owned by Rusal. On 1 February 2024, the Federal Court of Australia rendered its decision in the litigation initiated by Rusal against Rio Tinto and QAL, dismissing Rusal's case. Rio Tinto and QAL are working to understand the impacts of the decision.

Aluminium production of 3.3 million tonnes was 9% higher than 2022, after we returned to full capacity at the Kitimat smelter and completed cell recovery efforts at Boyne during the third quarter. All other smelters continued to demonstrate stable performance.

For more information about our capital projects and future growth options, see pages 30–31.

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Copper

Copper is essential to creating a sustainable, low-carbon world. Rapid electrification across all aspects of daily life is set to drive long-term demand for copper. With assets spanning the globe and an evolving suite of technologies to enable low-carbon production, we are accelerating growth and decarbonisation by producing the materials that enable a cleaner future.

Snapshot of the year

0.35
AIFR
(2022: 0.22)

42%
Underlying EBITDA margin (product group operations)
(2022: 49%)

$1.9bn
Underlying EBITDA
(2022: $2.6bn)[1]

$6.7bn
Segmental revenue
(2022: $6.7bn)

$2.0bn
Capital expenditure
(2022: $1.6bn)

$0.5bn
Net cash generated from operating activities
(2022: $1.5bn)[1]

1.0Mt
Scope 1 and 2 GHG emissions (equity Mt CO_2e)
(2022: 1.7Mt)

8,000
Employee numbers[2]
(2022: 8,000)

Safety

We experienced an increase in the number of injuries and Potentially Fatal Incidents (PFIs) across our copper assets. There were 22 PFIs in 2023 compared to 18 in the previous year. We had an overall all-injury frequency rate (AIFR) of 0.35 compared to 0.22 in 2022, an increase of 59%, with an employee AIFR of 0.31 and a contractor AIFR of 0.38.

Unfortunately, in 2023, we also experienced two permanent damage injuries at our Simandou project and Kennecott Underground project, and a Process Safety Tier I event at our Kennecott smelter. Extensive action plans are being executed to ensure our people and their safety remains at the centre of everything we do, and through our critical risk management we are focusing on fatality prevention across our sites. Underpinning our strategy, we continue our journey to embed our enhanced safety maturity model to help us improve and sustain exceptional safety performance. Copper assets continue to focus on understanding and reducing their most significant health risks exposures, including heat stress, diesel particulate matter and SO_2 exposure through the Kennecott smelter rebuild. First line assurance for catastrophic risk prevention is well embedded at Oyu Tolgoi and is beginning to develop at our other assets. This will provide greater certainty on our risk control effectiveness for major hazard and process safety risks going forward.

For more information about our global health and safety initiatives, see pages 71-72.

Market Insights

London Metal Exchange copper prices were supported by expectations that China's demand would recover substantially as COVID-19 restrictions were lifted at the beginning of 2023. Disruptions to mine supply in major mining countries further tightened market fundamentals in the first quarter, before loosening later in the year with the commissioning of new mining projects in South America and Africa.

Concerns about the US and China's economic growth towards the middle of the year undermined sentiment. That was followed by a stabilisation in China after pro-growth measures were stepped up in the third quarter. Overall, China's demand was resilient, lending support to copper prices together with inflationary pressure, although price gains were capped by US dollar appreciation. In the final months of 2023, there were several disruptions to mine supply in Latin America that resulted in a notably tighter copper concentrates market.

Enabling the low-carbon transition

In 2023, our Copper business's absolute greenhouse gas emissions (1.0Mt CO_2e) were 65.5% lower than the 2018 equity baseline (3.04Mt CO_2e). The decrease in emissions was mainly driven by decarbonising power and commercial transactions in renewable energy. Rio Tinto Kennecott is fully transitioning to renewable diesel after a successful seven month trial. Kennecott's fleet of 90 haul trucks and all heavy machinery will begin to transition to renewable diesel in the first quarter of 2024, along with consumption from the concentrator, smelter, and refinery. The transition will reduce Kennecott's carbon emissions by approximately 495,000 tonnes of CO_2 equivalent per annum, comparable to eliminating the annual emissions of more than 107,000 cars[3].

Nuton™, our bioleaching technology venture, has the potential to deliver game changing ESG performance. Compared to conventional concentrating and smelting and based on our comparative environmental benchmark study with the University of Technology, Sydney, Nuton™ is projected to have a carbon intensity up to 60% lower than a global average of 5.2 tonnes per tonne of copper. Combined with opportunities for renewable energy that can further reduce emissions from Nuton™, we're excited about the incredible outcome Nuton™ could bring.

For more information about our decarbonisation efforts in the Copper product group, see our *2023 Climate Change Report* at riotinto.com/climatereport.

1. 2022 has been adjusted to reflect a change in management responsibility for the Simandou iron ore project from Copper to the Chief Technical Officer. As a result, we have moved Simandou outside of reportable segments and accordingly adjusted prior period comparatives.
2. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 215 for more information.
3. Comparison calculation used US EPA Greenhouse gas equivalencies calculator (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator).

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Copper

Year ended 31 December	2023	2022	Change
Mined copper production ('000 tonnes — consolidated basis)	**620**	607	2%
Refined copper production ('000 tonnes — Rio Tinto share)	**175**	209	(16%)
Segmental revenue (US$ millions)	**6,678**	6,699	–%
Average realised copper price (US cents per pound)[1]	**390**	403	(3%)
Underlying EBITDA (US$ millions)	**1,904**	2,565	(26%)
Underlying EBITDA margin (product group operations)	**42%**	49%	
Underlying earnings (US$ millions)	**133**	687	(81%)
Net cash generated from operating activities (US$ millions)[2]	**545**	1,523	(64%)
Capital expenditure — excluding EAUs[3] (US$ millions)	**(1,976)**	(1,622)	22%
Free cash flow (US$ millions)	**(1,438)**	(116)	
Underlying return on capital employed (product group operations)[4]	**3%**	6%	

2022 has been restated following the transfer of the Simandou iron ore project to outside the Reporting segments, as it now reports to the Chief Technical Officer, and to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.

1. Average realised price for all units sold. Realised price does not include the impact of the provisional pricing adjustments, which positively impacted revenues by $2 million (2022: $175 million negative).
2. Net cash generated from operating activities excludes the operating cash flows of equity accounted units (EAUs) but includes dividends from EAUs (Escondida).
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes EAUs.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.
5. Mine design and plans will be reviewed by regulatory bodies as part of the OTFS23 process.
6. The 500 thousand tonne per year copper production target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 was previously reported in a release to the Australian Securities Exchange (ASX) dated 11 July 2023 "Investor site visit to Oyu Tolgoi copper mine, Mongolia". All material assumptions underpinning that production target continue to apply and have not materially changed.

Financial performance

We delivered first sustainable production from the underground mine at Oyu Tolgoi, where we doubled our interest to 66% following the acquisition of Turquoise Hill Resources at the end of 2022. However, lower refined copper volumes and higher unit costs, primarily driven by the planned smelter and refinery rebuild at Kennecott, in addition to higher energy prices and an increase in exploration and evaluation expenditure, led to underlying EBITDA being down 26% to $1.9 billion. Underlying EBITDA margin remained relatively strong at 42%.

Our copper unit costs, at 195 cents per pound, increased by 32 cents, or 20%, as a result of the lower shipment volumes of refined copper following the planned rebuild at Kennecott and higher input costs.

We generated $0.5 billion in net cash from operating activities, a 64% decrease on 2022, from the same drivers as underlying EBITDA, together with $0.3 billion lower dividends from Escondida.

Negative free cash flow of $1.4 billion reflected the above movements and significant investment of $2.0 billion in sustaining capital and our growth projects. This mainly related to the ongoing development of the Oyu Tolgoi underground, the projects at Kennecott and evaluation costs at Resolution and Winu.

Review of operations

Mined copper production, at 620 thousand tonnes, was 2% higher than 2022, reflecting first sustainable production from Oyu Tolgoi underground in the first quarter. This offset challenges at Kennecott following a conveyor failure in March, with the concentrator not returning to full capacity until the third quarter. Our share of mined copper production from Escondida was flat at 300 thousand tonnes.

Refined copper production decreased by 16% to 175 thousand tonnes as we undertook the largest rebuild of the smelter and refinery in Kennecott's history across the second and third quarters. The smelter rebuild was successfully completed in the fourth quarter of 2023 and the ramp-up is progressing.

Oyu Tolgoi underground project

During 2023, Rio Tinto, Oyu Tolgoi and the Government of Mongolia continued to work together towards the implementation of Mongolian Parliamentary Resolution 103.

We continue to see strong performance from the underground mine, with a total of 86 drawbells opened from Panel 0, including 67 drawbells in 2023.

By the end of 2023, shafts 3 and 4 sinking had reached 923 metres and 1,013 metres below ground level, respectively. Final depths required for shafts 3 and 4 are 1,130 and 1,176 metres, respectively. Both shafts are expected to be commissioned in the second half of 2024.

Construction of the conveyor to surface works continued to plan and was 88% complete at the end of 2023. Commissioning remains on track for the second half of 2024.

Construction of primary crusher 2 commenced in December 2023 and is due to be complete by the end of 2025.

Construction works for the concentrator conversion remains on schedule. Commissioning is expected to be progressively completed from the fourth quarter of 2024 through to the second quarter of 2025. Technical studies for mine design and schedule optimisation for Panels 1 and 2 were completed during the second quarter[5]. The operation remains on track to ramp up to deliver average mined copper production of ~500 thousand tonnes per year (100% basis) between 2028 and 2036[6].

For more information about our capital projects and future growth options, see pages 30–31.

Nuevo Cobre exploration joint venture agreement

We have entered into a joint venture with Corporación Nacional del Cobre de Chile (Codelco) following the acquisition of PanAmerican Silver's 57.74% stake in Agua de la Falda S.A. The new joint venture, known as Nuevo Cobre (New Copper), will allow us to explore and potentially develop Nuevo Cobre's assets in partnership with Codelco in Chile's prospective Atacama region.

Chile has the largest copper reserves in the world, and currently is the leading copper producer. Chile is also a leader in other critical minerals that the world needs for the energy transition and to achieve net zero carbon emissions.

The partnership builds on a collaboration agreement with Codelco, which first commenced in 2007, that encourages best practices, innovation, and technology to improve safety and productivity in underground mining.

Minerals

Our Minerals portfolio includes a global suite of businesses producing materials essential to a low-carbon future and projects well-positioned to meet the growing demand for electric vehicles.

We produce high-grade, low-impurity iron ore pellets and concentrate, titanium dioxide, diamonds and borates from our operations in Canada, Madagascar, South Africa and the US.

Snapshot of the year

0.24
AIFR
(2022: 0.38)

30%
Underlying EBITDA margin (product group operations)
(2022: 40%)

$1.4bn
Underlying EBITDA
(2022: $2.4bn)

$5.9bn
Segmental revenue
(2022: $6.8bn)

$0.7bn
Capital expenditure
(2022: $0.7bn)

$0.5bn
Net cash generated from operating activities
(2022: $1.5bn)

3.7Mt
Scope 1 and 2 GHG emissions (equity Mt CO_2e)
(2022: 4.0Mt)

10,000
Employee numbers[1]
(2022: 9,500)

Safety

While we recorded zero fatalities at managed operations in 2023, tragically four colleagues died in a plane crash while travelling to our Diavik diamond mine in January 2024. We are working closely with the authorities to support their efforts to understand the full facts of what happened.

Unfortunately, in 2023, we also experienced a permanent damage injury at our Diavik mine. The number of potentially fatal incidents (PFIs) increased to 27, with vehicle collision and rollover, contact with electricity and lifting operations accounting for the highest number of PFIs. Two of these PFIs were also significant process safety incidents at our RTIT Quebec Operations site in Sorel-Tracy, which did not result in injuries. We have heightened our focus on managing these risks and have implemented measures in response to the investigation.

Our all-injury frequency rate (AIFR) decreased to 0.24, compared to 0.38 in 2022, as we recorded fewer employee and contractor injuries. The rate of injuries in our contractor workforce reduced significantly, going from 0.42 in 2022 to 0.20 in 2023.

In 2024, we will continue our journey of improvement, enabled by the safety maturity model. Additionally, we will intensify our focus on health, environment, and security to achieve our objectives of creating a safe and productive workplace for our employees and contractor partners.

For more information
about our global health and safety initiatives, see pages 71-72.

Market Insights

The titanium dioxide (TiO_2) market saw a downturn in demand in developed regions, although there was a small improvement towards the fourth quarter. Elevated feedstock inventory also hampered TiO_2 purchases, leading to production cuts by major producers.

Borates prices also came under pressure as weak construction markets globally impacted underlying demand. Higher supply from leading producers accumulated into inventory as downstream demand underperformed.

The demand for IOC pellets in the European, Japanese, and Korean markets was stable in 2023 despite weaker steel production amid inflationary pressures. Following tentative signs of stabilisation in the European steel market in the middle of the year, pellet demand and premiums came under downward pressure by the end of the third quarter, and headwinds in the Atlantic Basin persisted through to the end of the year. Nevertheless, the demand for Direct Reduction pellets remained resilient in the Middle East and North Africa on the back of firm steel production in that region.

Downward pressure on lithium carbonate prices emanated from the deceleration in electric vehicle (EV) output growth and inventory accumulation along the supply chain. Supply from non-traditional regions (Africa) entered the market, incentivised by two years of elevated prices. Longer term, lithium market fundamentals remain strong as EV adoption continues to accelerate on supportive government policies and supply shortfalls requiring further investment.

Enabling the low-carbon transition

In 2023, our Minerals product group's absolute greenhouse gas (GHG) emissions were 3.7Mt CO_2e, a 6.7% decrease from 2022 levels and 0.1% lower than the 2018 equity baseline (3.7Mt CO_2e). We started the BlueSmelting™ demonstration plant at our RTIT Quebec Operations, a new ilmenite smelting technology that, if fully implemented, has the potential to reduce the site's overall GHG emissions by up to 70%.

We announced we would build the largest solar power plant across Canada's territories at Diavik Diamond Mine, featuring over 6,600 solar panels. It is expected to be fully operational in the first half of 2024. In Boron, California, we became the first open pit mine in the world to fully transition our heavy machinery from fossil to renewable diesel, which brings an anticipated CO_2e reduction of up to 45,000 tonnes per year. At QIT Madagascar Minerals, we commissioned the 8MW solar plant and 8.25 MWh lithium-ion battery energy storage system, and we started the construction of the 16MW wind project, scheduled for completion by 2025.

We have also opened a new battery manufacturing and testing research laboratory within our Bundoora Technical Development Centre in Melbourne, Australia, to test how our minerals and other products will perform in real-world applications, such as in EV batteries.

For more information
about our decarbonisation efforts in the Minerals product group, see our *2023 Climate Change Report* at riotinto.com/climatereport.

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 215 for more information.

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Minerals

Year ended 31 December	2023	2022	Change
Iron ore pellets and concentrates production[1] (million tonnes — Rio Tinto share)	**9.7**	10.3	(6%)
Titanium dioxide slag production ('000 tonnes — Rio Tinto share)	**1,111**	1,200	(7%)
Borates production ('000 tonnes — Rio Tinto share)	**495**	532	(7%)
Diamonds production ('000 carats — Rio Tinto share)	**3,340**	4,651	(28%)
Segmental revenue (US$ millions)	**5,934**	6,754	(12%)
Underlying EBITDA (US$ millions)	**1,414**	2,419	(42%)
Underlying EBITDA margin (product group operations)	**30%**	40%	
Underlying earnings (US$ millions)[2]	**312**	854	(63%)
Net cash generated from operating activities (US$ millions)	**548**	1,522	(64%)
Capital expenditure (US$ millions)[3]	**(746)**	(679)	10%
Free cash flow (US$ millions)	**(229)**	814	(128%)
Underlying return on capital employed (product group operations)[2, 4]	**13%**	22%	

1. Iron Ore Company of Canada (IOC) continues to be reported within Minerals.
2. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes'.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of $1.4 billion was 42% lower than 2022, primarily due to lower prices and higher costs. We experienced market weakness for many of our products, in particular for TiO_2 feedstock, where underlying demand for pigment was subdued on weak real estate activity in the Americas, Europe and China. This gave rise to lower sales volumes and, in combination with the two furnace failures at our RTIT Quebec operations, resulted in higher unit costs.

Net cash generated from operating activities of $0.5 billion was 64% lower than 2022, while negative free cash flow of $0.2 billion reflected the lower underlying EBITDA, higher working capital due to market conditions and a modest rise in capital expenditure.

Review of operations

Production of iron ore pellets and concentrate at IOC of 9.7 million tonnes was 6% lower than 2022 with challenges due to the wildfires in Northern Quebec in the second quarter, as well as extended plant downtime and conveyor belt failures in the third quarter.

TiO_2 slag production of 1,111 thousand tonnes was 7% lower than 2022. Two furnaces at our RTIT Quebec Operations remain offline following process safety incidents in June and July. In the fourth quarter, we decommissioned an additional furnace, which is due for reconstruction in 2024. As a result, we entered 2024 with six out of nine furnaces operating at our RTIT Quebec Operations and three out of four online at Richards Bay Minerals (RBM).

Borates production was 7% lower than 2022, as we adjusted for decreased customer demand, despite improved equipment reliability.

Our share of carats recovered was 28% lower than 2022, due to depleting one of three underground pipes and reaching the end of life for open pit mining.

For more information about our capital projects and future growth options, see pages 30–31.

Breakthrough technology: Scandium, a case in point

Scandium is a critical mineral in increasing demand for the energy transition and modern technologies such as aerospace, lasers and microelectronics due to its alloying and emerging high-tech properties. We are combining scandium with our low-carbon aluminium to produce an alloy that is stronger, more flexible and more resistant to heat and corrosion.

Today, our commercial scale demonstration plant in Quebec uses an innovative process to extract and produce high-purity scandium oxide from the waste streams of the existing TiO_2 production, without any additional mining.

This will make Rio Tinto one of the largest producers of scandium in the Western world. In two years, we have gone from testing the extraction process in a laboratory, to being able to supply a large share of the global scandium market.

In 2023, we acquired a high-grade scandium resource in New South Wales, Australia. The Burra™ Scandium Project is a small, high-value physical scandium asset, with a small environmental footprint. When operational, Burra will significantly increase, and geographically and operationally diversify, our annual scandium production.

Scandium is emblematic of Rio Tinto's transformation in terms of what we mine and how we mine.

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Our approach to ESG

As temporary custodians of the land where we operate, we are entrusted with accessing the world's essential materials and making them available for society's use.

These resources are finite, and we have a responsibility to find better ways to extract the full value from them in the safest and most sustainable way possible.

We know that responsibly managing our business impacts is fundamental if we want to continue to grow and deliver on our strategy. Two of our core objectives are to strengthen our social licence and achieve impeccable environmental, social and governance (ESG) credentials. As part of these commitments, we align our business priorities with society's expectations and ensure sustainability considerations are at the core of every decision we make.

Our shareholders, employees and host governments expect us to find better ways to lower our impact, decarbonise our operations and increase circularity, while contributing to a positive legacy for the host communities and countries where we operate.

And we have a big role to play in the world's transition to a low-carbon future. The materials we produce are essential in many low-carbon technologies. It also means we must deliver our own decarbonisation, alongside investing in research and development that enables our customers to decarbonise more quickly.

To meet our goals, we are focusing on developing the right mindset and culture, encouraging our people to work together to find new solutions and building partnerships with those who share our ambition for a more sustainable future.



Solar panel plant at Gudai-Darri, the Pilbara, Western Australia. See our *2023 Climate Change Report* for further information about this project.

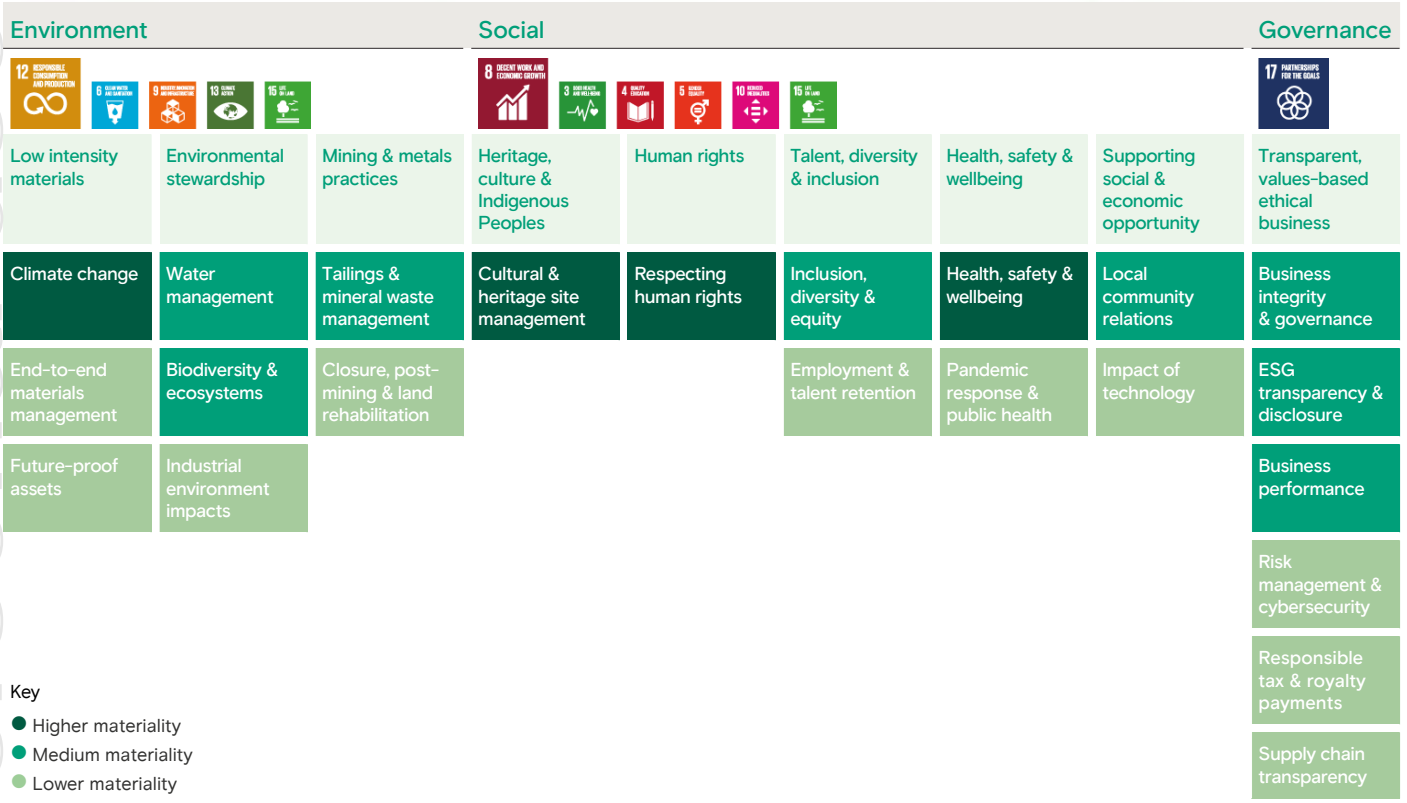
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Our ESG framework

We want to ensure all our stakeholders benefit from the success of our business. To do this, our priorities and performance must align with society's expectations, which are constantly evolving.

Each year we complete a materiality assessment to understand what ESG issues and topics matter most to, and have the greatest impact on, our stakeholders and our business. We gather information from internal and external stakeholders via interviews, surveys and reviews of publicly available information. We ask them what is important now and what they think will be important in five to ten years. Some issues are identified as higher materiality than others. Our ESG framework describes how we manage and report externally on these issues and how we contribute to the United Nations Sustainable Development Goals (UN SDGs).

The insights we gather through this process guide our work towards achieving impeccable ESG credentials and strengthening our social licence. This includes providing people and communities with economic opportunities; safeguarding and promoting the health, wellbeing and human rights of people and communities; combating climate change; and being excellent stewards of the natural resources entrusted to us. Our commitment to running a transparent, values-based, ethical business underpins all our work.



Each material topic above appears under either the environment, social or governance theme to which it primarily relates. However, there is crossover among ESG themes, meaning some material topics can be relevant to two or even all three themes. Accordingly, we work with themes and topics holistically, not in silos.

To achieve impeccable ESG credentials, we aim to:

- Provide people and communities with social and economic opportunities so they can live and grow sustainably.
- Play our role to advance a fair and socially inclusive energy transition.
- Build a healthy, diverse and inclusive workforce, support local communities to achieve their goals and aspirations, and deliver positive social outcomes.
- Decarbonise our operations (Scope 1 and 2) and our value chains (Scope 3) and maximise the full value of our resources.
- Encourage circularity and provide critical minerals that the world needs to advance.
- Minimise environmental and heritage impacts and act as a responsible steward of water and biodiversity, to strengthen our resilience to a changing environment.

The UN SDGs

Our approach to ESG aligns with the UN SDGs, which are recognised as the global blueprint for a sustainable future. The SDGs are a useful reference point to ensure we direct our efforts where they can deliver the most impact and our focus areas reflect society's expectations. We focus on goals that we feel are most relevant to operating our business responsibly and where we can have the biggest impact. Our two lead goals are SDG 12 (responsible consumption and production) and SDG 8 (decent work and economic growth).

Our operations also contribute to eight supporting SDGs (3, 4, 5, 6, 9, 10, 13 and 15), while SDG 17 (partnerships for the goals) reflects our approach to sustainability and is fundamental to the way we run our business.

For more information about our approach to the UN SDGs see riotinto.com/sustainabilityapproach.

What is important now

Our internal and external stakeholders are broadly aligned on the four highly material ESG topics. Climate change is the most important topic and includes greenhouse gas emissions reduction, climate resilience and adaptation, and just transition. Respecting human rights; cultural and heritage site management; and health, safety and wellbeing are the other three highly material topics.

For our business, the safety and wellbeing of our people remains our highest priority. Biodiversity and ecosystems; business integrity and governance; ESG transparency and disclosure; inclusion, diversity and equity; local community relations, tailings and mineral waste management; and water management are also material topics as we strive to build a sustainable business.

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What will be important in the future

Our internal and external stakeholders feel that climate change will only continue to increase in importance over the next decade. Biodiversity and ecosystems; the impact of technology; respecting human rights; risk management and cybersecurity; business integrity and governance; supply chain transparency; and end-to-end materials management will also increase in importance.

Water management will continue to be an extremely important topic in the future due to the reliance of local communities and our mining operations on this increasingly scarce resource. Managing all these ESG topics well will be integral to our social licence to operate and the success of our business.

Reporting our performance

Our materiality assessment records the threshold at which an issue or topic becomes important enough for us to report on externally. The importance of a topic is based on the significance of its impact on stakeholders. An ESG materiality assessment differs from financial materiality, which may use financial metrics or other quantitative analyses to determine what would be considered a significant or material impact.

As a member of ICMM, we commit to reporting on our ESG performance against the Global Reporting Initiative (GRI) standards and implementing the ICMM Performance Expectations (PEs). The ICMM Mining Principles framework focuses on the implementation of systems and practices related to a broad range of ESG areas. In 2022, all 29 Rio Tinto managed operating and refining assets completed a self-assessment against the ICMM PEs. A self-assessment was also completed for Rio Tinto Corporate. The criteria for prioritising 26 of our 29 operating assets for validation, within the three year cycle (2023-2025), was also disclosed at this time.

In 2023, on-site third-party validations were completed for 12 of our priority operating and refining assets. The validation reports received to date demonstrate a high level of alignment between the self-assessment and validation outcomes, with identification of relevant areas for improvement. Information on the 2022 self-assessment or 2023 validation results are presented in the ICMM PE Summary tab in the *2023 Sustainability Fact Book*. We have continued to improve our reporting to meet additional disclosure requirements, including the ICMM Social and Economic Reporting Framework (SERF). In 2023 we have disclosed our performance against most of the SERF indicators.

The majority of our ESG reporting is incorporated into this *Annual Report* and supplemented by our *2023 Sustainability Fact Book* containing current and historical data on topics including health, safety, environment, climate, communities, human rights, responsible sourcing, ICMM PEs and transparency.

For more information
see our *2023 Sustainability Fact Book* at riotinto.com/sustainabilityreporting.

Governance and assurance

The Sustainability Committee oversees strategies to manage social and environmental risks, including management processes and standards. The Committee reviews the effectiveness of management policies and procedures relating to safety, health, employment practices (apart from remuneration, which is the responsibility of the People & Remuneration Committee), relationships with neighbouring communities, environment, security and human rights, land access, political involvement and sustainable development. Given its strategic significance, climate change is overseen directly by the Board.

For more information
about our Sustainability Committee see pages 111-112.

This year, the Group's auditor KPMG was again engaged to provide the Directors of Rio Tinto with assurance on selected sustainability subject matters. KPMG's limited assurance statement satisfies the requirements of subject matters 1 to 4 of the ICMM assurance procedure.

For more information
about our external auditors and internal assurance see page 109.

Non-financial and sustainability information statement

The ESG section includes information required by regulation in relation to:

- Environmental and climate matters, including Task Force on Climate-related Financial Disclosure (TCFD) disclosures (pages 44-58).
- Our employees (pages 71-74).
- Social matters (pages 66-75).
- Human rights (page 75).
- Corruption and bribery (pages 76-77).

Other related information can be found here:

- Our business model (page 9).
- Principal risks and how they are managed (pages 80-88).
- Non-financial key performance indicators (page 43).

Notes on data

The data summarised in this ESG section relates to calendar years. Unless stated otherwise, parameters are reported for all managed operations without adjustment for equity interests. Where possible, we include data for operations acquired before 1 October of the reporting period. Divested operations are included in data collection processes up until the transfer of management control.

How we report

	Annual Report	Climate change reports[1]	Tax reports[2]	Human rights reports[3]	Sustainability Fact Book
Linking sustainability to purpose and strategy	●	●			
Materiality and material topics	●				
Climate change	●	●			●
Economic contribution	●		●		●
Human rights	●			●	●
Indigenous Peoples	●				●
Memberships and certifications					●
Sustainability data and trends					●

1. Includes our *Climate Change Report* and *2023 Addendum - Scope 1, 2 and 3 Emissions Calculation Methodology.*
2. Includes our *Taxes Paid Report* and *Country-by-Country Report.*
3. Includes our *Modern Slavery Statement* and our *Voluntary Principles on Security and Human Rights Report.*

For more information
see riotinto.com/sustainabilityreporting.

2023 performance against ESG targets

Targets	2023 performance
Reach zero fatalities and eliminate workplace injuries and catastrophic events.	**Zero fatalities at managed operations** (2022: 0 fatalities). – All-injury frequency rate (AIFR) at 0.37 (target: 0.40). (2022: 0.40). – 1.53 million critical risk management (CRM) verifications. (2022: 1.37 million).
Have all of our businesses identify at least one critical health hazard material to their business and demonstrate a year-on-year reduction of exposure to that hazard.	**6 assets achieved an exposure reduction to known health risks** (airborne contaminants and noise). (2022: 9 assets).
Reduce the rate of new occupational illnesses each year.	**27.15% increase in the rate of new occupational illnesses since 2022**
Reduce our absolute Scope 1 and 2 greenhouse gas emissions by 15% by 2025 and by 50% by 2030 (when compared to 2018 levels), and achieve net zero emissions from our operations by 2050.[1]	**5.5% reduction in Scope 1 and 2 greenhouse gas emissions below our 2018 baseline** (2022: 5.2%).
Disclose permitted surface water allocation volumes, annual allocation usage and the estimated surface water allocation catchment runoff from average annual rainfall for all managed operations by 2023. Achieve local water stewardship targets for selected sites by 2023.	**5 of the 7 water stewardship targets attained by 2023** (2022: 5 of 7). For more information about individual water target performance in 2023, see pages 60-61.
Achieve our global Communities and Social Performance (CSP) targets by 2026: – Year-on-year increase in contestable spend sourced from suppliers local[2] to our operations. – All sites to co-manage cultural heritage with communities and knowledge holders by 2026. – 70% of total social investment to be made through strategic, outcomes-focused partnerships by 2026. – All employees in high risk human rights roles to complete job-specific human rights training by 2024. – All employees to complete general human rights training by 2026.	– We sourced 16.8% of contestable spend from suppliers local to our operations. This was a 2.3% increase from 2022. Progress for each product group is included in the *2023 Sustainability Fact Book*. – We independently assessed 25 assets against the cultural heritage co-management maturity framework with 8 assets performing at level 4 (integrated), 7 at level 3 (defined), 9 at level 2 (emerging) and 1 at level 1 (learning)[3]. – Outcome indicator framework and strategic partnering principles were developed and endorsed in 2023 with self-assessment and baseline data to be collected in 2024. – Our human rights team delivered 35 tailored training sessions, targeting 11 assets and 12 functional teams globally. We recorded 2,441 completions of our modern slavery e-learning module, representing 66% of employees and contractors[4] in modern slavery high-risk roles.
Improve diversity[5] in our business by: – Increasing women in the business (including in senior leadership[6]) each year. – Aiming for 50% women in our graduate intake. – Aiming for 30% of our graduate intake to be from places where we are developing new businesses.	– 24.3% of our workforce were women, up 1.4% from 2022. – 25% of executive leaders were women, no change from 2022. – 30.1% of senior leadership were women, up 1.8% from 2022. – 30.8% of Board roles were held by women, up 0.8% from 2022. – 51.6% of our graduate intake were women, down 1.6% from 2022. – 37.6% of our graduate intake were from places where we are developing new businesses[7], up 1.6% from 2022.
Improve our employee engagement and satisfaction.	**1 point increase in our employee satisfaction score (eSAT[8]) since 2022 (from 73 to 74)** (2022: 2 point increase).

1. While we expect to have made financial commitments to abatement projects totalling more than 15% of our emissions by 2025, achieved emissions reductions will lag this.
2. We take a "site-centric" view of the definition of local, which allows operations to establish their own definition, based on a set of common principles. These principles require that each operation, in defining "local" takes into consideration its geographic, social and economic area of impact as well as ownership. For example, suppliers located within the Pilbara region of Western Australia are defined as "local" for Rio Tinto Iron Ore's Pilbara Operations. This approach is consistent with international best practice and aligns with the ICMM Social and Economic Reporting Framework guidance.
3. The cultural heritage co-management maturity framework sets out a maturity model consisting of five levels of maturity – from "learning the practice" to "leading practice". There are six categories against which a site will be evaluated to determine its level of maturity, covering various aspects of cultural heritage management.
4. Contractors refers to category 1, 2 and 3 contractors.
5. From 2021, the definition used to calculate diversity was changed to include people not available for work, and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders), excluding project contractors.
6. We define senior leadership as Managing Directors, General Managers, Group Advisers and Chief Advisors.
7. Identifying with a nationality is not mandatory. More than 48% of our graduates have not formally reported a nationality.
8. eSAT (Employee Satisfaction) is a measure of "how happy an employee is to work at Rio Tinto". It is calculated by averaging the responses on a 1-7 scale and expressing this out of 100.

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Environmental performance

Our purpose is to find better ways to provide the materials the world needs. The low-carbon transition is at the heart of our business strategy: we are focusing on growing production of the materials essential for the energy transition; decarbonising our operations; and partnering with our customers and suppliers to decarbonise our value chains.

Climate change

Our operational emissions targets are ambitious – to reduce emissions by 15% by 2025 and 50% by 2030 relative to 2018 levels, reaching net zero by 2050. Our targets cover more than 95% of our reported Scope 1 and 2 emissions and are aligned with 1.5°C pathways. We adjust our baseline to exclude reductions achieved by divesting assets and to account for acquisitions.

Our definition of net zero applies to our operational (Scope 1 and 2) emissions on an equity basis. To reach net zero we will need to decarbonise our operations as far as technically and commercially practical, and address all the remaining emissions with carbon dioxide removals from the atmosphere and long-term storage.

To tackle our Scope 3 emissions across our value chains we are committed to helping our customers and suppliers achieve their targets a decade earlier – reaching net zero by 2050. In particular, we continue to work with our customers to develop and scale up the technologies to decarbonise steel and aluminium production.

In this section, we comply with the requirements of Listing Rule 9.8.6(8)R by including climate-related financial disclosures consistent with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and recommended disclosures.

In determining our compliance with all 11 of the TCFD recommendations and recommended disclosures, we have considered both Section C of the TCFD Annex entitled "Guidance for All Sectors" and Section E of the TCFD Annex entitled "Supplemental Guidance for Non-Financial Groups". The climate-related financial disclosures made within this section also comply with the requirements of the *Companies Act 2006* as amended by the *Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022*.

Climate change matters are also integrated into other parts of this report, such as the key performance indicators (KPIs), principal risks, and notes to the financial statements. Progress on our Climate Action Plan (CAP) is material to the successful implementation of our Group strategy. This is summarised in the metrics and targets area of this climate change section. For supplementary information, please see our *2023 Climate Change Report* and *2023 Sustainability Fact Book*. We will continually enhance our climate reporting in response to emerging standards and requirements set by the International Sustainability Standards Board and national regulators.

"Many 1.5°C climate change scenarios rely on significant deployment of carbon dioxide removals to get to net zero, which may not be realistic. No single company or country can halt the course of climate change alone, so partnering to reduce emissions is vital."

Jakob Stausholm
Chief Executive



Environmental monitoring. Kennecott, US

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Climate-related governance

A) Describe the board's oversight of climate-related risks and opportunities

B) Describe management's role in assessing and managing climate-related risks and opportunities

Board, committee and management structure related to climate change	Summary of 2023 activities
The Board Climate change is a material and strategic topic for our business and is part of ongoing discussion and analysis at the most senior levels of management and the Board. It is also an important topic when the Board and Executive Committee engage with investors and civil society organisations. The Board approves our overall strategy, policy positions and climate disclosures within this report and the *Climate Change Report*. The Board set the 2025, 2030 and 2050 emissions targets, and monitors performance against targets and operational resilience. The Chair of the Board is responsible for our overall approach to climate change. The Board delegates specific responsibilities to Board committees and the Chief Executive. Climate change and the low-carbon transition are routinely on the Board's agenda, including as part of strategy discussions, risk management, financial reporting and executive remuneration. The Board considers climate-related matters as we develop and implement our strategy and make investment decisions. The low-carbon transition is at the heart of our business strategy and aligned with our four objectives. For additional information, see our Strategic context and Our strategy sections on pages 14-16. **For more information on the Board, their activities, and composition see pages 92-104.**	– Held dedicated meetings to focus on decarbonisation including large-scale renewable projects and repowering our Pacific Aluminium Operations. – Reaffirmed our strategy and engaged with investors and civil society organisations following the publication of our 2022 Climate Change Report. – Approved the 2022 Climate Change Report and climate-related disclosures in the 2022 Annual Report notes to the financial statements.
Sustainability Committee The Sustainability Committee maintains oversight of key sustainability areas that may be impacted by climate change, such as biodiversity and water. This includes assessing the effectiveness of associated controls and ensuring the operational-level resilience of the Group. **For more information see pages 111-112.**	– Received and discussed the following reports: Physical resilience to climate change, Boron water control framework follow-up, Environment performance and maturity update, and Proposed approach to nature commitments.
Audit & Risk Committee The Audit & Risk Committee addresses how climate issues (such as climate policy and our scenarios) impact the financial statements. The committee review all material accounting estimates and judgements relating to financial reporting, including those where climate issues are relevant and also appoint the external auditors, who assure greenhouse gas (GHG) emissions and ensure the effectiveness of the risk management framework. **For more information see page 107-110.**	– Reviewed and approved material climate-related accounting estimates and judgements relating to financial reporting. – Considered the relevance of climate-related risks when preparing and approving the Group's *Annual Report*.
People & Remuneration Committee The People & Remuneration Committee ensures the Group's remuneration structure and policies include climate-related performance metrics and reward individual executives fairly and responsibly. **For more information see page 113-145.**	– Assessed the annual executive performance against climate metrics and approved incentives and remuneration revisions related to the way climate change is incorporated into incentives.

Direct and monitor

Inform and report

Management role

Investment Committee

The Investment Committee reviews and approves the Group's capital expenditure in relation to abatement projects and climate change research and development. Decarbonisation investment decisions are made under a dedicated evaluation framework which considers the value of the investment and impact on cost base, the level of abatement, the maturity of the technology, the competitiveness of the asset and its policy context and alternative options on the pathway to net zero. Projects are also assessed against our approach to a just transition, with consideration to the impact on employees, local communities and industry.

Chief Executive and Executive Committee

The Chief Executive is responsible for delivering the CAP, as approved by the Board, with the Executive Committee supporting this role. Risk management, portfolio reviews, capital investments, annual financial planning and our approach to government engagement integrate our approach to climate change and emissions targets. The annual plan process focuses on the short-term (up to two years). The new growth and decarbonisation strategy is part of the medium term planning process. The Chief Executive leads the strategy process with the Executive Committee each year and, in 2023, reaffirmed the decision to put the low-carbon transition at the heart of our business strategy.

Remuneration: Our Chief Executive's performance objectives in the short-term incentive plan (STIP) includes delivery of the Group's strategy on climate change. These are cascaded down into the annual objectives of relevant members of the Executive Committee, including the Chief Technical Officer, and other members of senior management. Decarbonisation is also included as a performance measure in the long-term incentive plan (LTIP). See pages 119-141 for our Remuneration Policy, 2023 outcomes, and the incorporation of climate-related measures in the LTIP and STIP.

Energy and Climate Team

In 2022, we established a central team, Rio Tinto Energy and Climate (RTEC), to deliver progress on our CAP. This is led by the Chief Decarbonisation Officer, who reports to the Chief Technical Officer and is accountable for all aspects of the CAP. The RTEC team is structured according to the 6+1 programs that drive decarbonisation across our operations.

Two additional teams complete the RTEC organisation: a Decarbonisation Office that monitors and forecasts GHG emissions, tracks investment decisions and coordinates our approach to physical climate risks; and a Climate Policy and Advocacy team. Rio Tinto Commercial drives the approach to Scope 3 emissions, given its responsibility for procurement, shipping and sales to our customers. The Decarbonisation Office prepares a quarterly progress report for the Executive Committee, which includes operational emissions and progress on abatement projects across the 6+1 programs and other areas of our CAP.

Climate-related strategy and risk management

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Strategy

A) Describe the climate-related risks* and opportunities the organisation has identified over the short, medium, and long term.

B) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.

C) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

Risk management

A) Describe the organisation's processes for identifying and assessing climate-related risks.

B) Describe the organisation's processes for managing climate-related risks.

C) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.

* We typically refer to risks as both threats and opportunities, but follow TCFD wording in this section.

Our quantification and assessment of climate-related risks and opportunities is embedded within our Group risk management framework. This includes six core elements that are continually reviewed to ensure that we are effectively managing current risks and preparing for emerging risks.

In 2022, we launched the physical resilience program which included a climate risk and resilience assessment methodology. This guideline provides our assets and product groups with a bottom-up assessment framework to quantify physical climate risk and focuses on the following:

- Climate modelling assumptions: to guide the selection of future emission scenarios and time horizons to support bottom-up risk assessment and analyses.
- A risk assessment process: to identify and evaluate climate-related risks and opportunities.
- A risk management framework: to plan and implement risk responses, communicate risks with stakeholders and maintain and update risk information.

Our three lines of defence provide assurance that risks are effectively managed in line with our policies, standards and procedures. While risk management is the accountability of our leaders, all employees are empowered to identify and manage risks at the point that they arise in their business. For further detail regarding the Group risk management process, the principal risks and uncertainties of the Group and how ESG has been incorporated into these, see pages 78-88.

We use scenarios to identify and assess the climate-related risks and opportunities impacting our business in the, medium and long term. We use market analysis for our short-term outlook rather than the scenarios which provide a longer term view out to 2050. For climate change planning purposes, we define short term as up to two years, medium term as two to ten years and long term as beyond ten years.

Our short-term time frame aligns with our annual planning process. The medium-term time frame aligns to extended planning horizons that align with our growth projects and emissions abatement projects. Our long-term time frame considers the full lifespan of our mining assets and infrastructure, the long-term extent of our operations, and the continued impact climate risks and opportunities are expected to have on the business.

Low-carbon transition strategy and risk management

Through our Group risk assessment process and climate scenario analysis, it is evident that the low-carbon transition poses numerous transitional risks and opportunities for our business.

Based on our analysis of these risks and opportunities, their impact on the Group, and the role played in the transition, we have identified numerous transition-related principal risks and associated opportunities that have been incorporated into our Group risk strategy.

The materiality, and subsequent prioritisation, of each risk has been calculated through assessing the likelihood of an impact occurring as well as the effect this would have on the Group's free cash flow or business value.

The Group's climate change and the low-carbon transition uncertainties, based on our risk management process, have been assessed through the following principal risks:

2. Preparing our Iron Ore business to meet the demand for green steel.
3. Building trusted relationships with communities.
4. Minimising our impact on the environments we work in and building resilience to changes in those environments, including climate change and natural disasters.
7. Delivering on our growth projects.
8. Achieving our decarbonisation targets competitively.
9. Conducting our business with integrity, complying with all laws, regulations, and obligations.

See pages 82-88 where we have highlighted the key regions impacted by these risks, our risk management responses, and the relevant groups with oversight of each process.

The numerous risks and opportunities resulting from the low-carbon transition affect our portfolio in a variety of ways. The table on page 48 provides an overview of the varying impacts that the low-carbon transition has on our overall portfolio.

For more information on financial reporting considerations and sensitivities related to climate change and the low-carbon transition, see the notes to our financial statements on pages 162-165.

Capital allocation and investment framework

Decarbonisation investment is derived from the Group's capital allocation framework and aligned to our 2025 and 2030 Scope 1 and 2 emissions targets.

Our target to reduce emissions by 50% by 2030 relative to 2018 levels remains unchanged. However, we now believe that achieving this will require less capital investment and more operating expenditure. We originally estimated that approximately 3GW of renewable power would be needed to decarbonise our operations in the Pilbara - 1GW to replace gas-fired power generation and 2GW to decarbonise our diesel-based fleets. Carbon reduction from economically viable, large-scale fleet electrification has always been expected post-2030, however delays in the availability of this technology mean that we now do not expect to invest in the same scale of Pilbara renewables pre-2030. We remain committed to developing 1GW of renewable energy capacity in the Pilbara, however, we now estimate that 600 to 700MW capacity is required by 2030.

To accelerate our emissions abatement, we will take advantage of commercial solutions that can be ready in the market this decade and avoid lengthy project development schedules. Therefore, although our 2030 emissions target remains unchanged, we now believe that this can be met with $5bn-$6bn of capital investment, down from previous guidance of $7.5bn. This excludes capitalised RECs, voluntary offsets and compliance offset costs.

The table below shows capital and operational expenditure on decarbonisation. Group figures have been disclosed on page 173-174 and 184.

Decarbonisation expenditure

Capital expenditure on abatement projects

$94m

(2022: $86m)

Carbon credits and renewable energy certificates (RECs) (intangible assets)

$61m

(2022: $33m)

Operational expenditure

$234m

(2022: $138m)

Investments

$36m

(2022: $42m)[1]

1. Our 2022 figures have been restated to include Office of Chief Scientist and battery material investments.

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Climate change scenarios

Our scenario approach is reviewed every year as part of our Group strategy engagement with the Board. We have not fundamentally changed the scenarios presented in 2022 or the analysis undertaken in early 2023 to evaluate the resilience of our business under different transition-related scenarios. Our scenario framework focuses on two prevailing macro-level business concerns: the rate of global economic growth and the pace of climate action, each heavily influenced by global geopolitics and governance. Our two core scenarios (Competitive Leadership and Fragmented Leadership) are used to generate a central reference case for commodity forecasts and valuations. Additional scenarios (including our Aspirational Leadership scenario) are used to further evaluate the positive and negative effects of the energy transition across our portfolio and stress test investment decisions. We have designed our Aspirational Leadership scenario with the aim or reaching net zero by 2050, to help us better understand the world on a 1.5°C pathway and what this would mean for our business.

We do not undertake climate modelling ourselves, but determine the approximate temperature outcomes in 2100 by comparing the emissions pathways to 2050 in each of our scenarios with the Shared Socio-economic Pathways (SSP) set out in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report. We also consider the carbon budgets associated with different temperature outcomes. The emissions pathway of Aspirational Leadership is most closely aligned with the IPCC's shared socio-economic pathway 1 (SSP1-1.9) with emissions reaching net zero by 2050, which limits warming to 1.5°C. The emissions pathway in Competitive Leadership limits the global temperature increase to 1.6-2.0°C (SSP1-2.6). Fragmented Leadership's emissions pathway is between SSP1-2.6 and SSP2-4.5, so the global temperature increase is less than 2.5°C by 2100. For physical risk, we also use the IPCC's highest emissions scenario (SSP5-8.5) in our bottom-up asset-level physical risk and resilience assessments and other scenarios for our financial risk modelling (see page 163 for more information). So, when assessing risks and opportunities to the business we use a 1.5°C-aligned scenario to assess a fast low-carbon transition and we use the highest emissions and high temperature outcome scenario (SSP5-8.5) to assess physical climate risks. While there are many uncertainties about how a changing climate may negatively affect gross domestic product (GDP) growth, physical impacts of climate change are integrated into the GDP growth assumptions in our three scenarios. These are most significant in Fragmented Leadership and least significant in Aspirational Leadership.

Aspirational Leadership

Aspirational Leadership reflects our view of a world of high growth, significant social change and accelerated climate action with all countries setting new Nationally Determined Contributions (NDCs) that collectively achieve net zero emissions by mid-century. We believe that despite geopolitical differences, major economies tend to work together through multilateral frameworks and proactively work towards limiting temperature change to 1.5°C by 2100. While there may be temperature overshoot in many 1.5°C scenarios, there is limited risk of this in Aspirational Leadership. Although Aspirational and Competitive Leadership share similar GDP growth, higher carbon prices under Aspirational Leadership result in lower global emissions.

Competitive Leadership

Competitive Leadership reflects a world of high growth and strong climate action post-2030, with change driven by policy and competitive innovation. A proactive reform environment encourages stronger business innovation, higher investment and improved productivity. This allows global GDP to continue growing at close to recent historical levels with a growing contribution from India and other developing countries. Carbon emissions are slightly higher than those in Fragmented Leadership by 2030 due to increased GDP growth. However, these decline over time as carbon prices continue to rise post-2030. Nations drive toward achieving their Glasgow Climate Pact commitments, resulting in global GHG emissions falling from 54Gt CO_2e today to 21Gt in 2050.

Fragmented Leadership

Fragmented Leadership is characterised by limited progress on policy reform with volatile low growth. The business environment is defined by weak final demand and greater uncertainty, and requires close ties with governments to manage risk. It is a world defined by geopolitical and domestic tensions, spurred by populist agendas that offer leaders little opportunity to build consensus around reform and environmental agendas. Nations eventually achieve their 2030 NDCs as agreed in Paris in 2015, but abandon further progress resulting in flat global emissions post-2030. Carbon prices track alongside Competitive Leadership levels until 2030, but remain constant subsequent to this, resulting in increased global emissions.

Key scenario metrics[1]

	Aspirational Leadership		Competitive Leadership		Fragmented Leadership	
Global temperature outcome in 2100	1.5°C		1.6-2.0°C		2.1-2.5°C	
	2030 Outcome	2021-2050 CAGR	2030 Outcome	2021-2050 CAGR	2030 Outcome	2021-2050 CAGR
Global average carbon prices in 2030, (2021 US$/t CO_2e)	59	9 %	42	8 %	42	3 %
Global emissions, Gt CO_2e	40	-11%[2]	50	-4 %	50	-1 %
Global energy demand, mtoe	10,500	0.3 %	11,000	1 %	10,300	0.2 %
Global GDP growth (PPP), %	4 %	4 %	4 %	4 %	3 %	2 %
Energy intensity of global GDP, toe/$1,000 2015 PPP	0.1	-3 %	0.1	-3 %	0.1	-2 %
Carbon intensity of total energy, gCO_2/MJ	40	-13 %	45	-5 %	45	-2 %
Global energy from electricity, mtoe	2,900	4 %	2,900	4 %	2,700	2 %
Global wind and solar capacity, GW	9,800	11 %	7,500	10 %	5,700	7 %
EV penetration by 2030 (%)[3]	70	11 %	60	10 %	40	10 %
Finished steel demand (relative to 2021)	>110	1 %	>110	1 %	<100	– %
Aluminium demand (relative to 2021)	>130	2 %	>130	2 %	>120	1 %
Copper demand (relative to 2021)	>150	3 %	>150	3 %	>130	2 %

1. These metrics have been extracted from our scenarios modelling and have been rounded to avoid the impression that they are precise predictions. Mtoe = Million tonnes of oil equivalent, PPP = purchasing power parity.
2. 11% p.a. decline in CO_2 emissions based on 2021-49 period in net zero pathway (by 2050), emissions in 2030 are highest in Competitive Leadership due to high GDP growth.
3. 2021-50 compound annual growth rate (CAGR) based on global electric vehicle (EV) sales.

Our overall portfolio risks and opportunities in the low-carbon transition

Key

High opportunity | Moderate opportunity | Moderate risk | High risk

S Short term (less than 2 years) | M Medium term (2–10 years) | ML Medium and long term | L Long term (beyond 10 years) | No risk

	Aspirational Leadership	Competitive Leadership	Fragmented Leadership
Iron Ore	**Short term:** There is limited transition risk or opportunity to the Iron Ore business in the short term as the impacts of carbon pricing regulation is relatively low. Slow transition in the steel sector towards low-carbon technology limits risk to Pilbara operations. GDP growth has a stronger influence on iron ore price than climate change policy		
	M Lower medium-term demand versus Competitive Leadership due to higher scrap-use affecting Pilbara products (recovers post 2040)	ML Strong global GDP growth and continued urbanisation support iron ore demand including for Pilbara products	ML Slowdown in China and global GDP growth erode demand, creating margin pressure across the portfolio
	L Large increases in carbon pricing and penalties drive demand for high-grade iron ore supporting Simandou and Iron Ore Company of Canada (IOC)	ML Stronger customer preference for Simandou and IOC ores for lower-carbon traditional and emerging steelmaking	L Smaller regional increases in carbon prices relative to the other scenarios help preserve longer-term margins for low-cost, Tier 1 Pilbara ores
Aluminium	S **Short term:** Current carbon pricing regulation raises operational costs for carbon intensive assets, notably our refineries and smelters in Eastern Australia. Limited transition related short-term demand growth for aluminium		
	M Higher carbon penalties put pressure on emissions intensive refining and smelting operations	ML Competition to secure large-scale firmed renewable electricity to repower coal-based Pacific Aluminium Operations	ML China slowdown and production cap on primary aluminium reduce demand for seaborne bauxite
	ML Strong GDP growth and EV penetration support demand with value upside for hydro-based smelters (more pronounced in Aspirational Leadership)		L Slowing demand and low-carbon penalties greatly reduce value upside of ELYSIS™ and hydro-based smelters
	L Higher carbon penalties support ELYSIS™, hydro-based smelting assets in Quebec and repowering projects in Australia		
Copper	S **Short term:** limited risk of carbon pricing regulation on copper operations given their location in the US, Mongolia and Chile. Some transition related short-term demand growth for copper given increasing electrification energy system		
	ML Strong GDP growth and accelerated EV penetration and global electrification (backed by renewable electricity) support demand growth and margins across the portfolio		ML Lower demand growth and poor carbon policy reduce margins and upside for low-carbon smelting and refining (Kennecott and Escondida)
	ML Pressure to meet rapid demand growth supports growth projects (and Nuton™) if they satisfy environmental and social requirements		
	ML Environmental and social approval hurdles for new projects including Resolution Copper and La Granja		ML Geopolitical tensions could reduce joint venture partnership opportunities and create potential engineering, procurement and construction and logistical issues
Minerals	S **Short term:** Potential for carbon penalties to raise operational costs for emissions intensive minerals operations in Canada and South Africa. Some transition-related short-term demand growth for minerals that support electrification		
	ML Accelerated uptake of EVs and battery storage solutions supports growth projects (Rincon and Tamarack joint venture)	ML Strong outlook for battery materials but international competition for greenfield and mergers and acquisitions opportunities limit growth options	ML Reduced battery material growth opportunities but resilience from operating high-grade TiO_2 assets
	ML Increasing ESG scrutiny of new projects and more stringent regulations		ML Supply disruption risks and volatility bolster demand for precious metal and critical mineral by-products
	ML Potential for carbon penalties to raise operational costs for emissions intensive downstream processing of TiO_2 and battery materials		

Our approach: decarbonisation and producing materials needed for the low-carbon transition

The energy transition is a key driver of commodity demand today and will continue to be so over the next two decades. This will come on top of the demand growth from continued urbanisation and industrialisation (particularly in emerging economies) and it will trigger a new phase of demand growth in developed economies, which have faced saturating demand over the past two decades.

While the low-carbon transition is expected to create additional demand for our commodities (and therefore an opportunity to provide transition materials), the outlook for demand varies significantly between our scenarios as a function of GDP growth, technology uptake, and scrap supply and use. Different demand trajectories, combined with industry supply responses and global carbon policy evolution, determine the market prices for our three major commodities and implications for our Group-level and asset valuations.

We aim to invest in quality assets that give robust returns under our scenarios, creating a resilient portfolio with a significant upside to the energy transition. We have continued to invest in our copper portfolio through traditional assets such as Oyu Tolgoi and Kennecott, as well as early-stage application of our Nuton™ copper leaching technology.

In aluminium, we continue to develop emissions-free smelting technology with ELYSIS™ trials. Significant further research and development is needed, including to scale up the technology towards larger commercial-sized cells, before the broader implementation of ELYSIS™ is possible. For this reason, we do not expect this new technology to achieve emissions abatement across our smelters before 2030.

We believe that global iron ore demand will remain strong with a premium on higher grade ore needed for the production of green steel in Direct Reduction Iron-Electric Arc Furnace (DRI-EAF) steel processing. This includes the higher grade ores from the IOC and our Simandou project. Demand for these ores increases in our Aspirational Leadership and Competitive Leadership scenarios.

In other commodities, we are evaluating a range of opportunities to produce lithium as well as making demonstrable progress on various critical mineral developments that are essential for the energy transition.

The pace of technological development is uncertain, which could delay or increase the cost of our decarbonisation efforts as well as the ability to fully capitalise on transition opportunities.

For additional information on the resilience of our portfolio, see page 163.

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Physical climate risk and resilience

Our business and wider value chain experience a range of impacts associated with extreme weather. As the climate continues to change, so will the frequency and magnitude of events and impacts associated with extreme events. Proactive risk management is crucial for us to operate safely, productively, and profitably, well into the future.

Physical climate risk refers to the adverse impacts that arise from extreme weather and changes in climatic conditions and are typically categorised into two main types:

- **Acute climate risks** involve sudden and extreme events that can lead to rapid and severe impacts. Examples include tropical cyclones, wildfires, heatwaves, extreme rainfall, flooding and hail. Acute risks can disrupt operations, damage infrastructure, impact our people and communities, and result in production downtime and increased operational costs.
- **Chronic climate risks** manifest gradually over time, encompassing challenges such as rising sea levels, increasing air temperatures, and longer-term changes in precipitation patterns. Chronic risks are characterised by a slower onset and progression, requiring longer-term adaptation strategies and planning. Chronic risks can result in reduced resource availability, increased costs (such as water and energy), impacts on productivity and health and wellbeing of our workforce, and can potentially affect supply chain resilience.

The combination of these two types of climate risk can lead to a compound extreme (such as a landfalling tropical cyclone coupled with higher sea levels) and can accentuate related impacts.

Building resilience to a changing climate means having the capacity to anticipate, adapt to, and recover from the impacts of extreme weather events, ensuring the long-term viability of our assets, our people and communities, and broader value chains.

Our strategy and approach

Taking and managing risk responsibly is essential to operating and growing our business safely, effectively, and sustainably. Enhancing our resilience to physical climate risk is an important component of our approach to climate change and is embedded within our risk management and internal controls framework. Our approach to physical climate risk and resilience is centred around four pillars that guide our risk management and work on adaptation, and is summarised below.

Our approach

Weather/climate analytics and insights

- **Short (days) and medium (weeks-months) term:** weather forecasting, climate outlooks and natural catastrophe models.
- **Long term (decades):** downscaled latest-generation global climate models considering a range of future emission scenarios and time horizons.
- **Location information:** exposure and vulnerability.

Physical risk and resilience assessment

- **Identify:** determine location-specific physical climate risks (threats and opportunities) considering present-day and short, medium and long-term time horizons and multiple emission scenarios.
- **Evaluate:** assess identified risks in terms of their potential consequence (financial and non-financial) and likelihood.
- **Prioritise:** prioritise risks based on materiality.

Resilience planning and adaptation

- **Options:** explore and identify the most appropriate resilience and adaptation measures to mitigate risk.
- **Consider:** cost-benefit, principles of adaptive management, modularity and long-term sustainability.
- **Prioritise:** critical and high-impact measures for implementation.
- **Decide and implement:** decide and implement adaptation measures.

Monitoring and evaluation

- **Accountability:** clearly define roles and responsibilities.
- **Metrics:** evaluate performance against established metrics and indicators to assess success and impact.
- **Review:** revisit this approach regularly, or if there is a material change to the economic, social, environmental, or physical context of the subject/risk.



Weather/climate analytics and insights

We use the latest-generation weather and climate data products to gain quantitative insights into short, medium and long-term weather and climate risks. The strategic implementation of these advanced tools help manage physical climate risks proactively across our geographically diverse sites and supply chains. Across the Group, we utilise the following tools, the combination of which cater for time horizons and weather and climate risks from hours in the future (operational resilience and short-term decision-making) to decades (long-term strategic and scenario planning).

Product	Time horizon	Variables	Detail and use
Weather forecasts	Short term: hours to days	Atmospheric conditions: temperature, precipitation, wind	Weather and severe weather forecasts used at site-level to inform short-term operational planning and trigger emergency response planning.
Severe weather forecasts	Short term: hours to days	Extreme events: storms, tropical cyclones, flash floods, hail, lightning	
Climate outlooks	Short term: weeks to months	Atmospheric conditions (rainfall outlooks) and extreme events (tropical cyclone outlooks)	Climate outlooks inform operational mine planning and bolster operational resilience and rainy season preparations across our portfolio.
Catastrophe modelling	Short, medium and long term (years to decades)	Extreme events: tropical cyclone, flood	Modelling to estimate potential financial losses and damages that can result from extreme climate events like tropical cyclones and floods.
Climate change projections	Long term: decades	Atmospheric, climatic, oceanic and extreme events	Long-term projections of how acute and chronic hazards may change in the future. Projections are used to inform our asset-level and Global Industry Standard on Tailings Management (GISTM) physical risk and resilience assessments, operations, closure planning and execution, exploration, projects, mine water management, and Group finance and insurance.

Climate change projections are available for every site in our portfolio (including non-managed assets). Downscaled climate change projections are available for over 60 climate change variables and future emission scenarios from the IPCC Coupled Model Intercomparison Project 5 and 6 (CMIP5 and CMIP6). We have completed flood risk modelling for 100% of our managed and non-managed assets considering three future emission scenarios and time horizons spanning present-day, medium and long-term time horizons.

Physical risk and resilience assessment

Our approach to quantifying and assessing physical risk (threats) and resilience is both targeted and systematic, spanning from individual assets (bottom-up) to the Group level (top-down). We first identify climate risks and opportunities across varying and applicable time horizons (present day/short term, medium and long term) and emission scenarios. Next, we evaluate their potential financial and non-financial consequences and likelihood and we prioritise these risks by materiality for effective risk management and appropriate resource allocation. This process is integrated within the Rio Tinto Risk Management Information System. The scope of our assessments includes our operations and the environments in which we operate, our people, the communities that host us, and our supply chain.

Resilience planning and adaptation

Each site, operating context and location is unique. Our resilience planning identifies the most appropriate resilience measures to manage climate risks and adapt to them. This can explore multiple options, weighing up cost-benefit, alongside principles of adaptive management, modularity and sustainability. An investment decision is comprehensively evaluated before funding approval. This includes prioritising projects and engaging key stakeholders to seek alignment on the investment and its implementation.

Monitoring and evaluation

Risks are actively and regularly monitored with clearly defined roles and responsibilities. Adaptation is a continuous and evolving process and we continually evaluate the latest-generation of climate change data and emerging technologies to assess the risk profile of our assets and infrastructure over time. Where a material change to the economic, social, environmental or physical context of the risk has been identified, the assessment process is revisited.

Physical climate risks and impacts

Combining climate insights with a top-down assessment, we have identified eight Group-level material physical climate risks. Identifying and evaluating our most material challenges and significant risks empowers us to implement targeted controls, adaptation strategies and risk management plans, to safeguard our business and ensure a safe, profitable and productive operation in a rapidly changing climate.

While the emergence of climate-related risks varies in response to the evolving nature of the underlying hazards, many of these risks could manifest today. For example, an extreme heat event could impact the health, safety and productivity of our workforce in the short term. However, increases in future temperature means that risks may become more material. The summary table on page 51 takes into account both the short-term risk that could emerge during current operations as well as the long-term risk associated with climate change.

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Key

Short term (0–2 years)

Medium term (2–10 years)

Long term (10+ years)

Risk, impact and time horizon	Environmental triggers	Risk management
Tailings storage facility (TSF) containment breach/failure due to geotechnical instability or significant erosion event	Extreme rainfall, flooding	Our facilities comply with local laws and regulations and have risk management protocols in place, including a Group safety standard for tailings and water storage facilities. We regularly update this standard and undergo internal and external assurance checks. Our operational TSFs have, or are developing, tailings response plans and follow strict business resilience and communications protocols. In accordance with the relevant climate change requirements from the GISTM, all TSFs will conduct a climate change resilience assessment by August 2025.
Water shortages, supply and availability impacting operations and production, water treatment and environmental compliance, dust control and community relations	Rainfall, temperature	We use a water risk framework to identify, assess and manage water risks across our portfolio of managed operations. For more information on the water risk framework, see page 59. The framework covers four themes, one of which relates to water supply (water resource). The supply theme requires us to consider whether sufficient water is available to supply both our operational demands and the demands of other stakeholders within the broader catchment, under the range of conditions that are likely to occur over the asset's life. We apply rigorous standards and processes to ensure effective controls are in place at all sites. This includes our Group water quality protection and water management standard, and a standardised Group water management control library which describes all controls identified to manage our water risks. Asset-specific climate change risk and resilience assessments further enable continued improvement of water risk management over time.
Damage to critical coastal infrastructure (shipping berths, ship loaders, stackers/reclaimers, conveyors) resulting in operational and supply chain disruption	Tropical cyclone/ storm, wind, storm surge	Our coastal infrastructure is designed to withstand the wind loading and other impacts associated with extreme events, including severe tropical cyclones. Established business resilience management plans offer frameworks for response, continuity, and recovery in the event of a natural catastrophe scenario, aiming to minimise damage and resume operations swiftly. Our engineering risk assessment program, including asset-level critical risk assessments, considers natural catastrophe modelling and associated risks, if appropriate.
Damage and outages of critical electrical (motors, generators, cooling systems) **and power** (substations, transformers, transmission lines) **infrastructure**	Tropical cyclone/ storm, extreme rainfall, flooding, extreme temperatures, lightning	Electrical and power infrastructure is designed in accordance with local engineering and design standards and internal electrical safety standards and is considered in our asset-specific climate change risk and resilience assessments. Flood risk modelling (surface water, riverine and coastal inundation) incorporating future climate change projections has been completed across our portfolio of managed and non-managed operations.
Damage to critical mining and production infrastructure (eg fixed plant, conveyors) resulting in operational disruption	Tropical cyclone/ storm, extreme rainfall and/or flooding	Critical mining and production infrastructure is designed in accordance with local engineering and design standards and are considered in our asset-specific climate change risk and resilience assessments. Assets located in tropical cyclone-affected regions have appropriate controls to minimise damage and operational downtime. Flood risk modelling (surface water, riverine and coastal inundation) incorporating future climate change projections has been completed across our portfolio of managed and non-managed operations.
Health and safety and productivity of workforce	Extreme heat	Controls are in place to manage the risk of extreme heat for our workforce, including adequate acclimatisation prior to commencing work. Those undertaking high-risk heat tasks are monitored daily for signs or symptoms of heat illness/stress. Operator checklists ensure adequate hydration and work area management. Provision is made for cool rest areas with access to cool drinking water. Our workforce is able to self-pace their workload ensuring regular work/rest breaks.
Disruption to transport routes (maritime, rail, air and road access) **and supply chain** (supplies and critical spares and access to direct customers)	Tropical cyclone/ storm, extreme heat, extreme rainfall, flooding	We are working to better understand the interdependencies across our entire operation. In 2023, we operationalised analytics that provides real-time natural hazard impacts for over 50% of our tier 1-3 goods suppliers. Being alerted of potential supply disruption in real-time allows our teams to make informed decisions to reduce supply chain disruption. This work aims to identify critical components of our product group supply chains and manage the potential adverse impacts from physical climate risk.
Acute and chronic climate change impacting closure objectives	Tropical cyclones/ storms, temperature, rainfall, flooding, sea level rise	The physical impacts of climate change are considered when planning and executing closure. Latest-generation climate change projections specific to the site are used to inform appropriate landform design, water management and vegetation selection. This is to support modelling as per local regulatory requirements and internal closure standards. Ongoing and regular monitoring and maintenance of the site is essential to ensure the effectiveness of closure measures, including monitoring water quality, soil erosion, vegetation growth and any potential contamination or instability issues.

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Climate-related metrics and targets

A) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.

B) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.

C) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

We have identified various metrics to monitor our climate-related risks, opportunities and targets. Our decarbonisation strategy is monitored by tracking progress on our abatement projects and reporting Scope 1 and 2 emissions. On Scope 3 emissions, we track our customer engagement on decarbonisation, progress on individual projects and partnerships as well as our emissions.

We provide metrics for transition-related opportunities (the increased demand for transition materials) on page 56. Physical risks metrics include the financial exposure metric and annualised damage metric on pages 57-58.

We have also disclosed other ESG-related KPIs, metrics and targets that integrate with our objective of achieving impeccable ESG credentials within the respective Environmental, Social, and Governance performance sections of this *Annual Report*. A summary of these metrics is found on page 43 with other Group KPIs highlighted on pages 20-22.

Scope 1 and 2: Operational emissions targets aligned with 1.5°C

In 2023, we updated our Scope 2 emissions reporting methodology to align with improved and evolving global GHG emissions reporting standards. Our primary metric for Group emissions is a market-based methodology and we have restated our baseline and current emissions. Further detail on this change in reporting and the implications for our emissions baseline is available in our *2023 Addendum - Scope 1, 2 and 3 Emissions Methodology* report.

While there is no universal standard for determining the alignment of targets with the Paris Agreement goals, we conclude that our Scope 1 and 2 targets for 2030 are aligned with efforts to limit warming to 1.5°C. In 2021, KPMG provided limited assurance over the alignment of our Scope 1 and 2 targets with efforts to limit warming to 1.5°C. They also provided assurance of the roadmap to delivering those targets (as set out in our *2021 Climate Change Report*). KPMG provide assurance over our 2023 reporting of progress on our Climate Action Plan (CAP) commitments as well as on our 2023 Scope 1, 2 and 3 emissions.

Current year progress and update on 2025 target

Our Scope 1 and 2 emissions were 32.6Mt CO_2e in 2023. This is 6% below our 2018 baseline of 34.5Mt CO_2e and slightly below our adjusted 2022 emissions of 32.7Mt CO_2e (adjusted for acquisitions). Abatement delivered by our projects in 2023 exceeded emissions growth from higher production giving a slight reduction in emissions on a like for like basis.

Our 2023 emissions were slightly higher than our actual 2022 emissions total of 32.3Mt CO_2e due to the recent acquisitions of additional equity in OT and MRN.

Against a backdrop of rising production, the emissions reductions achieved since 2018 are mostly the result of decarbonising power. These include PPAs at Escondida and the purchase of renewable energy certificates (RECs) at our Kennecott and Oyu Tolgoi copper operations.

The scale of our commitments on abatement projects has increased rapidly since we reset our Scope 1 and 2 emissions targets in October 2021. In 2023, we have made project commitments which deliver abatement of around 2Mt CO_2e per year, mostly in renewable energy contracts and certificates, and biofuels deployment.

By 2025 we expect to have made financial commitments to abatement projects that will achieve more than 15% of Group emissions. However, our actual emissions abatement will lag this.

These delays are the result of a range of factors including engineering and construction timelines, pace of development related to new technology and energy systems in the locations we operate, and the need to carefully integrate our ambitions with the needs of our local communities and stakeholder groups. We also need additional abatement to address underlying emissions growth as our production plans evolve.

Progress to our 2030 target

Between now and 2030, the most significant opportunities to reduce our Scope 1 and 2 emissions are to switch the electricity we generate or purchase to renewables, and to address process heat emissions from our alumina refineries.

To reach our 2030 goals, our single largest lever - accounting for around one-quarter of our emissions - is to develop a competitive renewable energy solution for the Boyne and Tomago aluminium smelters in our Pacific Aluminium Operations (PacOps). In December 2023, we signed a PPA to buy all the electricity, and associated green products to be generated in the future, from the 1.1GW Upper Calliope Solar Farm project, which if combined with more renewable power and suitable firming, transmission and industrial policy, could provide part of a solution to repower Rio Tinto's three Gladstone production assets (Boyne aluminium smelter, Yarwun alumina refinery and the Queensland Alumina Limited (QAL) alumina refinery). Once approved and developed, this solar project has the potential to reduce operating carbon emissions by 1.8Mt per year.

We must also execute other key projects in our pipeline related to renewable electricity contracts and alumina processing heat reductions to meet our 2030 target.

We expect to make financial commitments before the end of the decade that will result in structural abatement of our portfolio beyond 2030. This demonstrates our continued commitment towards our net zero goal.

In 2023, we built a 5MW solar plant pilot project at Kennecott Copper. We approved, subject to regulatory approvals, a 12.4MW solar system and a 2.1MWh battery storage system via long-term PPAs for Amrun. There have been continued discussions on the proposed coastal Pilbara solar photovoltaic with stakeholders and we progressed studies for further solar and wind developments.

In alumina processing, we have developed a decarbonisation energy strategy for Yarwun and QAL refineries. We have progressed our double digestion pre-feasibility study at QAL which includes the construction and commissioning of a pilot plant to provide technical inputs to support the study. Electric boiler feasibility studies have progressed at Vaudreuil and we have also approved the Yarwun Hydrogen Calcination Pilot Demonstration Program. .

Voltalia began Phase 1 construction of a 130MW solar farm for Richards Bay Minerals (via PPA) and construction has also commenced on the 16MW Phase 2 Wind project at QIT Madagascar Minerals.

In the Pilbara, we remain committed to building 1GW of renewable energy capacity. However, due to the extended timeline for deployment of battery electric haulage solutions, we now estimate that 600MW to 700MW capacity is required by 2030.

We have completed the commercial and technical due diligence of the submissions for supply of renewable electricity to Gladstone aluminium assets. In 2024, we aim to progress renewable energy supply for Boyne Smelter, launch a Request for Proposal for renewable energy projects for Tomago, and seek renewable energy and storage capacity for Tranche 1 of electrification at the Gladstone alumina refineries.

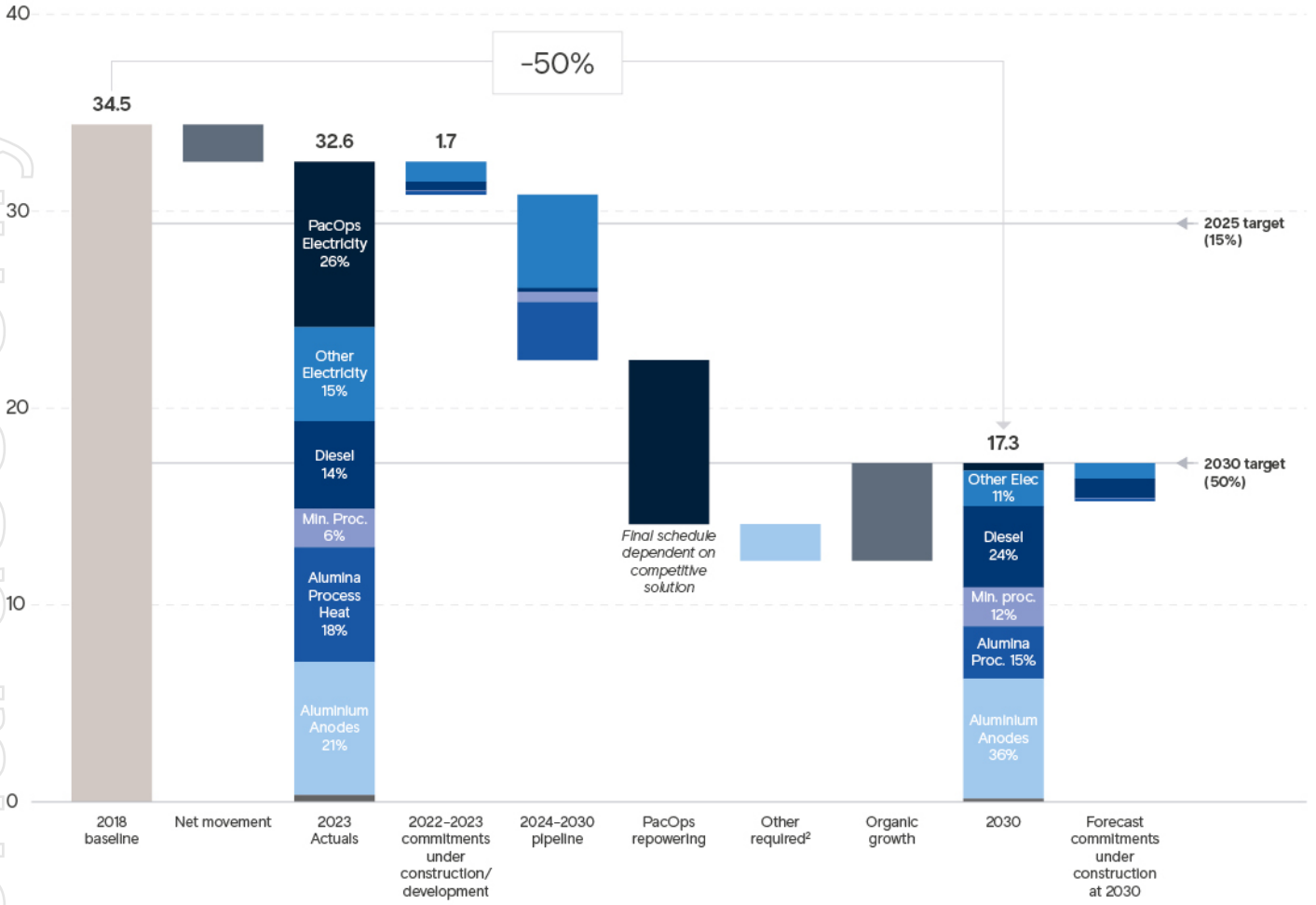
While prioritising emissions reductions at our operations, we are also investing in nature-based solutions (NbS) that can bring benefits to people, nature and climate. We may retire high quality carbon credits generated by these projects towards our 2030 targets. This will complement our abatement project portfolio – which aims to reduce operational emissions by 50% by 2030 – and support our compliance with carbon pricing regulation such as the Safeguard Mechanism in Australia. Our emissions reporting will continue to transparently distinguish between our underlying operational emissions, the volume and type of carbon credits retired and net Group emissions.

In 2023, our net emissions total does not include 86,000 ACCUs retired for compliance with the Safeguard Mechanism for the period 2021-22. We expect to include ACCUs in our net emissions figure from 2024 onwards.

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Pathway to our 2030 Scope 1 and 2 emissions target

(Mt CO_2e, equity basis)[1]



Note: small differences in chart attributable to rounding.

1. Restated emissions due to Scope 2 methodology changes. Data represent gross Scope 1 and 2 emissions and direct abatement projects.
2. "Other required" will flex over time based on abatement project delivery, growth, closures and asset changes.

Scope 3: Partnering to reduce the carbon footprint of our value chains

In 2023, our Scope 3 emissions were 578.1Mt CO_2e (equity basis), approximately 18 times higher than our Scope 1 and 2 emissions. Most of these emissions (94%) stem from customer processing of our products, particularly iron ore (69%) and bauxite and alumina (22%).

Scope 3 processing emissions related to our iron ore rose from 386.6Mt CO_2e in 2022 to 399.9Mt CO_2e in 2023 primarily due to an increase in production.

Downstream processing emissions from bauxite and alumina decreased from 147.3Mt CO_2e in 2022 to 129.8Mt CO_2e mostly as a result of reduced emission intensities related to aluminium smelting in China.

We have seen a significant increase in the number of our customers setting public targets for their Scope 1 and 2 emissions (our Scope 3). About 53% of our total iron ore sales are now to steel producers with existing public targets to reach net zero by 2050, up from about 50% in 2022 and 28% in 2021. Meanwhile, nearly 40% of our bauxite sales are to customers with net zero emissions targets, though only 13% of this is to companies aiming for net zero by 2050. As these numbers rise, we expect to enhance our ability to partner through the value chain to achieve our common sustainability objectives.

As things stand today, our analysis of our customers' targets and their governments' commitments to reduce their emissions, shows a trajectory for those processing emissions that approaches net zero by around 2060.

We are committed to partner with our customers and suppliers to find better ways to help them achieve their targets a decade earlier – reaching net zero by 2050.

To do this, we are investing in the development of breakthrough technologies aiming to help decarbonise our value chains and upgrading our ores to be suitable for these.

As the world's largest iron ore producer, we have a key role to play in decarbonising the steel industry. We are currently working with over 40 partners across 50 projects in 10 countries. Supported by research on our ore bodies, our objective is to unlock the most sustainable and economic pathways for our iron ores.

To reduce our Scope 3 emissions, we have defined 4+2 focus areas to address our Scope 3 emissions. These include our four most significant categories considering the magnitude of emissions and our ability to drive meaningful incremental impact – steel, alumina refining, shipping and procurement decarbonisation. In parallel, we are also working on two transversal programs aimed at leveraging our size and scale to support collective industry and policy action and enhancing emissions transparency across our value chains.

Steel value chain: We are actively working with our customers to help reduce their carbon emissions from the current blast furnace process. We have progressed the design plan of the Baowu Meishan microwave lump drying pilot plant and are also testing increased lump usage in the blast furnace with POSCO and Zenith. An economically viable carbon capture technology with Shougang that could capture blast furnace gas is also currently in development.

As part of our focus on emerging pathways, we aim to utilise our high-grade iron ores to accelerate the early proliferation of low-carbon technologies. During the year, we signed a multi-year agreement to supply high grade direct reduction iron ore pellets from IOC operations to H_2 Green Steel's integrated steel plant. We are also evaluating a portfolio of options in energy-advantaged regions (Canada, US, Europe, Australia, and the Middle East) to accelerate the build-out of natural gas and, eventually, hydrogen shaft furnace solutions.

Due to the scarce availability of high-grade ore, the main focus of our research and development is on a range of new technologies that unlock competitive low-carbon pathways for low and medium-grade iron ores.

We are working to solve the key constraints to this, notably removing impurities found in low-mid grade iron ores prior to/during iron and steel making.

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We are currently evaluating the extent to which impurities can be economically removed from our Pilbara blend ores prior to processing and have completed mineral resource and inventory reviews to understand how much of our future reserves are suitable for upgrading. Our detailed feasibility study related to Biolron™ has been completed and we have progressed research on the pelletisation of Pilbara ores.

In 2023, we spent $28 million on steel decarbonisation initiatives, and have set specific action-oriented targets for steel decarbonisation.

We estimate that we will spend $100 million on steel decarbonisation in 2024. Approximately one third of this will be capital expenditure on Biolron™ (subject to approvals and technical feasibility), with the remainder being operational expenditure on our other partnerships.

Aluminium value chain: The majority of our product is processed in China using coal-fired refining and smelting processes, where we have little influence over the power source for these electricity grids. Because of this, our short-to-medium-term focus is to help our customers improve the alumina refining process to increase energy efficiency and optimise the use of our bauxite. This is mostly via sweetening and improved digestion and renewable energy for heat source via hydrogen calcination and electric boilers in the longer term.

In 2023 we worked with three key customers representing more than 47% of our bauxite sales, to shortlist potential areas for future collaboration and we are now developing action plans to collaborate in priority ESG areas.

Procurement: Due to the nature of our businesses, many of our purchased inputs are from hard-to-abate sectors, such as caustic, coke, pitch and steel. In 2023 we completed a study to understand the sources of our procurement-related emissions. This enhanced our understanding of the sources and nature of our procurement-related emissions, including our highest emitting categories and suppliers, and potential abatement solutions.

Shipping: Our Scope 3 emissions from shipping and logistics are 9.2Mt CO_2e. We have achieved a 37% emissions intensity reduction relative to 2008 by incorporating larger, more efficient vessels such as Newcastlemaxes into our fleet, implementing various design improvements and technical modifications, and by ensuring the implementation of speed and route optimisation measures.

We continue to explore opportunities for biofuels and liquid natural gas (LNG) and are focused on bringing dual fuel, net zero vessels into our portfolio by 2030.

Although the economics of implementing these fuels remain challenging, a 12-month biofuel trial has been completed on our owned vessels which affirmed the fuel's technical viability for existing vessels.

Scope 3 near-term targets

By holding ourselves accountable on real and measurable commitments in the near term, we can help to make sure technologies are developed early enough to accelerate the transition in the long term.

Therefore, this year we have set specific near-term targets for steel, alumina refining, shipping and procurement decarbonisation.

To accelerate steel decarbonisation, we have set targets to support our customers to reduce blast furnace emissions by 20-30% by 2035, halve our Scope 3 emissions from IOC by 2035[1] relative to 2022 levels, commission the Biolron™ continuous pilot plant (CPP)[1], shaft furnace (DRI) and Electric Smelting Furnace pilot plant by 2026 and finalise the Pilbara beneficiation pilot plant study by 2026.

In alumina decarbonisation, we are committing to partnerships with the goal of improving energy efficiency, specifically via implementing and validating digestion improvement technology and developing approaches to control or remove organic compounds from the refining process. We are also committing to developing technologies that reduce moisture in our bauxite.

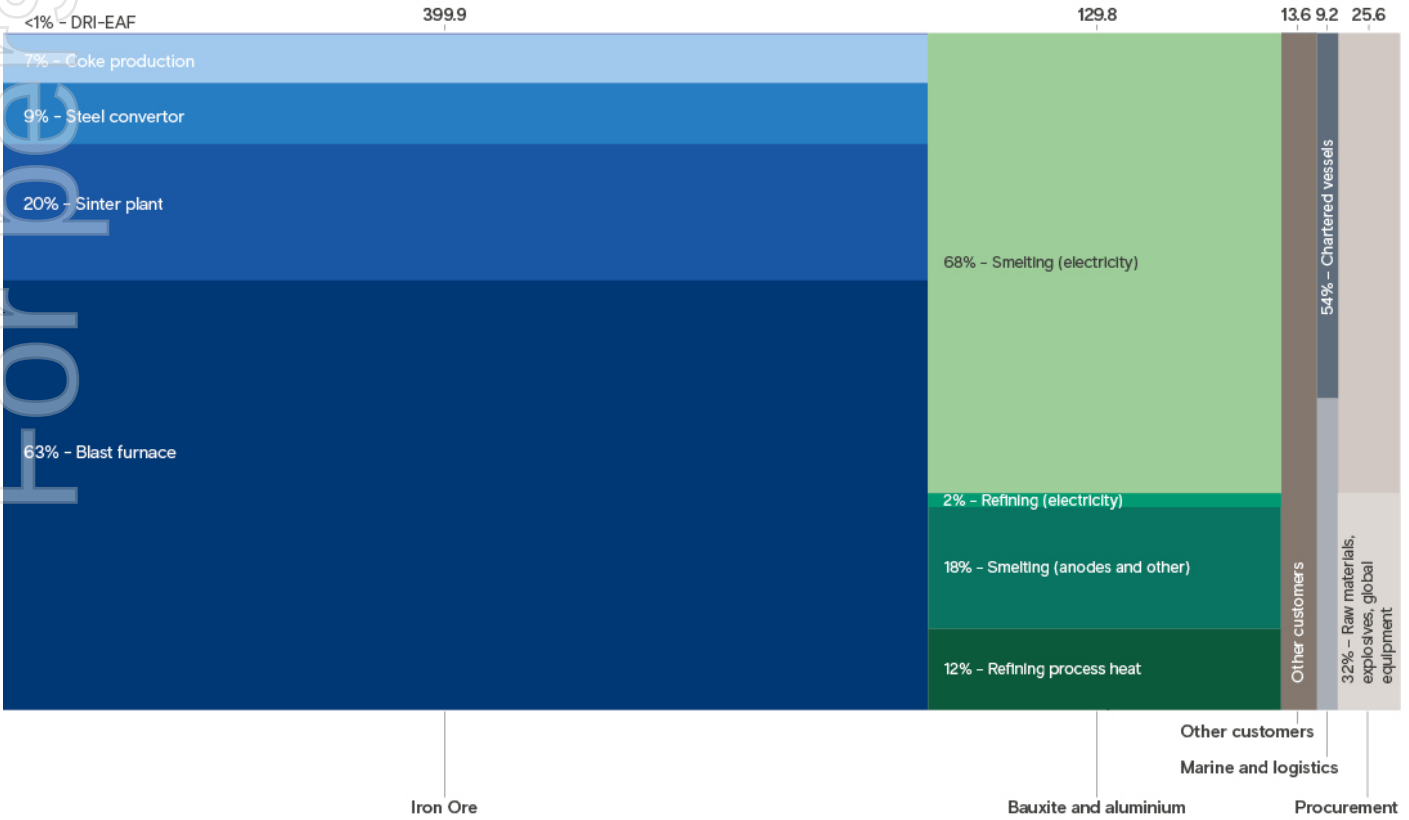
In relation to shipping emissions, we are aiming to reach net zero by 2050, have 10% of our chartered fleet using net zero fuel by 2030 (as per our First Movers Coalition pledge), achieve a 40% emissions intensity reduction by 2025 with a 50% reduction by 2030, and improve emissions reporting accuracy using actual voyage data in 2024.

To help decarbonise our procurement, starting in 2024, we will engage with our top 50 suppliers on decarbonisation and incorporate it as a key criterion for all new sourcing in high-emission categories.

1. Subject to funding approval and technical feasibility.

2023 Scope 3 emissions by category and source (equity basis)

578.1Mt CO_2e (2022: 583.9Mt CO_2e)



Scope 1 and 2 greenhouse gas emissions – equity basis (Rio Tinto share[1]). Performance against target

Equity greenhouse gas emissions (Mt CO_2e)	2023	2022	2018
Baseline Scope 1 and 2 emissions	**32.6**	32.7	
Carbon offsets retired	**0**	0.0	
Baseline net Scope 1 and 2 emissions[2]	**32.6**	32.7	
2018 emissions target baseline (adjusted for acquisitions and divestments)			34.5

Our 2030 greenhouse gas emissions targets are to reduce our absolute Scope 1 and 2 emissions by 15% by 2025 and 50% by 2030 compared with our 2018 equity baseline. Please see page 150 of this report and our *2023 Addendum - Scope 1, 2 and 3 Emissions Calculation Methodology* report for further detail on our emissions reporting methodology.
Changes to our 2018 baseline include: Scope 2 update to market-based methodology, the additional equity share of the Oyu Tolgoi mine that was purchased in mid-December 2022, and the additional equity share of MRN purchased in 2023 so a like-for-like comparison can be done on progress. We have also adjusted our 2022 emissions total to compare our actual progress on abatement in 2023 relative to other changes at our operations.
The baseline value is based on the current equity in each asset, including zero equity in divested assets.This differs from the "Scope 1, 2 and 3 greenhouse gas emissions - equity basis" table which does not get adjusted with asset or equity changes.

1. Rio Tinto share (equity basis) represents emissions from our benefit or economic interest in the activities resulting in the emissions.
2. Scope 2 emissions in the Baseline are calculated using the market- based method.

Scope 1, 2 and 3 greenhouse gas emissions – equity basis

Equity greenhouse gas emissions (Mt CO_2e)	2023	2022	2021	2020	2019
Scope 1 emissions	23.3	22.7	22.9	23	23.1
Scope 2: Market-based emissions[1]	9.3	9.6	10.1	10.4	9.9
Total Scope 1 and 2 emissions	32.6	32.3	33	33.4	33
Carbon offsets retired[2]	0	0	0	0	0
Total net Scope 1 and 2 emissions (with offsets retired)	32.6	32.3	33	33.4	33
Scope 2: Location-based emissions[3]	7.8	8.2	8.5	8.6	8.1
Scope 3 emissions	578.1	583.9	558.3	576.2	–
Operational emissions intensity (tCO_2e/t Cu-eq)(equity)[4]	6.8	7	7.2	7	6.8
Direct CO_2 emissions from biologically sequested carbon (eg CO_2 from burning biofuels/biomass)[5]	0.03	0	0	0	0

Queensland Alumina Limited (QAL) is 80% owned by Rio Tinto and 20% owned by Rusal. However, as a result of QAL's activation of a step-in process following the Australian Government's sanction measures, Rio Tinto is currently entitled to utilise 100% of the capacity at QAL, but paying 100% of the costs for as long as that step-in continues. Our 2023 equity emissions and our 2018 baseline include QAL emissions on the basis of Rio Tinto's 80% ownership. In 2023, the additional emissions associated with the step-in were 0.8Mt. Rusal has commenced proceedings challenging the validity of the step-in and the sanctions regime may change over time, such that the duration of the step-in remains uncertain. Historical Scope 1 and 2 emissions have been restated to reflect improvements in data quality.

1. Scope 2: Market-based emissions reported as zero include Escondida, Resolution Copper, Weipa and Kennecott Copper with surrendered Renewable Energy Certificates (RECs) and Oyu Tolgoi I-RECs from Inner Mongolia and nearby provinces. QMM has a wind and solar contract with energy attributes.
2. In 2023, we did not reduce our reported net emissions by using any surrendered carbon units as eligible offsets retired. Our net emissions total does not include 86,000 ACCUs retired for compliance with the Safeguard Mechanism for the period 2021-22. We expect to include ACCUs in our net emissions figure from 2024 onwards.
3. Scope 1 and 2 equity emissions total – Location-based: 31.1Mt CO_2e.
4. Historical information for copper equivalent intensity has been restated in line with the 2023 review of commodity pricing to allow comparability over time.
5. GHG Protocol Corporate accounting and reporting standard recommends disclosure of CO_2 emissions from biologically sequestered carbon for transparency. These are from biofuel use and are not classified as our Scope 1 emissions.

2023 equity greenhouse gas emissions by location (Mt CO_2e)	Scope 1 Emissions (Mt CO_2e)	Scope 2 Emissions[1] (Mt CO_2e)	Total Emissions (Mt CO_2e)
Australia	13.0	6.3	19.2
Canada	6.4	0.0	6.4
Africa	0.5	1.3	1.8
US	0.9	0.0	0.9
Europe	0.3	1.7	2.0
South America	0.5	0.0	0.5
Mongolia	0.2	0.0	0.2
New Zealand	0.5	0.0	0.5
Other	0.9	0.1	0.9
Total	**23.3**	**9.3**	**32.6**

1. Scope 2 emissions in this table are calculated using the market-based method.

Note: The sum of the categories may be slightly different to the Rio Tinto total due to rounding.

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Transition materials metrics

The following table provides metrics related to the first two pillars of our business strategy (grow in materials essential for the energy transition and accelerate the decarbonisation of our assets).

These metrics are production, revenue, capital expenditure, operating assets and emissions associated with each of our products. These products are classified as key transition materials (KTM) and other transition materials (OTM) aligning with the CA100+ Net Zero Standard for Diversified Mining Companies. The table also includes iron ore and gold as transition neutral materials (TNM). We divested the last of our coal assets in 2018.

Commodity	Classification	Year ended 31 December	Production[1]	Revenue[2] US$m	Capital expenditure[3] $m	Operating assets[4] $m	Emissions Mt CO_2e[5,6]	2024 Guidance Rio Tinto production share, unless otherwise stated
Lithium	KTM	**2023**	**–**	**–**	**27**	**834**	**–**	**–**
('000 tonnes)		2022	–	–	15	835	–	–
Copper[7] (Mined)	KTM	**2023**	**562**					
('000 tonnes)		2022	521					
Copper[7] (Refined)	KTM	**2023**	**175**					
('000 tonnes)		2022	209					
Silver (Mined)	OTM	**2023**	**3,811**					
('000 ounces)		2022	3,940					
Silver (Refined)	OTM	**2023**	**1,407**	**2023: 6,625**	**2023: 2.474**	**2023: 21.046**	**2023: 1.1**	Mined copper: 660 to 720kt
('000 ounces)		2022	1,950	2022: 6,618	2022: 1,942	2022: 18,463	2022: 1.7	Refined copper: 230 to 260kt
Molybdenum	OTM	**2023**	**2**					
('000 tonnes)		2022	3					
Gold (Mined)	TNM	**2023**	**282**					
('000 ounces)		2022	235					
Gold (Refined)	TNM	**2023**	**74**					
('000 ounces)		2022	114					
Aluminium[8]	OTM	**2023**	**3,272**	**9,272**	**906**	**11,919**	**17.2**	3.2 to 3.4Mt
('000 tonnes)		2022	3,009	10,738	925	10,131	16.5	
Alumina[8]	OTM	**2023**	**7,537**	**1,288**	**325**	**1,315**	**5.9**	7.6 to 7.9Mt
('000 tonnes)		2022	7,544	1,636	356	2,400	5.7	
Bauxite[8]	OTM	**2023**	**54,619**	**1,648**	**226**	**2,649**	**0.9**	53 to 56Mt
('000 tonnes)		2022	54,618	1,607	204	2,458	0.9	
Minerals[9]	OTM/TNM	**2023**	See footnote 10	**3,240**	**380**	**4,102**	**2.8**	Titanium dioxide slag: 0.9 to 1.1Mt
('000 tonnes/carats)		2022		3,485	332	3,955	3.0	
Iron Ore	TNM	**2023**	**290,171**	**33,772**	**3,193**	**20,581**	**3.7**	IOC[11] iron ore pellets and concentrate: 9.8 to 11.5Mt Pilbara iron ore (shipments, 100% basis): 323 to 338Mt
('000 tonnes)		2022	283,247	32,801	3,273	19,525	3.7	
Metallurgical Coal	Not applicable	**2023**	**–**	**–**	**–**	**–**	**–**	**–**
('000 tonnes)		2022	–	–	–	–	–	–
Thermal Coal	Not applicable	**2023**	**–**	**–**	**–**	**–**	**–**	**–**
('000 tonnes)		2022	–	–	–	–	–	–

Further notes on production and capacity

Mined copper: On track for 1Mt copper production within five years.
Recycled aluminium (Matalco): System capacity of 900kt; production of 582kt in 2023.
Lithium carbonate (Rincon 3000): System capacity of 3,000 tonnes by the end of 2024.
Iron ore (Pilbara System): System capacity of 345-360Mt mid-term.
Iron ore dual fines product of blast furnace and direct reduction fines (Simandou): 60Mtpa production target (Rio Tinto share of 27Mt). The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the ASX dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.

1. Production figures are measured according to Rio Tinto's ownership % share of each site. For further details on the share %, see pages 297 and 298 of the *Annual Report* where these have been highlighted.
2. Revenue reflects third party sales by product on a consolidated basis inclusive of our share of equity accounted units.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and other intangible assets, inclusive of our share of equity accounted units and reported by product.
4. Operating assets by product recorded above are the net assets of subsidiaries, joint operations and the Group's share relating to equity accounted units adjusted for net (debt)/cash and post-retirement assets and liabilities, net of tax, after the deduction of non-controlling interests.
5. Scope 1, 2, and 3 emissions are measured on an equity basis and align to the Rio Tinto ownership % share used to record production values. For additional information on our emissions methodology, see our *2023 Sustainability Fact Book* at riotinto.com/sustainabilityreporting.
6. The emissions in this table are Scope 1 and 2 GHG emissions for the operating sites producing the commodity listed. The total differs from the full Group share reported numbers as these exclude development, closure sites, marine and corporate emissions.
7. Copper production from Oyu Tolgoi, Kennecott and Escondida has been certified under the Copper Mark system. The Copper Mark certification for Escondida has been obtained via BHP who is the majority partner.
8. For a list of assets certified under the Aluminium Stewardship Initiative, see our *2023 Sustainability Fact Book*.
9. Minerals comprise titanium dioxide slag (KTM), borates (TNM), salt (TNM) and diamonds (TNM).
10. 2023 Mineral production is as follows:
    - Titanium dioxide slag ('000 tonnes): 1,111 (2022: 1,200)
    - Borates ('000 tonnes): 495 (2022: 532)
    - Salt ('000 tonnes): 5,973 (2022: 5,757)
    - Diamonds ('000 carats): 3,340 (2022: 4,651)
11. Iron Ore Company of Canada continues to be reported at Rio Tinto share.

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Physical climate risk and resilience

Modelling financial exposure to physical climate risk

Throughout 2023, we advanced our climate physical risk modelling, in collaboration with our climate risk consultants Marsh, and used modelling from XDI. Our latest analysis estimates the expected financial losses for individual assets, considering various time horizons and emission scenarios caused by discrete physical climate hazards. This analysis shows the potential financial losses associated with asset damage, but excludes the losses associated with business interruption or productivity loss. The latter, while considered in the formulation of the analysis, was excluded due to the complexity of our value chain and the increased subjectivity of loss attribution. This aspect may be considered in future years and requires further analysis to fully assess financial consequences.

Understanding and quantifying our financial exposure to these physical climate risks is important for prioritising our adaptation and investment decisions, safeguarding our assets, maintaining operational resilience, ensuring long-term profitability, and aligning with the evolving expectations of investors, regulators and stakeholders.

This modelling process and methodology considers the following:

1. **Asset portfolio:** encompasses a significant breadth of assets, including mining assets and critical infrastructure components, which are integral to our operations. Our modelling has considered over 18,000 individual points, each with unique latitude and longitude coordinates, representing assets across 76 sites in 18 countries. Assets are geolocated, facilitating the assessment of climate-related risks and hazards to their specific geographic location. Each point is assigned one of 28 asset archetypes, representing our diverse asset base. These archetypes best define the engineering characteristics and specifics of that point and determine the vulnerability to damage by different climate hazards. Archetypes do not capture unique design and engineering attributes of each asset.

   Only active industrial and mining facilities were modelled, including non-managed operations. Corporate offices and remote operation centres have been modelled but are not presented in this analysis. Assets in our closure portfolio have not been modelled, but are considered in bottom-up physical risk and resilience assessments.

2. **Climate scenarios, time horizons and hazards:** modelling considers two future emissions scenarios – Representative Concentration Pathways (RCPs) – from the IPCC, including RCP4.5 (intermediate greenhouse gas emission scenario) and RCP8.5 (high greenhouse gas emission scenario).

Emission scenario	Description and outcome
Intermediate emissions scenario IPCC Representative Concentration Pathway 4.5 (RCP4.5)	Emissions peak around 2040, then decline. Relative to the 1986–2005 period, global mean surface temperature changes are likely to be 1.1°C–2.6°C by 2100.
High emissions scenario IPCC Representative Concentration Pathway 8.5 (RCP8.5)	Emissions continue to rise throughout the 21st century and is considered a worst-case climate change scenario. Relative to the 1986–2005 period, global mean surface temperature changes are likely to be 2.6°C–4.8°C by 2100.

Source: The Intergovernmental Panel on Climate Change

   Our physical climate risk modelling considers present day (short term) and future risks. Multiple future time horizons are modelled, including 2030 (medium term), 2040 and 2050 (long term). Eight climate hazards are modelled in this analysis, including flooding (riverine and surface water), coastal inundation, including sea level rise, extreme heat, cyclonic wind, extreme wind, forest fire and freeze–thaw.

3. **Annualised damage (AD):** the output of the modelling is calculated for each asset under various climate scenarios, time horizons and hazards. AD, expressed as a percentage, represents the expected average annual damage to an asset attributable to climate-related hazards relative to a fixed value (eg $1 million). As such, an AD of 0.5% would mean that for every $1 million of exposure, $5,000 could be damaged, on average, in any given year.

   Asset-specific outputs have been aggregated to the site, region and Group level. Risk categorisation is based on the AD values, with thresholds set at <0.2% for low AD risk, 0.2–1% for medium AD risk, and >1% for high AD risk.

   Estimates consider a stationary "do nothing" approach for our operating assets and does not consider present or future controls, adaptation/resilience projects that will likely materially impact our AD cost.

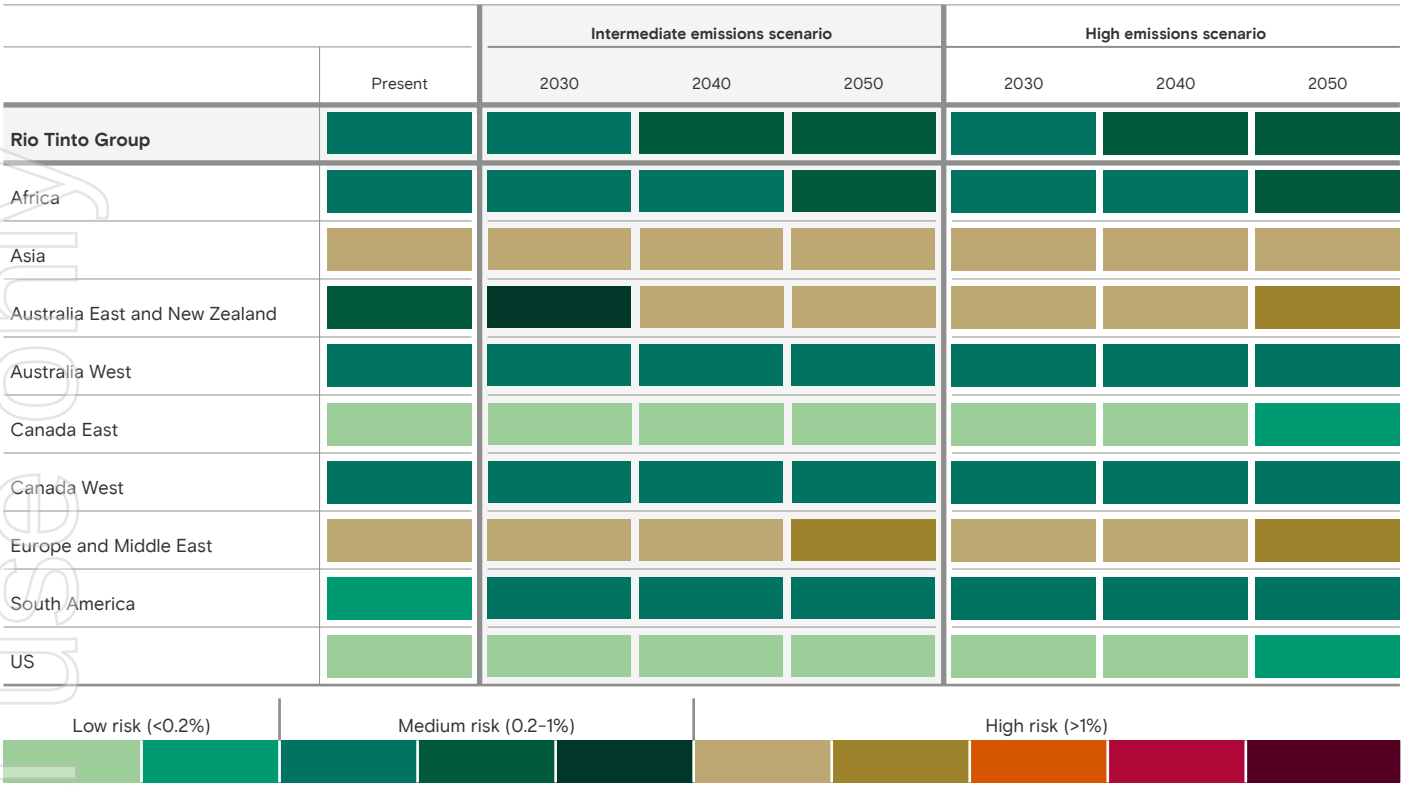
Annualised damage risk scores

At the Group level, present day AD losses fall within the initial range of the medium AD risk category (0.2–1%). Considering projected future emission scenarios by 2050, increases in AD are expected. This places the Group's AD in the intermediate range of the medium AD risk category, potentially exceeding a two-fold rise from present values.

Currently, across nine core climate geographies where we operate, the risk of AD is low in three regions, medium in five and high in two. Notably, sites located in Asia, the Middle East and Guinea are the primary contributors to the highest risk classification. In both the intermediate and high emissions scenarios, by 2050, eastern Australia and New Zealand are also expected to be classified as high risk with up to a four-fold increase in AD. This is principally due to the potential effects of coastal inundation, surface water flooding and cyclonic winds. Other notable increases in risk are in Europe and the Middle East (an approximate 60% increase). The risk trend in Asia is steady through time.

In assessing the risk of various hazards under different emissions scenarios projected for 2050, there is a notable shift in the risk profile for various perils across our operating sites. The number of sites at risk from coastal inundation, riverine flood and surface water flood increase under both future emission scenarios. Of all hazards, riverine flood sees the largest increase by 2050 under a high emissions scenario. The number of operating sites at risk from cyclonic wind, extreme wind, forest fire, freeze–thaw and soil subsidence are not expected to materially change with future emissions scenarios.

Annualised damage risk | Group and regional



Considerations and limitations

In our 2023 climate physical risk modelling analysis, we acknowledge several limitations and uncertainties inherent in the methodology and the long-term nature of the assessment.

Climate change modelling is subject to inherent uncertainties stemming from the dynamic nature of the Earth's climate system and from the unpredictability of future GHG emissions. Climate change scenarios should be regarded as representations of a plausible future (what may happen in the future) and not as forecasts or predictions (what will happen in the future). These factors contribute to a range of possible outcomes. However, despite these challenges, such models are useful for assessing potential risks and informing strategic decision-making for climate-resilient infrastructure and adaptation.

Furthermore, the accuracy of our analysis is contingent upon the quality and completeness of asset data and asset operating status. We have assumed there is no change in our operating assets and their value, not accounting for potential changes in types of operations, locations or design standards over time. Each asset was assigned an appropriate archetype, which best defines its engineering characteristics and subsequent vulnerability to specific hazards. This does not fully capture the unique design and engineering attributes of each asset, which may impact the resultant risk profile.

This analysis represents our initial perspective and is iterative, evolving with new scientific insights, climate projections, and advancements in risk modelling. We plan to regularly update this analysis to reflect our dynamic asset base.

The outcomes of this work will inform our areas of focus and refine our physical resilience program for 2024.

2023 progress on physical risk and resilience

Throughout 2023, we made progress on quantifying, managing and adapting to our physical climate risks.

- **Advancing our bottom-up physical resilience assessments:** progress in the Pilbara centered on further validation and quantification of physical climate-related risks from the 2022 climate change assessment and progress embedding physical resilience into business-as-usual management actions. We also conducted asset-level resilience assessments across our Canadian sites, including those in Saguenay, BC Works and IOC, as well as at our Simandou Iron Ore Project in Guinea and at Weipa and Yarwun in Australia. We have completed flood risk screening for all of our managed and non-managed assets.
- **Quantifying our top-down financial risk exposure:** scenario analysis was conducted across our global portfolio to quantify the financial impacts of physical climate risk.
- **Global Industry Standards on Tailings Management (GISTM):** in accordance with GISTM guidelines, we initiated a climate resilience assessment process for our tailings storage facilities (TSFs). The approach tests the design basis of each TSF component considering future climate change. Initially focused on 14 extreme and high-risk consequence TSFs, which we completed in 2023. Assessments for all remaining facilities will be completed by August 2025.
- **Technical adaptation and guidance:** in 2023, we developed a new internal leading practice guideline on how to incorporate climate change into mine water management planning. This guidance provides insights on when and how to model the impacts of climate change to inform hydrological design.
- **Supply chain:** this year, we operationalised analytics that provide real-time natural hazard monitoring for 50% of our supply chain (tier 1-3 goods suppliers). Being alerted of potential supply disruption in real time provides our teams with the opportunity to make informed decisions to reduce supply chain disruption.

In 2024, we will progress bottom-up physical risk and resilience assessments across our operating sites and across our TSFs, in accordance with the GISTM. Climate physical risk modelling completed in 2023 has provided us with valuable data which will be used to focus our activities in 2024 and beyond.

For more information on physical risk and resilience see riotinto.com/climaterisk.

Listening. Learning. Delivering.

Environmental stewardship

As environmental stewards, we focus on responsibly managing shared resources to protect the health, safety and livelihoods of local communities. We manage risk to minimise adverse environmental impacts from our operations and to sustain our shared ecosystems, planet and natural resources for future generations.

2023 progress

In 2023, we continued to strengthen our approach to environmental risk management by updating and implementing a shared language, developing a standardised set of controls and associated performance requirements and ensuring we are assessing the full breadth of potential environmental impacts in a consistent way across our business. This is evident in our Group environmental risk taxonomy and consequence descriptions for risk and incidents.

As a forum member of the Taskforce on Nature-related Financial Disclosures (TNFD), we have undertaken pilots of the prototype risk management and opportunity disclosure framework at our Simandou site in Guinea and at Greater Hope Downs in Australia. The final framework was released in September 2023. Through our membership with ICMM, we are engaging with our industry peers to develop mining sector-specific guidance for TNFD. We have also refreshed our approach to managing nature-related risk and are developing a pathway to increasing our environment-related disclosures in line with the requirements of TNFD. As part of the Health, Safety, Environment and Security Transformation Program, we continue to improve how we manage our environmental data. Access to trusted and timely environmental data across all Saguenay–Lac-St-Jean sites is supporting decision making, meeting the growing demand for transparency and enabling us to set meaningful targets for continuous improvement in environmental performance. A project is underway to optimise environmental data collection across the business, leveraging existing tools as much as possible.

We have also worked to build a more consistent approach to environmental management and embed it across our business processes throughout the lifecycle of our operations. To support our assets in managing their overall health, safety and environmental performance, we continue to evolve our approach. We recently incorporated environmental and health risk ownership and performance management into our safety maturity model (SMM).

Water

Water is a shared resource critical to sustaining biodiversity, people and economic prosperity. Increasingly disrupted weather patterns and more extreme weather events due to climate change, and a growing world population, mean efficiently managing water is more important than ever.

The way we think about water and manage associated risks reflects the diversity of our operations and geographic locations. A small proportion of our assets operate in water-scarce regions, while others must remove excess water to allow safe mining operations. These are examples of the many potential risks we manage across the lifecycle of our diverse operations.

We share water with the communities and ecosystems surrounding our operations, so we aim to avoid permanent impacts on water resources by carefully managing the quality and quantity of the water we use and return to the environment. This means balancing the needs of our operations with those of the local communities and ecosystems. We do this while considering the impact of climate change, already felt in the level of rainfall and water security at some of our operations. We understand this responsibility extends beyond the life of our operations.

To address this complexity, we adopt a catchment-level approach to developing potential solutions and managing our risks and impacts within our operations. We use 2030 water stress as determined by the World Resource Institute (WRI) to identify operational catchments of most concern.

For more information
see www.riotinto.com/water.



First major mining company to publish site-by-site water usage data

In 2023, on World Water Day, we became the first major mining company to release our site-by-site water usage. The interactive online map shows surface water usage across our global network of managed sites in 35 countries.

For each site included, the database shows permitted surface water allocation volumes, annual allocation usage and the associated catchment runoff from average annual rainfall estimates.

These disclosures allow us to engage closer with our stakeholders and be even more transparent, while we continue to focus on becoming better water and land stewards for future generations.

For more information
see www.riotinto.com/watermanagement.

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Group water risk profile (percentage of managed operations)

To manage our water impacts, we first need to understand the specific risks at more than 50 operating sites, as well as our overall Group impacts. To do this, we have developed a water risk framework that considers:

- water resource
- quality and quantity
- dewatering
- long-term obligations.

We use this framework to identify, assess and manage water risks. This comprehensive approach extends beyond our mandatory reporting obligations and allows us to have relevant conversations about water risks internally and with stakeholders in the communities where we operate. In 2023, we continued to embed the Group water control library, a suite of critical controls and their associated performance requirements to manage our water risks.

Our Group water risk profile shows the level of exposure against each of the four risk categories. Most of our water risks sit in the low to moderate range. There are some in very high and high categories for each. Regardless of the level of risk, we apply rigorous standards and processes to manage them. Below we give examples of how the risk framework has been applied across some of our assets with site-based targets.

Not applicable | Low risk | Moderate risk | High risk | Very high risk

Water resource

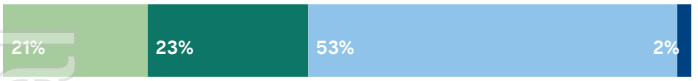
Is there enough water available for both environment needs, community needs and our operational use?



The water resource risk at Oyu Tolgoi in Mongolia is assessed as moderate, even though it is located in the Gobi Desert. Oyu Tolgoi sources its water requirements from a deep water supply, the Gunii Hooloi aquifer, a 150-metre deep resource holding around 6.8 billion cubic metres of non-drinkable saline water. Oyu Tolgoi uses this water source efficiently with water recycling and conservation practices implemented across the operation.

Water quality and quantity

Does the way we manage water on site, or discharge excess water, cause environmental impacts or operational constraints?



Our QIT Madagascar Minerals (QMM) operation in Madagascar operates in a highly sensitive area from a water, broader environment and community perspective. The discharges from our operation have the potential to impact receiving water quality and, therefore, the water quality risk is assessed as high. We are working to improve management activities on site, including our ability to more accurately measure our water discharge quality, and the deployment of a dedicated water treatment plant to adjust the discharge pH.

Dewatering

Does the removal of water from the operational areas of our sites impact regional aquifers or our mine plans?



Impacts associated with dewatering and water supply activities in the Pilbara are recognised as a very high risk for our business. Returning water to the aquifers impacted by our mining activities in a controlled manner is the focus of a number of studies. We are working with Traditional Owners on water management.

Long-term obligations

Do our operational activities generate long-term or ongoing obligations related to water?



We may sometimes generate impacts that we are required to manage over the long term, such as post-closure pit lakes in the Pilbara, or potential seepage from our waste rock or tailings facilities in our aluminium and copper sites. Our systems and standards aim to ensure that risks are identified early and managed appropriately and responsibly throughout the asset lifecycle.

2023 progress

Our water balance

Our Group water balance outlines where water was withdrawn from, discharged to, recycled or reused and consumed at our operations.

The reported categories correlate with the requirements of ICMM and global reporting initiatives.

We also report on our aggregated water balance for sites in water-stressed areas. We assess water stress using the WRI's Aqueduct Water Risk Atlas mapping tool.

For more information
see our *2023 Sustainability Fact Book* at riotinto.com/sustainabilityreporting.

Our water numbers

Our total operational withdrawals for 2023 were 1,170GL (2022: 1,173GL.). Freshwater, or category 1 quality, withdrawals accounted for 424GL or 36% of this total (2022: 432GL). Freshwater is generally suitable for consumption with minimal treatment required. Where possible, we aim to minimise our extractions from water sources of this quality.

Total discharges for 2023 were 692GL (2022: 694GL). Total water recycled or reused for 2023 was 303GL (2022: 312GL).

Our 2019–2023 water targets

Our five-year water targets allow us to be more transparent about our water usage, risk profile, management and specific challenges. These targets, and the data required to measure progress against them, are helping us become better water stewards.

Our water targets were set in 2019 and consisted of one Group target and six site-based targets, reflecting our catchment-based approach and recognising that we manage vastly different water-related risks across our business.

The site-based targets were chosen based on their water risk profile, our ICMM commitments, and local community and environmental interdependencies.

Not approved for issue

We successfully achieved our Group target in 2023. A disclosure platform was developed and released, making public detailed information about annual surface water usage across our global network of managed sites in 35 countries; a first for the mining industry.

We attained four of our six site-based water targets with improved understanding of our responsibilities for water stewardship evident throughout the business. Refer to the table below for further details.

Throughout 2023, we continued embedding our water risk framework and associated controls across our product groups, and commenced the development and socialisation of our next round of nature-related targets. Further details on the new target program will be released during 2024.

Progress against our targets

Group target	Water risk	Status	Commentary
Rio Tinto Group (Tier 1[1])			
By 2023, we will disclose – for all managed operations – permitted surface water allocation volumes, annual allocation usage and the associated surface water allocation catchment rainfall-runoff volume estimate.	Water resource	Attained	A disclosure platform was developed and released in 2023, making public detailed information about annual surface water usage across our global network of managed sites in 35 countries.
Site-based target	**Water risk theme**	**Status**	**Commentary**
Pilbara operations, Iron Ore (Tier 1)			
Our Iron Ore product group will complete six managed aquifer recharge investigations by 2023.	Dewatering (aquifer reinjection)	Attained	Successful completion of six managed aquifer recharge investigations with another three investigations underway. Two of the investigations resulted in ongoing recharge programs.
Oyu Tolgoi, Copper (Tier 1)			
Oyu Tolgoi will maintain average annual water use efficiency at 550L/tonne of ore to concentrator from 2019-23.	Water resource (intensity and efficiency)	Attained	Oyu Tolgoi maintained its average annual water use efficiency below 550L/tonne for the period 2019-23. Oyu Tolgoi remains one of the most efficient copper operations in the industry.
Kennecott Utah Copper, Copper (Tier 1)			
Kennecott will reduce average annual imported water per ton of ore milled by 5% over the 2014-18 baseline of 393 gal/ton (1,487L/ton) at the Copperton Concentrator by 2023.	Water resource (import reduction)	Not attained	With the exception of 2019, annual concentrator water intensity has remained above the 2014-2018 target baseline. Required changes to the concentrator process during 2020 resulted in increased water usage compared to the initial target baseline. Kennecott's water usage has trended down since the implementation of these changes. Kennecott's commitment to improve water efficiency through the concentrator successfully reduced intensity in 2022 and 2023 to approximately 10% lower than the period peak recorded in 2021.
Ranger Mine[2], Energy Resources of Australia Limited (ERA), Closure (Tier 1)			
ERA will achieve the planned total process water inventory treatment volume by 2023, as assumed in the Ranger water model.	Quantity/quality (inventory reduction)	Not attained	Since the commencement of the Water Target in 2019, ERA has implemented the process water treatment capacity upgrades that were envisaged in the Ranger closure plan of the time, including an upgrade to the capacity of its Brine Concentrator and the construction and subsequent upgrade of a Brine Squeezer. Despite these upgrades, process water treatment rates have not met expectations. Other changes in project schedule mean that the assumptions behind the Ranger water model used to set the Water Target are no longer valid. A feasibility study refresh completed in 2023 identified that ERA should move to a program management approach to the rehabilitation of Ranger, with additional studies required for the later stages of the project. The outcome of these additional studies will ultimately lead to an updated Ranger water model and a revised plan for process water treatment.
QIT Madagascar Minerals (QMM), Minerals (Tier 2[3])			
QMM will develop and implement an improved integrated site water management approach by 2023.	Quantity/quality (discharge quality)	Attained	Actions committed to and in-progress as part delivery of the site-based water target include: – updated water management strategy and vision – host community engagement in water management activities – establishing a water treatment plant – improvements in data integrity and capability in testing controls – improved transparency and disclosure of water information – improvements in host community access to potable water.
Queensland Alumina Limited (QAL), Aluminium (non-managed joint venture) (Tier 2)			
QAL will complete the following four water-related improvement projects from the QAL five-year environment strategy by 2023: – Project L1: integrity of bunds and drains – Project W3: caustic pipe and wasteline 4 integrity – Project W6: residue disposal area surface/ground water impacts – Project W7: residue disposal area release to receiving environment.	Quality/quantity (discharge quality) Joint venture performance improvement	Attained	Progress of nominated water-related improvement projects is aligned with current project schedules. Refer to the 5-Year Environment Strategy on QAL's website for further details.

For more information
about our progress against our site-based water targets see www.riotinto.com/water.

1. Tier 1 water targets form part of the Rio Tinto external limited assurance program.
2. Ranger Mine is owned and operated by ERA. Rio Tinto is a 86.3% shareholder in ERA.
3. Tier 2 water targets do not form part of the Rio Tinto external limited assurance program.

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Biodiversity

We are dependent on healthy ecosystems to run a successful business and we recognise our responsibility to effectively mitigate the impact of our operations on nature.

Healthy natural environments with functioning ecosystems are key to climate resilience. They also provide important services to the communities where we operate and our business. We are committed to protecting biodiversity, and our ambition is to achieve no net loss where we operate. This means striking a balance between negative impacts on biodiversity and positive outcomes achieved through mitigation.

2023 progress

We are active members of ICMM and other industry associations and working groups seeking to drive improvements for our industry. Our involvement in the ICMM Taskforce on Nature-related Financial Disclosures (TNFD) working group, Global Reporting Initiative (GRI) Biodiversity Technical Committee and the ICMM Nature Working Group have contributed to the development of important industry resources: the TNFD framework, the draft GRI Biodiversity Standard, and ICMM's Nature Position Statement.

We continue to assess the sensitivity of our activities by using global datasets of threatened species and conservation and protected areas, developed by the UN Environment Programme World Conservation Monitoring Centre (UNEP WCMC). Together with the UNEP WCMC, we completed an updated biodiversity sensitivity study in 2023 to inform risk prioritisation across our activities, including exploration and projects, and support allocation of resources. Work will continue in 2024, to be guided by the recommendations of the TNFD framework.

We continue to innovate to help us become better environmental stewards. In 2023, in partnership with the UNEP WCMC, we piloted a standard method for efficiently identifying potential actions to deliver conservation value beyond the management of our direct impacts. Together with UNEP WCMC, we conducted TNFD pilots at two sites (Simandou in Guinea and Greater Hope Downs in Western Australia) to inform the development of the framework. This process provides us with a better understanding of our impacts, dependencies and importantly, the key environmental monitoring and management activities that will underpin future disclosure requirements.

In 2023, we continued the independent review of monitoring programs at our high-priority biodiversity sites.

This involved ensuring management plans and actions adequately address biodiversity risks. We completed this review at our Richards Bay Minerals (RBM) site in 2023, with further efforts planned for 2024.

We also submitted a revised Environmental and Social Impact Assessment (ESIA) for our planned mine and rail activities at our Simandou project in Guinea, drawing on data collected over the last decade, and have progressed work to deliver an ESIA in 2024 for the planned development of the port.

At our Weipa operations, we continue to use machine-learning solutions to support research and monitoring of the endangered Palm Cockatoo and have partnered with the Australian National University and Australia Zoo's Wildlife Warriors to better understand the challenges faced by this species. This ensures that leading conservation science informs our decisions and helps bring balanced perspectives, innovation and best practice to responsible environmental stewardship.

For more information about our biodiversity work see riotinto.com/biodiversity.

Land

2023 progress

In 2023, we rehabilitated 22 square kilometres of land, mostly at our iron ore mines and exploration areas in the Pilbara, Western Australia and our mineral sands mines in South Africa and Madagascar. Of this, we rehabilitated 4.5 square kilometres of ex-pit landforms and legacy areas across our Pilbara mines. This is part of our Iron Ore business's plan to increase rehabilitation, in partnership with Pilbara Aboriginal businesses. Since 2021, we have completed 24 square kilometres of land rehabilitation across our Pilbara mine operations.

In Mongolia, we have rehabilitated 4 square kilometres of abandoned mine workings based outside our operational footprint, along valley floors and river beds in the Selenge province. This is a part of Oyu Tolgoi's commitment to the Government of Mongolia's national movement to plant one billion trees by 2030.

In 2023, our land footprint – total disturbed area – was 3,848 square kilometres, an increase of 38 square kilometres compared to 2022. This includes all disturbances to our operating assets and activities, such as exploration activities, smelters, mines and supporting infrastructure.

Our rehabilitation teams continue to partner with research centres and universities to refine our rehabilitation approaches and improve outcomes.

We continue to support the Australian-led Cooperative Research Centre for Transformation in Mining Economies (CRC TiMe) through research that addresses the complex challenges underpinning mine closure and relinquishment. At our bauxite mines and refineries we have continued trials focusing on transforming stored tailing material into soils that will support plant growth. We also continued trials using satellite-derived data to test methodologies aimed at providing insights to support on-ground monitoring for vegetation and erosion monitoring of rehabilitation. In addition, 16 of our operations completed rehabilitation trials to improve seed germination, erosion and topsoil quality.

For more information about our closure work see page 64.

Waste

2023 progress

Waste and residues from our operational activities are key areas of our environmental risk management. In 2023, we continued to focus on managing potential contamination from these sources. This included work to remove all use of PFAS (perfluoroalkyl and polyfluoroalkyl substances) in fire-suppression systems at our sites, which will continue through to 2024 due to delays in retrofits of equipment and infrastructure and challenges sourcing alternative fluorine-free substances for use in fire-suppression systems in some jurisdictions.

At some of our long-life assets, we continue to evaluate waste management practices of the past that have led to a need for remediation in the present. We focus on finding better ways to extract maximum value and to transform waste and by-products from our operations into materials the world needs. One example is our work to sustainably extract and produce high-purity scandium oxide and tellurium from waste streams.

We also continue to look for opportunities to repurpose items we purchase at the end of useful life. For example, in 2023, we partnered with a local business to trial recycling end-of-life conveyor belts used to move iron ore across our Pilbara operations. This trial will continue into early 2024 and has the potential to divert 10,000 to 15,000 tonnes of waste from landfill every year.

Some of our assets generate mineral waste with the potential to be chemically reactive, requiring careful management to prevent environmental impacts. We conduct independent reviews every four years to assess the effectiveness of our risk management programs and identify areas for improvement. In 2023, this was done at two sites – Diavik in Canada and RBM in South Africa. The review at Diavik revealed long-term progress in managing and controlling our mineral waste risks. At RBM there were no risks of critical or high significance, and the risk posed by reactive mineral wastes at the asset was low. Further opportunities to improve mineral waste management will continue at both sites in the short and long term.

For more information about tailings see page 64.

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Turning slime into solar panels

Tellurium is one of the rarest elements on Earth, usually found in small, sparse rock deposits, making it difficult to mine at scale. But at our Kennecott copper operations near Salt Lake City, Utah, we have discovered a way to extract tellurium from an unlikely source – slime waste material. And while we know we have more to do to eliminate waste completely, Kennecott's tellurium plant is the latest example of work we are doing globally to minimise our waste by finding a use for every material we dig from the ground or creating new products from the waste itself.

For more information about how we extract tellurium from slime see riotinto.com/telluriumfromwaste.

Air quality

Clean air is critical for the health of our host communities and the surrounding ecosystems. We are working to improve air quality management, focusing on emissions of particulate matter and gases from our operational activities, including mining, materials handling, processing and transportation. The potentially hazardous emissions we monitor at operations are:

- sulphur oxides (SOx), mainly at our aluminium and copper smelters
- nitrogen oxides (NOx), mainly from burning fossil fuels
- gaseous fluoride emissions from aluminium smelters
- respirable particulate emissions (PM_{10} and $PM_{2.5}$), very fine particles from mining and processing operations and from burning fossil fuels.

We focus on reducing emissions at source by upgrading equipment to use the best available technologies, adding air pollution control equipment, implementing mitigation measures and using renewable energy or alternative feed material where possible. Our air quality management programs include monitoring, sampling at source, incident tracking and risk assessments.

Many of our assets have multi-year air quality improvement projects in place. For example, at Iron Ore Company of Canada (IOC), there is a multidisciplinary working group focused on assessing dust abatement options. We are mitigating dust at the source by introducing new dust control technology at the induration machine stacks. The working group is also exploring biodegradable dust suppressants to limit wind erosion at IOC's tailings facilities. We have expanded our air quality monitoring network at IOC's mine in Labrador City and at our Rio Tinto Iron and Titanium Quebec Operations Sorel-Tracy plant.

In some instances, we exceeded permissible dust levels at nearby air quality monitoring stations. We investigated all high dust concentration events. Most resulted from unusual forest fires, such as those close to our operations in Sept-Îles, Canada, in June, where exceedances were observed over a large region. Improving our air quality monitoring network over the coming years will help us to prevent dust incidents in the future.

Operational environment overview

	2023	2022	2021	2020	2019
Significant environmental incidents[1]	**1**	0	3	0	0
Fines and prosecutions – environment ($'000)[2]	**987**	110	7	27	19
Land footprint – disturbed (cumulative square kilometres)	**3,848**	3,810	3,735	3,630	3,627
Land footprint – rehabilitated (cumulative square kilometres)	**552**	522	494	490	489
Mineral waste disposed or stored (million tonnes)	**977**	978	1,005	987	905
Non-mineral waste disposed or stored (million tonnes)	**0.73**	0.75	0.65	0.47	0.28
SOx emissions (thousand tonnes)	**72.5**	66.2	70.2	75.7	76.8
NOx emissions (thousand tonnes)	**64.8**	64.6	62.3	65.2	63.4
Fluoride emissions (thousand tonnes)	**2.61**	2.36	2.36	2.27	2.34
Particulate (PM_{10}) emissions (thousand tonnes)	**146.0**	146.3	142.3	143.2	130.7

1. Significant environmental incident is an incident with an actual consequence rating of high or very high. We measure and rate incidents according to their actual environmental and compliance impacts using five severity categories: very low, low, moderate, high and very high. Very high and high environmental incidents are usually reported to the relevant product group head and the Rio Tinto Chief Executive as soon as possible. The severity categories were updated for incident reporting in 2023 based on changes to Rio Tinto's risk matrix and associated environment consequence descriptors..
2. In 2023, we paid environmental fines totaling $986,968 resulting from non-compliant storage of residue materials as well as exceedance of the annual mobile fluoride load within the final effluent at Alma, Canada; spillage of an acidic substance at a discharge outfall at Arvida, Canada; exceedance of the annual mobile fluoride load within the final effluent at Laterriere, Canada; removal of an elm tree as well as the drowning of two Goitered Gazelles at the tailings storage facility at Oyu Tolgoi, Mongolia; release of water with a slightly elevated total suspended solids concentration than authorised by the site's Environmental Authority from Yarwun, Australia; multiple breaches (13) of land clearing conditions relating to iron ore exploration activities within the Pilbara region, Australia; separate spills of caustic and acidic materials, as well as a fine for a separate administrative non-compliance issue, at Sorel Tracey, Canada; and failure to immediately notify the regulators of a dangerous substance spill at Havre Saint Pierre, Canada..

Mining and metals practices

Tailings

We engage with stakeholders throughout the lifecycle of our tailings storage facilities, from design to closure. We also collaborate closely with external bodies to improve the way tailings are managed across our industry.

We operate 98 tailings storage facilities (TSFs) across our global assets. Thirty-nine are active TSFs, 26 are inactive and 33 are closed. There have been no external wall failures at any of our TSFs for more than 20 years.

We work through technical committees and joint venture relationships to support leading practice in tailings management. Our full tailings disclosure is available on our website at riotinto.com/tailings. We periodically update the list of TSFs to reflect operational and ownership changes, including changes due to the transition to closure or remediation obligations for legacy assets and reclassification of facilities.

Our facilities are regulated and permitted and have been managed for many years to comply with local laws, regulations, permits, licences and other requirements. Tailings management has been included in the Group risk register since 2010, and our Group safety standard for tailings and water storage facilities has been in place since 2015. Our internal assurance processes verify that our managed TSFs operate in accordance with this standard, which we updated in 2020.

Our TSFs have emergency response plans – tested through training exercises in collaboration with stakeholders such as local emergency services – and follow strict business resilience and communication protocols.

2023 progress

We have continued to progress our implementation of the Global Industry Standard on Tailings Management (GISTM), which focuses on preventing tailings facility failures, reducing the social and environmental impacts of tailings facilities, and improving engagement and transparency on tailings with local communities. We have also assessed our progress on implementation through self-assessment and independent audits using ICMM's GISTM Conformance Protocols.

Much of the implementation work is already complete for the tailings facilities that have a "very high" or "extreme" consequence classification, and all these tailings facilities are nearing conformance with the GISTM. However, there is still work to do to complete the implementation and to embed the changes made.

Implementation work programs are specific to each tailings facility, and while the timing for completion of each work program varies, we anticipate that we will deliver this work progressively and that all "very high" and "extreme" consequence classification tailings facilities will fully meet the requirements of the GISTM in 2024 (except where longer-term engineering works are required).

In August 2023, we disclosed detailed information for the tailings facilities we operate that are rated "very high" or "extreme" under the GISTM consequence classification scheme. We also disclosed information on the other tailings facilities we operate that have lower GISTM consequence classifications, based on the Investor Mining and Tailings Safety Initiative (IMTSI) request for public disclosures on tailings.

For more information about our most recent tailings facilities disclosures see our interactive map at riotinto.com/tailings.

In 2023, we:

- Continued to regularly convene the Tailings Management Committee with our designated Accountable Executives, which provides coordinated governance of tailings management practices across the Group.
- Conducted multi-disciplinary risk assessments for all our "very high" and "extreme" consequence facilities.
- Continued to partner with BHP on tailings filtration solutions at very high throughputs for copper operations, which supports our goal of increasing water recovery and recycling.
- Continued to support the Future Tails partnership, a collaboration between Rio Tinto, BHP and the University of Western Australia (UWA). In 2023, seven students were awarded a Graduate Certificate in Tailings Management from UWA, three of whom are Rio Tinto employees. This year, the program had 91 students from 15 countries who have enrolled in 262 micro-credentialled units. Two PhD candidates also commenced their research programs in 2023.
- Continued to play an active role in the ICMM tailings working group, which provides guidance to support the safe, responsible management of tailings with the goal of eliminating fatalities and catastrophic events.

Closure and repurposing

As we mine and process metals and minerals we have an environmental and social impact. Our aspiration is to create a positive legacy, meeting our commitments to stakeholders and host communities, and deliver environmental, social and financial value. The end of an asset's life is an opportunity for a new beginning. We are finding better ways to repurpose and renew our assets.

2023 progress

Our approach

We recognise we are often a short chapter in the long history of the land where we operate. Understanding this, our first step is to work with stakeholders to develop a shared vision for the future and a pathway to deliver that together.

Today, we incorporate closure through each stage of the asset lifecycle, in the way we design, build and operate. In 2023 we made it easier for operating assets to fund progressive closure work to reduce our impact. For more information on progressive rehabilitation in 2023, see page 65.

We develop asset closure strategies to identify potential future land uses and focus on opportunities to reduce closure costs and risks over the asset lifecycle. We completed eight additional asset closure strategies in 2023, and now have these in place for 59% of our active operations. All of our operating sites have closure plans, and we are developing closure plans for assets that have an indefinite life such as some port facilities. We review these plans regularly to align with stakeholder expectations and to incorporate lessons learned from other closure projects. At operations with joint ownership structures, we endeavour to work in partnership with other asset owners to ensure closure is considered through asset design, planning and operations.

To bring greater certainty to our closure plans, we are undertaking 16 closure studies across operations and our legacy portfolio.

For more information about our closure risks see page 84.

90+

legacy assets managed within our portfolio

59%

of our active operations have asset closure strategies in place

$17.2bn

in closure provisions on our balance sheet at the end of 2023 (2022: $15.8bn)

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Partnering

We partner to ensure decisions from design through to operations create social, economic, and environmental value when mining and processing ends.

- To build industry capability and share best practices in closure, we developed the Leadership in Sustainable Mine Closure Program in partnership with the University of British Columbia, Curtin University and Ernst & Young.
- To reduce our waste inventory, we continue to explore circular economy options. We began a trial to recycle end of life tyres and belts at Argyle and we completed the first shipments of scrap steel from the Gove refinery for recycling.
- To identify opportunities to create value, we consider options for reprocessing. At Nevada Copper, a former copper site in McGill, Nevada, US we completed a drilling program with Regeneration Enterprises.
- To create long-term social and economic value from the remediation effort at Beatson, a series of former underground copper mines on Latouche Island in Prince William Sound, Alaska we signed a Memorandum of Understanding with the Native Village of Chenega, an Alaska Native tribe, and Chenega Corporation, an Alaska Native corporation, establishing a framework for collaboration toward achieving common goals.

Innovating

We innovate to seek lasting benefits. We partner with universities, governments and other organisations to find opportunities to repurpose and reprocess mineral and industrial waste, improve treatment and valorisation of mining-influenced waters, and explore the social aspects of mine closure.

- Our Mining Influenced Water Challenge was launched to inspire solutions for sustainable water treatment through closure. We received 98 submissions from 36 countries. We have committed to fund $15 million over three years for the 13 projects selected.
- We launched a crowdsourcing campaign through the Pioneer Portal to seek partners to develop a remote sensing solution for environmental monitoring and mineral waste characterisation receiving 100 concept papers.
- We continue to progress our partnership with the Mining Microbiome Analytics Platform to better understand the data collected about the microbes we have at our sites and how they can support rehabilitation and recover metals from mineral waste at closed sites.

We continue to build our expertise and learn as we execute closure work and manage our legacy portfolio.

Argyle diamond mine

We continue to rehabilitate the Argyle diamond mine on Miriwoong and Gija country in Western Australia. In 2023, we completed removal of the processing plant above ground infrastructure, continued reprofiling of the alluvial mining and waste rock landforms and capping of the tailings storage facility. We have reviewed our contracting strategy to increase work awarded to Traditional Owner businesses, increasing our spend to A$33 million in 2023 (2022: A$21 million). We are engaging with Traditional Owners on how to best support and expand meaningful participation.

Gove refinery and residue disposal areas

In 2023, we began the largest demolition project in the Southern Hemisphere at the Gove refinery in the Northern Territory, Australia. While water treatment and capping of the residue disposal areas continues, we are working closely with Gumatj and Rirratjingu Traditional Owners, and the Northern Territory Government, to plan for the future of the region beyond mining. In 2023, we spent A$94 million with Traditional Owner businesses, a decrease on the previous year due to lower global fuel prices (2022: A$101 million).

Ranger uranium mine

Energy Resources of Australia (ERA) is rehabilitating the Ranger uranium mine in the Northern Territory, Australia. We are committed to the successful rehabilitation of the Ranger Project Area to a standard that will establish an environment similar to the adjacent Kakadu National Park, a World Heritage site. We acknowledge the Traditional Owners', the Mirarr People, consistent opposition to developing the Jabiluka uranium deposit and restate our full support for ERA's commitment that the deposit would never be developed without the Mirarr People's consent. Our utmost priority and commitment is to the rehabilitation of the Ranger Project Area in a way that is consistent with the wishes of the Mirarr People.

On 4 April 2023, we announced our support for ERA's Interim Entitlement Offer (IEO), which raised approximately A$369 million to address funding requirements for the Ranger Rehabilitation Project to the end of the second quarter of 2024. Rio Tinto, which owns 86.3% of ERA's shares, subscribed for its full entitlements under the terms of the IEO, at a cost of A$319 million.

In October 2023, ERA announced that the findings of a 2022 Feasibility Study were under review. The study was undertaken on a lower technical risk rehabilitation methodology and to further refine the Ranger Project Area rehabilitation execution scope, risks, cost and schedule. In December 2023, ERA announced that they expected rehabilitation costs to materially exceed the previously estimated range and expected to increase their closure provision to approximately A$2.3 billion.

Rio Tinto continues to provide project support, including organisational and technical support, as requested by ERA. For more information, please visit ERA's website.

Legacy assets

We manage over 90 legacy assets in nine countries and 28 tailings storage facilities, for more information on tailings management see page 64.

In 2023, we donated over 28 acres of land to the Southwestern Oregon Community College in Brookings, Oregon, US to support the expansion of their Curry Campus. The donation triples the size of the Curry Campus providing additional education opportunities in the region.

In France we opened an eco-park in partnership with the French Ministry of ecological transition at Le Thoronet, a former bauxite mine. The park features hiking trails and diverse habitat areas to support local wildlife.

We completed relinquishments at Lochacker Schreiber, a former landfill in Switzerland returning the land to local government for future use, long-term management and monitoring.

At Kelian, a former gold mine in Indonesia we have entered into a post-mining agreement with the province of East Kalimantan, under the supervision of the Ministry of Environment and Forestry to support the long-term management of the site. We have completed the restoration of the environment in the protected forest, which contains a rhinoceros sanctuary.

For more information about closure provisions and financial statements see page 196.



Building capability in closure

Mine closure is a complex challenge that we face as an industry. Changing societal expectations mean the landscape is evolving and we need to develop specialist skills and capability in closure. We developed the Leadership in Sustainable Mine Closure Program in partnership with the University of British Columbia, Curtin University and Ernst & Young to help meet this need and create opportunities to share best practices and learnings. Learn how some of our first program participants are finding better ways to incorporate closure into their work.

For more information see riotinto.com/closure.

Social performance

Our operations can have far-reaching impacts on society. We work hard to avoid or minimise adverse impacts and seek to understand, and invest in, the diverse knowledge, cultures and resources that exist in areas where we operate. Our ambition is to contribute to positive and enduring outcomes for our workforce and the communities and countries where we operate.

For personally

Community engagement and social investment

The strength of our relationships with the communities where we operate, and broader society, is fundamental to our business. Without the support from host communities we can not operate successfully.

Through our partnerships, we strive to support communities in achieving their aspirations and improve lives by contributing to social and economic outcomes, all while respecting and protecting their connection to culture and nature.

We have evolved our approach to engaging with communities and Indigenous Peoples across our business. By listening to understand, being willing to learn from our mistakes and genuine partnering, we will deliver better long-term outcomes for everyone. It enhances our understanding and appreciation of the people and diverse cultures in the geographies where we work. Our relationships with Indigenous Peoples are a priority for us and we especially value our agreements with First Nations People of the lands on which we operate.

We seek out the voices of communities to inform our planning and decision making, and it helps us manage our impacts better, contribute to social outcomes and preserve and protect heritage.

Our Communities and Social Performance (CSP) teams work across our entire business and include people with a range of expertise, from archaeologists, anthropologists, social scientists and economic development experts, to human rights specialists and operational leaders. While these teams help to implement our technical activities, everyone in our business has a role to play in our social licence.

Our assets operate in line with our global *Communities and Social Performance Standard*, which was revised and strengthened in 2022. Our standard provides clear direction on what success looks like and the minimum requirements expected across our global business.

2023 progress

We continue to strengthen our social performance capacity and capability to be better operators and partners. Throughout 2023, our CSP practitioners undertook online learning, communities of practice and face-to-face cross-functional workshops. We have also added central roles in key areas such as heritage, agreements and human rights.

Understanding and acting on the perceptions of communities who host our operations is essential. In 2023, we trialled a new program which will be rolled out across the Group in 2024 and 2025, to help us more effectively engage and better understand our host communities' perceptions, leading to improved data-driven social performance.

CSP targets

In 2023, we progressed initiatives towards our 2026 CSP targets. We focused on developing and implementing frameworks and measurement criteria for both cultural heritage co-management and social investment strategic partnerships. Our human rights training continued throughout the year, with planning for expanded online learning programs.

For more information about our CSP targets see page 43.



Yinjaa-Barni Art, Roebourne, Australia

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Country updates

QIT Madagascar Minerals (QMM), Madagascar

In 2023, QMM faced protests led by representatives of a local association. The protests affected the safety and well-being of employees and people in the communities and in October 2023, an altercation between protesters and public security forces escalated into violence. Public security forces officially reported one person died, and one person was injured. We are committed to learning from this tragic event and will work together with local communities and other stakeholders through open, meaningful, and respectful dialogue to seek to prevent such incidents in the future and find safe, peaceful and long-term solutions to community concerns.

In 2023, QMM committed to increase its community and social investment spend to $4 million per year, on projects to be co-designed with communities, authorities and government, and which are consistent with local, regional and national development plans. This is part of a range of initiatives aimed at maintaining trust and collaboration with local communities. Our commitment to reforestation also continues through our initiative to help local communities establish village tree nurseries.

Resolution Copper project, Arizona, US

At our Resolution Copper project, we are committed to preserving Native American and local community cultural heritage and bringing lasting benefits to the entire region. We continue to strengthen relationships with local communities and Native American tribes by deepening our engagement and partnership support. In 2023, we signed agreements with a number of Native American tribes with ancestral ties to the land, to work together on youth recreation, cultural preservation and economic initiatives. We also finalised a Good Neighbour agreement with the Town of Superior to define the relationship with the town and local community groups over the life of the mine.

Resolution Copper also entered into several multi-year partnership agreements with local and national-level Native American organisations supporting education and youth recreation, including the American Indian Science and Engineering Society (AISES), the Native American Basketball Invitational (NABI) and the Belvado Foundation at the San Carlos Apache community.

For more information
visit Resolution Copper's website resolutioncopper.com/cultural-heritage.

Simandou project, Guinea

At our Simandou iron ore project, we work with local communities to design and deliver local social investment programs, regional economic development programs and livelihood restoration initiatives to build community resilience and support the future of the operation. By raising local capacities, engaging with local entrepreneurs, and investing in training and development, we hope to contribute to a better future for the local communities.

We also work with our infrastructure and joint venture partners to ensure a consistent application of internationally recognised environmental and social performance standards across the entire project. And we are implementing human rights due diligence processes to understand our potential human rights impacts and ensure our employees, contractors and those in the local communities are treated with dignity and respect.

Oyu Tolgoi, Mongolia

At Oyu Tolgoi, we strive to be a leader in sustainable social and economic change through partnerships with local communities and government. Since 2015, we have made an annual contribution to the regional Development Support Fund (DSF) – administered jointly by Oyu Tolgoi and the community – for community initiatives in the Umnugovi aimag. In 2023, the fund provided $6.2 million to help complete a local school, kindergarten and health care centre and construct sewage pipelines, pasture irrigation, waste plant and rare animal protection projects. This has improved accessibility and provided a better standard of living for community members.

The Future Generation Special Fund makes up 5% of the annual DSF investment and provides development opportunities for youth. In 2023, 114 local students were awarded the Goviin Oyu scholarship to study in specialist fields. Since 2015, 519 students have received scholarships, and of these, 70% have been hired for jobs in their local communities.

Employment from the local communities at Oyu Tolgoi increased by 10% in 2023 due to a comprehensive recruitment process and local talent development. There is also a focus on strengthening the local and national supply chain with local spending increasing from $261 million in 2022 to $272 million in 2023.

In 2023, Oyu Tolgoi committed $50 million over five years to support the Khanbogd Soum town development by 2040. Some infrastructure projects are already underway, including the construction of a road, a public square, a recreational sport centre and the renovation of the local hospital.

Oyu Tolgoi also continues to work with herders, local communities and the government to improve water accessibility and address the increased demand for water.

Panguna mine, Bougainville, Papua New Guinea

The Panguna mine was operated by Bougainville Copper Limited (BCL), majority-owned by Rio Tinto, for 17 years from 1972 until 1989, when operations were suspended due to a civil war, which lasted until 1998. In 2016, we transferred our 53.83% majority shareholding in BCL to the Autonomous Bougainville Government (ABG) and the Papua New Guinea (PNG) Government for no consideration, enabling the ABG and PNG to hold an equal share in BCL of 36.4% each.

In September 2020, the Human Rights Law Centre (HRLC) filed a complaint against Rio Tinto on behalf of 156 Bougainville residents with the Australian National Contact Point (AusNCP) regarding the Panguna site.

In 2021, as an outcome of the AusNCP engagement, a joint committee of stakeholders, the Panguna Mine Legacy Impact Assessment Oversight Committee (Committee), was formed to oversee a detailed independent assessment of the Panguna mine. The Panguna Mine Legacy Impact Assessment (Legacy Impact Assessment) will cover the environmental impacts, and directly connected social and human rights impacts, caused by the Panguna mine since the cessation of mining. The Committee is chaired by an independent facilitator with representatives from the ABG, the Independent State of PNG, clan leaders and landowners, local communities, Rio Tinto, BCL and HRLC. It has met regularly since its formation.

In 2022, the Committee selected and endorsed Tetra Tech Coffey to undertake phase 1 of the Legacy Impact Assessment. The Legacy Impact Assessment began in December 2022 and continued throughout 2023 with three field campaigns completed successfully. The field work in 2023 included interviews with community members across the study areas as well as assessing the stability of aging mine infrastructure and impacts related to water quality and flooding. The Legacy Impact Assessment will provide all parties with a clearer understanding of the human rights impacts, so we can consider the best way forward together. Results will be presented to the Committee when phase 1 is completed (due 2024).

Compagnie des Bauxites de Guinée SA (CBG), Guinea

CBG is a bauxite operation in Guinea owned by Halco Mining Inc. (51%) and the Guinean Government (49%). Halco is a consortium comprised of Rio Tinto (45%), Alcoa (45%) and Dadco Investments (10%). Rio Tinto participates on the boards of Halco and CBG, with representation on various shareholder oversight committees.

Through our Board and committee roles, we monitor and support CBG's approach to environmental protection, community issues and human rights. We are aware of the concerns regarding access to land and water, and the pace of livelihood restoration programs as well as concerns regarding CBG's stakeholder engagement.

In 2023, sustainability advisory committees at Halco and CBG levels met regularly, strengthening our governance oversight and providing support to CBG for the improvement of CBG's social and environmental practices, including for the development of an ongoing human rights due diligence process. Both the Halco and CBG advisory committees are closely following CBG's response to a complaint made to the International Finance Corporation's (IFC) Office of the Compliance Advisor Ombudsman (CAO). The mediation process facilitated by the CAO has conducted four plenary sessions and several other bilateral meetings between the parties in 2023. Through a collaborative approach, important progress was made with agreements on CBG's practices on stakeholder engagement and management of grievances. Additionally, the implementation of previous agreements on blasting and access to water have progressed, delivering positive outcomes to local communities. Halco continues to participate in the mediation process as an observer, alongside the IFC.

Social investment

We have a long history of partnering to support the host communities and regions where we operate. We employ local people, buy local products, and engage local services. In 2023, our total voluntary global social investment was $84 million, covering a wide range of social and economic programs. And we introduced a new company-wide approach to social investment, which focuses on working together with communities to find out what is important to them so we can make decisions that will deliver positive and enduring outcomes. This is essential for our continued social licence in an increasingly complex world.

For more information about our partnerships and community engagement see riotinto.com/socialeconomicdevelopment

Update on our communities and social performance commitments

This section provides an update on our CSP commitments made after the tragic destruction of the rock shelters at Juukan Gorge in May 2020. This remains an important area of focus, as we continue to find better ways, recognising we always have things to learn.

In 2021 and 2022 we asked Traditional Owner groups in the Pilbara to share feedback on our progress on some of the commitments we made as part of the Rio Tinto Board Review in 2020 on cultural heritage management. We repeated this process in 2023 with six out of ten Pilbara Traditional Owner entities choosing to respond. The verbatim feedback is presented on our website at riotinto.com/juukangorge as it was provided, with only the names removed for anonymity. We now have a three-year longitudinal perspective on our relationships. We have summarised our progress under three areas: relationships, governance and process, and leadership and inclusion.

For more information see our *2021* and *2022 Communities and Social Performance Commitments Disclosures* at riotinto.com/cspreport.

Relationships

We are finding better ways to work with communities and Indigenous Peoples, particularly in how we protect heritage. We are moving to a model of co-management, working in partnership with Indigenous Peoples across our operations. Our approach aims to enhance our understanding and appreciation of Indigenous cultural heritage and ensure that Indigenous voices inform our planning and decision making.

Social, Cultural and Heritage Management Plans

In 2023, our Iron Ore business advanced five Social, Cultural, and Heritage Management Plans for proposed developments, with positive feedback by Traditional Owners. It is based on building understanding, co-designing, partnering, and transparently sharing information.

Memorandum of understanding with Yindjibarndi Energy Corporation

We are exploring new economic models to increase First Nations participation in our business. In October 2023, we announced a memorandum of understanding (MoU) with the Yindjibarndi Energy Corporation to explore opportunities to collaborate on renewable energy projects on Yindjibarndi Country in the Pilbara region of Western Australia. Together, we will consider a range of opportunities, including wind and solar power and battery energy storage systems.

Nammuldi cultural heritage incident

In August 2023, as part of our cultural heritage monitoring and management processes, we identified the fall of a Pilbara scrub tree and a one cubic metre rock from the overhang of a rock shelter in an area adjacent to the Nammuldi mine site. As soon as we identified this, we paused nearby blasting work occurring 150 metres away, and notified the Traditional Owners of the land, the Muntulgura Guruma People. We have apologised to the Muntulgura Guruma People, who we deeply respect, and are continuing to work closely with them. We've completed a detailed review to understand what happened and how we can improve.

We are working through the outcomes of the review with the Muntulgura Guruma People. We will continue to listen, learn and improve our ways of working.

Working with Indigenous communities in Canada

Healthy community relationships are essential to our operations and future growth. We have 12 active long-term impact benefits/participation agreements with Indigenous communities in Canada, supported by proactive site-based and regional engagements.

Naskapi Nation and Iron Ore Company of Canada agreement

In February 2023, the Naskapi Nation of Kawawachikamach and Iron Ore Company of Canada (IOC) signed an agreement to establish a mutually beneficial relationship based on dialogue, collaboration and trust. This socio-economic agreement aims to create opportunities for greater participation by Naskapi People in IOC's activities through training and development, employment, collaboration on environmental projects, and procurement. It will also protect and encourage the practice of traditional activities and provide long-term financial benefits to the Naskapi Nation.

Cheslatta Carrier Nation visit Australia

We are increasing engagement, participation and encouraging learning. In 2023, the Cheslatta Carrier Nation from British Columbia attended the World Mining Congress in Brisbane, and visited our Weipa operations in Queensland where they met with Traditional Owners.

Governance and process

During 2023, we continued to implement our *Communities and Social Performance Standard*, and revise systems and processes to help us meet external expectations and deliver better social and human rights outcomes. We have strengthened our social risk framework, and our teams' understanding of social and human rights risks.

Australian Advisory Group

We established the Australian Advisory Group (AAG) in 2022 to provide independent expert advice to our executives on matters impacting our operations in Australia, with a priority focus on First Nations issues and opportunities. The group met four times in 2023, including site visits to Weipa and the Pilbara. An independent review of the AAG was finalised in October to ensure the AAG continues to operate in a way that adds genuine value to our business.

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The Oxford Leading Sustainable Corporations Programme

A recommendation from the Juukan Gorge Board review in 2020 was to strengthen our leaders' understanding of current and emerging environmental, social and governance (ESG) issues to better preserve cultural heritage. In 2022, we partnered with Saïd Business School, University of Oxford to pilot their Leading Sustainable Corporations Programme. In 2023, 116 leaders completed the 12-week course. Learning outcomes and feedback were overwhelmingly positive, igniting new discussions about sustainability that will support our decarbonisation objectives, mutually beneficial sustainability outcomes for communities and the long-term success of the business. It will be offered again in 2024.

Independent Cultural Heritage Management Audit

In March 2023, we published an independent report (produced by ERM, a global sustainability consultancy) on a global audit of our cultural heritage management performance.

The audit was completed throughout 2021 and 2022 across 20 assets in Australia and 17 assets in other countries where we operate, including Canada, South Africa, US and Mongolia. The audit identified areas where we are achieving leading cultural heritage practices but also areas where we need to improve our performance. Based on the report recommendations, we are developing a consolidated action plan and a cultural heritage maturity model to monitor progress across the business.

For more information
see the results from the Independent Cultural Heritage Management Audit at riotinto/culturalheritage.

Leadership and inclusion

We are fast-tracking Indigenous Australians into professional and leadership roles to ensure we have a stronger representation of diverse voices at our decision-making tables in Australia. In 2023, we revised our target to have 100 Indigenous leaders by 2025. Having true diversity of perspectives, and an Indigenous lens on decision making, will guide our company moving forward.

Creating an environment that is safe for Indigenous employees is a priority. Our cultural safety initiative "Care for Mob" will be delivered against a national framework in partnership with the Everyday Respect taskforce to ensure all employees feel safe, supported and respected.

In 2023, we launched the Elevating Voices Network in Australia. The Network is led by a small group of Indigenous and non-Indigenous employee volunteers who come together to activate events, activities and conversations. By encouraging connections, building cultural intelligence, and fostering a more culturally safe company, the Elevating Voices Network aims to create stronger links for collaboration, celebrate representation of our Indigenous workforce, enhance current and future initiatives and complement meaningful workplace opportunities through engagement.

We have also continued our Cultural Connection program to ensure leaders can navigate and understand Indigenous culture and build strong trusted relationships with the Indigenous community and Indigenous employees in Australia. In 2023, we introduced this program to our Communities and External Affairs team in Mongolia, to uplift their cultural knowledge in preparation for a cross cultural visit between the Nyangumarta Traditional Owner group in Australia, and Mongolian herders and employees in Mongolia.

Indigenous participation

In 2023 we re-established the Aboriginal Training and Liaison (ATAL) program through a co-design process with the Traditional Owner groups we work with in the Pilbara. This work-ready program is focused on empowering participants to develop skills for ongoing employment in different jobs and industries across the Pilbara.

Indigenous partnerships

One of our priorities is partnering with local and national Indigenous organisations to provide support in key areas such as economic development, community empowerment, preserving traditional knowledge and practices and promoting sustainable development and social inclusion.

In November 2023, we announced a five-year partnership with First Nations Media Australia (FNMA) to help them digitise and preserve at-risk media (audio and video tapes) from the 1970s to 1990s. The FNMA Archiving Project will support First Nations media organisations and other Central Australian-based Aboriginal media organisations.

The partnership sits within our Living Languages Living Cultures program, which has been designed to promote the recognition, preservation, and revitalisation of Australian Indigenous languages and cultures for the benefit of Australian Indigenous communities.

Supporting Indigenous businesses

We support local businesses, employ local people and buy local products, especially from Indigenous, small and regional businesses. In 2023, we spent more than A$725 million with Indigenous businesses across Australia – an increase of 28% on the year before.

We are also increasing our spend with local and Indigenous businesses in Canada and the US. In 2023, we spent $190 million with Indigenous suppliers in North America. We do not always get it right, but when our local suppliers have concerns, we listen and learn. In February 2023, at our Rincon lithium project in Argentina, some members of local Indigenous suppliers blocked a road to the site due to concerns about the procurement process. We met with the communities, listened to the issues and made changes to facilitate their ability to access contracts.

Truth and reconciliation

In 2023, we supported the referendum for an Aboriginal and Torres Strait Islander Voice in the Australian Constitution and provided a corporate donation to the "Yes" campaign.

The "No" outcome does not change our support for constitutional recognition for Indigenous Australians. As one of the largest employers of Indigenous Australians and a company that operates on the lands of Indigenous Peoples, we have long supported constitutional recognition for Indigenous Australians.

In Canada, we continue to create learning opportunities for our people to raise awareness about the history, culture and rights of Indigenous Peoples. In 2023, we introduced a new online training on awareness of Indigenous culture and issues, across all our Canadian sites. We held a series of educational events to celebrate National Indigenous History Month, and to commemorate Truth and Reconciliation Day.

Economic contributions ($ million)

	2023	2022	2021	2020	2019
Consolidated sales revenue	**54,041**	55,554	63,495	44,611	43,165
Net cash generated from operating activities[1]	**15,160**	16,134	25,345	15,875	14,912
Profit after tax for the year[2]	**9,953**	13,048	22,597	10,400	6,972
Underlying earnings[2]	**11,755**	13,359	21,401	12,448	10,373
Underlying earnings per share (US cents)[2]	**725.0**	824.7	1,322.4	769.6	636.3
Net (debt)/cash	**(4,231)**	(4,188)	1,576	(664)	(3,651)
Capital expenditure[3]	**(7,086)**	(6,750)	(7,384)	(6,189)	(5,488)
Employment costs	**(6,636)**	(6,002)	(5,513)	(4,770)	(4,522)
Payables to governments[4]	**(7,881)**	(9,313)	(12,789)	(8,224)	(7,175)
Amounts paid by Rio Tinto	**N/A[5]**	(10,779)	(13,334)	(8,404)	(7,635)
Amounts paid by Rio Tinto on behalf of its employees	**N/A[5]**	(1,622)	(1,486)	(1,353)	(1,284)

1. Data includes dividends from equity accounted units, and is after payments of interest, taxes and dividends to non-controlling interests in subsidiaries.
2. Comparative information for 2022 and 2021 has been restated to reflect the adoption of narrow scope amendments to IAS12 Income Taxes.
3. Capital expenditure is presented gross before taking into account any disposals of property, plant and equipment.
4. Payables to governments includes corporate taxes, government royalties and employer payroll taxes.
5. Our *Taxes Paid Report* will be published later this year on riotinto.com.

	2023	2022	2021	2020	2019
Community investment[1] (discretionary)	**84***	62.6	72.1	47.0	36.4
Development contributions[2] (non-discretionary)	**17.6**	18.2	19.1	12.8	12.0
Payment to landowners[3] (non-discretionary)	**231.9**	299.0	222.9	165.9	147.0

* Community investment increased in 2023 attributed largely to Oyu Tolgoi and Rio Tinto Iron Ore.

1. Community investments are voluntary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto managed operations to third parties to address identified community needs or social risks.
2. Development contributions are defined as non-discretionary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto to a third party to deliver social, economic and/or environmental benefits for a community, which Rio Tinto is mandated to make under a legally binding agreement, by a regulatory authority or otherwise by law.
3. Payment to landowners are non-discretionary compensation payments made by Rio Tinto to third parties under land access, mine development, native title, impact benefit and other legally binding compensation agreements.

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Health, safety and wellbeing

Caring for one another is one of our values – it is part of who we are and the way we work, every shift, every day. Nothing is more important than the health, safety and wellbeing of our employees, contractors and communities.

2023 progress

Although there were no fatalities on our managed sites in 2023, in January 2024, tragically four team members from our Diavik mine in Canada lost their lives when a charter flight crashed on its way to the mine.

In 2023, we also continued to see fatalities more broadly across our industry, including six at our non-managed operations. We firmly believe all fatalities are preventable. Our focus remains on identifying, managing and, where possible, eliminating risks to ensure everyone, including partners and colleagues at our non-managed operations, goes home safely every day.

In 2023, we encountered three permanent damage injuries; two significant hand injuries at Diavik and Guinea respectively, and another at Kennecott Integrated Skarns Project, where one of our colleagues sustained a leg injury requiring amputation.

We also experienced three significant process safety events in 2023; two at Sorel-Tracy in Quebec, and one at Kennecott in Utah. We are continuing to find better ways to safely run our operations and prevent these incidents from occurring. One example is our newly developed process safety improvement plan that aims to continually improve the maturity of our management system and culture. These will continue to be implemented globally through until 2025.

Our all-injury frequency rate (AIFR) was 0.37 in 2023, an improvement from 2022 (2022: 0.40). We continue to see a disparity in safety performance for employees compared to contractors, so our focus remains on improving contractor safety by further integrating contractors into our safety culture.

Across our operations, we continue to see serious incidents where people are exposed to potentially fatal events. The main safety risks relate to falling objects, falling from heights and vehicle-related incidents. These risk areas account for 58% of the total potentially fatal incidents and remain at the forefront of our safety maturity efforts.

Critical risk management

Critical risk management (CRM) remains our primary fatality elimination tool, helping to ensure critical controls are in place and working where there is a fatal risk. In 2023, we initiated a project to help our teams reconnect with why we have CRM, and to enhance the quality of verifications which check that the right critical controls are in place for each task. In 2024, we will leverage the data we collect to identify trends, which will help us proactively intervene before incidents occur.

Vehicles and driving

In 2023, we introduced a program to help our teams learn critical lessons related to vehicles and driving, including potential gaps in vehicles and driving critical controls, and developing effective strategies to address these.

We also focused on deepening our understanding of mass transport risks, facilitating self-assessments at our sites to identify compliance with our Group procedure. We will undertake a similar exercise to better understand our aviation-related risk profile in 2024.

Safety maturity model

We acknowledge the importance of leadership and strong processes in driving a sustained improvement to our safety performance and safety culture. This is evident in the implementation of our safety maturity model (SMM). Introduced in 2019, the SMM is our blueprint for safety, integrating best practices in leadership, engagement, learning, risk management and work planning, as well as operational ownership of health and environmental risks. In 2023, we continued to work closely with our assets to evaluate and evolve their safety maturity, and foster both physical and psychological safety. Through this work, we have refined our assessor training program, placing a higher emphasis on elements such as mindsets, behaviours and felt experiences towards our safety maturity efforts. This supports our belief that all employees and contractors should feel empowered to work safely, speak up and make decisions that prioritise their wellbeing. While we acknowledge cultural transformation is a long-term journey, we draw encouragement from the outcomes of the SMM assessments conducted in 2023. These have significantly deepened our understanding of the safety culture at each site and support actionable insights which will guide us towards creating an even safer work environment.

Demonstrating leadership of maritime safety and crew welfare

As the first initiative of its kind for the dry bulk industry, we launched the Designated Owners and Operators Program. It provides us and our shipping value chain partners, including shipowners and operators, a structured platform to work together on improving maritime safety and crew welfare standards. Although we have not had any fatalities across our owned vessels since the formation of Rio Tinto Marine in 1989, over the past four years, seven seafarers have tragically lost their lives on chartered vessels. As part of the program, our partners commit to improving everyday practices to prevent fatalities and injuries, and improve crew welfare. So far we have onboarded 16 owners/operators, representing around 36% of our shipped volumes.

Mental health and wellbeing

Mental health is a core part of our safety culture. We have a responsibility to support the wellbeing of our people, beyond the traditional areas of health and safety, and we are committed to creating a work environment that is free from psychological harm.

Our employees' mental health can be impacted by psychosocial hazards at work, so we continue to strengthen our psychosocial risk management. To support an environment where everyone feels safe, respected and included, we are progressing all 26 recommendations from the *Everyday Respect Report*. This focuses on training leaders in building psychological safety and becoming upstanders, rectifying any unsafe facilities and building plans to make our facilities more inclusive, and providing a more people-centric response to support those impacted by harmful behaviours and disrespect. In 2023, 83.5% of our employees completed the "Building Everyday Respect" employee learning module, a critical step towards changing our culture, building trust and supporting the psychological safety of our colleagues.

To better support people impacted by bullying, harassment, sexual harm, racism and discrimination, we introduced Care Hub in late 2023. Care Hub facilitates access to a range of wellbeing pathways and informal non-investigative resolution options to help people navigate routes for healing, recovery, support and resolution, as is aligned to the recommendations from the *Everyday Respect Report*. For more information about Care Hub, see page 77.

In 2023, we continued our work to help leaders recognise psychosocial hazards; assess the risks; and implement, evaluate and monitor effective controls, just as for any other health or safety risk. The practices support ISO 45003 and the World Health Organisation's mental health report. We also continued embedding our mental health framework to raise awareness of mental wellbeing, reduce stigma and increase the capacity of our leaders to recognise and support individuals experiencing mental ill-health.

Aligned with our commitment to provide our employees the tools and skills they need to support their mental health, we continue to provide and promote the employee assistance program (EAP), our mental health toolkit and our global Peer Support Program, which includes more than 1,600 peer supporters globally. We also support our people through our domestic violence support programs, which cover 100% of employees. Importantly, we continued to support global mental health campaigns such as R U OK? Day and World Mental Health Day. In October 2023, we held our mental health week to support mental wellbeing and encourage our people to look out for one another. We ran a program of activities that included a comprehensive communications toolkit, packed with vital information and resources for holistic wellbeing. Our people, from graduates to the Executive Committee, shared powerful stories and commitments to mental health in a series of impactful videos.

We also hosted a number of engaging regional calls addressing related wellbeing topics which have contributed to shaping a culture that prioritises mental wellbeing and breaking down stigmas.

In 2023, we challenged ourselves on the role we can play in preventing suicide. This work involved understanding how we can work together as a business, improve identification of those individuals who may be at risk, and support our people and families impacted by deaths from suicide.

We continue to be an active member of the Minerals Council of Australia (MCA) Psychosocial Risk Management Working Group, chaired by MCA and industry partners, to improve the understanding and management of psychosocial risk within our industry.

Occupational health

In 2023, we recorded a higher number of new occupational health illnesses compared to the previous year, with 98 (2022: 70), in line with our increased focus on medical assessments. These assessments are a key requirement in ensuring and maintaining our employees' fitness for work, addressing legislative requirements and managing risk profiles. We continue to standardise and simplify these assessments to help improve our health performance.

We also ran two workshops for our global health and hygiene practitioners to share learnings, best practice and recent technology developments in the Southern and Northern hemisphere. We completed occupational and industrial hygiene monitoring at all of our operational and managed assets. This included analysis of noise, airborne particulates, gas and other contaminants that can lead to adverse health effects for our employees and contractors. This helped us to better understand our exposure profile and prioritise actions to put effective controls in place.

In 2023, we commenced a project to improve clarity and accessibility of data collected through annual surveys. This project will continue in 2024 and beyond, allowing better internal reporting of health and industrial hygiene risks at a Group level, and individually for each product group. Health monitoring remains a pivotal focus, involving the redesign of fit-for-purpose medical assessments.

The data collected over 2023 allowed for semi-quantitative assessments of risk and identified areas where we can implement or enhance control measures. Each product group worked on identifying projects within their assets which, with the support of the Health Area of Expertise, will be designed, developed and implemented to reduce exposures for our employees and contractors. We will continue to track exposure reduction projects across product groups in 2024.

Recognising the need to improve the transparency and detail of our health data, we performed a Group internal audit in 2022. We are continuing to implement the audit recommendations by working to improve the reporting of our data. These recommendations include reviewing gaps in guidance, updating our existing guidance to address these gaps, re-training our health practitioners and improving the available consolidated reports to enable further insights.

We also made improvements to our annual corporate reporting activity to ensure data collected and reported is relevant to both internal and external stakeholders.

This transparently shares our health, safety, environment, security and communities performance over a longer period of time, and builds our environmental, social and governance (ESG) credentials.

Health, safety, environment and security transformation

The health, safety, environment and security (HSES) transformation program has simplified the way we work and provided access to trusted and timely data, ultimately making our business safer. Following three successful pilots in Enablon™ in 2022 – a new digital tool helping us to integrate HSES data and processes into a single platform – global deployment of the core Enablon™ modules started in 2023. Today, more than 70% of the business is using Enablon™, and the final wave of deployment will be completed in early 2024.

We also deployed 11 Enablon™ environment modules across all Saguenay–Lac-St-Jean sites in Quebec, Canada in 2023.

Work continues to expand the capabilities of Enablon™ to support processes such as management of change, in-field safety tools and chemical management, which will drive simplification and standardisation across the Group.

Safety and health performance

	2023	2022	2021	2020	2019
Fatalities at managed operations	**0**	0	0	0	0
All-injury frequency rate (per 200,000 hours worked)	**0.37**	0.40	0.40	0.37	0.42
Number of lost-time injuries	**236**	225	216	187	227
Lost-time injury frequency rate (per 200,000 hours worked)	**0.23**	0.25	0.25	0.22	0.27
Safety maturity model score[1]	**5.2**	4.7	5.7	5.4	4.5
Rate of new cases of occupational illness (per 10,000 employees)[2]	**19.2**	15.1	15.2	16.8	20.7
Number of employees[3]	**57000**	54,000	49,000	47,500	46,000
Fines and prosecutions – safety ($'000)[4]	**330.0**	339.0	646.2	25.4	40.7
Fines and prosecutions – health ($'000)[5]	**0.9**	0.0	5.0	0.0	1.4

1. Figures in the table represent the Rio Tinto Group average SMM score at the end of each year. Each year, assets are added or removed from the SMM program based on project and closure cycles. New assets to the program are baselined in the first quarter of each year and added to the Group average at the end of the year.
2. Rate of new cases of occupational illness (NCOI) = number of all new cases of occupational illnesses x 10,000/number of employees (based on average monthly statistics).
3. These figures include the Group's share of joint ventures and associates (rounded).
4. In 2023, we paid safety fines resulting from non-compliances identified during MSHA inspections at our Boron and Owens Lake operations, California, US, and Kennecott Copper and Bingham Canyon mines, Utah, US.
5. In 2023, we paid health fines resulting from non-compliances identified during the inspections conducted by the Health Authorities at our Oyu Tolgoi mine in Mongolia.

Contributing causes for newly reported illness cases (employees)

	2023	2022	2021	2020	2019
Noise induced hearing loss	**28**	20	16	23	34
Musculoskeletal disorders	**46**	32	32	29	29
Mental stress	**4**	5	1	2	2
Others	**20**	13	15	14	16

Note: There can be one or more illness reported for each employee/contractor.

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Talent, diversity and inclusion

We are finding better ways™ to live our values and build an environment of trust where everyone feels safe, respected and empowered. This is how we attract and retain world-class talent to our operations globally. Our people have access to outstanding development opportunities allowing them to build skills and capabilities to support them in their role, many that are transferable within and beyond our industry.

2023 progress

Listening to our people

More than 39,000 employees responded to our most recent survey in October 2023, and our employee satisfaction score (eSAT) increased to 74 (from 73 in 2022). Of particular note was the positive progress we are making on key indicators aligned with everyday respect: authenticity (75), belonging (71), inclusion (69) and speaking up (74). We have more to do and will continue to focus on accountability and increasing collaboration inside and outside of our business.

Supporting an inclusive culture

In 2023, we continued our work to support an inclusive culture by implementing the recommendations outlined in the *Everyday Respect Report*. Our focus has been on:

- promoting respect
- investing in leadership development
- creating an inclusive workplace
- increasing support for our people
- ensuring equality through pay equity.

In 2024, we will conduct an independent Everyday Respect progress review. We look forward to reporting on the results and our progress.

Promoting respect

The physical and psychological health and safety of our workforce is a priority. In 2023, 83.5% of our employees completed a learning module on building psychological safety and becoming an upstander.

We have also introduced the concept of "Purple Banners" across the business. Through these updates, we share case studies of recent instances of harmful behaviours and disrespect that has happened in the business. This encourages deeper discussions about conduct among our teams and helps increase transparency.

For more information about our work to support employees' psychological health and safety see the health, safety and wellbeing section on pages 71–72.

Investing in leadership development

In 2023, we held two leadership conferences to bring our senior leaders together to reflect on our past, make further progress against our strategy and look at ways we can shape the future of our business for the next 150 years. The keynotes, leader presentations and discussions with community groups were underpinned by our values.

We also continue to offer the Voyager leadership program to all senior leaders to help them lead authentically with care, courage and curiosity. This is an immersive leadership experience that accelerates personal growth and deepens self-understanding. This program has now been completed by 72% of our senior leaders. In 2023, we continued to support and develop our leaders through the Leading Sustainable Corporations Programme in partnership with Oxford University and focusing on developing leaders as coaches.

In 2023, we have spent time developing, testing and launching new leadership programs that will help our leaders create a safe environment, empower their teams and perform together.

We are also committed to increasing cultural knowledge, advancing Indigenous leadership in our workforce and creating an environment where everyone feels safe and respected. In Australia, our Indigenous leadership program continues to fast-track Indigenous Australians into professional and leadership roles, helping us to ensure that we have a stronger representation of diverse voices across our business.

For more information about how we are increasing Indigenous leadership in our business see the CSP commitments section on page 69.

Creating an inclusive workplace

The representation of women across all levels in our business continues to be an important focus. In 2023, we saw an increase from 22.9% to 24.3% and further increases across all levels of the organisation, with senior leaders increasing from 28.3% to 30.1%, and operations and general support increasing from 16.2% to 17.7%.

Implementing the *Everyday Respect Report* recommendations remains our priority and we are confident that this will improve both the attraction and retention of women and other diverse groups to our business.

For more information about the Everyday Respect initiative see riotinto.com/everydayrespect.

We continued to evolve our award-winning graduate program in 2023 and recruited our biggest cohort yet with 298 graduate roles. Of these, 51.7% in new graduate roles were women and 37.6% were from communities where we are building new businesses. In Australia, 10.6% of the graduate intake (down from 15% in 2022) and 13.8% of our vacation student program (up from 2.2% in 2022) were Indigenous.

In December 2023, we formalised our ambitions to increase representation of ethnic minorities setting a global target of 18% ethnic minority representation within our senior leadership population (Executive Committee direct reports) by the end of 2027.

Collecting and monitoring ethnicity data is challenging in a global context. We have more work to do in 2024 to ensure that we have an accurate understanding of both our baseline and progress against this target. We will report on the progress and the key programs and activities we put in place to increase representation, to ensure our organisation is welcoming and built to support all of our people.

Throughout 2023, we have also made it a priority to address safety and hygiene risks in our facilities with improvements to security, lighting and access to well-maintained restrooms and change rooms. We are performing audits and making rectifications across all major sites and offices. We are committed to investing to ensure that our facilities are safe and meet the needs of our diverse workforce. To provide a safe and constructive way for employees and contractors to raise concerns and give feedback, we have created new village councils across managed villages and camps. We now have over 20 village councils across our camps, and these principles are also being adopted in some of our office locations.

We have also established a global network of Employee Resource Groups (ERGs) to help us find better ways to elevate diverse voices. These employee-led groups, each with an Executive Committee member as a sponsor, bring people with a shared identity together with their allies to offer a diverse lens to business challenges and projects and offer participants career development opportunities. We have three ERGs which are LGBTQ+, neurodiversity and gender equality. We plan to broaden our scope and launch additional ERGs in 2024.

55,000[1] people

make up our workforce of employees and contractors, an increase of 5.8% since 2022 (52,000).

9,166 new hires

joined the business in 2023, of which 2,718 were contractors becoming permanent employees. (2022: 11,062 new hires of which 4,317 were contractors).

24.3% women

in our workforce, an increase of 1.4% since 2022 (22.9%). Workforce breakdown: 13,396 women; 41,660 men; 8 undeclared gender.

62% employees

participated in myShare[2], an increase of 3% (2022: 59%).

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2023, rounded to the nearest 1,000.
2. myShare is our global employee share plan.

Increasing support for our people

In 2023, the Business Conduct Office (BCO) launched Care Hub, our new independent care unit providing trauma and people-focused support, practical care and alternative resolution options to anyone affected by harmful behaviours. Care Hub currently supports matters reported through myVoice, including matters where reporters are referred to myVoice by Human Resources, our Health, Safety, Environment and Security function, leaders, our Peer Support Network, and has supported over 276 people since launching.

For more information about the BCO, myVoice and Care Hub see page 77.

Ensuring equality through pay equity

Ensuring that employees with similar skills, knowledge, qualifications, experience and performance are paid equally for the same or comparable work is intrinsically linked to our commitment to inclusion and diversity. We remain committed to eliminating any residual pay inequities based on gender or other non-legitimate dimensions of difference.

Our equal pay gap, the primary lens we use when assessing gender pay, measures the extent to which women and men employed by our company in the same location and performing work of equal value receive the same pay. Our 2023 equal pay gap is less than 1% in favour of men.

Our gender pay gap is a measure of the difference between the average earnings of women and men across the Group (excluding incentive pay), regardless of role, expressed as a percentage of men's earnings. Our 2023 gender pay gap is less than 1% in favour of women.

For more information about our commitment to pay equity see riotinto.com/payequity.

Workforce data by region[1][2]

Region	Average employee headcount[3]	Headcount distribution %	Absenteeism[4]	Average contractor headcount[5]	Headcount distribution %
Africa	3,058	6.0%	3.1%	134	2.8%
Americas	16,174	31.9%	0.6%	845	17.7%
Asia	5,834	11.5%	1.2%	137	2.9%
Australia/New Zealand	24,535	48.3%	4.7%	3,594	75.3%
Europe	1,168	2.3%	0.7%	64	1.3%
Total[6]	**50,768**	**100.0%**	**2.9%**	**4,773**	**100.0%**

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2023.
2. Rates have been calculated based on average monthly headcount in the year.
3. Employee headcount excludes Non-Executive Directors, contractors and people not available for work.
4. Absenteeism includes unplanned leave (sick leave, disability, parental and other unpaid leave) for populations on global, centralised HR systems. Excludes Non-Executive Directors and contractors.
5. Contractors include those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders.
6. The sum of the categories may be slightly different to the Rio Tinto total shown due to rounding.

Workforce data by category and diversity[1][2]

		Gender[3]					Age Group[4]				Region[4]				
Headcount distribution %		Women (count)	Men (count)	Undeclared (count)	Women %	Men %	Under 30	30-39	40-49	Over 50	Africa	Americas	Asia	Australia /NZ	Europe
Senior leaders	1.1%	175	407	0	30.1%	69.9%	0.2%	6.4%	44.9%	48.5%	4.5%	26.0%	10.6%	43.8%	15.1%
Managers	8.2%	1,526	3,005	2	33.7%	66.3%	0.5%	25.3%	44.2%	30.0%	5.1%	34.1%	11.3%	43.5%	6.0%
Supervisory and professional	37.2%	6,282	14,173	5	30.7%	69.3%	11.7%	36.7%	30.3%	21.3%	6.4%	24.7%	16.9%	50.0%	2.0%
Operations and general support	52.6%	5,138	23,831	1	17.7%	82.3%	17.8%	28.8%	26.6%	26.8%	6.4%	35.5%	9.1%	47.5%	1.5%
Graduates	0.9%	275	244	0	53.0%	47.0%	84.9%	13.3%	1.8%	—%	5.7%	32.4%	14.6%	46.3%	1.0%
Total	**100.0%**	**13,396**	**41,660**	**8**	**24.3%**	**75.7%**	**14.5%**	**31.1%**	**29.4%**	**25.0%**	**6.3%**	**31.3%**	**12.2%**	**48.0%**	**2.2%**

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2023.
2. Excludes Non-Executive Directors, Executive Committee, contractors and people not available for work 2017-2020. From 2021, the definition used to calculate diversity was changed to include people not available for work and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders) excluding project contractors.
3. In 2023, eight (8) individuals' gender was undeclared.
4. Representation by Age and Region includes employees only, excludes contractors.

Employee hiring and turnover rates[1][2][3]

		Gender[4]		Age group				Region				
	Total	Women	Men	Under 30	30-39	40-49	Over 50	Africa	Americas	Asia	Australia /NZ	Europe
Employee hiring rate[5][6]	**17.6%**	35.0%	65.0%	42.8%	30.8%	17.8%	8.6%	7.4%	26.2%	14.2%	49.0%	3.2%
Employee turnover rate[7]	**8.4%**	8.7%	8.3%	11.1%	7.9%	6.8%	9.5%	5.2%	6.0%	3.8%	11.3%	7.9%

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2023.
2. Excludes Non-Executive Directors and contractors.
3. Rates have been calculated based on average monthly headcount in the year per category.
4. In 2023, eight (8) individuals' gender was undeclared.
5. Total hiring rate is calculated as total employee hires over average employee headcount for the year.
6. Hiring rate includes total employee hires per category over total hires for the year.
7. Turnover rate excludes temporary workers and the reduction of employees due to business divestment. Turnover rate includes total terminations per category over average monthly headcount in the year per category.

Human rights

Our human rights program is core to delivering on our business strategy and achieving impeccable environmental, social and governance (ESG) credentials.

Commitment

We commit to respecting and supporting the dignity, wellbeing and human rights of everyone we interact with. Living up to that commitment relies on embedding rights-respecting and ethical behaviour throughout our business, from how we work with local communities to how we choose our suppliers and engage with others in the workplace. We know that our activities, and those of our partners, can have both a positive and a negative impact on human rights. Successfully embedding Group-wide respect for human rights relies on our:

- business culture (to establish supportive mindsets and behaviours aligned with our values)
- processes and systems (to integrate and operationalise human rights due diligence into management systems)
- engagement with broader society (to help address root causes of human rights harm).

For more information about our human rights commitments see our *Human Rights Policy*.

Progress in 2023

Governance

We continue to evolve our human rights performance to help prevent our involvement in adverse human rights impacts. We regularly review and update internal standards, systems and processes to integrate human rights due diligence and promote more responsible and ethical ways of working.

As part of ongoing assurance of our human rights program, the Group Internal Audit team completed its review of risk assessment and evaluation processes across the Group's identified salient issues. The review found that while risks impacting human rights are being identified and captured in risk management systems, broader Group-wide understanding of risks and human rights consequences is needed. To help with this, we continue to develop our Group-wide human rights controls, with a focus on modern slavery risk control management.

Salient human rights issues

Aligned with the United Nations Guiding Principles (UNGPs) on Business and Human Rights, we identify the priority human rights issues that could severely impact people through our activities or business relationships. These issues consider our operational footprint, value chain and external contexts and include:

- land access and use
- Indigenous Peoples' rights
- security
- inclusion and diversity
- community health, safety and wellbeing
- workplace health and safety
- labour rights (including modern slavery)
- climate change and just transition.

Assets conduct a range of assessments to enable a more complete understanding of their risk context so they can prevent and mitigate human rights risks. In 2023, Richards Bay Minerals, ISAL, Kennecott, Rincon, Iron Ore Company of Canada and all Pacific region operations undertook risk assessments to review their salient human rights issues. In addition, 13 assets completed human rights and tailings assessments as part of the Global Standard on Tailings Management review. Our human rights team supported higher risk assets as they worked towards conducting human rights impact assessments, with a focus on QIT Madagascar Minerals, Simandou, Rincon and Oyu Tolgoi. For assets in more complex security contexts that involve private and public security forces, we continued to undertake security and human rights assessments.

For more information about our security and human rights program see our annual *VPSHR* statement.

Our business relationships

We partner with communities, business partners and other stakeholders to advance respect for human rights in line with international standards and our values.

Our joint venture partners

In 2023, we worked with joint venture partners to provide human rights technical support and monitored human rights performance, through Board and Committee roles for non-managed operations. Human rights risk assessments were completed at La Compagnie des Bauxites de Guinée (CBG) and Sohar Aluminium, as part of a broader human rights due diligence program and Aluminium Stewardship Initiative (ASI) certification. CBG received its provisional ASI certification in December 2023.

Suppliers

Using a risk-based approach through our third party due diligence process, we pre-screen our potential business partners and complete desktop human rights reviews. More than 10,000 business partners completed baseline screening in 2023, and 177 were escalated for human rights review. We undertook human rights knowledge shares with 18 strategic suppliers.

We expect our suppliers (including subcontractors) to adhere to our *Supplier Code of Conduct*, which includes respecting human rights. In 2023, we reviewed this code to further clarify our expectations and align with best practice, and plan to launch the updated code in 2024.

In 2023, we focused due diligence efforts on higher risk supplier categories, including logistics and renewables due to operating contexts and potentially higher risk workforces. We started a project to review non-financial, sustainability and human rights risks in core procurement categories to further promote transparency and effective risk management. We expect this work to be completed in 2024.

For more information about our human rights and modern slavery approach see our annual *Modern Slavery Statement.*

Grievance and remedy

Effective grievance management can enable more trusted relationships. Every asset is required to have a grievance mechanism. In 2023, we updated guidance and provided training to help teams better align practice with the UNGPs effectiveness criteria.

We are committed to providing for, or cooperating in, remediation when we identify we have caused or contributed to, human rights harm. We may also play a role in remediation where we are directly linked to harm through our products, services or operations. Receiving feedback, complaints or grievances from stakeholders is an important part of our ongoing human rights due diligence approach. In 2023 the human rights team provided counsel and support on a range of internal investigations.

Capacity building on human rights

Everyone has a role in respecting human rights; our people are our first line of defence. Our strategy focuses on demystifying, integrating, operationalising and personalising respect for human rights.

In 2023, our human rights team delivered 35 tailored training sessions targeting 11 assets and 12 functional teams globally. We recorded 2,441 completions of our modern slavery online learning module. We will launch further learning initiatives to support our target to train 100% of high-risk human rights roles by the end of 2024. Our human rights training records are available in the *2023 Sustainability Fact Book*.

Collaboration

It is crucial that we collaborate with peers, civil society organisations and others given the systemic nature of human rights issues. We identify and embrace initiatives that work to mitigate the root causes of human rights harm. We advocate on public policy efforts that help businesses respect human rights. We continue to engage with peers, investors, civil society organisations, workers' organisations and business partners on issues relating to human rights. In 2023 this focus included multiple industry initiatives including International Council on Mining and Metals Human Rights working group, the Human Rights Resources and Energy Collaborative, and the Mining Association of Canada's International Social Responsibility Committee. We actively participate in the Voluntary Principles Initiative and United Nations Global Compact networks and attend regional business and human rights forums in Africa, Asia and Europe.

For more information about how we engaged with our key stakeholders, including civil society organisations see pages 12.

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Governance performance

We expect our people and partners to uphold the highest standard of integrity, act ethically and do the right thing. The way we treat our people, our partners, the environment, the communities where we work, and how we conduct business is what makes us a responsible partner of choice.

For people and planet

Transparent, values-based, ethical business

2023 progress

Code of Conduct

In early 2023, we launched *The Way We Work*, our updated Code of Conduct, which is available at riotinto.com/ethics. It is designed to help all employees and contractors live our values of care, courage and curiosity, and is a a central tool in reshaping our culture. The values, commitments and behaviours set out in our Code of Conduct provide clarity which allows us to deliver responsibly. It is broader in scope than the previous version, reflecting changes in societal expectations. It also includes our newly developed ethical decision-making model to help our people reflect on the potential impacts decisions may have on the business and others. An interactive, online version of the Code of Conduct is also available, including additional related content, real life examples and associated training.

Compliance program developments

Business integrity is core to how we build trust with our stakeholders and the foundation of our ability to run our operations. Our Business Integrity Compliance Program (BICP) is continuously evolving to align with leading industry practice, the regulatory landscape and specific business integrity risks we face across the countries where we operate.

During 2023, we delivered several BICP improvements:

- We set up a new online disclosures system for gifts and entertainment from and to third parties, conflicts of interest and sponsorship and donations. This increases transparency and allows us to automate approvals and workflow.
- We are exposed to reputational, financial and non-financial risk through our third parties' actions. We continued to enhance our Third-Party Risk Management (TPRM) framework and hired relevant subject matter experts in areas such as sanctions and renewables. Our TPRM Committee meets regularly to set policy and risk appetite associated with categories of third-party risk. We have also started to implement a new TPRM system to increase automation and improve risk management by integrating it with other associated business processes.
- We completed a fraud risk assessment across the organisation and reviewed our controls to prevent and detect fraud risk. This helps us better understand the root causes of fraud and improve our response.
- We hired more people in country to support developing businesses in high-risk jurisdictions, such as Guinea and Argentina.
- We invested in our Sanctions Compliance Program to enhance our monitoring of trade sanctions and increase awareness of trade sanctions compliance.

25,187 employees

undertook compliance training in 2023

Annual training

Our reputation as a business that operates with high levels of integrity is dependent on the actions and decisions we make each day. We empower our people to seek guidance when faced with ethical or business dilemmas – both to prevent incidents from occurring, and to protect them and others from harm. To help equip our workforce to navigate uncertain areas and spot ethical and compliance-related risks, we implemented a new online training course focused on ethical decision making through several interactive, real-life scenarios. 25,187 employees completing online compliance training in 2023.

In addition to online training, the Ethics and Compliance team delivers tailored risk-based face-to-face training on anti-bribery and corruption, data privacy, anti-trust and trade sanctions. A total of 6,359 employees received face-to-face training in 2023. We also provide business integrity training to our third parties on a risk basis.



Operations Centre in Perth, Australia

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myVoice, our confidential reporting program

We want to create a safe, respectful and inclusive workplace, with a strong ethical culture, that reflects our values, and we encourage and support our people to speak up if they have concerns about potential misconduct or harmful behaviour. A strong culture of speaking up, with protections against reprisal, enables us to identify and address potential issues early, respond appropriately, minimise risk and care for our people and the communities in which we operate.

The myVoice program enables confidential and anonymous reporting, including protected whistleblower disclosures. myVoice is operated by the Business Conduct Office (BCO), which reports to our Chief Legal, Governance and Corporate Affairs Officer, and provides regular program insights to the Board and the Group Ethics and Compliance Committee.

In 2023, the BCO continued to enhance the myVoice program by refining our triage and investigation processes, including a people-centric, trauma-informed approach.

Care Hub

In 2023, the BCO launched Care Hub, which provides additional and more accessible channels to raise concerns, access wellbeing support and explore resolution options. Care Hub provides options to resolve reports of harmful and disrespectful behaviour via alternative resolution and early intervention where appropriate rather than investigation. Our support partners facilitate specialised care, guidance and resolution options for our people for matters involving racism, sexual harassment and assault, bullying and harassment or discrimination. They also support leaders, Human Resources, respondents and witnesses to those behaviours. Care Hub is underpinned by regionally appropriate support services and resolution options informed by diverse voices throughout the organisation.

Since launching, Care Hub has supported over 276 people, and feedback has been positive; people feel safe and supported.

We established a BCO reporting and governance function to help us capture and communicate early insights. In 2023, we saw an increase in the number of concerns raised through myVoice to 1,613 (2022: 1,459).

The rate of reporting per 1,000 employees was 29.1 in 2023 (2022: 28.1). Anonymous reporting in 2023 (40%) remained consistent with trends in previous year (2022: 38%).

Of the cases investigated by the BCO, 61% were substantiated in 2023 (2022: 65%). Of the cases closed in 2023 (for both matters reported into myVoice in 2023 and prior periods), the average days to close a case reduced to 38 days from 52 days in 2022.

Upcoming areas of focus:

- Refine and update the myVoice Procedure to reflect enhancements to our framework and processes.
- Continue to expand our data analytics capability and provide the business with insights that enable our people to strengthen processes and culture, locally and globally.
- Expand the channels of reporting to services and support available through Care Hub.
- Continue to identify possible barriers preventing individuals from speaking up.
- Track the increased awareness and impact of the BCO's interventions in more depth through data analytics.

We know there is more work to do to improve our organisational culture. Each person's experience of misconduct is unique. We are committed to holding ourselves accountable and having controls in place to identify where our business processes may have created an opportunity for misconduct to arise. This is critical to ensuring our people feel safe and respected in the workplace.

Transparency

Transparency encourages accountability – ours as well as others'. Being open and transparent about our tax payments, mineral development contracts, beneficial ownership and our stance on a range of other sustainability issues, such as climate change, allows us to enter into open, fact-based conversations with our stakeholders. This provides a better understanding of everyone's roles and responsibilities.

We are recognised as a leader in transparent tax reporting. We are a founding member of the Extractive Industry Transparency Initiative (EITI) and have actively supported EITI's principles and global transparency and accountability standards since 2003. We are also a signatory to the B Team Responsible Tax Principles.

Political integrity

We do not favour any political party, group or individual, or involve ourselves in party political matters. We prohibit the use of funds to support political candidates or parties. Our business integrity procedure includes strict guidelines for dealing with current and former government officials and politicians. They cannot be appointed to senior employee positions or engaged as consultants, in certain circumstances, without the approval of executive management and our Chief Ethics and Compliance Officer. We regularly engage with governments and share information and our experiences on issues that affect our operations and our industry.

We join industry associations where membership provides value to our business, investors and other stakeholders. We outline the principles that guide our participation and the way we engage, as well as a list of the top five associations by membership fees paid, on our website at riotinto.com/industryassociations. We also track and disclose how we engage on climate policy issues, disclosing when the policies and advocacy positions adopted by industry associations differ materially from ours. We continue to strengthen our approach and disclosures on industry associations.

Voluntary commitments, accreditations and memberships

We take part in a number of global, national and regional organisations and initiatives that inform our sustainability approach and standards, which in turn allows us to better manage our risks. These independent organisations and initiatives assess and recognise our performance, and we participate in industry accreditation programs for some of our products.

For more information about our voluntary commitments, accreditations and memberships see riotinto.com/sustainabilityapproach.

myVoice cases reported by category (% of cases reported)

	2023		2022		2021		2020		2019	
Case rate	**29.1**		28.1		25.7		14.5		15.9	
Reports received[1]	**1,613**		1,459		1,246		748		804	
	Reports received	**Reports substantiated[2]**	Reports received	Reports substantiated	Reports received	Reports substantiated	Reports received	Reports substantiated	Reports received	Reports substantiated
Business integrity	**254**	**48%**	211	52%	154	36%	102	51%	134	36%
Personnel	**1,196**	**55%**	1,034	65%	819	57%	421	38%	454	31%
Health, safety, environment[3]	**109**	**61%**	120	47%	186	22%	68	35%	52	46%
Communities	**4**	**0%**	10	0%	6	0%	25	0%	3	0%
Information security	**22**	**0%**	16	67%	18	36%	99	47%	111	81%
Finance	**2**	**50%**	1	0%	0	0%	2	68%	5	33%
Other	**26**	**0%**	67	33%	63	14%	31	50%	45	0%

1. Includes multiple reports relating to same allegations, where applicable.
2. Based on all cases investigated and closed during 2023, including cases reported in previous years. Where percentages slightly differ from previous annual reports, this can be due to a number of factors including re-opening of cases, internal reviews or quality assurance processes.
3. Contained community concerns pre-2020 are now split into a separate category.

Our approach to risk

Taking risks responsibly is key to delivering our strategy in a way that creates value for our customers, shareholders, employees and partners.

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Our risk appetite

Risk appetite is an expression of the acceptable exposure to uncertainties that an organisation is willing to accept in pursuit of its strategic objectives. Energy transition continues to be core to our strategy to strengthen our resilience and pursue new growth opportunities and partnerships.

Partnering to advance decarbonisation efforts

Our targets are to reduce our absolute Scope 1 and 2 emissions by 15% by 2025 and by 50% by 2030 (when compared to 2018 levels), and achieve net zero emissions from our operations by 2050.

We aim to reduce our Scope 3 emissions from the Iron Ore Company of Canada (IOC) by 50% by 2035, and increase our marine emissions intensity reduction target to 50% by 2030.

We expect to invest $5-6 billion in capital to 2030 to deliver our decarbonisation strategy.

Our approach to investment is based on commercial transactions for available technologies and attractive economies; transformational projects that transition our assets for low carbon; and industry breakthroughs in hard-to-abate processing.

Developing products and technologies to create options for the future

We partner with customers, competitors, suppliers, technology developers, governments and universities to tackle the energy transition.

We are committed to support customers with their intent to reduce carbon emissions from existing blast furnaces by 20% to 30% by 2035. We expect to spend around $400 million every year in research and development on the five components of our technology road map to deliver on this: health and safety, lightening our overall environmental footprint, supporting growth, decarbonising our business and our products, and improving productivity.

The full list of climate targets is published in our *Climate Change Report*.

Shaping our portfolio to enable the energy transition

We focus on excelling in development and being the best operator in commodities essential for the drive to net zero.

We continue to consider higher-risk jurisdictions and broadening our target commodities.

We aim to spend up to $3 billion on growth capital every year, while maintaining capital discipline in pursuit of value-accretive opportunities.

Our determination to be the best operator and to achieve impeccable environmental, social and governance (ESG) credentials is underpinned by our zero tolerance for non-compliance with our operational procedures, laws and obligations. These expectations are outlined in our Group policies, standards and procedures, which are published on our website at riotinto.com/policies.



Port Dampier, Australia

Our approach to risk management

To protect and create value, we aim to have the right people at the right level managing risks.

Our strategy, values and risk appetite inform and shape our risk management framework. We embed risk management at every level of the organisation to effectively manage threats and opportunities to our business and host communities, and our impact on nature.

Our risk management process can be described as a Plan-Do-Check-Act cycle. We monitor how well we manage material risks to our objectives by checking and verifying the implementation of our response plans (actions and controls) and our actual performance against objectives. We enhance the check-and-verify step by applying the three lines of defence approach.

Our risk management process

Set strategy, objectives and risk appetite	Risk analysis	Risk management	Assurance	Communication	Improve & embed
	Identify and evaluate risks to our strategy and objectives	Implement controls and actions to manage risks within risk appetite	Check and verify that controls and actions are effective in managing the risks	Communicate current and emerging risks and escalate as appropriate	Build risk capability and culture so active management is embedded in how we run our business
Plan		Do	Check		Act

Rio Tinto has an enterprise-wide risk management information system (RMIS) which includes a set of integrated tools and applications to capture, manage and communicate material risks to the business. We are currently implementing a program to refresh our three lines of defence as a core part of the risk management framework, enabled by the development and implementation of a Group Control Library to strengthen the first line and optimise the second line.

Governance structure supporting our risk management framework

Board and sub-committees

Full Board	Audit & Risk Committee	Sustainability Committee	People & Remuneration Committee

Executive management committees

Risk Management Committee	Ore Reserves Steering Committee	Evaluation & Investment Committee	Ethics & Compliance Committee	Disclosure Committee
Major Hazards Technical Committee	Closure Steering Committee	Safety & Operations Committee	Cyber Security Steering Committee	Financial Risk Management Committee

Operational management committees

Management steering committees providing oversight of risk management in their areas of responsibility

Strategic and portfolio risks

- Resources to Reserves risks
- Capital project risks
- Technology risks
- Portfolio opportunities
- Low-carbon transition risks

People, partnerships and operational performance risks

- People and culture risks
- Major hazards risks
- Health, safety, environment and security (HSES) risks
- Communities and social performance (CSP) risks
- Climate change and natural disaster risks
- Cyber risks
- Ethics and compliance risks
- Third-party risks
- Non-managed asset risks
- Managed asset risks
- Closure risks

Financial and commercial risks

- Liquidity risks
- Market risks
- Credit risks
- Tax risks
- Disclosure risks

The Board and the Executive Committee oversee our principal risks, and the Audit & Risk Committee monitors the overall effectiveness of our risk management and internal controls framework. In addition, the operational management committees of our product groups and Group functions also oversee risk management in their area of responsibility, with insights from assurance and compliance activities.

At the front-line operational level, all employees are required and empowered to own and manage the risks that arise within their area of responsibility. This governance structure supports our risk management framework and enables effective management of material risks.

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Emerging risks

Emerging risks are highly uncertain by nature. Given our diverse portfolio and geographical footprint, we are exposed to many highly uncertain, complex and often interrelated risks. We track leading indicators of emerging risks and their likely impact on our business, markets and host communities. Our analysis is anchored on our global scenarios as outlined in the Strategy section on page 14.

We have actions in place to minimise the potential impact of heightened geopolitical tensions and macroeconomic uncertainty that could impact our performance. We have put actions in place to minimise this impact. This is discussed within principal risks 11 and 14 detailed in the following pages.

Governments have been introducing new policies to support reindustrialisation, accelerate decarbonisation and meet societal expectations. While this could support demand for materials we produce and provide support for both new and existing operations, it could also encourage competition.

The rapid proliferation of Artificial Intelligence (AI) and advancing technologies is an emerging area of exposure for the business. We recognise the significant opportunities and threats presented by the use of AI for us and the global economy. Our focus is on further understanding this evolution and ensuring we have strong risk management and governance processes to support its use.

Climate change and the low-carbon transition continue to provide both opportunity and threats for us. We closely monitor and assess the impact of climate change through scenarios; see page 46-47. We address these and our current actions under our principal risks 2, 4 and 8. Please refer to the climate change section on pages 44-58 for further details.

Longer-term viability statement

Context

To deliver our strategy, which is underpinned by our business model, we must meet our four strategic objectives. Our strategy and business model are outlined on pages 8 and 9 respectively.

Our business planning processes include modelling a series of macroeconomic scenarios and using various assumptions that consider internal and external factors. As part of our robust risk management framework, we closely track, monitor and mitigate principal risks to our business plan and model.

Viability assessment process and key assumptions

The assumptions underlying our business plan and macroeconomic forecast have the greatest level of certainty for the first three years. Our longer-term viability assessment examines the first five years (2024-28) of the business plan. This allows for a detailed analysis of the potential impacts of risks materialising in the first three years and enables us to further stress test the business plan for risks materialising towards the end of the time period, although with less certainty. Our Directors are therefore able to assess the Group's capacity to exercise financial levers available in both the three-year and five-year time frames to maintain our viability.

The principal risks and uncertainties section outlines risks that could materially affect our performance, prospects or reputation. For the viability assessment, we have considered principal risks that could severely impact the Group's liquidity and solvency.

Assessment of viability

The principal risks and key assumptions considered in our longer-term viability assessment are as follows:

Principal Risk A

Remaining competitive through economic cycles or shocks

Scenario assumptions: A global financial crisis takes place in 2024, akin to the one that took place in 2008, albeit not as severe, and extends through to the end of the assessment period. It assumes commodity prices experience large negative pricing shocks in 2024, which is sustained through 2028.

Principal Risk B

Group material major hazard or cyber risk

Scenario assumptions: A singular catastrophic event occurs, resulting from a major operational failure or cyber security breach, such as a tailings and water storage facility failure, extreme weather event, or underground or geotechnical event. It results in multiple fatalities, cessation of operations and significant financial impacts. We have assumed two such events occur within the assessment period. It relates to principal risks 1 (Preventing fatalities, permanent disablements, and illness) and 12 (Preventing material business disruption and data breaches due to cyber events).

Principal Risk C

Delivery of our growth projects

Scenario assumptions: A risk impacting our ESG credentials materialises (for example, principal risks 6 (Building trusted relationships with Indigenous Peoples) and 3 (Building trusted relationships with communities), impacting our ability to deliver our growth strategy. We have assumed an impact on our near-term key projects and considered available alternatives. The financial impact assumed here is in addition to any non-financial impact, such as reputational damage.

We quantify the expected financial impact of each risk based on internal macroeconomic and business analysis, as well as internal and external benchmarking on similar risks. We apply a probabilistic approach to quantify risks and impacts where relevant.

The first five years of the Group's business plan has been stress tested for each risk to assess the impact on the Group's longer-term viability, including whether additional financing facilities would be required. In addition to liquidity and solvency, the assessment also considered other financial performance metrics as well as dividend payments. These metrics are subject to robust stress tests.

The most "severe" scenario, considers the financial impact of all three risks materialising at the start of the assessment period, followed by a second major hazard or cyber event occurring towards the end of the five-year time period. Without management action, this scenario would create both an immediate and prolonged severe impact, resulting in the Group's free cash flow performance over the assessment period being an estimated outflow of $6 billion in aggregate.

We have a suite of management actions available to preserve resilience through the period of assessment, including accessing lines of credit, reducing organic and inorganic growth capital expenditure and raising capital. Our financial flexibility could be limited during the peak of the crisis. The viability of the Group under all the scenarios tested remained sound.

The resilience of the Group's business model is largely underpinned by four factors:

- the competitive position and diversification of our commodities portfolio
- the disciplined capital allocation framework and commitment to prudent financial policy
- the pay-out shareholder return policy being based on earnings, and is therefore more sustainable
- the focus on achieving impeccable ESG credentials and therefore strengthening our social licence, which allows for growth and maintained access to debt capital and bank loan markets.

Therefore, considering the Group's current position and the robust assessment of our emerging and principal risks, the Directors have assessed the prospects of the Group over the next five years (until 31 December 2028) and have a reasonable expectation that we will be able to continue to operate and meet our liabilities as they fall due over that period.

In the long term, there are four principal risks with long-dated consequences that could have a material impact on our viability.

- Preparing our Iron Ore business to meet the demand for green steel[1].
- Leaving a positive legacy for future generations, embedding closure considerations throughout the lifespan of our assets.
- Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural disasters.
- Delivering our growth projects.

The principal risks and uncertainties section provides further details including current management responses.

1. Produced through low CO_2 technologies.

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Principal risks and uncertainties

The principal risks and uncertainties outlined in this section reflect the risks that could materially affect, negatively or positively, our ability to meet our strategic objectives.

A principal risk is one or a combination of risks that emerges due to external or internal factors. It could be of any nature, and manifest and escalate from any part of the business as an opportunity or a threat. Where risks are material to the Group, they are escalated to the Risk Management Committee and, as appropriate, to the Board or its committees. This requires a strong risk culture, which we continue to develop and foster.

To ensure we can prioritise our efforts and resources, we regularly assess our principal risks' potential consequence and likelihood. These assessments, and the effectiveness of our associated controls, reflect management's current expectations, forecasts and assumptions. By definition, they involve subjective judgements and depend on changes in our internal and external environments. While we deploy controls to reduce the likelihood and consequence of risks, some inherent risks to our business remain. These include natural disasters, where there is limited capacity in the international insurance markets to transfer such risks. We closely monitor these threats and develop business resilience plans.

The principal risk potential assessments mapped below are primarily based on our managed operations. We are exposed to risks associated with our non-managed joint ventures which, if they arise, may have consequences on our reputation or our financial condition. We seek to bring an equal level of rigour and discipline to our managed and non-managed joint ventures as we do to our wholly-owned assets. We do this through engagement, embedded representatives and influence, in line with applicable laws.

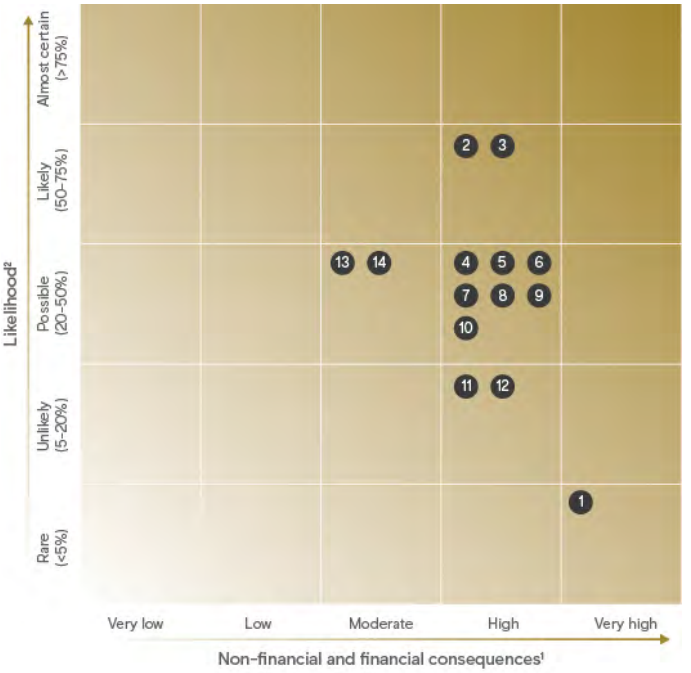
The timeframe of our principal risks is within five years unless explicitly stated otherwise.

We frame our principal risks in the context of our overarching strategic objectives: to be the best operator; to achieve impeccable ESG credentials; to excel in development; and to protect our social licence. These are summarised in the table below in order of maximum reasonable consequence, likelihood and change since 2022.

Current assessment of principal risks

As of February 2024

	Principal risk	Key objective	Oversight
1	Preventing fatalities, permanent disablements, and illness from a major hazard or safety event	Best operator	Sustainability Committee
2	Preparing our Iron Ore business to meet the demand for green steel	Best operator	Board
3	Building trusted relationships with communities	Social licence	Sustainability Committee
4	Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural disasters	Impeccable ESG	Sustainability Committee
5	Leaving a positive legacy for future generations, embedding closure considerations throughout the lifespan of our assets	Social licence	Sustainability Committee
6	Building trusted relationships with Indigenous Peoples	Social licence	Sustainability Committee
7	Delivering on our growth projects	Excel in development	Board
8	Achieving our decarbonisation targets competitively	Impeccable ESG	Board
9	Conducting our business with integrity, complying with all laws, regulations and obligations	Impeccable ESG	Board
10	Transforming our culture, enabling us to live our values	Best operator	Board
11	Remaining competitive through economic cycles or shocks	Best operator	Audit & Risk Committee
12	Preventing material business disruption and data breaches due to cyber events	Best operator	Board
13	Attracting, developing and retaining people with the requisite skills	Best operator	People & Remuneration Committee
14	Withstanding the impacts of geopolitics on our trade or investments	Best operator	Board



1. Free cash flow or business value (NPV)
2. Considering effectiveness of existing controls

Change versus 2022 represents changes in risk evaluation, movements up or down are driven by changes in consequence or likelihood.

1. Preventing fatalities, permanent disablements, and illness from a major hazard or safety event

Nothing is more important than the safety and wellbeing of our employees, contractors and communities where we operate. The mining industry is inherently hazardous, with the potential to cause illness or injury, damage to the environment and disruption to communities. Our objective is first and foremost to have zero fatalities. Our focus is on identifying, managing and, where possible, eliminating risks.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

Demonstrating our ability to meet or exceed our commitments in safety and hazard management can support us in attracting and retaining talent and help us achieve our impeccable ESG credential objective.

Threats

Major hazards include process safety, underground mining, slope geotechnical and tailings management. Failing to effectively manage these risks could result in a catastrophic event or other long-term damage. Loss of technical capability at complex operations poses a significant risk.

While not considered major hazards, significant risks at our sites include falling objects, fall from height, and vehicles and driving. These are the top three causes of potentially fatal incidents (PFIs) which could result in fatalities in our business.

Key exposures

Our underground operations such as Oyu Tolgoi, Diavik and Kennecott. Geotechnical risk at our Kennecott and QIT Madagascar Minerals (QMM) operations. Mass passenger transportation risks (including chartered aviation). Process safety at our smelters and refineries. Our tailings and water storage facilities.

Risk oversight

The Major Hazards Steering Committee, Risk Management Committee and Sustainability Committee.

Management's response includes:

- Oversight by the Sustainability Committee, supported by the Risk Management Committee, Major Hazard Steering Committee and quarterly major hazard meetings taking place at each product group.
- Providing key technical capability in hazard and asset management through our Centres of Excellence within our Development & Technology function. Providing assurance against the Group Standards and Procedures with an associated control library in the RMIS.
- Ongoing implementation of the Global Industry Standard on Tailings Management (GISTM).
- Focusing on fatality elimination through our critical risk management (CRM) program.
- Reporting, investigating and sharing learnings from HSES incidents internally (such as sharing learnings from PFIs) and monitoring HSES performance monthly at Group level.
- Building safety targets into personal performance metrics to incentivise safe behaviour and effective risk management (as outlined in our Remuneration report).

2. Preparing our Iron Ore business to meet the demand for green steel

Decarbonisation of iron and steel making may affect the future relative values of our iron ore products. We have the opportunity to unlock business value through the optimisation of our iron ore product strategy, partnering with technology providers and universities, and innovating with our customers to position ourselves favourably for the future demand for green steel.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

By proactively engaging with customers, technology providers and research institutes we can develop low-carbon steelmaking pathways suited to our low-mid grade ores, protecting the future value of our Pilbara ores.

Threats

The emerging low-carbon iron and steel making technologies require high grade iron ores, and may not favour low-mid grade ores such as those found in the Pilbara. This could impact the future competitiveness of our iron ore portfolio. Decarbonisation of the steel value chain will require the development and proliferation of economic low-carbon technologies suited to low-mid grade ores.

This principal risk is focused on a medium- to longer-term time horizon.

Key exposures

Pilbara low-mid grade ores.

Risk oversight

The Steel Decarbonisation Steering Committee and the Board.

Management's response includes:

- Reshaping our Iron Ore portfolio to bring additional high-grade ore to the market, such as Simandou.
- Establishing the Rio Tinto Steel Decarbonisation team to identify and develop technical and commercial options through deep partnerships and collaboration across the steel value chain with a specific focus on economic low-carbon solutions for our Pilbara ores. See our *2023 Climate Change Report* for further details.
- Exploring beneficiation and modular concentrators with technology partners to upgrade Pilbara ores to reduce impurities and increase amenability to future low-carbon steelmaking technology.
- Developing long-term strategic research and development partnerships with key iron ore customers including Baowu, Nippon Steel, BlueScope, POSCO, Zenith and Shougang to explore a range of economic new low-carbon technologies suited to low-mid grade iron ores. Key areas of focus include the development of electric melter technology, fluidised bed technology, carbon capture, use and storage, as well as optimisation of existing blast furnaces.
- Developing Biolron™ in partnership with the University of Nottingham and Metso. The Biolron™ process uses sustainable biomass and microwave energy to convert Pilbara ores into metallic low-carbon iron.

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3. Building trusted relationships with communities

If we are not viewed as a trusted partner by communities and broader society, our performance, future prospects and reputation will be impacted.

Strategic alignment	Change vs 2022
Social licence	Increasing

Opportunities

Strong relationships with the communities in which we operate provide stable operating environments. Positive engagement with communities, governments and other stakeholders can support access to new resources, create predictable investment, strengthen human rights and help shape mutually beneficial economic, social and environmental outcomes.

Threats

Our access to land and resources could be impacted if we are not considered a trusted partner that respects people's rights, manages adverse social and environmental impacts and sustainably improves social and economic outcomes in communities that host our operations. Other potential issues can include operational disruption, security incidents, expropriation, export or foreign investment restrictions, increased government regulation and delays in approvals, which may threaten the investment proposition, title or carrying value of assets.

Key exposures

Simandou, Richards Bay Minerals (RBM), Resolution, QMM, Oyu Tolgoi and Jadar.

Risk oversight

The Risk Management Committee and the Sustainability Committee.

Management's response includes:

We seek to build trusted relationships with communities by:

- Strengthening community engagement through appropriately resourced and skilled CSP teams (with support from the CSP Area of Expertise) and having clear accountability for relationships with host communities residing with the asset leader.
- Delivering sustainable, long-term outcomes through strategic social investment for impact, regional economic development and mutually beneficial partnerships.
- Setting the minimum operating standard through our revised *Communities and Social Performance Standard* and *Human Rights Policy*.
- Setting local procurement policies and targets, including local content commitments for major capital projects.
- Uplifting capability in our leadership and teams across our organisation supported by our CSP Area of Expertise to coach and elevate CSP expectations.
- Building our capacity for grievance management so that we address and remedy (where applicable) issues before they escalate to more serious problems.
- Implementing human rights due diligence to improve our understanding of potential harms and mitigating their occurrence wherever possible.
- Deploying specialist technical resources where required to support business units to manage more complex issues and risks.

4. Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural disasters

Producing the materials the world needs means we have an impact on the environment. Our operations and projects are inherently hazardous, requiring proactive management to minimise potential impact to water resources, air quality or biodiversity in new asset developments, existing operations and closures. Our assets, infrastructure, communities and broader value chains are exposed to the impacts of extreme weather events, such as drought, flooding, heat waves and fires. Climate change is expected to impact the frequency, intensity and likelihood of extreme events.

Strategic alignment	Change vs 2022
Impeccable ESG	Increasing

Opportunities

By understanding specific exposures across our portfolio, our capital programs can incorporate measures to minimise environmental impact and improve resilience in the event of an extreme climatic event. Development and investment in nature-based solutions, independent of mining operations, addresses climate change while halting and reversing nature loss, and supporting the resilience of communities through alternative socio-economic opportunities.

Threats

A number of our operations and future development opportunities exist within, or close to, sensitive biodiverse regions. Our licence to operate and develop requires us to demonstrate our capability to protect ecosystems and community health through improved practices and technological solutions. Natural hazards or extreme weather events can endanger our employees and communities, damage our assets or cause significant operational interruption. Longer-dated exposure to chronic changes in climate is less understood given the inherent uncertainty in future climate projections.

Key exposures

Our operations in the Pilbara and Saguenay-Lac-Saint-Jean region, Simandou and RBM.

Risk oversight

The Risk Management Committee and the Sustainability Committee.

Management's response includes:

- Our product group CEOs endorsing Annual Environmental Certification across all assets.
- Understanding our exposure at each asset through programs such as our critical risk assessment (CRA) program and asset integrity assurance, and climate change resilience assessments (CCRAs).
- Applying protective principles instead of having a compliance-driven approach at all our operations. Fostering proactive relationships with international civil society organisations, governments and environment departments to support protective legislation.
- Actively supporting and reporting our practices against the commitments outlined in the International Council on Mining and Metal's position statement on water stewardship.
- Using the latest-generation climate analytics (weather forecasts, climate outlooks, catastrophe modelling and projections) to gain quantitative insights into short-, medium-, and long-term physical climate risks.
- Developing technical guidance to inform physical climate risk identification, management and adaptation.
- Having Business Resilience Plans and Emergency response plans, training and annual exercises to prepare for a natural disaster event, including established communication plans and coordination with local, regional and state agencies.

5. Leaving a positive legacy for future generations, embedding closure considerations throughout the lifespan of our assets

We aspire to leave a positive legacy for future generations. We do this in partnership with our stakeholders, embedding closure considerations throughout the entire lifespan of our assets – in the way we design, build, run, close and transition them.

Strategic alignment	Change vs 2022
Social licence	Increasing

Opportunities

The opportunities for us to improve our existing closure planning lie in working more closely with our stakeholders over the life of our managed operations to understand and work towards agreed outcomes. We also invest in research and development to find efficient and better ways to manage closure risks. Finally, we look for opportunities to repurpose and reuse sites for future economic and social benefit so that we can relinquish or divest our closed and legacy sites where possible.

Threats

Financial obligations for closure may increase over time due to stakeholders' and community expectations, regulation, standards, technical understanding and techniques.

Exposures at a closed or legacy asset could impact our reputation, our licence to operate globally and the cost of closure. The legacy portfolio continues to retain a level of uncertainty due to the lack of historic information. We are progressively undertaking studies to determine options for future management.

Key exposures

Pilbara near-term closures (including Channar), Gove, Argyle, Energy Resources Australia (ERA) (non-managed), and the Panguna site in Bougainville (legacy).

Risk oversight

The Closure Steering Committee and the Sustainability Committee.

Management's response includes:

- Oversight by the Closure Steering Committee, which recognises the importance of closure to our stakeholders and the significant liability it represents for our business. The Committee is represented by both functions and product groups.
- Implementing the Closure Standard; second line assurance has been completed on three operating and six legacy assets in 2023.
- Updating our Asset Closure Strategy (ACS) at least every five years over the life of our managed assets. This includes a plan and cost estimates. 59% of our active operations have developed an ACS.
- Undertaking closure studies for sites that plan to close in the next ten years.
- Incentivising progressive closure activities by removing approved spend from product group free cash flow from 2024.
- Actively exploring cost-effective solutions to common challenges through targeted research and development projects and improvements in closure planning, studies, execution and legacy management.
- Ensuring capability and diversity within the Closure business unit team, with dedicated CSP, health and safety, and major hazard professionals supporting the closed and legacy assets.
- Developing management plans for tailings facilities across our legacy assets aligned with the GISTM ratings.
- Participating in the Panguna Mine Legacy Impact Assessment which will cover environmental impacts, and directly connected social and human rights impacts, caused by the Panguna mine since cessation of mining. Findings are due in 2024.

6. Building trusted relationships with Indigenous Peoples

Our relationships with Indigenous Peoples play a material role in delivering our operational and strategic goals and in our ability to operate. A breakdown in these critical relationships may have a significant impact on our business. We aim to build respectful and enduring relationships with Indigenous partners and communities, enabling them to realise their goals and aspirations, and to create long term shared benefits.

Strategic alignment	Change vs 2022
Social licence	Stable

Opportunities

We have the opportunity to work closely with Indigenous Peoples to realise long-term socio-economic, cultural and environmental benefits. Our capacity to deliver value to host communities and the Indigenous Peoples of the territories on which we operate supports our current and future growth plans including in the Pilbara, Winu, Weipa, Gove and the Saguenay–Lac-Saint-Jean region, with and existing partnership at Iron Ore Company of Canada.

Threats

Mining activities may strain relationships with Indigenous Peoples, particularly where actual or perceived damage of significant cultural values (cumulative or acute) occurs without consultation and consent. This may result in loss of trust with Indigenous Peoples, impacting our social licence to operate.

Key exposures

Resolution, Pilbara and British Columbia.

Risk oversight

The Risk Management Committee and the Sustainability Committee.

Management's response includes:

- Undertaking an Independent Cultural Heritage Management Audit throughout 2021 and 2022 across 20 Australian assets and 17 non-Australian assets. Releasing ERM's independent report in March 2023 evaluating our performance in cultural heritage management.
- Strengthening the integrated cultural heritage management system through the close-out of the audit findings and embedding social considerations in approvals and decision-making processes at all levels of the organisation.
- Building cultural responsiveness and competence across our leadership teams and workforce.
- Strengthening consultation, meaningful engagement and free, prior and informed consent (FPIC) processes through the finalisation of an internal toolkit.
- Improving the quality of our complaints and grievance processes through training and guidance materials.
- Focusing on improved agreement making and implementation practices across the Group, including agreement modernisation efforts in Western Australia.
- Strengthening Indigenous leadership, employment and economic development efforts.
- Setting clear guidance on how we should conduct our business, no matter where we work or where we are from through our Code of Conduct, *Communities and Social Performance Standard*, and *Human Rights Policy*.

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7. Delivering on our growth projects

Delivering our growth strategy relies on our ability to develop resources faster and more competitively than others, while aiming for impeccable ESG credentials, and on the success of our exploration and acquisition activities to secure those resources. Developing projects requires complex multi-year study and execution plans and carries significant delivery risk.

Strategic alignment	Change vs 2022
Excel in development	Stable

Opportunities

Active and focused exploration and business development efforts have the potential to increase or diversify our commodity resource base. Through operational efficiencies, deployment of new technologies or improved understanding of our orebodies, we may convert a greater proportion of resources to reserves more competitively.

Threats

New high-quality deposits are increasingly scarce and those that are known require advances in processing technology, significant capital investment or may negatively impact our ESG credentials. Additionally, as studies and projects progress, they are susceptible to changes in approvals, societal expectations or changes in underlying commercial or economic assumptions, which could impact economic viability.

Key exposures

Simandou, Pilbara increasing approval time frames, Oyu Tolgoi underground expansion, Rincon, Resolution and Jadar.

Risk oversight

The Investment Committee, the Ore Reserves Steering Committee and the Board.

Management's response includes:

- Focusing on our objective "Excel in development" to deliver inorganic and organic growth through alignment across the Group, leveraging our in-house capabilities (such as exploration, processing at Bundoora, Business Development, Battery Materials team, specialised projects and studies division).
- Progressing our ambition to invest up to $3 billion per annum of growth capital expenditure focused on energy transition commodities, such as copper, battery materials, high-grade iron ore and critical minerals (rhenium, tellurium, scandium and selenium).
- Developing joint venture partnerships to enhance development capabilities and reduce funding requirements such as the joint venture with First Quantum to develop the La Granja project.
- Broadening our scope to include higher-risk jurisdictions and targets (with a few exceptions, such as Russia) and consider minimum viable projects that can grow and create optionality or are a strategic fit for the Group.
- Stage gate approval process (Evaluation and Investment Committees, Board) including in-flight monitoring of project progress, as articulated in our Project Evaluation Standard and Guidance.
- New country entry (NCE) reviews to ensure robust ESG and human rights due diligence during exploration or M&A.

8. Achieving our decarbonisation targets competitively

Ensuring our ability to deliver longer-term strategic objectives, achieve our Scope 1 and 2 targets between now and 2050 and deliver on our focus area of impeccable ESG, while balancing the need to invest for growth, deliver superior shareholder returns and remain competitive.

Strategic alignment	Change vs 2022
Impeccable ESG	Stable

Opportunities

Decarbonising our assets has the potential to enhance our competitive advantage (tariffs and access to markets) as well as embedding a culture of energy efficiency and allowing us to explore economic opportunities that will benefit our host communities. Renewable energy projects will likely provide energy in excess of our needs at certain times, improving the availability of renewable energy in the communities where we operate.

We are well placed to be a leading supplier of materials to support the energy transition; for example, aluminium for solar panels and copper for electric vehicles.

Threats

Delays in priority initiatives will threaten our Scope 1 and 2 target delivery and ability to respond proactively and competitively. A key uncertainty is our ability to successfully engage (and partner where appropriate) with governments and other external parties to progress grid decarbonisation. Furthermore, our 2030 targets include new technology that is dependent on timely and successful investment in research and development; for example, hydrogen calcination and BlueSmelting™.

Following our social and human rights standards during implementation of decarbonisation projects will be critical to avoid adversely impacting people and stakeholder relationships. However, this may limit our available sourcing options and lead to delays in meeting our targets (for example, solar panel sourcing).

Key exposures

Rio Tinto Aluminium Pacific Operations (Pacific Ops) repowering and Alumina processing.

Risk oversight

The Risk Management Committee and the Board.

Management's response includes:

- Delivering our targets through six large abatement programs focused on renewables (such as Pilbara, RBM, Pacific Ops), ELYSIS™, alumina processing (Yarwun and Queensland Aluminium Limited [QAL]), mineral processing and diesel; complemented by nature-based solutions and offsets.
- Establishing a dedicated team, Rio Tinto Energy & Climate, to focus on accountability for decarbonisation decision-making, funding and resource prioritisation, data collection and analysis.
- Having our Office of the Chief Scientist support decarbonisation research and development to identify pathways for hard-to-abate areas required to meet our targets.
- Developing partnerships with external parties to leverage broader capabilities and accelerate decarbonisation including:
  - Centre for Future Materials led by Imperial College London to find innovative ways to provide the materials the world needs for the energy transition.
  - Yarwun Hydrogen Calcination Pilot Demonstration Program in partnership with Sumitomo.
  - Pilbara renewables memorandum of understanding with Yindjibarndi Energy Corporation.
  - Battery Electric Haul Truck program pilots in the Pilbara with Caterpillar in 2024 and Komatsu in 2025.

9. Conducting our business with integrity, complying with all laws, regulations and obligations

Our determination to be the best operator and have impeccable ESG credentials is underpinned by our zero tolerance for non-compliance with our operational procedures, laws and our obligations. These expectations are outlined in our Group policies, standards and procedures, published on our website at riotinto.com/policies.

Strategic alignment	Change vs 2022
Impeccable ESG	Stable

Opportunities

Good corporate citizens that operate to high ethical standards are known to contribute to a healthy culture, out-perform peers and attract better talent leading to greater success in securing access to resources and investment opportunities.

Threats

A serious breach in our operations or in our value chain of anti-corruption legislation or sanctions, human rights, anti-trust rules, or inappropriate business conduct, could result in serious harm to people and significant reputational and financial damage.

Key exposures

Argentina and Guinea.

Risk oversight

The Group Ethics & Compliance Committee and the Board.

Management's response includes:

- Oversight of principal risk areas and assessment of cultural indicators by the Board and the Group Ethics & Compliance Committee.
- Maintaining management oversight and reporting through risk, assurance and compliance forums with operational and functional teams, supported by ethics and compliance risk management review forums.
- Implementing an effective, risk-informed Business Integrity Compliance Program across the Group.
- Having dedicated legal teams to assist our businesses in identifying, understanding and complying with current and emerging regulatory obligations.
- Having a dedicated Third Party Risk Management team within Ethics & Compliance and a Third Party Risk Management Committee that oversees third party risk management policy and risk appetite decisions at a Group level.
- Having a Litigation & Regulatory team and Areas of Expertise for anti-bribery, corruption and competition.
- Training and building awareness on compliance program requirements and regulatory obligations for both employees working in high-risk roles and high-risk third parties.
- Integrating our commitments to core business and human rights standards, including the *UN Guiding Principles on Business and Human Rights*, into our business plans and actions.
- Assuring compliance with our policies, standards and procedures including the Business Integrity standard and procedure, the third-party and human rights due diligence procedures.
- Implementation of the Voluntary Principles on Security and Human Rights and a strong security management framework.
- Looking into all concerns that are raised promptly and in a confidential manner and keeping reporters safe from any retaliation. Our whistleblowing program is managed by our Business Conduct Office.

10. Transforming our culture, enabling us to live our values

Living our values goes to the heart of our Group's performance, prospects and reputation. Sharing and demonstrating our values unlocks opportunities in all that we do, every day. We are focused on building a culture of trust, where all our people feel safe, respected and empowered to be their best selves and help drive change.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

Our reputation and ability to build respectful and trusting partnerships is dependent on our business conduct consistent with our corporate values.

Our corporate values inspire our people to contribute in ways that align with our purpose and strategic direction. It enables us to build a workplace where everyone feels safe, respected and empowered to deliver every day.

Threats

Not living our values will lead to production over safety. As societal expectations change, it is essential that we focus on our commitment to social licence and our values of care, courage and curiosity. The final report of the Western Australia Parliamentary Inquiry into Sexual Harassment in the Mining Industry and our release of the *Everyday Respect Report* on the findings from an independent review of our workplace culture, both in 2022, highlighted the scale of change required internally and across the resources sector.

Risk oversight

The Board.

Management's response includes:

We embarked on a cultural change program led by the refresh of our corporate values in 2021 and have accelerated this since through the Everyday Respect task force. We have also refreshed and updated our Code of Conduct, *The Way We Work*, to be more comprehensive and act as the blueprint of key principles, driving policy position, setting out Rio Tinto's commitments to stakeholders, and clarifying what is expected of all employees.

To support our leaders and teams in living our values, we have focused on:

- Launching our refreshed purpose and values, and a program to support how they are embedded.
- Developing Everyday Respect task force workstreams to address sexual harassment, bullying and racism in our workplace. These have focused on ensuring safe and appropriate facilities and providing a caring, human-centred response to disrespectful and harmful behaviours.
- Undertaking biannual people surveys and presenting annual values scorecards to the Executive Committee and the Board.
- Continuing to develop our internal whistleblowing program (myVoice), open to employees and external stakeholders to report on conduct inconsistent with our values and Code of Conduct.
- Launching Care Hub which are independent care units providing trauma and people-focused support, practical care and alternative resolution options to anyone affected by harmful behaviours.
- Changing our people management processes to create company-wide alignment behind our strategy and increase respectful and transparent behaviour.

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11. Remaining competitive through economic cycles or shocks

Our business model depends on our ability to convert existing resources to reserves available for mining when required. The viability of our orebodies and business is most sensitive to commodity economics which is greatly influenced by macroeconomic and geopolitical developments. We aim to remain competitive, preserve resilience and maintain access to funding by having cost-competitive assets, a diversified commodities portfolio, a strong balance sheet, prudent financial policies and strong ESG credentials.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

Favourable market conditions and strong internal capital discipline allow us to maintain our balance sheet strength, enabling us to invest in growth opportunities, pay down debt and enhance returns to shareholders.

Through operational efficiencies, deployment of new technologies or improved understanding of our orebodies, we may convert a greater proportion of our resources to reserves.

Threats

Deteriorating economic and political environment leading to falling commodity prices (reduced cash flow, limiting profitability), trade actions (increased tariffs, retaliations and sanctions), and governments' efforts to exert more control over their natural resources by changing contractual, regulatory or tax measures. This can impact our key markets, operations or investments and access to funding.

Orebody health remains challenged with Ore Reserve depletion driven by expanded production and ongoing resource development challenges. Failure to secure access and approvals limiting collection of required orebody knowledge or a material reduction in commodity price may reduce the volume of existing reserves and the future conversion of resources to reserves in the required timeframe.

Risk oversight

The Financial Risk Management Committee, the Risk Management Committee and the Audit & Risk Committee.

Management's response includes:

- Implementing the Safe Production System (SPS) which aims to transform how we operate our assets, manage performance and develop and empower our people. This enables us to consistently deliver outstanding safety and production results and improve our asset and equipment reliability and maintenance.
- The Orebody Knowledge Centre of Excellence maintains and assures compliance with the Group's Resources and Reserves Standard and monitors KPIs to track variations from expected asset production plans.
- Maintaining capital discipline and a strong balance sheet through robust investment governance processes, prudent financial policies and a pay-out-based shareholder returns policy. A strong investment grade credit rating ensures access to diverse funding sources and sufficient liquidity.

12. Preventing material business disruption and data breaches due to cyber events

Manage cybersecurity events to ensure there is no disruption to our operations that could impact how our employees work, or data privacy or sensitive information breach related to customers, contractors or suppliers.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

The value of a robust cybersecurity function extends beyond the protection of our information, productivity and people. Requests for information to substantiate Rio Tinto's cybersecurity capabilities are becoming more frequent and in-depth as our customers look to validate their supply-chain risk. In parallel, the expectations from regulators and ratings agencies are increasing and new obligations for public disclosure of cybersecurity incidents are emerging. This generates opportunity to enhance our ESG credentials and customer value proposition.

Threats

Cyber breaches can arise from malicious external or internal attacks, but also inadvertently through human error and the inconsistent application across functions of controls that are not managed by Information Services and Technology (IS&T). Although the extent and frequency of cybersecurity threats remains in line with growth expectations, attacks have been observed to be more destructive in nature. The ongoing digitisation and transformation of operational technology environments, and the increasing use of AI to inform and automate decisions, amplifies the threat of loss of control systems or hijacking of autonomous functions.

Key exposures

Our greatest exposure continues to be through third parties. There was one notable breach in 2023 with Go Anywhere, a third party, where sensitive Rio Tinto data was exposed. Additionally, the growing reliance on technology to underpin productivity is increasing the breadth and magnitude of operational disruption exposures.

Risk oversight

The Cyber Security Steering Committee (CSSC) and the Board.

Management's response includes:

- The CSSC is our primary governance body and is responsible for our cyber strategy and oversight of Group-wide initiatives.
- In recognition of the role all employees play in keeping our information and systems secure, clear expectations for data privacy, cybersecurity and handling of confidential information are set out in *The Way We Work*.
- Improving mandatory Group-wide cybersecurity training and awareness programs.
- Maintaining business resilience management plans for major incident response and recovery, including cybersecurity events and a dedicated plan for IS&T.
- Maturing third-party risk management through contractual inclusions and proactive compliance assessments.
- Operating a perpetual cybersecurity program of work ensures our controls remain relevant to the evolving threat environment.
- Initiating a program in 2024 to simplify IT governance and improve the integrity, consistency and monitoring of key controls.
- We are investing to strengthen our cybersecurity capabilities, specifically our threat intelligence, which maintains relationships with government, industry, professional bodies and education institutions to ensure we remain vigilant of the threat landscape.
- Ongoing inspection and assurance of the security of our environment, and to an extent, the environment of our suppliers.
- Focused assessment and assurance in collaboration with industry-leading practitioners on our capability and readiness to enhance and extend controls into operational technology environments in response to the increasing exposure.

13. Attracting, developing and retaining people with the requisite skills

Our ability to achieve our business strategy depends on attracting, developing and retaining a wide range of internal and external skilled and experienced people.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

Enhanced productivity, innovation and business resilience through investment in critical skills required now and for the future "building" through a focus on early careers and reskilling our people rather than "buying in" talent.

Increased local employment and career pathways supports our social licence to operate.

Creating partnerships including joint ventures to acquire talent.

Threats

Business interruption or underperformance may arise from a lack of access to capability. Tight labour markets and entry into new countries are leading to heightened competition for diverse talent and critical skills, such as climate, energy, decarbonisation, technical mining and processing skills, licence to operate, new commodities and projects.

Changing societal expectations are placing pressure on our corporate and employer brand, that is, who we are and what we stand for. Since the pandemic, people are less inclined to relocate, thus forcing us to rely on local or national recruitment which reduces the market size for sourcing talent.

Key exposures

Safety concerns as turnover rate in Process Safety Management (PSM) roles continue.

Risk oversight

People & Remuneration Committee.

Management's response includes:

- Creating the Rio Tinto Leadership team and ensuring Group-wide succession plans for critical roles, present and future.
- Ramping up our strategic workforce planning capability with a focus on critical roles (PSM) and future capabilities, including decarbonisation.
- Building capability of leaders at all levels through our Leading with Care, Courage and Curiosity development offerings, equipping them to engage, develop and care for their people thus increasing our ability to retain key skills and talent.
- Refreshed approach to talent management ensuring all our people have a meaningful conversation about their performance, motivations and experience, in addition to a quality development plan that will enable them to gain the skills and experience required for the future.
- Ongoing monitoring of the global talent market, developments and trends, including talent mobility coupled with a talent acquisition strategy that targets multiple labour markets and diverse skills.
- Biannual people survey, engagement strategy and retention modelling.
- Group-wide employee value proposition tailored by labour market and talent segment including a remuneration approach that considers CPI and market segments, and an ongoing evolution of employee benefits and incentives.
- Global graduate program and strategic partnerships for mutually beneficial relationships with universities.
- Local trainee (apprenticeship) programs and other future skill-development partnerships.
- Implementation of Workday as our core HR system in Q3 2024 which will provide improved and consistent data on our people, such as effective monitoring of employee movement and retention and understanding of the experience and capabilities that we have in the workforce.

14. Withstanding the impacts of geopolitics on our trade or investments

Geopolitics has the potential to increase trade tensions, undermining rule-based trading systems. Trade actions may impact our key markets, operations or investments, limiting the benefits of being a multinational company with a global footprint. We continue to build reliance through diversification and to identify opportunities for engagement with governments, civil society, industry associations and international bodies.

Strategic alignment	Change vs 2022
Best operator	Stable

Opportunities

Working closely with governments on balanced domestic policy proposals that bring long-term economic and social benefits for the country while supporting growth and investments for us.

Global geopolitical re-alignments include the creation of new strategic alliances between countries that could create partnership and growth opportunities such as security of critical minerals supply.

Threats

Deteriorating economic and political environment leading to falling commodity prices (reduced cash flow, limiting profitability, reducing reserve inventory), trade actions (increased tariffs, retaliations, and sanctions), and governments' efforts to exert more control over their natural resources by changing contractual, regulatory or tax measures. This can impact our key markets, operations or investments.

Key exposures

A highly uncertain and unstable global macro environment, including China-US tensions and the indirect impacts of the war in Ukraine and conflict in the Middle East. The US election in November 2024 may bring multiple geopolitical and economic uncertainties.

Risk oversight

The Financial Risk Management Committee, the Risk Management Committee and the Audit & Risk Committee.

Management's response includes:

- Continuing to further diversify our portfolio of commodities (focused on materials that enable the low-carbon transition), markets and jurisdictions to reduce exposure to specific geopolitical events, such as Rincon lithium project in Argentina, Simandou high-grade iron ore project in Guinea.
- A fully-resourced external affairs function to closely monitor the political and geopolitical environment to identify possible opportunities for the Group through engagement with governments, civil society, industry associations and international bodies.
- The new country entry Group procedure, which is focused on cross-functional, real-time engagement.
- The Sanctions Standard and Export Control Procedure to mitigate against potential breach of economic sanctions and trade controls. Ongoing monitoring of the political environments where we operate and engagement with government in those areas.
- Capability to settle and receive RMB including management of central bank digital currency transactions to mitigate potential trade tensions impact on key Chinese customers' access to credit and USD.
- Quantifying and managing political/country risk through the country risk premium.

Five-year review

Selected financial data

The selected consolidated financial information below has been derived from the historical audited consolidated financial statements of the Rio Tinto Group. The selected consolidated financial data should be read in conjunction with, and qualified in their entirety by reference to, the 2023 financial statements and notes thereto. The financial statements as included on pages 158-258 have been prepared in accordance with International Financial Reporting Standard (IFRS) as defined in "The basis of preparation" section to the financial statements on page 158.

Rio Tinto Group

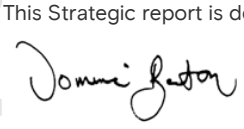
Income statement data

For the years ending 31 December Amounts in accordance with IFRS	2023 $m	2022[2] $m	2021[2] $m	2020 $m	2019 $m
Consolidated sales revenue	**54,041**	55,554	63,495	44,611	43,165
Group operating profit[1]	**14,823**	19,933	29,817	16,829	11,466
Profit after tax for the year[2]	**9,953**	13,048	22,597	10,400	6,972
Basic earnings for the year per share (US cents)[2]	**620.3**	765.0	1,304.7	604.0	491.4
Diluted earnings for the year per share (US cents)[2]	**616.5**	760.4	1,296.3	599.8	487.8
Dividends per share					
Dividends declared during the year					
US cents					
– interim	**177.0**	267.0	376.0	155.0	151.0
– interim special	**–**	–	185.0	–	61.0
– final	**258.0**	225.0	417.0	309.0	231.0
– special	**–**	–	62.0	93.0	
UK pence					
– interim	**137.67**	221.63	270.84	119.74	123.32
– interim special	**–**	–	133.26	–	49.82
– final	**203.77**	185.35	306.72	221.86	177.47
– special	**–**	–	45.60	66.77	
Australian cents					
– interim	**260.89**	383.70	509.42	216.47	219.08
– interim special	**—**	–	250.64	—	88.50
– final	**392.78**	326.49	577.04	397.48	349.74
– special	**–**	–	85.80	119.63	
Dividends paid during the year (US cents)					
– ordinary	**402.0**	684.0	685.0	386.0	331.0
– special	**–**	62.0	278.0	–	304.0
Weighted average number of shares basic (millions)	**1,621.4**	1,619.8	1,618.4	1,617.4	1,630.1
Weighted average number of shares diluted (millions)	**1,631.5**	1,629.6	1,628.9	1,628.6	1,642.1
Share buy-back ($ million)		–	–	208	1,552
Balance sheet data					
Total assets	**103,549**	96,744	102,896	97,390	87,802
Share capital/premium	**7,908**	7,859	8,097	8,302	7,968
Total equity/net assets[2]	**56,341**	52,741	57,113	51,903	45,242
Equity attributable to owners of Rio Tinto[2]	**54,586**	50,634	51,947	47,054	40,532

1. Group operating profit or loss includes the effects of charges and reversals resulting from impairments (other than impairments of equity accounted units) and profit and loss on disposals of interests in businesses. Group operating profit or loss amounts shown above exclude equity accounted operations, finance items, tax and discontinued operations.
2. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 "Income Taxes".

Directors' approval statement

This Strategic report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:



Dominic Barton
Chair
21 February 2024

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Directors' report

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Chair's introduction

Our focus as a Board in 2023 has been on embedding an empowering culture and on the delivery of consistent operational performance to progress our four key strategic objectives. Strong corporate governance is essential to achieving these goals.



The following pages provide a comprehensive description of our governance arrangements – including our overall governance framework, how we engage with stakeholders, how we evaluate our own Board effectiveness and detailed reports on the work of each of our Board committees. I believe these arrangements are first class, but we recognise that effective governance requires constant adaptation and evolution. We therefore strive to continuously improve our approach to optimise how the Board can drive and support the success of the business, for the benefit of shareholders and all of our other stakeholders.

It has been another busy year for the Board, but in this introduction I would like to highlight three areas which were an important part of our focus during 2023, and into 2024.

Site visits

With the lifting of most remaining COVID-related travel restrictions in 2023, we were able to resume Board visits to our operations and to strategically important countries. Whilst like many, we adapted well to the pandemic restrictions with 'virtual' Board meetings, there is simply no substitute for getting on the ground in person to gain first hand insights into operations and meet key stakeholders in person.

In July, we had a remarkable visit to Mongolia. The Board visited our mining operations at Oyu Tolgoi and met with employees, partners and contractors, and members of the local community. The visit also included important meetings with our partners in the Mongolian government and the opportunity to experience the annual Naadam Festival, showcasing the nation's history and cultural roots.

In September, we held our Board meeting in Washington, D.C. Given the importance of the Group's North American business and strategy and the very significant role that the United States plays in climate, energy transition, and geopolitics, the trip included a program of valuable engagements with US civil society, business and political leaders.

We had a landmark visit in December, where we held the first Rio Tinto Board meeting in China. The visit included a series of engagements to deepen our relationships with government, customers, partners and suppliers. We also celebrated key milestones such as the 40th anniversary of the opening of our China Office and the 50th anniversary of the first shipment of iron ore to China.

Board composition

As we reported last year, during 2022 we evaluated the mix of skills and experience on the Board and concluded that we needed to refresh our composition, with a particular focus on mining, operations and projects experience, renewables and the energy transition, finance / accounting, and knowledge of countries or regions of strategic relevance to the Group.

Over the course of 2023, I am pleased that we have made significant progress in this, with the announcement of six new Non-Executive Directors representing these skillsets and experience. We have provided details on the search process for our new Non-Executive Directors and how they fulfil these skills requirements in the Nominations Committee Report on page 106.

Board evaluation

In the second half of 2023 we had the three-yearly external, independent evaluation of Board effectiveness – this is described further on the following pages.

Overall, the review concluded that the Board and its Committees were working effectively, but it also provided some valuable insights on how we can enhance performance. We discussed the initial findings in October 2023 and reviewed some detailed suggested actions in February 2024 that we hope will help with the ongoing optimisation of our governance arrangements.

I believe that these activities, and those described over the following pages, represent a solid set of corporate governance arrangements at Rio Tinto, but also demonstrate our commitment to continuously improving them.



Dominic Barton
Chair

21 February 2024

Board of Directors

Rio Tinto plc and Rio Tinto Limited have a common Board of Directors. The Directors are collectively responsible for the stewardship and long-term sustainable success of the Group.



Dominic Barton BBM
Chair

BA (Hons), MPhil. Age 61. Appointed April 2022; Chair from May 2022.

Skills and experience:

Dominic spent over 30 years at McKinsey & Company, including nine years as the Global Managing Partner, and has also held a broad range of public sector leadership positions. He has served as Canada's Ambassador to China, Chair of Canada's Advisory Council for Economic Growth, and Chair of the International Advisory Committee to the President of South Korea on National Future and Vision. Dominic brings a wealth of global business experience, including deep insight of geopolitics, corporate sustainability and governance. His business acumen and public sector experience position him to provide balanced guidance to Rio Tinto's leadership team. Dominic believes in the competitive advantage of putting people at the heart of strategy and the role culture change will play in Rio Tinto's future success.

Current external appointments:

Chair of LeapFrog Investments and Chancellor of the University of Waterloo.



Jakob Stausholm
Chief Executive

Ms Economics. Age 55. Appointed Chief Financial Officer September 2018; Chief Executive from January 2021.

Skills and experience: As Chief Executive, Jakob brings strategic and commercial expertise and governance experience. He is committed to rebuilding trust with communities, Traditional Owners and engaging broadly with stakeholders, including governments, partners and other business leaders. He continues to focus on improving operational performance, including through the Safe Production System, creating and progressing value-accretive growth options while remaining disciplined on capital allocation and delivering returns for shareholders. Jakob joined Rio Tinto in 2018 as Chief Financial Officer. He has over 20 years' experience, primarily in senior finance roles at Maersk Group and Royal Dutch Shell plc, including in capital-intensive, long-cycle businesses, as well as in innovative technology and supply chain optimisation. He was also a Non-Executive Director of Woodside Petroleum and Statoil (now Equinor).

Current external appointments:

None.



Peter Cunningham
Chief Financial Officer

BA (Hons), Chartered Accountant (England and Wales). Age 57. Chief Financial Officer from June 2021.

Skills and experience:

As Chief Financial Officer, Peter brings extensive commercial expertise from working across the Group in various geographies. He is strongly focused on the decarbonisation of our assets, investing in the commodities essential for the energy transition, and delivering attractive returns to shareholders while maintaining financial discipline.

During almost three decades with Rio Tinto, Peter has held a number of senior leadership roles, including Group Controller, Chief Financial Officer – Organisational Resources, Global Head of Health, Safety, Environment & Communities, Head of Energy and Climate Strategy, and Head of Investor Relations.

Current external appointments:

None.



Dean Dalla Valle
Independent Non-Executive Director

MBA. Age 64. Appointed June 2023.

Skills and experience:

Dean brings over four decades of operational and project management experience in the resources and infrastructure sectors. He draws on 40 years' experience at BHP where he was Chief Commercial Officer, President of Coal and Uranium, President and Chief Operating Officer Olympic Dam, President Cannington, Vice President Ports Iron Ore and General Manager Illawarra Coal. He has had direct operating responsibility in 11 countries, working across major mining commodities, and brings a wealth of experience in engaging with a broad range of stakeholders globally, including governments, investors and communities. Dean was Chief Executive Officer of Pacific National from 2017 to 2021.

Current external appointments:

Chair of Hysata.



Simon Henry
Independent Non-Executive Director

MA, FCMA. Age 62. Appointed April 2017.

Skills and experience:

Simon has significant experience in global finance, corporate governance, mergers and acquisitions, international relations, and strategy. He draws on over 30 years' experience at Royal Dutch Shell plc, where he was Chief Financial Officer between 2009 and 2017.

Current external appointments:

Senior Independent Director of Harbour Energy plc, Adviser to the Board of Oxford Flow Ltd, member of the Board of the Audit Committee Chairs' Independent Forum, member of the Advisory Board of the Centre for European Reform and Advisory Panel of the Chartered Institute of Management Accountants (CIMA), and trustee of the Cambridge China Development Trust.



Kaisa Hietala
Independent Non-Executive Director

MPhil, MS. Age 53. Appointed March 2023.

Skills and experience:

Kaisa is an experienced executive with a strong track record of helping companies transform the challenges of environmental megatrends into business opportunities and growth. She began her career in upstream oil and gas exploration and, as Executive Vice President of Renewable Products at Neste Corporation, she played a central role in its commercial transformation into the world's largest and most profitable producer of renewable products. She was formerly a Board member of Kemira Corporation.

Current external appointments:

Senior Independent Director of Smurfit Kappa Group plc, Non-Executive Director of Exxon Mobil Corporation, Chair of the Board of Tracegrow Ltd and a member of the Supervisory Board of Oulu University.



Sam Laidlaw
Independent Non-Executive Director

MA, MBA. Age 68. Appointed February 2017; Senior Independent Director from May 2019.

Skills and experience:

Sam has more than 40 years' experience of long-cycle, capital-intensive industries in which safety, the low-carbon transition, and stakeholder management are critical. Sam has held a number of senior roles in the energy industry, including as CEO of both Enterprise Oil plc and Centrica plc. He was also a member of the UK Prime Minister's Business Advisory Group.

Current external appointments:

Chair of Neptune Energy Group Holdings Ltd, Chair of the National Centre of Universities & Business and Board member of Oxford Saïd Business School.



Susan Lloyd-Hurwitz
Independent Non-Executive Director

BA (Hons), MBA (Dist). Age 56. Appointed June 2023.

Skills and experience:

Susan brings significant experience in the built environment sector with a global career spanning over 30 years. Most recently Susan was Chief Executive Officer and Managing Director of Mirvac Group for over a decade. Prior to this, she was Managing Director at LaSalle Investment Management, and held senior executive positions at MGPA, Macquarie Group and Lendlease Corporation. Susan is known for her transformational leadership on cultural change, gender equity, diversity and inclusion, and sustainability, while at the same time delivering financial results.

Current external appointments:

President of Chief Executive Women, Chair of the Australian National Housing Supply & Affordability Council, Non-Executive Director of Macquarie Group, Member of the Sydney Opera House Trust, Global Board member at leading international business school, INSEAD and Non-Executive Director of Spacecube.

Board and Secretary changes

Megan Clark stepped down from the Board on 15 December 2023. Steve Allen stepped down as Group Company Secretary on 29 August 2023. Sharon Thorne will join the Board on 1 July 2024.

Past external appointments over the last three years

For details of each Director's previous directorships of other listed companies see the Directors' report on page 147.

Board committee membership key

- Committee Chair
- Audit & Risk Committee
- People & Remuneration Committee
- Nominations Committee
- Sustainability Committee



Simon McKeon AO

Independent Non-Executive Director

BCom, LLB, FAICD. Age 68. Appointed January 2019; Senior Independent Director, Rio Tinto Limited from September 2020. Designated Non-Executive Director for workforce engagement from January 2021.

Skills and experience:

Simon brings insights into sectors, including financial services, for purpose, law and government. He practised as a solicitor before working at Macquarie Group for 30 years, including as Executive Chair of its business in Victoria, Australia. Simon served as Chair of AMP Limited, MYOB Limited, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and was the first President of the Australian Takeovers Panel.

Current external appointments:

Chancellor of Monash University, Chair of the Australian Industry Energy Transitions Initiative Steering Group, and Non-Executive Director of National Australia Bank Limited.



Martina Merz

Independent Non-Executive Director

B.Eng. Age 60. Appointed February 2024.

Skills and experience:

Martina brings over 38 years of extensive leadership and operational experience, most recently as CEO of industrial engineering and steel production conglomerate ThyssenKrupp AG. She has held numerous leadership roles, including at Robert Bosch GmbH and at Chassis Brakes International. Martina also has extensive listed company experience and is known for her expertise in the areas of strategy, risk management, legal/compliance and human resources.

Current external appointments:

Member of the supervisory board at AB Volvo and Siemens Aktiengesellschaft and Member of the Shareholder Council of the Foundation Carl-Zeiss-Stiftung as the owner of Zeiss AG and Schott AG.



Jennifer Nason

Independent Non-Executive Director

BA, BCom (Hons). Age 63. Appointed March 2020.

Skills and experience:

Jennifer has over 37 years of experience in corporate finance and capital markets. She is the Global Chair of Investment Banking at JP Morgan, based in the US, where she sits on the Investment Bank's Executive Committee. For the past 20 years, she has led the Technology, Media and Telecommunications global client practice. During her time at JP Morgan, she has also worked in the metals and mining sector team in both the US and Australia. Jennifer co-founded and chaired the company's Investment Banking Women's Network.

Current external appointments:

Co-Chair of the American Australian Business Council.



Joc O'Rourke

Independent Non-Executive Director

BSc, EMBA. Age 63. Appointed October 2023.

Skills and experience:

Joc has over 35 years of experience across the mining and minerals industry. He was the Chief Executive Officer of The Mosaic Company, the world's leading integrated producer and marketer of concentrated phosphate and potash, from 2015 to December 2023. He also served as President of Mosaic until recently and previously held roles there including Executive Vice President of Operations and Chief Operating Officer. Prior to this, he was President of Australia Pacific at Barrick Gold Corporation, leading gold and copper mines in Australia and Papua New Guinea. Joc is known for his deep knowledge of the mining industry, and passion for improving safety and operational performance.

Current external appointments:

Non-Executive Director at the Toro Company and The Weyerhaeuser Company.



Ngaire Woods CBE

Independent Non-Executive Director

BA/LLB, DPhil. Age 61. Appointed September 2020.

Skills and experience:

Ngaire is the founding Dean of the Blavatnik School of Government, Professor of Global Economic Governance and the Founder of the Global Economic Governance Programme at Oxford University. As a recognised expert in public policy, international development and governance, she has served as an adviser to the African Development Bank, the Asian Infrastructure Investment Bank, the Center for Global Development, the International Monetary Fund, and the European Union.

Current external appointments:

Vice-Chair of the Governing Council of the Alfred Landecker Foundation and Board member of the Mo Ibrahim Foundation, the Van Leer Foundation, and the Schwarzman Education Foundation. Member of the Conseil d'administration of L'Institut national du service public.



Ben Wyatt

Independent Non-Executive Director

LLB, MSc. Age 49. Appointed September 2021.

Skills and experience:

Ben had a prolific career in the Western Australian Parliament before retiring in March 2021. He held a number of ministerial positions and became the first Indigenous treasurer of an Australian parliament. His extensive knowledge of public policy, finance, international trade and Indigenous affairs brings valuable insight and adds to the depth of knowledge on the Board. Ben was previously an officer in the Australian Army Reserves, and went on to have a career in the legal profession as a barrister and solicitor.

Current external appointments:

Non-Executive Director of Woodside Energy Ltd, APM Human Services International Limited, Telethon Kids Institute and West Coast Eagles. Member of the Advisory Committee of Australian Capital Equity.



Andy Hodges

Group Company Secretary

Associate of the Chartered Governance Institute UK and Ireland; MBA. Age: 56. Appointed August 2023.

Skills and experience:

Andy joined Rio Tinto in 2018 and became Group Company Secretary in 2023. Andy brings with him nearly 20 years of experience in senior company secretarial roles, including as Head of Secretariat at Centrica, Deputy Company Secretary at Anglo American and Assistant Company Secretary at Aviva.

Current external appointments:

None.



Tim Paine

Company Secretary, Rio Tinto Limited

BEc, LLB, FGIA, FCIS. Age 60. Appointed January 2013.

Skills and experience:

Tim joined Rio Tinto in 2012 and became Joint Company Secretary of Rio Tinto Limited in January 2013. He has over 30 years of experience in corporate counsel and company secretary roles, including as General Counsel and Company Secretary at Mayne Group, Symbion Health and Skilled Group. Tim also spent 12 years at ANZ Bank, including as Acting General Counsel and Company Secretary.

Current external appointments:

Joint Company Secretary for Australia-Japan Innovation Fund and member of the Governance Institute of Australia's Legislation Review Committee.

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Executive Committee

Day-to-day management of the business is delegated by the Board to the Chief Executive and, through him, to other members of the Executive Committee and to certain management committees.



Jakob Stausholm
Chief Executive

Biography can be found on page 92.



Peter Cunningham
Chief Financial Officer

Biography can be found on page 92.



Bold Baatar
Chief Executive, Copper

Bold was appointed Chief Executive, Copper in February 2021. Prior to this, he led the Energy & Minerals product group, a position he had held since 2016. Since joining Rio Tinto in 2013, he has held a number of leadership positions across operations, marine, iron ore sales and marketing, and Copper.

Bold brings deep experience across geographies, commodities and markets. A passionate advocate for integrating ESG into decision making across the business landscape, he combines strong commercial and business development expertise with a focus on developing markets and partnerships with our host communities and nations.



Alf Barrios
Chief Commercial Officer

Alf was appointed Chief Commercial Officer, Chair for China and Chairman for Japan in 2021. He joined Rio Tinto in 2014 as Chief Executive, Aluminium. Alf has over 30 years of global experience in the resources sector across operations, marketing, trading and business development.

The Commercial team is accountable for our sales and marketing, procurement, marine and logistics activities, and creates value and growth across Rio Tinto by working closely with our assets, customers and suppliers. Alf is focused on building industry-leading customer and supplier partnerships to deliver innovation and ESG leadership and create future value for the company.



Mark Davies
Chief Technical Officer

Mark was appointed to the Executive Committee in 2020 and became Chief Technical Officer in October 2021. Mark joined Rio Tinto in 1995 as a Senior Mechanical Engineer and has worked in operational and functional leadership roles, including in our Iron and Titanium business unit, Group Risk, and Global Procurement.

Mark is responsible for our development teams, including Exploration, Studies and Major Capital Construction, Energy, Climate and Closure teams working to rehabilitate and repurpose mines and facilities at the end of the development cycle. Mark's remit also includes our technical centres of excellence as well as the Office of the Chief Scientist, which drives our global research and development activities. Mark is our representative on the Champions of Change Coalition, a group of business and community leaders working to achieve a significant and sustainable increase in the representation of women in leadership.



Isabelle Deschamps
Chief Legal Officer, Governance & Corporate Affairs

Isabelle joined Rio Tinto in November 2021. She has extensive international experience, most recently as General Counsel of the AkzoNobel Group and a member of its Executive Committee, with responsibility across Legal, Strategy and M&A activities. Prior to this, Isabelle worked at Unilever in the UK and the Netherlands, holding various legal and compliance leadership roles.

Alongside leading our global Legal, Communication, and External Affairs teams, Isabelle oversees a range of governance functions, including Company Secretariat, Ethics & Compliance, and the Technical Evaluation group. She champions Everyday Respect and drives our integrated social licence agenda. Isabelle is a pragmatic, transparent leader with a passion for equal opportunities, inclusion and diversity, continuous learning, and driving a culture of integrity.



Sinead Kaufman
Chief Executive, Minerals

Sinead became Chief Executive, Minerals in March 2021. Since Sinead joined Rio Tinto in 1997 as a geologist, she has held senior leadership and operational roles across Aluminium, Copper & Diamonds, Energy & Minerals, and Iron Ore. She joined the Executive Committee in early 2021.

Sinead brings strong operational expertise combined with a track record of delivering future-focused sustainability outcomes. Sinead has led the Minerals business to play a central role in driving growth, for example, through the acquisition of the Rincon Lithium Project in Argentina, which supports our battery materials strategy. She is also playing a leading role in many sustainability initiatives to help us reach our decarbonisation ambition.

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James Martin

Chief People Officer

James joined our Executive Committee as Chief People Officer in April 2021. Prior to this, James was at Egon Zehnder for 21 years. He led a range of global practices and specialised in coaching, talent management and leadership development. Prior to this, he worked in equity research after a career as an air force pilot.

James has been supporting our culture evolution, from building a new leadership program, to paving the way to a more inclusive work environment and helping create our new values. His vision is to help unlock more of our potential and to inspire even more of our colleagues to feel the pride in Rio Tinto that many already do.



Kellie Parker

Chief Executive, Australia

Kellie was appointed Chief Executive, Australia in 2021, after a 20-year career at Rio Tinto. Before this, Kellie was Managing Director, Pacific Operations, Aluminium, a role she took after more than a decade of leadership, safety and operational roles across the Iron Ore and Aluminium businesses.

Kellie represents our Australian interests with all stakeholders, and brings her operational experience and community values to listen, respond and set the direction for the business. Kellie also has responsibility for Health, Safety, Environment & Security (HSES) and Communities and Social Performance (CSP). She has a people-centric approach, with a strong commercial background, and she is an advocate for Indigenous Australians.



Jérôme Pécresse

Chief Executive, Aluminium

Jérôme was appointed Chief Executive, Aluminium in October 2023. Prior to joining Rio Tinto, Jérôme was President & CEO of General Electric (GE) Renewable Energy, where he helped define and implement GE's strategy to support the decarbonisation of the energy sector. He brings a wealth of global experience, primarily in energy, mining, business development and strategy from his previous roles at GE, Alstom and Imerys.

Jérôme is committed to the energy transition and is focused on decarbonising our operations while growing our business to support new material needs for the future. Building a strong work culture around diversity and entrepreneurship, and forging partnerships with First Nations and Indigenous Peoples, communities and governments is fundamental to his approach.



Simon Trott

Chief Executive, Iron Ore

As Chief Executive – Iron Ore, Simon leads the world's largest and most innovative integrated bulk commodity producer, achieving exceptional financial performance by finding better ways to provide the materials the world needs.

Drawing on 25 years' mining industry experience across operating, commercial and business development roles, Simon is driving the Iron Ore business to develop a values-based performance culture and reach its vision to become the most valued resource business.

He is focused on building the Iron Ore business we need for the future, by transforming its safe operating performance, leading the field in mine development, building valued partnerships, respecting, trusting and supporting self-determined outcomes for Traditional Owners, as well as positioning for a green future and decarbonising the Pilbara.

Former Executive Committee members

Ivan Vella resigned from Rio Tinto in 2023 and ceased to be a member of the Executive Committee on 13 June 2023. He continued as Chief Executive, Aluminium until 23 October 2023, when Jérôme Pécresse succeeded him.

Arnaud Soirat stepped down as Chief Operating Officer on 31 January 2024, ahead of his retirement from Rio Tinto.

Our stakeholders

This section, together with the information on pages 12-13, constitutes our Section 172(1) statement.

The Board is required by the *UK Companies Act 2006* to promote the success of the company for the benefit of our shareholders, and in doing so, take into account the interests of our wider stakeholders. Our key stakeholders are our workforce, the communities in which we operate, civil society organisations, governments, our investors, our customers, and our suppliers.

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	How we engage	
Workforce Engaged people are key to our success.	– Intranet, emails and newsletter updates on subjects such as safety and mental health shares, financial results and Group news. – Twice-yearly people surveys. – myVoice, our confidential reporting program. – Sessions with members of the Board and employees. – In-person and virtual town halls with the Board and Executive Committee members.	– The Board engaged with our workforce while visiting several sites and offices throughout the year, including in Mongolia, London, France, Perth and China. For more information about some of these visits, see page 101. – In May 2023, members of the Board met with three employee groups at our Perth office. Two groups included emerging talent, while the third was employees from our Development & Technology team. These sessions allowed Board members and our teams to exchange insights and reflections about the business.
Communities The communities where we live and work are fundamental to our business – without their support, we cannot operate.	We continue to strengthen our social performance structure, governance approach and processes. We have increased engagement between Indigenous Peoples and our senior operational leaders and teams. Our engagement activities include: – Community liaison teams. – Various meeting formats to reflect local expectations. – myVoice, our confidential whistleblower program, which provides a way for anyone, internal or external, to raise concerns about the Group.	– Executive members regularly meet with Indigenous communities as part of site visits. – Since 2021, we have asked Traditional Owner groups in the Pilbara to share yearly feedback on our progress on some of the commitments we made as part of the Rio Tinto Board Review in 2020 on cultural heritage management. In 2023, six out of ten Pilbara Traditional Owner entities chose to respond. The feedback is presented at riotinto.com/juukangorge.
Civil society organisations Civil society organisations (CSOs) play an important role in society. They hold us to account and help us understand societal expectations across ESG issues, identify risks and opportunities to collaborate.	– We engage regularly with a wide range of CSOs to understand and respond to areas of interest and concern, communicate progress, share challenges and advance common goals. In 2023, we expanded our outreach to CSOs in Argentina, Serbia, Guinea, the US and Canada. – We engage locally, nationally and globally on specific issues related to an operation. – We attend industry forums where CSOs are present to understand the latest trends and expectations on ESG issues.	– Since 2018, we have held annual roundtables with CSO leaders and members of the Board and Executive Committee. The roundtables provide a dedicated forum for our most senior leaders to engage directly with CSOs and discuss strategic issues. – We continue to have issue-specific conversations with CSOs to explore issues in depth and gain detailed insights to inform our approach to each topic. In 2023, these included two sessions on decarbonisation progress, three sessions about the Jadar project, and two sessions about the Resolution Copper project.

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What was important in 2023	How the Board has taken account of these interests
– Company culture and the Everyday Respect report – Training and career opportunities – Compensation and inflation – Health, safety and wellbeing – Business growth and operational performance – Societal issues	– Simon McKeon, our designated Non-Executive Director for workforce engagement, oversees our program of workforce engagement events. – An engaged and diverse workforce is imperative to the success of the business. The Board reviews the implementation activities and progress of the 26 recommendations of the Everyday Respect report quarterly. For more information about the Everyday Respect initiative and how the Board monitors our culture, see pages 100 and 101. – The health, safety and wellbeing of our people is a key priority for the Board. The Board considers this in all decisions to ensure we continually evolve our assets' safety maturity and aim to create a physically and psychologically safe workplace. – The Board considers our workforce when making decisions on new ventures, projects and other growth opportunities, and aims to support job opportunities and fair work. For more information about how the Board engages with employees to understand their interests and concerns, see page 101.
– Job creation and procurement opportunities – Land access – Socioeconomic development projects – Environmental management, tailings storage facilities, operational impacts and potential site closures – Security	– The Board oversees and receives regular updates on many projects and the impact they have or will have on communities. Supporting economic opportunities for our host communities and regions is a key priority for us and, in addition to our social investment programs, we strive to employ local people and engage local services. – We have developed the Western Australian Indigenous Participation Strategy, designed to support a more collaborative approach to attracting and developing Indigenous employees. – We have undertaken independent cultural management audits to help us improve our cultural heritage management and performance, and our engagement with Indigenous communities. – The Australian Advisory Group guides us on current and emerging issues, which helps us better manage policies and positions important to Australian communities and our broader business. For more information about our work with communities, see page 66–70.
– Decarbonisation, offsets and Scope 3 – Water management, biodiversity protection and nature-based solutions – Cultural heritage protection, Indigenous economic advancement, community consultation, consent and free, prior and informed consent (FPIC) – EU due diligence regulation – Transparency and anti-corruption – Advocacy on policy	– The Board and its sub-committees consider issues raised by CSOs throughout the year, particularly through the Sustainability Committee. The Board is represented at the CSO roundtables through the Chair and other Directors. – The Board considers ESG issues and our social licence to operate when making decisions on new ventures, projects and other growth opportunities. – The Chair and executives engaged extensively with investors on the topic of environment and water. In 2023, we published our transparent water data platform which was well received by CSOs and other stakeholders.

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How we engage

Governments

Governments – national, state and provincial, and local – are important stakeholders for our business. They provide the legal and policy framework that supports our businesses, and ensures that our communities and people are protected.

- We provide updates on issues relevant to our industry, either directly or as part of industry associations.
- We participate in multi-stakeholder organisations, initiatives and roundtables, such as the Extractive Industry Transparency Initiative (EITI), and the ICMM.
- We have innovative partnerships with governments, such as ELYSIS with the Governments of Canada and Quebec. We also partner with governments on projects, such as with the Government of Guinea on the Simandou iron ore deposit.
- Government representatives regularly visit our sites.
- In Australia, we engage with governments on issues such as project approvals and cultural heritage protection.
- In the US, we advocate on public policy related to the North American supply chain and alignment on climate change, critical minerals and materials, renewable energy, and trade.
- In China, we partner and engage with a range of government and state-owned entities on issues related to climate change, innovation, training, procurement, and product supply.
- We contribute to UK and EU public policy development.

Investors

Our strategy and long-term success depend on the support of our investors.

- Regular calls, one-on-one meetings and group events, roadshows, presentations and attendance at investor conferences.
- Webinars and online Q&A sessions.
- Our corporate reporting suite and regular updates on our website and social media.
- We held two annual general meetings (AGMs), one in Australia and one in the UK, where institutional and retail investors could engage directly with the Board and management, giving them the opportunity to ask questions and vote on our Remuneration Report.
- In 2023, our Chair, Dominic Barton, met with investors from the UK, the US and Australia to convey how our strategy integrates the net zero transition into our business, including our portfolio, capital investment decisions, and business planning.

Customers

The needs of our customers are central to our operational decision-making.

- Our Commercial team engages with customers through direct engagements and via business and industry forums.
- We periodically seek feedback from our customers through a customer survey, supplementary to the regular feedback we receive as part of ongoing customer interactions. The next customer survey will be conducted in 2024. Results from these surveys will be shared with the Board.
- Decarbonisation is one of our customers' biggest challenges. We partner to find innovative solutions to help produce sustainable products that support their net zero ambitions. For example, in 2023 we signed a memorandum of understanding with the BMW Group to deliver low-carbon aluminium, while also enabling a more sustainable and traceable supply chain for aluminium products through our START blockchain technology.
- In December 2023, the Board visited China and met with Chinalco, China Baowu and BYD. Board members visited their operations, demonstrating our commitment to continuing to strengthen our partnerships with China.

Suppliers

Our suppliers are critical to our ability to run efficient and safe global operations.

- Our Commercial team manages contracts and engages with our suppliers in a range of ways, including regular meetings and site visits, supplier events, local and host community procurement forums, annual awards, and supplier capability development initiatives.
- We partner with suppliers to co-develop technologies and applications, such as renewable diesel with Neste and Rolls-Royce.
- We periodically seek feedback from our suppliers through a supplier survey to improve our engagement and to strengthen our partnerships. The next supplier survey will be conducted in 2024. Results from these surveys are shared with the Board.

What was important in 2023	How the Board has taken account of these interests
– Tax and royalty payments – Compliance with laws and regulations – Local employment, procurement, health and safety – ESG issues, decarbonisation opportunities and socioeconomic development projects – Operational environmental management – Transparency and human rights – Industrial policy – New technology – Security	– We engage with government officials to understand their expectations, concerns, and policies. This helps us align our activities with government interests. The Board receives regular updates regarding all our projects and, in doing so, oversees our engagement with governments. – Board meetings were held in Australia, Mongolia, US and China in 2023, with significant engagement with government stakeholders. – The Board oversees our financial management to ensure we comply with tax obligations and fair contribution to our host country's revenue. We comply with regulations and contribute positively to the economic and social development of the regions where we operate.
– Financial and operational performance. – Our ESG performance, including the impact of climate change and how we are decarbonising our business. – Compliance with laws and regulations. – Human rights. – Remuneration policy.	– With regard to capital allocation and shareholder returns, the Board is committed to maintaining an appropriate balance between cash returns to shareholders and investment in the business, with the intention of maximising long-term shareholder value. – Given investor interest in ESG issues, including climate change and our work with communities around the world, the Board considers these issues during its yearly strategy sessions when assessing our portfolio positions. – The Board's engagement in CSO roundtables and some investor events provides a sounding board as we implement our strategy, respond to requisitioned resolutions and develop our reporting. – The People & Remuneration Committee Chair consulted extensively with shareholders and proxy advisers in 2023 to update them on proposals for the Remuneration Policy which is due for renewal at the 2024 AGMs, taking their feedback into consideration.
– Supply security. – Responsible sourcing and supply. – Transparency in the supply chain. – Human rights. – Compliance with laws and regulations. – Competitive pricing. – Product quality. – Strategic partnerships. – Evidence of ESG traceability. – Participation in responsible mining certification systems.	– The Chief Commercial Officer updates the Board annually on the key priorities and vision for Commercial, its role in supporting the Group strategy, and our customer engagement initiatives. – The Board approved a $700 million[1] investment to acquire a 50% equity stake in Giampaolo Group's wholly-owned Matalco business. For more information on the Board's decision-making on the investment in Matalco, see page 100.
– Responsible sourcing and supply. – Transparency in the supply chain. – Human rights. – Compliance with laws and regulations. – Competitive pricing. – Performance. – Payment terms. – Strategic partnerships.	– The Chief Commercial Officer provides an annual update to the Board on the Group's activities with suppliers, including metrics regarding how the Group has supported initiatives aimed at Indigenous groups. – With support from the Board, we facilitated a distribution deal between Wuxi Boton, one of our largest suppliers in China, and the entrepreneurial subsidiary of the Innu communities of Uashat mak Mani-utenam for the resale and after-sales service of industrial conveyors in Quebec, Canada.

1. Subject to closing adjustments.

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How the Board has considered stakeholders in their decision-making

Our Board believes that we can only achieve long-term sustainable success if we consider relevant stakeholders in our decision-making and ensure that decisions align with our purpose and values. Below are three examples of how our Board has considered stakeholders in 2023.



Matalco joint venture

The Board reviewed and approved the acquisition of a 50% stake in Giampaolo Group's Matalco business for $700 million[1]. The Matalco joint venture will manufacture and market recycled aluminium products.

Stakeholders impacted

- Communities
- Customers
- Governments
- Investors
- Workforce

Relevance to our objectives

●●

Decision

- We are committed to the low-carbon transition and providing our customers with materials enabling their energy transition. As part of this strategy, a range of aluminium recycling opportunities were assessed. It was determined that the Matalco joint venture met our strategic objectives and criteria.
- After a rigorous internal approvals process, including endorsement from our Investment Committee, the proposal was reviewed and approved by the Board in May 2023.
- The Board agreed that the proposal would positively impact our stakeholders, particularly our customers who are looking to reduce their carbon footprint with low-carbon aluminium products.
- The Board also considered the impact on local communities, as part of its review.
- Delivering on our strategic objectives and the low-carbon transition is also important to our investors and workforce.
- The Matalco transaction was finalised in November 2023 after receiving regulatory approval.

1. Subject to closing adjustments.



Seawater desalination plant

The Board reviewed and approved the $395 million investment in a seawater desalination plant in the Pilbara, Western Australia to support water supply for our coastal operations and local communities.

Stakeholders impacted

- Communities
- CSOs
- Governments
- Investors
- Suppliers
- Workforce

Relevance to our objectives

●●●

Decision

- Ensuring our ports, operations and local communities have a good water supply is imperative to our business and license to operate.
- Ahead of requesting Board approval, the coastal water supply project went through formal internal approvals, including Investment Committee approval. The Board reviewed and approved the project in May 2023.
- The project's impact on all associated Traditional Owners and Custodians was top of mind for the Board.
- The Board were satisfied that the project benefitted all our stakeholders and achieves our objective to Excel in Development. Construction of the plant will create approximately 300 jobs, and the plant has the ability for future expansion.
- We continue to work with regulators in Australia to ensure that all the required approvals are in place for the project to proceed.

For more information about how we manage water, see page 59.



Everyday Respect

The Board continued to monitor our progress against the 26 Everyday Respect recommendations and our commitment to strengthen our culture.

Stakeholders impacted

- Communities
- CSOs
- Customers
- Governments
- Investors
- Suppliers
- Workforce

Relevance to our objectives

●●●

Decision

- In 2021, we initiated a comprehensive, independent review of our workplace culture to better understand, prevent and respond to harmful behaviours in the workplace. The Board and Executive Committee fully endorsed the recommendations set out in the report in 2022 and have supported all initiatives that have been implemented so far to meet the 26 recommendations.
- During 2023, the Board received quarterly updates on progress against the Everyday Respect report recommendations.
- The Board considers our culture in all conversations with our people during site visits and when visiting offices.
- The Board considers all our stakeholders when monitoring the implementation of the Everyday Respect recommendations and how we are progressing our broader culture journey, especially our workforce, communities and our investors.
- To ensure we continue to progress the Everyday Respect recommendations, the Board has requested Elizabeth Broderick to undertake a final independent progress report in 2024.

For more information about our progress to implement the recommendations from the *Everyday Respect Report* see riotinto.com/everydayrespect.

Relevance to our four objectives key

● Best operator ● Impeccable ESG ● Excel in development ● Social licence

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How the Board monitors culture

One of the Board's focus areas is to assess and monitor our culture to make sure that our policies, practices and behaviours throughout the business are aligned with our purpose, values and strategy.

It is important to the Board that they, together with the leadership team, collectively set the right tone from the top, and each Director aspires to lead by example by living our values of care, courage and curiosity. Our values guide behaviour and the way we make decisions, from small everyday choices to big strategic decisions.

Since we released the Everyday Respect report in 2022, the Board has supported management to make targeted systemic improvements aimed at eradicating harmful disrespect including sexual harassment, bullying and racism. We are committed to the implementation of the 26 recommendations listed in the report. In addition, Representation targets, engagement programs and the creation of Employee Resource Groups are now in place.

These initiatives as well as systemic changes to talent, performance and reward are key enablers in creating an everyday respect culture.

For more information about Everyday Respect see riotinto.com/everydayrespect.

The Board monitors and assesses the culture of the Group by regularly receiving people updates from the Executive Committee and management and engaging directly with employees through site visits. The Board also receives a quarterly update on how the 26 recommendations from the Everyday Respect report are progressing. This, together with data from the myVoice confidential whistleblower program, a quarterly update on the culture journey, the employee engagement survey, and data on retention, provide the Board with a comprehensive view of how we are progressing on our culture journey.

Although there is more to do, we believe that our work to strengthen our culture has already had an impact, with employee engagement, retention and productivity improving in recent years. As we redefined our culture, we have seen a natural attrition of people with behaviours not aligned with our values.

The Board places great importance on employee engagement and regularly reviews its approach to engaging with the workforce. Simon McKeon, in his role as our designated Non-Executive Director for engagement with the workforce, also facilitates two-way dialogue between the Board and wider workforce.

Employee engagement survey

The Board received and considered reports and updates from the Chief People Officer on the results of our twice-yearly People Survey in July and December, which provided useful insights into employee sentiment. In considering the reports, the Board supported a number of recommendations aimed at improving communications from senior leadership to the wider workforce, increasing opportunities for career growth and learning, and supporting psychological health and safety.



Western Australia town hall: celebrating 150 years

Dominic Barton, Jakob Stausholm, Peter Cunningham and Kellie Parker, Chief Executive, Australia, had the opportunity to celebrate Rio Tinto's 150 years during a Perth town hall, hosted by Simon Trott, Chief Executive, Iron Ore. More than 2,100 of our people attended the town hall, joining in-person and online. They had the opportunity to ask questions and hear the Board and Executive Committee members' reflections, who, in turn, gained insight into what is top of mind for our people.

Site visits

In addition to the regular program of Board meetings, the Board also visited several sites and offices in 2023. These visits allow the Board to observe the operations in action and deepen their knowledge, while understanding the culture of the business and how we are progressing against our People Strategy.



Jakob Stausholm and Jennifer Nason share the traditional Mongolian beverage "airag" (fermented mare's milk).

Oyu Tolgoi, Mongolia

The Board visited Mongolia in July. The Chair and several Board members met with Prime Minister Oyun-Erdene and government ministers and participated in the Mongolian Economic Forum in Ulaanbaatar, which focused on future investment opportunities in Mongolia. While in Ulaanbaatar, the Board experienced the annual Naadam Festival, which offered a great demonstration of the nation's history and cultural roots.

The Board visited Oyu Tolgoi and had the opportunity to see the underground block cave performing well. They were impressed by the mine's productivity and the management of underground health and safety. They also viewed trials of underground electric vehicles, which form part of future plans to help decarbonise the mine.

While in Mongolia, Board members also visited a herder family in the community, shared a traditional meal, heard the education plans for their children, and listened to herders' concerns about late seasonal rains to provide feed for their camels.

The visit offered the Board a chance to deepen their relationships with the Mongolian Government, observe the culture and leadership at our site, meet our frontline leaders, partners and contractors, and assess whether the business is meeting the expectations of traditional herders and local communities in Mongolia.

Le Thoronet, France

Our Chair, Dominic Barton, visited south east France in October to see our Closure team in action. Dominic visited the Gardanne alumina refinery, the closed bauxite mine of Le Thoronet and the closed bauxite residue disposal area at St-Cyr. The former bauxite sites have been fully rehabilitated and are now used by the community for recreational activities. The visit provided an opportunity to learn more about our closure activities, stakeholder engagement and how we work towards a shared vision for the environment and community after mining ends. The visit illustrated both the scale and the variety of closure activity. Work to close assets and remediate and repurpose land is critical to our social licence and impeccable ESG credentials objectives.

Board activities in 2023

The Board had seven scheduled meetings in 2023. At every Board meeting, the Chief Executive and Chief Financial Officer report on the safety, operating, and business performance of the Group and people, culture and values.

During the year, the Board reviewed its forward agenda of matters to be discussed, considered its constitution, composition, and performance, and reviewed any new or amended Group policies.

The Board has ultimate oversight of ESG matters, but has delegated responsibility for certain matters to the Sustainability Committee.

Set out below are some of the specific matters that the Board considered during the year.

In February, the Board:

- Reviewed and approved the Group's 2022 full year results and final shareholder returns, which had been considered by the Audit & Risk Committee.
- Discussed a paper detailing a suggested approach to succession planning for Executive Committee positions.
- Approved the Group's 2023 Annual Plan.
- Approved the *2022 Climate Change Report* and approach to industry associations.
- Received updates on Business Conduct Office activities including material compliance risks, compliance program developments and effectiveness, and business integrity myVoice insights.

In April, the Board:

- Received updates on the Group's 150th anniversary and associated stakeholder engagement.
- Discussed a report covering the Group's progress on cultural change.
- Discussed Board succession planning.
- Approved two requests for funding to develop and execute a growth and life expansion pathway for Kennecott.
- Received an update on progress with the Oyu Tolgoi project, which included cave health metrics in relation to panel 0.
- Approved a proposal for the Group to form a joint venture with Giampaolo Group, by acquiring a 50% stake in Giampaolo Group's Matalco business for $700 million (subject to closing adjustments).

In May, the Board:

- Received an in-depth assessment of the health of the Group's Ore Reserves and Mineral Resources, and considered the trends and emerging risks and opportunities of our Ore Reserves and Mineral Resources.
- Reviewed an update on initiatives aimed at simplifying the business.
- Approved the AP60 96-pot smelter for expansion for capital expenditure of $1.1 billion.
- Discussed an update and teach-in on the Safe Production System deployment program, reviewing its success, progress, and impact on the business.
- Reviewed the Jadar project, covering the country context, resource profile and mineralogy of the asset, the major elements of the project scope, and the project economics and financials.
- Reviewed a technical update regarding the Kennecott shutdown.
- Considered an update on the Group's aluminium business, focusing on progress on the low-carbon strategy, and potential opportunities for the business.
- Considered a paper regarding the Group's Modern Slavery Statement, which was approved.

In July, the Board:

- Met in Mongolia and participated in a wide range of events and engagements with employees and key stakeholders and visited the Oyu Tolgoi mine.
- Considered updates on culture, progress on the Everyday Respect recommendations, and the second quarter 2023 people survey.
- Reviewed a paper providing an update on the results of a compliance program perceptions study, material compliance issues and risks, and Business Integrity Compliance Program effectiveness.
- Reviewed and approved the Group's 2023 half year results statement and interim shareholder returns, which had been considered by the Audit & Risk Committee.
- Reviewed and approved funding for the Rincon lithium project.

In September, the Board:

- Met in Washington D.C. to deepen understanding of our North American business and strategy. The trip included a valuable program of engagements with stakeholders and business and political leaders.
- Discussed an update on the status of the proposed Simandou iron ore project, with regards to the progress of negotiations, joint venture partner engagements, and the status of current capital approvals.
- Approved a request for funding to continue the feasibility study, progress early works and long lead procurement for a high-density ore project at Robe River Iron Ore Associations Joint Venture's Cape Lambert.
- Approved a request for funding for Resolution Copper to advance social licensing and permitting initiatives, operations and maintenance, and to close the feasibility study.

In October, the Board:

- Approved the appointment of Joc O'Rourke as a Non-Executive Director of Rio Tinto plc and Rio Tinto Limited.
- Approved funding for sustaining capital for the Oyu Tolgoi project.
- Reviewed a progress update regarding the Simandou project.
- Reviewed an update on the Group's projects' performance in 2023, including an overview of the forward portfolio and strategic priorities for 2024.
- Considered the Board evaluation results.
- Reviewed the Group's risk scenarios and mitigations of those risks.
- Considered and approved the Group's Tax Policy.

In December, the Board:

- Met in China, for the first time. This important visit included a wide range of engagements with stakeholders, partners and government, culminating with a celebratory event for key customers and suppliers.
- Considered an update on Energy Resources Australia Ltd's rehabilitation of the Ranger Project Area.
- Approved a number of requests for sustaining capital for projects within Rio Tinto Iron Ore's Pilbara operations.
- Reviewed a post divestment review of the Australian coal business.
- Considered an assessment of the Group's principal risks, associated controls, and management responses deployed in 2023.
- Approved the Group's 2024 Annual Plan.

Strategy and risk

The Board holds dedicated two-day strategy sessions in May and September each year. The May discussions concentrate on the external strategic environment and in September the focus is on the Group's progress and future strategic direction. See pages 14-19 for details of our strategy.

A high-level summary of the main themes discussed is below:

May

- The shifting roles and importance of governments and our customers' customers in metals and mining.
- The importance of partnerships.
- How to improve our social licence.
- The need to identify opportunities for the Group to leverage its expertise in specific areas of the value chain.
- How to maintain resilience while creating value.

September

- Decarbonisation of the business.
- Our people, culture, and performance.
- Our portfolio, diversification, and growth opportunities.

Governance framework

Good governance is about considering the right things, at the right time, with the right people and insights. We have structured the way the Board works to support that objective, to strengthen our strategic focus, and to facilitate the support that the Board provides to the executive team. Here is a summary of the framework.

Board of Directors

We are finding better ways to provide the materials the world needs.

By doing so efficiently, effectively and sustainably, we aim to create long-term value for all stakeholders. Our purpose is supported by three core values – care, courage and curiosity. The Board is collectively responsible for pursuing this purpose and approves the strategy, budget and plans proposed by the Chief Executive to achieve this objective.

Board Charter

See the Board Charter for more information on the role of the Board and the delegation to management.



For more information see riotinto.com/corporategovernance.

Audit & Risk Committee

Helps the Board to monitor decisions and processes designed to ensure the integrity of financial reporting, the independence and effectiveness of the external auditors, and robust systems of internal control and risk management.

See page 107

Nominations Committee

Helps the Board determine its composition, and that of its committees. They are regularly reviewed and refreshed, so they are able to operate effectively and have the right mixture of skills, experience and background.

See page 105

People & Remuneration Committee

Helps the Board ensure the Remuneration Policy and practices reward employees and executives fairly and responsibly, with a clear link to corporate and individual performance, and a focus on people and culture.

See page 113

Sustainability Committee

Helps the Board oversee the Group's integrated approach to sustainability and strategies designed to manage health and safety, and social and environmental risks, including management processes and standards.

See page 111

Chair's Committee

Supports the functioning of the Board and will consider urgent matters between Board meetings.

Chief Executive

Has delegated responsibility for the executive management of Rio Tinto, consistent with the Group's purpose and strategy, and subject to matters reserved for the Board, as set out in the Schedule of Matters Reserved for the Board (available at riotinto.com), and in accordance with the Group's delegation of authority framework.

Executive Committee

The Executive Committee supports the Chief Executive in the delivery of strategy, annual plans and commercial objectives, and in managing the financial and operational performance of the Group.

The following management committees support the Chief Executive in the performance of his duties.

Investment Committee

Reviews proposals on investments, acquisitions and disposals. Approves capital decisions within delegated authority limits, and otherwise recommends matters for approval to the Board, where appropriate.

Risk Management Committee

Oversees the management and mitigation of the principal risks that could materially impact the Group's business objectives and exceed its risk tolerances.

Ore Reserves Steering Committee

Responsible for standards and control procedures in the Ore Reserves estimation and disclosure process. Ensures that they are effective in meeting internal objectives and regulatory requirements.

Closure Steering Committee

Oversees the process and controls designed to manage the material risks related to rehabilitation, closure and legacy operations.

Disclosure Committee

Reviews and approves the release of all significant public disclosures on behalf of the Group. Oversees the Group's compliance with its disclosure obligations in accordance with all relevant legal and regulatory requirements, including processes to ensure such disclosures are accurate and timely.

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Evaluating our performance

We undertake a formal annual evaluation of the effectiveness of the Board and, every third year, we engage a professional external adviser to carry out an independent evaluation.

In 2023, we appointed Jan Hall, of business advisory company No 4, to conduct our external evaluation. No 4 does not have any other connection with Rio Tinto, and was appointed following a formal tender process overseen by the Chair, Senior Independent Director, Rio Tinto plc and Group Company Secretary.

Board review process

The external review comprised observations of Board and Committee meetings and a series of interviews with the Board members, Executive Committee members, the Company Secretary and certain advisors.

Conclusions of the evaluation

The Directors discussed the initial findings from the evaluation at the October Board meeting. The evaluation concluded overall that the Board and its Committees were working well, and that the performance of the Chair and individual directors was effective.

In terms of areas for improvement, it was agreed to explore ways of creating more time for in-depth discussion of the most material matters, to further sharpen the focus on strategic execution and, to help enable those improvements, to explore efficiencies related to the arrangements of the Board including scheduling, allocation of time and format of the Board's materials.

It was agreed that the Chair would lead further discussion on how to progress these matters and report back to the Board.

Actions

In February 2024, the Board reviewed a number of proposed actions to progress the improvement opportunities identified by the evaluation. This included a high-level summary of the most material matters for the Board to focus on, phased over the short-, medium- and longer-term of the Group's development. This document then informed the Board forward agenda program, a schedule of thematic "deep dives" on material matters, and a revised template for the Board papers.

The Board recognise that effectiveness requires continuous improvement, and we will gather feedback and reiterate these actions on a regular basis.

Directors' attendance at scheduled Board and committee meetings during 2023[1]

	Committee Appointments	Board	Audit & Risk	Nominations	People & Remuneration	Sustainability
Chair and Executive Directors						
Dominic Barton[2]	C	7/7		3/3	4/5	4/4
Jakob Stausholm		7/7				
Peter Cunningham		7/7				
Non-Executive Directors						
Megan Clark – retired 15 December 2023[3]		7/7		3/3	5/5	4/4
Dean Dalla Valle – joined 1 June 2023[4]	C	4/4		2/2	1/1	2/2
Simon Henry[5]	C	7/7	6/6	2/3		
Kaisa Hietala – joined 1 March 2023		6/6		2/2		3/3
Sam Laidlaw[6]	C	7/7		3/3	5/5	4/4
Susan Lloyd-Hurwitz – joined 1 June 2023		4/4		2/2	3/3	
Simon McKeon		7/7	6/6	3/3	5/5	
Jennifer Nason		7/7		3/3	5/5	
Joc O'Rourke – joined 25 October 2023		2/2				
Ngaire Woods		7/7		3/3	5/5	4/4
Ben Wyatt		7/7	6/6	3/3		

1. In addition to the scheduled meetings of the Board and Committees for 2023, in order to attend to urgent matters, one ad hoc meeting of the People & Remuneration Committee and one ad hoc meeting of the Sustainability Committee were convened. Other than as expressly noted below, these meetings were attended by each member of those committees.
2. Dominic Barton was unable to attend a meeting of the People & Remuneration Committee in October due to meetings with key Rio Tinto customers in South Korea.
3. Megan Clark stepped down as Chair of the Sustainability Committee with effect from 1 October 2023.
4. Dean Dalla Valle became a member of the Sustainability Committee and the People & Remuneration Committee with effect from 1 June 2023 and 1 November 2023 respectively, and became Chair of the Sustainability Committee with effect from 1 October 2023.
5. Simon Henry was unable to attend a meeting of the Nominations Committee in February due to a medical appointment.
6. Sam Laidlaw was unable to attend an ad hoc meeting of the Sustainability Committee due to the meeting having been convened with short notice, clashing with previously-arranged travel commitments.

Board committee membership key

- Committee Chair
- Nominations Committee
- Sustainability Committee
- Audit & Risk Committee
- People & Remuneration Committee

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Nominations Committee report

Our main priority as a Committee in 2023 was on refreshing the Board, and I am pleased to report that, over the year, we have announced the appointment of six new Non-Executive Directors.

We welcomed Kaisa Hietala, Susan Lloyd-Hurwitz, Dean Dalla Valle and Joc O'Rourke to the Board during the course of 2023 and, in December, we announced the appointments of Martina Merz, who joined the Board on 1 February 2024, and Sharon Thorne, who will join in July 2024.

Megan Clark stepped down as a Non-Executive Director on 15 December 2023, having served for nine years on the Board. I would like to express my sincere thanks to Megan for her contribution to Rio Tinto. We will greatly miss her insights and wise counsel.

As we have announced today, Simon McKeon will step down as a Non-Executive Director at the conclusion of our annual general meetings in 2024. I am extremely grateful to Simon for his invaluable contribution. On behalf of the Board, I wish him well for the future.

These changes mark the completion of the latest phase of refreshing the Board, with the six newly appointed Non-Executive Directors covering the key areas of expertise we had identified in our search criteria.

We have also enhanced the gender diversity of our Board composition, with four of the six new Directors being women. Our new Board will comprise 14 Directors, six of whom (43%) are women. Our new Board will peak at 14 directors and then go back to a more optimal size. We believe it is important to retain the expertise and experience of our longer-serving Directors during the transitional period as newer Directors familiarise themselves with the Group. We also acknowledge that, for the same reason, we do not currently comply with the new UK Listing Rules target that at least one of the senior board positions (Chair, Chief Executive Officer, Chief Financial Officer or Senior Independent Director) should be a woman. We are committed to achieving that target and this will be a key consideration for future appointments to these roles.



Dominic Barton
Nominations Committee Chair
21 February 2024

Refreshing the Board

2023 was a busy and important year in terms of refreshing the Board. As we set out in the Annual Report last year, the Nominations Committee identified a number of areas of expertise to inform the candidate search and strengthen the Board's composition in mining, operations and projects (preferably former or current Chief Executives or other senior leaders), renewables and the energy transition, financial/accounting, and knowledge of countries or regions of strategic relevance to the Group.

During the year, and with the support of executive search firm, Spencer Stuart, the Committee oversaw the appointments of six new Non-Executive Directors who were identified as providing expertise in these areas.

We continue to work hard to enhance the diversity of our Board composition. With four of the six new directors being women, our new Board will be 43% women (six out of 14 directors). The number of directors from an ethnic background is one.

The external search diversity of the identified areas of expertise was as follows:

Mining, operations and projects

38% women
13% ethnic background

Renewables and the energy transition

60% women
9% ethnic background

Finance/accounting

74% women
10% ethnic background

Completed candidate searches within identified expertise areas, were as follows:

Mining, operations and projects

Dean Dalla Valle and Joc O'Rourke were appointed to the Board in June 2023 and October 2023, respectively. Dean has four decades of operational and project management experience as a senior leader in the resources and infrastructure sectors and Joc has more than 25 years' experience in the mining and minerals industry, for the last decade as a Chief Executive. Dean has also succeeded Megan Clark as Chair of the Sustainability Committee.

Susan Lloyd-Hurwitz and Martina Merz were appointed to the Board in June 2023 and February 2024, respectively. Susan brings extensive experience in Australia's built environment sector, for the last decade as a Chief Executive. She is known for her transformational leadership on cultural change, gender equity, diversity and inclusion, and sustainability. Martina brings leadership and operational experience as a former Chief Executive in industrial engineering and steel production.

Renewables and the energy transition

Kaisa Hietala was appointed to the board in March 2023. Kaisa brings a deep understanding of renewables and sustainability from her knowledge of the resources industry, as well as commercial capability.

Finance/accounting

Sharon Thorne will join the Board from July 2024 and will strengthen the composition of our Audit & Risk Committee. Sharon is a Chartered Accountant and spent 36 years with Deloitte, holding a number of leadership positions.

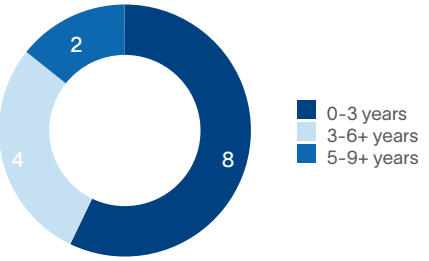
For more information about our new Non-Executive Directors, see the Board biographies on pages 92-93.

Nominations Committee members

Dominic Barton (Chair)	Simon McKeon
Megan Clark[1]	Martina Merz[4]
Dean Dalla Valle[2]	Jennifer Nason
Simon Henry	Joc O'Rourke[5]
Kaisa Hietala[3]	Ngaire Woods
Sam Laidlaw	Ben Wyatt
Susan Lloyd-Hurwitz[2]	

1. Until retirement from the Board on 15 December 2023.
2. Appointed 1 June 2023.
3. Appointed 1 March 2023.
4. Appointed 1 February 2024.
5. Appointed 25 October 2023.

Length of tenure of Non-Executive Directors



Appointments to the Board – our policy

We base our appointments to the Board on merit, and on objective selection criteria, with the aim of bringing a range of skills, knowledge and experience to Rio Tinto. This involves a formal and rigorous process to source strong candidates from diverse backgrounds and conducting appropriate background and reference checks on the shortlisted candidates. We aim to appoint people who will help us address the operational and strategic challenges and opportunities facing the company and ensure that our Board is diverse in terms of experience, gender, nationality, social background and cognitive style. As such, we engage only recruitment agencies that are signed up to the Voluntary Code of Conduct on diversity best practice.

We believe that an effective Board combines a range of perspectives with strong oversight, combining the experience of Directors who have developed a deep understanding of our business over several years with the fresh insights of newer appointees. We aim for the Board's composition to reflect the global nature of our business – we currently have eight different nationalities (including dual nationalities) on a Board of 14.

The Committee engaged Spencer Stuart to support the search for our new Non-Executive Directors. The Committee is satisfied that Spencer Stuart does not have any connections with the company or individual Directors that may impair their independence.

When recruiting government or former government officials to join the Rio Tinto Board, we comply with any restrictions and obligations existing pursuant to relevant laws and regulations, including with respect to confidentiality, lobbying and conflicts of interest.

The key skills and experience of our Board are set out on this page of the report.

Our key responsibilities

The purpose of the Nominations Committee is to review the composition of the Board. The Committee leads the process for appointments, making recommendations to the Board as part of succession planning for Non-Executive Directors. It also approves proposals for appointments to the Executive Committee.

Membership of the Committee

All Non-Executive Directors are currently members of the Nominations Committee.

The Chief Executive and the Chief People Officer are invited to attend all or part of meetings, as appropriate. The Committee is chaired by the Chair of the Board, unless the matter under consideration relates to the role of the Chair.

The Committee had three formal meetings in 2023 and received regular and detailed updates on the status of the various searches, as required. Attendance at the formal meetings is included in the table on page 104.

Diversity

The Board recognises that it has a critical role to play in creating an environment in which all contributions are valued, different perspectives are embraced, and biases are acknowledged and overcome. The Board shares ownership with the Executive Committee of the Group's Inclusion and Diversity Policy, which can be found at riotinto.com/policies.

The proportion of women on the Board is currently 36% (five women and nine men) and will be 43% following the commencement of Sharon Thorne's appointment in July 2024.

The Group has continued to set measurable gender diversity objectives for the composition of senior leadership and graduate intake and achievement of these targets contributes to the variable remuneration of senior executives. Progress on diversity is shown in the Our approach to ESG section on page 43, where we show a breakdown by seniority.

The number of Directors who identify themselves as being from an ethnic background is one (Ben Wyatt).

For further information on the gender and ethnic diversity of the Board and Executive Committee please see page 153 of the Compliance with governance codes and standards section.

Progress on diversity is shown in the Talent, diversity and inclusion section on pages 73–74.

Skills and experience of the Chair and Non-Executive Directors

Skills and Experience	Some experience	Extensive experience	Total
Chief Executive experience Chief Executive-level experience of a major corporation.	3	5	**8**
Chief Financial Officer & audit experience Experience in financial accounting and reporting, corporate finance, internal controls, treasury and associated risk management.	3	2	**5**
Mining and broader industrial operations Senior executive experience in a large, global mining or industrial organisation.	1	5	**6**
Major projects Experience in developing large-scale, long-cycle capital projects.	5	5	**10**
Corporate governance Experience on the Board of a major quoted corporation subject to rigorous corporate governance standards.	1	9	**10**
Global experience, including multinational and geopolitical experience Experience working in multiple global locations, exposed to a range of cultural, business, regulatory and political environments and/or in-depth understanding of public policy and government relations.	1	9	**10**
Relevant country/regional expertise Knowledge of countries or regions of strategic relevance to the Group.	7	1	**8**
Downstream customer markets Understanding of value chain development, including consumers, customers and marketing demand drivers.	5	3	**8**
ESG Experience of issues associated with environmental and social responsibility, including communities and social performance, government relations, workplace health and safety and stakeholder engagement.	6	6	**12**
Energy transition Knowledge and experience of managing climate-related threats and opportunities including climate science, the low-carbon transition and public policy.	8	1	**9**
Industrial technology & innovation Experience of nurturing and harnessing research, development and innovation, including digital technology and cybersecurity.	5	2	**7**
Mergers and acquisitions & private equity/investing Experience of mergers, acquisitions, disposals, joint ventures, private equity and investing.	7	1	**8**

Audit & Risk Committee report

I am pleased to present the Audit & Risk Committee (Committee) report for 2023. During the year, the Committee continued to oversee the processes in place to monitor the Group's risk management and financial reporting. This included reviewing and considering the longer-term viability statement (LTVS) and ensuring this Annual Report is fair, balanced, and understandable.

The Committee spent much of its time discussing and overseeing the significant issues of judgement relating to the financial statements. In particular, this included consideration of impairment charges and reversals, exclusions, closure provisions, climate change, tax and litigation.
We appraised and monitored the status of the Group's internal control of financial reporting for the Sarbanes-Oxley Act requirements. We have also overseen the Group's systems of internal control and risk management, including the Group Internal Audit (GIA) function.

This year, the Committee endorsed a GIA development program to enhance the teams quality, agility and speed of plan and assurance delivery. This sees GIA working more closely with the business to support and assure critical activities, and ensure a prioritised approach to managing recommendations following audits. It will simplify processes while maintaining strong assurance activity. We believe this approach is appropriate and will encourage cultural change to support the Group's objectives. We also monitored and supported developments in the risk management function and processes targeted at a clearer articulation of the three lines of defence model, in particular the roles and accountabilities of the first and second lines.

We continue to closely monitor the developing regulatory requirements in the three jurisdictions in which we are listed. Throughout the year the Committee received updates on the potential for UK corporate governance reform. We aim to be a valued contributor to positive developments in corporate governance, and to adopt new requirements in a timely way. I have worked with our team and through the Audit Committee Chairs' Independent Form (ACCIF) in formulating responses to the Financial Reporting Council's UK Corporate Governance Code consultation. Although many of the original proposals have now been withdrawn, we intend to continue working towards and developing an Audit and Assurance Policy, which will show how we receive assurance over the integrity of our reporting, including both financial statements and other components of the Annual Report, and other external reporting requirements. I also believe our current LTVS already meets most of the requirements for the proposed Resilience statement, and that Rio Tinto will be well positioned to consider the new requirement for a Board statement on the effectiveness of internal controls.

In 2023, the Committee, together with the Sustainability Committee, also closely followed the changing landscape of environmental, social and governance (ESG) reporting requirements. In the short term the new climate-related requirements have been disclosed on a voluntarily basis. The Committee will continue to monitor ESG reporting changes and make necessary preparations to report against them as required. I remain concerned about the multiple emerging frameworks here and the box ticking approach being taken by some stakeholders, and will continue to contribute wherever possible to development of common global standards within the mining sector.

I would like to take this opportunity to thank my fellow Committee members for their continuing diligence, insight and challenge, as well as our colleagues across the business who support the work of the Committee.

I hope readers find this report of the Committee's work in 2023, set out on the following pages, informative and interesting.



Simon Henry
Audit & Risk Committee Chair

21 February 2024

Audit & Risk Committee members

Simon Henry (Chair)
Simon McKeon
Ben Wyatt

Membership

The members of the Committee are all independent Non-Executive Directors, and their biographies can be found on pages 92-93. The Chair of the Board is not a member of the Committee.

As Rio Tinto's securities are listed in Australia, the UK and the US, we follow the regulatory requirements and best practice governance recommendations for audit committees in each of these markets.

Australian listing requirements

In Australia, the members, and the Committee as a whole, meet the independence requirements of the Australian Securities Exchange (ASX) Principles. Specifically, the Committee members between them have the accounting and financial expertise and a sufficient understanding of the industry in which the company operates to be able to discharge the Committee's mandate effectively.

UK listing requirements

In the UK, the members meet the requirements of the Financial Conduct Authority's (FCA) Disclosure Guidance and Transparency Rules, and the provisions of the UK Corporate Governance Code relating to audit committee composition. Simon Henry, the Chair of the Committee, is considered by the Board to have recent and relevant financial experience.

Simon Henry has extensive experience in the natural resources sector. Simon McKeon and Ben Wyatt have gained experience in the mining sector by serving on the Board and on the Committee, and through regular site visits, reports and presentations. The Committee as a whole has competence relevant to the sector in which the company operates.

The Committee complies with the Audit Committees and the External Audit: Minimum Standard.

US listing requirements

In the US, the requirements for the Committee's composition and role are set out in Securities and Exchange Commission (SEC) and New York Stock Exchange (NYSE) rules. The members of the Committee meet the independence requirements set out under Rule 10A-3 of the US Exchange Act and under Section 303A of the NYSE Listed Company Manual. The Board has designated Simon Henry as an "audit committee financial expert". The Board also believes that the other members of the Committee are financially literate by virtue of their wide business experience.

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Committee remit

The Committee's objectives and responsibilities are set out in our Terms of Reference (see riotinto.com/corporategovernance). These follow the relevant best practice recommendations in Australia, the UK and the US.

Our main duties

Financial reporting – we review the key judgements needed to apply accounting standards and to prepare the Group's financial statements. We also review the narrative reporting that goes with them, with the aim of maintaining integrity in the Group's financial reporting. We also monitor exclusions made in deriving alternative (non-GAAP) (Generally Accepted Accounting Principles) performance measures such as underlying earnings.

External audit – we oversee the relationship with the external auditors and review all the non-audit services they provide and their fees, to safeguard the auditors' independence and objectivity. We also assess the effectiveness of the external audit and, when necessary, carry out a formal tender process to select new auditors.

Framework for internal control and risk management – we monitor the effectiveness of the Group's internal controls, including those over financial reporting. We also oversee the Group's risk management framework.

Group Internal Audit (GIA) – we oversee the work of GIA and its head, who reports functionally to the Committee Chair.

Mineral Resources and Ore Reserves – we oversee the reporting and assurance of Mineral Resources and Ore Reserves, and consider the impact on financial reporting.

Distributable reserves – we provide assurance to the Board that distributable reserves are sufficient, and in the correct corporate entities, to support any dividend proposals.

These duties feed into an annual work plan that ensures we consider issues on a timely basis. The Committee has authority to investigate any matters within its remit. We have the power to use any Group resources we may reasonably require, and we have direct access to the external auditors. We can also obtain independent professional advice at the Group's expense, where we deem necessary. No such advice was required during 2023.

The Committee Chair reports to the Board after each meeting on the main items discussed, and the minutes of Committee meetings are circulated to the Board.

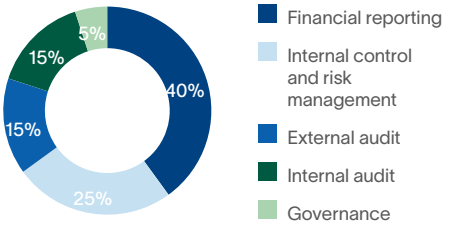
We had six Committee meetings in 2023. Attendance at these meetings is included in the table on page 104. The Committee has met twice to date in 2024.

The Chair of the Board, the Chief Financial Officer, the Group Financial Controller and the heads of GIA and Risk regularly attend Committee meetings, as do the Chief Legal Officer, Governance & Corporate Affairs, and the Group Company Secretary. Other senior executives and subject-matter experts are invited as needed.

The external auditors were present at all of the Committee meetings during the year. The auditors review all materials on accounting or tax matters in advance of each meeting, and their comments are included in the papers circulated to Committee members. The audit partners also meet with the Committee Chair ahead of each meeting to discuss key issues and raise any concerns.

The Committee meets regularly in private sessions. We also hold regular private discussions with the external auditors. Management does not attend these sessions. The Committee Chair also has regular contact and discussions with these stakeholders outside the formal meetings.

Use of Committee meeting time in 2023



Other focus areas in 2023

In addition to the scheduled workload, the Committee also:

- Received an update, at a joint session with the Sustainability Committee, on regulatory reform including potential changes to UK corporate governance requirements and the landscape for ESG reporting.
- Discussed an update on the OECD Pillar One and Two proposals to implement a new global tax framework involving a reallocation of taxing rights to market jurisdictions and application of a 15% global minimum tax.
- After a robust process, in early 2024 recommended to the Board that the draft 2023 Annual Report should be taken as whole, fair, balanced and understandable.
- Reviewed the quality and effectiveness of the Group's internal control and risk management systems. This review included the effectiveness of the Group's internal controls over financial reporting, and the Group's disclosure controls and procedures in accordance with sections 404 and 302 of the US Sarbanes-Oxley Act 2002. The Committee also considered reports from GIA and KPMG on their work in reviewing and auditing the control environment.

Significant issues relating to financial statements

There were four significant issues considered by the Committee in relation to the financial statements.

Matters considered	Conclusion
Review of carrying value of cash-generating units and impairment charges/reversals	The Committee assessed management's determination of cash-generating units, review of impairment triggers, and consideration of potential impairment charges and reversals over the course of the year. In the first half of the year impairment triggers were identified at the Gladstone alumina refineries. The Committee considered the key judgements made by management, in particular the valuation sensitivity to the cost of carbon credits. In the second half of the year an impairment reversal trigger was identified at the Simandou iron ore project in Guinea. The key matters discussed with management were the timing of cost capitalisation and the perimeter of previously impaired assets that continue to be relevant to the project development.
Application of the policy for items excluded from underlying EBITDA	The Committee reviewed the Group's policy for exclusion of certain items from underlying earnings and confirmed the consistent application of this policy year on year. The items excluded from underlying earnings comprised charges of US$2.1 billion and income of US$0.4 billion. A reconciliation of net earnings to underlying earnings is presented in the Alternative Performance Measures.
Estimate for provision for closure, restoration and environmental obligations	The Committee reviewed the significant changes in the estimated provision for closure, restoration and environmental obligations by product group and Rio Tinto Closure. The Committee received updates on the closure studies completed in the period and the significant reforecast of costs in relation to the Ranger mine by Energy Resources of Australia. The Committee reviewed economic assumptions assessed by management, including inflation during the period and supported changes to the discount rate.
Climate change	The Committee received an overview of the work that management is undertaking in relation to climate change and the potential financial reporting implications thereof. The Committee reviewed the climate change summary in the Financial Statements and the impacts of climate change throughout the notes, with particular emphasis on the impact to impairment charges and the related disclosure of sensitivities.

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Climate change-related financial reporting

The Directors have considered the relevance of the risks of climate change and transition risks associated with achieving the goals of the Paris Agreement when preparing and signing off the Company's accounts. The narrative reporting on climate-related matters is consistent with the accounting assumptions and judgements made in this report. The Audit & Risk Committee reviews and approves all material accounting estimates and judgements relating to financial reporting, including those where climate issues are relevant. The Group's approach to climate change is supported by strong governance, processes and capabilities.

Our commodity price forecasts focus on two core scenarios. They are used to generate a central reference case for commodity forecasts and valuations, used pervasively in our financial processes, including impairment testing, estimating remaining economic life, and discounting closure and rehabilitation provisions, as was the case in the prior year.

There is broad recognition that the pace of decarbonisation across the global economy is too slow to limit warming to 1.5°C and that current climate policies in many countries are not yet aligned with their stated ambitions. Consequently, neither of our two core scenarios, Fragmented Leadership and Competitive Leadership, is consistent with the expectation of climate policies required to accelerate the global transition to meet the stretch goal of the Paris Agreement. Although our operational emissions reduction targets align with the goals of the Paris Agreement, our two core scenarios do not. Given this, we also assess our sensitivity, and test the economic performance of our business against, the Aspirational Leadership scenario we have developed that reflects our view of the global actions required to meet the stretch goal of the Paris Agreement of limiting warming to 1.5°C.

Overall, based on our internally developed pricing outlooks, we do not envisage an adverse impact of the 1.5°C Paris Agreement-aligned sensitivity on asset carrying values, remaining useful life, closure and rehabilitation provisions for our Group.

During the year, the assessment performed under the Physical Resilience Programme, together with our ongoing review processes, including impairment assessments, did not identify any material accounting impacts as a consequence of the physical risks associated with climate change.

For more information on climate change impact on our Group, see our *2023 Climate Change Report* and page 44 in this report.

Contact with regulators during 2023

During the year, the Company received a letter from the SEC regarding the Production, Mineral Reserves, Mineral Resources and Operations disclosures in our 2022 20-F.

External auditors

Engagement of the external auditors

For the 2023 financial year, KPMG are serving as our auditors. The UK entity of KPMG audits Rio Tinto plc, and the Australian entity audits Rio Tinto Limited. The UK audit engagement partner, Jonathan Downer, was appointed in March 2021 and the Australian partner, Trevor Hart, was appointed in 2020.

We agreed on the scope of the auditors' review of the half-year accounts, and of their audit of the full-year accounts, taking into consideration the key risks and areas of material judgement for the Group. We also approved the fees for this work and the engagement letters for the auditors.

The Group has fully complied with the Statutory Audit Services Order.

Safeguarding independence and objectivity, and maintaining effectiveness

In our relationship with the external auditors, we need to ensure that they retain their independence and objectivity, and are effective in performing the external audit.

Use of the external auditors for non-audit services

The external auditors have significant knowledge of our business and of how we apply our accounting policies. That means it is sometimes cost-efficient for them to provide non-audit services. There may also be confidentiality reasons that make the external auditors the preferred choice for a particular task.

However, safeguarding the external auditors' objectivity and independence is an overriding priority. For this reason, and in line with the Financial Reporting Council's (FRC) Ethical Standard and the SEC independence rules, the Committee ensures that the external auditors do not perform any functions of management, undertake any work that they may later need to audit or rely upon in the audit, or serve in an advocacy role for the Group.

We have a policy governing the use of the auditors to provide non-audit services. The cap on the total fees that may be paid to the external auditors for non-audit services in any given year is 70% of the average of the audit fees for the preceding three years. This is in line with the FRC's Ethical Standard. Non-audit assignments fall into two broad categories:

- Audit, audit-related or other "pre-approved" services where we believe there is no threat to auditors' independence and objectivity, other than through the fees payable.
- Other services approved under delegated authority.

We apply different approval regimes to these areas of work. Approval of "pre-approved" services is as follows:

- Up to $50,000: subject to prior notification to management, this work can be awarded.
- From $50,001 to $100,000: requires the Chief Financial Officer's approval.
- Over $100,000 and with a tender process: if the external auditors are successful in the tender, the appointment requires the Chief Financial Officer's approval.
- From $100,001 to $250,000 without a tender process: requires the Chief Financial Officer's approval.
- Over $250,000 without a tender process: requires the Committee's or Committee Chair's approval.

In each case, the nature of the assignment and the fees payable are reported to the Committee.

The Chief Financial Officer can approve other services up to the value of $50,000 and an aggregate value of no more than $100,000. Fees exceeding $100,000 in aggregate require approval from the Committee or the Committee Chair.

At the half-year and year-ends, the Chief Financial Officer and the external auditors report to the Committee on non-audit services performed and the fees payable. Individual services are also reported to the Committee at each meeting that have either been approved since the previous meeting, or that require approval for commencement following the meeting.

Non-audit services provided by KPMG in 2023 were either within the predetermined approval levels or approved by the Committee and were compatible with the general standard of independence for auditors and the other requirements of the relevant regulations in Australia, the UK and the US regulations.

Fees for audit and non-audit services

The amounts payable to the external auditors, in each of the past two years, were:

	2023	2022
Audit fees	**26.6**	25.7
Non-audit service fees:		
Assurance services	**4.1**	3.3
All other fees	**0.1**	0.3
Total non-audit service fees	**4.2**	3.6
Non-audit: audit fees (in-year)	**16 %**	14 %

For further analysis of these fees, please see note 38 on page 237.

None of the individual non-audit assignments was significant, in terms of either the work done or the fees payable. We have reviewed the non-audit work in aggregate. We are satisfied that neither the work done, nor the fees payable, compromised the independence or objectivity of KPMG as our external auditors.

Independence of the external auditors

KPMG are required to provide a declaration to the Directors in relation to their compliance with the independence requirements of the Australian Corporations Act 2001 and the professional code of conduct for external auditors. A copy of this is on page 267.

No person who served as an officer of Rio Tinto during 2023 was a Director or partner of KPMG at a time when they conducted an audit of the Group.

Effectiveness of the external auditors

We review the effectiveness of the external auditors annually. We consider the results of a survey containing questions on the auditors' objectivity, quality and efficiency. The survey, conducted in June 2023, was completed by a range of operational and corporate executives across the business, and by Committee members.

We are satisfied with the quality and objectivity of KPMG's 2022 audit.

Appointment of the auditors

The Committee has reviewed the independence, objectivity and effectiveness of KPMG as external auditors in 2023 and in the year to date. We have recommended to the Board that KPMG should be retained in this role for 2024, which the Board supports.

KPMG have indicated that they are willing to continue as auditors of Rio Tinto. A resolution to reappoint them as auditors of Rio Tinto plc will be proposed as a joint resolution at the 2024 AGMs, together with a separate resolution seeking authority for the Committee to determine the external auditors' remuneration.

Subject to the approval of the above resolution, KPMG will continue in office as auditors of Rio Tinto Limited.

Risk management and internal controls

We review Rio Tinto's internal control systems and the risk management framework. We also monitor risks falling within our remit, especially those relating to the integrity of financial reporting. A summary of the business's internal control and risk management systems, and of the principal risks and uncertainties we face, is available in the Strategic report on pages 78-88. Importantly, responsibility for operating and maintaining the internal control environment and risk management systems sits at asset level. Leaders of our businesses and functions are required to confirm annually that adequate internal controls are in place, that these are operating effectively and are designed to identify any failings and weaknesses that may exist, and that any required actions are taken promptly.

The Audit & Risk Committee also regularly monitors our risk management and internal control systems (including internal financial controls). We aim to have appropriate policies, standards and procedures in place, and ensure that they operate effectively.

As part of considering the risk management framework, the Committee receives regular reports from the Group Financial Controller, the Chief Legal Officer, Governance & Corporate Affairs, and the Head of Tax on material developments in the legal, regulatory and fiscal landscape in which the Group operates.

The Board, supported by the Audit & Risk Committee, has completed its annual review of the effectiveness of our risk management and internal control systems. This review included consideration of our material financial, operational and compliance controls. The Board concluded that the Group has an effective system of risk management and internal control.

Internal control over financial reporting

The main features of our internal control and risk management systems in relation to financial reporting are explained on page 151.

Internal audit program structure

GIA provides independent and objective assurance of the adequacy and effectiveness of risk management and internal control systems. It may also recommend improvements.

While the Head of GIA reports administratively to the Chief Financial Officer, appointment to, or removal from, this role requires the consent of the Audit & Risk Committee Chair. The Head of GIA is accountable to the Chairs of the Audit & Risk and the Sustainability Committees, and communicates regularly with both.

Our GIA team therefore operates independently of management. Its mandate is set out in a written charter, approved by the Audit & Risk Committee. GIA uses a formal internal audit methodology that is consistent with the Institute of Internal Auditors' (IIA) internationally recognised standards.

When needed, the team brings in external partners to help achieve its goals. There is a clear policy to address any conflicts of interest, which complies with the IIA's standards on independence. This policy identifies a list of services that need prior approval from the Head of GIA.

Governance of the annual plan

Each year's internal audit plan is approved by the Audit & Risk Committee and the Sustainability Committee. The plan is focused on higher-risk areas and any specific areas or processes chosen by the committees. It is also aligned with any risks identified by the external auditors. Both committees are given regular updates on progress, including any material findings, and can refine the plans, as needed.

Effectiveness of the internal audit program

The Audit & Risk Committee monitors the effectiveness of the GIA function throughout the year, with updates on performance at every meeting. In 2022, PwC's assessment of GIA provided some useful suggestions for further improvement to mature GIA to "trusted adviser" level. These suggested improvements were actioned during 2023 and while the transformation is ongoing, it will improve the function's effectiveness and speed of delivery, while maintaining strong assurance activity.

We are satisfied that the quality, experience and expertise of GIA are appropriate for the business and that GIA was objective and performed its role effectively. We also monitored management's response to internal audits during the year. We are satisfied that improvements are being implemented promptly in response to GIA findings, and believe that management supports the effective working of the GIA function.

Committee effectiveness

The Committee reviews its effectiveness annually. In 2023, this was accomplished through an externally-facilitated evaluation of the Board and its committees.

The performance of the Committee was highly rated, with no areas of concern raised and no significant changes recommended.

Sustainability Committee report

The Sustainability Committee supports the long-term strategy of Rio Tinto's businesses by caring for our people, overseeing our contribution to the sustainability of the environments and communities in which we operate, and encouraging the business to find better ways to provide the materials that the world needs.

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I am pleased to present my first report on the work of the Sustainability Committee, having been appointed Chair of the Committee in October 2023.

The Sustainability Committee's activities include overseeing Rio Tinto's policies, frameworks, and management systems that are designed to maintain the health and safety of our employees and contractors, to manage our key social and environmental risks, to support the communities in which we operate, and to respect human rights in our business and value chains. By maintaining our focus on these important areas, we are also supporting Rio Tinto's social licence to operate.

While we have now experienced five years without a fatality at our managed operations, tragically four team members from our Diavik mine in Canada lost their lives when a charter flight on its way to the mine crashed in January 2024. This is a stark reminder that safety hazards still exist in our operations, and that we must remain eternally vigilant and committed to managing them. A critical item on the Committee's agenda is tracking our progress in analysing and learning from incidents that have the potential to result in Potential Fatal Incidents (PFIs) to prevent similar incidents from happening across our operations. In July, we investigated two process safety incidents that had occurred within six weeks at Rio Tinto Iron and Titanium Quebec Operations' reduction plant in Sorel-Tracy, Canada. We looked at the root causes of each of these events, and the work being done to investigate what further process controls should be implemented.

In 2023, the Group recorded an all-injury frequency rate of 0.37 – an improvement on the rate of 0.40 for the prior year. However, three permanent damage injuries occurred: an operator injured their hand at our Diavik diamond mine in Canada; a driller lost four fingers at the Simandou iron ore project in Guinea; and at our Kennecott copper operations in Salt Lake City, Utah a geotechnical engineer required a leg amputation. We continue to encourage transparent reporting of PFIs as they occur, and are focusing on the critical risk areas indicated by these incidents – and in particular on falling objects, working at heights, and vehicles and driving. The overall number of reported PFIs remained broadly consistent with the prior year's levels at 103.

In 2023, the Committee undertook deep dives into selected key safety risks. This included an assessment of the mass passenger transport risks across the Group, during which we examined compliance with our controls, and opportunities for strengthening those controls. Other deep dives in 2023 examined process safety risks, and risks associated with contact with electricity. The Committee also reviewed the design of the governance frameworks for health, safety, security, environment and communities for our joint venture arrangements at Simandou.

At our April meeting, the product group Chief Executives and the Chief Commercial Officer presented to the Committee on the key ESG and operational risks and trends for each product group and for Rio Tinto Marine, and the controls for managing those risks. The Committee noted the key sustainability risk themes across the Group, and commended the collaboration across the Group for managing these risks.

The Committee continues to review the progress with our safety maturity model (SMM) program, a key tool for developing and enhancing our safety culture. In 2023, the business incorporated a mid-year self-assessment process in addition to the end of year independent assessment, and key insights were provided to the Committee. While no material changes were made to the SMM in 2023, the Group's safety maturity is steadily advancing with an average score in 2023 of 5.2 (out of a scale of 0 to 9), which is an 11% improvement on the prior year.

The Committee continued to monitor our progress towards implementation of the Global Industry Standard on Tailings Management (GISTM). In August 2023, in accordance with GISTM Principle 15, we published information on our facilities with Very High or Extreme consequence classifications. The Committee also continues to directly engage with executives having accountability for the safety of tailings facilities across the Group, and has received progress updates from management on the pathway to full conformance with the GISTM.

The Committee examined the independent audit of Rio Tinto's Cultural Heritage Management program as part of the response plan to the Rio Tinto Board Review of Cultural Heritage Management, published August 2020. It will monitor ongoing actions to advance Cultural Heritage Management practices globally.

The Committee reviewed the progress of Rio Tinto's program for managing its physical resilience to climate change, and for the Group's compliance with the disclosure requirements set out by the Task Force on Climate-Related Financial Disclosure.

Sustainability risks cannot be considered in isolation. As part of our governance and oversight of sustainability as an integrated risk for the business, the Committee receives annual updates from our product group Chief Executives on their integrated strategies for managing sustainability risks and opportunities. The Committee examined sustainability risk themes and trends identified for the Group, including the impact of the Group's decarbonisation agenda on sustainability risks, and the need for an interdisciplinary approach for the management of increasingly interdependent sustainability risks.

The Group's Internal Audit (GIA) function undertakes reviews and reports to the Sustainability Committee on matters within the Committee's scope. In addition, the Group's auditors, KPMG, reported to the Committee on their assurance procedures over our 2022 sustainable development reporting.

Other key areas of focus for the Committee in 2023 included:

- Human Rights: reviewing management of human rights risks, tracking global trends in human rights policy and regulation, and overseeing our modern slavery reporting.
- Environment and biodiversity: received reports on all areas of environmental risk management (excluding decarbonisation and climate change).
- Water: receiving an update on our progress against our water stewardship targets.
- Health, Safety, Environment and Security (HSES) performance: receiving regular updates on HSES performance.
- Communities and Social Performance (CSP): receiving a progress update on the Group's CSP strategy, including key activities undertaken in 2023 and a forward-looking view on priorities for 2024, in support of the group objectives of Impeccable ESG and Social Licence.
- Major hazards: receiving updates from management on the implementation of the GISTM and implementation of the Group's Process Safety Improvement plan 2023-25.

Site visits are an important element of the work of the Committee, and this year in addition to a full Board site visit to Oyu Tolgoi in Mongolia, our Committee members made individual visits to our Iron Ore operations in the Pilbara, Western Australia; in the US, our operations at Resolution Copper in Arizona, and our Kennecott copper operations in Salt Lake City, Utah; QIT Madagascar Minerals' facilities in Madagascar; our RTIT operations in Suzhou, China; four Rio Tinto Alcan legacy sites at Le Thoronet, Gardanne, St-Cyr and Montgrand in France; and to our Technical Development Centre in Bundoora, Victoria.

Finally, I would like to thank Megan Clark for her leadership and guidance as Chair of this Committee for the past seven years, and her commitment and generosity of time in assisting my transition into the role of Chair.



Dean Dalla Valle
Sustainability Committee Chair
21 February 2024

Sustainability Committee members

Dean Dalla Valle (Chair)[1]	Sam Laidlaw
Megan Clark[2]	Ngaire Woods
Dominic Barton	Joc O'Rourke[4]
Kaisa Hietala[3]	

1. Member of the Committee from 1 June 2023, Chair of the Committee from 1 October 2023.
2. Chair of the Committee until 30 September 2023, Member of the Committee until retirement from the Board on 15 December 2023.
3. Member of the Committee from 1 March 2023.
4. Member of the Committee from 1 January 2024.

The role of the Committee

The Committee's scope and responsibilities are set out in its Terms of Reference, which can be found at riotinto.com/corporate governance.

Activities in 2023

The Committee met five times in 2023. During these meetings, the Committee undertook the following activities:

Health and safety

- Received updates on the Group's performance across key health and safety metrics.
- Conducted regular reviews of PFIs occurring across the Group.
- Conducted deep dives into key safety risks and controls, including process safety risk, mass passenger transport risks, and major tailings and water storage facility failure.

Environment

- Reviewed the Group's performance across key environmental metrics.
- Received an update on progress against the Group's 2019 to 2023 water stewardship targets.
- Conducted a deep dive into the Group's physical resilience to climate change and compliance with the TCFD disclosure requirements.
- Received updates on the Group's implementation of the GISTM, and engaged with Accountable Executives in line with the Standard's requirements.

Communities and social performance

- Received a progress update on the Group's CSP strategy.
- Received a report from the Chair of the Australian Advisory Group, an advisory forum to provide a broad perspective on emerging developments and specific policies or initiatives that could impact our business in Australia.
- Received a report on an independent audit of the Group's cultural heritage management performance.
- Reviewed progress on development of the Group's *2022 Modern Slavery Statement*.

Assurance, risk management and global sustainability trends

- Approved the external assurance plan for the Group's sustainability reporting, and for the performance data supporting the safety and environmental, social and governance (ESG) performance outcomes under the short-term incentive plan.
- Received presentations on the key sustainability risks and trends for each product group and for Rio Tinto Marine. These were presented by product group Chief Executives and the Chief Commercial Officer (for Rio Tinto Marine).
- Received reports from GIA on their audits relating to matters within the Committee's scope, including:
  - The Group's closure control framework.
  - The water management control frameworks at Boron in California, and at Oyu Tolgoi.
  - Progress on implementation of the recommendations in the *Everyday Respect Report*.
  - Management of environmental compliance at Gudai-Darri in the Pilbara.
  - Caustic release risk management processes at the Yarwun Alumina Refinery in Queensland.
  - Rio Tinto Iron Ore's engagement and interaction with Traditional Owners.
  - Community and government obligations at Diavik in Canada.
  - Major slope geotechnical hazard risks, including at Iron Ore Company of Canada and at Kennecott.
  - Major underground safety risks, including at Kennecott and Diavik.
  - Mass transportation risks at Winu in Western Australia and at our Rincon lithium project in Argentina.
  - The design of the health, safety, security, environment and communities joint venture governance arrangements at Simandou.
- Reviewed recommendations for the Group's 2024 sustainable development internal assurance plan.

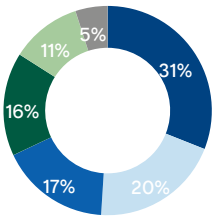
Governance and disclosure

- Reviewed various sustainability disclosure materials.
- Reviewed an assessment of the Group's most material sustainability topics to be reported on in the *2023 Annual Report*.
- Received an update, in a joint session with the Audit & Risk Committee, on the global governance and ESG reporting landscape, Rio Tinto's proposed approach to meet relevant evolving requirements, and the work underway in preparation for doing so.

Other (including closure and security)

- Received an update on the Group's closure strategy and work program.
- Received regular updates on security issues across the Group and key insights on risk assessments and controls.

The chart below represents the allocation of the Committee's meeting time during 2023:



- Health and safety
- Environment, including tailings management, water, and biodiversity
- Assurance, risk management, global sustainability trends
- Communities and social performance (including cultural heritage and human rights)
- Governance and disclosure
- Other (including closure and remediation, and security)

The Committee Chair reports to the Board after each meeting and our minutes are tabled before the Board. All Directors have access to the Committee's papers.

Sustainability disclosures

Our approach to ESG
is described in detail on pages 40–77.

For more information and to access our *2023 Sustainability Fact Book*
see riotinto.com/sustainability.

Our *2023 Climate Change Report*
can be found at riotinto.com/climatereport.

Our *2022 Communities and Social Performance Commitments Disclosure*
can be found at riotinto.com/cspreport.

Our *2022 Modern Slavery Statement*
can be found at riotinto.com/modernslavery.

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Remuneration report

Annual statement by the People & Remuneration Committee Chair

The Committee's overarching purpose is to ensure the people, culture and remuneration policies, frameworks and practices are aligned with the Group's strategy, objectives and values.

Dear shareholders,

On behalf of the Board, I am pleased to present our 2023 Directors' Remuneration report.

Nothing is more important than the health, safety and wellbeing of our people. While we had zero fatalities at our managed operations in 2023, tragically four colleagues died in a plane crash while travelling to our Diavik mine in January 2024.

2023 was another year of solid operational performance. While the external environment remains volatile and challenging, the fundamentals of our business enable us to continue delivering strong financial results. We have a very resilient business with strong free cashflows underpinned by the quality of our assets, our people and strength of our balance sheet. It allows us to systemically address short term issues and build sustainable growth.

Our operational performance has been accompanied by progress towards our strategic objectives of "impeccable environment, social and governance (ESG)", "becoming the best operator", "excelling in development" and "strengthening our social licence". This has seen us accelerate our decarbonisation strategy, improve our culture, safely improve and stabilise production, and diversify in materials enabling the global energy transition.

The resilience of our business has allowed us to continue to invest in 2023. We announced an investment of $1.1 billion to expand our AP60 aluminium smelter in Canada with low-carbon technology. We entered into joint ventures during the year, with First Quantum Minerals at the La Granja copper project in Peru, and with the Giampaolo Group through which Rio Tinto acquired a 50% stake in Matalco, to recycle aluminium products throughout the US and Canada. Good progress was made with our ELYSIS™ technology which has the potential to transformatively decarbonise the way we produce aluminium.

We continued to develop our existing portfolio, particularly at Oyu Tolgoi where we saw the first underground production in the first quarter of 2023, and at the world-class Simandou iron ore project in Guinea, where key infrastructure agreements were concluded during the year. A pre-feasibility study to progress development of the Rhodes Ridge project, one of the best undeveloped iron ore deposits in Western Australia, was approved at the end of the year.

Overview of performance and strategic progress in 2023

Short-term incentive plan

In 2023, we implemented our new Short-term incentive plan (STIP) scorecard which has collective goals at its core. Half of the scorecard for 2023 was based on financial measures of underlying earnings and STIP free cash flow (flexed and unflexed), with the flexed outcome measuring our progress towards "best operator". Outcomes against the other half of the scorecard are linked to strategic goals of "impeccable ESG" covering safety performance, carbon reduction, and diversity and inclusion, "progress on excel in development", and "strengthening our licence to operate". An individual multiplier is in place to be used sparingly in cases of exceptional or underperformance. The STIP scorecard applies consistently across 26,000 eligible employees including the Executive Committee.

The Committee has assessed Group performance against the STIP scorecard and determined the overall outcome is 56% of maximum.

For the financial component of the STIP scorecard, we reported STIP underlying earnings of $10.9 billion and STIP free cash flow of $10.8 billion. This is against a backdrop of higher than planned iron ore and copper prices. Operationally, we achieved slightly lower than expected production, reflecting equipment failures, extended downtime and safety-related disruptions. We also had a build in our working capital in 2023, impacting our cash flow performance. Overall, our reported 2023 financial results were above plan, albeit below target on a flexed basis, resulting in an outcome of 45% of maximum.

The strategic component of the STIP scorecard includes four separate measures. Progress has been made in each area resulting in an overall outcome of 67% of maximum. The outcome against our "impeccable ESG" measure, which includes safety, was above target for the year. 2023 was a fatality-free year, but we regrettably recorded three permanent damage injuries (PDIs) at our sites in Diavik, Guinea and Kennecott. We continue to believe all incidents and injuries are preventable and we remain focused on identifying, managing and, where possible, eliminating risks. As a result of these PDIs, the result for the all-injury frequency rate component has been capped at 50% of maximum.

Progress on decarbonisation and the approval of specific abatement projects accelerated over the year as we continued to shape our roadmap to our 2030 ambition. During the year, we critically reviewed our project portfolio, leading to project commitments equivalent to a 1.9Mt reduction in our expected 2030 emissions.

Our people and culture measures include a gender diversity element and while we added 1,456 women to the workforce the outcome was below the stretching target set for 2023, with room for improvement in 2024. The delivery of our everyday respect learning reached more than 34,000 employees in 2023, which is above our outstanding range.

Overall performance against the "excel in development" measure was above target for the year, reflecting exciting progress in exploration and studies, and continued strong delivery across several projects despite some challenges during the year.

The social licence measure provides an indication of how we are perceived by our community of stakeholders. In 2023, our global reputation score remained broadly consistent with our 2022 baseline, resulting in a target outcome.

The Committee did not apply the individual multiplier for either of the Executive Directors but it has been selectively applied to some Executive Committee members. Further details on each component of the STIP scorecard outcomes, the individual performance and STIP outcomes for the Executive Directors can be found on pages 129-132.

Long-term incentive plan

The performance period for the 2019 Performance Share Award (PSA) concluded in December 2023 and awards will vest on 22 February 2024. The vesting outcome of the 2019 PSA is 94.1% based on our total shareholder return (TSR) of 103.4% over this five-year cycle. This level of TSR performance compares favourably against our mining peers and broader global corporates. The Committee considered the vesting outcome in the context of underlying business performance and the consequence management framework, and was satisfied the outcome was fair and representative of the shareholder experience.

Remuneration Policy

In accordance with the triennial policy cycle, we will be submitting our 2024 Remuneration Policy (the new Policy) to shareholders for their approval at our 2024 annual general meetings (AGMs). Changes being made to our Remuneration Policy (the current Policy) are summarised on page 115 with a full version of the new Policy on pages 119-126.

The Committee fully understands stakeholder expectations that the remuneration of executives should be linked to balanced financial and non-financial performance outcomes, appropriately governed and aligned with delivery against our strategy, supported by sustainable long-term value creation. With these elements in mind, the Committee has undertaken a comprehensive review of our current Policy with primary considerations including:

- **Competitive advantage:** Responding to climate change is critical to our long-term competitive advantage and value creation. There can be an inherent tension between decarbonisation goals and short- to medium-term financial performance. Our intent is to balance this appropriately in how we structure our long-term and short-term incentives. Given the inherent uncertainty, we believe three-year targets are most appropriate for measuring progress against our decarbonisation goals.
- **The global talent market:** Rio Tinto competes for the best talent with the world's largest companies. We need to be competitive to retain and secure the talent required to execute our strategic ambitions.
- **Simplify focus for our global team:** Over the last decade, the complexity of our business has increased, placing greater demands on our leaders. Clear, collective targets that build alignment will reinforce the STIP changes we made last year and help our leaders maintain focus on the most critical objectives.

I met with many of our shareholders and the key UK and Australian advisory bodies to discuss our proposals. I would like to thank those who took part in this consultation.

While views inevitably vary across the stakeholder group, I was pleased to find a sizeable majority of those we met were broadly supportive of the key changes. Following this consultation, the Committee further refined and adapted the proposals in response to feedback.

The main changes proposed to our current Policy relate predominantly to the structure of future long-term incentive plan (LTIP) awards.

As part of the 2021 Policy renewal, the maximum LTIP award level was reduced from 438% to 400% of base salary, while the on-target STIP for the Chief Executive was also reduced from 120% to 100% of base salary. These reductions have impacted our market positioning relative to peers in the talent market.

Given the scale of our strategic ambition and our important role in global decarbonisation, it is vital we secure and retain the talent required to achieve our goals. Our senior executives remain highly attractive to competitors and despite this competition for talent, the Committee is seeking to maintain a measured approach to pay. US-style pay practices continue to be materially higher than in other jurisdictions and we are not seeking to match these award levels in our new Policy. Instead, we have focused on ensuring executives are aligned with similarly sized and globally complex FTSE 10 companies and mining peers.

The Committee proposes future LTIP awards to Executive Directors and other Executive Committee members are capped at 500% of base salary. This would position award levels closer to FTSE 10 peers where the median LTIP maximum award is in excess of 500% of salary, yet still materially below US pay levels. Shareholder alignment will also be enhanced via increased shareholding requirements.

The additional LTIP increment will be directly linked to the achievement of our value accretive climate change strategy. Given the scale and complexity of Rio Tinto's emissions portfolio, our decarbonisation ambitions and the multi-year timeframe for this transition, we are proposing a balanced scorecard approach with four equally weighted elements. This will include input and outcome metrics that incentivise long-term value creation and sustained medium-term performance across multiple performance cycles. Both the scorecard and relative TSR will be measured over three years and awards will be subject to a further two-year holding period. This means that executives will continue to only realise value from awards after five years, consistent with the previous structure. The application of leaver and recovery provisions (malus and clawback) will remain unchanged. This time horizon is consistent with mainstream FTSE practices in the UK, where just under 80% of the Group's shares are listed and is also aligned with the *UK Corporate Governance Code*. While practice on the length of performance periods is more mixed in Australia, the overall time horizon of five years remains towards the upper-end of broader ASX practice.

Ultimately the Committee concluded that a three-year performance period was more appropriate as it enables the setting of more robust and tangible targets for the decarbonisation scorecard where immediate action is required but long-term visibility is limited. It also provides flexibility to cascade the plan to less senior participants on more consistent terms. Relative TSR performance will be measured over the same period for simplicity. Extensive modelling demonstrated that the change in TSR performance did not create a material difference in outcomes. Overall we continue to have a remuneration structure that is more heavily weighted to long-term incentives than many of our peers. Further details are set out on pages 134-135.

The Committee recognises the progress of our decarbonisation strategy will need to be closely monitored to inform how we set our targets and assess performance under this part of the LTIP award. To support this, the Committee will ensure input is obtained from subject matter experts within the business and other Board committees. We also commit to providing enhanced disclosure and independent verification so shareholders can fully understand the basis of any awards vesting. 80% of our LTIP will be driven by relative TSR to align with the interests of shareholders.

The Committee strongly believes our proposals will ensure our executive remuneration arrangements incentivise the delivery of our ambitious strategy with a balanced focus on the short- and long-term. This will also align our reward outcomes with Group performance and shareholder experience. I will continue to proactively engage with shareholders on this subject.

Implementation for 2024

During 2023, the Committee considered extensive benchmarking as part of our new Policy, which shaped our remuneration decisions for 2024. In the shareholder consultations we illustrated material gaps which the Policy changes are aimed at reducing.

The STIP structure introduced in 2023 will be broadly maintained for 2024; however the financial metrics have been refined by replacing earnings with underlying earnings before interest, taxes, depreciation, and amortisation (EBITDA). This is a key measure of our underlying financial performance and is well understood by both internal and external stakeholders.

Executive changes

We welcomed Jérôme Pécresse to the role of Chief Executive Aluminium in October 2023. Jérôme was appointed on terms consistent with our current Policy, and details of his terms are included on page 138.

In June 2023, Ivan Vella resigned from his role as Chief Executive Aluminium, stepping down from the Executive Committee. Ivan was due to leave Rio Tinto in December 2023; however his employment was terminated on 15 November 2023 for actions that did not follow Rio Tinto's requirements for the acceptable management of confidential information. The Committee is continuing to review this matter and will apply the consequence management framework as part of its review.

People

From 2023, the remit of the Committee increased to include talent, capability, and diversity and culture, reflecting the ever-increasing importance of these areas and our commitment to building a more inclusive culture.

During the year, we worked with the Executive Committee to set the direction and tone for a workplace culture that aligns with our purpose, reflects our values, and supports the delivery of our strategy. To that end, we supported the implementation of a new performance management framework that places as much emphasis on how results are delivered as it does on what is achieved. This further builds on our decision to change the STIP scorecard to apply consistently across 26,000 colleagues.

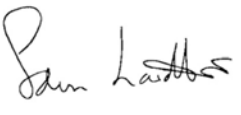
The Committee monitored culture progression through visits to our sites and offices, operational deep-dives, and management presentations, considering trends and findings from our biannual engagement survey, succession and talent plans for our most senior roles as well as our ability to attract and retain a diverse workforce. The overall representation of women in our business remains a key aspect of our broader agenda on diversity and inclusion and will continue to be an area of focus in 2024.

Pay in the broader context

Our focus on pay equity is evident in our gender pay metrics. We have made progress toward eradicating any equal pay and gender pay gap. Further details on equal pay, gender pay gap, and a wider discussion on diversity and inclusion, are provided in the ESG section of this report on pages 73-74.

As always, I welcome shareholder feedback and comments on our 2023 Directors' Remuneration report.

Yours sincerely,



Sam Laidlaw
People & Remuneration Committee Chair

21 February 2024

Remuneration at a glance – Policy changes

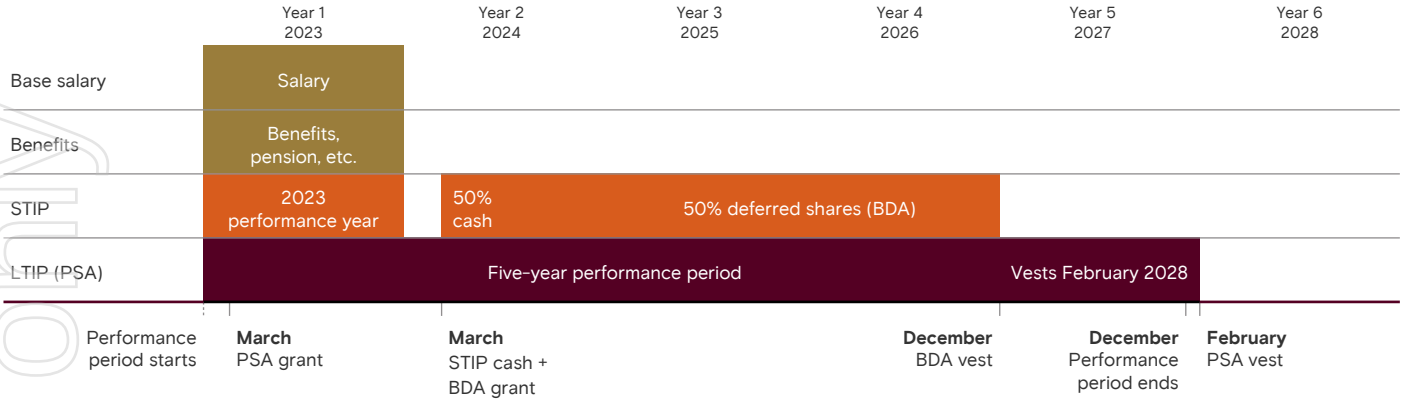
Our current Policy was approved by shareholders at our 2021 AGMs and has served us well. The changes for the 2024 Policy reflect the need to ensure strategic alignment and remuneration competitiveness.

Element	2021 Policy summary	Proposed changes for 2024 and implementation
Base salary	– Base salaries are set to reflect broad alignment with comparable roles in the global external market and the executive's qualifications, responsibilities and experience. – Base salaries are reviewed annually by the Committee, and any increase is normally aligned with the wider workforce, with a maximum individual annual increase of 5% plus Consumer Price Index (CPI). – An individual increase may be higher in specific circumstances, such as promotion, increased responsibilities or market competitiveness.	– Remove the cap on individual salary increases to better align with market practice where the use of salary caps is uncommon and to ensure the Policy provides sufficient flexibility where appropriate. – It is intended that salary increases remain in line with the wider workforce, and for any additional increases to continue to be in specific circumstances. – For 2024, salaries for the Executive Directors will be increased by 4% which aligns with the increase for UK employees. Salaries as at 1 March 2024 will be: – Chief Executive – £1,285k – Chief Financial Officer – £761k
Pension or superannuation	– Rio Tinto may choose to offer participation in a pension plan, superannuation fund, or a cash allowance in lieu. – The maximum annual benefit is set to reflect the pension arrangements for the wider employee population and is currently capped at 14% of base salary.	– No change.
Other benefits	– Executives are eligible to receive benefits which may include private healthcare cover, life and accident insurances, professional advice, and other minor benefits. – Secondment, relocation and localisation benefits may also be made to and on behalf of executives living outside their home country.	– No change.
STIP	– Measures and weightings for the scorecard are selected by the Committee for each financial year. At least 50% of the measures will relate to financial performance, and a significant component will relate to safety. Other strategic, environmental, social and governance (ESG) and individual business outcomes may be included. – For financial performance, threshold performance results in a nil award (25% of award pays out for threshold performance for non-financial measures) and outstanding performance results in maximum payout. The payout for specific metrics may be varied to reflect the stretch of the underlying target. – Maximum opportunity is capped at 200% of base salary for each executive. – Normally, 50% of the STIP is delivered in cash and the balance is delivered in shares that are deferred for three years as a Bonus Deferral Award (BDA). – Dividends (or equivalents) may accrue in respect of any BDA that vest. – The Committee retains the right to exercise discretion to ensure that the level of award payable is appropriate. – Malus, clawback and suspension provisions apply to the STIP and BDA.	– Replace the earnings-based measure with EBITDA, half of which is adjusted for commodity prices in the same way as the current earnings measure.
LTIP	– Performance is measured against TSR relative to the EMIX Global Mining Index and to the MSCI World Index. – The Committee will set performance conditions aligned with the Group's long-term strategic objectives for each PSA grant. Relative TSR has been chosen as the predominant measure of long-term performance. The Committee retains the discretion to adjust the performance measures and weightings as appropriate. – Awards have a maximum face value of 400% of base salary. Threshold vesting is 22.5% of face value. Target is 50% of face value. – Dividends (or equivalents) may accrue in respect of any PSA that vest. – The Committee retains the right to exercise discretion and seeks to ensure that outcomes are fair and reflective of the overall performance of the company during the performance period. – Malus, clawback and suspension provisions apply to LTIP awards.	– Opportunity increased from 400% to 500% of base salary with the additional 100% of base salary linked to tangible decarbonisation targets. – Performance period reduced from five to three years, followed by a holding period of two years. – Following the decommissioning of the EMIX Global Mining Index in 2023, our TSR will be measured against the S&P Global Mining Index and the MSCI World Index. – Clawback provisions updated to comply with SEC requirements.
Shareholding requirements	– Over a five-year period, executives should reach a share ownership in Rio Tinto shares equivalent in value to: – Chief Executive: 400% of base salary. – Other executives: 300% of base salary. – Longer periods may be accepted for new appointments. – Executive Directors are required to retain a holding for two years after leaving the Group in line with the shareholding requirements.	– Requirement for all executives increased by 100% of base salary. – Requirement expressed as a fixed number of Rio Tinto shares, calibrated based on the existing requirement after applying the 100% increase of base salary to shareholding requirements. – Fixed number of shares subject to review every two years.

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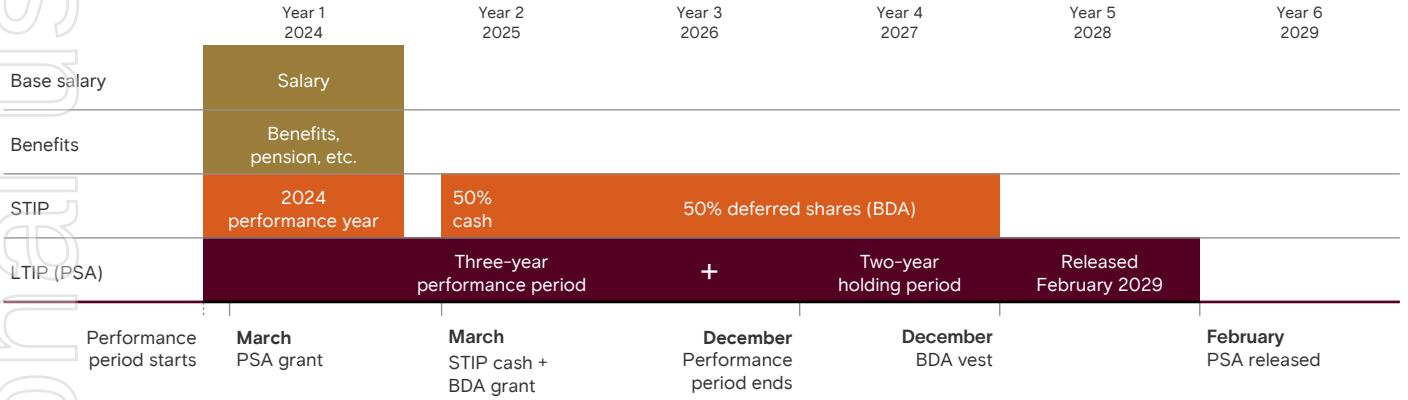
When remuneration is delivered under current Policy

The following chart provides a timeline of when remuneration is delivered, using 2023 as an example.



When remuneration is delivered under proposed 2024 Policy

The following chart provides a timeline of when remuneration is delivered under the proposed new Policy.



How are performance metrics for incentives aligned with the strategy?

In 2022, we moved to a much simpler STIP design, where the approximately 26,000 employees that participate in the STIP have one Group scorecard rather than the diversified scorecards previously used. The metrics in the STIP design were chosen to drive the implementation of our strategy and are based around our areas of focus: our four objectives together with the delivery of strong financial performance and accelerating our culture change.

The PSA is targeted at our most senior leaders, with consistent metrics applied for all participants. The award is intended to capture how we create sustainable value for our shareholders over the longer term. For many years, LTIP awards have been primarily based on relative TSR performance against both sector peers and the wider market. For 2024, alongside TSR, we are introducing a scorecard linked to the Group's long-term decarbonisation agenda. We are aware of our responsibility in this area and the positive impact of decarbonisation. Given the scale and complexity of our emissions portfolio, a balanced scorecard approach has been developed that focuses on input and outcome metrics.

	Incentive	Reflection in scorecard
Strategic priorities		
People and culture	STIP	Focuses on "how" we do things as well as "what" we achieve as a critical lever of accelerating our culture change and building an inclusive workplace environment.
Excel in development	STIP	Measures progress in relation to exploration, studies and project execution.
Impeccable ESG	STIP / LTIP	Safety in all its aspects remains a key priority alongside progressing the work on our decarbonisation pathways towards achieving our 2030 ambition. The new decarbonisation scorecard in the LTIP is structured around our multi-year and ambitious decarbonisation strategy, with a focus on a combination of offensive and defensive metrics to incentivise long-term competitive advantage.
Social licence	STIP	Measures our progress in building trust and meaningful relationships with our community of stakeholders.
Best operator – flexed financials	STIP	Focuses on achievement of financial plan commitments.
Shareholder experience		
Unflexed financials	STIP	Aligned to market conditions for our commodities.
Total shareholder return	LTIP	Measures performance relative to sector peers and wider market.

Proposed Policy

People & Remuneration Committee Chair Q&A

How does the new Policy support Rio Tinto's strategy?

We have a clear strategy to build a stronger business by focusing on four objectives, which will help improve our productivity, reduce capital intensity and assist us in becoming a partner of choice for a range of stakeholders globally.

Although our existing framework remains broadly fit for purpose, the Committee has identified a number of refinements to better align remuneration with these strategic priorities, including an increased focus on decarbonisation. The Committee is also proposing a range of simplifications to ensure our remuneration arrangements are appropriate and allow us to be competitive in the global talent market.

Have the changes made to STIP last year been effective?

In 2022, we undertook a detailed review of incentives which resulted in the introduction of a much simpler STIP design for the approximately 26,000 employees that participate in the STIP, with clearer alignment to our strategy. The STIP targets help to make our goals relevant to day-to-day actions, and the level of engagement from participants over the past year has been encouraging.

For 2024, we are maintaining this design and are taking the opportunity to refine the financial metrics by replacing the current earnings measure with EBITDA. This is a key measure of our underlying financial performance that is less subject to adjustment and well understood by both internal and external stakeholders.

How do incentives support Rio Tinto's low-carbon transition agenda?

Climate change and the low-carbon transition are at the heart of our strategy. The Committee recognises the importance of including ESG metrics in our incentives, alongside a continued focus on operational and financial performance to deliver long-term shareholder returns.

Impeccable ESG is a significant part of our STIP scorecard, with an increased focus on achieving our decarbonisation ambitions while maintaining a material focus on continued safety performance.

In recognition of the long-term nature of the carbon journey, the Committee believes now is the right time to introduce decarbonisation metrics into the long-term incentives, by linking the additional PSA opportunity to the execution of our value accretive climate change strategy.

Why aren't you including Scope 3 emissions?

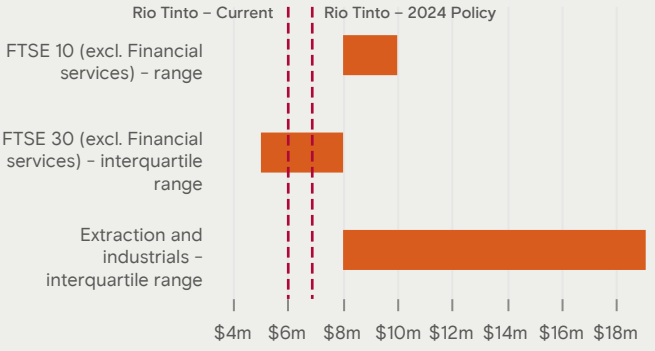
Measuring and incentivising Scope 3 emissions is inevitably challenging. These emissions are primarily from our customers in Asia, processing our iron ore into steel, and bauxite into aluminium, so our level of control is limited. The best way to tackle these emissions is to work in partnerships to develop the technologies needed to produce low-carbon metals and minerals.

While Scope 3 emissions are not within our direct control and are not specifically measured under the incentive schemes, the breadth of the decarbonisation scorecard for the PSA, particularly the focus on transition strategy and R&D, will ensure focus is given to developing new technologies that may support the longer-term reduction of Scope 3 emissions.

What is the rationale for increasing the PSA opportunity?

In recent years we have reduced executive pay. Meanwhile, our UK and Australian competitors have increased pay for executives. Our target pay is no longer competitive and, after years of good retention, we are starting to lose executives and may be at risk of losing more after having significant invested in their development. Given the scale of our strategic ambition, it is vital that we secure, retain and attract the talent required to achieve our goals. Increasing the PSA opportunity moves us closer to our competitors' pay levels, in a way that is only realised with sustained long-term performance, enabling a focus on our decarbonisation strategy for competitive advantage. Further, we are requiring that the increased opportunity be added to mandatory shareholding requirements, increasing it by 100% of base salary for all executives.

CEO total remuneration at target



Why are you moving to a three-year performance period for the PSA?

The use of a three-year performance period aligns our approach with typical market practice in the UK and the US while in Australia this approach is used by around one-third of larger companies. The inclusion of a two-year holding period will mean awards will continue to be released only after five years subject to achievement of the relevant performance conditions. The combined five-year time horizon aligns with UK market practice and is longer than most US and Australian companies. Participants will also continue to be strongly aligned with shareholders via increased share ownership requirements.

The PSA is a critical tool for retaining, incentivising and motivating staff at many levels of management. The Committee believe that a three-year time horizon will be more tangible to participants below the Executive Committee and will therefore increase the competitiveness of the package and maximise the effectiveness of the PSA.

How do the Policy proposals align executives with the wider workforce?

The new Policy maintains the strong alignment of the current policy between executive reward and reward in the broader organisation.

The approach to base salary is consistent across the organisation. No changes are proposed to benefits, keeping executive pensions in line with the broader employee population.

The STIP applies in a consistent manner across a population of 26,000 eligible employees, while the PSA objectives ensure senior leaders are focused on creating sustainable long-term value for our shareholders.

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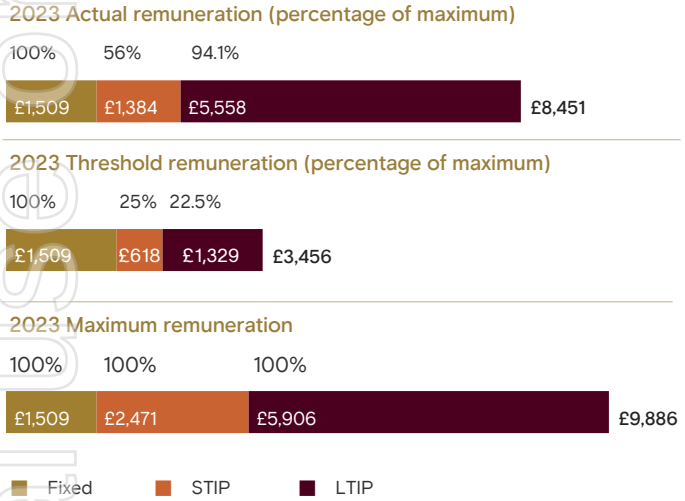
2023 remuneration outcomes

Executive Director remuneration (£'000)

The charts below set out the maximum and actual executive remuneration, as calculated under the UK regulations. As explained on page 127, there are differences in both the reporting and methodology for measuring remuneration under the Australian regulations.

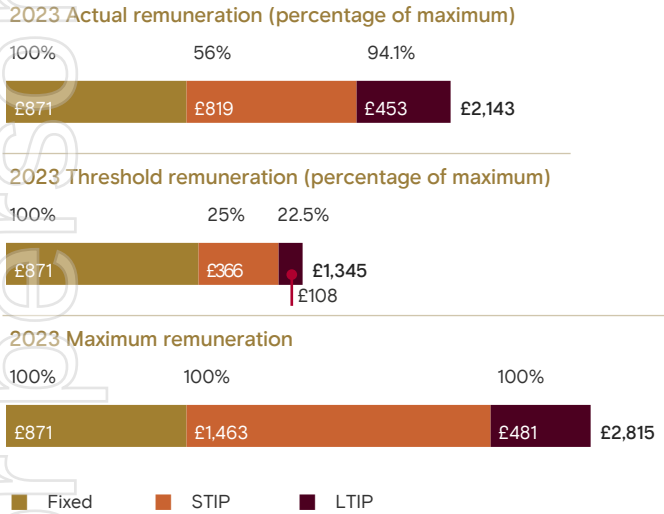
Chief Executive

Jakob Stausholm



Chief Financial Officer

Peter Cunningham



2023 short-term incentive plan



Group financial scorecard

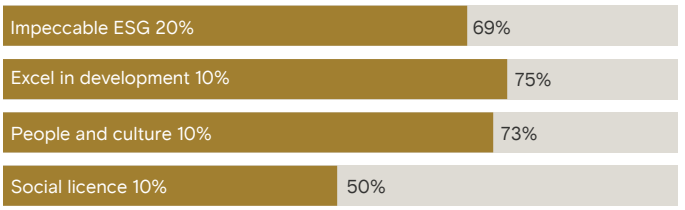
Weighting	50 %
Weighted performance	22.4 %

Group strategic scorecard

Weighting	50 %
Weighted performance	33.6 %

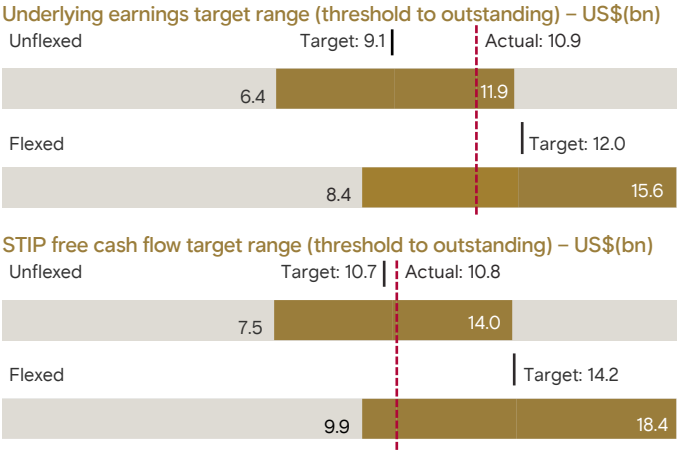
Strategic scorecard performance

In 2023, the Group strategic scorecard outcome was above target at 67.2% of maximum.



Financial scorecard performance

In 2023, the Group financial STIP outcome was below target at 44.8% of maximum.



2019–2023 long-term incentive plan



TSR relative to EMIX/S&P Global Mining Index

Weighting	50 %
Weighted performance	44 %

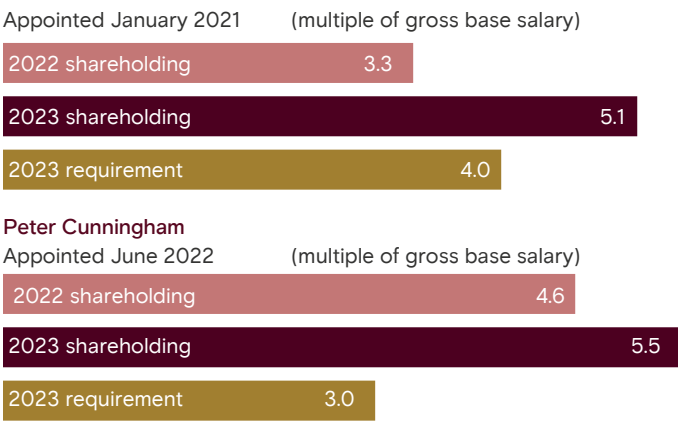
TSR relative to MSCI World Index

Weighting	50 %
Weighted performance	50 %

LTIP

We outperformed the EMIX/S&P Global Mining Index by 5.1% per annum resulting in 88% vesting of this component and the MSCI World Index by 8.6% per annum resulting in maximum vesting of this component. Overall vesting for the 2019 PSA was 94.1%.

Share ownership requirements



Remuneration Policy

Remuneration Policy introduction

This Policy applies to our Executive and Non-Executive Directors and to the Chair. In accordance with Australian law, it also sets out the broad policy principles that apply to members of the Executive Committee who are not directors.

Our Policy is binding only in so far as it relates to directors. Therefore, implementing this Policy for executives who are not directors may vary from that of the Executive Directors.

In determining the new Policy, the Committee followed a robust process, which included multiple discussions and engagement with investors and proxy advisers regarding the content of the Policy, taking into account the needs of the business and evolving market and best practice. The Committee considered input from both management and our independent advisers while ensuring that conflicts of interest were appropriately managed.

The overall structure of the new Policy remains broadly unchanged from the Policy previously approved by shareholders in 2021. Updates to the Policy largely reflect strategic focus, evolving corporate governance and market practice, with changes being made to aid the operation of the Policy, including refinements to incentive measures proposed for 2024. The key changes to the Policy include increasing the LTIP maximum award to 500% of salary (from 400%) to drive the decarbonisation agenda, and increasing share ownership requirements.

Our remuneration policies, principles and practices

Our values of care, courage and curiosity reflect who we are and what we stand for as a business. They guide the Committee in its decision-making and are foundational to our remuneration-related policies, principles and practices.

Our first priority is to allocate remuneration resources wisely. We want our pay policies to be regarded as fair by employees and shareholders alike to reward both short and long-term performance and to reinforce the values and collective behaviours that drive sustainable performance. Although we believe that our Policy is fit for purpose, the Committee retains the discretion to override any unforeseen and inappropriate formulaic outcomes.

People with high quality skillsets, who are capable of managing and growing the business sustainably, are essential to delivering on our strategic objectives. Rio Tinto operates in global markets where it competes for talented executives in a limited pool. Our remuneration strategy is therefore designed to attract and retain the people we need. We recognise remuneration represents just one of the factors that encourages the attraction and retention of talent. We also seek to engage our employees over the long-term, to foster diversity, to offer a caring and respectful work environment, to provide challenging work as well as opportunities to build capability. Our people strategy is underpinned by our commitment to safety and our core values.

Competitive remuneration linked to performance and shareholder value creation

We link remuneration to performance targets over both the short- and long-term, to ensure executive rewards align to both short-term priorities and long-term sustainable growth in shareholder value. In order to assess the competitiveness of the packages we offer, we benchmark ourselves against other international mining and natural resources companies, and companies in the FTSE 30 (excluding financial services) and global industrials of comparable size, which typically have similar global reach and complexity.

The outcomes of these benchmarking exercises form just part of our consideration of the appropriate level of remuneration packages. The actual outcome will depend on both business and individual performance and behaviours.

We take salary increases in the broader employee population into account in determining any change to the base salary of executives and consult with shareholders on the design of our short- and long-term incentive plans to ensure they are aligned with shareholder interests and priorities. We do not formally consult with our employees on the Policy, but approximately 60% of the workforce are shareholders through participation in our employee share plans and therefore have the right to vote on the Remuneration report. Employees are invited to ask questions or express opinions through our normal employee communication channels. Our employee engagement surveys in 2023 were completed by an average of 38,500 employees.

Performance under the STIP is measured over one year based on a balanced scorecard including strategic and financial metrics. We recognise the importance of ensuring targets are achieved in the right way, aligned to our values and consider this when determining STIP outcomes. 50% of the STIP is normally deferred into shares that vest after three years.

Performance under the LTIP is measured over three years (for PSA awards made from 2024) and awards are typically delivered in shares together with cumulative dividends. Awards with a three-year performance period are also subject to a holding period of a further two years.

Our share ownership policy requires executives to build up and maintain a material shareholding in the company as described in the Implementation report.

Alignment with the *UK Corporate Governance Code*

The *UK Corporate Governance Code* principles for developing a remuneration policy have been addressed as follows:

Principle	Focus
Clarity	Our Policy is set out in a fully transparent manner. Communications and engagement with stakeholders promotes clarity around all elements of the Policy.
Simplicity	Our Policy retains key features of transparency, alignment with our strategic objectives and simplicity to aid understanding.
Risk	The incentive arrangements have been structured to support effective risk management. This includes a strong focus on long-term success. Risks include non-financial risk, such as safety, the environment and heritage protection. Malus, clawback and suspension provisions apply to all variable remuneration, which allow for adjustment of rewards in the event of risk management failures.
Predictability	The remuneration outcomes under the different performance scenarios (threshold, target, and outstanding) are clearly set out with an estimate of potential maximum outcome if the share price increased by 50%. See charts on page 123.
Proportionality	The Policy maintains a strong link to strategy and performance. This is set out in the Policy table on page 116. The Committee also has discretion over all variable remuneration outcomes.
Alignment to culture	Our incentive plans are aligned with our strategic focus on long-term sustainable growth and a focus on values and behaviours.

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Executive remuneration structure – Policy table

The Policy set out on the following pages is designed to provide a total remuneration package that is appropriately balanced between fixed and variable components, with an emphasis on long-term variable pay. The remuneration structure for executives, including the relationship between each element of remuneration and Group performance, is summarised below.

Further details on the key performance indicators (KPIs) used to assess Group performance are provided in the Strategic report on pages 20-22.

Any commitment made before this Policy takes effect or before an executive became or becomes a director will be honoured even if it is not consistent with this or any subsequent Policy.

Remuneration arrangements – Fixed

Base salary

Link to Group performance and strategy

- We pay competitive salaries to hire, motivate and retain highly competent executives from a global talent pool.

Operation

- Base salary is the main fixed element of the remuneration package.
- Base salaries are reviewed annually. We determine any increases based on Group and individual performance, global economic conditions, role responsibilities, an assessment against relevant comparator groups and internal relativities. Any increase is generally aligned with the average base salary increases applying to the broader employee population unless there were significant changes to an individual's role and/or responsibilities during the year. Such changes may include a promotion or increase in responsibility or where the executive's base salary is significantly below market positioning.
- Benchmarking is undertaken periodically but not annually, and our intention is to apply judgement in evaluating market data.

Pension or superannuation

Link to Group performance and strategy

- We provide competitive post-employment benefits in a cost-efficient manner in order to hire and retain.

Operation

- Employment benefits typically include participation in a pension plan, superannuation fund, or a cash allowance to contribute to a personal pension or superannuation fund, which are aligned with the arrangements for the broader workforce in the country of employment.
- The maximum annual benefit is currently capped at 14% of base salary but may be adjusted to reflect changes in arrangements for the wider employee population.

Other benefits

Link to Group performance and strategy

- We provide competitive other benefits in a cost-efficient manner in order to hire and retain.

Operation

- Other benefits may include, but are not limited to, private healthcare cover for the executive and their dependants, life insurance, accident insurance, professional advice, participation in local flexible benefit programs and certain other minor benefits (including modest retirement gifts in applicable circumstances, occasional spouse travel in support of the business, any Rio Tinto business expenses which are deemed to be taxable, and any resulting tax on the benefits).
- Secondment, relocation and localisation benefits, including payment of transfer allowances, may also be made to and on behalf of executives living outside their home country.
- Given the nature and variety of the items that make up benefits, there is no formal maximum level of company contribution.

Remuneration arrangements – Short-term performance-related (at risk)

Short-term incentive plan

Link to Group performance and strategy

- STIP focuses participants on achieving demanding annual performance goals, which are based on the Group's priorities, in pursuit of the creation of sustainable value for our stakeholders.
- We require that sustainable business practices are adhered to, particularly in the context of safety and ESG.
- We consider the individual performance of our executives against our values. *The Way We Work* outlines how we deliver both our purpose and strategy. It makes clear how all employees are expected to behave, in accordance with our values of care, courage and curiosity.

Operation

- The level of award for threshold performance is normally set at either nil or 25% of maximum, but may be adapted to reflect the stretch of the underlying targets.
- The award is normally pro-rated on a straight-line basis between threshold, target and outstanding points.
- The maximum award is capped at 200% of base salary for all executives. Any outcome from the formulaic STIP calculation is subject to discretion by the Committee.
- A scorecard based on the Group's priorities is established at the commencement of the financial year. The measures and the relative weightings are selected by the Committee in order to drive business performance for the current year, including the achievement of strategic and financial business outcomes that are priorities for the financial year in question. At least 50% of the measures will relate to financial performance, a significant component will relate to safety performance and any work-related fatality will have a material impact on the STIP result for all executives.
- At the beginning of each year, we expect to disclose the measures and weightings only, with targets deemed commercially sensitive. We intend to disclose these targets and outcomes retrospectively.
- An individual performance multiplier may be applied to the STIP outcome, but the final payout may not exceed 200% of salary.

Remuneration arrangements – Short-term performance-related (at risk) continued

Operation continued

- In making its year-end determination of STIP awards, the Committee seeks to ensure that actual performance is directly comparable to the targets set at the beginning of the year. This may result in adjustments to the targets or to the assessed results being made by the Committee (in particular to take account of events outside management's control), to ensure a like-for-like comparison. Both upward and downward adjustments can be made, with reference to principles agreed by the Committee, to ensure the outcomes are fair.
- Malus, clawback and suspension provisions apply and are set out later in the Policy.

Bonus deferral

Link to Group performance and strategy

- Provides ongoing alignment between executives and shareholders through deferral of part of the STIP award into Rio Tinto shares.

Operation

- 50% of the STIP will normally be delivered in deferred shares (known as Bonus Deferral Awards (BDA)) with the remainder delivered in cash.
- BDA normally vest in the December of the third year after the end of the STIP performance year to which they relate.
- Dividends (or equivalents) may accrue in respect of any BDA that vest.
- Where permitted by the plan rules, and where the Committee so decides, awards may be made or satisfied in cash in lieu of shares. Awards are normally, but not exclusively, granted with an intention to settle in shares.
- BDA vest on a change of control.
- Malus, clawback and suspension provisions apply and are set out later in the Policy.

Remuneration arrangements – Long-term performance-related (at risk)

Performance share awards under the long-term incentive plan

Link to Group performance and strategy

- Performance share awards (PSA) are designed to provide a simple and transparent mechanism for aligning executive reward with the execution of an effective business strategy and delivery of superior long-term shareholder returns.
- Award levels are set to provide substantive focus on and reward long-term performance. PSA are the most significant component within the remuneration package and are calibrated so as to ensure the overall competitiveness of the remuneration package.

Operation

- PSA are conditional share awards (or economic equivalent) that vest subject to the achievement of stretching performance conditions and continued employment.
- The Committee will set performance conditions aligned with the Group's long-term strategic objectives for each PSA grant.
- For the 2024 awards, relative TSR has been retained as the primary measure as it provides an objective external assessment over a sustained period on a basis that is familiar to shareholders. In addition, metrics linked to decarbonisation have been introduced to reflect the importance of climate change and low-carbon transition to the Group's strategy.
- While we expect TSR and decarbonisation will remain key performance metrics, the Committee retains the discretion to adjust the performance measures and weightings as appropriate.
- PSA are normally only released five years after grant. From 2024, PSA are subject to a three-year performance period followed by a holding period of two years, with awards usually only released to executives five years after the award was granted.
- Awards have a maximum face value of 500% of base salary when granted which is currently determined using the average share price of the prior financial year. Actual annual award levels may vary for each executive.
- Threshold performance would result in the vesting of up to 22.5% of the award.
- Dividends (or equivalents) may accrue in respect of any PSA that vest.
- Where permitted by the plan rules, and where the Committee so decides, awards may be made or satisfied in cash in lieu of shares. Awards are normally, but not exclusively, granted with an intention to settle in shares.
- Awards and performance conditions may be adjusted to take account of variations of share capital and other transactions. Subject to this Policy, performance conditions may also be amended in other circumstances if the Committee considers that a changed performance condition would be a fairer measure of performance.
- If there is a change of control, awards will vest to the extent performance conditions are then satisfied. Unless the Committee determines otherwise, if the change of control happens prior to the vesting of the award, the number of shares that can vest will be reduced pro rata for the period from grant to change of control relative to the vesting period. The Committee may, alternatively, with agreement of an acquiring company, replace PSA with equivalent new awards over shares in the acquiring company.
- The Committee retains the discretion, where circumstances warrant, to amend performance conditions under the relevant plan rules. The Committee will seek to ensure that outcomes are fair and that they take account of the overall performance of the company during the performance period.
- Malus, clawback and suspension provisions apply and are set out later in the Policy.

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Shareholding requirements

Link to Group performance and strategy

- Shareholding requirements align executives' interests with those of shareholders.

Operation

- The Group understands the importance of and expects executives to build up and maintain a material shareholding in Rio Tinto.
- Executives should aim to reach a share ownership in Rio Tinto shares, which is set as a fixed number of shares with reference to the following levels:
  - Chief Executive: 5 x base salary
  - Chief Financial Officer: 4 x base salary
  - Other executives: 4 x base salary
- From an operational perspective these requirements are converted into a fixed number of shares. For 2024, the required holdings are as follows:
  - Chief Executive: 120,000 Rio Tinto plc shares
  - Chief Financial Officer: 60,000 Rio Tinto plc shares
  - Other executives (requirement varies by individual): 46,000–54,000 Rio Tinto plc shares or 40,000–46,000 Rio Tinto Limited shares
- The applicable number of shares will be reviewed at least every two years to account for salary and share price movements.
- Executives are expected to build up their shareholding over a five-year period. Longer periods may be accepted for new appointments.
- Shares are treated as "owned" once vested and where beneficial and/or legal ownership of the shares is held by the executive. A beneficial interest includes any shares for which an executive receives the benefit of ownership (such as a right to receive dividends) without directly owning the shares. Given the mandatory nature and absence of performance conditions, 50% of the unvested BDA will be treated as owned accounting for likely effects of taxation.
- Executive Directors are expected to continue to meet the shareholding requirements for two years after ceasing to be an Executive Director (or if the holding requirement is not met at this date, the relevant holding at the time). When considered alongside the existing leaver provisions for share awards, this will ensure that Executive Directors will remain aligned with shareholders for an extended period.
- The Committee retains the discretion to enforce shareholding requirements through the application of malus to unvested share awards and/or scale back of future grants.

Consequence management framework

In 2021, the consequence management framework was introduced as a framework to assist with the application of Committee discretion and the potential recovery of incentives in exceptional circumstances.

Malus, clawback and suspension provisions will apply to all STIP and LTIP awards in cash or shares. Under both the malus and clawback provisions, where the Committee determines that exceptional circumstances exist, the Committee may, at its discretion, reduce the number of shares to be received on vesting of an award, or, for a period of two years after the vesting, the end of any holding period or payment of a share or cash award, the Committee can clawback value from a participant.

The circumstances under which the Committee may exercise such discretion may include, inter alia:

- any fraud or misconduct by a participant or an exceptional event which has had, or may have, a material effect on the value or reputation of any member of the Group (excluding an exceptional event or events which have a material adverse effect on global macroeconomic conditions).
- an error in the Group's financial statements, which requires a material downward restatement or is otherwise material, or where information has emerged since the award date, which would have affected the size of the award granted or vested.
- where the Committee determines that the personal performance of a participant, of their product group or of the Group does not justify vesting or where the participant's conduct or performance has been in breach of their employment contract, any laws, rules or codes of conduct applicable to them or the standards reasonably expected of a person in their position.
- the performance of the company, business or undertaking in which a participant worked or works or for which they were or are directly or indirectly responsible for is found to have been misstated or subject to a material misrepresentation. Consequently, the award being granted and/or vesting has resulted in a greater number of shares than would otherwise have been the case.
- where any team, business area, member of the Group or profit centre in which the participant works or worked has been found guilty in connection with any regulatory investigation or has been in breach of any laws, rules or codes of conduct applicable to it or the standards reasonably expected of it.
- where the Committee determines that there has been material damage to the Group's social licence to operate.
- a catastrophic safety or environmental event or events occurring in any part of the Group.

Under the suspension provisions, the Committee may suspend the vesting or payment of an award (for up to five years) until the outcome of any internal or external investigation is concluded and may then reduce or lapse the participant's award based on the outcome of that investigation. Note that where suspension applies, the 24-month clawback period will not extend beyond the period commencing from the original vesting date or end of holding period.

Remuneration delivered under this Policy is also subject to any additional malus and clawback provisions operated by the company, including but not limited to the Incentive-Based Compensation Clawback Policy adopted in compliance with the US SEC legislation requiring the clawback of incentives erroneously awarded as a result of material misstatements for up to three financial years.

Discretion

The Committee recognises the importance of ensuring that the outcomes of the Group's executive pay arrangements described in this Policy, properly reflect the Group's overall performance and risk appetite.

The Committee therefore reserves the right to review all remuneration outcomes arising from mechanistic application of performance conditions and to exercise discretion to make adjustments where such outcomes do not properly reflect underlying performance or the experience of shareholders or other stakeholders. The Committee will also be mindful of broader diversity and inclusion ambitions.

The Committee may, at its discretion, adjust and/or set different performance measures if events occur (such as a change in strategy, a material acquisition or divestment, a catastrophic safety or environmental incident, a change in control, or other unexpected event) which cause the Committee to determine that the measures are no longer appropriate or in the best interests of shareholders or other stakeholders, and that amendment is required so that the measures, as far as possible, achieve their original purpose. Such discretion will be exercised judiciously and clearly disclosed and explained in the Implementation report.

Any discretionary adjustments for directors will be disclosed in the Implementation report for the relevant financial period.

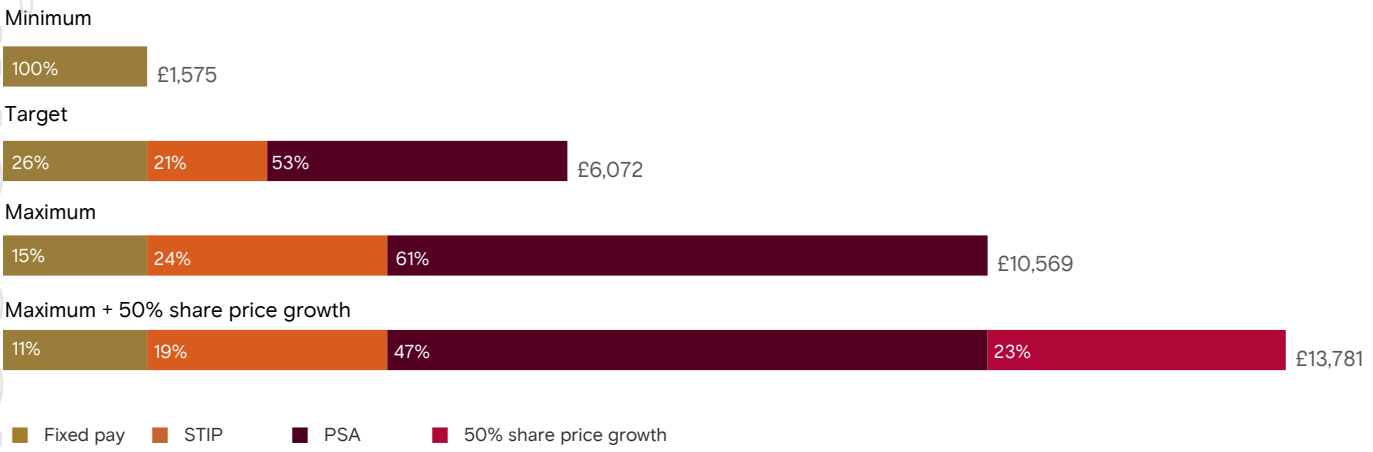
Legal opinion

2024 remuneration opportunity

The following charts provide an indication of the minimum, target and maximum total remuneration opportunity, subject to shareholder approval of the Remuneration Policy for the Executive Directors, together with the proportion of the package delivered through fixed and variable remuneration. The STIP and PSA are both performance-related remuneration.

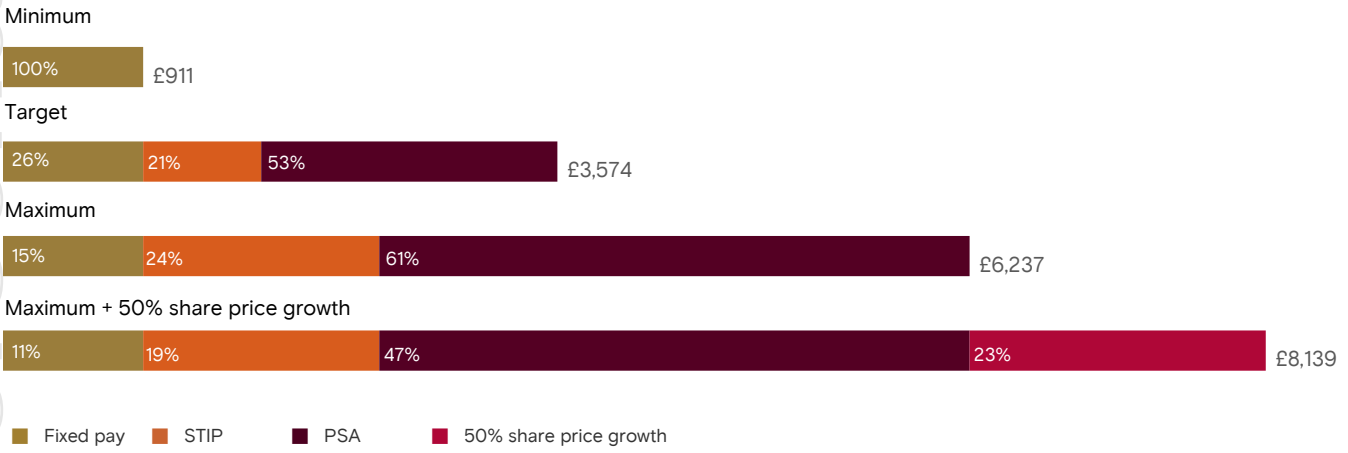
Chief Executive

(£'000)



Chief Financial Officer

(£'000)



The following table provides the basis for the values included in the charts above:

Fixed pay (stated in £'000)	Base salary[1]	Pension	Benefits[2]	Total
Jakob Stausholm	£1,285	£180	£110	£1,575
Peter Cunningham	£761	£107	£43	£911

1. Base salary is the salary effective 1 March 2024.
2. The value of benefits is as per the 2023 benefits figure in the single total figure of remuneration table, as set out in the Implementation report.

Performance-related pay	
Target STIP and LTIP performance	– A STIP award of 50% of the maximum award, equating to 100% of base salary – Expected value of 2024 PSA of 50% of face value, calculated as 250% of base salary
Maximum STIP and LTIP performance	– A maximum STIP award of 200% of base salary – Full vesting of 2024 PSA, calculated as 500% of base salary

- PSAs granted under the LTIP are measured at 2024 face value. This does not constitute an estimate of the value of awards that may potentially vest with respect to year-end 31 December 2026. An assumed 50% growth in share price has been included in the final illustration. No assumption has been made for payment of dividends.
- Further details of the 2024 PSA are disclosed in the Implementation report.

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Recruitment remuneration

The table below sets out the policy for both internal and external recruitment. No form of "golden hello" will be provided upon recruitment. In the case of internal appointments, commitments preceding appointment will be honoured.

Element	Recruitment policy
Base salary	We aim to position base salary at an appropriate level, taking into consideration a range of factors including the executive's current remuneration and experience, internal relativities, an assessment against relevant comparator groups and cost. If a new Executive Director is initially appointed at a lower rate, the Committee retains the ability to award larger increases in subsequent years in order to realign the salary over time as the individual develops in the role.
Pension or superannuation	Consistent with Policy table.
Other benefits	Consistent with Policy table.
STIP	Eligible to take part in our STIP with maximum opportunity capped at 200% of base salary.
PSA under LTIP	Maximum face value of 500% of base salary in line with our Policy.
Buy-out awards	Any compensation provided to an executive recruited from outside the Group, for the forfeiture of remuneration arrangements on joining, is considered separately to the establishment of forward-looking annual remuneration arrangements. Our approach with respect to such "buy-outs" is to determine a reasonable level of award, on a like-for-like basis, consisting primarily of equity-based awards, but also potentially cash, taking into consideration the quantum of forfeited awards, their performance conditions and vesting schedules. The Committee will obtain an independent external assessment of the value of awards proposed to be bought out and retains discretion, subject to the considerations noted above, to make such compensation arrangements as it deems necessary and appropriate to secure the relevant executive's employment. The Committee's intention is that buy-out compensation should include, where appropriate, performance conditions and equivalent timeframes for release.
Relocation-related support	If the Committee concludes that it is necessary and appropriate to secure an appointment, relocation-related support and international mobility benefits may be provided, depending on the circumstances and in line with the Group's broader approach. Any relocation arrangements will be set out in the Implementation report.

Executives' service contracts and termination

Under normal circumstances, Executive Directors will be offered service contracts that can be terminated by either party with up to 12 months' notice in writing. In exceptional circumstances, an initial notice period of up to 24 months during the first two years of employment, reducing to up to 12 months thereafter, may be necessary to secure an external appointment. In some circumstances, it may also be appropriate to use fixed-term contracts for Executive Directors.

Other executives are offered service contracts which can be terminated by the company with up to 12 months' notice in writing, and by the executive with up to 12 months' notice in writing.

The contracts for executives include appropriate non-compete and restrictive covenants.

The current contract terms of directors and the other executives are included in the Implementation report. The letters of appointment are available for inspection at Rio Tinto plc's registered office, and at our AGMs.

Executives may be required to go on "Garden leave" during all or part of their notice period and may receive their base salary, STIP and other benefits during the notice period (or the cash equivalent). Where applicable, tax equalisation and other expatriate benefits will continue in accordance with the executive's prevailing terms and conditions.

If termination is a result of redundancy, the terms of the relevant local policy or practice will apply in the same way as for other employees hired in the same location.

The STIP and LTIP rules govern the entitlements that executives may have under those plans upon termination of employment, which is dependent on whether they are considered an eligible leaver or not. In general terms, an eligible leaver is an executive who leaves the Group by reason of ill-health, injury, disability (as determined by the executive's employer), retirement with company consent, redundancy, transfer of the undertaking in which the executive works, change of control of the executive's employing company, or death in service. In addition, the plan rules afford discretion to the Committee to award eligible leaver status in other circumstances.

In the case of dismissal for cause, the company can terminate employment without notice and without payment of any salary or compensation in lieu of notice. The Committee will apply the consequence management framework, and outstanding awards under any of the Group's incentive plans may be forfeited and previous awards clawed back.

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Element	Termination policy
Base salary, pension and other benefits	Base salary will be paid in lieu of any unexpired notice and may be paid progressively in instalments over the notice period. For Executive Directors the Committee will (to the extent permitted by relevant law) have regard to the Executive Director's ability to mitigate their loss in assessing the payment to be made. Executive Directors and their dependants may also be eligible for post-retirement benefits such as medical and life insurance. The company may also agree to continue certain other benefits for a period following termination where the arrangements are provided under term contracts or in accordance with the terms of the service contract, for example, payment for financial advice, tax advice and preparation of tax returns for a tax year. In some cases, they may receive a modest leaving gift.
Short-term incentive plan (STIP)	If an eligible leaver leaves the Group during a performance year, the Committee may determine in its absolute discretion to award a pro rata portion of the STIP based on the amount of the year served and based on actual assessment of performance against the scorecard targets. Any cash payment will be made at the normal STIP payment date and no portion of the award will be deferred into shares. If an executive provides the company notice of their resignation during the performance year, but does not leave the Group until after the end of the performance year, the Committee may determine in its absolute discretion to make an award under the STIP. In these circumstances, the executive will only be eligible to receive the cash portion of the award and will forfeit any deferred shares portion. Any cash payment will be made at the normal STIP payment date. No STIP award will be made where an executive who is not an eligible leaver leaves the Group, resigns or is terminated for cause prior to the end of the performance year.
Bonus deferral awards (BDA)	BDA will normally vest on the scheduled vesting date. There will be no pro-rating of BDA. Termination as an ineligible leaver at any point during the vesting period will result in forfeiture of BDA.
Performance share awards (PSA)	PSA will normally vest on the scheduled vesting date, subject to performance conditions. PSA will be reduced pro rata to reflect the period of employment between the date of grant of the award and the normal vesting date (in February following end of the three-year performance period). Leaver provisions apply until the release date of the awards at the end of the holding period. Termination as an ineligible leaver at any point during the five-year time horizon will therefore result in forfeiture of PSA.
Management share awards (MSA)	Any MSA granted prior to appointment will normally be retained, and vest, at the Committee's discretion, at the scheduled vesting date (although awards for US taxpayers may vest on leaving). MSA will be reduced pro rata to reflect the period of employment between the date of grant of the award and the normal vesting date. Termination as an ineligible leaver at any point during the vesting period will result in forfeiture of MSA.
All-employee share plans	All-employee share awards will normally vest on or shortly after leaving. There will be no pro rata reduction of awards. Termination as an ineligible leaver at any point during the vesting period will result in forfeiture of awards.
Dividend shares	Any dividend equivalent shares will be calculated on the vesting of all share awards.
Repatriation	On termination, the company will pay relocation or expatriation benefits as agreed at the time of the original expatriation and/or in accordance with applicable legislation and internal policies on travel and relocation.
Accrued but untaken leave	Accrued but untaken annual leave and any long service leave will be paid out on termination, in accordance with the relevant country legislation and practice applicable to all employees.
Legal expenses	The company may pay reasonable legal and other professional fees (including outplacement support) to, or in respect of, an executive concerning the termination of their employment.
Settlement claims	Subject to the approval of the Committee, the company may pay such amount as it determines is reasonable to settle any claims that an executive may have in connection with the termination of their employment.
Restrictive covenants	While our employment agreements include appropriate restrictive covenants as a matter of practice, the Policy provides additional flexibility to make payments in respect of expanding or enhancing existing covenants to protect Rio Tinto and its shareholders. The amount of such payment will be determined by the Committee based on the content and duration of the covenant.

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Chair and Non-Executive Directors' remuneration

The table below summarises how the fees are set and our Policy for the Chair and Non-Executive Directors:

Area	Chair	Non-Executive Directors
Setting of fees	The Committee (excluding the Chair, if they are a member) determines the terms of service and remuneration of the Chair.	The Non-Executive Directors' fees and other terms are set by the Board upon the recommendation of the Chair's Committee (which includes the Chair, Chief Executive and Chief Financial Officer).
Fees	It is Rio Tinto's policy that the Chair should be remunerated on a competitive basis and at a level that reflects the complexity of the business and their contribution to the Group, as assessed by the Board. The Chair receives a fixed annual fee and does not receive any additional fee or allowance either for committee membership or being a committee chair, or for travel. The Chair does not participate in the Group's incentive plans.	Non-Executive Directors receive a base fee with additional fees paid for further Board responsibilities such as committee membership, being a committee chair or taking on the senior independent director role. Allowances may be paid for attending meetings that involve medium or long-distance air travel. They do not participate in any of the Group's incentive plans. Fees paid to Non-Executive Directors reflect their respective duties and responsibilities, and the time required for them to make a meaningful and effective contribution to Rio Tinto affairs.
Pension and superannuation	Rio Tinto does not pay retirement or post-employment benefits to the Chair.	Where the payment of statutory minimum superannuation contributions for Australian Non-Executive Directors is required by Australian superannuation law, these contributions are deducted from the director's overall fee entitlements.
Benefits	The Chair may on occasion receive reimbursement for costs incurred in relation to the provision of professional advice. Other benefits include accident insurance (note this is neither contractual nor a taxable benefit), other minor benefits (including modest retirement gifts in applicable circumstances), occasional spouse travel in support of the business, any Rio Tinto business-related expenses that are deemed to be taxable and any tax the company has paid on their behalf.	Non-Executive Directors may on occasion receive reimbursement for costs incurred in relation to the provision of professional advice. Other benefits provided include accident insurance (note this is neither contractual nor a taxable benefit), other minor benefits (including modest retirement gifts in applicable circumstances), occasional spouse travel in support of the business and any Rio Tinto business-related expenses that are deemed to be taxable and any tax the company has paid on their behalf.

Appointment

The appointment of Non-Executive Directors (including the Chair) is handled through the Nominations Committee and Board processes. The Chair's letter of appointment from the company stipulates their duties as Chair of the Group and appointment may be terminated without liability on the part of Rio Tinto in accordance with the Group's constitutional documents dealing with retirement, disqualification from office or other vacation from office. Otherwise, their appointment may be terminated by giving 12 months' notice. Accrued fees will be paid up to the termination date with the exception of dismissal for cause. The Committee has the discretion to make a payment in lieu of notice if the Chair is not required to serve their full 12 months' notice. Should the Chair's appointment be terminated by reason of their removal as a director pursuant to a resolution of shareholders at the AGM, the company shall be liable to pay any fees accrued up to the date of any such removal.

The Non-Executive Directors' letters of appointment from the company stipulate their duties and responsibilities as directors. Each Non-Executive Director is appointed subject to their election and annual re-election by shareholders. Non-Executive Directors' appointments may be terminated by either party giving three months' notice. There are no provisions for compensation payable on termination of their appointment. The letters of appointment are available for inspection at Rio Tinto plc's registered office and at the AGM.

The current fee levels are set out in the Implementation report.

As provided for in the Rio Tinto plc Articles of Association and Rio Tinto Limited Constitution, the current maximum aggregate fees payable annually to the Non-Executive Directors (including the Chair) for serving on the Board and any committees is £3 million. This current maximum aggregate amount of £3 million per annum was approved by shareholders at the 2009 AGMs and it has remained unchanged during the past 15 years, during which time the size of the Board has also increased. An ordinary resolution will be proposed at the 2024 AGMs seeking shareholder approval to increase the maximum aggregate amount to £4 million per annum with effect from 1 March 2024. In the event the resolution is not approved by the shareholders at the 2024 AGMs, the current maximum aggregate amount of £3 million per annum will continue to apply.

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Implementation report

This Implementation report is presented to shareholders for approval at our AGMs. It outlines how our Policy was implemented in 2023 and the intended operation in 2024.

About our reporting

As our shares are listed on both the Australian Securities Exchange and London Stock Exchange, the information provided within our Remuneration report must comply with the reporting requirements of both countries.

Our regulatory responsibilities impact the volume of information we provide, as well as the complexity. In Australia, we need to report on a wider group of executives, as described in the following paragraph. In addition, as set out in the summary table below, the two reporting regimes follow different methodologies for calculating remuneration.

In the UK, disclosure is required for the Board, including the Executive Directors. The Australian legislation requires disclosures in respect of "key management personnel" (KMP), being those persons having authority and responsibility for planning, directing and controlling the activities of the Group. Accordingly, our KMP comprise the Board, all product group Chief Executives and the Chief Commercial Officer.

Throughout this Remuneration report, KMP are collectively referred to as "executives". They are listed on page 137, with details of the positions held during the year and dates of appointment to those roles.

The single total figure of remuneration table on page 129 shows remuneration for our Executive Directors, gross of tax and in the relevant currency of award or payment.

In table 1a on page 141, we report information regarding executives in accordance with Australian statutory disclosure requirements. The information is shown gross of tax and in US dollars. The remuneration details in table 1a include accounting values relating to various parts of the remuneration package, most notably LTIP awards, and require a different methodology for calculating the pension value. The figures in the single total figure of remuneration table are therefore not directly comparable with those in table 1a. Where applicable, amounts have been converted using the relevant average exchange rates included in the notes to table 1a.

In table 1b on page 142, we report the remuneration of the Chair and the Non-Executive Directors.

Certain information contained within the Remuneration report is audited, as outlined on page 145.

Shareholder voting

As required under UK legislation, the new Policy will be subject to a binding vote at our 2024 AGMs. The Implementation report, together with the annual statement by the People & Remuneration Committee Chair, is subject to an advisory vote each year as required by UK legislation. Under Australian legislation, the Remuneration report as a whole is subject to an advisory vote. All remuneration-related resolutions will be voted on at the AGMs as Joint Decision Matters by Rio Tinto plc and Rio Tinto Limited shareholders. An additional resolution is being put forward at the AGMs to increase the annual maximum aggregate fees payable to Non-Executive Directors from £3 million to £4 million.

The differing approaches explained

As well as the difference in methodology for measuring remuneration, there are also key differences in how remuneration is reported in the UK and Australia.

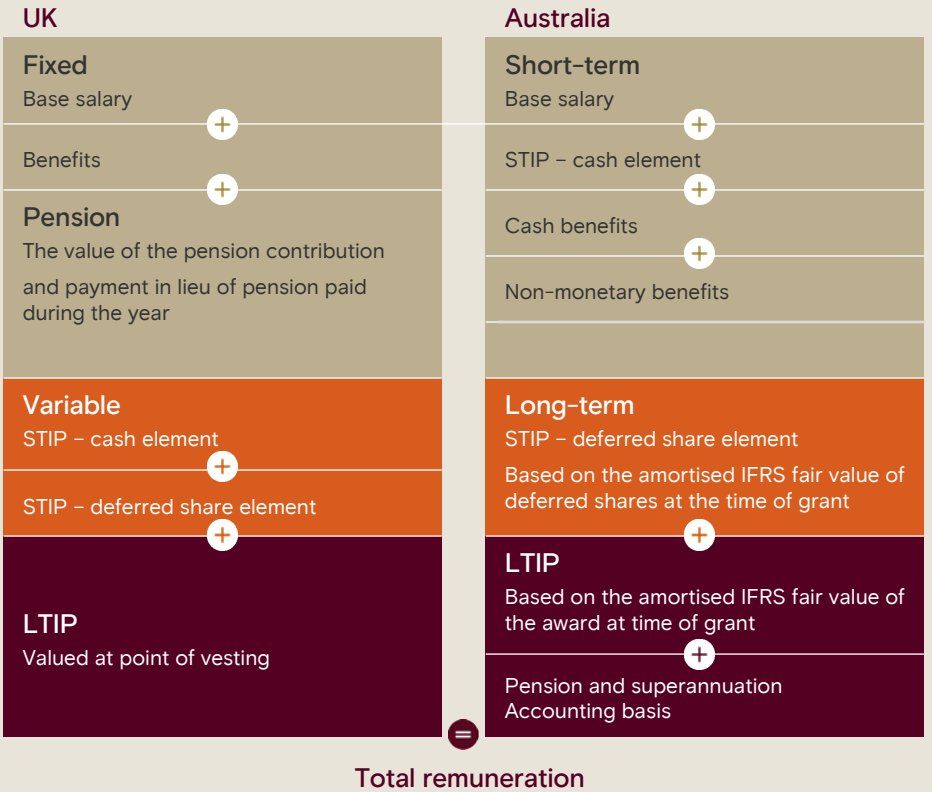
UK

- For reporting purposes, remuneration is divided into fixed and variable elements.
- We report remuneration in the currency it is paid; for example, where a UK executive is paid in pounds sterling, remuneration is reported in pounds sterling.

Australia

- For reporting purposes, remuneration is divided into short- and long-term elements.
- All remuneration is reported in US dollars, so using the previous example, the UK executives' remuneration would be converted to US dollars using the average exchange rate for the financial year (except STIP, which is converted at the year-end exchange rate).

The table below summarises the elements of each component of remuneration, as well as the significant differences in the approaches to measurement.



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People & Remuneration Committee

Responsibilities

The Committee's responsibilities are set out in our Terms of Reference, which is reviewed annually, and published at riotinto.com/corporategovernance.

Our responsibilities include:

People

- Reviewing strategic workforce planning including talent, succession and development planning within the Group.
- Developing leaders' skills.
- Overseeing and implementing the Board's workforce engagement plan and implementation.

Culture

- Developing strategies to implement the Group's values and to progress implementation of the *Everyday Respect Report* recommendations and the monitoring of broader cultural change.
- Developing strategies, initiatives and performance measures around organisational culture and desired behaviours.
- Assessing the effectiveness of diversity and inclusion policies.

Remuneration

- Determining the Group's remuneration strategy, policy and framework.
- Determining the remuneration of the Chair, Executive Directors and other members of the Executive Committee.
- Determining the mix and operation of the Group's STIP and LTIP, ensuring alignment with the company's strategic objectives.
- Overseeing the operation of the Group's STIP and LTIP for executives, including approving awards, setting performance criteria, and determining any vesting, and where necessary applying the consequence management framework to current and prior awards.
- Determining contractual notice periods and termination commitments, and setting retention and termination arrangements for executives.
- Overseeing awards under the Group's all-employee share plans.
- Responsible for the Annual Remuneration report, shareholder engagement on the Remuneration Policy including its implementation, and other related matters including gender pay.
- Reviewing workforce remuneration and related policies and the alignment of incentives and rewards with culture, taking these into account when setting the Policy for Executive Director remuneration.
- Engaging independent external remuneration advisers.

We consider the level of pay and conditions for all employees across the Group when determining executive remuneration.

Committee membership

The members of the Committee during the year and to the date of this report were:

Sam Laidlaw (Committee Chair)	Dominic Barton
Megan Clark (to 15 December 2023)	Dean Dalla Valle (from 1 November 2023)
Susan Lloyd-Hurwitz (from 1 June 2023)	Simon McKeon
Jennifer Nason	Ngaire Woods

How we work

The Group Company Secretary (or their delegate) attends meetings as secretary to the Committee. The Chief Executive, Chief People Officer, Head of Reward and Head of Talent attend appropriate parts of the meetings at the invitation of the Committee Chair. No individual is in attendance during discussions about their own remuneration.

Independent advisers

The Committee has a protocol for engaging and working with remuneration consultants to ensure that "remuneration recommendations" (being advice relating to the elements of remuneration for KMP, as defined under the Australian *Corporations Act 2001*) are made free from undue influence by KMP to whom they may relate. We monitored compliance with these requirements throughout 2023. Deloitte, the appointed advisers to the Committee, gave declarations to the effect that any remuneration recommendations were made free from undue influence by KMP to whom they related, and the Board has received assurance from the Committee and is satisfied that this was the case.

Deloitte are members of the Remuneration Consultants' Group, and voluntarily operate under its Code of Conduct (the Code) in relation to executive remuneration consulting in the UK. The Code is based upon principles of transparency, integrity, objectivity, competence, due care and confidentiality. Deloitte has confirmed that they adhered to the Code throughout 2023 for all remuneration services provided to Rio Tinto. The Code is available online at remunerationconsultantsgroup.com.

The Committee is satisfied that the Deloitte team is independent. During 2023, Deloitte's services also included attending Committee meetings, providing support on the 2024 Remuneration Policy and giving advice in relation to management proposals and shareholder consultations.

Deloitte was paid $504,507 (2022: $545,620) for these services. Fees were charged on the basis of time and expenses incurred.

We received other services and publications relating to remuneration data from a range of sources. During the year, Deloitte also provided internal audit, tax compliance and other non-audit advisory services. These services were provided under separate engagement terms and the Committee is satisfied that there were no conflicts of interest.

How the Committee spent its time in 2023

During 2023, the Committee met six times. We fulfilled our responsibilities as set out in our terms of reference including the expanded scope on the broader People agenda.

Our work in 2023 included:

- Reviewing culture maturity metrics.
- Reviewing people development and talent management.
- Determining any base salary adjustments and LTIP grants for executives.
- Determining the targets for the 2023 STIP.
- Reviewing performance of the accountable executives for Global Industry Standard on Tailings Management (GISTM) implementation.
- Reviewing performance against the 2022 STIP and 2018 PSA targets, including assessing applicable adjustments.
- Considering shareholder feedback on the remuneration-related resolutions for the 2023 AGMs.
- Transitioning from EMIX Global Mining Index to the S&P Global Mining Index as a relative performance comparator group for PSA.
- Considering, reviewing and refining the alternate structures for the new Policy.
- Consulting with shareholders and proxy advisers on our new Policy proposals.
- Setting terms of appointment of Jérôme Pécresse, Chief Executive, Aluminium.
- Terminating the employment of Ivan Vella, Chief Executive, Aluminium.
- Further refining the consequence management framework.
- Reviewing executives' progress towards the Group's share ownership requirements.
- Reviewing the strategy and annual reports on the Group's global benefit plans.

Performance review process for executives

We conduct annual performance reviews for all executives. Our key objectives for the performance review process are to:

- Improve organisational effectiveness by creating alignment between the executive's objectives, Rio Tinto's strategy, the individual's leadership behaviours and the company's values.
- Provide a consistent, transparent and balanced approach to measure, recognise and reward executive performance.

The Chief Executive conducts the review for members of the Executive Committee and recommends the performance outcomes to the Committee. The Chief Executive's performance is assessed by the Chair of the Board and it is discussed and considered with the Committee and the Board. Performance reviews for all executives took place in 2023 and early 2024.

Strategic report Governance Financial statements Additional information

Executive Directors

Single total figure of remuneration (£'000)

Executive Director	Year	Base salary	Benefits	Pension	Total fixed	Incentive – STIP payment: Cash	Incentive – STIP payment: Deferred shares	Value of LTIP awards vesting[1]: Face value	Value of LTIP awards vesting[1]: Share price appreciation	Total variable	Single total figure
Jakob Stausholm (Chief Executive)	2023	1,227	110	172	**1,509**	692	692	4,425	1,132	**6,941**	**8,450**
Jakob Stausholm (Chief Executive)	2022	1,177	130	165	**1,472**	575	576	1,360	1,027	**3,538**	**5,010**
Peter Cunningham (Chief Financial Officer)	2023	726	43	102	**871**	409	410	361	92	**1,272**	**2,143**
Peter Cunningham (Chief Financial Officer)	2022	700	39	98	**837**	320	320	333	251	**1,224**	**2,061**

1. Dividend equivalent shares are applied on the vesting of the LTIP awards, are valued at the grant price for the LTIP awards and included in the face-value figure. The impact of share price change for LTIP awards vesting is included under share price appreciation. The value of the 2022 LTIP awards vesting is restated to reflect the actual vested value.

The LTIP face value for 2023 is based on the number of PSA shares due to vest for the performance period ending 31 December 2023 (including notional dividends accrued throughout the vesting period), valued at the share price on the grant date. Any impact of share price movement over the vesting period is shown under the share price appreciation column. The increase in values for LTIP award vesting for the Chief Executive reflects a full year grant in 2019 compared to a pro-rated grant in 2018.

The 2023 face value and the share price appreciation figures shown above are estimates of both the number of shares that will ultimately vest and the share price on vesting. Once actual values are known these estimates will be restated in the following year. Refer to page 134 for further detail.

Fixed remuneration

Base salary

Consistent with prior practice, Executive Director base salary increases are in line with that awarded to the wider UK employee population. The general salary increase for UK employees in 2024 will be 4%. Base salaries are reviewed with a 1 March effective date.

Executive Director	Annual base salary 1 March 2023 £'000	Annual base salary 1 March 2024 £'000	% change
Jakob Stausholm	1,235	1,285	4%
Peter Cunningham	732	761	4%

Benefits (2023)

Includes healthcare, allowance for professional tax compliance services, occasional spouse travel in support of the business which is deemed to be taxable to the individual, and non-performance based awards under the all-employee share plans.

Pension (2023)

Pension benefits can either be paid as contributions to Rio Tinto's company pension fund and/or as a cash allowance.

Executive Director	Pension contributions paid to the Rio Tinto pension fund £'000	Cash in lieu of pension contributions paid £'000	Total £'000	Pension provision (% of base salary)
Jakob Stausholm	8.4	163.4	172	14%
Peter Cunningham	8.4	93.3	102	14%

Short-term incentive plan (2023)

2023 outcome

For an executive's STIP outcome, the weighted STIP financial and strategic scorecard results are added to determine the total result. The resulting STIP is delivered equally in cash and deferred shares.

Executive Director	Weighted result (out of 100%): Financial (50%)[1]	Weighted result (out of 100%): Strategic (50%)[2]	Group Scorecard result %	Fatality deduction (%)	STIP (% of base salary)	Base salary £'000	STIP outcome £'000	Delivered in: Cash £'000	Delivered in: Deferred shares £'000	Percentage of: Max awarded	Percentage of: Max forfeited	Percentage of: Target awarded
Jakob Stausholm	22.4%	33.6%	56%	—%	112%	1,235	1,384	692	692	56%	44%	112%
Peter Cunningham	22.4%	33.6%	56%	—%	112%	732	819	409	410	56%	44%	112%

1. The Financial scorecard includes flexed financials (underlying earnings and free cash flow), focusing on the achievement of financial plan commitments and unflexed financials (underlying earnings and free cash flow) aligned to market conditions for our commodities.
2. The Strategic scorecard includes Excel in development (exploration progression, studies progression and project execution metrics), impeccable ESG (safety and decarbonisation metrics), people and culture (gender diversity and Everyday respect metrics) and social licence (reputation metric).

Maximum STIP award is capped at 200% of base salary. Target performance represents of 50% of maximum and outstanding performance represents 100% of maximum.

Half of the STIP award will be paid in cash in March 2024, and the remainder will be delivered in deferred shares as a BDA, vesting in December 2026. On cessation of employment, any unvested deferred shares will lapse unless the Committee decides the executive is an eligible leaver.

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2023 short-term incentive plan measures

Performance categories	Weighting	Commentary
Financial	50%	For 2023, the financial measures were STIP underlying earnings and STIP free cash flow. The first, STIP underlying earnings, gives insight to cost management, production and performance efficiency. This is calculated as underlying earnings of $11.7 billion adjusted for items not reflective of performance in the year as described on page 131. A reconciliation of underlying earnings to net earnings is provided on pages 290-291. STIP free cash flow demonstrates how we convert underlying earnings to cash and provides further insight into how we are managing costs, efficiency and productivity. STIP free cash flow comprises free cash flow (as reported on page 293), adjusted to exclude dividends paid to holders of non-controlling interests in subsidiaries ($0.5 billion) and development capital expenditure, to include development capital expenditure on decarbonisation ($2.7 billion). This adjusted metric excludes the impact of those components of free cash flow that are not directly related to performance in the year and therefore better represents underlying business performance.
Strategic	50%	**Impeccable ESG (20%)** aims to promote safety in all its aspects and progress decarbonisation efforts as we work towards achieving our ambition to reduce Scope 1 and 2 emissions by 2030. Safety measures a combination of our safety maturity model (SMM) and all injury frequency rate (AIFR). The safety outcome is underpinned by an assessment of conformance with the GISTM for "very high" and "extreme" classification tailings facilities. Decarbonisation measures progress of carbon abatement projects against incremental stages of development. **People and culture (10%)** aims to improve diversity, create an inclusive work environment in which people can thrive, accelerate our culture change, and reinforce our values. It encompasses gender diversity and Everyday Respect metrics. Gender diversity measures the year-on-year increase in representation of women in our organisation. Everyday Respect reflects the completion rate of the "Building Everyday Respect" employee training program. **Excel in development (10%)** aims to incentivise a growth mindset by focusing on exploring new opportunities, prospecting new sites, technology, and innovation. It measures performance in exploration, studies and project execution. Exploration focuses on the opportunities coming out of the exploration pipeline and moving into formal studies. Studies assesses the number of studies approved to progress to project execution phase. Project delivery measures our execution progress in creating growth opportunities and closure projects across the Rio Tinto portfolio. **Social licence (10%)** is included as an indicator of our ability to build trust and acceptance of Rio Tinto with our external community of stakeholders. The general public perception in key countries is reflected by a reputation score currently measured via a third-party survey provider, RepTrak.

Calculation of 2023 short-term incentive plan award

The following table summarise the calculation of the 2023 short-term incentive plan (STIP) award for the Executive Directors. Threshold payout is nil on financial measures and social licence and 25% of maximum for other strategic measures. Below threshold payout is nil on all other measures.

Group scorecard outcomes

		Weighting (out of 100%)	2023 performance[1]			Outcome	Result (% of maximum)	Weighted result (out of 100%)
			Threshold	Target	Outstanding			
STIP Underlying earnings	Unflexed	12.5%	$6.4 billion	$9.1 billion	$11.9 billion	10.9	83.1%	10.4%
	Flexed	12.5%	$8.4 billion	$12.0 billion	$15.6 billion		34.7%	4.3%
STIP Free cash flow	Unflexed	12.5%	$7.5 billion	$10.7 billion	$14.0 billion	10.8	50.9%	6.4%
	Flexed	12.5%	$9.9 billion	$14.2 billion	$18.4 billion		10.4%	1.3%
Total Financials		**50%**					**44.8%**	**22.4%**
Impeccable ESG	AIFR[2]	3.3%	0.46	0.40	0.32	0.37	50%	1.7%
	SMM[3]	6.7%	4.6	5.1	6.1	5.2	55%	3.7%
	Decarbonisation[4]	10.0%	7Mt CO_2e	10Mt CO_2e	13Mt CO_2e	12	83.5%	8.4%
People and culture	Everyday Respect	5.0%	30% of employees	40% of employees	50% of employees	83.5%	100%	5.0%
	Gender diversity	5.0%	1% improvement	1.5% improvement	2% improvement	1.4%	45%	2.3%
Excel in development	Exploration progression[5]	2.5%	1	2	3	3	100%	2.5%
	Project execution	5.0%	25%	50%	75%	50%	50%	2.5%
	Studies progression	2.5%	1 study	2 studies	3 studies	6	100%	2.5%
Social licence	Reputation	10.0%	55.9 or below	57.9 to 59.9 (inclusive)	60.9 or above	58.8	50%	5.0%
Total Strategic		**50%**					**67.2%**	**33.6%**
Total Group		**100%**						**56%**

1. No payout below threshold. Threshold payout is nil for financial measures and social licence and 25% of maximum for the other strategic measures. Payout for achieving target corresponds to 50% of maximum, going up in a straight line to outstanding, which represents 100% of maximum.
2. AIFR assesses the number of injuries per 200,000 hours worked by employees and contractors at managed operations. It includes medical treatment cases, restricted workday and lost-day injuries. AIFR improved from 0.40 in 2022 to 0.37 in 2023, surpassing the target. The AIFR component of the STIP result is however capped at target, which represents 50% of maximum, due to three permanent damage injuries (PDIs). The PDIs occurred at our Diavik Diamond Mine in Canada, in Guinea and at Kennecott Underground, Integrated Skarns Project respectively.
3. The Group SMM STIP result is the average of the SMM scores achieved by the individual assets included in the Safety Maturity program.
4. For Decarbonisation, the progress of carbon abatement projects against incremental stages of development is calculated as the expected 2030 carbon reduction, measured in tonnes of CO_2e, contributed by each abatement project that passes a stage-gate during the calendar year. The scope is restricted to direct abatement initiatives under the global "6+1" decarbonisation program, including approved renewable energy, abatement and energy efficiency projects. Nature-based solution (NbS) offset projects are not in scope.
5. Six projects progressed from Projects of Merit (PoM) to Conceptual Study (CS) phase. Each project has been assigned a value of 0.5 points for the PoM to CS transition, resulting in a weighted outcome of 3.

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Commentary on financial measures

Unflexed performance for our financial performance is above target at 67%. Above-plan commodity prices have continued to provide us with an uplift in financial performance: the iron ore realised price of $100 per wet metric tonne (wmt) being 11% higher than plan; the copper price 4% higher than plan.

Flexed performance to remove the impact of commodity prices and foreign exchange rates gives us an indication of underlying business performance. Key drivers of flexed performance are reflected in lower than planned production volumes as a result of the overland conveyor belt failure and extended smelter shut down at Kennecott, the two furnaces that remain offline following the two process safety incidents at Rio Tinto Iron and Titanium Quebec Operations (RTIT) in June and July, and the disruptions caused from the forest fires at Iron Ore Company of Canada (IOC) in June.

Our earnings performance benefited from a number of one-off events and non-cash impacts. Conversely, our cash flow performance was impacted by a build in working capital in 2023 of $0.9 billion which was not in the plan. This mainly related to a build in inventory at Kennecott following the extended smelter rebuild and higher working capital at RTIT, reflective of weaker market conditions.

Based on these factors, the flexed component is below target for earnings (at 34.7%) and cash flow (at 10.4%).

In line with our standard STIP principles, two downward adjustments were approved by the Committee to ensure the outcome was a fair reflection of underlying performance. These related to benefits to underlying earnings that were not reflective of performance during the year. The two adjustments were in connection with the Group's share of net interest on shareholder loans following the acquisition of the minority interest in Turquoise Hill Resources in 2022 and the update of the Group's discount rate and inflation assumptions applied to closure and other provisions, along with a resulting lower amortisation charge in the period.

Outcome for financials (unflexed and flexed): below target (at 44.8%)

Commentary on Strategic measures

Impeccable ESG

Safety is our number one priority, and while we had zero fatalities at our managed operations in 2023, tragically four colleagues died in a plane crash while travelling to our Diavik mine in January 2024. These fatalities will be considered further when reviewing 2024 performance. In 2023, we improved our all-injury frequency rate (AIFR) performance from 0.4 to 0.37, exceeding the annual target of 0.4. Regrettably, we had three permanent damage injuries (PDIs) in Canada at Diavik, in Guinea and in the US at Kennecott. Acknowledging the PDIs, the result for the AIFR component has been capped at target.

As part of our continual improvement, we have also seen an uplift of 0.6 in our safety maturity model (SMM) assessments score, against a target improvement of 0.5, resulting in a SMM global score of 5.2. We have also exceeded the target for our GISTM implementation plans for "extreme" and "very high" consequence tailings facilities in 2023. We have had no incidents with off-lease tailings releases at any of our facilities.

Decarbonisation measures the progress of carbon abatement projects against incremental stages of development. Climate change and the low-carbon transition is at the heart of our strategy. We have set ambitious commitments to reduce carbon emissions (CO_2e) from our business by 50% relative to 2018 levels in 2030 and achieve net zero Scope 1 and 2 emissions by 2050.

The carbon abatement target set for 2023 was 10Mt of CO_2e. A total of 29 projects progressed through a development stage during the year, leading to an above target performance of 12Mt CO2e abatement expected by 2030.

Outcome for Impeccable ESG: Above target

Excel in development

Excel in development encompasses goals focusing on exploration progression, studies progression and project execution.

Exploration progression develops a dynamic portfolio of projects that are rigorously prioritised and rapidly tested. Exploration progression focuses on the opportunities coming out of the exploration pipeline and moving into formal studies, including Conceptual Studies completed with a decision to hold, divest or advance to Order of Magnitude (OoM), studies advancing from Projects of Merit (PoM) to Conceptual Study (CS) phase, and studies advancing from Target Testing (TT) to PoM.

Six projects in the exploration portfolio pipeline advanced from PoM to CS phase in 2023, across a large variety of ore deposits. Each project has been assigned a value of 0.5 points for the PoM to CS transition, resulting in an outstanding weighted score of three.

Studies progression of six studies, significantly exceeding the target of two, obtained approval from the Investment Committee (IC) to progress from feasibility study to execution project, including North Rim Skarns Stage 1 at Kennecott Copper, AP60 smelter expansion at Aluminium, West Angelas Deposit A-West, Parker Point Stockyard Sustaining, Hope Downs 1 Sustaining and Coastal Water Supply Sustaining at Iron Ore. We have also made significant progress towards the full approval of the Simandou project in Guinea. This is the highest number of studies to progress to execution in a single year since 2012. This outstanding result provides diversified growth opportunities across commodities of Copper, Aluminium and Iron Ore.

Projects execution refers to the percentage of in flight and completed projects on track against the IC plan. Throughout 2023, we made strong progress on a range of projects. Four out of eight projects finished the year within three months of the approved IC schedule, achieving the "on track" project target of 50%, including Integrated Skarns Underground Characterisation, Western Range, Oyu Tolgoi underground and the Gove Refinery Closure projects. At the Oyu Tolgoi copper mine, the construction of the conveyor to surface works is approaching 90%, with critical path maintained and the mine schedule optimisation work completed. Both shafts 3 and 4 are expected to be commissioned in the second half of 2024. At Western Range, we made progress on bulk earthworks and on the primary crusher pad construction, and the 5-month Coarse Ore Stockpile shutdown is underway.

Outcome for Excel in development: Above target

People and culture

Our People and culture scorecard focuses on building everyday respect and improving gender diversity.

Building everyday respect progressed in 2023, with deployment of the Everyday Respect training program (Building Everyday Respect through care, courage and curiosity) across our organisation. The goal of the program is to set the foundational elements of psychological safety at a Group level and to emphasise the role everyone plays in creating a psychologically safe, respectful, and inclusive work environment. Over 34,000 of our in-scope employees completed the program either through a self-paced module or face-to-face sessions. Our training completion rate target has been significantly exceeded, reaching 83.5%.

Gender diversity in 2023 was focused on both increasing the number of women and changing the culture to become more inclusive, the representation of women across our business remains a challenge. It will continue to be an area of high focus in 2024. The year-on-year average global increase was 1.4 percentage points, landing below our 1.5 percentage points target. The increase is distributed across all levels of the organisation with women representation amongst senior leaders increasing year on year from 28.3% to 30.1%, and representation in operations and general support functions increasing by 1.5 percentage points, from 16.2% to 17.7%.

Outcome for People and culture: Above target

Social licence

Reputation as the social licence metric focuses on building trust and acceptance of Rio Tinto with our community of external stakeholders. The general public perception in key countries is reflected by a reputation score measured by RepTrak. The 2023 result was 58.8, within the target range of 57.9 to 59.9. This score is a weighted, global aggregate made up of results from Australia, Canada, Mongolia, New Zealand, South Africa, United Kingdom, and the US.

Outcome for Social licence: At target

Commentary on Individual performance

Jakob Stausholm

Individual multiplier outcome: Not applied

Strategic objectives	Assessment
Impeccable ESG	– Substantial efforts to progress our decarbonisation commitments, with two sites transitioning to renewable diesel (Boron complete and Kennecott to commence in early 2024), with continued focus on progressing new technologies including BlueSmelting at Sorel-Tracy, Nuton and Biolron™. Key to achieving our 2030 decarbonisation target is the repowering of our Gladstone operations and, with substantial effort made in 2023, this has resulted in driving the development of the largest solar farm in Australia, announced in early 2024. – Publishing of our Water Data platform, delivering market-leading transparency and disclosure at the asset level. Water discharges are monitored at the vast majority of our operations, with a number of sites already undertaking significant water monitoring programs as part of regulatory processes. – Progress on safety marred by three permanent damage injuries.
Excel in development	– Significant progress of the Simandou project, to unlock the largest known undeveloped, high-grade iron ore resource globally. – Successful completion of the Matalco recycling joint venture, strengthening the ability for our North American business to meet the growing demand for low-carbon materials. – Commenced early works on the $1.1 billion expansion of our AP60 smelter in Quebec. – Strengthened the future of our Pilbara iron ore portfolio with Western Range construction on schedule, Rhodes Ridge moving to pre-feasibility phase and productivity improvements at Gudai Darri resulting in an expected uplift in capacity. These steps are pivotal to us meeting our mid-term capacity target of 345–360 million tonnes. – Development of lithium business behind plan.
People and culture	– Strong leadership continues to develop and is focussed on culture. Employee satisfaction (eSat) and recommend scores exceeded 2022 levels. – Implementation of the 26 recommendations from the Everyday Respect report remain on track, and, in line with these recommendations, we are completing an independent progress review in 2024. – Establishment of the global leadership collective for our most senior employees to further drive cultural change. – Improvement in representation of women at all levels of the organisation, but further work required on gender diversity across the workforce.
Social licence	– The Pilbara renewables MoU was signed with Yindjibarndi Energy, an important step to mark a change from the past in our engagement with Traditional Owners. Co-management of replacement mines in the Pilbara remains a key focus for the Group. – Iron Ore Company of Canada signed an agreement to establish a mutually beneficial relationship with the Naskapi Nation of Kawawachikamach. – Relationships with government and civil society continue to improve and deepen. Regular roundtables with global civil society organisation (CSO) in each of our key regions continue to improve transparency and trust and our understanding of society's needs.
Best operator	– The Group's total copper equivalent production increased by over 3% from 2022 despite extended shutdown at Kennecott. – Delivered the second highest year of shipments from the Pilbara, driven by the ramp up of Gudai-Darri and the implementation of the Rio Tinto Safe Production System. – Achieved first sustainable production at our Oyu Tolgoi underground mine in March 2023, with strong performance throughout the year as the underground mine continues through a ramp up phase. – Completed the largest rebuild of the smelter and refinery in Kennecott's history, demonstrating continued investment in our existing assets to enhance resilience. – Exceeded the deployment targets set for the Safe Production System, driving forward operational improvements across the Group. – Production volumes impacted by equipment reliability and furnace shutdowns.

Peter Cunningham

Individual multiplier outcome: Not applied

Strategic objectives	Assessment
Impeccable ESG	– Strengthened investment approach to carbon abatement. This led to a significant increase in the number of projects that we were able to progress. – Supported the simplification of decarbonisation investment pathways resulting in greater use of commercial solutions and partnerships, easing capital expenditure requirements this decade. – Supported investments in renewable energy (Australia, South Africa), renewables diesel (Kennecott, Boron), research and development investment in hard to abate processing emissions, as well as nature-based solutions partnerships generating high quality carbon credits to complement our decarbonisation efforts.
Excel in development	– Key contributor to the formation of the Matalco recycling joint venture through leadership of the Business Development, Treasury and Evaluation teams. – Played a critical role in the execution of strategy and shaping the portfolio, including progressing the high-grade iron ore Simandou project and studies for Pilbara replacement mines, investing in AP60 expansion, partnering to develop the La Granja copper mine, and progressing Kennecott underground. – Maintained financial strength with consistent capital allocation, balancing essential capital expenditure with shareholder returns and growth.
People and culture	– The performance management framework was improved during the year, with more comprehensive and integrated reporting but further work needed to fully embed across the organisation. – Has been a strong advocate for simplification and standardisation, as well as removing complexity through rule changes, technology and innovation, system interventions and in-sourcing of some key activities. – Has promoted an owner's mindset, with comprehensive communications throughout the year, focused on the performance of our STIP scorecard.
Social licence	– Further developed a comprehensive capital allocation processes to promote investment decisions and further build partnerships and capabilities. – Supported investment for creating growth options and social licence through targeted exploration and evaluation, communities and social performance (CSP) and social investment, decarbonisation, and research and development.
Best operator	– Led the simplification and continuous improvement with a strong focus on the transformation of business productivity through increased use of digital. – Continued to streamline the investment approval process to dedicate time to the most complex decisions. – Supported investments that improved asset discipline and performance management, resulting in 3% copper equivalent production growth at the Group level.

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2024 short-term incentive plan

This section outlines the operation of the 2024 short-term incentive plan (STIP).

2024 short-term incentive plan measures and weightings

Financial scorecard dimension	Weighting	What does it measure?	Commentary
Underlying EBITDA – Unflexed	12.5%	Underlying EBITDA is a segmental performance measure and represents profit before tax, net finance items, depreciation and amortisation.	Underlying EBITDA is the prominent financial measure of underlying business performance on an income statement basis. The core objectives of robust operational performance and careful cost management are well reflected in Underlying EBITDA. The EBITDA target for STIP purposes equates to the EBITDA of the Group's annual plan.
Underlying EBITDA – Flexed	12.5%	Underlying EBITDA, adjusted for the impact of commodity prices and foreign exchange rates.	Removing the impact of commodity prices and foreign exchange rates gives us a stronger indication of the EBITDA outcome of our underlying business performance, aligned to the core objective of Best Operator.
STIP free cash flow – Unflexed	12.5%	STIP free cash flow comprises free cash flow adjusted to exclude dividends paid to holders of non-controlling interests in subsidiaries and development capital expenditure.	STIP free cash flow demonstrates how we convert underlying EBITDA to cash and provides further insight into how we are managing efficiency and productivity, including working capital and sustaining capital. The STIP free cash flow target for STIP purposes equates to the same measure of the Group's annual plan.
STIP free cash flow – Flexed	12.5%	STIP free cash flow, adjusted for the impact of commodity prices and foreign exchange rates.	Removing the impact of commodity prices and foreign exchange rates gives us a stronger indication of the free cash flow outcome of our underlying business performance, aligned to the core objective of Best Operator.
Total weighting	**50%**		

Strategic scorecard dimension	Weighting	What does it measure?	Commentary
Impeccable ESG			
Decarbonisation	10%	Progress of moving carbon abatement projects through the various stages of development all the way to execution to meet our decarbonisation ambition.	Provides focus on progressing at pace and optimising resources deployment of decarbonisation projects.
Safety index	10%	AIFR as a lag indicator and SMM at our assets as a lead indicator, which includes maturity of safety leadership, including psychological safety. Conformance to GISTM is set as an underpin.	Safety is at the heart of everything we do. The safety index provides focus on the importance of continuing to embed and strengthen our safety culture.
People and culture			
Diversity	5%	Improving representation of women at Rio Tinto.	The ongoing focus on improving gender representation is an important contributor to advancing our culture change agenda.
Culture	5%	Measuring progress in our culture change journey.	Using trends in responses and scores to our engagement surveys to demonstrate to what extent our culture is changing.
Excel in development			
Exploration, studies and project execution	10%	Performance in exploration, studies and project delivery.	Exploration, studies and project execution identifies opportunities for growth and enhancing orebody reserves across our portfolio while keeping focus on the importance of executing to time and budget.
Social licence			
Reputation	10%	Indicators of progress made in building acceptance and trust with our community of external stakeholders, including but not only communities, governments, customers, suppliers, and civil society. General public perception in key countries is measured by a reputation score.	Assesses trust and acceptance of us by a broad community of stakeholders. We are developing further tools to assess social licence beyond 2024.
Total weighting	**50%**		

A fatality deduction of 10% will be applied to the overall scorecard outcome in the event of work-related fatalities. This 10% deduction combined with the 10% weighting of the safety index maintains the prominence of safety in the STIP structure.

The specific targets for the 2024 STIP are considered by the Board to be commercially sensitive. These will be disclosed alongside the outturn retrospectively in the 2024 Implementation report.

Long-term incentive plan

PSAs granted in 2019 were based on two performance conditions, both measured over a five-year performance period:

- TSR relative to the EMIX Global Mining Index – 50%
- TSR relative to the MSCI World Index – 50%

The TSR performance condition against the MSCI World Index has been met in full. The performance outcome against the EMIX Global Mining Index was 88.2% resulting in an overall vesting of 94.1%. The value of the shares vesting included in the single total figure of remuneration table for 2023 is an estimate, as the actual value can only be determined once the share price and final application of dividend equivalents on vesting are known.

The disclosed value is based on:

- The approved TSR outcome relative to the EMIX Global Mining Index (transitioned to S&P Global Mining Index from 1 August 2023 following the decommissioning of the EMIX on 31 July 2023) and MSCI World Index (with associated dividend equivalent shares)
- The average share prices for Rio Tinto plc and Rio Tinto Limited over the last quarter of the five-year performance period (Q4 2023).

The actual value associated with the 2019 PSA vesting will be disclosed in the 2024 Remuneration report.

Calculation of 2019 PSA vesting

Our independent remuneration consultants, Deloitte, calculated performance against the TSR measures. The dual TSR measures recognise that the company competes in the global market for investors as well as within the mining sector, and rewards executives for returns over the long-term that outperform both the broader market and the mining sector.

Index	Threshold (22.5% of maximum)	Maximum (100% of maximum)	Actual TSR outperformance	Weighting	Vesting outcome
S&P Global Mining Index[1]	Equal to Index	Index + 6% p.a.	Index + 5.1% p.a.	50 %	88.2 %
MSCI World Index	Equal to Index	Index + 6% p.a.	Index + 8.6% p.a.	50 %	100 %

1. The EMIX Global Mining Index was decommissioned on 31 July 2023 and therefore it was necessary to identify a replacement index for the remainder of the performance period. The Committee considered a range of alternative indices and determined that S&P's replacement index (the S&P Global Mining Index) was the most suitable, given the overlap in constituents and close correlation in performance. TSR performance was calculated by our independent remuneration consultants tracking the EMIX Global Mining Index to 31 July 2023 and the S&P Global Mining Index thereafter. This methodology will apply to all outstanding PSA.

Executive Director	Year included in single figure	Award	Overall vesting %	Dividend equivalents	Dividend equivalents (% of shares vesting)	Shares (including dividend equivalents)	Share price	PSA outcome (£'000)[1]
Jakob Stausholm	2023	2019 PSA	94.1 %	28,796	38 %	103,708	£53.59	£5,558
Peter Cunningham	2023	2019 PSA	94.1 %	2,347	38 %	8,453	£53.59	£453

1. The PSA outcome is an estimate based on the average share price over the last quarter of 2023.

For reference, the 2018 PSA vested in full on 23 February 2023 with Rio Tinto plc and Rio Tinto Limited share prices of £59.83 and A$125.51 respectively (closing share price on the day prior to vesting). Dividend equivalents were equal to 33.5% for Jakob Stausholm and 35.1% for Peter Cunningham of the vested awards.

Long-term incentive plan awards granted in 2023

These awards are subject to TSR performance relative to the S&P Global Mining Index and MSCI World Index (equal weighting). Targets for threshold and maximum performance are unchanged from prior years.

Executive Director	Type of award	Grant date	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[1]	Conditional shares awarded	End of the period over which the performance conditions have to be fulfilled	Vesting month
Jakob Stausholm	PSA	22 March 2023	400 %	4,942	22.5 %	£53.07	93,114	31 December 2027	February 2028
Peter Cunningham	PSA	22 March 2023	400 %	2,926	22.5 %	£53.07	55,134	31 December 2027	February 2028

1. In line with the Policy, the grant price for PSA is determined by reference to the average share price for the calendar year prior to year of grant. The grant price of £53.07 represents the Rio Tinto plc average share price for 2022.

Long-term incentive plan due to be granted in 2024

Executive Director	Type of award	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[1]	Conditional shares to be awarded	End of the period over which the performance conditions have to be fulfilled	End of holding period
Jakob Stausholm	PSA	500 %	6,424	22.5 %	£53.43	120,232	31 December 2026	February 2029
Peter Cunningham	PSA	500 %	3,804	22.5 %	£53.43	71,195	31 December 2026	February 2029

1. In line with Policy, the grant price for PSA is determined by reference to the average share price for the calendar year prior to year of grant. The grant price of £53.43 represents the Rio Tinto plc average share price for 2023.

Performance measures

The Committee intends to grant 2024 PSAs with performance metrics, weightings and targets in line with the approach set out in the new Policy. 80% of the award will be based on relative TSR measured on a weighted ranked basis against a sector and a broader market index. For the 2024 award, the weighting has been re-balanced so that two-thirds of the TSR element will be measured relative to sector peers and the remaining one-third measured against a broader market reference point. The remaining 20% of the award will be based on strategic measures linked to decarbonisation.

Performance measures	Threshold (22.5% of maximum)	Maximum (100% of maximum)	Weighting
Relative TSR vs S&P Global Mining Index	Median	Upper Quartile	53.3%
Relative TSR vs MSCI World Index	Median	Upper Quartile	26.7%
Decarbonisation scorecard	see below	see below	20%

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Decarbonisation

Given the scale and complexity of our emissions portfolio and our decarbonisation ambitions as well as the multi-year timeframe for this transition, performance and progress will be assessed using a balanced scorecard. The decarbonisation scorecard includes a combination of metrics that address opportunities and risks from the energy transition to incentivise long-term competitive advantage. The balanced scorecard includes the following four equally weighted elements assessed over the three-year performance period:

Objective	Details
Residual emissions	– This provides a measure of actual reduction in Scope 1 and 2 emissions with targets set taking into account the Group's stated ambition of a 50% reduction by 2030 (relative to our 2018 baseline). Achieving the maximum outcome would be consistent with the linear trajectory required to achieve the 2030 ambition. – The Committee will take into account the relative contribution of nature-based offsets directly associated with Rio Tinto landholdings or those of its joint ventures when assessing performance. The contribution will be capped at 10% and for any outcome above target the contribution from offsets will be ignored.
Project delivery	– The successful delivery of abatement projects will be fundamental to achieving our stretching decarbonisation objectives. – Working with the Decarbonisation Office the Committee have identified a number of priority decarbonisation projects for which investment approval has been granted, or is expected to be granted in 2024. Examples of projects to be included for 2024 - 2026 performance period are the commissioning of a BioIron™ continuous pilot plant and an electric boiler at IOC, both of which have been noted at previous investor seminars and are further defined in our 2023 Climate Change Report. The projects included will be planned for execution within the performance period and will typically have a duration of 1-3 years. These will be physical projects, potentially including renewable energy project delivery, alumina process heat reductions, minerals processing solutions or projects that support our partners with Scope 3 emissions reductions. Commercial solutions such as power purchase agreements or procuring biofuels would not be considered in this metric. – At the end of the three-year performance period, there will be a qualitative assessment of project delivery measuring conformance to plan for both spend and schedule. Using a pre-determined framework, each project will be assigned a score out of ten and vesting will be determined based on the average score of the projects.
Technology development	– Progressing towards net zero will require technology advancement and research and development breakthroughs that convert into implemented projects. – This metric assesses Group spend committed to research and development and the successful implementation of projects that have a meaningful impact on the abatement of emissions (including spend associated with reducing Scope 3 emissions).
Transition strategy	– This measure will align decarbonisation activity with our value creation strategy, specifically in building new capabilities or commitments towards new growth assets. – Three transition strategy outcomes have been identified that are significant to Group value, namely, Pacific Operations (PacOps) decarbonisation, ELYSIS™ implementation, and aluminium and copper recycling. Working with the Chief Scientist, each project has been assigned a bespoke scorecard that enables a qualitative assessment of progress and performance. – At the end of the three-year performance period, each transition strategy will be assigned a score out of ten using a predetermined framework and vesting will be determined based on the average score of the transition objectives.

While the Committee have spent considerable time ensuring that the targets are robust, challenging and in line with our strategy, it is recognised that this is a complex and evolving area. Assessment of the scorecard will inevitably require a degree of judgement to ensure that outturns are an appropriate reflection of performance. To support the Committee with their assessment, additional processes have been introduced including input from subject matter experts within the business, as well as other Board Committees, and development of a framework to scoring results. The targets under each element of the scorecard are summarised below:

Objective	LTIP weighting	Threshold (22.5% of maximum)	Target (50% of maximum)	Maximum (100% of maximum)
Residual emissions Reduction in residual emissions relative to 2018 baseline	5%	3.6Mt CO_2e	5.1Mt CO_2e	6.6Mt CO_2e
Project delivery Conformance to plan for priority decarbonisation projects	5%	Average score of at least six out of ten being a maximum deviation of 25% from planned cost and schedule	Average score of at least eight out of ten being a maximum deviation of 15% from planned cost and schedule	Average score of at least nine out of ten being less than 10% deviation from planned cost and schedule
Technology development Technology advancements and research and development breakthroughs that convert into implemented projects	5%	0.2% of Group revenue on decarbonisation research and development spend At least one project into implementation totalling 250kt annual abatement	0.4% of Group revenue on decarbonisation research and development spend At least one project into implementation totalling 500kt annual abatement	0.5% of Group revenue on decarbonisation research and development spend At least two projects into implementation totalling 750kt annual abatement
Transition strategy Alignment of decarbonisation activity with value creation	5%	Average score of at least six out of ten representing more limited progress	Average score of at least eight out of ten representing good progress towards strategic goals, some areas of outperformance, substantially achieved or on track to deliver major objectives, or progress with no major failures or impacts on broader performance of the Group	Average score of at least nine out of ten representing significant outperformance of expectations, implementation achieved or a major new advancement with scope for material benefits

In disclosing the above information the Committee has sought to provide transparency of the metrics, targets and how different outcomes will be rewarded, noting that certain details within the scorecard, such as those relating to activity addressing project delivery and technology development outcomes, are considered commercially sensitive. However, further detail on the targets and outcomes will be disclosed at vesting. The Committee also recognises that, although long-term in nature, the decarbonisation strategy will inevitably evolve over time and it is in shareholders' interests for the business to remain suitably agile (eg responding to technological advancements).

In setting the above measures and targets, the Committee has been mindful to use quantitative measures where possible to ensure the targets can be assessed through formulaic vesting outcomes. This approach also provides for straight-line vesting between threshold, target and maximum outcomes, where appropriate. The Committee will retain discretion in determining vesting outcomes and where required will adjust targets or baselines in relation to any material changes to the portfolio, such as following acquisitions, divestments or closure. The use of offsets towards any measure will be limited, and in the case of the residual emissions targets, will be capped and used only towards any outcome up to target.

Executive Directors' shareholding

In line with our share ownership policy, Executive Directors' shareholdings are calculated using the closing price of Rio Tinto shares on 31 December 2023.

	Multiple of base salary			Holding of ordinary shares	
Executive Director	31 December 2023	Requirement	Year requirement needs to be met	31 December 2023	31 December 2022
Jakob Stausholm	**5.1**	4.0	2024	**95,363**	56,337
Peter Cunningham	**5.5**	3.0	2026	**63,053**	52,815

The multiple of base salary shown above includes 50% of the value of unvested BDA.

We operate a post-employment holding requirement for Executive Directors, but no former Executive Directors are currently subject to a holding requirement.

Service contracts

Executive Director	Position held during 2023	Date of appointment to position	Notice period
Jakob Stausholm	Chief Executive	1 January 2021	12 months
Peter Cunningham	Chief Financial Officer	17 June 2021	12 months

Either party can terminate their contract with notice in writing, or immediately by the company by paying the base salary only in lieu of any unexpired notice.

Executives' external and other appointments

Neither of the Executive Directors currently has an external directorship.

Past director payments

There were no payments to past directors in excess of the de-minimis threshold of £15,000.

Chief Executive's remuneration over time

Year	Chief Executive	Single total figure of remuneration ('000)	Annual STIP award against maximum opportunity	Long-term incentive vesting against maximum opportunity (PSA)
2014	Sam Walsh	A$10,476	88.4%	49%
2015	Sam Walsh	A$9,141	81.9%	43.6%
2016	Sam Walsh[1]	A$5,772	68.2%	50.5%
2016	Jean-Sébastien Jacques	£3,116	82.4%	50.5%
2017	Jean-Sébastien Jacques	£3,821	73.4%	66.7%
2018	Jean-Sébastien Jacques	£4,551	70.1%	43%
2019	Jean-Sébastien Jacques	£5,999	74.8%	76%
2020	Jean-Sébastien Jacques	£8,670	0%	66.7%
2021	Jakob Stausholm[2]	£2,788	61.3%	–
2022	Jakob Stausholm[3]	£5,010	48.7%	100%
2023	Jakob Stausholm	£8,450	56%	94.1%

1. STIP award and PSA vesting percentages restated following release from the deed of deferral as described in prior Remuneration reports.
2. Jakob Stausholm joined Rio Tinto in September 2018 and became Chief Executive on 1 January 2021. Therefore, he did not participate in the 2017 LTIP which vested at 66.7% of maximum.
3. The 2022 single total figure of remuneration for Jakob Stausholm reported in the 2022 Remuneration report was £4.8 million based on the estimated value of the 2018 PSA which vested at 100%. The single total figure of remuneration for 2022 shown above is restated and based on the actual vesting share price of £59.83.

The effect of performance on the value of shareholdings, as measured by TSR delivered over the past five years, based on the sum of dividends paid and share price movements during each calendar year, is detailed in the table below.

	Underlying earnings	Underlying EBITDA	Dividends paid per share	Share price – Rio Tinto plc pence		Share price – Rio Tinto Limited A$		TSR
Year	$ millions	$ millions	$ cents	1 Jan	31 Dec	1 Jan	31 Dec	Group %
2019	10,373	21,197	635	3,730	4,503	78.47	100.40	38.7%
2020	12,448	23,902	386	4,503	5,470	100.40	113.83	34.0%
2021	21,401	37,720	963	5,470	4,892	113.83	100.11	(3.8)%
2022	13,359	26,272	746	4,892	5,798	100.11	116.41	18.3%
2023	11,755	23,892	402	5,798	5,842	116.41	135.66	15.8%

The data presented in this table reflects the dual corporate structure of Rio Tinto. We weight the two Rio Tinto listings to produce a Group total shareholder return (TSR) figure in line with the methodology used for the 2019 PSA.

TSR has been calculated using spot Return Index data as at the last trading day for the year sourced from DataStream.

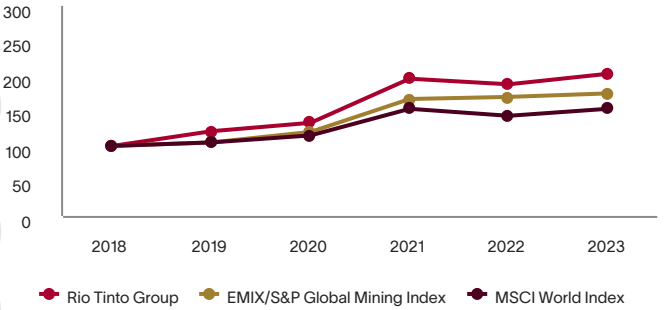
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Total shareholder return

The vesting of the PSA granted in 2019 was subject to relative TSR against the S&P Global Mining Index (transitioned from the EMIX Global Mining Index following its decommissioning in July 2023) and the MSCI World Index.

The graph below shows Rio Tinto's TSR performance for the 2019 PSA. It uses the same methodology as that used to calculate the vesting for the PSA granted in 2019 with a performance period that ended on 31 December 2023.

Total shareholder return

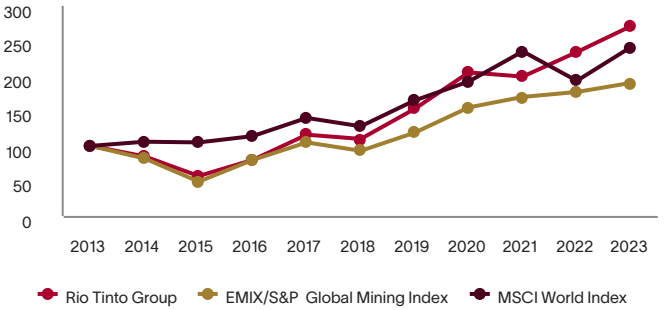


1. TSR has been calculated using 12 month average Return Index data for the year sourced from DataStream.
2. TSR for Rio Tinto Group has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity at the start of the period.

The following graph illustrates the TSR performance of the Group against the S&P Global Mining Index (and for periods to 31 July 2023 against the EMIX Global Mining Index) and the MSCI World Index over the ten years to the end of 2023.

The graph meets the requirements of Schedule 8 of the *UK Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended) and is not an indication of the vesting of PSA granted in 2019.

Total shareholder return



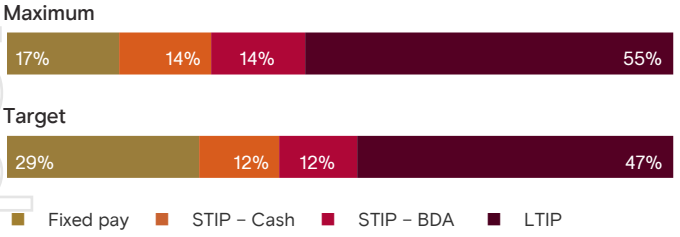
1. TSR has been calculated using spot Return Index data as at the last trading day for the year sourced from DataStream.
2. TSR for Rio Tinto Group has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity at the start of the period.

Other executive key management personnel

This section sets out remuneration information pertaining to executive key management personnel (KMP) excluding the Chief Executive and the Chief Financial Officer. The Remuneration Policy applicable to the Executive Directors is also applicable to the other executive KMP with variances specified in this section.

The remuneration mix for other executive KMP under this Policy is set out in the chart below.

2023 Remuneration mix



2023 Assumptions

The value of benefits is estimated at 11% of base salary.

Performance-related (at risk)	
Target STIP and LTIP performance	– STIP award of 50% of the maximum award (equates to 100% of base salary) – PSA expected value of 50% of face value, calculated as 200% of base salary
Maximum STIP and LTIP performance	– Maximum STIP award of 200% of base salary – Maximum PSA face value of 400% of base salary

No assumption has been made for growth in share price and payment of dividend equivalents.

The table below outlines the positions held by the other executive KMP and the respective dates of appointment:

Name	Position(s) held during 2023	Date of appointment to position
Bold Baatar	Chief Executive Copper	1 February 2021
Alfredo Barrios	Chief Commercial Officer	1 March 2021
Sinead Kaufman	Chief Executive Minerals	1 March 2021
Jérôme Pécresse	Chief Executive Aluminium	23 October 2023
Simon Trott	Chief Executive Iron Ore	1 March 2021
Ivan Vella[1]	Chief Executive Aluminium	1 March 2021

1. Ivan Vella ceased to be a KMP on 23 October 2023 and his employment terminated on 15 November 2023.

Base salary

Base salaries for Executive Committee members are reviewed annually by the Committee with increases generally aligned with the wider employee population in the relevant jurisdiction. Variations may occur in instances in which an individual has changed position, or the position's duties and responsibilities have been enlarged, for example as a result of a reorganisation or acquisition, or where an individual's remuneration has fallen below comparable positions in the market. As disclosed last year, Bold Baatar and Simon Trott received a higher salary increase in 2023 to reflect their market positioning.

Short-term incentive plan

Overview of 2023 short-term incentive plan weightings and measures

The measures and weightings used to determine short-term incentive plan (STIP) awards for executives in 2023 are set out on page 130.

The 2023 STIP awards are detailed in the table below.

			Percentage of:	
	2023 STIP award (% of salary)	2023 STIP award ('000)	Maximum STIP awarded	Maximum STIP forfeited
Bold Baatar	140%	£941	70%	30%
Alfredo Barrios	84%	SGD981	42%	58%
Sinead Kaufman	112%	A$1,188	56%	44%
Jérôme Pécresse	112%	C$258	56%	44%
Simon Trott	140%	A$1,650	70%	30%

Share ownership

The following table shows the share ownership level for other KMP as a multiple of base salary.

	Share ownership level at 31 December 2023 as a multiple of base salary
Bold Baatar	5.9
Alfredo Barrios	4.5
Sinead Kaufman	6.2
Jérôme Pécresse	0.4
Simon Trott	5.4

Share ownership level is calculated using the market price of Rio Tinto shares on 31 December 2023, and we define "share ownership" in our Policy.

Service contracts

Alongside the new Policy, any newly signed service contracts can be terminated by the company or executive with 12 months' notice in writing, or immediately by the company by paying base salary only in lieu of any unexpired notice.

Other KMP appointments

All newly appointed executives have received a remuneration package that is aligned with our Policy and is comprised of base salary in line with market benchmarks; target STIP opportunity of 100% of base salary (with maximum opportunity of 200% of base salary); LTIP awards of up to 400% of base salary; company pension contributions of 14% of base salary; and other benefits such as company-provided healthcare coverage, and continued eligibility to participate in the all-employee share plans. A minimum shareholding requirement of 300% of base salary applies on appointment to be built up over subsequent years.

Executive departures

Ivan Vella ceased to be a KMP on 23 October 2023 and his employment was terminated on 15 November 2023 as an ineligible leaver. All subsisting variable remuneration was therefore lapsed and only statutory payments for accrued leave were made following termination.

Broader employee disclosures

Chief Executive pay ratio

The ratio of the single total figure of remuneration for the Chief Executive to the lower quartile, median and upper quartile Rio Tinto Australian employee population for 2023 is set out in the table below.

	Lower quartile	Median	Upper quartile
2023	116	97	81
2022 [1]	76	52	42

1. The 2022 pay ratio data has been restated based on actual pay outcomes for the Chief Executive in 2022.

The median CEO pay ratio of 97:1 is higher than last year, primarily due to the vesting of Jakob's first full LTIP award from 2019 which vested at 94.1% at the end of the 2023 performance year. The Committee continues to be mindful of the relationship between executive remuneration and that of our broader workforce. The Committee's decision-making will continue to be supported by regular and detailed reporting on these matters.

Relative spend on remuneration

The table below shows our relative spend on remuneration across our global employee population and distributions to shareholders in the year. We have also shown other significant disbursements of the company's funds for comparison.

Stated in US$m	2023	2022	Difference in spend
Remuneration paid[1]	**6,636**	6,002	634
Distributions to shareholders[2]	**6,470**	11,727	(5,257)
Purchase of property, plant and equipment, and intangible assets[3]	**7,086**	6,750	336
Corporate income tax paid[3]	**4,627**	6,909	(2,282)

1. Total employment costs for the financial year as per note 26 to the financial statements.
2. Distributions to shareholders include equity dividends paid to owners of Rio Tinto shares as per the Group cash flow statement.
3. Purchase of property, plant and equipment, and intangible assets, and corporate income tax paid during the financial year are as per the Group cash flow statement.

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Change in director and employee pay

In the table below, we compare the annual changes in salary, benefits and annual incentives of the directors for the past four years, to that of the Australian employee population. Column 'a' represents the percentage change in salary and fees; values in column 'b' represent the percentage change in taxable benefits; and values in column 'c' represents the percentage change in bonus outcomes for performance periods in respect of each financial year.

	2019 to 2020			2020 to 2021			2021 to 2022			2022 to 2023		
	a[1]	b	c	a[1]	b	c	a[1]	b	c	a[1]	b[2]	c[3]
Executive Directors												
Jakob Stausholm	2%	34%	29%	46%	(19)%	25%	2%	94%	(18)%	**4%**	**(15)%**	**20%**
Peter Cunningham	–	–	–	–	–	–	–	18%	47%	**4%**	**10%**	**28%**
Non-Executive Directors												
Dominic Barton[4]	–	–	–	–	–	–	–	–	–	**50%**	**(84)%**	**–%**
Megan Clark	1%	(54)%	–%	(3)%	(93)%	–%	(1)%	1,651%	–%	**(1)%**	**52%**	**–%**
Simon Henry	3%	(88)%	–%	–%	64%	–%	(6)%	98%	–%	**(7)%**	**189%**	**–%**
Sam Laidlaw	8%	(87)%	–%	–%	(51)%	–%	–%	779%	–%	**–%**	**242%**	**–%**
Simon McKeon	9%	(72)%	–%	15%	(91)%	–%	(6)%	1,487%	–%	**6%**	**78%**	**–%**
Jennifer Nason	–	–	–	–	–	–	(6)%	58%	–%	**(8)%**	**59%**	**–%**
Ngaire Woods	–	–	–	–	–	–	–%	273%	–%	**–%**	**201%**	**–%**
Ben Wyatt	–	–	–	–	–	–	12%	–%	–%	**–%**	**52%**	**–%**
Kaisa Hietala[5]	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Susan Lloyd-Hurwitz[5]	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Dean Dalla Valle[5]	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Joc O'Rourke[5]	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Australian workforce[6]	**4%**	**5%**	**19%**	**4%**	**–%**	**(18)%**	**7%**	**6%**	**15%**	**8%**	**(1)%**	**16%**

1. Change in salary and fees compared on an annualised basis to smooth the impact of part-year appointments.
2. Changes in director benefits are primarily driven by variances in business travel during the year.
3. The percentage change in annual incentive compares the incentive outcomes for the 2022 performance year to those for the 2023 performance year.
4. Increase in fees are representative of 2023 being the first full year post appointment in 2022 and reduction in benefits reflective of non-recurring benefits from appointment in 2022.
5. No prior year data as appointed as a Non-Executive Director in 2023.
6. Since Rio Tinto plc, the statutory entity for which this disclosure is required, does not have any employees, we have included voluntary disclosure of the change in employee pay for our Australian employees who make up more than 40% of our employee population.

"–" in the table signifies no reported change as a result of the absence of comparable data.

Non-Executive Directors

What we paid our Chair and Non-Executive Directors

Positions held

We list the Non-Executive Directors who held office during 2023 below. Each held office for the whole of 2023 unless otherwise indicated. Their years of appointment are reported in "Board of Directors" on pages 92-93.

Name	Title
Dominic Barton	Chair
Megan Clark	Non-Executive Director (to 15 December 2023)
Dean Dalla Valle	Non-Executive Director (from 1 June 2023)
Simon Henry	Non-Executive Director
Kaisa Hietala	Non-Executive Director (from 1 March 2023)
Sam Laidlaw	Non-Executive Director
Susan Lloyd-Hurwitz	Non-Executive Director (from 1 June 2023)
Simon McKeon	Non-Executive Director
Jennifer Nason	Non-Executive Director
Joc O'Rourke	Non-Executive Director (from 25 October 2023)
Ngaire Woods	Non-Executive Director
Ben Wyatt	Non-Executive Director

Service contracts

The Chair and Non-Executive Directors' letters of appointment from the company stipulate their terms of appointment, including their duties and responsibilities as Directors. Each Non-Executive Director is appointed subject to their election and annual re-election by shareholders. The Chair's appointment may be terminated by either party giving 12 months' notice and Non-Executive Directors' appointments may be terminated by either party giving three months' notice.

Annual fees payable

The Chair's fee is determined by the Committee and was increased in December 2023 with effect from 1 March 2024. Prior to this increase, the Chair's fee had remained unchanged since the increase in July 2013.

All other fees are subject to review by the Board on the recommendation of the Committee.

A review of Non-Executive Director fees was undertaken in 2023. The review supported an increase in Non-Executive Director fees effective 1 March 2024 reflecting the significant increase in complexity and time commitment of the Non-Executive Director roles, as well as accounting for inflation after a freeze in fees for an extended period of time.

The table below shows the annual fees paid in 2023 and to be paid in 2024 to the Chair and Non-Executive Directors.

	2024	2023
Director fees		
Chair's fee	£ 800,000	£ 730,000
Non-Executive Director base fee	£ 115,000	£ 95,000
Non-Executive Director base fee for Australian residents	£ 115,000	£ 105,000
Senior Independent Director	£ 45,000	£ 45,000
Committee fees		
Audit & Risk Committee Chair	£ 50,000	£ 40,000
Audit & Risk Committee member	£ 30,000	£ 25,000
People & Remuneration Committee Chair	£ 45,000	£ 35,000
People & Remuneration Committee member	£ 25,000	£ 20,000
Sustainability Committee Chair	£ 45,000	£ 35,000
Sustainability Committee member	£ 25,000	£ 20,000
Nominations Committee member	£ 8,000	£ 7,500
Meeting allowances		
Long distance (flights over 10 hours per journey)	£ 10,000	£ 10,000
Medium distance (flights of 5-10 hours per journey)	£ 5,000	£ 5,000

We set out details of each element of remuneration, and the single total figure of remuneration, paid to the Chair and Non-Executive Directors during 2023 and 2022 in US dollars in table 1b on page 142. No post-employment, termination or share-based payments were made. Statutory minimum superannuation contributions for Non-Executive Directors are deducted from the Director's overall fee entitlements when these are required by Australian superannuation law.

The total fee and allowance payments made to the Chair and Non-Executive Directors in 2023 were within the current maximum aggregate annual amount of £3 million set out in the Group's constitutional documents, approved by shareholders at the 2009 AGMs. An ordinary resolution will be proposed at the 2024 AGMs seeking shareholder approval to increase the maximum aggregate annual amount to £4 million with effect from 1 March 2024.

Share ownership policy for Non-Executive Directors

Rio Tinto has a policy that encourages Non-Executive Directors to build up a shareholding equal in value to one year's base fee within three years of their appointment. Details of Non-Executive Directors' share interests in the Group, including total holdings, are set out in table 2 on page 142.

Non-Executive Directors' share ownership

The Non-Executive Directors' shareholdings are calculated using the market price of Rio Tinto shares on 31 December 2023:

Director	Share ownership level at 31 December 2023 as a multiple of base fee	Share ownership level at 31 December 2022 as a multiple of base fee
Dominic Barton	**1.2**	1.1
Megan Clark[1]	**4.4**	3.9
Dean Dalla Valle[2]	**0.0**	N/A
Simon Henry	**1.2**	0.9
Kaisa Hietala[3]	**0.3**	N/A
Sam Laidlaw	**4.6**	4.6
Susan Lloyd-Hurwitz[2]	**1.0**	N/A
Simon McKeon	**7.7**	6.8
Jennifer Nason	**1.1**	1.1
Joc O'Rourke[4]	**0.0**	N/A
Ben Wyatt	**0.3**	0.2
Ngaire Woods	**0.9**	0.3

1. Megan Clark left the Board on 15 December 2023.
2. Dean Dalla Valle and Susan Lloyd-Hurwitz joined the Board on 1 June 2023.
3. Kaisa Hietala joined the Board on 1 March 2023.
4. Joc O'Rourke joined the Board on 25 October 2023.

Other statutory disclosures

Other share plans

All-employee share plans

The Committee believes that all employees should be given the opportunity to become shareholders in our business, and that share plans help engage, retain and motivate employees over the long term. Rio Tinto's share plans are therefore part of its standard remuneration practice, to encourage employee share ownership and create alignment with the shareholder experience. Executives may participate in broad-based share plans that are available to Group employees generally and to which performance conditions do not apply.

A global employee share purchase plan is normally offered to all eligible employees unless there are local jurisdictional restrictions. Under the plan, employees may acquire shares up to the value of $5,250 (or equivalent in other currencies) per year or capped at 15% of their base salary if lower. Each share purchased will be matched by the company, providing the participant holds the shares, and is still employed, at the end of the three-year vesting period.

Approximately 34,000 of our employees (63% of those eligible) are shareholders as a result of participating in these plans. In the UK, these arrangements are partially delivered through the UK Share Plan which is a UK tax approved arrangement. Under this plan, eligible participants may also receive an annual award of Free Shares up to the limits prescribed under UK tax legislation.

Management Share Awards

The Management Share Awards (MSA) are designed to help the Group attract the best staff in a competitive labour market, and to retain key individuals as we deliver our long-term strategy. MSA are conditional awards that are not subject to a performance condition. They vest at the end of three years subject to continued employment. Shares to satisfy the awards are bought in the market or reissued from Treasury. Executive Committee members are not eligible to be granted MSA after appointment.

Shareholder voting

In the table below, we set out the results of the remuneration-related resolutions voted on at the Group's 2023 AGMs.

Resolution	Votes for	Votes against	Votes withheld[1]
Approval of the Directors Remuneration report: Implementation report	96%	4%	21,075,873
Approval of the Remuneration Policy (2021)	97%	3%	22,272,424
Approval of the Directors' Remuneration report	96%	4%	21,100,383

1. A vote "withheld" is not a vote in law and is not counted in the calculation of the proportion of votes for and against the resolution.

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Table 1a – Executives' remuneration

Stated in US$'000[1]		Short-term benefits: Base salary	Cash bonus[2]	Other cash-based benefits[3]	Non-monetary benefits[4]	Total short-term benefits
Executive Directors						
Jakob Stausholm	**2023**	**1,525**	**860**	**203**	**129**	**2,717**
	2022	1,456	694	199	153	2,502
Peter Cunningham	**2023**	**903**	**523**	**116**	**47**	**1,589**
	2022	866	386	151	41	1,444
Other executives						
Bold Baatar	**2023**	**824**	**601**	**105**	**79**	**1,609**
	2022	760	361	114	34	1,269
Alfredo Barrios	**2023**	**864**	**373**	**43**	**98**	**1,378**
	2022	811	368	47	112	1,338
Sinead Kaufman	**2023**	**700**	**408**	**80**	**91**	**1,279**
	2022	707	340	86	52	1,185
Jérôme Pécresse	**2023**	**170**	**98**	**537**	**6**	**811**
Simon Trott	**2023**	**772**	**566**	**90**	**56**	**1,484**
	2022	749	372	93	106	1,320
Ivan Vella[8]	**2023**	**616**	**–**	**70**	**129**	**815**
	2022	765	286	94	102	1,247

Stated in US$'000[1]		Long-term benefits: Value of shared-based awards[5] BDA[6]	PSA	MSA	Others[7]	Post-employment benefits[9] Pension and superannuation	Other post-employment benefits	Termination benefits	Total remuneration[10]	Currency of actual payment
Executive Directors										
Jakob Stausholm	**2023**	**783**	**2,556**	**–**	**8**	**10**	**–**	**–**	**6,074**	**£**
	2022	701	2,020	–	7	5	–	–	5,235	£
Peter Cunningham	**2023**	**338**	**691**	**132**	**7**	**10**	**–**	**–**	**2,767**	**£**
	2022	224	342	192	6	5	–	–	2,213	£
Other executives										
Bold Baatar	**2023**	**473**	**1,531**	**–**	**8**	**10**	**–**	**–**	**3,631**	**£**
	2022	419	1,360	–	7	5	–	–	3,060	£
Alfredo Barrios	**2023**	**428**	**1,578**	**–**	**4**	**43**	**–**	**–**	**3,431**	**S$**
	2022	423	1,404	–	3	97	–	–	3,265	S$
Sinead Kaufman	**2023**	**293**	**856**	**13**	**3**	**18**	**–**	**–**	**2,462**	**A$**
	2022	227	557	126	3	19	–	–	2,117	A$
Jérôme Pécresse	**2023**	**22**	**–**	**–**	**–**	**23**	**–**	**–**	**856**	**C$**
Simon Trott	**2023**	**436**	**1,465**	**–**	**–**	**18**	**–**	**–**	**3,403**	**A$**
	2022	408	1,461	–	1	19	–	–	3,209	A$
Ivan Vella[8]	**2023**	**(323)**	**(1,003)**	**6**	**(1)**	**23**	**–**	**155**	**(328)**	**C$**
	2022	204	695	52	4	24	–	–	2,226	C$

Notes to table 1a – Executives' remuneration

1. "Table 1a – Executives' remuneration" is reported in US$ using A$1 = US$0.66441; £1 = US$1.24329; C$1 = US$0.7410; S$1 = US$0.74464 which are year-to-date average rates, except for cash bonuses which use A$1 = US$0.68605; £1 = US$1.2770; C$1 = US$0.75835; S$1 = US$0.75956 31 December 2023 year-end rates.
2. "Cash bonus" relates to the cash portion of the 2023 STIP award to be paid in March 2024.
3. "Other cash-based benefits" typically include cash in lieu of company pension or superannuation contributions. For Jérôme Pécresse this also includes the international transfer allowance paid as per the company standards upon Jérôme's relocation from France to Canada.
4. "Non-monetary benefits" for executives typically include healthcare coverage, professional tax compliance services/advice, flexible perquisites and, where applicable, leave accruals and mobility related benefits.
5. The "Value of share-based awards" has been determined in accordance with the recognition and measurement requirements of IFRS2 "Share-based Payment". The fair value of awards granted as MSA, BDA and PSA have been calculated at their dates of grant using valuation models provided by external consultants, Lane Clark and Peacock LLP, including an independent Monte Carlo valuation model, which take into account the constraints on vesting attached to these awards. Further details of the valuation methods and assumptions used for these awards are included in note 27 (Share-based Payments) in the financial statements. The fair value of other share-based awards is measured at the purchase cost of the shares from the market. The share-based values disclosed in this table do not reflect amounts actually paid in 2023 or the value of shares that will ultimately vest.
6. "BDA" represents the portion of the 2020–2023 STIP awards deferred into Rio Tinto shares.
7. "Others" includes the Global Employee Share Plan (myShare) and the UK Share Plan.
8. The figures for Ivan Vella reflect his remuneration up until he ceased to be a KMP on 23 October 2023. His total remuneration up until his employment termination date of 15 November 2023 was ($268,000). The negative values for his remuneration reflect the reversal of accounting costs in relation to the lapse of share awards as a result of the termination of his employment.
9. Any costs related to defined benefit pension plans and post-retirement medical benefits are the service costs attributable to the individual, calculated in accordance with IAS 19. The cost for defined contribution pension plans is the amount contributed in the year by the company.
10. "Total remuneration" represents the disclosure of total emoluments and compensation required under the Australian *Corporations Act 2001* and applicable accounting standards.

Further details in relation to aggregate compensation for executives, including directors, are included in note 29 (Directors' and key management remuneration).

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Table 1b – Non-Executive Directors' remuneration

Stated in US$'000[1]		Fees and allowances[2]	Non-monetary benefits[3]	Post-employment benefits	Single total figure of remuneration[4]	Currency of actual payment
Chair						
Dominic Barton	**2023**	**908**	**30**	**–**	**938**	**£**
	2022	600	192		792	£
Non-Executive Directors						
Megan Clark	**2023**	**222**	**8**	**24**	**254**	**A$**
	2022	221	2	23	246	A$
Dean Dalla Valle[5]	**2023**	**109**	**6**	**10**	**125**	**A$**
Simon Henry	**2023**	**221**	**3**	**–**	**224**	**£**
	2022	202	4	–	206	£
Kaisa Hietala[6]	**2023**	**163**	**18**	**–**	**181**	**£**
Sam Laidlaw	**2023**	**308**	**5**	**–**	**313**	**£**
	2022	263	5	–	268	£
Susan Lloyd-Hurwitz[5]	**2023**	**114**	**3**	**9**	**126**	**A$**
Simon McKeon	**2023**	**302**	**7**	**–**	**309**	**A$**
	2022	275	3	–	278	A$
Jennifer Nason	**2023**	**202**	**6**	**–**	**208**	**£**
	2022	196	4	–	200	£
Joc O'Rourke[7]	**2023**	**23**	**–**	**–**	**23**	**£**
Ngaire Woods	**2023**	**221**	**5**	**–**	**226**	**£**
	2022	188	9	–	197	£
Ben Wyatt	**2023**	**220**	**10**	**–**	**230**	**A$**
	2022	203	4	4	211	A$

1. Remuneration is reported in US$. The amounts have been converted using the 2023 annual average exchange rates of £1 = US$1.24329 and A$1 = US$0.66441.
2. "Fees and allowances" comprises the total fees for the Chair and all Non-Executive Directors (NED), and travel allowances for the NED. The statutory minimum superannuation contributions required by the Australian superannuation law and paid for the Australia based NED are included in "Fees and allowances".
3. "Non-monetary benefits" include, as in previous years, amounts that are deemed by the UK tax authorities to be benefits in kind relating largely to the costs of directors' expenses in attending Board meetings held at the company's UK registered office (including associated accommodation and subsistence expenses) and professional tax compliance services/advice. Given these expenses are incurred by directors in the fulfilment of their duties, the company pays the tax on them.
4. Represents disclosure of the single total figure of remuneration under Schedule 8 of the Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and total remuneration under the Australian *Corporations Act 2001* and applicable accounting standards.
5. The amounts reported for Dean Dalla Valle and Susan Lloyd-Hurwitz reflect the period of active Board memberships from 1 June 2023 to 31 December 2023.
6. The amounts reported for Kaisa Hietala reflect the period of active Board memberships from 1 March 2023 to 31 December 2023.
7. The amounts reported for Joc O'Rourke reflect the period of active Board memberships from 25 October 2023 to 31 December 2023.

For more information
further details in relation to aggregate compensation for executives, including directors, are included in note 29 (Directors' and key management remuneration).

Table 2 – Directors' and executives' beneficial interests in Rio Tinto shares

	Rio Tinto plc[1]			Rio Tinto Limited			Movements	
	1 Jan 2023[2]	31 Dec 2023[3]	7 Feb 2024[4]	1 Jan 2023[2]	31 Dec 2023[3]	7 Feb 2024[4]	Compensation[5]	Other[6]
Directors								
Dominic Barton	–	–	–	11,900	11,900	11,900	–	–
Megan Clark[7]	–	–	N/A	6,370	6,370	N/A	–	–
Peter Cunningham	52,815	63,053	63,065	–	–	–	16,173	(5,923)
Dean Dalla Valle[8]	–	–	–	–	–	–	–	–
Simon Henry	1,500	2,000	2,000	–	–	–	–	500
Kaisa Hietala[8]	–	500	500	–	–	–	–	500
Sam Laidlaw	7,500	7,500	7,500	–	–	–	–	–
Susan Lloyd-Hurwitz[8]	–	–	–	–	1,380	1,380	–	1,380
Simon McKeon	–	–	–	10,000	10,000	10,000	–	–
Jennifer Nason	1,765	1,765	1,765	–	–	–	–	–
Joc O'Rourke[8]	–	–	–	–	–	–	–	–
Jakob Stausholm	56,337	95,363	95,389	–	–	–	52,047	(12,995)
Ngaire Woods	572	1,482	1,482	–	–	–	–	910
Ben Wyatt	–	–	–	300	400	400	–	100
Executives								
Bold Baatar	76,111	61,216	61,242	–	–	–	93,458	(108,327)
Alfredo Barrios	62,392	47,888	47,922	–	–	–	98,601	(113,071)
Sinead Kaufman	–	–	–	39,511	43,633	43,633	15,232	(11,109)
Jérôme Pécresse	–	5,000	5,000	–	–	–	–	5,000
Simon Trott	9,780	19,338	19,338	26,006	26,090	26,090	85,161	(75,519)
Ivan Vella[7]	94	160	N/A	17,569	23,986	N/A	19,997	(13,513)

1. Rio Tinto plc ordinary shares or American depositary receipts.
2. Or date of appointment, if later.
3. Or date of cessation as director or KMP, if earlier.
4. Latest practicable date prior to the publication of the *2023 Annual Report*, in accordance with LR 9.8.6 R(1).
5. Shares obtained through awards under the Rio Tinto UK Share Plan, the Global Employee Share Plan and/or vesting of PSA, MSA and BDA granted under the Group's LTIP and STIP deferral arrangements.
6. Share movements due to the sale or purchase of shares, or shares received under dividend reinvestment plans.
7. Ivan Vella ceased to be a KMP effective 23 October 2023 and Megan Clark ceased to be a Non-Executive Director on 15 December 2023.
8. Kaisa Hietala was appointed Non-Executive Director on 1 March 2023, Dean Dalla Valle and Susan Lloyd-Hurwitz were appointed Non-Executive Director on 1 June 2023 and Joc O'Rourke was appointed Non-Executive Director on 25 October 2023.

Interests in outstanding BDA, MSA and PSA, and UK Share Plan and the Global Employee Share Plan are set out in table 3 and 3a (see pages 143-145).

Unaudited

Table 3 – Plan interests (awards of shares under long-term incentive plans)

Name	Award/ grant date	Market price at award[1,2]	1 January 2023	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2023	7 February 2024	Vesting period concludes	Date of release	Market price at release	Market value of award at release US$[3]
Bold Baatar													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	6,583	–	–	1,575	(8,158)	–	–	1 Dec 2023	1 Dec 2023	£ 55.57	563,631
	23 Mar 2022	£ 58.00	6,956	–	–	–	–	6,956	6,956	1 Dec 2024	–	–	–
	22 Mar 2023	£ 53.19	–	5,463	–	–	–	5,463	5,463	1 Dec 2025	–	–	–
Performance Share Awards[4]	15 May 2018	£ 42.30	63,039	–	–	22,104	(85,143)	–	–	31 Dec 2022	23 Feb 2023	£ 59.22	6,268,859
	18 Mar 2019	£ 42.67	51,752	–	–	–	–	51,752	51,752	31 Dec 2023	–	–	–
	16 Mar 2020	£ 33.58	53,272	–	–	–	–	53,272	53,272	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	54,005	–	–	–	–	54,005	54,005	31 Dec 2025	–	–	–
	23 Mar 2022	£ 58.00	44,414	–	–	–	–	44,414	44,414	31 Dec 2026	–	–	–
	22 Mar 2023	£ 53.19	–	50,672	–	–	–	50,672	50,672	31 Dec 2027	–	–	–
Alfredo Barrios													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	7,497	–	–	1,794	(9,291)	–	–	1 Dec 2023	1 Dec 2023	£ 55.57	641,910
	23 Mar 2022	£ 58.00	6,466	–	–	–	–	6,466	6,466	1 Dec 2024	–	–	–
	22 Mar 2023	£ 53.19	–	5,549	–	–	–	5,549	5,549	1 Dec 2025	–	–	–
Performance Share Awards[4]	15 May 2018	£ 42.30	66,050	–	–	23,159	(89,209)	–	–	31 Dec 2022	23 Feb 2023	£ 59.22	6,568,228
	18 Mar 2019	£ 42.67	57,011	–	–	–	–	57,011	57,011	31 Dec 2023	–	–	–
	16 Mar 2020	£ 33.58	53,236	–	–	–	–	53,236	53,236	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	54,652	–	–	–	–	54,652	54,652	31 Dec 2025	–	–	–
	23 Mar 2022	£ 58.00	43,707	–	–	–	–	43,707	43,707	31 Dec 2026	–	–	–
	22 Mar 2023	£ 53.19	–	51,626	–	–	–	51,626	51,626	31 Dec 2027	–	–	–
Peter Cunningham													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	1,402	–	–	335	(1,737)	–	–	1 Dec 2023	1 Dec 2023	£ 55.57	120,008
	23 Mar 2022	£ 58.00	5,203	–	–	–	–	5,203	5,203	1 Dec 2024	–	–	–
	22 Mar 2023	£ 53.19	–	5,827	–	–	–	5,827	5,827	1 Dec 2025	–	–	–
Management Share Awards	16 Mar 2020	£ 33.58	3,713	–	–	838	(4,551)	–	–	23 Feb 2023	23 Feb 2023	£ 59.22	335,078
	18 Mar 2021	£ 55.58	4,781	–	–	–	–	4,781	4,781	22 Feb 2024	–	–	–
Performance Share Awards[4]	15 May 2018	£ 42.30	7,229	–	–	2,534	(9,763)	–	–	31 Dec 2022	23 Feb 2023	£ 59.22	718,824
	18 Mar 2019	£ 42.67	6,489	–	–	–	–	6,489	6,489	31 Dec 2023	–	–	–
	16 Mar 2020	£ 33.58	7,426	–	–	–	–	7,426	7,426	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	9,564	–	–	–	–	9,564	9,564	31 Dec 2025	–	–	–
	23 Mar 2022	£ 58.00	50,405	–	–	–	–	50,405	50,405	31 Dec 2026	–	–	–
	22 Mar 2023	£ 53.19	–	55,134	–	–	–	55,134	55,134	31 Dec 2027	–	–	–
Sinead Kaufman													
Bonus Deferral Awards	18 Mar 2021	A$110.80	1,408	–	–	269	(1,677)	–	–	1 Dec 2023	1 Dec 2023	A$124.69	138,932
	23 Mar 2022	A$113.68	4,711	–	–	–	–	4,711	4,711	1 Dec 2024	–	–	–
	22 Mar 2023	A$115.45	–	4,278	–	–	–	4,278	4,278	1 Dec 2025	–	–	–
Management Share Awards	16 Mar 2020	A$77.65	4,289	–	–	871	(5,160)	–	–	23 Feb 2023	23 Feb 2023	A$122.58	420,249
Performance Share Awards[4]	15 May 2018	A$ 83.61	6,322	–	–	2,002	(8,324)	–	–	31 Dec 2022	23 Feb 2023	A$122.58	677,937
	18 Mar 2019	A$93.32	6,291	–	–	–	–	6,291	6,291	31 Dec 2023	–	–	–
	16 Mar 2020	A$77.65	8,579	–	–	–	–	8,579	8,579	31 Dec 2024	–	–	–
	18 Mar 2021	A$110.80	41,207	–	–	–	–	41,207	41,207	31 Dec 2025	–	–	–
	23 Mar 2022	A$113.68	36,042	–	–	–	–	36,042	36,042	31 Dec 2026	–	–	–
	22 Mar 2023	A$115.45	–	40,045	–	–	–	40,045	40,045	31 Dec 2027	–	–	–

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Name	Award/ grant date	Market price at award[1,2]	1 January 2023	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2023	7 February 2024	Vesting period concludes	Date of release	Market price at release	Market value of award at release US$[3]
Jakob Stausholm													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	9,680	–	–	2,316	(11,996)	–	–	1 Dec 2023	1 Dec 2023	£ 55.57	828,797
	23 Mar 2022	£ 58.00	13,017	–	–	–	–	13,017	13,017	1 Dec 2024	–	£ –	–
	22 Mar 2023	£ 53.19	–	10,488	–	–	–	10,488	10,488	1 Dec 2025	–	£ –	–
Performance Share Awards[4]	10 Sept 2018	£ 35.16	29,886	–	–	10,008	(39,894)	–	–	31 Dec 2022	23 Feb 2023	£ 59.22	2,937,292
	18 Mar 2019	£ 42.67	79,609	–	–	–	–	79,609	79,609	31 Dec 2023	–	–	–
	16 Mar 2020	£ 33.58	74,711	–	–	–	–	74,711	74,711	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	103,510	–	–	–	–	103,510	103,510	31 Dec 2025	–	–	–
	23 Mar 2022	£ 58.00	85,126	–	–	–	–	85,126	85,126	31 Dec 2026	–	–	–
	22 Mar 2023	£ 53.19	–	93,114	–	–	–	93,114	93,114	31 Dec 2027	–	–	–
Simon Trott													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	6,392	–	–	1,529	(7,921)	–	–	1 Dec 2023	1 Dec 2023	£ 55.57	547,257
	23 Mar 2022	A$113.68	5,494	–	–	–	–	5,494	5,494	1 Dec 2024	–	–	–
	22 Mar 2023	A$115.45	–	4,683	–	–	–	4,683	4,683	1 Dec 2025	–	–	–
Performance Share Awards[4]	15 May 2018	£ 42.30	57,188	–	–	20,052	(77,240)	–	–	31 Dec 2022	23 Feb 2023	£ 59.22	5,686,981
	18 Mar 2019	£ 42.67	50,598	–	–	–	–	50,598	50,598	31 Dec 2023	–	–	–
	16 Mar 2020	£ 33.58	52,838	–	–	–	–	52,838	52,838	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	49,571	–	–	–	–	49,571	49,571	31 Dec 2025	–	–	–
	23 Mar 2022	A$113.68	38,204	–	–	–	–	38,204	38,204	31 Dec 2026	–	–	–
	22 Mar 2023	A$115.45	–	44,488	–	–	–	44,488	44,488	31 Dec 2027	–	–	–
Ivan Vella[5]													
Bonus Deferral Awards	18 Mar 2021	£ 55.58	1,525	–	(1,525)	–	–	–	–	1 Dec 2023	–	–	–
	23 Mar 2022	£ 58.00	5,288	–	(5,288)	–	–	–	–	1 Dec 2024	–	–	–
	22 Mar 2023	£ 53.19	–	4,261	(4,261)	–	–	–	–	1 Dec 2025	–	–	–
Management Share Awards	16 Mar 2020	A$77.65	1,931	–	–	392	(2,323)	–	–	23 Feb 2023	23 Feb 2023	A$122.58	189,194
Performance Share Awards[4]	15 May 2018	A$83.61	13,376	–	–	4,237	(17,613)	–	–	31 Dec 2022	23 Feb 2023	A$122.58	1,434,467
	18 Mar 2019	A$93.32	8,570	–	(8,570)	–	–	–	–	31 Dec 2023	–	–	–
	16 Mar 2020	A$77.65	3,862	–	(3,862)	–	–	–	–	31 Dec 2024	–	–	–
	18 Mar 2021	£ 55.58	51,025	–	(51,025)	–	–	–	–	31 Dec 2025	–	–	–
	23 Mar 2022	£ 58.00	41,731	–	(41,731)	–	–	–	–	31 Dec 2026	–	–	–
	22 Mar 2023	£ 53.19	–	48,648	(48,648)	–	–	–	–	31 Dec 2027	–	–	–

1. Awards denominated in pounds sterling were for Rio Tinto plc ordinary shares of 10 pence each and awards denominated in Australian dollars were for Rio Tinto Limited shares. All awards are granted over ordinary shares.
2. The weighted fair value per share of BDA and MSA granted in March 2023 was £52.85 and £52.80 respectively for Rio Tinto plc and A$114.28 and A$114.17 for Rio Tinto Limited and for PSA was £28.41 for Rio Tinto plc and A$61.66 for Rio Tinto Limited. Conditional awards are awarded at no cost to the recipient and no amount remains unpaid on any shares awarded.
3. The amount in US dollars has been converted at the rate of US$0.80432 = £1 and US$1.50509 = A$1, being the average exchange rates for 2023.
4. For the PSA granted on 18 March 2019 with a performance period that concluded on 31 December 2023, 94.1% of the award vested.
5. Ivan Vella ceased to be a KMP effective 23 October 2023 and his employment with Rio Tinto terminated on 15 November 2023. All unvested awards held were lapsed.
6. The closing price at 31 December 2023 was £58.42 for Rio Tinto plc shares and was A$135.66 for Rio Tinto Limited shares. The high and low prices during 2023 of Rio Tinto plc and Rio Tinto Limited shares were £64.06 and £45.09 and A$136.65 and A$102.51 respectively.
7. As of 7 February 2024, the above members of the Executive Committee held 1,530,214 shares awarded and not vested under the LTIP and STIP deferral arrangements. No Executive Committee member held any options.

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Table 3a – Plan interests (award of shares under all-employee share arrangements)

		myShare		UK Share Plan				Total activity in 2023		
	Plan interests at 1 January 2023[1]	Value of Matching shares awarded in year[2] (U$'000)	Value of Matching shares vested in year[3] (U$'000)	Value of Matching shares awarded in year[2] (U$'000)	Value of Matching shares vested in year[3] (U$'000)	Value of Free shares awarded in year[4] (U$'000)	Value of Free shares vested in year[4] (U$'000)	Grants in year (U$'000)	Vesting in year (U$'000)	Plan interests at 31 December 2023[1]
Bold Baatar	388.5	2	3	2	2	4	6	8	11	357.6
Alfredo Barrios	196.4	5	6	0	0	0	0	5	6	205.4
Peter Cunningham	300.5	2	3	0	0	4	6	6	9	274.6
Sinead Kaufman	158.7	4	6	0	0	0	0	4	6	148.8
Jakob Stausholm	388.5	2	3	2	2	4	6	8	11	357.6
Simon Trott[5]	0	0	0	0	0	0	0	0	0	0.0
Ivan Vella	152.9	4	5	0	0	0	0	4	5	0.0

1. All shares shown are Rio Tinto plc shares except in the case of Sinead Kaufman which are Rio Tinto Limited shares. Ivan Vella held a combination of Rio Tinto plc and Rio Tinto Limited shares.
2. myShare and UK Share Plan Matching share awards are granted on a quarterly basis (in January, April, July and October) throughout the year.
3. The vesting of a Matching share is dependent on continued employment with Rio Tinto and the retention of the associated Investment share purchased by the participant for three years.
4. UK Share Plan Free shares vest after three years.
5. Simon Trott suspended participation in myShare effective October 2019, resulting in no activity during 2023.
6. UK Share Plan awards shown above and the vested Matching shares under myShare are included, where relevant, in the executive's share interests in table 2.
7. The value of shares is rounded.

Audited information

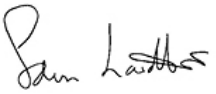
Under Schedule 8 of the *Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended), the following information is auditable:

- The 2023 performance for the purposes of the STIP on pages 129–132.
- The single total figure of remuneration for each Director, as set out on page 129 and table 1b on page 142.
- Details of the Directors' total pension entitlements, as set out on page 129.
- Details of taxable benefits on page 129.
- Details of scheme interests awarded to the Directors during the financial year, as set out on page 134 and tables 3 and 3a on pages 143–145.
- Details of payments to past Directors as set out on page 136.
- Details of shareholding ownership policy and Directors' share ownership on pages 136 and 140.
- Statement of the Directors' shareholdings and share interests, as set out in tables 2, 3 and 3a on pages 142–145 of the Implementation report.
- STIP objectives and outcomes for 2023 as set out on pages 129–132 and LTIP outcome and award granted for 2023 as set out on page 134.

The Australian Securities and Investments Commission issued an order dated 16 July 2021, under which the Remuneration report must be prepared and audited in accordance with the requirements of the Australian *Corporations Act 2001* applied on the basis of certain modifications set out in the order (as detailed on page 265). The information provided in the Remuneration report has been audited as required by section 308 (3C) of the Australian *Corporations Act 2001*.

Directors' approval statement

This Directors' Remuneration report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:



Sam Laidlaw

People & Remuneration Committee Chair

21 February 2024

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Additional statutory disclosure

The Directors present their report and audited consolidated financial statements for the year ended 31 December 2023.

Scope of this report

For the purposes of UK company law and the Australian *Corporations Act 2001*:

- The additional disclosures under the heading "Shareholder information" on pages 347-354 are hereby incorporated by reference to, and form part of, this Directors' report.
- The Strategic report on pages 1-89 provides a comprehensive review of Rio Tinto's operations, its financial position and its business strategies and prospects, and is incorporated by reference into, and forms part of, this Directors' report.
- Certain items that would ordinarily need to be included in this Directors' report (including an indication of likely future developments in the business of the company and the Group) have, as permitted, instead been discussed in the Strategic report, while details of the Group's policy on addressing financial risks and details about financial instruments are shown in note 24 to the Group financial statements.
- Taken together, the Strategic report and this Directors' report are intended to provide a fair, balanced and understandable assessment of the development and performance of the Group's business during the year and its position at the end of the year; its strategy; likely developments; and any principal or emerging risks and uncertainties associated with the Group's business.
- The Directors' declaration on page 266 is also incorporated into this Directors' report.

For the purposes of compliance with DTR 4.1.5R(2) and DTR 4.1.8R, the required content of the "Management report" can be found in the Strategic report or this Directors' report, including the material incorporated by reference.

A full report on Director and executive remuneration and shareholdings can be found in the Remuneration report on pages 113-145, which, for the purposes of the Australian *Corporations Act 2001*, forms part of this Directors' report.

Dual-listed structure and constitutional documents

The dual-listed companies (DLC) structure of Rio Tinto plc and Rio Tinto Limited, and their constitutional provisions and voting arrangements – including restrictions that may apply to the shares of either company under specified circumstances – are described on pages 347-348.

Operating and financial review

Rio Tinto's principal activities during 2023 were mining minerals and metals throughout the lifecycle from exploration, development, mining and processing, marketing, and repurposing and renewing our assets to create a positive legacy.

Subsidiaries, joint operations, joint ventures and associated undertakings, principally affecting the profits or net assets of the Group in the year, are listed in notes 30-32 to the financial statements.

The following significant changes and events affected the Group during 2023 and up to the date of this report:

- In February 2023, we released our 2022 *Climate Change Report*, including our *Climate Action Plan*, to the Australian Securities Exchange.
- In February 2023, we announced changes to the estimates of Ore Reserves at Rio Tinto Kennecott copper operations' Bingham Canyon deposit in Utah; Mineral Resources at Winu copper project in Western Australia; Mineral Resources at QIT Madagascar Minerals' Petriky mineral sands deposit in Madagascar; and Ore Reserves at Richards Bay's Minerals Zulti South mineral sands deposit in South Africa.
- In March 2023, we resolved a previously self-disclosed investigation by the U.S. Security Exchange Commission (SEC) into certain contractual payments made to a former consultant in 2011, relating to the Simandou project in the Republic of Guinea. Without admitting to or denying the SEC's findings, Rio Tinto paid a $15 million civil penalty for violations of the books and records and internal controls provisions of the US *Foreign Corrupt Practices Act*. This payment did not have a significant effect on Rio Tinto's financial position or profitability.
- In March 2023, we priced US$650 million of ten-year fixed rate SEC-registered debt securities and US$1.1 billion of 30-year fixed rate SEC-registered debt securities. The bonds were issued by Rio Tinto Finance (USA) plc and are fully and unconditionally guaranteed by Rio Tinto plc and Rio Tinto Limited. The ten-year notes will pay a coupon of 5.000% and will mature on 9 March 2033 and the 30-year notes will pay a coupon of 5.125% and will mature on 9 March 2053.
- In March 2023, we announced the appointment of Dean Dalla Valle and Susan Lloyd-Hurwitz to the Board as Non-Executive Directors. Mr Dalla Valle and Ms Lloyd-Hurwitz, both Australian citizens, joined the Board on 1 June 2023.
- In March 2023, we announced that we and First Quantum Minerals entered into an agreement to form a joint venture that will work to unlock the development of the La Granja copper project in Peru. The transaction was expected to be completed by Q3 of 2023.
- In April 2023, we announced we supported Energy Resources of Australia Ltd's (ERA) plans for an Interim Entitlement Offer (IEO), which seeks to raise up to A$369 million to address funding requirements for the Ranger Rehabilitation Project in Australia's Northern Territory to the end of Q2 2024. Rio Tinto, which owns 86.3% of ERA's shares, pre-committed to subscribe for its full entitlements under the terms of the IEO, at a cost of A$319 million.
- In May 2023, we announced that we had published our report on payments to governments made by Rio Tinto plc and its subsidiary undertakings for the year ended 31 December 2022, as required under the UK's *Report on Payments to Governments Regulations 2014* (as amended in December 2015), and it had been filed at Companies House. We paid US$10.8 billion of taxes and royalties and a further US$1.6 billion on behalf of our employees during 2022.
- In June 2023, we announced we will invest $1.1 billion to expand our state-of-the-art AP60 aluminium smelter equipped with low-carbon technology at Complexe Jonquière in Canada. The total investment includes up to $113 million of financial support from the Quebec government. This expansion, which will coincide with the gradual closure of potrooms at the Arvida smelter on the same site, will enable Rio Tinto to continue to meet customers' demands for low-carbon, high-quality aluminium for use in transportation, construction, electrical and consumer goods.
- In June 2023, we announced that we had an approved investment of $498 million to deliver underground development and infrastructure for an area known as the North Rim Skarn at our Kennecott operation in Utah. Production will commence in 2024 and is expected to ramp up over two years, to deliver around 250 thousand tonnes[1] of additional mined copper over the next ten years alongside open cut operations. This investment will strengthen the supply of copper in the US by increasing production from underground mining and improving the health of key assets.

1. The production target of around 250 thousand tonnes of additional mined copper over the next ten years (2023 to 2033) at Kennecott was previously reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 titled "Rio Tinto invests to strengthen copper supply in US". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.

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- In July 2023, we announced that we had entered into an agreement with Giampaolo Group to form a joint venture to manufacture and market recycled aluminium products with Rio Tinto acquiring a 50% equity stake in Matalco business for $700 million[1].
- In July 2023, we hosted an investor visit to the Oyu Tolgoi copper mine in Mongolia, set to be the world's fourth largest mine by 2030.
- In August 2023, we announced that we and the Simfer joint venture had reached an important milestone by concluding key agreements with the Republic of Guinea and Winning Consortium Simandou on the trans-Guinean infrastructure for the world class Simandou iron ore project.
- In August 2023, we announced that we and First Quantum Minerals completed the transaction to form a joint venture that will work to unlock the development of the La Granja project in Peru, one of the largest undeveloped copper deposits in the world. First Quantum acquired a 55% stake in the project for $105 million, and committed to further invest up to $546 million into the joint venture to solely fund capital and operational costs to take the project through a feasibility study and toward development.
- In October 2023, we hosted an investor tour to our Pilbara iron ore operations in Western Australia. We showcased our world class ports, autonomous rail network and 17 mines, including our newest mine Gudai-Darri, and the Rhodes Ridge project, one of the world's largest and highest quality undeveloped iron ore deposits.
- In October 2023, we announced the appointment of Joc O'Rourke to the Board as Non-Executive Director. Mr O'Rourke, a dual Canadian/Australian national, joined the Board on 25 October 2023.
- In November 2023, we reached a court approved settlement with SEC related to the disclosure of the impairment of Rio Tinto Coal Mozambique reflected in the 2012 year-end accounts.
- In December 2023, we announced completion of the Matalco joint venture, combining the strengths of North America's largest primary and secondary aluminium producers to meet the growing demand from manufacturers for low carbon materials. Following the receipt of all regulatory approvals, Rio Tinto has acquired a 50% equity stake in the Matalco business from Giampaolo Group for $738 million.
- In December 2023, we provided an update on the Simandou project, which is being progressed through the Simfer joint venture in partnership with Chalco Iron Ore Holdings (CIOH), a Chinalco-led consortium and the Republic of Guinea. First production from the Simfer mine is expected in 2025, ramping up over three months to an annualised capacity of 60 million tonnes per year.[2]
- In December 2023, we hosted an investor seminar in Sydney where we gave an update on progress in our long-term strategy of investing. Executives also outlined the progress that was made in 2023, which has been a pivotal year in the Group's copper production.
- In December 2023, Megan Clark stepped down as Non-Executive Director.
- In December 2023, Martina Merz and Sharon Thorne were appointed as Non-Executive Directors. Martina Merz joined the Board on 1 February 2024 and Sharon Thorne will join on 1 July 2024.
- In December 2023 we published our Country by Country Report for 2022, supplementing the comprehensive disclosures in our 2022 Taxes and Royalties Paid Report to disclose associated financial information on a country by country basis for all countries where we had a taxable presence in 2022.

For more information visit riotinto.com/invest.

In 2023 and 2022, the Group did not receive any public takeover offers from third parties in respect of Rio Tinto plc shares or Rio Tinto Limited shares. In 2022, Rio Tinto made, had accepted and completed a takeover offer for all of the remaining shares of Turquoise Hill Resources (TRQ) that we did not own.

Details of events that took place after the balance sheet date are further described in note 39 to the financial statements.

Risk identification, assessment and management

The Group's principal risks and uncertainties are listed on pages 81-88. The Group's approach to risk management is discussed on pages 79-80.

Share capital

Details of the Group's share capital as at 31 December 2023 are described in note 34 to the financial statements. Details of the rights and obligations attached to each class of shares are covered on pages 347-348, under the heading "Voting arrangements".

Details of certain restrictions on holding shares in Rio Tinto and certain consequences triggered by a change of control are described on page 348 under the heading "Limitations on ownership of shares and merger obligations". There are no other restrictions on the transfer of ordinary Rio Tinto shares, save for:

- Restrictions that may from time to time be imposed by laws, regulations or Rio Tinto policy (for example, relating to market abuse, insider dealing, share trading or an Australian foreign investment).
- Restrictions on the transfer of shares that may be imposed following a failure to supply information required to be disclosed, or where registration of the transfer may breach a court order or a law, or in relation to unmarketable parcels of shares.
- Restrictions on the transfer of shares held under certain employee share plans while they remain subject to the plan.

At the AGMs held in 2023, shareholders authorised:

- The on-market purchase by Rio Tinto plc or Rio Tinto Limited or its subsidiaries of up to 125,083,217 Rio Tinto plc shares (representing approximately 10% of Rio Tinto plc's issued share capital, excluding Rio Tinto plc shares held in Treasury at that time).
- The off-market purchase by Rio Tinto plc of up to 125,083,217 Rio Tinto plc shares acquired by Rio Tinto Limited or its subsidiaries under the above authority.
- The off-market and/or on-market buy-back by Rio Tinto Limited of up to 55.6 million Rio Tinto Limited shares (representing approximately 15% of Rio Tinto Limited's issued share capital at that time).

Substantial shareholders

Details of substantial shareholders are included on page 349.

Dividends

Details of dividends paid and declared for payment, together with the company's shareholder returns policy, can be found on page 29.

Directors and executives

The names of Directors and their periods of appointment are listed on pages 92-93, together with details of each Director's qualifications, experience and responsibilities, and current directorships.

There are no family relationships between any of our Directors or executives. None of our Directors or Executive Committee members are elected or appointed under any arrangement or understanding with any major shareholder, customer, supplier or otherwise.

A table of Directors' attendance at Board and committee meetings during 2023 is on page 104.

Previous listed directorships

Details of each Director's previous directorships of other listed companies (where relevant) held in the past three years are set out below:

Martina Merz: thyssenkrupp AG (February 2019-June 2023)

Directors' and executives' beneficial interests

A table of Directors' and executives' beneficial interests in Rio Tinto shares is on page 142.

Secretaries

Andy Hodges is Group Company Secretary and Company Secretary of Rio Tinto plc. Tim Paine is the Company Secretary of Rio Tinto Limited. Andy's and Tim's qualifications and experience are described on page 93.

1. This figure is subject to closing adjustments.
2. The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the Australian Securities Exchange (ASX) dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.

Indemnities and insurance

The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited provide for them to indemnify, to the extent permitted by law, Directors and officers of the companies, including officers of certain subsidiaries, against liabilities arising from the conduct of the Group's business. The Directors, Group Company Secretary and Company Secretary of Rio Tinto Limited, together with employees serving as Directors of eligible subsidiaries at the Group's request, have also received similar direct indemnities. Former Directors also received indemnities for the period in which they were Directors. These are qualifying third-party indemnity provisions for the purposes of the UK *Companies Act 2006*, in force during the financial year ended 31 December 2023 and up to the date of this report. During 2023, Rio Tinto paid legal costs under the terms of those indemnities for certain former Directors and officers totalling $1,878,654.

Qualifying pension scheme indemnity provisions (as defined by section 235 of the UK *Companies Act 2006* and other applicable legal jurisdictions) were in force during the course of the financial year ended 31 December 2023 and up to the date of this Directors' report, for the benefit of trustees of the Rio Tinto Group pension and superannuation funds across various jurisdictions. No amount has been paid under any of these indemnities during the year.

The Group has agreed to pay a premium for Directors' and officers' insurance. Disclosure of the nature of the liability covered by the insurance and premium paid is subject to confidentiality requirements under the contract of insurance.

Labour relations

We also work together with our employees and their unions, and we seek constructive dialogue and fair solutions while maintaining the competitiveness of our managed operations. In 2023, we had no union industrial actions.

Employment of people with a disability

We acknowledge the systemic barriers facing people with disabilities in attaining meaningful employment. We further acknowledge the efforts necessary to fully support people with disabilities and we seek to implement the accommodations they need to fulfil their role, or an alternative role if required.

Our Inclusion and Diversity Policy sets out our expectations around the behaviours needed for an inclusive and diverse workplace, where we embrace different perspectives, valuing diversity as a strength.

Our Employment Policy outlines how we are committed to preventing discrimination and that we employ on the basis of job requirements and do not discriminate on grounds of disability or any other protected characteristic. It also explains how we ensure our people are trained to perform their roles. More information can be found at riotinto.com/policies.

We remain a member of the IncludeAbility Employer Network, which was set up by the Australian Human Rights Commission and aims to increase access to meaningful employment opportunities for people with a disability. We will continue to seek ways to improve how we provide meaningful opportunities for people with a disability and are also working to reduce these barriers as part of our response to the recommendations in the *Everyday Respect Report*.

Engagement with UK employees

Our statement on engagement with UK employees is on page 96-97.

Engagement with suppliers, customers and others in a business relationship with the company

Our statement on engagement with suppliers, customers and others in a business relationship with the company is on page 98-99.

Waived dividends

The number of shares on which Rio Tinto plc dividends are based excludes those held as treasury shares and those held by employee share trusts that waived the right to dividends. Employee share trusts waived dividends on 110,774 Rio Tinto plc ordinary shares and 31,831 American depository receipts (ADRs) for the 2022 final dividend, and on 99,016 Rio Tinto plc ordinary shares and 35,066 ADRs for the 2023 interim dividend. (2021: on 194,321 Rio Tinto plc ordinary shares and 30,162 ADRs for the 2021 final dividend and on 111,443 Rio Tinto plc ordinary shares and 35,132 ADRs for the 2023 interim dividend; 2021: on 101,752 Rio Tinto plc ordinary shares and 27,873 ADRs for the 2020 final dividend and on 91,008 Rio Tinto plc ordinary shares and 27,501 ADRs for the 2021 interim dividend). In 2023, 2022 and 2021, no Rio Tinto Limited shares were held by Rio Tinto plc.

The number of shares on which Rio Tinto Limited dividends are based, excludes those held by shareholders who have waived the rights to dividends. Employee share trusts waived dividends on 35,010 Rio Tinto Limited ordinary shares for the 2022 final dividend and on 34,607 shares for the 2023 interim dividend (2022: on 36,517 shares for the 2021 final dividend and 31,368 shares for the 2022 interim dividend; 2021: on 45,250 shares for the 2020 final dividend and 33,531 shares for the 2021 interim dividend).

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Purchases

Rio Tinto plc shares of 10p each and Rio Tinto plc American Depositary Receipts (ADRs)

	Total number of shares purchased[1]	Average price per share US$[2]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans	Total number of shares purchased as part of publicly announced plans or programs[3]	Maximum number of shares that may be purchased under plans or programs
2023						
1 to 31 Jan	–	–	–	–	–	124,921,573[5]
1 to 28 Feb	–	–	–	–	–	124,921,573[5]
1 to 31 Mar	–	–	–	–	–	124,921,573[5]
1 to 30 Apr	586,662	67.61	393,248	193,414	–	125,083,217[6]
1 to 31 May	56,348	61.77	–	56,348	–	125,083,217[6]
1 to 30 Jun	–	–	–	–	–	125,083,217[6]
1 to 31 Jul	–	–	–	–	–	125,083,217[6]
1 to 31 Aug	–	–	–	–	–	125,083,217[6]
1 to 30 Sep	503,079	63.37	342,910	160,169	–	125,083,217[6]
1 to 31 Oct	28,991	61.54	–	28,991	–	125,083,217[6]
1 to 30 Nov	–	–	–	–	–	125,083,217[6]
1 to 31 Dec	–	–	–	–	–	125,083,217[6]
Total	1,175,080[4]	65.36	736,158	438,922	–	–
2024						
1 to 31 Jan	–	–	–	–	–	125,083,217[6]
1 to 07 Feb	–	–	–	–	–	125,083,217[6]

Rio Tinto Limited shares

	Total number of shares purchased[1]	Average price per share $[2]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans[7]	Total number of shares purchased as part of publicly announced plans or programs[3]	Maximum number of shares that may be purchased under plans or programs
2023						
1 to 31 Jan	–	–	–	–	–	55,600,000[8]
1 to 28 Feb	–	–	–	–	–	55,600,000[8]
1 to 31 Mar	–	–	–	–	–	55,600,000[8]
1 to 30 Apr	733,797	77.39	572,918	160,879	–	55,600,000[8]
1 to 31 May	41,021	71.54	–	41,021	–	55,600,000[9]
1 to 30 Jun	–	–	–	–	–	55,600,000[9]
1 to 31 Jul	–	–	–	–	–	55,600,000[9]
1 to 31 Aug	–	–	–	–	–	55,600,000[9]
1 to 30 Sep	595,223	73.31	459,671	135,552	–	55,600,000[9]
1 to 31 Oct	167,043	71.79	–	167,043	–	55,600,000[9]
1 to 30 Nov	–	–	–	–	–	55,600,000[9]
1 to 31 Dec	705,351	90.06	–	705,351	–	55,600,000[9]
Total	2,242,436	79.77	1,032,589	1,209,847	–	–
2024						
1 to 31 Jan	–	–	–	–	–	55,600,000[9]
1 to 07 Feb	–	–	–	–	–	55,600,000[9]

1. Monthly totals of purchases are based on the settlement date.
2. The shares were purchased in the currency of the stock exchange on which the purchases took place and the sale price has been converted into US dollars at the exchange rate on the date of settlement.
3. Shares purchased in connection with the dividend reinvestment plans and employee share plans are not deemed to form any part of any publicly announced plan or program.
4. This figure represents 0.0936% of Rio Tinto plc issued share capital at 31 December 2023.
5. At the Rio Tinto plc AGM held in 2022, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 124,921,573 Rio Tinto plc shares. This authorisation expired at the 2023 AGM on 6 April 2023.
6. At the Rio Tinto plc AGM held in 2023, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 125,083,217 Rio Tinto plc shares. This authorisation will expire on the later of 5 July 2024 or the date of the 2024 AGM.
7. The average price of shares purchased on-market by the trustee of Rio Tinto Limited's employee share trust during 2023 was $82.77.
8. At the Rio Tinto Limited AGM held in 2022, shareholders authorised the off-market and/or on-market buy-back of up to 55.6 million Rio Tinto Limited shares.
9. At the Rio Tinto Limited AGM held in 2023, shareholders authorised the off-market and/or on-market buy-back of up to 55.6 million Rio Tinto Limited shares.

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Political donations

Rio Tinto prohibits the use of its funds to support political candidates or parties. No donations were made by the Group to parties or political candidates during the year. At Rio Tinto, we respect every country's political process and do not get involved in political matters, nor do we make any type of payments to political parties or political candidates. In the US, in accordance with the *Federal Election Campaign Act*, we provide administrative support for the Rio Tinto America Political Action Committee (PAC), which was created in 1990 and encourages voluntary employee participation in the political process. All Rio Tinto America PAC employee contributions are reviewed for compliance with federal and state laws and are publicly reported in accordance with US election laws. The PAC is controlled by neither Rio Tinto nor any of its subsidiaries, but instead by a governing board of five employee members on a voluntary basis. In 2023, contributions to Rio Tinto America PAC by 12 employees amounted to $10,425 and Rio Tinto America PAC donated $17,500 in political contributions in 2023.

Government regulations

Our operations around the world are subject to extensive laws and regulations imposed by local, state, provincial and federal governments. In addition to these laws, several of our operations are governed by specific agreements made with governments, some of which are enshrined in legislation.

The geographic and product diversity of our operations reduces the likelihood of any single law or government regulation having a material effect on the Group's business as a whole.

Environmental regulations

Rio Tinto is subject to various environmental laws and regulations in the countries where it has operations. We measure our performance against environmental regulation by tracking and rating incidents according to their actual environmental and compliance impacts using five severity categories (very low, low, moderate, high or very high). Incidents with a consequence rating of high or very high are of a severity that requires notification to the relevant product group head and the Rio Tinto Chief Executive immediately after the incident occurring. In 2023, there were one environmental incidents at managed operations with a high impact.

During 2023, eight managed operations incurred fines amounting to $986,968 (2022: $109,782). Details of these fines are reported in the Our approach to ESG section on page 63.

Australian corporations that exceed specific greenhouse gas (GHG) emissions or energy use thresholds have obligations under the Australian *The National Greenhouse and Energy Reporting Act 2007* (NGER). All Rio Tinto entities covered under this Act have submitted their annual NGER reports by the required 31 October 2023 deadline.

Further information on the Group's environmental performance is included in the Our approach to ESG section on pages 44-58, and at riotinto.com/sustainabilityreporting.

Energy efficiency action

Details of the measures taken to increase the company's energy efficiency are reported on pages 45-58.

Energy consumption[1, 2, 3]

Energy consumption in GWh	2023	2022[5]
From activities including the combustion of fuel and the operation of facilities	**85,463**	84,619
From the net purchase of electricity, heat, steam or cooling	**27,421**	25,065
Total energy consumed[4]	**112,884**	109,684

1. Rio Tinto does not report on the proportion of energy consumption associated with the UK and offshore area since it has no producing assets in the UK, only offices, and consequently falls below Rio Tinto's threshold level of reporting.
2. Our approach and methodology used for the determination of measuring energy consumption is available at riotinto.com.
3. Data reported is 100% managed basis, without adjustment for equity interest. Includes total energy less export to others..
4. Rio Tinto exports electricity and steam to others and exports are netted from our purchases.
5. Numbers restated from those originally published to ensure comparability over time.

Greenhouse gas (GHG) emissions (in million tonnes CO_2e)[6, 7, 8]

	2023	2022[13]
Scope 1[9]	**23.3**	22.7
Scope 2[10]	**9.3**	9.6
Net GHG emissions[11]	**32.6**	32.3[14]
Operational emissions intensity (tCO_2e/t Cu-eq)(equity)[12]	**6.8**	7.0

6. Rio Tinto's GHG emissions for our operations (RT share: equity basis) are reported in accordance with the requirements under Part 7 of the UK *Companies Act 2006* (Strategic report and Directors' report) Regulations 2013. This GHG data represents Scope 1 and market-based Scope 2 data on equity basis. Our approach and methodology used for the determination of these emissions are available at riotinto.com.
7. Rio Tinto's GHG emissions inventory is based on definitions provided by The World Resource Institute/ World Business Council for Sustainable Development Greenhouse Gas Protocol: A Carbon Reporting and Accounting Standard (Revised Edition) (2015).
8. Rio Tinto does not report on the proportion of CO_2 emissions associated with the UK and offshore area since it has no producing assets in the UK, only offices, and consequently falls below Rio Tinto's threshold level of reporting.
9. Scope 1 GHG emissions are direct GHG emissions from facilities fully or partially owned or controlled by Rio Tinto (equity share basis). They include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock.
10. In 2023, Rio Tinto reviewed all Scope 2 emissions sources and transitioned to a dual Scope 2 reporting method. Location-based method reflects the emissions grid intensity of the location which the operation is located and includes the percentage of renewables that make up the total unadjusted grid intensity. Market-based method counts commercial decisions to purchase the unique rights to renewable energy as zero emissions and applies a residual mix factor (or similar) to the remaining MWh purchased. The residual mix factor is typically equivalent to the grid intensity with renewable attributes that have been sold removed from the factor. Scope 2 GHG emissions are GHG emissions from the electricity, heat or steam brought in from third parties (indirect emissions). Scope 2 emission factors are consistent with the Australian National Greenhouse and Energy Reporting Measurement Determination 2008 for Australian operations location-based reporting. For non-Australian operations, where possible, factors are sourced from public grid level data or electricity retailers. Scope 2 emissions are presented on equity share basis, for market-based reporting Scope 2 includes the use of renewable electricity certificates.
11. Total emissions are the sum of Scope 1 and Scope 2 emissions. These emissions exclude indirect emissions associated with transportation and use of our products reported under Scope 3 emissions at riotinto.com.
12. Historical information for copper equivalent intensity has been restated in line with the 2023 review of commodity pricing to allow comparability over time.
13. Numbers restated from those originally published to ensure comparability over time using market-based method for Scope 2 reporting.
14. Actual 2022 emissions. To evaluate our progress against our targets, we also disclose adjusted 2022 Scope 1 and 2 emissions on a baseline equivalent basis of 32.7Mt CO_2e.

Exploration, research and development

The Group carries out exploration, research and development as described in the product group pages on pages 32-39. Exploration and evaluation costs, net of any gains and losses on disposal, generated a net loss before tax of $1,230 million (2022: $896 million). Research and development costs were $245 million (2022: $76 million).

Financial instruments

Details of the Group's financial risk management objectives and policies, and exposure to risk, are described in note 24 to the financial statements.

Dealing in Rio Tinto securities

Rio Tinto securities dealing policy restricts dealing in Rio Tinto securities by Directors and employees who may be in possession of inside information. These individuals must seek clearance before any proposed dealing takes place.

Our policy also prohibits such persons from engaging in hedging or other arrangements that limit the economic risk in connection to Rio Tinto securities issued, or otherwise allocated, as remuneration that are either unvested, or that have vested but remain subject to a holding period. We also impose restrictions on a broader group of employees, requiring them to seek clearance before engaging in similar arrangements over any Rio Tinto securities.

Financial reporting

Financial statements

The Directors are required to prepare financial statements for each financial period that give a true and fair view of the state of the Group at the end of the financial period, together with profit or loss and cash flows for that period. This includes preparing financial statements in accordance with UK-adopted international accounting standards, applicable UK law (*Companies Act 2006*), Australian law (*Corporations Act 2001*) as amended by the ASIC class order and preparing a Remuneration report that includes the information required by Regulation 11, Schedule 8 of the *Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended) and the Australian *Corporations Act 2001*.

In addition, the UK *Corporate Governance Code* recommends that the Board provide a fair, balanced and understandable assessment of the company's position and prospects in its external reporting.

Rio Tinto's management conducts extensive review and challenge in support of the Board's obligations, aiming to strike a balance between positive and negative statements and provide good linkages throughout the *Annual Report*.

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The Directors were responsible for the preparation and approval of the Annual Report for the year ended 31 December 2023. They consider the *Annual Report*, taken as a whole, to be fair, balanced and understandable, and that it provides the information necessary for shareholders to assess the Group's position, performance, business model and strategy.

The Directors are responsible for maintaining proper accounting records, in accordance with UK and Australian legislation. They have a general responsibility to safeguard the assets of the Group, and to prevent and detect fraud and other irregularities. The Directors are also responsible for ensuring that appropriate systems are in place to maintain and preserve the integrity of the Group's website.

Legislation in the UK governing the preparation and dissemination of financial statements may differ from current and future legislation in other jurisdictions. The work carried out by the Group's external auditors does not take into account such legislation and, accordingly, the external auditors accept no responsibility for any changes to the financial statements after they are made available on the Group's website.

The Directors, senior executives, senior financial managers and other members of staff who are required to exercise judgement while preparing the Group's financial statements, are required to conduct themselves with integrity and honesty, and in accordance with the highest ethical standards, as are all Group employees.

The Directors consider that the *2023 Annual Report* presents a true and fair view and has been prepared in accordance with applicable accounting standards, using the most appropriate accounting policies for Rio Tinto's business, and supported by reasonable judgements and estimates. The accounting policies have been consistently applied as described on pages 158-167, and Directors have received a written statement from the Chief Executive and the Chief Financial Officer to this effect. In accordance with the internal control requirements of the Code and the ASX Principles, this written statement confirms that the declarations in the statement are founded on a sound system of risk management and internal controls, and that the system is operating effectively in all material respects in relation to financial reporting risks. Further information on Directors' responsibilities is included on page 266.

Disclosure controls and procedures

The Group maintains disclosure controls and procedures, as defined in US *Securities Exchange Act of 1934* (Exchange Act) Rule 13a-15(e). Management, with the participation of the Chief Executive and Chief Financial Officer, has evaluated the effectiveness of the Group's disclosure controls and procedures in relation to US Exchange Act Rule 13a-15(b), as of the end of the period covered by this report, and has concluded that the Group's disclosure controls and procedures were effective at a reasonable assurance level.

Management's report on internal control over financial reporting

Management is responsible for establishing and maintaining adequate internal controls over financial reporting. These controls, designed under the supervision of the Chief Executive and Chief Financial Officer, provide reasonable assurance regarding the reliability of the Group's financial reporting and the preparation and presentation of financial statements for external reporting purposes, in accordance with International Financial Reporting Standards (IFRS) as defined on page 158.

The Group's internal controls over financial reporting include policies and procedures designed to ensure the maintenance of records that:

- accurately and fairly reflect transactions and dispositions of assets,
- provide reasonable assurances that transactions are recorded as necessary, enabling the preparation of financial statements in accordance with IFRS, and that receipts and expenditures are made with the authorisation of management and Directors of each of the companies, and
- provide reasonable assurance regarding the prevention or timely detection of unauthorised acquisition, use or disposition of the Group's assets that could have a material effect on its financial statements.

Due to inherent limitations, internal controls over financial reporting cannot provide absolute assurance. Similarly, these controls may not prevent or detect all misstatements, whether caused by error or fraud, within each of Rio Tinto plc and Rio Tinto Limited.

There were no changes to internal controls over financial reporting during the relevant period that have materially affected, or were reasonably likely to materially affect, the internal control over financial reporting of Rio Tinto plc and Rio Tinto Limited.

Management's evaluation of the effectiveness of the company's internal controls over financial reporting was based on criteria established in the Internal Control-Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission. Following this evaluation, management concluded that our internal controls over financial reporting were effective as at 31 December 2023.

Directors' declaration

The Directors' statement of responsibilities in relation to the Group's financial statements is set out on page 266.

Non-audit services and auditor independence

Details of the non-audit services and a statement of independence regarding the provision of non-audit services undertaken by our external auditor, including the amounts paid for non-audit services, are set out on pages 109-110 of the Directors' report.

A copy of the Auditor's Independence Declaration as required under section 307C of the *Corporations Act 2001* is set out on page 267.

Going concern

The Directors, having made appropriate enquiries, have satisfied themselves that it is appropriate to adopt the going concern basis of accounting in preparing the financial statements. Additionally, the Directors have considered longer-term viability, as described in their statement on page 80.

2024 annual general meetings

The 2024 AGMs will be held on 4 April in London, UK and 2 May in Brisbane, Australia. Separate notices of the 2024 AGMs will be produced for the shareholders of each company.

Directors' approval statement

The Directors' report is delivered in accordance with a resolution of the Board.



Dominic Barton
Chair

21 February 2024

Compliance with governance codes and standards

Application of and compliance with governance codes and standards

This section sets out our compliance with the applicable governance codes and standards. As our shares are listed on both the Australian Securities Exchange (ASX) and the London Stock Exchange (LSE), we set out how we have complied with the codes and standards of those bodies on the following pages:

London Stock Exchange – *UK Corporate Governance Code* (2018 version) (the UK Code), see pages 152–154.

Australian Securities Exchange – *ASX Corporate Governance Council's Corporate Governance Principles and Recommendations (4th edition)* (the ASX Principles), see pages 154–156.

In addition, as explained below, as a foreign private issuer (FPI) with American depositary receipts (ADRs) listed on the New York Stock Exchange (NYSE), we need to report any significant corporate governance differences from the NYSE listing standards (NYSE Standards) followed by US companies.

Statement of compliance with the UK Code and ASX Principles

Throughout 2023 and as at the date of this report, the Group has complied with all the Principles of the UK Code and the ASX Principles, and all the relevant provisions. The UK Code is available at frc.org.uk, and the ASX Principles at asx.com.au. For the purposes of ASX Listing Rule 4.10.3 and the ASX Principles, pages 91–112 of this report form our "Corporate Governance Statement". This statement is current as at 21 February 2024, unless otherwise indicated, and has been approved by the Board. Corporate governance documents and policies referenced can be found on our website at riotinto.com/corporategovernance.

Difference from NYSE Standards

We have reviewed the NYSE Standards and consider that our practices are broadly consistent with them, with the following exceptions where the literal requirements of the NYSE Standards are not met due to differences in corporate governance between the US, UK and Australia:

- The NYSE Standards state that US companies must have a nominating/corporate governance committee which, in addition to identifying individuals qualified to become board members, develops and recommends to the Board a set of corporate governance principles applicable to the company. Our Nominations Committee does not develop corporate governance principles for the Board's approval. The Board itself develops such principles.
- Under US securities law and the NYSE Standards, the company is required to have an audit committee that is directly responsible for the appointment, compensation, retention and oversight of the work of external auditors. While our Audit & Risk Committee makes recommendations to the Board on these matters, and is subject to legal and regulatory requirements on oversight of audit tenders, the ultimate responsibility for the appointment and retention of the external auditors of Rio Tinto rests with the shareholders.
- Under US securities law and the NYSE Standards, an audit committee is required to establish procedures for the receipt, retention and treatment of complaints regarding accounting, internal accounting controls and audit matters. The whistleblowing program (myVoice) enables employees to raise any concerns confidentially or anonymously. The Board has responsibility to ensure that the program is in place and to review the reports arising from its operations.

The UK Code

Board leadership and company purpose

A. Making the Board effective

Our Board provides effective and entrepreneurial leadership. It is collectively responsible for the stewardship and long-term success of the Group. There is a framework of prudent and effective controls that enable risk to be assessed and managed. In the Our approach to ESG section on pages 40–77 we set out how we assess our impact on wider society. See page 102 for the key activities undertaken by the Board during the year and the factors that were considered when making decisions.

B. The company's purpose, values and strategy, and alignment with culture

Through our Code of Conduct – *The Way We Work*, the Board sets the company's purpose, values, and standards for the Group's employees. Our values are set out on page 8. The Board is committed to acting in accordance with these values, championing and embedding these in the organisation. The Board also seeks to ensure that the culture of the company is aligned with these values and standards.

C. Company performance and risk management

The Board leads the development of long-term investment plans for the company. It aims to make good quality decisions at the right time, to achieve the company's objectives, in alignment with our purpose, values and strategy. The role of the Board in establishing and monitoring the internal control environment is set out in the Audit & Risk Committee report on pages 107–110. The way in which the company manages risk is set out on pages 78–88. For information on the delegation of business to management, please refer to pages 94–95.

The formal schedule of matters reserved for the Board's decision, available at riotinto.com/corporategovernance, covers areas including: setting the Group's purpose and strategic vision; monitoring performance of the delivery of the approved strategy; approving major investments, acquisitions and divestments; the oversight of risk and the setting of the Group's risk appetite; and reviewing the Group's governance framework.

D. Stakeholder engagement

The Chair undertakes regular engagement with our major shareholders, in addition to that carried out by the Chief Executive, the Chief Financial Officer and the investor relations team. The committee Chairs also engage with their relevant stakeholders on any significant matters and details of any engagement are provided in the committee reports. We have mapped our key stakeholders and continually work to understand their views, and we take account of our responsibilities to our stakeholders when making business decisions. We explain more about this in our section 172(1) statement, set out on pages 96–100. We also discuss stakeholders in the Strategic report on pages 12–13 and in Our approach to ESG in this report.

Simon McKeon is the designated Non-Executive Director for workforce engagement. An overview of workforce engagement during 2023 is set out on pages 96–97.

At Rio Tinto plc's AGM on 6 April 2023, Resolution 21 ("Authority to purchase Rio Tinto plc shares") was passed with less than 80% of votes in favour, and Shining Prospect (a subsidiary of the Aluminium Corporation of China (Chinalco)) voted against. Chinalco has not sold any Rio Tinto plc shares and now has a holding of over 14%, given its non-participation in Rio Tinto's significant share buyback programs. This places Chinalco close to the 14.99% holding threshold agreed with the Australian Government at the time of Chinalco's original investment in 2008.

E. Our workforce policies and practices

Group workforce policies are approved by the Board. All the policies relating to our workforce take account of the global nature of our company. Our whistleblowing process is overseen by the Board. Every member of the workforce has access to the whistleblower program (myVoice); details of this program are on page 77.

Division of responsibilities

F. The role of the Chair

The Chair leads the Board and is responsible for its overall effectiveness. He was independent on the date of his appointment and we consider he remains independent for the purposes of the Code. The Chair recognises the importance of creating a boardroom culture that encourages openness and debate and ensures constructive relations between executive and Non-Executive Directors.

The Chair is responsible for the management of the Board and its committees, Director performance, induction, training and development, succession planning, engagement with external stakeholders, and attendance by the Board at shareholder meetings.

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The Chair is supported by the Senior Independent Directors, the Group Company Secretary and the Chief Executive. In line with the UK Code, the Senior Independent Director, Rio Tinto plc is responsible for acting as a sounding board for the Chair and engages with shareholders to develop a balanced understanding of their interests and concerns.

For further details, please see our Board Charter on our website, which sets out the role, responsibilities, structure, compositions and conduct of the Board, as well as the role of the Chair, the Senior Independent Director, Rio Tinto plc and the Senior Independent Director, Rio Tinto Limited.

G. Composition of the Board

As at the date of this report, the Board comprises 14 members: 11 independent Non-Executive Directors, the Chair, the Chief Executive, and the Chief Financial Officer.

As detailed in the Nominations Committee report, we engaged Spencer Stuart to support the search for six new Non-Executive Directors as set out on page 105 of the Nominations Committee report. The Committee is satisfied that Spencer Stuart does not have any connections with the company or individual Directors that may impair their independence.

The Board is satisfied that it has the appropriate balance of skills, experience, independence, and knowledge of the company to enable its members to discharge their respective duties and responsibilities effectively, and that no individual or group can dominate the Board's decision-making. There is a clear division of responsibilities between the leadership of the Board and the executive leadership of our business. The Chief Executive is responsible for the day-to-day management of the business and, under a Group delegation of authority framework, delegates to other members of the Executive Committee.

H. Role of Non-Executive Directors

We list all of the Non-Executive Directors that we consider to be independent on pages 92–93. Over 50% of the Board (excluding the Chair) are Non-Executive Directors. The Non-Executive Directors constructively challenge and help develop proposals on strategy. They are also responsible for scrutinising management performance and ensuring that financial information, risks and controls, and systems of risk management are robust.

Each Director has undertaken to allocate sufficient time to the Group in order to discharge their responsibilities effectively, and this is kept under review by the Nominations Committee. The Directors' other appointments are listed on pages 92–93.

I. Board processes and role of the Company Secretary

The governance framework on page 103 explains the governance structure of the Board and sets out the relationship with the Chief Executive. The roles and responsibilities of each committee are explained. On pages 100 and 102 we provide some examples of the decision-making process of the Board and the steps it takes to function effectively, including how it considers stakeholders in this process.

The Group Company Secretary is the trusted interlocutor within the Board and its committees, and between senior leadership and the Non-Executive Directors. He is responsible for advising the Board, through the Chair, on all governance matters. He supports the Chair in ensuring that the information provided to the Board is of sufficient quality and appropriate detail in order for the Board to function effectively and efficiently.

Composition, succession and evaluation

J. Appointments to the Board

The Nominations Committee ensures a formal, rigorous and transparent procedure for the appointment of new Directors. It is also responsible for Board succession planning, regularly assessing the balance of skills, experience, diversity and capacity required to oversee the delivery of Rio Tinto's strategy. This year, the Nominations Committee oversaw the appointment of six new Non-Executive Directors. Details of this process are provided in the Nominations Committee report on page 105.

The Nominations Committee also reviews proposed appointments to the Executive Committee. The Board has responsibility for the process and monitoring of Executive Committee succession planning. The Board oversees a longer-term succession planning process for the Executive Committee, including the roles of the Chief Executive and the Chief Financial Officer.

All Non-Executive Directors are members of the Nominations Committee. The Committee is chaired by the Chair, apart from when the Committee is dealing with the appointment of his or her successor. Only the Chair and Committee members have the right to attend the meetings of the Nominations Committee; attendance by all other individuals is by invitation only. The Nominations Committee report sets out the Board's approach to succession planning and how this supports the development of a diverse pipeline, at all levels. All Directors are subject to annual re-election at the AGMs.

Details of external search consultancies used for Board appointments can be found in the Nominations Committee report on page 105.

K. Skills, experience and knowledge of the Board and its committees

In our succession planning, we aim to bring a diverse and complementary range of skills, knowledge and experience to the Board, so that we are equipped to navigate the operational, social, regulatory and geopolitical complexity in which our business operates. Achieving the right blend of skills and diversity to support effective decision-making is a continuing process. Further details of tenure and experience of the Board are set out in the Nominations Committee report on pages 105–106. The Board biographies set out the specific skills and experience that each Director brings to the Board (pages 92–93).

L. Board evaluation

The performance of the Board, its committees and individual Directors is evaluated annually. In accordance with Code Provision 21, every third year, an external adviser is engaged to carry out a formal independent evaluation of the Board and its committees. In 2023, we appointed No 4 to conduct our external evaluation. No 4 is a business advisory company which does not have any other connection with Rio Tinto.

For more information see page 104.

Our disclosure on Board and executive management diversity in line with UK Listing Rules (LR9.8.6R(10)) is set out below.

Gender reporting categories as at 31 December 2023

Gender	Number of Board members	% of Board	Number of senior positions on the board (e.g. CEO/CFO, SID & Chair)	Number in executive management	% of executive management
Men	9	69 %	4	9	75 %
Women	4	31%[1]	–	3	25 %
Non-binary	–	–	–	–	–
Not specified/prefer not to say	–	–	–	–	–

1. As at 21 February 2024, the percentage of women on the Board is 36% and will be 43% from 1 July 2024.

Ethnicity reporting categories as at 31 December 2023

ONS ethnicity category	Number of Board members	% of Board	Number of senior positions on the board (e.g. CEO/CFO, SID & Chair)	Number in executive management	% of executive management
White British or White Other	12	92 %	4	7	58 %
Mixed/Multiple Ethnic Groups	–	–	–	1	8 %
Asian/Asian British	–	–	–	–	–
Black/African/Caribbean/Black British	–	–	–	–	–
Other Ethnic Group	1	8 %	–	–	–
Not specified/prefer not to say	–	–	–	4	33 %

Audit, risk and internal control

M. Internal and external audit

The Audit & Risk Committee monitors the independence and effectiveness of the Internal Audit function and external auditors. The Committee is responsible for reviewing key judgements within the Group's financial statements and narrative reporting, with the aim of maintaining the integrity of the Group's financial reporting. For further detail, please refer to the Audit & Risk Committee report on pages 107-110.

The appointment of KPMG as external auditor for the 2023 financial year was approved by shareholders at our AGMs in 2023.

N. Fair, balanced and understandable assessment

The Board is responsible for the presentation of a fair, balanced and understandable assessment of the company's position and prospects, not only in the *Annual Report*. We have a robust process in place, including through the Disclosure Committee, to ensure that this is the case.

O. Risk management and internal control framework

The Board is ultimately responsible for aligning our long-term strategic objectives with the risk appetite of the company, taking into account the principal and emerging risks faced by the company. Please refer to pages 78-88 for further details of our business planning cycle and risk management framework and how these support our longer-term viability statement.

Remuneration

P. Remuneration policies and practices

The People & Remuneration Committee supports the Board by setting our Remuneration Policy. Through long-term and short-term incentives, our Remuneration Policy is designed to help drive a performance culture that incentivises executives to deliver the Group's long-term strategy and create superior shareholder value over the short, medium and long term. The overarching aim is to ensure our remuneration structure and policies reward fairly and responsibly with a clear link to corporate and individual performance, and to the company's long-term strategy and values. We have worked to ensure that we have a clear policy that can be understood by shareholders and stakeholders.

Q. Procedure for developing remuneration policy

We have a formal and transparent procedure for developing our Remuneration Policy, and no Director is involved in deciding their own remuneration. Executive remuneration is set with regard to the wider workforce and through market benchmarking. For further detail, please refer to the People & Remuneration Committee report on pages 113-145. The Committee is supported by remuneration consultant Deloitte. The Board received assurance from the Committee and from Deloitte that Deloitte did not have any connections with Rio Tinto or the Board that would have impaired its independence. Please refer to page 128 for further detail.

R. Exercising independent judgement

The People & Remuneration Committee comprises seven Non-Executive Directors to ensure independent judgement with regard to remuneration outcomes. The Committee considers remuneration on an annual basis and determines outcomes by assessing executive performance against performance criteria, details of which can be found in the People & Remuneration Committee report on pages 113-145. This states how our Remuneration Policy has been applied and sets out details of any adjustments made or discretions exercised.

ASX Principles

Principle 1: Lay solid foundations for management and oversight

Recommendation 1.1

Rio Tinto plc and Rio Tinto Limited have a common Board of Directors. The principal role of the Board is to set the Group's strategy and to review its strategic direction regularly. The Board also has responsibility for corporate governance. A Board Charter setting out the role of the Board and management and matters reserved for the Board is available on riotinto.com/corporategovernance.

The Board delegates responsibility for day-to-day management of the business to the Chief Executive and other members of the Executive Committee. A number of management committees support the Chief Executive and the Executive Committee. The structure of these committees is set out on page 103.

Recommendation 1.2

The Nominations Committee, on behalf of the Board, ensures a formal, rigorous and transparent procedure for the appointment of new Directors. A similar process is followed with the Executive Committee and senior executive appointments, including a formal and rigorous process to source strong candidates from diverse backgrounds and conducting appropriate background and reference checks on the shortlisted candidates. In 2023, the Nominations Committee oversaw the appointment of six new Non-Executive Directors, Kaisa Hietala Dean Dalla Valle, Susan Lloyd-Hurwitz, Joc O'Rourke, Martina Merz and Sharon Thorne. Details of this process are provided in the Nominations Committee report on page 105.

The notice of AGM provides all material information in Rio Tinto's possession relevant to decisions on election and re-election of Directors, including a statement from the Board that it considers all Directors continue to perform effectively and demonstrate appropriate levels of commitment. It also provides reasons why each Director is recommended for re-election, highlighting their relevant skills and experience. Further information on the skills and experience of each Director is set out on pages 92-93.

Recommendation 1.3

The company has written agreements setting out the terms of appointment for each Director and senior executive. Non-Executive Directors are appointed by letters of appointment. Executive Directors and other senior executives are employed through employment service contracts. Further information is set out on page 124, 136, 138 and 139 in the Remuneration report.

Recommendation 1.4

The Group Company Secretary is accountable to the Board and advises the Chair, and, through the Chair, the Board on all governance matters. The appointment and removal of the Group Company Secretary is a matter reserved for the Board.

Recommendation 1.5

Rio Tinto has a Group-wide, Board-endorsed Inclusion and Diversity Policy. The policy is available at riotinto.com/policies. The Board sets objectives for achieving diversity for the Board, senior executives and the workforce, and annually reviews the Group's performance against them. Page 43 sets out the measurable objectives and our performance against them. The respective proportions of men and women on the Board, in senior executive positions and across the whole organisation, are reported on pages 43, 106 and 153 of the *Annual Report*.

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Recommendation 1.6

The performance of the Board, its committees and individual Directors is evaluated annually. Every third year, an external adviser is engaged to carry out a formal independent evaluation of the Board and its committees. In 2023, we appointed No 4 to conduct our external evaluation. No 4 is an independent business advisory company which does not have any other connection with Rio Tinto.

For further information, please refer to page 104.

Recommendation 1.7

The performance of Executive Committee members, including Directors, is continually evaluated as part of the Group's performance evaluation cycle. Further details are set out in the Remuneration report on pages 113-145.

Principle 2: Structure the Board to be effective and add value

Recommendation 2.1

The Nominations Committee includes all Non-Executive Directors and is chaired by the Chair of the Board. The Board is satisfied that all Non-Executive Directors, including the Chair, continue to meet the test for independence under the ASX Principles.

The Nominations Committee's terms of reference are available at riotinto.com/corporategovernance. The Nominations Committee report on pages 105-106 provides further details on its role and responsibilities. Details on membership, the number of times the Committee met, and the attendance of members are set out on page 104.

Recommendation 2.2

A Board skills matrix showing key attributes in terms of skills, experience and diversity that are relevant to the Board is set out on page 106.

Recommendations 2.3, 2.4, 2.5

The Nominations Committee is responsible for assessing the independence of each Non-Executive Director against an independence framework that combines the requirements of the UK Code, the ASX Principles and the NYSE Standards. The Committee reviews and approves this framework each year.

The Board is satisfied that all of its Non-Executive Directors are independent in character and judgement, and are free from any relationships (material or otherwise) or circumstances that could create a conflict of interest.

The Chair was considered independent upon his appointment and, in the Board's view, he continues to satisfy the tests for independence under the ASX Principles and the NYSE Standards.

The name, skills and experience of each Director, together with their terms in office, are shown in the biographical details on pages 92-93.

Recommendation 2.6

On joining Rio Tinto, all Directors receive a full, formal induction program. It is delivered over a number of months, and tailored to their specific requirements, taking into account their respective committee responsibilities.

All Directors are expected to commit to continuing their development during their tenure. This is supported through a combination of site visits, teach-ins, deep dives, and internal business and operational briefings provided in or around scheduled Board and committee meetings.

In addition, the Group Company Secretary provides regular updates on corporate governance developments in the UK, Australia and the US.

Principle 3: Instil a culture of acting lawfully, ethically and responsibly

Recommendations 3.1, 3.2, 3.3, 3.4

Through our Code of Conduct – *The Way We Work*, the Board sets the company's purpose, values, and standards for the Group's employees. Our values are set out on page 8. The Board is committed to acting in accordance with these values, championing, and embedding them in the organisation. Our Code of Conduct is available at riotinto.com/ethics.

Rio Tinto's confidential and independently operated whistleblowing program (myVoice) offers an avenue through which our employees, contractors, suppliers and customers can report concerns anonymously, subject to local law. These may include concerns about the business, or behaviour of individuals, including suspicion of violations of financial reporting, safety or environmental procedures or other business integrity issues. The program features telephone and web submissions, a case management tool, and a reporting tool to allow for better analysis of case statistics.

The myVoice procedure explains how concerns regarding matters relating to Rio Tinto, its business and its people can be raised, in confidence and without fear of retaliation. The procedure also sets out who can make a report and what they can expect from us if they do report a concern. The procedure is available on our website. Further details on myVoice are set out on page 77. Rio Tinto's business integrity standard sets out the Group's position on issues relating to bribery and corruption. This is also available on our website. Further information is set out on page 76.

Oversight of the Group's ethics, integrity and compliance program now falls within the remit of the Board.

Principle 4: Safeguard integrity in corporate reports

Recommendation 4.1

The Audit & Risk Committee report on pages 107-110 provides details of the role and responsibilities of the Committee. The Committee's terms of reference are available at riotinto.com/corporategovernance. Further details on membership, the number of times the Committee met during 2023 and the attendance of members are set out on page 104.

Recommendation 4.2

Details on compliance with the financial reporting requirements contemplated under this recommendation are set out on pages 150-151.

Recommendation 4.3

We have a thorough and rigorous review process in place to ensure integrity of the periodic reports we release to the market. We communicate with the market through accurate, clear, concise and effective reporting, and contents of periodic reports are verified by the subject matter experts and reviewed by the relevant Group functions. Such reports are then reviewed and considered by the Group Disclosure Committee for release to the market.

Principle 5: Make timely and balanced disclosure

Recommendation 5.1

We recognise the importance of effective and timely communication with shareholders and the wider investment community.

It is our policy to make sure that all information disclosed or released by the Group is accurate, complete and timely, and complies with all continuous and other disclosure obligations under applicable listing rules and other relevant legislation.

To ensure that trading in our securities takes place in an informed and orderly market, we have established a Disclosure Committee to oversee compliance with our continuous disclosure obligations. The Group Disclosure and Communications Policy, and the terms of reference of our Disclosure Committee, together with our adopted procedures in relation to disclosure and management of relevant information, support compliance with our disclosure obligations. A copy of the *Group Disclosure and Communications Policy* is available on the website.

The Disclosure Committee is responsible for determining whether information relating to Rio Tinto may require disclosure to the markets under the continuous disclosure requirements in the jurisdictions in which Rio Tinto is listed. In accordance with its terms of reference, the specific focus of the Committee is to consider and determine on a timely basis whether information would, to the extent that the information is not public and relates directly or indirectly to Rio Tinto, be likely to have a material effect on the price of Rio Tinto securities if that information was generally available.

The members of the Committee are the Chief Executive; the Chief Financial Officer; the Group Company Secretary; the Chief Legal Officer, Governance & Corporate Affairs; the Head of Strategy & Investor Relations; and the Chief Executive Australia.

Recommendation 5.2

Consistent with the Group's disclosure protocols, the Board is provided with copies of all material market announcements promptly after they are released to the market.

Recommendation 5.3

As a matter of practice, all our new or substantive investor presentations are released to the market via ASX and LSE market announcement platforms.

Principle 6: Respect the rights of security holders

Recommendation 6.1

Our website includes pages dedicated to corporate governance, providing information on compliance with governance codes and standards (the UK Code, the ASX Principles and the NYSE Standards); the terms of reference of the committees; risk management and financial reporting; and Board governance, including selection, appointment and re-election of Directors, Directors' independence, and Board performance evaluation.

All information released to the markets is posted in the media section of our website. Our website also provides general investor information. Annual and half-year results, as well as any major presentations, are webcast and the materials are available at our website, which also contains presentation material from investor seminars.

Recommendation 6.2

Our main channels of communication with the investment community are through the Chair, Chief Executive and Chief Financial Officer, who have regular meetings with the Group's major shareholders. The Senior Independent Director, Rio Tinto plc, and the Senior Independent Director, Rio Tinto Limited, have a specific responsibility under the UK Code and the Board Charter to be available to shareholders who have concerns that have not been resolved through contact with the Chair, Chief Executive or Chief Financial Officer, or for whom such contact is inappropriate. We have a number of processes and initiatives to ensure that members of the Board understand the views of major shareholders. The Chief Financial Officer reports to the Board at each meeting, and provides regular investor updates. In addition, the Head of Strategy & Investor Relations reports regularly to the Board, and an annual survey of major shareholders' opinions is presented to the Board by the Group's investor relations advisers. Further information on engagement with shareholders and investors during 2023 is set out on pages 98–99.

Recommendations 6.3, 6.4

The AGMs present an opportunity to provide a summary business presentation, to inform shareholders of recent developments, and to give them the opportunity to ask questions. Generally, the Chairs of all Board committees are available to answer questions raised by shareholders, and all Directors are expected to attend where possible. The AGMs are generally webcast and transcripts of the Chair's and Chief Executive's speeches are made available on our website. A summary of the proceedings at the meetings, and the results of voting on resolutions, are made available as soon as practicable after the meetings. At Rio Tinto AGMs, all resolutions are decided by poll and not by show of hands.

In 2023, the Rio Tinto Limited AGM was held in Perth as a hybrid meeting. With the use of technology, shareholders who could not attend in person were offered the opportunity to virtually participate at the AGM, ask questions and vote on the resolutions.

Recommendation 6.5

Shareholders can choose to communicate electronically with the companies and the share registrars. Contact details for the registrars are set out on page 355 and on our website.

Principle 7: Recognise and manage risk

Recommendations 7.1, 7.2

The Board is ultimately responsible for risk management and internal controls, and for ensuring that the systems in place are robust and take into account the principal risks faced by the Group. The Board delegates certain matters relating to the Group's risk management framework to the Audit & Risk Committee, which provides updates to the Board on matters discussed at each meeting. The Sustainability Committee advises the Board on risk appetite tolerance and strategy with respect to sustainable development risks. Further information about the Sustainability Committee is set out on pages 111–112. Terms of reference for the Sustainability Committee are available on our website. Further details on the Group's governance framework for risk management and internal control are set out on pages 78–88 and 110.

Recommendation 7.3

Further information on Rio Tinto's Group Internal Audit function is set out on page 110.

Recommendation 7.4

A description of the principal risks and uncertainties that could affect Rio Tinto (including economic, environmental and social sustainability risks), and of the Group's governance framework for risk management and internal control, is set on pages 78–88. Further information on sustainability is available on pages 40–77.

Principle 8: Remunerate fairly and responsibly

Recommendation 8.1

The Remuneration report on pages 113–145 provides details on the role and responsibilities of the People & Remuneration Committee. The Committee's terms of reference are available on our website. Further details on membership, the number of times the Committee met during 2023, and the attendance of members are set out on pages 92–93 and 104.

Recommendation 8.2

Rio Tinto's policies and practices regarding remuneration of Non-Executive Directors, Directors and senior executives are set out on pages 113–145 in the Remuneration report.

Recommendation 8.3

Rio Tinto's approach on participating in equity-based remuneration schemes is set out on page 150. This is also addressed in the Rio Tinto Securities Dealing Policy, which is available on our website.

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Simandou iron ore project, Guinea

Corporate information

About Rio Tinto

In 1995, Rio Tinto plc, incorporated in the UK and listed on the London and New York Stock Exchanges, and Rio Tinto Limited, incorporated in Australia and listed on the Australian Securities Exchange, formed a dual-listed companies structure (DLC). Under the DLC, Rio Tinto plc and Rio Tinto Limited are viewed as a single economic enterprise, with common boards of directors, and the shareholders of both companies have a common economic interest in the DLC. For further information on the DLC structure, see page 347. International Financial Reporting Standards (IFRS)-compliant consolidated financial statements of the Rio Tinto Group are prepared on this basis, with the interests of shareholders of both companies presented as the equity interests of shareholders in the Rio Tinto Group. This is in accordance with the principles and requirements of IFRS and in accordance with an order, under section 340 of the Australian *Corporations Act 2001*, issued by the Australian Securities and Investments Commission (ASIC) on 16 July 2021 ('ASIC class order').

For further details of the ASIC class order relief, see page 265.

Rio Tinto's business is finding, mining, and processing mineral resources. Major products are iron ore, aluminium, copper, industrial minerals (borates, titanium dioxide and salt) and diamonds. Activities span the world and are strongly represented in Australia and North America, with significant businesses in Asia, Europe, Africa and South America.

Rio Tinto plc's registered office is at 6 St James's Square, London SW1Y 4AD, UK. Rio Tinto Limited's registered office is at Level 43, 120 Collins Street, Melbourne VIC 3000, Australia.

About the presentation of our financial statements

All financial statement values are presented in US dollars and rounded to the nearest million (US$m) unless otherwise stated. Where applicable, comparatives have been adjusted to measure or present them on the same basis as current year figures.

Our financial statements for the year ended 31 December 2023 were authorised for issue in accordance with a Directors' resolution on 21 February 2024.

a. The basis of preparation

The financial information included in the financial statements for the year ended 31 December 2023, and for the related comparative periods, has been prepared:

- under the historical cost convention, as modified by the revaluation of certain financial instruments, the impact of fair value hedge accounting on the hedged items and the accounting for post-employment assets and obligations;
- on a going concern basis, management has prepared detailed cash flow forecasts for at least 12 months and has updated life-of-mine plan models with longer-term cash flow projections, which demonstrate that we will have sufficient cash, other liquid resources and undrawn credit facilities to enable us to meet our obligations as they fall due;
- to meet UK-adopted international accounting standards, applicable UK law (*Companies Act 2006*) and Australian law (Australian *Corporations Act 2001*) as amended by the ASIC class order;
- to meet international accounting standards as issued by the International Accounting Standards Board (IASB) and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC), which are mandatory at 31 December 2023.

The above accounting standards and interpretations are collectively referred to as "IFRS" in this report and contain the principles we use to create our accounting policies. Where necessary, adjustments are made to the locally reported assets, liabilities, and results of subsidiaries, joint arrangements and associates to align their accounting policies with ours for consistent reporting.

b. The basis of consolidation

The financial statements consolidate the accounts of Rio Tinto plc and Rio Tinto Limited (together "the Companies") and their respective subsidiaries (together "the Group", "we", "our") and include the Group's share of joint arrangements and associates.

We consolidate subsidiaries where either of the companies controls the entity. Control exists where either of the companies has: power over the entities, that is, existing rights that give it the current ability to direct the relevant activities of the entities (those that significantly affect the companies' returns); exposure, or rights, to variable returns from its involvement with the entities; and the ability to use its power to affect those returns. A list of principal subsidiaries is shown in note 30.

A joint arrangement is an arrangement in which two or more parties have joint control. Joint control is the contractually agreed sharing of control such that decisions about the relevant activities of the arrangement (those that significantly affect the companies' returns) require the unanimous consent of the parties sharing control. We have two types of joint arrangements: joint operations (JOs) and joint ventures (JVs). A JO is a joint arrangement in which the parties that share joint control have rights to the assets and obligations for the liabilities relating to the arrangement. This includes situations where the parties benefit from the joint activity through a share of the output, rather than by receiving a share of the results of trading. For our JOs, shown in note 31, we recognise: our share of assets and liabilities; revenue from the sale of our share of the output and our share of any revenue generated from the sale of the output by the JO; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to our interest in the JO. These amounts are recorded in our financial statements on the appropriate lines. A JV is a joint arrangement in which the parties that share joint control have rights to the net assets of the arrangement. JVs are accounted for using the equity accounting method.

An associate is an entity over which we have significant influence. Significant influence is presumed to exist where there is neither control nor joint control and the Group has over 20% of the voting rights, unless it can be clearly demonstrated that this is not the case. Significant influence can arise where we hold less than 20% of the voting rights if we have the power to participate in the financial and operating policy decisions affecting the entity. It also includes situations of collective control.

We use the term "equity accounted units" (EAUs) to refer to associates and JVs collectively. Under the equity accounting method, the investment is recorded initially at cost to the Group, including any goodwill on acquisition. In subsequent periods, the carrying amount of the investment is adjusted to reflect the Group's share of the EAUs' retained post-acquisition profit or loss and other comprehensive income. Our principal JVs and associates are shown in note 32.

In some cases, we participate in unincorporated arrangements and have rights to our share of the assets and obligations for our share of the liabilities of the arrangement rather than a right to a net return, but we do not share joint control. In such cases, we account for these arrangements in the same way as our joint operations, with all such amounts measured in accordance with the terms of the arrangement, which is usually in proportion to our interest in the arrangement.

All intragroup transactions and balances are eliminated on consolidation.

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c. Materiality

Our Directors consider information to be material if correcting a misstatement, omission or obscuring could, in the light of surrounding circumstances, reasonably be expected to change the judgement of a reasonable person relying on the financial statements. The Group considers both quantitative and qualitative factors in determining whether information is material; the concept of materiality is therefore not driven purely by numerical values.

When considering the potential materiality of information, management makes an initial quantitative assessment using thresholds based on estimates of profit before taxation; for the years ended 31 December 2023 and 31 December 2022 the quantitative threshold was US$700 million. However, other considerations can result in a determination that lower values are material or, occasionally, that higher values are immaterial. These considerations include whether a misstatement, omission or obscuring: masks a change or trend in key performance indicators; causes reported key metrics to change from a positive to a negative value or vice-versa; affects compliance with regulatory requirements or other contractual requirements; could result in an increase to management's compensation; or might conceal an unlawful transaction.

In assessing materiality, management also applies judgement based on its understanding of the business and its internal and external financial statement users. The assessment will consider user expectations of numerical and narrative reporting. Sources used in making this assessment would include, for example: published analyst consensus measures, experience gained in formal and informal dialogue with users (including regulatory correspondence), and peer group benchmarking.

d. Summary of key judgements or other relevant judgements made in applying the accounting policies

The preparation of the financial statements requires management to use judgement in applying accounting policies and in making critical accounting estimates.

These judgements and estimates are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements. Areas of judgement in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements and key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are noted below. Further information is contained in the notes to the financial statements.

Summarised below are the key judgements that we have taken in the application of the Group's accounting policies for 2023 and how they compare to the prior year. Taking a different judgement over these matters could lead to a material impact on the 2023 financial statements. More detail on the judgement can be found in the respective notes.

Key judgements	2023	2022	Context
Indicators of impairment and impairment reversals (note 4)	✔	✔	Various cash-generating units of the Group have been impaired in previous years and are, therefore, monitored closely for indicators of further impairment or impairment reversal as such adjustments would likely be material to our results.
Deferral of stripping costs (note 13)	✔	✔	The deferral of stripping costs is a key judgement in open-pit mining operations as it impacts the amortisation base for these costs, calculated on a units of production basis; this involves determining whether multiple pits are considered separate or integrated operations, which in turn influences the classification of stripping activities as pre-production or production phase. This judgement relies on various factors that are based on the unique characteristics and circumstances of each mine.
Estimation of asset lives (note 13)	✔	✔	The useful lives of major assets are often linked to the life of the orebody they relate to, which is in turn based on the life-of-mine plan. Where the major assets are not dependent on the life of a related orebody, management applies judgement in estimating the remaining service potential of long-lived assets. The accuracy of estimating these useful lives is essential for determining the appropriate allocation of costs over time, reflecting the consumption of the asset's economic benefits.
Close-down, restoration and environmental obligations (note 14)	✔	✔	Significant judgement is required to assess the possible extent of closure rehabilitation work needed to fulfil the Group's legal, statutory, and constructive obligations, along with other commitments to stakeholders. This involves leveraging our experience in evaluating available options and techniques to meet these obligations, associated costs and their likely timing and, crucially, determining when that estimate is sufficiently reliable to make or adjust a closure provision.

Information on other relevant judgements to help understand the financial statements has been incorporated into the relevant accounting policy sections of each note. We have summarised these judgements below:

Other relevant judgements	2023	2022	Context
Identification of functional currencies (f below)	✔	✔	The determination of functional currency is a relevant judgement as it affects the measurement of non-current assets included in the balance sheet and, as a consequence, the depreciation and amortisation of those assets included in the income statement. It also impacts exchange gains and losses included in the income statement and in equity.
Exclusions from underlying EBITDA (note 1)	✔	✔	Judgement is required in excluding items from profit after tax as they are gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into the underlying business performance.
Determination of cash-generating units (CGUs) (note 4)	✔	✔	Judgement is applied to identify the Group's CGUs, particularly when assets belong to integrated operations. Changes in asset allocations to CGUs could impact impairment charges and reversals.
Uncertain tax positions (note 10)	✔	✔	Where the amount of tax payable or recoverable is uncertain in any of the jurisdictions in which the Group operates, whether due to the local tax authority challenge or due to uncertainty regarding the appropriate treatment, judgement is required to assess the probability that the adopted treatment will be accepted.
Assessment of indefinite-lived water rights in Quebec (note 12)	✔	✔	We continue to judge the water rights in Quebec to have an indefinite life because we expect the contractual rights to contribute to the efficiency and cost effectiveness of our operations for the foreseeable future. This determination is a relevant judgement as intangible assets that are deemed to have indefinite lives are not amortised; they are reviewed annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment.
Recoverability of deferred tax assets (note 15)	✔	✔	In considering the recoverability of deferred tax assets, judgement is required regarding the extent to which certain risk factors are likely to affect the recovery of these assets, including future profit forecasts.
Lease assessment (note 21)	✔	–	The Group has entered into renewable energy power purchase agreements that require judgements to assess whether the arrangement contains a lease for the relevant power generating assets.
Accounting for the Pilbara Iron Arrangements (note 31)	✔	✔	In assessing the Pilbara Iron Arrangements, judgement is required in concluding whether they collectively constitute a joint arrangement.
Basis of consolidation of Queensland Alumina Limited (note 31)	–	✔	Judgement is required to assess how we consolidate Queensland Alumina Limited (QAL). As a result of the Australian government imposing Trade Sanctions against Russia, QAL is not able to process bauxite on behalf of Rusal entities. Rio Tinto has contributed additional bauxite tonnes to ensure that 100% of production capacity is maintained. We continue to account for QAL as a joint operation.
Accounting for Minera Escondida Ltda (note 32)	✔	✔	Judgement is required in our determination that Escondida is a joint venture as this impacts the classification of the entity in the financial statements.
Recognition of contingencies (note 37)	✔	✔	Judgement is required to determine whether disclosure is made for material contingent liabilities depending on whether the possibility of any loss arising is considered remote, and whether these can be reliably estimated in order to be quantified.

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e. Key sources of estimation uncertainty

We define key sources of estimation uncertainty as accounting estimates that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year. We summarise below the most significant items and the rationale for their identification. Relevant sensitivities are included within the indicated financial statement notes.

Key accounting estimates	2023	2022	Context
Estimation of the close-down, restoration and environmental cost obligations (note 14)	✔	✔	Close-down, restoration and environment obligations are based on cash flow projections derived from studies that incorporate planned rehabilitation activities, cost estimates and discounting for the time value. Closure studies are performed to a rolling schedule with increased frequency and engineering accuracy for sites approaching end of life. Information from these studies can result in a material change to the associated provisions. The most significant closure provision update related to the Ranger mine at Energy Resources of Australia. The provision is based on reforecast cash flows, these are subject to further study which could result in material adjustment in the near term.
Estimation of obligations for post-employment costs (note 28)	✔	✔	The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. There is significant estimation uncertainty pertaining to the most significant assumptions used in accounting for pension plans, namely the discount rate, the long-term inflation rate and mortality rates.

f. Currency

Other relevant judgements – identification of functional currency

We present our financial statements in US dollars, as that presentation currency most reliably reflects the global business performance of the Group as a whole.

The functional currency for each subsidiary, unincorporated arrangement, joint operation and equity accounted unit is the currency of the primary economic environment in which it operates. For businesses that reside in developed economies, the functional currency is generally the currency of the country in which it operates because of the dominance of locally incurred costs. If the business resides in an emerging economy, the US dollar is generally identified to be the functional currency as a higher proportion of costs, particularly imported goods and services, are agreed and paid in US dollars, in common with other international investors. Determination of functional currency involves judgement, and other companies may make different judgements based on similar facts.

The determination of functional currency affects the measurement of non-current assets included in the balance sheet and, as a consequence, the depreciation and amortisation of those assets included in the income statement. It also impacts exchange gains and losses included in the income statement and in equity. We also apply judgement in determining whether settlement of certain intragroup loans is neither planned nor likely in the foreseeable future and, therefore, whether the associated exchange gains and losses can be taken to equity. During 2023, A$15 billion of intragroup loans continued to meet these criteria; associated exchange gains and losses are taken to equity.

On consolidation, income statement items for each entity are translated from the functional currency into US dollars at the full-year average rate of exchange, except for material one-off transactions, which are translated at the rate prevailing on the transaction date. Balance sheet items are translated into US dollars at period-end exchange rates.

Exchange differences arising on the translation of the net assets of entities with functional currencies other than the US dollar are recognised directly in the currency translation reserve. These translation differences are shown in the statement of comprehensive income, with the exception of the translation adjustment relating to Rio Tinto Limited's share capital, which is shown in the statement of changes in equity.

Where an intragroup balance is, in substance, part of the Group's net investment in an entity, exchange gains and losses on that balance are taken to the currency translation reserve.

Except as noted above, or where exchange differences are deferred as part of a cash flow hedge, all other differences are charged or credited to the income statement in the year in which they arise.

The principal exchange rates used in the preparation of the financial statements were:

	Full-year average			Year-end		
One unit of local currency buys the following number of US dollars	**2023**	2022	2021	**2023**	2022	2021
Pound sterling	**1.24**	1.24	1.38	**1.28**	1.21	1.35
Australian dollar	**0.66**	0.69	0.75	**0.69**	0.68	0.73
Canadian dollar	**0.74**	0.77	0.80	**0.76**	0.74	0.78
Euro	**1.08**	1.05	1.18	**1.11**	1.07	1.13
South African rand	**0.054**	0.061	0.068	**0.054**	0.059	0.063

g. Ore Reserves and Mineral Resources

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. An Ore Reserve is the economically mineable part of a measured or indicated Mineral Resource.

The estimation of Ore Reserves and Mineral Resources requires judgement to interpret available geological data and subsequently to select an appropriate mining method and then to establish an extraction schedule. At least annually, the Competent Persons of the Group (according to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code)), estimate Ore Reserves and Mineral Resources using assumptions such as:

- available geological data;
- expected future commodity prices and demand;
- exchange rates;
- production costs;
- transport costs;
- close-down and restoration costs;
- recovery rates;
- discount rates; and
- renewal of mining licences.

With regard to our future commodity price assumptions, to calculate our Ore Reserves and Mineral Resources for our filing on the Australian Securities Exchange and London Stock Exchange, we use prices generated by our Strategy and Economics team (refer to the Climate change section for further details about our pricing methodology). For our *Annual Report on Form 20-F*, filed with the Securities Exchange Commission (SEC), we use consensus price or historical pricing and comply with subpart 1300 of Regulation S-K (SK-1300), instead of with the JORC code.

We use judgement as to when to include Mineral Resources in accounting estimates, for example, the use of Mineral Resources in our depreciation policy as described in note 13 and in the determination of the date of closure as described in note 14.

There are many uncertainties in the estimation process and assumptions that are valid at the time of estimation may change significantly when new information becomes available. New geological or economic data or unforeseen operational issues may change estimates of Ore Reserves and Mineral Resources. This could cause material adjustments in our financial statements to:

- depreciation and amortisation rates;
- carrying values of intangible assets and property, plant and equipment;
- deferred stripping costs;
- provisions for close-down and restoration costs; and
- recovery of deferred tax assets.

The unaudited statement of Ore Reserves is included on pages 300 to 311 and of Mineral Resources on pages 312 to 322.

h. Impact of climate change on the Group

The impacts of climate change and the execution of our climate change strategy on our financial statements are discussed below:

Strategy and approach to climate change

In 2021, we put the low-carbon transition at the heart of our business strategy, setting a clear pathway to deliver long-term value as well as ambitious targets to decarbonise our business.

Our targets are to reduce Scope 1 and 2 emissions by 15% by 2025, 50% by 2030 (both relative to our 2018 equity baseline) and to reach net zero emissions by 2050. These targets are aligned with efforts to limit warming to 1.5°C – the stretch long-term goal of the Paris Agreement. The pathway to reducing our carbon footprint is organised into six global decarbonisation programs focused on renewables, Pacific aluminium operations, aluminium anodes including ELYSIS™ technology, alumina processing decarbonisation, minerals processing decarbonisation and diesel alternatives. Nature-based solutions (NbS) and carbon credits complement our decarbonisation programs. By 2025 we expect to have made financial commitments to abatement projects on renewables, diesel replacement and process heat that will achieve more than 15% of Group emissions, however, our actual emissions abatement will lag these. To accelerate these activities, we established the Rio Tinto Energy and Climate Team led by our Chief Decarbonisation Officer. To deliver our decarbonisation strategy, we estimate that we will invest around US$5 billion to US$6 billion in capital between 2022 to 2030 (revised from US$7.5 billion in prior year, due to the increased role of commercial contracts treated as operating expenditure and our expected timeline of fleet electrification roll out post 2030). This excludes capitalised voluntary and compliance-based offset costs.

Our approach to addressing Scope 3 emissions is to engage with our customers on climate change and work with them to develop and scale up the technologies to decarbonise steel and aluminium production.

Our forecast growth capital expenditure captures new growth opportunities with a focus on materials that are expected to see strong demand growth from the low carbon transition. This includes our investment in Simandou, completion of the Oyu Tolgoi underground copper-gold mine and investment in new copper and lithium projects. Our budget for central greenfield exploration mainly focuses on copper with a growing battery materials program.

Decarbonisation investment decisions are made under a dedicated evaluation framework, which includes consideration of the value of the investment and its impact on the cost base, the level of abatement, the maturity of the technology, the competitiveness of the asset and its policy context, and alternative options on the pathway to net zero. Projects are also assessed against our approach to a just transition, with consideration of the impact on employees, local communities, and industry.

Further details on our approach and progress are provided in the front half of this Annual Report: Progressing our Strategy on page 17 and Climate Change on pages 44 to 58.

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Climate change scenarios

Our strategy and approach to climate change are informed by our analysis of the interplay of global megatrends, explored through the lens of plausible global scenarios. These set the context for our industry and underpin our commodity price outlooks, portfolio and capital allocation choices and how we operate as a business. There are many plausible scenarios for global energy transition, all with different impacts on future commodity price outcomes. We did not fundamentally change our scenarios in 2023, but have updated the temperature outcomes in 2100 based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. The following two core scenarios are used to generate a single central reference case for use in commodity price forecasts, valuation models, reserves and resources determination and in determining estimates for assets and liabilities in our financial statements, as was the case in the prior year:

- Competitive Leadership scenario, limiting global warming to between 1.6°C–2°C (previously 2°C) by 2100, reflects a rapidly developing world of high growth and strong climate action post-2030, with change driven by policy and competitive innovation. As a result, we expect that countries achieve their Glasgow Climate Pact commitments agreed at the UN Climate Summit (COP26). Global weighted average carbon prices are forecast to rise rapidly at an average of 8% per year over the next three decades, reaching US$42/t$CO_2$e in 2030, and rising rapidly post-2030 to incentivise significant mitigation in industrial sectors post-2030.
- Fragmented Leadership scenario, with global warming to between 2.1–2.5°C (previously exceeding 2.5°C) by 2100, is characterised by limited progress on policy reform with volatile low growth. We expect that nations eventually achieve their 2030 Nationally Determined Contributions as agreed in Paris in 2015 but fail to progress towards long-term carbon goals agreed at COP26. Global weighted average carbon prices are forecast to rise slowly, at an average of 2.9% per year over the period to 2050, reaching US$42 in 2030; but remain too low post-2030 to incentivise significant mitigation in industrial sectors resulting in flat global emissions post-2030.

We note with concern that at the UN Climate Summit in late 2023 (COP28), it was evident in the global stock take that progress to decarbonise the global economy is falling short of the goal to limit warming to 1.5°C by 2100 and that current climate policies in many countries are not yet aligned with their stated ambitions. Consequently, neither of our two core scenarios are consistent with the expectation of climate policies required to accelerate the global transition to meet the stretch goal of the Paris Agreement. Although our operational emissions reduction targets align with the goals of the Paris Agreement, our two core scenarios do not. As a result, we also assess our sensitivity and test the economic performance of our business against a scenario we have developed to reflect our view of the global actions required to meet the stretch goal of the Paris Agreement. We refer to this Paris-aligned scenario as the Aspirational Leadership scenario.

The Aspirational Leadership scenario reflects a world of high growth, significant social change and accelerated climate action. Global weighted average carbon prices rise rapidly – at an average of 9.3% per year over the next three decades – reaching $59/t$CO_2$e in 2030 and incentivise rapid and deep reductions in industrial emissions post-2030. Despite geopolitical differences, major economies work together through multilateral frameworks and proactively work towards limiting temperature change to 1.5°C by 2100. The Aspirational Leadership scenario is a commodity sales price and carbon tax sensitivity, with all other inputs remaining equal to our Reference Case. It is built by design to reach net zero emissions globally by 2050 and help us better understand the pathways to meet the Paris Agreement goal, and what this could mean for our business. It is used for strategy and risk discussions, including analysis of sensitivity to our view of a Paris-aligned pathway and comparison of relative economic performance to our core scenarios.

Importantly, none of our three scenarios are considered a definitive representation for our assessment of the future impact of climate change on the Group. Scenario modelling has inherent limitations and, by its nature, allows a range of possible outcomes to be considered where it is impossible to predict which outcome is likely.

We do not publish the commodity price forecasts associated with these scenarios, as to do so would weaken our position in commercial negotiations and might give rise to concerns from other market participants.

Low-carbon transition risks and opportunities, financial resilience of our portfolio

Through our strategy process, we compare the economic performance of our portfolio under our two core scenarios and the Aspirational Leadership scenario. This indicates that, overall, the economic performance of our portfolio would be stronger in scenarios with proactive climate action, particularly in relation to aluminium, copper and higher-grade iron ore. This reflects anticipated increased demand for these commodities in the low-carbon transition.

We anticipate that our Group's overall economic performance will be the strongest under the Competitive Leadership scenario and the weakest under the Fragmented Leadership scenario. Our Aspirational Leadership scenario predicts the Group's overall economic performance would fall between the Fragmented Leadership and Competitive Leadership scenarios. This reflects higher estimated economic performance for our copper and aluminium businesses in the Aspirational Leadership scenario, based on their higher price profiles, offset by higher expected carbon penalties across our operating jurisdictions, and lower prices for lower grade iron ore products. Refer below for our assessment of the accounting implications of forecast commodity pricing in the Aspirational Leadership scenario.

We carefully monitor and manage transition risks linked to our operational Scope 1 and 2 emissions and value-chain Scope 3 emissions. In particular, we expect the decarbonisation of our assets to benefit from the implementation of new technologies. The pace of technological development is uncertain, which could delay or increase the cost of our decarbonisation efforts.

Physical risk impacts

In 2022, we launched the Physical Resilience Program across the Group starting with the asset-level resilience assessment in iron ore operations in the Pilbara and aluminium operations in the Saguenay. In 2023, we continued to make progress in a Group-wide, top-down assessment to further understand the risks and opportunities associated with physical climate change and to quantify any financial impacts, in addition to the site-specific, bottom-up assessments, which will continue in the foreseeable future. Asset-level resilience assessments conducted across our Canadian sites, including Saguenay, Kitimat, and IOC; our iron ore project at Simandou in Guinea; at Weipa and Yarwun in Australia as well as our ongoing review processes, including impairment assessments, have not identified any material accounting impacts to date. For example, in 2023, no write-offs were necessary in the Pilbara, where certain infrastructure assets, such as transmission lines, that have reached the end of their natural lives are being replaced with climate resilient infrastructure. In addition, we do not foresee the renewal of our contractual water rights in Canada that have been classified as indefinite-lived intangible assets to be at risk from climate change (note 12). Further, closure planning considers future climate change projections at each step of the process to support safe and appropriate final landform design.

NbS, carbon credits and renewable energy certificates (RECs)

While prioritising emissions reductions at our operations, we are also investing in NbS that can bring benefits to people, nature and climate. We have three pathways to securing carbon credits: investment in Australian Carbon Credit Units (ACCUs), the development of our own voluntary projects and commercial agreements with voluntary carbon credit developers. We may use high quality carbon credits from these projects towards our 2030 target. This will complement our abatement project portfolio and support our compliance with carbon pricing regulation such as the Safeguard Mechanism in Australia (approximately half of our Group emissions are subject to carbon pricing regulation in Australia, Canada and elsewhere).

In March 2023, the Australian Parliament legislated to introduce reforms to the Safeguard Mechanism that apply from 1 July 2023. In the short-to-medium term, we anticipate that a number of our facilities will be above the legislated baseline, requiring us to purchase and surrender ACCUs. In 2023, we purchased US$61 million (2022: US$33 million) of carbon credits and RECs. They have been acquired for our own use and are accounted for as intangible assets (note 12).

Accounting impacts from executing our strategy

Global decarbonisation and the world's energy transition continue to evolve, with the potential to materially impact our future financial results as our significant accounting judgements and key estimates are updated to reflect prevailing circumstances. In response, carrying values of assets and liabilities could be materially affected in future periods. Our current strategy and approach to decarbonise our operations and achieve our Scope 1 and 2 emissions targets are considered in our significant judgements and key estimates reflected in these financial results.

Progressing our strategy to grow in materials needed for the low-carbon transition

As part of our strategy to grow in materials essential for the energy transition we progressed our high-grade iron ore project in Simandou, we continued to invest in our copper portfolio and the Rincon lithium project. These projects follow our existing accounting policies on undeveloped properties and cost capitalisation.

As discussed in note 5, we entered into an agreement with Giampaolo Group to form the Matalco joint venture for a combined consideration of US$738 million to meet a growing demand for recycled aluminium solutions. The investment is accounted for under the equity method. In 2023, we also invested US$45 million in a copper project known as Nuevo Cobre accounted for as an investment in a partially owned subsidiary (note 5).

Decarbonising our portfolio

As part of our decarbonisation programs, we invested US$94 million (2022: US$86 million) in various decarbonisation projects, all capitalised on balance sheet. Our operating expenditure on Scope 1, 2 and 3 energy efficient initiatives and research and development (R&D) costs, inclusive of our equity share of R&D related to ELYSIS™, was US$234 million (2022: US$138 million), all recognised in the income statement (note 7). Our capital commitments related to decarbonisation in 2023 totalled US$123 million (2022: US$8 million)and included the Amrun renewable power purchase agreement (PPA) classifed as a lease not yet commenced (note 37).

In addition, we invested US$36 million (2022: US$42 million) in entities specialising in decarbonisation and related technology, accounted for as financial assets, and Australian Integrated Carbon (AIC), a leading developer of high-quality carbon credits, which is an equity accounted unit.

Given the significant investments we are making to abate our carbon emissions, we have considered the potential for asset obsolescence, with a particular focus on our Pilbara operations where we are building our own renewable assets and are prioritising investment in renewables to switch away from natural gas power generation. No material changes to useful economic lives have been identified in the current year as the assets are expected to be required for the transition (note 13). As the renewable projects progress, it is possible that such adjustments may be identified in the future.

Large scale renewable power off-take arrangements require judgement to determine the appropriate accounting treatment and may result in a lease, a derivative or an executory contract depending on contractual terms (refer to note 21 for further information on significant judgements in lease assessment). The renewable solar PPAs at Richards Bay Minerals (RBM) will be accounted for on an accrual basis as energy is produced, while the renewable offtake arrangements at QIT Madagascar Minerals (QMM) and Amrun are leases.

As part of the program to develop renewable energy solutions for our Queensland aluminium assets, on 22 December 2023 we entered into a long-term renewable 1.1GW PPA at Upper Calliope Solar Farm, to buy renewable electricity and associated green products to be generated in the future. The contract is accounted for as a level 3 financial derivative with a zero fair value at inception and an immaterial value at year end. The derivative will require complex measurement over the contract's term.

No adjustments to useful lives of the existing fleet have been identified to date as a result of planned fleet electrification in the Pilbara and the purchase of battery-powered locomotives in the prior period. The solutions are still in development or pilot stages and the gradual fleet replacement is intended to be part of the normal lifecycle renewal of trucks. Depending on technological development, which is highly uncertain, this could lead to accelerated depreciation in the future. Similarly, our target to have net zero vessels in our portfolio by 2030 has not given rise to accounting adjustments to date, as the replacement is planned as part of the lifecycle renewal. The energy efficiency double digestion project at Queensland Alumina refinery does not reduce the economic lives of the underlying alumina assets, but could lower operating costs and improve margins. The expenditure on our own carbon abatement projects and technology advancements follows existing accounting policies on cost capitalisation, research and development costs.

Impairment - sensitivities to climate change

In our impairment review process we consider the risks associated with climate change.

The Gladstone alumina refineries are responsible for more than half of our Scope 1 carbon dioxide emissions in Australia and therefore have been a key focus as we evaluate options to decarbonise our assets. The legislated Safeguard Mechanism reforms referred to above, difficult trading conditions, together with our improved understanding of the capital requirements for decarbonisation, were identified as impairment triggers and an impairment of US$1,175 million was recognised during the year at the Yarwun alumina refinery and Queensland Alumina Limited (note 4). The recoverable amount included the benefits of an energy efficiency digestion project at Queensland Alumina refinery. This does not reduce the economic lives of the underlying alumina assets but could lower operating costs and improve margins. Following the impairment in 2022, we continue to evaluate lower emission power solutions for the Boyne smelter that could extend its life to at least 2040. In such circumstances, the net present value of the forecast future cash flows could support the reversal of past impairments. In note 4 we illustrated the sensitivity of the refineries valuations to the cost of carbon credits.

Under the Aspirational Leadership scenario, which is not used in the preparation of these financial statements, nor for budgeting purposes, the economic performance of copper and aluminium is expected to be stronger under supply and demand forward pricing curves, which we believe will be consistent with the Paris Agreement. It is possible therefore, under certain conditions, that historical impairments associated with these assets could reverse.

In the Aspirational Leadership scenario, the prices for lower-grade iron ore are supported in the medium term by an assumed underlying increase in GDP-driven demand. However, in the longer term, we assume the pricing for lower-grade iron ore to be weaker than in our core scenarios. This will depend on the development of low-carbon steel technology, the pace of which is uncertain, but is expected to be

offset by higher prices for higher-grade iron ore. Consistent with the prior year, this is very unlikely to give rise to impairment triggers for 2024 or in the short- to medium-term due to the high returns on capital employed in the Pilbara and the slow deployment of low-carbon steel technology.

Use of Paris-aligned accounting

Forecast commodity prices, including carbon prices, incorporated into a blend of our two scenarios are used to inform critical accounting estimates included as inputs to impairment testing, estimation of remaining economic life for units of production depreciation and discounting closure and rehabilitation provisions. These prices represent our best estimate of actual market outcomes based on the range of future economic conditions regarding matters largely outside our control, as required by IFRS. As neither of our core scenarios represents the Group's view of the goals of the Paris Agreement, our commodity price assumptions used in accounting estimates are not consistent with the expectation of climate policies required to accelerate the global transition to meet the goals of the Paris Agreement. As described above, we use our Aspirational Leadership scenario to understand the sensitivity of these estimates to Paris-aligned assumptions.

We completed the divestments of our coal businesses in 2018 and no longer mine coal, but retained a contingent royalty income from these divestments. Recent favourable coal prices exceeded contractual benchmark levels and resulted in the cash royalty receipt of US$38 million during 2023. We also carry royalty receivables of US$214 million on our balance sheet at 31 December 2023, measured at fair value (note 24). The fair value of this balance may be adversely impacted in the future by a faster pace of transition to a low carbon economy, but this impact is not expected to be material.

Closure dates and cost of closure are also sensitive to climate assumptions, including precipitation rates, but no material changes have been identified in the year specific to climate change that would require a material revision to the provisions in 2023. For those commodities with higher forward price curves under the Aspirational Leadership scenario, it may be economical to mine lower mineral grades, which could result in the conversion of additional Mineral Resources to Ore Reserves and therefore longer dated closure.

Overall, based on the Aspirational Leadership scenario pricing outcomes, and with all other assumptions remaining consistent with those applied to our 2023 financial statements, we do not currently envisage a material adverse impact of the 1.5°C Paris-aligned sensitivity on asset carrying values, remaining useful life, or closure and rehabilitation provisions for the Group. It is possible that other factors may arise in the future, which are not known today, that may impact this assessment.

Additional commentary on the impact of climate change on our business is included in the following notes:

Financial reporting considerations and sensitivities related to climate change	Page
Recoverable value of our assets, asset obsolescence, impairment and use of sensitivities (note 4)	179
Operating expenditure spend on decarbonisation (note 7 - footnote (h))	184
Water rights - climate impact on indefinite life (note 12)	189
Carbon abatement spend on procurement of carbon units and renewable energy certificates (note 12 - footnote (a))	190
Estimation of asset lives (note 13)	192
Additions to property, plant and equipment with a primary purpose of reducing carbon emissions (note 13 - footnote (d))	194
Useful economic lives of power generating assets (note 13)	195
Close-down, restoration and environmental cost (note 14)	199
Upper Calliope Solar Farm PPA in Queensland (note 24 (iv))	211
Coal royalty receivables (note 24)	214
Decarbonisation capital commitments (note 37)	235

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i. New standards issued and effective in the current year

Our financial statements have been prepared on the basis of accounting policies consistent with those applied in the financial statements for the year ended 31 December 2022, except for the accounting requirements set out below, effective as at 1 January 2023.

Deferred Tax related to Assets and Liabilities arising from a Single Transaction (Amendments to IAS 12 "Income Taxes"), mandatory in 2023 and endorsed by the UK)

At 1 January 2023, we adopted narrow-scope amendments to IAS 12 and have restated comparative periods in accordance with the transition arrangements. These amendments introduce an exception to the initial recognition exemption application for transactions giving rise to equal and offsetting taxable and deductible temporary differences.

Under the amendments, separate deferred tax assets and liabilities are calculated and recognised, prior to application of any required recovery testing and permitted offsetting, and subsequent movements in those deferred tax assets and liabilities are recognised in the income statement. Our previous accounting policy stated that "where the recognition of an asset and liability from a single transaction gives rise to equal and offsetting temporary differences, we apply the initial recognition exemption allowed by IAS 12, and consequently recognise neither a deferred tax asset nor a deferred tax liability in respect of these temporary differences".

The most significant impact of implementing these amendments is from temporary differences related to the Group's provisions for close-down and restoration, and lease obligations and corresponding capitalised closure costs and right-of-use assets. Adjustments to deferred tax assets and liabilities related to these balances have been recognised as at 1 January 2021, being the beginning of the earliest comparative period to be presented in the financial statements for the year ended 31 December 2023, with the cumulative effect recognised as an adjustment to retained earnings or other components of equity at that date. For other transactions, the impact of which was immaterial, the amendments apply only to those taking place on or after 1 January 2021. The impact on equity attributable to owners of Rio Tinto at 1 January 2023 of implementing the amendments to IAS 12 is as follows:

At 1 January	**2023 US$m**	2022 US$m	2021 US$m
Equity attributable to owners of Rio Tinto (previously reported)	**50,175**	51,415	47,054
Impact of IAS 12 amendments[(a)]	**459**	515	516
Restated equity attributable to owners of Rio Tinto	**50,634**	51,930	47,570

(a) Retained earnings adjustments at 1 January 2023 and 2022 include the impact of income statement adjustments for the years ended 31 December 2022 and 2021, respectively.

The restatement of deferred tax balances for the comparative reporting date is as follows:

	31 December 2022 US$m
Deferred tax assets (previously reported)	2,766
Impact of IAS 12 amendments	30
Deferred tax assets (restated)	2,796
Deferred tax liabilities (previously reported)	(3,601)
Impact of IAS 12 amendments	437
Deferred tax liabilities (restated)	(3,164)
Net impact of IAS 12 amendments on deferred tax balances	467
Comprising, prior to offsetting of balances:	
Deferred tax assets arising from:	
- Provisions and other liabilities	1,586
- Capital allowances	(57)
	1,529
Deferred tax liabilities arising from Capital allowances	(1,062)

Restatement of pre-offset balances at 31 December 2022 represents additional gross deferred tax liabilities of US$922 million and gross deferred tax assets of US$1,380 million in relation to close-down and restoration obligations and related capitalised closure costs, and additional gross deferred tax liabilities of US$140 million and gross deferred tax assets of US$149 million in relation to lease liabilities and related right-of-use assets.

The impact of restatement on net earnings for the years ended 31 December 2021 and 31 December 2022 were a net credit of US$22 million and net charge of US$28 million, respectively, related to depreciation of closure and right of use assets and settlement of closure and lease liabilities.

IFRS 17 "Insurance Contracts" and Amendments to IFRS 17 "Insurance Contracts" (mandatory in 2023 and endorsed by the UK)

We implemented IFRS 17 and related amendments on 1 January 2023, which provides consistent principles for all aspects of accounting for insurance contracts. The standard does not have a material impact on the Group.

Amendments to IAS 1 "Presentation of Financial Statements", IFRS Practice Statement 2 "Making Materiality Judgements" and Amendments to IAS 8 "Accounting policies, Changes in Accounting Estimates and Errors"

We adopted Amendments to IAS 1 and IFRS Practice Statement 2, requiring companies to disclose their material accounting policies rather than their significant accounting policies. The amendments do not have a material impact on the Group.

We adopted Amendments to IAS 8 clarifying how companies should distinguish changes in accounting policies generally applied retrospectively, from changes in accounting estimates applied prospectively. The amendments introduce a new definition for accounting estimates clarifying that they are monetary amounts in the financial statements that are subject to measurement uncertainty. The amendments do not have a material impact on the Group.

The Organisation for Economic Co-operation and Development's (OECD) Pillar Two Rules

We have adopted the amendments to IAS 12 issued in May 2023, which provide a temporary mandatory exception from the requirement to recognise and disclose deferred taxes arising from enacted or substantively enacted tax law that implements the Pillar Two model rules, including tax law that implements qualified domestic minimum top-up taxes described in those rules. Under these amendments, any Pillar Two taxes incurred by the Group will be accounted for as current taxes from 1 January 2024.

j. Reconciliation with Australian Accounting Standards

Our financial statements have been prepared in accordance with IFRS, as defined in the "Basis of preparation" section on page 158, which differs in certain respects from the version of IFRS that is applicable in Australia, referred to as Australian Accounting Standards (AAS). We are required to disclose the effect of the adjustments to our consolidated income statement, consolidated total comprehensive income/(loss) and consolidated shareholders' funds if our accounts were prepared under the version of IFRS that is applicable in Australia. This is in order to satisfy the obligations of Rio Tinto Limited to prepare consolidated accounts under Australian company law, as amended by an order issued by the Australian Securities and Investments Commission on 16 July 2021.

Prior to 1 January 2004, our financial statements were prepared in accordance with UK Generally Accepted Accounting Practice (UK GAAP). Under IFRS, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US$380 million at 31 December 2023 (2022: US$380 million).

Save for the exception described above, the Group's financial statements prepared in accordance with IFRS are consistent with the requirements of AAS.

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Group Income Statement

Years ended 31 December

	Note	2023 US$m	2022 US$m Restated [a]	2021 US$m Restated[a]
Consolidated operations				
Consolidated sales revenue	1, 6	**54,041**	55,554	63,495
Net operating costs (excluding items disclosed separately)	7	**(37,052)**	(34,770)	(32,690)
Net impairment (charges)/reversals	4	**(936)**	150	(269)
Loss on disposal of interest in subsidiary	5	**—**	(105)	—
Exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects)	8	**(1,230)**	(896)	(719)
Operating profit		**14,823**	19,933	29,817
Share of profit after tax of equity accounted units		**675**	777	1,042
Impairment of investments in equity accounted units	4	**—**	(202)	—
Profit before finance items and taxation		**15,498**	20,508	30,859
Finance items				
Net exchange (losses)/gains on external net debt and intragroup balances		**(251)**	253	802
Losses on derivatives not qualifying for hedge accounting		**(54)**	(424)	(231)
Finance income	9	**536**	179	64
Finance costs	9	**(967)**	(335)	(243)
Amortisation of discount on provisions	14, 36	**(977)**	(1,519)	(418)
		(1,713)	(1,846)	(26)
Profit before taxation		**13,785**	18,662	30,833
Taxation	10	**(3,832)**	(5,614)	(8,236)
Profit after tax for the year		**9,953**	13,048	22,597
– attributable to owners of Rio Tinto (net earnings)		**10,058**	12,392	21,115
– attributable to non-controlling interests		**(105)**	656	1,482
Basic earnings per share	2	**620.3 c**	765.0 c	1,304.7 c
Diluted earnings per share	2	**616.5 c**	760.4 c	1,296.3 c

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

The notes on pages 158 to 167 and pages 173 to 258 are an integral part of these consolidated financial statements.

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Group Statement of Comprehensive Income

Years ended 31 December

	Note	2023 US$m	2022 US$m Restated [a]	2021 US$m Restated [a]
Profit after tax for the year		**9,953**	13,048	22,597
Other comprehensive income/(loss)				
Items that will not be reclassified to the income statement:				
Re-measurement (losses)/gains on pension and post-retirement healthcare plans	28	**(461)**	578	1,026
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)		**(24)**	—	5
Tax relating to these components of other comprehensive income	10	**152**	(123)	(305)
Share of other comprehensive (losses)/income of equity accounted units, net of tax		**(3)**	5	12
		(336)	460	738
Items that have been/may be subsequently reclassified to the income statement:				
Currency translation adjustment[b]		**644**	(2,399)	(1,865)
Currency translation on subsidiary disposed of, transferred to the income statement		**—**	105	—
Fair value movements:				
– Cash flow hedge gains/(losses)		**30**	(167)	(211)
– Cash flow hedge (gains)/losses transferred to the income statement		**(39)**	106	14
Net change in costs of hedging reserve	35	**5**	4	(18)
Tax relating to these components of other comprehensive loss	10	**1**	21	62
Share of other comprehensive income/(losses) of equity accounted units, net of tax		**14**	(27)	(12)
		655	(2,357)	(2,030)
Total other comprehensive income/(loss) for the year, net of tax		**319**	(1,897)	(1,292)
Total comprehensive income for the year		**10,272**	11,151	21,305
– attributable to owners of Rio Tinto		**10,335**	10,649	19,895
– attributable to non-controlling interests		**(63)**	502	1,410

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Excludes a currency translation gain of US$47 million (2022: charge of US$240 million; 2021: charge of US$211 million) arising on Rio Tinto Limited's share capital for the year ended 31 December 2023, which is recognised in the Group statement of changes in equity. Refer to the Group statement of changes in equity on page 172.

The notes on pages 158 to 167 and pages 173 to 258 are an integral part of these consolidated financial statements.

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Group Cash Flow Statement

Years ended 31 December

	Note	2023 US$m	2022 US$m	2021 US$m
Cash flows from consolidated operations[a]		**20,251**	23,158	33,936
Dividends from equity accounted units		**610**	879	1,431
Cash flows from operations		**20,861**	24,037	35,367
Net interest paid		**(612)**	(573)	(438)
Dividends paid to holders of non-controlling interests in subsidiaries		**(462)**	(421)	(1,090)
Tax paid		**(4,627)**	(6,909)	(8,494)
Net cash generated from operating activities		**15,160**	16,134	25,345
Cash flows from investing activities				
Purchases of property, plant and equipment and intangible assets	1	**(7,086)**	(6,750)	(7,384)
Sales of property, plant and equipment and intangible assets		**9**	—	61
Acquisitions of subsidiaries, joint ventures and associates	5	**(834)**	(850)	—
Disposals of subsidiaries, joint ventures, joint operations and associates	5	**—**	80	4
Purchases of financial assets		**(39)**	(55)	(45)
Sales of financial assets[b][c]		**1,220**	892	114
Net (funding of)/receipts from equity accounted units		**(144)**	(75)	6
Other investing cash flows[d]		**(88)**	51	85
Net cash used in investing activities		**(6,962)**	(6,707)	(7,159)
Cash flows before financing activities		**8,198**	9,427	18,186
Cash flows from financing activities				
Equity dividends paid to owners of Rio Tinto	3	**(6,470)**	(11,727)	(15,357)
Proceeds from additional borrowings[e]	19, 20	**1,833**	321	1,488
Repayment of borrowings and associated derivatives[e]	19, 20	**(310)**	(790)	(1,707)
Lease principal payments	19	**(426)**	(374)	(358)
Proceeds from issue of equity to non-controlling interests		**127**	86	66
Purchase of non-controlling interest[f]	5, 30	**(33)**	(2,961)	—
Other financing cash flows		**2**	(28)	6
Net cash used in financing activities		**(5,277)**	(15,473)	(15,862)
Effects of exchange rates on cash and cash equivalents		**(23)**	15	100
Net increase/(decrease) in cash and cash equivalents		**2,898**	(6,031)	2,424
Opening cash and cash equivalents less overdrafts		**6,774**	12,805	10,381
Closing cash and cash equivalents less overdrafts	22	**9,672**	6,774	12,805

Notes to the Group Cash Flow Statement

(a) Cash flows from consolidated operations	Note	2023 US$m	2022 US$m	2021 US$m
Profit after tax for the year (comparative restated)[g]		**9,953**	13,048	22,597
Adjustments for:				
– Taxation (comparative restated)[g]		**3,832**	5,614	8,236
– Finance items		**1,713**	1,846	26
– Share of profit after tax of equity accounted units		**(675)**	(777)	(1,042)
– Loss on disposal of interest in subsidiary	5	**—**	105	—
– Impairment charges of investments in equity accounted units after tax	4	**—**	202	—
– Net impairment charges/(reversals)	4	**936**	(150)	269
– Depreciation and amortisation		**5,334**	5,010	4,697
– Provisions (including exchange differences on provisions)		**1,470**	1,006	1,903
– Pension settlement		**—**	—	(291)
Utilisation of other provisions	36	**(104)**	(176)	(128)
Utilisation of provisions for close-down and restoration	14	**(777)**	(609)	(541)
Utilisation of provisions for post-retirement benefits and other employment costs	26	**(277)**	(254)	(231)
Change in inventories		**(422)**	(1,185)	(1,397)
Change in receivables and other assets[h]		**(418)**	20	(367)
Change in trade and other payables		**(86)**	700	685
Other items[i]		**(228)**	(1,242)	(480)
		20,251	23,158	33,936

(b) In 2023, we received net proceeds of US$1,157 million (2022: US$352 million and 2021: US$107 million) from our sales and purchases of investments within a separately managed portfolio of fixed income instruments. Refer to note 19 for details. Purchases and sales of these securities are reported on a net cash flow basis within "Sales of financial assets" or "Purchases of financial assets" depending on the overall net position at each reporting date.

(c) In 2022, Sale of financial assets includes US$525 million of cash received from the sale of the gross production royalty at the Cortez Complex in Nevada, USA. Refer to note 1 and note 7.

(d) In 2022, Other investing cash flows includes inflows relating to payments from a trust fund controlled by the Government of Australia to Energy Resources Australia (ERA) for closure activity that has been completed. At 31 December 2023 the total amount held in the trust fund was US$349 million (31 December 2022: US$329 million). In 2021, Other investing cash flows included a net settlement upon completion of a transaction increasing the Group's 60% share in the Diavik Diamond Mine to sole ownership.

(e) On 7 March 2023, we issued US$650 million 10-year fixed rate, and US$1.1 billion of 30-year fixed rate, SEC-registered bonds. The 10-year notes, which mature on 9 March 2033, have a coupon of 5% and the 30-year notes, which mature on 9 March 2053, have a coupon of 5.125%. The funds were received net of issuance fees and discount. There were no debt securities issued during the year ended 31 December 2022. In 2021, we issued US$1.25 billion 30-years fixed rate SEC-registered debt securities, which expire on 2 November 2051, with a coupon of 2.75%. The funds were received net of issuance fees and discount. We also completed a US$1.2 billion (nominal value) bond buyback program.

(f) On 16 December 2022, we acquired the remaining 49% share of Turquoise Hill Resources for expected consideration of US$3.2 billion inclusive of transaction fees. At 31 December 2022, US$2,961 million had been paid, including US$33 million of transaction costs. In 2023, further transaction costs of US$33 million were paid, the balance to dissenting shareholders remains unpaid.

(g) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

(h) In 2021, the Mongolian Tax Authority required payment by Oyu Tolgoi of US$356 million in relation to disputed tax matters. Oyu Tolgoi continues to dispute the matters and has classified amounts subject to international arbitration as prepayments pending resolution.

(i) Other items includes the recognition of realised losses of US$57 million on currency forwards not designated as hedges (2022: realised losses US$459 million, 2021: realised losses US$131 million). In 2022, other items also included the deduction of the US$432 million relating to the gain recognised on sale of the Cortez royalty shown in "Sale of financial assets" and in 2021 other items included US$336 million relating to a gain on recognition of a new wharf at Kitimat, Canada with no associated cash flow.

The notes on pages 158 to 167 and pages 173 to 258 are an integral part of these consolidated financial statements.

Unaudited information

Group Balance Sheet

At 31 December

	Note	2023 US$m	2022 US$m Restated [a]
Non-current assets			
Goodwill	11	**797**	826
Intangible assets	12	**4,389**	3,645
Property, plant and equipment	13	**66,468**	64,734
Investments in equity accounted units		**4,407**	3,298
Inventories	16	**214**	203
Deferred tax assets	15	**3,624**	2,796
Receivables and other assets	17	**1,659**	1,893
Other financial assets	23	**481**	406
		82,039	77,801
Current assets			
Inventories	16	**6,659**	6,213
Receivables and other assets	17	**3,945**	3,478
Tax recoverable		**115**	347
Other financial assets	23	**1,118**	2,160
Cash and cash equivalents	22	**9,673**	6,775
		21,510	18,973
Total assets		**103,549**	96,774
Current liabilities			
Borrowings	20	**(824)**	(923)
Leases	21	**(345)**	(292)
Other financial liabilities	23	**(273)**	(69)
Trade and other payables	18	**(8,238)**	(8,047)
Tax payable		**(542)**	(223)
Close-down and restoration provisions	14	**(1,523)**	(1,142)
Provisions for post-retirement benefits and other employment costs	26	**(361)**	(353)
Other provisions	36	**(637)**	(554)
		(12,743)	(11,603)
Non-current liabilities			
Borrowings	20	**(12,177)**	(10,148)
Leases	21	**(1,006)**	(908)
Other financial liabilities	23	**(513)**	(904)
Trade and other payables	18	**(596)**	(604)
Tax payable		**(31)**	(36)
Deferred tax liabilities	15	**(2,584)**	(3,164)
Close-down and restoration provisions	14	**(15,627)**	(14,617)
Provisions for post-retirement benefits and other employment costs	26	**(1,197)**	(1,305)
Other provisions	36	**(734)**	(744)
		(34,465)	(32,430)
Total liabilities		**(47,208)**	(44,033)
Net assets		**56,341**	52,741
Capital and reserves			
Share capital			
– Rio Tinto plc	34	**207**	207
– Rio Tinto Limited	34	**3,377**	3,330
Share premium account		**4,324**	4,322
Other reserves	35	**8,328**	7,755
Retained earnings	35	**38,350**	35,020
Equity attributable to owners of Rio Tinto		**54,586**	50,634
Attributable to non-controlling interests		**1,755**	2,107
Total equity		**56,341**	52,741

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

The notes on pages 158 to 167 and pages 173 to 258 are an integral part of these consolidated financial statements.

The financial statements on pages 158 to 258 were approved by the directors on 21 February 2024 and signed on their behalf by

Dominic Barton
Chair

Jakob Stausholm
Chief Executive

Peter Cunningham
Chief Financial Officer

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Group Statement of Changes in Equity

Year ended 31 December 2023	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance as previously reported	**3,537**	**4,322**	**7,805**	**34,511**	**50,175**	**2,099**	**52,274**
Adjustment for transition to new accounting pronouncements[a]	–	–	(50)	509	459	8	467
Restated opening balance	**3,537**	**4,322**	**7,755**	**35,020**	**50,634**	**2,107**	**52,741**
Total comprehensive income for the year[b]	–	–	585	9,750	10,335	(63)	10,272
Currency translation arising on Rio Tinto Limited's share capital	47	–	–	–	47	–	47
Dividends (note 3)	–	–	–	(6,466)	(6,466)	(462)	(6,928)
Newly consolidated operation (note 5)	–	–	–	–	–	33	33
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[c]	–	–	(78)	(17)	(95)	–	(95)
Change in equity interest held by Rio Tinto (note 30)	–	–	–	(13)	(13)	13	–
Treasury shares reissued and other movements	–	2	–	–	2	–	2
Equity issued to holders of non-controlling interests	–	–	–	–	–	127	127
Employee share awards charged to the income statement	–	–	66	76	142	–	142
Closing balance	**3,584**	**4,324**	**8,328**	**38,350**	**54,586**	**1,755**	**56,341**

Year ended 31 December 2022	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance as previously reported[d]	3,777	4,320	9,998	33,320	51,415	5,158	56,573
Adjustment for transition to new accounting pronouncements[a]	–	–	(22)	537	515	8	523
Restated opening balance	3,777	4,320	9,976	33,857	51,930	5,166	57,096
Total comprehensive income for the year[b]	—	–	(2,193)	12,842	10,649	502	11,151
Currency translation arising on Rio Tinto Limited's share capital	(240)	–	–	–	(240)	–	(240)
Dividends (note 3)	–	–	–	(11,716)	(11,716)	(421)	(12,137)
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[c]	–	–	(84)	(16)	(100)	–	(100)
Change in equity interest held by Rio Tinto	–	–	–	701	701	(3,907)	(3,206)
Treasury shares reissued and other movements	–	2	–	–	2	–	2
Equity issued to holders of non-controlling interests	–	–	–	(711)	(711)	797	86
Employee share awards charged to the income statement	–	–	56	63	119	–	119
Transfers and other movements	–	–	–	–	–	(30)	(30)
Closing balance (restated)	3,537	4,322	7,755	35,020	50,634	2,107	52,741

Year ended 31 December 2021	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance as previously reported	3,988	4,314	11,960	26,792	47,054	4,849	51,903
Adjustment for transition to new accounting pronouncements[a]	–	–	–	516	516	7	523
Restated opening balance	3,988	4,314	11,960	27,308	47,570	4,856	52,426
Total comprehensive income for the year[b]	–	–	(1,938)	21,833	19,895	1,410	21,305
Currency translation arising on Rio Tinto Limited's share capital	(211)	–	–	–	(211)	–	(211)
Dividends (note 3)	–	–	–	(15,385)	(15,385)	(1,090)	(16,475)
Share buyback	–	–	–	–	–	–	–
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[c]	–	–	(95)	(18)	(113)	–	(113)
Change in equity interest held by Rio Tinto	–	–	–	76	76	(76)	–
Treasury shares reissued and other movements	–	6	–	–	6	–	6
Equity issued to holders of non-controlling interests	–	–	–	–	–	66	66
Employee share awards charged to the income statement	–	–	49	60	109	–	109
Closing balance	3,777	4,320	9,976	33,874	51,947	5,166	57,113

(a) The impact of adopting the narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Refer to the Group statement of comprehensive income for further details. Adjustments to other reserves include currency translation attributable to owners of Rio Tinto, other than that arising on Rio Tinto Limited's share capital.
(c) Net of contributions received from employees for share awards.
(d) In 2022, the opening balance includes a US$17 million adjustment for the prospective adoption of Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets", as reported in the prior year financial statements.

The notes on pages 158 to 167 and pages 173 to 258 are an integral part of these consolidated financial statements.

Notes to the 2023 financial statements

Our financial performance

We use a number of measures, including segmental revenue, underlying EBITDA, and capital expenditure to provide us with a greater understanding of our operations' underlying business performance, including revenue generation, productivity and cost management, on a comparable basis between reporting years.

1 Our financial performance by segment

Our management structure is based on product groups (PG) together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to our Chief Executive who is the chief operating decision maker (CODM) and is responsible for allocating resources and assessing performance of the operating segments. The CODM's primary measure of profit is underlying EBITDA.

The Copper reportable segment has been adjusted to reflect a change in management responsibility for the Simandou iron ore project in Guinea (Simandou) to the Chief Technical Officer for the build phase of this project. As a result, Simandou is now included in "Other Operations", which is below reportable segments in our segmental analysis. Prior year comparatives have been adjusted accordingly.

Our reportable segments are as follows:

Reportable segment	Principal activities
Iron Ore	Iron ore mining and salt and gypsum production in Western Australia.
Aluminium	Bauxite mining; alumina refining; aluminium smelting.
Copper	Mining and refining of copper, gold, silver, molybdenum, other by-products and exploration activities.
Minerals	Includes mining and processing of borates, titanium dioxide feedstock, and iron concentrate and pellets from the Iron Ore Company of Canada. Also includes diamond mining, sorting and marketing and development projects for battery materials, such as lithium.

	2023		
	Segmental revenue US$m	Underlying EBITDA US$m	Capital expenditure[a] US$m
Iron Ore	32,249	19,974	2,588
Aluminium	12,285	2,282	1,331
Copper	6,678	1,904	1,976
Minerals	5,934	1,414	746
Reportable segments total	57,146	25,574	6,641
Other operations	142	(578)	323
Inter-segment transactions	(231)	8	
Share of equity accounted units[b]	(3,016)		
Central pension costs, share-based payments, insurance and derivatives		168	
Restructuring, project and one-off costs		(190)	
Central costs		(990)	
Central exploration and evaluation expenditures		(100)	
Proceeds from disposal of property, plant and equipment			9
Other items			113
Consolidated sales revenue/Purchases of property, plant and equipment and intangible assets	54,041		7,086
Underlying EBITDA		23,892	

(a) Capital expenditure for reportable segments includes the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations.

(b) Consolidated sales revenue includes subsidiary sales of US$20 million (2022: US$50 million; 2021: US$44 million) to equity accounted units which are not included in segmental revenue. Segmental revenue includes the Group's proportionate share of product sales by equity accounted units (after adjusting for sales to subsidiaries) of US$3,036 million (2022: US$2,900 million; 2021: US$3,117 million) which are not included in consolidated sales revenue.

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Notes to the 2023 financial statements

1 Our financial performance by segment *continued*

	2022 Adjusted[a]			2021 Adjusted[a]		
	Segmental revenue US$m	Underlying EBITDA US$m	Capital expenditure[b] US$m	Segmental revenue US$m	Underlying EBITDA US$m	Capital expenditure[b] US$m
Iron Ore	30,906	18,612	2,940	39,582	27,592	3,947
Aluminium	14,109	3,672	1,377	12,695	4,382	1,300
Copper	6,699	2,565	1,622	7,827	4,027	1,328
Minerals	6,754	2,419	679	6,481	2,603	644
Reportable segments total	58,468	27,268	6,618	66,585	38,604	7,219
Other operations	192	(205)	53	251	(86)	(13)
Inter-segment transactions	(256)	24		(268)	42	
Share of equity accounted units[c]	(2,850)			(3,073)		
Central pension costs, share-based payments, insurance and derivatives		377			110	
Restructuring, project and one-off costs		(173)			(80)	
Central costs		(766)			(613)	
Central exploration and evaluation expenditures		(253)			(257)	
Proceeds from disposal of property, plant and equipment			–			61
Other items			79			117
Consolidated sales revenue/Purchases of property, plant and equipment and intangible assets	55,554		6,750	63,495		7,384
Underlying EBITDA		26,272			37,720	

(a) Comparative information has been adjusted to reflect the movement of the Simandou iron ore project from the "Copper" reportable segment to "Other operations".
(b) Capital expenditure for reportable segments includes the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations.
(c) Consolidated sales revenue includes subsidiary sales of US$20 million (2022: US$50 million; 2021: US$44 million) to equity accounted units which are not included in segmental revenue. Segmental revenue includes the Group's proportionate share of product sales by equity accounted units (after adjusting for sales to subsidiaries) of US$3,036 million (2022: US$2,900 million; 2021: US$3,117 million) which are not included in consolidated sales revenue.

Segmental revenue

Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units in proportion to our equity interest (after adjusting for sales to/from subsidiaries).

Segmental revenue measures revenue on a basis that is comparable to our underlying EBITDA metric.

Other segmental reporting

For further information relating to Revenue by destination and product and Non-operating assets by geography, refer to note 6 on page 183 and Our operating assets section on page 187, respectively.

Underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items which do not reflect the underlying performance of our reportable segments.

Other relevant judgements – Exclusions from underlying EBITDA

Items excluded from profit after tax are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into the underlying business performance. The following items are excluded from profit after tax in arriving at underlying EBITDA in each year irrespective of materiality:

- Depreciation and amortisation in subsidiaries and equity accounted units;
- Taxation and finance items in equity accounted units;
- Taxation and finance items relating to subsidiaries;
- Unrealised gains/(losses) on embedded derivatives not qualifying for hedge accounting;
- Net gains/(losses) on disposal of interests in subsidiaries;
- Impairment charges net of reversals;
- The underlying EBITDA of discontinued operations;
- Adjustments to closure provisions where the adjustment is associated with an impairment charge and for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgemental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. In 2023, this includes all re-estimates of the closure provisions for fully impaired sites identified in the second half of the year due to the materiality of the adjustment in aggregate. In 2022 this category included the gain recognised by Kitimat relating to LNG Canada's project and the gain recognised upon sale of the Cortez royalty. In 2021 the category included the changes in closure estimates at Energy Resources of Australia and Gove Refinery.

Legally binding

	2023 US$m	2022 US$m Restated[a]	2021 US$m Restated[a]
Profit after tax for the year	**9,953**	13,048	22,597
Taxation	**3,832**	5,614	8,236
Profit before taxation	**13,785**	18,662	30,833
Depreciation and amortisation in subsidiaries excluding capitalised depreciation[b]	**4,976**	4,871	4,525
Depreciation and amortisation in equity accounted units	**484**	470	497
Finance items in subsidiaries	**1,713**	1,846	26
Taxation and finance items in equity accounted units	**741**	640	759
(Gains)/losses on embedded commodity derivatives not qualifying for hedge accounting (including foreign exchange)	**(15)**	(6)	51
Impairment charges net of reversals[c]	**936**	52	269
Gain recognised by Kitimat relating to LNG Canada's project[d]	**—**	(116)	(336)
Change in closure estimates (non-operating and fully impaired sites)[e]	**1,272**	180	1,096
Loss on disposal of interests in subsidiary[c]	**—**	105	—
Gain on sale of the Cortez royalty[f]	**—**	(432)	—
Underlying EBITDA	**23,892**	26,272	37,720

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Depreciation and amortisation in subsidiaries for the year ended 31 December 2023 is net of capitalised depreciation of US$358 million (2022: US$139 million; 2021: US$172 million).
(c) Refer to note 4 for details.
(d) During 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying EBITDA consistent with prior years as it was part of a series of transactions that together were material. On 3 December 2021 we gained control over a new wharf at Kitimat, Canada that was built and paid for by LNG Canada. The gain on recognition was excluded from underlying EBITDA on the grounds of individual magnitude and consistency with the associated impairment charge in 2021. Refer to note 4 for details.
(e) In 2023 the charge includes US$0.9 billion related to the closure provision update announced by Energy Resources of Australia on 12 December 2023 together with the update included in their half year results for the period ended 30 June 2023, published in August. This update was considered material and therefore it was aggregated with other closure study updates (see note 14) which were similar in nature and have been excluded from underlying EBITDA. The other closure study updates were at legacy sites managed by our central closure team as well as an update at Yarwun alumina refinery which was expensed due to the impairment earlier in the year. In 2022, the charge related to re-estimates of underlying closure cash flows for legacy sites where the environmental damage preceded ownership by Rio Tinto. In 2021, the closure provision increase excluded from underlying earnings was attributable to study updates at Energy Resources of Australia, Diavik, Gove refinery, and a number of the Group's legacy sites where the environmental damage preceded ownership by Rio Tinto.
(f) On 2 August 2022, we completed the sale of a gross production royalty which was retained following the disposal of the Cortez Complex in 2008. The gain recognised on sale of the royalty was excluded from underlying EBITDA on the grounds of individual magnitude.

2 Earnings per ordinary share

Basic earnings per share

	2023	2022 Restated[a]	2021 Restated[a]
Net earnings attributable to owners of Rio Tinto (US$ million)	**10,058**	12,392	21,115
Weighted average number of shares (millions)[b]	**1,621.4**	1,619.8	1,618.4
Basic earnings per ordinary share (cents)	**620.3**	765.0	1,304.7

Diluted earnings per share

For the purposes of calculating diluted earnings per share, the effect of dilutive securities of 10.1 million shares in 2023 (2022: 9.8 million; 2021: 10.5 million) is added to the weighted average number of shares described in footnote (b) below. This effect is calculated under the treasury stock method, in accordance with IAS 33 “Earnings per Share”. Our only potential dilutive ordinary shares are share awards for which terms and conditions are described in note 27.

	2023	2022 Restated[a]	2021 Restated[a]
Net earnings attributable to owners of Rio Tinto (US$ million)	**10,058**	12,392	21,115
Weighted average number of shares (millions)[b]	**1,631.5**	1,629.6	1,628.9
Diluted earnings per share attributable to ordinary shareholders of Rio Tinto (cents)	**616.5**	760.4	1,296.3

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) The weighted average number of shares is calculated as the average number of Rio Tinto plc shares outstanding not held as treasury shares of 1,250.5 million (2022: 1,248.9 million; 2021: 1,247.4 million) plus the average number of Rio Tinto Limited shares outstanding of 370.9 million (2022: 370.9 million; 2021: 371.0 million) over the relevant period. There were no cross holdings of shares between Rio Tinto Limited and Rio Tinto plc at 31 December 2023 (2022: nil; 2021: nil).

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Notes to the 2023 financial statements

3 Dividends

Our Directors have announced a final dividend of 258.0 cents per share on 21 February 2024. This is expected to result in payments of US$4.2 billion. The dividend will be paid on 18 April 2024 to Rio Tinto plc and Rio Tinto Limited shareholders on the register at the close of business on 8 March 2024. Dividends per share announced for the year ended 31 December are as follows:

	2023	2022	2021
Ordinary dividends per share: announced with the results for the year	**258.0 c**	225.0 c	417.0 c
Special dividends per share: announced with the results for the year[(a)]	**—**	—	62.0 c

(a) Dividends are determined in US dollars, which is our functional currency, and declared in British pounds for Rio Tinto Plc and Australian dollars for Rio Tinto Limited. The applicable currency exchange rate to convert the US dollar dividend into British pounds and Australian dollars is determined with reference to the WMR 4pm (UK) fixings on the day prior to the announcement of our results for the year. Ordinary shareholders of Rio Tinto Limited and Rio Tinto Plc are paid equal cash dividends on a per share basis in line with the terms of the dual-listed structure.

Total dividends per share paid in the year

	Dividends per share 2023	Dividends per share 2022	Dividends per share 2021
Previous year final – paid during the year (US cents)	**225.0 c**	417.0 c	309.0 c
Previous year special – paid during the year (US cents)	**—**	62.0 c	93.0 c
Interim – paid during the year (US cents)	**177.0 c**	267.0 c	376.0 c
Interim special – paid during the year (US cents)	**—**	—	185.0 c
Total paid during the year (US cents)	**402.0 c**	746.0 c	963.0 c

	Dividends per share 2023	Dividends per share 2022	Dividends per share 2021
Rio Tinto plc previous year final (pence)	**185.4 p**	306.7 p	221.9 p
Rio Tinto plc previous year special (pence)	**—**	45.6 p	66.8 p
Rio Tinto plc interim (pence)	**137.7 p**	221.6 p	270.8 p
Rio Tinto plc interim special (pence)	**–**	–	133.3 p
Total paid during the year (pence)	**323.1 p**	573.9 p	692.8 p
Rio Tinto Limited previous year final – fully franked at 30% (Australian cents)	**326.5 c**	577.0 c	397.5 c
Rio Tinto Limited previous year special – fully franked at 30% (Australian cents)	**—**	85.8 c	119.6 c
Rio Tinto Limited interim – fully franked at 30% (Australian cents)	**260.9 c**	383.7 c	509.4 c
Rio Tinto Limited interim special – fully franked at 30% (Australian cents)	**–**	–	250.6 c
Total paid during the year (Australian cents)	**587.4 c**	1,046.5 c	1,277.1 c

The franking credits available to the Group as at 31 December 2023, after allowing for Australian tax payable in respect of the current and prior reporting period's profit, are estimated to be US$8,734 million (2022: US$7,246 million; 2021: US$6,611 million).

The proposed Rio Tinto Limited dividend will be fully franked based on a tax rate of 30%, and reduce the franking account balance by US$410 million.

Reconciliation of dividend declared to dividend paid

	2023 US$m	2022 US$m	2021 US$m
Rio Tinto plc previous year final dividend payable	**2,875**	5,024	3,809
Rio Tinto plc previous year special dividend payable	**–**	747	1,146
Rio Tinto plc interim dividend payable	**2,147**	3,162	4,627
Rio Tinto plc interim special dividend payable	**—**	–	2,276
Rio Tinto Limited previous year final dividend payable	**815**	1,597	1,138
Rio Tinto Limited previous year special dividend payable	**—**	237	343
Rio Tinto Limited interim dividend payable	**629**	949	1,372
Rio Tinto Limited interim special dividend payable	**–**	–	674
Dividends payable during the year	**6,466**	11,716	15,385
Net movement of unclaimed dividends in the year	**4**	11	(28)
Dividends paid during the year[(b)]	**6,470**	11,727	15,357

(b) We economically hedge the dividend cash flows from the announcement date to the payment date in order to reduce our foreign exchange exposure on these cash flows. The realised impact of these hedges is shown within 'Other items' in the Cash flows from consolidated operations and is not included in the above.

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4 Impairment charges net of reversals

Recognition and measurement

Impairment charges and reversals are assessed at the level of cash-generating units (CGUs) which, in accordance with IAS 36 "Impairment of Assets", are identified as the smallest identifiable asset or group of assets that generate cash inflows, which are largely independent of the cash inflows from other assets. Separate cash-generating units are identified where an active market exists for intermediate products, even if the majority of those products are further processed internally. In some cases, individual business units consist of several operations with independent cash-generating streams which constitute separate CGUs.

Goodwill acquired through business combinations is allocated to the cash-generating unit or groups of cash-generating units that are expected to benefit from the related business combination, and tested for impairment at the lowest level within the Group at which goodwill is monitored for internal management purposes. All cash-generating units containing goodwill (note 11), indefinite-lived intangible assets and intangible assets that are not ready for use (note 12) are tested annually for impairment as at 30 September, regardless of whether there has been an impairment trigger, or more frequently if events or changes in circumstances indicate a potential impairment charge.

Other relevant judgements – determination of CGUs

Judgement is applied to identify the Group's CGUs, particularly when assets belong to integrated operations, and changes in CGUs could impact impairment charges and reversals. The most relevant judgement continues to relate to the grouping of Rio Tinto Iron and Titanium Quebec Operations and QIT Madagascar Minerals (QMM) as a single CGU on the basis that they are vertically integrated operations and there is no active market for QMM's ilmenite.

Property, plant and equipment, including right-of-use assets and intangible assets with finite lives are reviewed for impairment annually or more frequently if there is an indication that the carrying amount may not be recoverable. This review starts with an appraisal of the perimeter of cash-generating units to consider changes in the business or strategic direction. Following this, an assessment of internal and external indicators is performed. Internal sources of information considered include assessment of the financial performance of the CGU and changes in mine plans. External sources of information include changes in forecast commodity prices, costs and other market factors.

Non-current assets (excluding goodwill) that have suffered impairment are reviewed using the same basis for valuation as explained below whenever events or changes in circumstances indicate that the impairment loss may no longer exist, or may have decreased. If appropriate, an impairment reversal will be recognised. The carrying amount of the cash-generating unit after reversal must be the lower of (a) the recoverable amount, as calculated above, and (b) the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the cash-generating unit in prior periods.

In 2023, we identified indicators of impairment at the Gladstone alumina refineries in the Aluminium segment and indicators of impairment reversal at the Simandou project. Refer to page 179 for details.

Key judgement – indicators of impairment and impairment reversals

The Oyu Tolgoi and Kitimat cash-generating units have both been impaired in previous years and are therefore monitored closely for indicators of further impairment or impairment reversal as such adjustments would likely be material to our results. At the time of their impairment, the carrying value and fair value for these CGUs were equal, making the CGUs sensitive to changes in economic assumptions, albeit headroom may have subsequently arisen due to the passage of time.

Oyu Tolgoi

We assessed the Oyu Tolgoi CGU for internal sources of information that could indicate impairment or impairment reversal by reference to the operational performance of the mine and development progress for the underground operation. For external sources of information that could indicate impairment or impairment reversal, we considered current and projected commodity prices. We concluded that there were no indicators of impairment or impairment reversal.

Kitimat

The Kitimat smelter was impaired in 2013 and 2014 during the construction phase as cost overruns were not expected to be recovered through economic performance. The plant was further impaired in 2021 (refer to page 180 for details) as operational performance was adversely impacted by a workforce strike in June 2021 that has reduced the capacity over a prolonged period.

In 2023, the operational performance of the plant was considered as part of the assessment of internal sources of information for evidence of impairment or impairment reversal. As highlighted in the climate change section, the economic performance of assets in the aluminium segment has the potential to perform more strongly as the world transitions to a lower carbon future; however, our assessment of external sources of information did not indicate that this had yet been priced into asset valuations. We concluded that there were no indicators of impairment or impairment reversal.

Where indication of impairment or impairment reversal exists, an impairment review is undertaken. The recoverable amount is assessed by reference to the higher of value in use (being the net present value of expected future cash flows of the relevant cash-generating unit in its current condition) and fair value less costs of disposal (FVLCD). When the recoverable amount of the cash-generating unit is measured by reference to FVLCD, this amount is further classified in accordance with the fair value hierarchy for observable market data that is consistent with the unit of account for the cash-generating unit being tested. The Group considers that the best evidence of FVLCD is the value obtained from an active market or binding sale agreement and, in this case, the recoverable amount is classified in the fair value hierarchy as level 1. When FVLCD is based on quoted prices for equity instruments but adjusted to reflect factors such as a lack of liquidity in the market, the recoverable amount is classified as level 2 in the fair value hierarchy. No cash-generating units are currently assessed for impairment by reference to a recoverable amount based on FVLCD classified as level 1 or level 2.

Notes to the 2023 financial statements

4 Impairment charges net of reversals *continued*

Where unobservable inputs are material to the measurement of the recoverable amount, FVLCD is based on the best information available to reflect the amount the Group could receive for the cash-generating unit in an orderly transaction between market participants at the measurement date. This is often estimated using discounted cash flow techniques and is classified as level 3 in the fair value hierarchy.

Where the recoverable amount is assessed using FVLCD based on discounted cash flow techniques, the resulting estimates are based on detailed life-of-mine and long-term production plans. These may include anticipated expansions which are at the evaluation stage of study.

The cash flow forecasts for FVLCD purposes are based on management's best estimates of expected future revenues and costs, including the future cash costs of production, capital expenditure, and closure, restoration and environmental costs. For the purposes of determining FVLCD from a market participant's perspective, the cash flows incorporate management's price and cost assumptions in the short and medium term. In the longer term, operating margins are assumed to remain constant where appropriate, as it is considered unlikely that a market participant would prepare detailed forecasts over a longer term. The cash flow forecasts may include net cash flows expected to be realised from the extraction, processing and sale of material that does not currently qualify for inclusion in ore reserves. Such non-reserve material is only included when there is a high degree of confidence in its economic extraction. This expectation is usually based on preliminary drilling and sampling of areas of mineralisation that are contiguous with existing ore reserves. Typically, the additional evaluation required to achieve reserves status for such material has not yet been done because this would involve incurring evaluation costs earlier than is required for the efficient planning and operation of the mine.

As noted above, cost levels incorporated in the cash flow forecasts for FVLCD purposes are based on the current life-of-mine plan or long-term production plan for the cash-generating unit. This differs from value in use which requires future cash flows to be estimated for the asset in its current condition and therefore does not include future cash flows associated with improving or enhancing an asset's performance. Anticipated enhancements to assets may be included in FVLCD calculations and, therefore, generally result in a higher value.

Where the recoverable amount of a cash-generating unit is dependent on the life of its associated orebody, expected future cash flows reflect the current life of mine and long-term production plans; these are based on detailed research, analysis and iterative modelling to optimise the level of return from investment, output and sequence of extraction. The mine plan takes account of all relevant characteristics of the orebody, including waste-to-ore ratios, ore grades, haul distances, chemical and metallurgical properties of the ore impacting process recoveries and capacities of processing equipment that can be used. The life-of-mine plan and long-term production plans are, therefore, the basis for forecasting production output and production costs in each future year.

Forecast cash flows for ore reserve estimation for JORC purposes are generally based on Rio Tinto's commodity price forecasts, which assume short-term market prices will revert to the Group's assessment of the long-term price, generally over a period of three to five years. For most commodities, these forecast commodity prices are derived from a combination of analyses of the marginal costs of the producers and the incentive price of these commodities. These assessments often differ from current price levels and are updated periodically. The Group does not believe that published medium- and long-term forward prices necessarily provide a good indication of future levels because they tend to be strongly influenced by spot prices. The price forecasts used for ore reserve estimation are generally consistent with those used for impairment testing unless management deems that in certain economic environments a market participant would not assume Rio Tinto's view on prices, in which case in preparing FVLCD impairment calculations management estimates the assumptions that a market participant would be expected to use.

Forecast future cash flows of a cash-generating unit take into account the sales prices under existing sales contracts.

The discount rates applied to the future cash flow forecasts represent an estimate of the rate the market participant would apply having regard to the time value of money and the risks specific to the asset for which the future cash flow estimates have not been adjusted. The Group's weighted average cost of capital is generally used as a starting point for determining the discount rates, with appropriate adjustments for the risk profile of the countries in which the individual cash-generating units operate. For final feasibility studies and ore reserve estimation, internal hurdle rates, which are generally higher than the Group's weighted average cost of capital, are used. For developments funded with project finance, the debt component of the weighted average cost of capital may be calculated by reference to the specific interest rate of the project finance and anticipated leverage of the project.

For operations with a functional currency other than the US dollar, the impairment review is undertaken in the relevant functional currency. In estimating FVLCD, internal forecasts of exchange rates take into account spot exchange rates, historical data and external forecasts, and are kept constant in real terms after five years. The great majority of the Group's sales are based on prices denominated in US dollars. To the extent that the currencies of countries in which the Group produces commodities strengthen against the US dollar without an increase in commodity prices, cash flows and, therefore, net present values are reduced. Management considers that, over the long term, there is a tendency for movements in commodity prices to compensate to some extent for movements in the value of the US dollar, particularly against the Australian dollar and Canadian dollar, and vice versa. However, such compensating changes are not synchronised and do not fully offset each other. In estimating value in use, the present value of future cash flows in foreign currencies is translated at the spot exchange rate on the testing date.

Generally, discounted cash flow models are used to determine the recoverable amount of CGUs. In this case, significant judgement is required to determine the appropriate estimates and assumptions used and there is significant estimation uncertainty. In particular, for fair value less costs of disposal valuations, judgement is required to determine the estimates a market participant would use. The discounted cash flow models are most sensitive to the following estimates: the timing of project expansions; the cost to complete assets under construction; long-term commodity prices; production timing and recovery rates; exchange rates; operating costs; reserve and resource estimates; closure costs; discount rates; allocation of long-term contract revenues between CGUs; and, in some instances, the renewal of mining licences. Some of these variables are unique to an individual CGU. Future changes in these variables may differ from management's expectations and may materially alter the recoverable amounts of the CGUs.

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	Note	2023 Pre-tax amount US$m	2023 Taxation US$m	2023 Non-controlling interest US$m	2023 Net amount US$m	2022 Pre-tax amount US$m	2021 Pre-tax amount US$m
Aluminium – Alumina refineries		**(1,175)**	**347**	**—**	**(828)**	–	–
Aluminium – Pacific Aluminium		**–**	**–**	**–**	**–**	(202)	–
Aluminium – Kitimat		**–**	**–**	**–**	**–**	–	(269)
Other operations – Simandou		**239**	**152**	**(215)**	**176**	–	–
Other operations – Roughrider		**–**	**–**	**–**	**–**	150	–
Total impairment charges net of reversals		**(936)**	**499**	**(215)**	**(652)**	(52)	(269)
Allocated as:							
Intangible assets	12	**231**				150	–
Property, plant and equipment	13	**(1,167)**				–	(269)
Investment in equity accounted units (EAUs)		**–**				(202)	–
Total impairment charges net of reversals		**(936)**				(52)	(269)
Comprising:							
Net impairment (charges)/reversals of consolidated balances					**(936)**	150	(269)
Impairment (charges) related to EAUs (pre-tax)					**–**	(202)	–
Total impairment charges net of reversals in the financial information by business unit (page 286)					**(936)**	(52)	(269)
Taxation (including related to EAUs)					**499**	–	72
Non-controlling interests					**(215)**	–	–
Total impairment charges net of reversals in the income statement					**(652)**	(52)	(197)

2023

Aluminium – Alumina refineries, Australia

The Gladstone alumina refineries are responsible for more than half of our scope 1 carbon dioxide emissions in Australia and therefore have been a key focus as we evaluate options to decarbonise our assets. In March 2023, the Australian Parliament legislated to introduce a requirement for large heavy industrial carbon emitters to purchase carbon credits based on their scope 1 emissions with a reducing baseline for these emissions. The challenging market conditions facing these assets, together with our improved understanding of the capital requirements for decarbonisation and the now legislated cost escalation for carbon emissions, were identified as impairment triggers during the six months ended 30 June 2023.

Using a fair value less cost of disposal methodology and discounting real-terms post-tax cash flows at 6.6%, we have recognised a pre-tax impairment charge of US$1,175 million (post-tax US$828 million). This represented a full impairment of the property, plant and equipment at the Yarwun alumina refinery (US$948 million) and an impairment of US$227 million for the property, plant and equipment of Queensland Alumina Limited (QAL). These impairments reflect market participant assumptions and the difficult trading conditions for these assets which were operating below our planned output.

For QAL, the recoverable amount (net present value of US$325 million) was represented by future cash flows attributable to the double digestion project. This major capital project improves the energy efficiency of the alumina production process and significantly reduces carbon emissions. These cash flows were risk adjusted to reflect the pre-feasibility study stage of project evaluation. If investment in the double digestion project is not approved, the post-tax impairment charge would be US$325 million greater and result in a full impairment of QAL.

Impact of climate change on our business – Gladstone alumina refineries

We are committed to the decarbonisation of our assets to reduce Scope 1 and 2 emissions by 50% by 2030 and to net zero emissions by 2050 relative to our 2018 equity baseline. We anticipate that further carbon action may be necessary to align with the goals of the Paris agreement to limit temperature increases to 1.5°C. To illustrate the sensitivity of the refinery valuations to the cost of carbon credits, we have modelled a 10% increase in those unit costs across all years, before the impact of decarbonisation projects with all other inputs to the 30 June 2023 impairment valuation remaining constant. For QAL, this sensitivity indicated a reduction in the pre-tax value by US$99 million; however this is expected to be largely mitigated by decarbonisation projects, including double digestion. There was no impact at Yarwun as all property, plant and equipment was already fully impaired.

Notes to the 2023 financial statements

4 Impairment charges net of reversals *continued*

Other operations – Simandou, Guinea

The Simandou project in Guinea was fully impaired in 2015 as uncertainty over infrastructure ownership and funding had resulted in further spend on exploration and evaluation being neither budgeted nor planned. In the second half of 2023, we concluded key agreements with the Republic of Guinea and Winning Consortium Simandou (WCS) on the trans-Guinean infrastructure for the Simandou project and progressed agreements with our joint venture partners that will enable the development of the Simandou iron-ore mine. We therefore concluded that although development agreements remain subject to regulatory approvals, the key uncertainties that gave rise to the 2015 impairment have reversed and consequently an impairment reversal trigger was identified at 1 October 2023.

Revisions to the Investment Framework and changes to the proposed infrastructure arrangements since 2015 mean that historical costs associated with these items have been superseded and therefore the attributable asset cost and accumulated impairment associated with these items have been permanently derecognised. Previously capitalised exploration and evaluation costs associated with the mine and retained items of property, plant and equipment that continue to be relevant to the Simandou project development have been assessed for impairment reversal. The recoverable amount of the cash-generating unit measured on a fair value less cost of disposal basis, is significantly greater than the historical cost of the remaining impaired assets and therefore supports a full reversal of their previously recorded impairment charge. The pre-tax impairment reversal of US$239 million is allocated as US$231 million to intangible assets (exploration and evaluation) and US$8 million to property, plant and equipment. A deferred tax asset of US$152 million has been recorded to account for the difference between the asset values included in the Group accounts and the carrying value of in-country depreciable assets. Under our Aspirational Leadership pricing scenario, increases in carbon pricing are expected to drive demand for the higher-grade iron ore at Simandou which would indicate a higher recoverable value. As the previous impairment has been fully reversed, this Paris aligned-sensitivity would not result in a different impairment reversal.

All spend on the Simandou project between the impairment in 2015 and 30 September 2023 was expensed as incurred. With effect from 1 October 2023, qualifying spend is capitalised.

2022

Other operations – Roughrider, Canada

On 17 October 2022, we completed the sale of the Roughrider uranium undeveloped project located in the Athabasca Basin in Saskatchewan, Canada for US$150 million (US$80 million in cash and US$70 million in shares of Uranium Energy Corp.). The project was fully impaired during the year ended 31 December 2017 due to significant uncertainty over whether commercially viable quantities of mineral resources could be identified at a future date. The sale therefore led to an impairment reversal during the year ended 31 December 2022. It also led to a loss on disposal being recognised of US$105 million arising from the recycling of the currency translation reserve to the income statement.

Aluminium – Pacific Aluminium, Australia and New Zealand

The operating and economic performance of the Boyne Smelter in Queensland, Australia was below our expectations in 2022. The plant operated with reduced capacity and the economic performance suffered due to the high cost of energy from the coal-fired Gladstone Power Station. These conditions were identified as an impairment trigger. We calculated a recoverable amount for the cash-generating unit based on post-tax cash flows, expressed in real terms and discounted using a post-tax rate of 6.6% over the period to 2029. This date was chosen as it coincided with both the remaining term of the Boyne Smelter joint venture agreements and the Group's Paris-aligned commitment to reduce carbon emissions by 50% by 2030 relative to the 2018 baseline. Despite the implementation of temporary energy price caps by the Australian Government in 2022, this resulted in an impairment charge of US$202 million, representing a full impairment of the carrying value of the Boyne Smelter investment in equity accounted unit.

2021

Aluminium – Kitimat, Canada

On 3 December 2021, we announced completion of the newly-constructed wharf at Kitimat. Construction spend was incurred by LNG Canada and therefore a gain of US$336 million representing the estimated fair value of the cost of construction was recorded and the carrying value of the Kitimat CGU increased accordingly. Output from the smelter was reduced to 25% as a result of a workforce strike in mid-2021 and ramp-up to full capacity was expected to extend through into 2022. As a previously impaired CGU, and therefore carrying limited headroom, these factors were identified as conditions that could indicate that the uplifted carrying value may not be supportable and therefore the CGU was tested for impairment.

Using the fair value less cost of disposal methodology and discounting real-terms post-tax cash flows at 6.6%, we recognised a post-tax impairment charge of US$197 million (pre-tax US$269 million) representing the difference between the recoverable amount (US$3,126 million) and the carrying value (US$3,323 million).

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5 Acquisitions and disposals

Acquisitions

Recognition and measurement

In determining whether a particular set of activities is a business, an acquired arrangement has to have an input and substantive process, which together significantly contribute to the ability to create outputs. Where an acquisition does not meet the definition of a business as defined by IFRS 3 "Business Combinations" each asset is recognised on the balance sheet at fair value. In the Group cash flow statement we assess, based on the substance of the transaction, whether to allocate the cash consideration for these transactions either to "Purchases of property, plant and equipment, and intangible assets" or to "Acquisitions of subsidiaries, joint ventures and associates" depending on the type of assets purchased.

For undeveloped mining projects that have arisen through acquisition, the allocation of the purchase price consideration may result in undeveloped properties being recognised at an earlier stage of project evaluation compared with projects arising from the Group's exploration and evaluation program. Subsequent expenditure on acquired undeveloped projects is only capitalised if it meets the high degree of confidence threshold discussed in note 12.

Where we increase our ownership interest in a subsidiary, the difference between the purchase price and the carrying value of the share of net assets acquired is recorded in equity. The cash cost of such purchases is included within "financing activities" in the cash flow statement.

2023

On 8 November 2023 we acquired Meridian Minera Limitada's (MML) 57.7% share in Agua de la Falda (ADLF) for US$45 million. Subsequently, we entered into an agreement with Corporación Nacional del Cobre de Chile (Codelco), a state-owned enterprise, to explore and potentially acquired assets in Chile's prospective Atacama region - the project will be known as Nuevo Cobre.

The majority ownership of 57.7% equity confers voting rights that will allow Rio Tinto to control the relevant activities of Nuevo Cobre. Therefore, we have accounted for Nuevo Cobre as an investment in a partially owned subsidiary. There was no goodwill recognised on acquisition as the transaction was not accounted for as a business combination. The difference between the net assets acquired and the purchase consideration has been recognised within Intangible assets as Exploration and Evaluation assets. The transaction gives rise to the recognition of a non-controlling interest of US$33 million, representing Codelco's 42.3% equity stake in Nuevo Cobre.

On 30 November 2023, Rio Tinto and Giampaolo Group completed a transaction to form the Matalco joint venture. We acquired a 50% equity interest in Matalco Canada Inc which owns one Canadian aluminium recycling facility and a 50% equity interest in Matalco USA LLC which owns six aluminium recycling facilities in the USA for combined consideration of US$738 million, inclusive of accrued transaction costs and working capital adjustments.

Rio Tinto has joint control over the Matalco businesses and therefore our investment is accounted for under the equity method.

At 31 December 2023, the fair value of the underlying identifiable assets acquired and liabilities assumed have been provisionally determined and will be finalised within one year of the acquisition date in line with the requirements of IFRS.

2022

Following approval from Australia's Foreign Investment Review Board (FIRB), on 29 March 2022 we completed the acquisition of Rincon Mining Pty Limited, the owner of a lithium project in Argentina. Total cash consideration was US$825 million. In determining whether Rincon's set of activities is a business, we assessed whether it had inputs and substantive processes which together significantly contribute to the ability to create outputs. Based on this assessment, we concluded that Rincon did not meet the definition of a business as defined by IFRS 3 "Business Combinations" and therefore no goodwill was recorded. The transaction was therefore treated as an asset purchase with US$822 million of capitalised exploration and evaluation recorded for the principal economic resource. The balance of total consideration was allocated to property, plant and equipment and other assets/liabilities. For the Group cash flow statement we determined that, since Rincon constitutes a group of companies, it was appropriate to present the cash outflow as "Acquisitions of subsidiaries, joint ventures and associates" rather than as separate asset purchases even though it did not meet the definition of a business combination.

On 31 August 2022 we made a US$25 million investment in McEwen Copper Inc. through our copper leaching technology venture, Nuton™. We accounted for our holding in McEwen Copper Inc. as an investment in associate, given our representation on their Board.

On 16 December 2022 we acquired the remaining 49% share of Turquoise Hill Resources for expected consideration of US$3.2 billion, inclusive of transaction costs. This transaction was not classified as a business combination as it related to the purchase of non-controlling interests in an entity already consolidated as a subsidiary. Accordingly, the transaction did not result in the remeasurement of assets or liabilities and has been accounted for in the statement of equity as an adjustment to non-controlling interests and retained earnings.

At 31 December 2022, consideration paid amounted to US$2,961 million, including US$33 million of transaction costs. In 2023, a further $33 million of transaction costs were paid (previously expected to be US$41 million). Certain shareholders exercised their right to dissent to the transaction. In accordance with the terms of the circular, those dissenting shareholders received initial consideration of C$34.4 per share, with final consideration depending on the outcome and timing of dissent proceedings, which at the end of 2023 remained outstanding. We included within Other provisions (note 36) US$211 million for additional consideration to be paid to the dissenting shareholders representing the difference between their initial consideration and C$43 per share paid to all other shareholders.

2021

On 18 November 2021, we announced that we had completed the acquisition of the 40% share in the Diavik Diamond Mine in the Northwest Territories of Canada held by Dominion Diamond Mines, becoming the sole owner as a result. The transaction did not meet the definition of a business combination and therefore the incremental assets and liabilities were treated as an asset purchase. Prior to purchase, we recognised our existing 60% share of assets, revenues and expenses, with liabilities recognised according to its contractual obligations, and a corresponding 40% receivable or contingent asset representing the co-owner's share where applicable. Receivables relating to the co-owner's share were de-recognised and treated as part of the net purchase consideration on completion.

Disposals

Recognition and measurement

If a group of assets and liabilities (Disposal group) is sold the carrying value of the disposal group is de-recognised with the difference between the carrying amount and the consideration received recognised in the income statement. Certain amounts previously recognised in other comprehensive income in respect of the entity disposed of may be recycled to the income statement. The cash proceeds of disposals are included within "Investing activities" in the cash flow statement.

Notes to the 2023 financial statements

5 Acquisitions and disposals *continued*

2023

On 28 August 2023, we completed the sale of a 55% interest in the undeveloped La Granja project in Peru for US$105 million to First Quantum Minerals (FQM). The consideration received is recorded in the cash flow statement for US$104 million (net of US$1 million of cash balance), of which US$16 million relating to sale of land is included within "net cash used in investing activities" and the remaining US$88 million is included within "net cash generated from operating activities". As a result of the sale, our retained interest in La Granja represents a 45% owned associate (equity accounted) over which Rio Tinto has significant influence during the evaluation phase.

On initial recognition, the gain on fair valuation of interest retained in the project of US$85 million was recognised to the extent of US$47 million (relating to the 55% interest sold) within "profit relating to interests in undeveloped projects" and the remaining gain of US$38 million was eliminated against the fair value of the EAU. In total, we recognised a pre-tax gain of US$154 million in the income statement, primarily representing the consideration transferred by First Quantum, plus the fair value of the retained interest in the project.

2022

As summarised in note 4, we sold our shareholding in the Roughrider uranium undeveloped project on 17 October 2022 for consideration of US$150 million (US$80 million in cash and US$70 million in shares of Uranium Energy Corp). This transaction was treated as a disposal of a subsidiary as the carrying value was largely represented by assets recorded as a purchase price allocation from the Hathor Exploration business combination in 2012.

2021

There were no material disposals in 2021.

6 Revenue by destination and product

Recognition and measurement

We recognise sales revenue related to the transfer of promised goods or services when control of the goods or services passes to the customer. The amount of revenue recognised reflects the consideration to which the Group is or expects to be entitled in exchange for those goods or services.

Sales revenue is recognised on individual sales when control transfers to the customer. In most instances, control passes and sales revenue is recognised when the product is delivered to the vessel or vehicle on which it will be transported once loaded, the destination port or the customer's premises. There may be circumstances when judgement is required based on the five indicators of control below:

- The customer has the significant risks and rewards of ownership and has the ability to direct the use of, and obtain substantially all of the remaining benefits from, the good or service.
- The customer has a present obligation to pay in accordance with the terms of the sales contract. For shipments under the Incoterms cost, insurance and freight (CIF)/carriage paid to (CPT)/cost and freight (CFR), this is generally when the ship is loaded, at which time the obligation for payment is for both product and freight.
- The customer has accepted the asset. Sales revenue may be subject to adjustment if the product specification does not conform to the terms specified in the sales contract but this does not impact the passing of control. Assay and specification adjustments have historically been immaterial.
- The customer has legal title to the asset. The Group usually retains legal title until payment is received for credit risk purposes only.
- The customer has physical possession of the asset. This indicator may be less important as the customer may obtain control of an asset prior to obtaining physical possession, which may be the case for goods in transit.

Revenue is principally derived from sale of commodities. We sell the majority of our products on CFR or CIF Incoterms. This means that the Group is responsible (acts as principal) for providing shipping services and, in some instances, insurance after the date at which control of goods passes to the customer at the loading port. The Group, therefore, has separate performance obligations for freight and insurance services that are provided solely to facilitate the sale of the products it produces. Other Incoterms commonly used by the Group are free on board (FOB), where the Group has no responsibility for freight or insurance once control of the goods has passed at the loading port, and delivered at place (DAP), where control of the goods passes when the product is delivered to the agreed destination. For these Incoterms, there is only one performance obligation, being the provision of product at the point where control passes.

Within each sales contract, each unit of product shipped is a separate performance obligation. Revenue is generally recognised at the contracted price as this reflects the standalone selling price. Sales revenue excludes any applicable sales taxes. Sales of copper concentrate are stated net of the treatment and refining charges, which will be required to convert it to an end product.

The Group's products are sold to customers under contracts that vary in tenure and pricing mechanisms, including some volumes sold on the spot market. Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms, with a smaller proportion of iron ore volumes being sold on the spot market.

Certain of the Group's products may be provisionally priced at the date revenue is recognised and a provisional invoice issued; however, substantially all iron ore and aluminium sales are reflected at final prices in the results for the period. Provisionally priced receivables are subsequently measured at fair value through the income statement under IFRS 9 "Financial Instruments" as described in note 24. The final selling price for all provisionally priced products is based on the price for the quotational period stipulated in the contract. Final prices for copper concentrate are normally determined between 30 and 120 days after delivery to the customer. The change in value of the provisionally priced receivable is based on relevant forward market prices and is included in sales revenue. Refer to "Other revenue" within the sales by product disclosure below.

Revenues from the sale of significant by-products, such as gold, are included in sales revenue. Third-party commodity swap arrangements principally for delivery and receipt of smelter-grade alumina are offset within operating costs. The sale and purchase of third-party production for own use or to mitigate shortfalls in our production are accounted for on a gross basis with sales presented within revenue from contracts with customers. Other operating income includes revenue incidental to the main revenue-generating activities of the operations and is treated as a credit to operating costs.

Typically, the Group has a right to payment before or at the point that control of the goods passes, including a right, where applicable, to payment for provisionally priced products and unperformed freight and insurance services. Cash received before control passes is recognised as a contract liability. The amount of consideration does not contain a significant financing component as payment terms are less than one year. We have a number of long-term contracts to supply products to customers in future periods. Generally, revenue is recognised on an invoice basis, as each unit sold is a separate performance obligation and therefore the right to consideration from a customer corresponds directly with our performance completed to date.

We do not disclose sales revenue from freight and insurance services separately as we do not consider that this is necessary in order to understand the impact of economic factors on the Group. Our Chief Executive, the chief operating decision maker as defined under IFRS 8 "Operating Segments", does not review information specifically relating to these sources of revenue in order to evaluate the performance of business segments and Group information on these sources of revenue is not provided externally. We do provide information on freight revenue for the iron ore and bauxite businesses on pages 33 and 35 to help stakeholders understand FOB operating margins for those products.

Consolidated sales revenue by destination[a]

	2023 %	2022 %	2021 %	2023 US$m	2022 US$m	2021 US$m
Greater China (includes Taiwan)	**59.6**	54.3	59.7	**32,193**	30,172	37,878
United States of America	**13.9**	15.9	12.6	**7,516**	8,823	8,012
Asia (excluding Greater China and Japan)	**7.2**	7.1	6.9	**3,881**	3,937	4,415
Japan	**6.9**	7.4	7.9	**3,727**	4,091	5,012
Europe (excluding UK)	**5.3**	6.5	5.2	**2,859**	3,618	3,271
Canada	**2.9**	3.1	2.6	**1,588**	1,743	1,677
Australia	**1.7**	1.9	1.8	**923**	1,047	1,122
UK	**0.1**	0.3	0.4	**81**	182	243
Other countries	**2.4**	3.5	2.9	**1,273**	1,941	1,865
Consolidated sales revenue	**100**	100	100	**54,041**	55,554	63,495

(a) Consolidated sales revenue by geographical destination is based on the ultimate country of the product's destination, if known. Where the ultimate destination is not known, we have defaulted to the shipping address of the customer. Rio Tinto is domiciled in both the UK and Australia.

Consolidated sales revenue by product

We have sold the following products to external customers during the year:

	2023		
	Revenue from contracts with customers US$m	**Other revenue[a] US$m**	**Consolidated sales revenue US$m**
Iron ore	**33,383**	**389**	**33,772**
Aluminium, alumina and bauxite	**12,039**	**(63)**	**11,976**
Copper	**3,219**	**(1)**	**3,218**
Industrial minerals (comprising titanium dioxide slag, borates and salt)	**2,806**	**(8)**	**2,798**
Gold	**470**	**6**	**476**
Diamonds	**444**	**–**	**444**
Other products and freight services[b]	**1,360**	**(3)**	**1,357**
Consolidated sales revenue	**53,721**	**320**	**54,041**

	2022			2021		
	Revenue from contracts with customers US$m	Other revenue[a] US$m	Consolidated sales revenue US$m	Revenue from contracts with customers US$m	Other revenue[a] US$m	Consolidated sales revenue US$m
Iron ore	33,068	(267)	32,801	42,992	(796)	42,196
Aluminium, alumina and bauxite	13,955	(165)	13,790	12,336	103	12,439
Copper	3,276	(80)	3,196	3,229	96	3,325
Industrial minerals (comprising titanium dioxide slag, borates and salt)	2,685	(16)	2,669	2,114	3	2,117
Gold	564	9	573	1,075	2	1,077
Diamonds	816	–	816	501	–	501
Other products and freight services[b]	1,710	(1)	1,709	1,837	3	1,840
Consolidated sales revenue	56,074	(520)	55,554	64,084	(589)	63,495

(a) Consolidated sales revenue includes both revenue from contracts with customers, accounted for under IFRS 15 "Revenue from Contracts with Customers", and subsequent movements in provisionally priced receivables, accounted for under IFRS 9, and included in "other revenue" above.

(b) "Other products and freight services" includes metallic co-products, molybdenum, silver and other commodities.

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Notes to the 2023 financial statements

7 Net operating costs (excluding items disclosed separately)

	Note	2023 US$m	2022 US$m	2021 US$m
Raw materials, consumables, repairs and maintenance		**12,019**	12,477	9,957
Amortisation of intangible assets	12	**124**	159	178
Depreciation of property, plant and equipment	13	**5,210**	4,851	4,519
Employment costs	26	**6,636**	6,002	5,513
Shipping and other freight costs		**2,781**	3,146	3,275
Decrease in finished goods and work in progress[a]		**1,152**	803	29
Royalties		**3,135**	2,994	3,878
Amounts charged by equity accounted units[b]		**1,163**	1,429	1,160
Net foreign exchange (gains)/losses		**(47)**	(42)	14
Gain on sale of the Cortez Royalty[c]		**–**	(432)	–
Gains recognised by Kitimat relating to LNG Canada's project[d]		**–**	(116)	(336)
Provisions (including exchange differences on provisions)		**1,491**	1,006	1,906
Research and development		**245**	76	65
Other external costs[e]		**5,295**	4,161	4,071
Costs included above capitalised or shown on a separate line item[f]		**(1,331)**	(722)	(646)
Other operating income[g]		**(821)**	(1,022)	(893)
Net operating costs (excluding items disclosed separately)[h]		**37,052**	34,770	32,690

(a) Includes purchases of third-party material to satisfy sales contracts.
(b) Amounts charged by equity accounted units relate to toll processing fees and also include purchases from equity accounted units of bauxite, aluminium and copper concentrate which are then processed by the product group or sold to third parties.
(c) On 2 August 2022, we completed the sale for US$525 million of a gold royalty which was retained following the disposal of the Cortez mine in 2008.
(d) During the first half of 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. On 3 December 2021 we recognised a new wharf at Kitimat, Canada within Property, plant and equipment that was built and paid for by LNG Canada.
(e) In 2023, other external costs include US$269 million (2022: US$465 million, 2021: US$502 million) of short-term lease costs and US$40 million (2022: US$50 million, 2021 US$34 million) of variable lease costs recognised in the income statement in accordance with IFRS 16 "Leases". Refer to note 21.
(f) In 2023, US$1,007 million (2022: US$485 million; 2021: US$445 million) of operating costs were capitalised, US$247 million (2022: US$190 million; 2021: US$154 million) of costs were shown separately within "Exploration and evaluation costs" in the Group income statement, and US$77 million (2022: $47 million; 2021: US$47 million) of costs were shown within operating costs as "Research and development".
(g) Other operating income includes sundry revenue incidental to the main revenue-generating activities of the operations.
(h) Operating decarbonisation spend of US$234 million (2022: US$138 million) is allocated as US$182 million (2022: US$88 million) within "Net operating costs (excluding items disclosed separately)", with the remainder included in our share of profit or loss of equity accounted units.

8 Exploration and evaluation expenditure

Exploration and evaluation expenditure includes costs that are directly attributable to:

- researching and analysing existing exploration data;
- conducting geological studies, exploratory drilling and sampling;
- examining and testing extraction and treatment methods;
- compiling various studies (order of magnitude, pre-feasibility and feasibility) and/or
- early works at mine sites prior to full notice to proceed.

Exploration expenditure relates to the initial search for deposits with economic potential. Expenditure on exploration activity undertaken by the Group is not capitalised.

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. These costs are also expensed until the business case for the project is sufficiently advanced. For greenfield projects, expensing typically continues to a later phase of study compared with brownfield expansions.

The charge for the year and the net amount of intangible assets capitalised during the year are as follows:

	2023 US$m	2022 US$m	2021 US$m
Expenditure in the year (inclusive of net cash proceeds of US$88 million (2022: US$1 million; 2021: US$7 million) on disposal of undeveloped projects)[a]	**(1,684)**	(1,097)	(852)
Non-cash movements and non-cash proceeds on disposal of undeveloped projects	**(17)**	(6)	23
Amount capitalised during the year	**471**	207	110
Exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects) per income statement	**(1,230)**	(896)	(719)
Comprising:			
Exploration and evaluation expenditures	**(1,384)**	(897)	(726)
Profit from disposal of interests in undeveloped projects[a]	**154**	1	7

(a) In 2023, net cash proceeds of US$88 million were received in relation to the sale of a 55% interest in the undeveloped La Granja project in Peru, for which we recognised a gain on disposal of US$154 million. This profit is recorded within underlying EBITDA as it represents recovery of past exploration and evaluation expenditures that were also included within underlying EBITDA. Refer to note 5 for details of the transaction.

9 Finance income and finance costs

	Note	2023 US$m	2022 US$m	2021 US$m
Finance income from loans to equity accounted units		**4**	3	2
Other finance income (including bank deposits, net investment in leases, and other financial assets)		**532**	176	62
Total finance income		**536**	179	64
Interest on:				
– Financial liabilities at amortised cost (excluding lease liabilities) and associated derivatives		**(1,209)**	(713)	(489)
– Lease liabilities		**(50)**	(49)	(47)
Fair value movements:				
– Bonds designated as hedged items in fair value hedges[(a)]		**(190)**	526	246
– Derivatives designated as hedging instruments in fair value hedges[(a)]		**203**	(515)	(242)
Loss on early redemption of bonds		**–**	–	(69)
Amounts capitalised[(b)]	12, 13	**279**	416	358
Total finance costs		**(967)**	(335)	(243)

(a) The main sources of ineffectiveness of the fair value hedges include changes in the timing of the cash flows of the hedging instrument compared to the underlying hedged item, and changes in the credit risk of parties to the hedging relationships.
(b) We capitalise interest based on the Group or relevant subsidiary's cost of borrowing (refer to note 12 and note 13) or at the rate of project-specific debt (where applicable).

10 Taxation

Recognition and measurement

The taxation charge contains both current and deferred tax.

Current tax is the tax expected to be payable on the taxable income for the year calculated using rates applicable during the year. It includes adjustments for tax expected to be payable or recoverable in respect of previous periods. Where the amount of tax payable or recoverable is uncertain, we establish provisions based on either: the Group's judgement of the most likely amount of the liability or recovery; or, when there is a wide range of possible outcomes, a probability weighted average approach.

Deferred tax is calculated in accordance with IAS 12 using rates that have been enacted or substantively enacted at the balance sheet date. Where the recognition of an asset and liability from a single transaction gives rise to equal and off-setting temporary differences, we had previously applied the Initial Recognition Exemption allowed by IAS 12, and consequently recognised neither a deferred tax asset nor a deferred tax liability in respect of these timing differences. Under the narrow-scope amendments to IAS 12, deferred tax assets and liabilities are required to be recognised in respect of such temporary differences and prior year results have been restated accordingly (refer to section "New standards issued and effective in the current year" on page 166 for details). Primarily, this applies to lease arrangements and changes in closure estimates which are capitalised.

Other relevant judgements – uncertain tax positions

The Group operates across a large number of jurisdictions and is subject to review and challenge by local tax authorities on a range of tax matters. Where the amount of tax payable or recoverable is uncertain, whether due to local tax authority challenge or due to uncertainty regarding the appropriate treatment, judgement is required to assess the probability that the adopted treatment will be accepted. In accordance with IFRIC 23 "Uncertainty over Income Tax Treatments", if it is not probable that the treatment will be accepted, the Group accounts for uncertain tax provisions for all matters worldwide based on the Group's judgement of the most likely amount of the liability or recovery, or, where there is a wide range of possible outcomes, using a probability weighted average approach. Uncertain tax provisions include any related interest and penalties.

The Mongolian Tax Authority has issued a number of tax assessments covering the fiscal years 2013 to 2020, the most recent of which was received in December 2023, which are inconsistent with the Oyu Tolgoi Investment Agreement and Mongolian legislation. We have not booked any uncertain tax provisions for the matters under dispute, which have been referred to international arbitration. As required by Mongolian law we have paid US$356 million in respect of the assessments, pending resolution of the disputes through the arbitration. These amounts, adjusted for exchange rate movements, are included within our non-current receivables and other assets on the balance sheet. The interpretation of the Investment Agreement and Mongolian legislation has been, and is expected to continue to be, subject to dispute. Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the recovery of the amounts paid and of certain deferred tax assets, further details of which are provided in Note 15.

Taxation charge

	Note	2023 US$m	2022 US$m Restated[(a)]	2021 US$m Restated[(a)]
– Current		**5,092**	4,851	8,144
– Deferred	15	**(1,260)**	763	92
Total taxation charge		**3,832**	5,614	8,236

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

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Notes to the 2023 financial statements

10 Taxation *continued*

Prima facie tax reconciliation

	2023 US$m	2022 US$m Restated[a]	2021 US$m Restated[a]
Profit before taxation[b]	**13,785**	18,662	30,833
Prima facie tax payable at UK rate of 23.5% (2022: 19%; 2021: 19%)[c]	**3,239**	3,546	5,858
Higher rate of taxation of 30% on Australian earnings (2022: 30%; 2021: 30%)	**835**	1,550	2,598
Other tax rates applicable outside the UK and Australia	**(2)**	(17)	103
Tax effect of profit from equity accounted units, related impairments and expenses[b]	**(159)**	(109)	(198)
Impact of changes in tax rates	**(173)**	(11)	—
Resource depletion allowances	**(11)**	(40)	(52)
Recognition of previously unrecognised deferred tax assets[d]	**(157)**	(261)	(212)
Write-down of previously recognised deferred tax assets[e]	**—**	932	—
Utilisation of previously unrecognised deferred tax assets[f]	**(10)**	(37)	(200)
Unrecognised current year operating losses[g]	**567**	212	107
Deferred tax arising on internal sale of assets in Canadian operations[h]	**(364)**	—	—
Adjustments in respect of prior periods[i]	**31**	(222)	40
Other items	**36**	71	192
Total taxation charge	**3,832**	5,614	8,236

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) The Group profit before tax includes profit after tax of equity accounted units. Consequently, the tax effect on the profit from equity accounted units is included as a separate reconciling item in this prima facie tax reconciliation.
(c) As a UK headquartered and listed Group, the reconciliation of expected tax on accounting profit to tax charge uses the UK corporate tax rate to calculate the prima facie tax payable. Rio Tinto is also listed in Australia, and the reconciliation includes the impact of the higher tax rate in Australia where a significant proportion of the Group's profits are currently earned. The impact of other tax rates applicable outside the UK and Australia is also included. The weighted average statutory corporate tax rate on profit before tax is approximately 31% (2022: 29% 2021: 29%).
(d) The recognition of previously unrecognised deferred tax assets in 2023 and 2022 relates primarily to Oyu Tolgoi where reaching sustainable underground production has reduced the risk of tax losses expiring if not recovered against taxable profits within eight years. In the comparative period to 31 December 2021 the recognition of previously unrecognised deferred tax assets also included the recognition of prior year deferred tax assets in our Australian Aluminium business.
(e) The write-down of previously recognised deferred tax assets in the prior year relates to deferred tax assets of our US businesses. The enactment of the US *Inflation Reduction Act of 2022* in August included a new Corporate Alternative Minimum Tax (CAMT) regime which applies a minimum tax rate of 15% on accounting profits. As a result of the new legislation, which does not give relief for some Federal deferred tax assets, the deferred tax assets previously recognised have been written down. This amount has been restated from US$820 million as previously reported to US$932 million to reflect the adoption of narrow-scope amendments to IAS 12 referred to in footnote (a).
(f) In 2021, the utilisation of previously unrecognised deferred tax assets arose due to higher than forecast profits in the year at Oyu Tolgoi.
(g) Unrecognised current year operating losses include tax losses around the Group, including increases in closure estimates in 2023, for which no tax benefit is currently recognised due to uncertainty regarding whether suitable taxable profits will be earned in future to obtain value for the tax losses.
(h) During the year the Canadian aluminium business completed an internal sale of assets which resulted in the utilisation of previously unrecognised capital losses and an uplift in the tax depreciable value of assets on which a deferred tax asset of US$364 million is recognised.
(i) In the year to 31 December 2022, adjustments in respect of prior periods includes amounts related to the settlement of all tax disputes with the Australian Tax Office for the years 2010 to 2021.

	2023 US$m	2022 US$m	2021 US$m
Tax on fair value movements:			
– Cash flow hedge fair value gains	**1**	21	62
Tax credit/(charge) on re-measurement gains/(losses) on pension and post-retirement healthcare plans	**152**	(123)	(305)
Deferred tax relating to components of other comprehensive income for the year (note 15)	**153**	(102)	(243)

Future tax developments

We continue to monitor and evaluate the domestic implementation by relevant countries of the Organisation for Economic Co-operation and Development's (OECD) Pillar Two which seeks to apply a 15% global minimum tax. Pillar Two was substantively enacted by the United Kingdom on 20 June 2023, with application from 1 January 2024. As the Pillar Two legislation was not operative at the reporting date, the Group has no related current tax exposure.

We have adopted the guidance contained in *International Tax Reform – Pillar Two Model Rules – Amendments to IAS 12* released on 23 May 2023, which provides a temporary mandatory exception from deferred tax accounting for Pillar Two. We estimate that the exposure to additional taxation in 2024 under Pillar Two is immaterial for the Group.

Our operating assets

We are a diversified mining operation with the majority of our assets being located in OECD countries.

Non-current assets other than excluded items[a]

The total of non-current assets other than excluded items is shown by location below.

	2023 US$m	2022 US$m Restated[b]
Australia	**31,419**	31,674
Canada	**15,362**	14,472
Mongolia	**14,172**	12,872
United States of America	**7,171**	6,441
Africa	**3,412**	2,945
South America	**3,624**	3,317
Europe (excluding UK)	**165**	245
UK	**132**	136
Other countries	**1,254**	1,159
Total non-current assets other than excluded items	**76,711**	73,261
Non-current assets excluded from analysis above:		
Deferred tax assets	**3,624**	2,796
Other financial assets	**481**	406
Quasi-equity loans to equity accounted units[a]	**14**	—
Receivables and other assets	**1,209**	1,338
Total non-current assets per balance sheet	**82,039**	77,801

(a) Allocation of non-current assets by country is based on the location of the business units holding the assets. It includes investments in equity accounted units totalling US$4,393 million (2022: US$3,298 million) which represents the Group's share of net assets excluding quasi-equity loans shown separately above.

(b) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

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Notes to the 2023 financial statements

11 Goodwill

Recognition and measurement

Goodwill is not amortised; it is tested annually at 30 September for impairment or more frequently if events or changes in circumstances indicate a potential impairment. Refer to note 4 for further information.

	2023 US$m	2022 US$m
Net book value		
At 1 January	**826**	879
Adjustment on currency translation	**(29)**	(53)
At 31 December	**797**	826
– cost	**16,237**	15,974
– accumulated impairment	**(15,440)**	(15,148)
At 1 January		
– cost	**15,974**	16,987
– accumulated impairment	**(15,148)**	(16,108)

At 31 December, goodwill has been allocated as follows:

	2023 US$m	2022 US$m
Net book value		
Richards Bay Minerals	**370**	405
Pilbara	**342**	337
Dampier Salt	**85**	84
	797	826

Impairment tests for goodwill

Richards Bay Minerals

Richards Bay Minerals' annual impairment review resulted in no impairment charge for 2023 (2022: no impairment charge). The recoverable amount has been assessed by reference to the CGU's FVLCD, in line with the policy set out in note 4 and classified as level 3 under the fair value hierarchy. FVLCD was determined by estimating cash flows until the end of the life-of-mine plan including anticipated expansions. In arriving at FVLCD, a post-tax discount rate of 8.6% (2022: 8.6%) has been applied to the post-tax cash flows expressed in real terms.

The key assumptions to which the calculation of FVLCD for Richards Bay Minerals is most sensitive and the corresponding change in FVLCD are set out below:

	2023 US$m	2022 US$m
5% increase in the titanium slag price	**217**	**207**
1% increase in the discount rate applied to post-tax cash flows	**(175)**	**(140)**
10% strengthening of the South African rand	**272**	**263**

Future selling prices and operating costs have been estimated in line with the policy set out in note 4. The recoverable amount of the cash-generating unit (CGU) exceeds the carrying value when each of these sensitivities is applied while keeping all other assumptions constant.

Forward looking

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12 Intangible assets

Recognition and measurement

Purchased intangible assets are initially recorded at cost. Finite-life intangible assets are amortised over their useful economic lives on a straight line or units of production basis, as appropriate. Intangible assets that are deemed to have indefinite lives and intangible assets that are not yet ready for use are not amortised; they are reviewed annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment.

The majority of our intangible assets relate to capitalised exploration and evaluation spend on undeveloped properties and contract-based water rights. The water rights were acquired with Alcan in Canada.

The carrying values for undeveloped properties are reviewed at each reporting date in accordance with IFRS 6 "Exploration for and Evaluation of Mineral Resources". The indicators of impairment differ from the tests in accordance with IAS 36 in recognition of the subjectivity of estimating future cash flows for mineral interests under evaluation. Potential indicators of impairment include: expiry of the right to explore, substantive expenditure is no longer planned, commercially viable quantities of mineral resources have not been discovered and exploration activities will be discontinued, or sufficient data exists to indicate a future development would be unlikely to recover the carrying amount in full. When such impairment indicators have been identified, the recoverable amount and impairment charge are measured under IAS 36. Impairment reversals for undeveloped properties are not subject to special conditions within IFRS 6 and are therefore subject to the same monitoring for indicators of impairment reversal as other CGUs.

Exploration and evaluation

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. Capitalisation of evaluation expenditure commences when there is a high degree of confidence that the Group will determine that a project is commercially viable; that is, the project will provide a satisfactory return relative to its perceived risks and, therefore, it is considered probable that future economic benefits will flow to the Group. The Group's view is that a high degree of confidence is greater than "more likely than not" (that is, greater than 50% certainty) and less than "virtually certain" (that is, less than 90% certainty).

Assessing whether there is a high degree of confidence that the Group will ultimately determine that an evaluation project is commercially viable requires judgement and consideration of all relevant factors such as: the nature and objective of the project; the project's current stage, project timeline, current estimates of the project's net present value (including sensitivity analyses for the key assumptions), and the main risks of the project. Development expenditure incurred prior to the decision to proceed is subject to the same criteria for capitalisation, being a high degree of confidence that the Group will ultimately determine that a project is commercially viable.

In some cases, undeveloped projects are regarded as successors to ore bodies, smelters or refineries currently in production. Where this is the case, it is intended that these will be developed and go into production when the current source of ore is exhausted or when existing smelters or refineries are closed. Ore reserves may be declared for an undeveloped mining project before its commercial viability has been fully determined. Evaluation costs may continue to be capitalised in between declaration of ore reserves and approval to mine as further work is undertaken in order to refine the development case to maximise the project's returns.

Carbon credits and Renewable Energy Certificates

Carbon credits and Renewable Energy Certificate (RECs) acquired for our own use are accounted for as intangible assets, initially recorded at cost. They are amortised through the income statement when surrendered.

Contract-based intangible assets

The majority of the carrying value of our contract-based intangible assets relate to water rights in the Quebec region. These contribute to the efficiency and cost effectiveness of our aluminium operations as they enable us to generate electricity from hydropower stations.

Other relevant judgements – assessment of indefinite-lived water rights in Quebec, Canada

We continue to judge the water rights in Quebec to have an indefinite life because we expect the contractual rights to contribute to the efficiency and cost effectiveness of our operations for the foreseeable future. Accordingly, the rights are not subject to amortisation but are tested annually for impairment. We have no other indefinite-lived assets.

The remaining carrying value of the water rights of US$1,776 million (included in contract-based assets) as at 31 December 2023 (2022: US$1,693 million) relates wholly to the Quebec smelters CGU. The Quebec smelters CGU was tested for impairment by reference to FVLCD using discounted cash flows. The recoverable amount of the Quebec smelters is classified as level 3 under the fair value hierarchy. In arriving at its FVLCD, post-tax cash flows expressed in real terms have been estimated over the expected useful economic lives of the underlying smelting assets and discounted using a real post-tax discount rate of 6.6% (2022: 6.6%).

The recoverable amounts were determined to be significantly in excess of carrying value, and there are no reasonably possible changes in key assumptions that would cause the remaining water rights to be impaired.

Impact of climate change on our business – water rights

To manage the uncertainties of climate change and our impact on the area, our team of hydrologists in Quebec analyse different weather scenarios on a daily basis. We monitor the water resource available to us along with the impact that our operation is having on the water quality and quantity, and on the environment when we return the water following use. Based on our analysis to date, we do not consider the renewal of our contractual water rights to be at risk from climate change for the foreseeable future.

Notes to the 2023 financial statements

12 Intangible assets *continued*

	2023				
	Exploration and evaluation US$m	Trademarks, patented and non-patented technology US$m	Contract-based intangible assets US$m	Other intangible assets[a] US$m	Total US$m
Net book value					
At 1 January 2023	**1,368**	**12**	**1,875**	**390**	**3,645**
Adjustment on currency translation	**—**	**1**	**52**	**8**	**61**
Additions[b]	**471**	**—**	**—**	**121**	**592**
Amortisation for the year	**—**	**(4)**	**(7)**	**(113)**	**(124)**
Impairment reversal[c]	**231**	**—**	**—**	**—**	**231**
Newly consolidated operations[d]	**85**	**—**	**—**	**—**	**85**
Disposals, transfers and other movements	**(176)**	**—**	**33**	**42**	**(101)**
At 31 December 2023	**1,979**	**9**	**1,953**	**448**	**4,389**
– cost[c]	**1,989**	**222**	**2,996**	**1,926**	**7,133**
– accumulated amortisation and impairment[c]	**(10)**	**(213)**	**(1,043)**	**(1,478)**	**(2,744)**

	2022				
	Exploration and evaluation US$m	Trademarks, patented and non-patented technology US$m	Contract-based intangible assets US$m	Other intangible assets[a] US$m	Total US$m
Net book value					
At 1 January 2022	363	22	2,008	439	2,832
Adjustment on currency translation	(22)	(2)	(114)	(24)	(162)
Additions	207	5	—	106	318
Amortisation for the year	—	(13)	(9)	(137)	(159)
Impairment reversal[c]	150	—	—	—	150
Subsidiaries no longer consolidated[c]	(150)	—	—	—	(150)
Newly consolidated operations[d]	822	—	—	—	822
Disposals, transfers and other movements	(2)	—	(10)	6	(6)
At 31 December 2022	1,368	12	1,875	390	3,645
– cost	3,030	211	2,908	1,732	7,881
– accumulated amortisation and impairment	(1,662)	(199)	(1,033)	(1,342)	(4,236)

(a) Carbon abatement spend of US$61 million in 2023 (2022: US$33 million) relates to procurement of carbon units and RECs included within "Other intangible assets" on initial recognition and charged to the income statement when surrendered.

(b) In the current year, additions to exploration and evaluation assets includes US$4 million of interest capitalised. Our average borrowing rate, excluding any project finance, used for capitalisation of interest is 7.50% (2022: 5.60%).

(c) The impairment reversal in the current year relates to the Simandou project, this also impacted cost and accumulated impairment due to derecognition of historical exploration and evaluation costs. In 2022, the impairment reversal and disposal related to our sale of the Roughrider uranium project. Refer to note 4 for details.

(d) In the current year, the acquisition relates to our purchase of Meridian Minera Limitada's 57.7% share in Agua de la Falda. In 2022, the acquisition related to our purchase of Rincon, a lithium project in Argentina. Refer to note 5 for details.

Where amortisation is calculated on a straight line basis, the following useful lives have been determined:

	Trademarks, patented and non-patented technology		Contract-based intangible assets		Other intangible assets	
Type of intangible	Trademarks	Patented and non-patented technology	Power contracts/water rights	Other purchase and customer contracts	Internally generated intangible assets and computer software	Other intangible assets
Amortisation profile	14 to 20 years	10 to 20 years	2 to 45 years	5 to 15 years	2 to 5 years	2 to 20 years

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13 Property, plant and equipment

Recognition and measurement

Property, plant and equipment is stated at cost, as defined in IAS 16 "Property, Plant and Equipment", less accumulated depreciation and accumulated impairment losses. The cost of property, plant and equipment includes, where applicable, the estimated close-down and restoration costs associated with the asset.

Property, plant and equipment includes right-of-use assets arising from leasing arrangements, shown separately from owned and leasehold assets.

Once an undeveloped mining project has been determined as commercially viable and approval to mine has been given, further expenditure is capitalised under "capital work in progress" together with any amount transferred from "Exploration and evaluation". Once the project enters into an operation phase, the amounts capitalised in capital work in progress are reclassified to their respective asset categories.

Costs incurred while commissioning new assets, in the period before they are capable of operating in the manner intended by management, are capitalised unless associated with pre-production revenue. Development costs incurred after the commencement of production are capitalised to the extent they are expected to give rise to a future economic benefit. Interest on borrowings related to construction or development projects is capitalised, at the rate payable on project-specific debt if applicable or at the Group or subsidiary's cost of borrowing if not. This is performed until the point when substantially all the activities that are necessary to make the asset ready for its intended use are complete. It may be appropriate to use a subsidiary's cost of borrowing when the debt was negotiated based on the financing requirements of that subsidiary.

Depreciation of non-current assets

Property, plant and equipment is depreciated over its useful life, or over the remaining life of the mine, smelter or refinery if that is shorter and there is no reasonable alternative use for the asset by the Group. Depreciation commences when an asset is available for use and therefore there is no depreciation for capital work in progress.

Straight line basis

Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight line basis as follows:

	Land and buildings		Plant and equipment	
Type of Property, plant and equipment	Land	Buildings	Power-generating assets	Other plant and equipment
Depreciation profile	Not depreciated	5 to 50 years	See Power note below on page 195	3 to 50 years

The useful lives and residual values for material assets and categories of assets are reviewed annually and changes are reflected prospectively.

Units of production basis

For mining properties and leases and certain mining equipment, consumption of the economic benefits of the asset is linked to production. Except as noted below, these assets are depreciated on the units of production basis.

In applying the units of production method, depreciation is normally calculated based on production in the period as a percentage of total expected production in current and future periods based on ore reserves and, for some mines, other mineral resources. Other mineral resources may be included in the calculations of total expected production in limited circumstances where there are very large areas of contiguous mineralisation, for which the economic viability is not sensitive to likely variations in grade, as may be the case for certain iron ore, bauxite and industrial mineral deposits, and where there is a high degree of confidence that the other mineral resources can be extracted economically. This would be the case when the other mineral resources do not yet have the status of ore reserves merely because the necessary detailed evaluation work has not yet been performed and the responsible technical personnel agree that inclusion of a proportion of measured and indicated resources in the calculation of total expected production is appropriate based on historical reserve conversion rates.

The required level of confidence is unlikely to exist for minerals that are typically found in low-grade ore (as compared with the above), such as copper or gold. In these cases, specific areas of mineralisation have to be evaluated in detail before their economic status can be predicted with confidence.

Sometimes the calculation of depreciation for infrastructure assets, primarily rail and port, considers measured and indicated resources. This is because the asset can benefit current and future mines. The measured and indicated resource may relate to mines which are currently in production or to mines where there is a high degree of confidence that they will be brought into production in the future. The quantum of mineral resources is determined taking into account future capital costs as required by the JORC code. The depreciation calculation, however, applies to current mines only and does not take into account future development costs for mines which are not yet in production. Measured and indicated resources are currently incorporated into depreciation calculations in the Group's Australian iron ore business.

Notes to the 2023 financial statements

13 Property, plant and equipment *continued*

Key judgement – estimation of asset lives

The useful lives of the major assets of a cash-generating unit are often dependent on the life of the orebody to which they relate. Where this is the case, the lives of mining properties, and their associated refineries, concentrators and other long-lived processing equipment are generally limited to the expected life of the orebody. The life of the orebody, in turn, is estimated on the basis of the life-of-mine plan. Where the major assets of a cash-generating unit are not dependent on the life of a related orebody, management applies judgement in estimating the remaining service potential of long-lived assets. Factors affecting the remaining service potential of smelters include, for example, smelter technology and electricity purchase contracts when power is not sourced from the Group, or in some cases from local governments permitting electricity generation from hydropower stations.

Impact of climate change on our business – estimation of asset lives

We expect there to be a higher demand for copper, aluminium, lithium and high-grade iron ore in order to meet demand for the minerals required to transition to a low carbon economic environment, consistent with the climate change commitments of the Paris Agreement. We expect this to exceed new supply to the market and therefore increase prices. Under the Aspirational Leadership scenario, the economic cut-off grade for our Ore Reserves is expected to be lower; in effect we would mine a greater volume of material before the mines are depleted. We cannot quantify the difference this would make without undue cost as it would require revised mine plans, but for property, plant and equipment this increased volume of material would reduce the depreciation charge during any given period for assets that use the "Units of production" depreciation basis.

Deferred stripping

In open pit mining operations, overburden and other waste materials must be removed to access ore from which minerals can be extracted economically. The process of removing overburden and other waste materials is referred to as stripping. During the development of a mine (or, in some instances, pit; see below), before production commences, stripping costs related to a component of an orebody are capitalised as part of the cost of construction of the mine (or pit). These are then amortised over the life of the mine (or pit) on a units of production basis.

Where a mine operates several open pits that are regarded as separate operations for the purpose of mine planning, initial stripping costs are accounted for separately by reference to the ore from each separate pit. If, however, the pits are highly integrated for the purpose of mine planning, the second and subsequent pits are regarded as extensions of the first pit in accounting for stripping costs. In such cases, the initial stripping of the second and subsequent pits is considered to be production phase stripping (see below).

Key judgement – deferral of stripping costs

We apply judgement as to whether multiple pits at a mine are considered separate or integrated operations. This determines whether the stripping activities of a pit are classified as pre-production or production phase stripping and, therefore, the amortisation base for those costs. The analysis depends on each mine's specific circumstances and requires judgement: another mining company could make a different judgement even when the fact pattern appears to be similar.

The following factors would point towards the initial stripping costs for the individual pits being accounted for separately:

- if mining of the second and subsequent pits is conducted consecutively following that of the first pit, rather than concurrently;
- if separate investment decisions are made to develop each pit, rather than a single investment decision being made at the outset;
- if the pits are operated as separate units in terms of mine planning and the sequencing of overburden removal and ore mining, rather than as an integrated unit;
- if expenditures for additional infrastructure to support the second and subsequent pits are relatively large; and
- if the pits extract ore from separate and distinct orebodies, rather than from a single orebody.

If the designs of the second and subsequent pits are significantly influenced by opportunities to optimise output from several pits combined, including the co-treatment or blending of the output from the pits, then this would point to treatment as an integrated operation for the purposes of accounting for initial stripping costs. The relative importance of each of the above factors is considered in each case.

In order for production phase stripping costs to qualify for capitalisation as a stripping activity asset, three criteria must be met:

- it must be probable that there will be an economic benefit in a future accounting period because the stripping activity has improved access to the orebody;
- it must be possible to identify the "component" of the orebody for which access has been improved; and
- it must be possible to reliably measure the costs that relate to the stripping activity.

A "component" is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).

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Recognition and measurement of deferred stripping

Phase	Development Phase	Production Phase	
Stripping activity	Overburden and other waste removal during the development of a mine before production commences.	Production phase stripping can give access to two benefits: the extraction of ore in the current period and improved access to ore which will be extracted in future periods.	
Period of benefit	After commissioning of the mine.	Future periods after first phase is complete.	Current and future benefit are indistinguishable.
Capitalised to mining properties and leases in property, plant and equipment	During the development of a mine, stripping costs relating to a component of an orebody are capitalised as part of the cost of construction of the mine.	It may be the case that subsequent phases of stripping will access additional ore and that these subsequent phases are only possible after the first phase has taken place. Where applicable, the Group considers this on a mine-by-mine basis. Generally, the only ore attributed to the stripping activity asset for the purposes of calculating the life-of-component ratio is the ore to be extracted from the originally identified component.	Stripping costs for the component are deferred to the extent that the current period ratio exceeds the life-of-component ratio.
Allocation to inventory	Not applicable	Not applicable	The stripping cost is allocated to inventory based on a relevant production measure using a life-of-component strip ratio. The ratio divides the tonnage of waste mined for the component for the period either by the quantity of ore mined for the component or by the quantity of minerals contained in the ore mined for the component. In some operations, the quantity of ore is a more appropriate basis for allocating costs, particularly when there are significant by-products.
Component	A "component" is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).		
Life-of-component ratio	The life-of-component ratios are based on the ore reserves of the mine (and for some mines, other mineral resources) and the annual mine plan; they are a function of the mine design and, therefore, changes to that design will generally result in changes to the ratios. Changes in other technical or economic parameters that impact the ore reserves (and for some mines, other mineral resources) may also have an impact on the life-of-component ratios even if they do not affect the mine design. Changes to the ratios are accounted for prospectively.		
Depreciation basis	Depreciated on a "units of production" basis based on expected production of either ore or minerals contained in the ore over the life of the component unless another method is more appropriate.		

Property, plant and equipment – owned and leased assets

	2023 US$m	2022 US$m
Property, plant and equipment – owned	**65,290**	63,731
Right-of-use assets – leased	**1,178**	1,003
Net book value	**66,468**	64,734

Notes to the 2023 financial statements

13 Property, plant and equipment *continued*

Property, plant and equipment – owned

	Note	2023 Mining properties and leases[a] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2023		**10,529**	**6,699**	**34,407**	**12,096**	**63,731**
Adjustment on currency translation[b]		**14**	**116**	**495**	**54**	**679**
Adjustments to capitalised closure costs	14	**(292)**	**—**	**—**	**—**	**(292)**
Interest capitalised[c]	9	**—**	**—**	**—**	**275**	**275**
Additions[d]		**222**	**207**	**1,381**	**5,110**	**6,920**
Depreciation for the year[a]		**(802)**	**(504)**	**(3,511)**	**—**	**(4,817)**
Impairment charges[e]		**(92)**	**(58)**	**(922)**	**(87)**	**(1,159)**
Disposals		**—**	**(28)**	**(73)**	**(27)**	**(128)**
Transfers and other movements[f]		**3,976**	**1,590**	**4,568**	**(10,053)**	**81**
At 31 December 2023		**13,555**	**8,022**	**36,345**	**7,368**	**65,290**
Balance sheet analysis						
– cost		**29,731**	**14,737**	**80,993**	**7,728**	**133,189**
– accumulated depreciation and impairment		**(16,176)**	**(6,715)**	**(44,648)**	**(360)**	**(67,899)**
Non-current assets pledged as security[g]		**5,307**	**1,477**	**6,980**	**3,715**	**17,479**

	Note	2022 Mining properties and leases[a] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2022		10,817	5,995	33,453	13,528	63,793
Adjustment on currency translation[b]		(436)	(344)	(1,870)	(311)	(2,961)
Adjustments to capitalised closure costs	14	520	—	—	—	520
Interest capitalised[c]	9	—	—	—	416	416
Additions[d]		360	304	1,111	4,732	6,507
Depreciation for the year[a]		(891)	(433)	(3,171)	—	(4,495)
Disposals		(3)	(1)	(38)	(4)	(46)
Newly consolidated operations[h]		—	1	—	5	6
Transfers and other movements[f]		162	1,177	4,922	(6,270)	(9)
At 31 December 2022		10,529	6,699	34,407	12,096	63,731
Balance sheet analysis						
– cost		25,263	12,805	74,562	13,118	125,748
– accumulated depreciation and impairment		(14,734)	(6,106)	(40,155)	(1,022)	(62,017)
Non-current assets pledged as security[g]		1,602	491	5,113	8,876	16,082

(a) At 31 December 2023, the net book value of capitalised production phase stripping costs totalled US$2,505 million, with US$2,069 million within "Property, plant and equipment" and a further US$436 million within "Investments in equity accounted units" (2022: total of US$2,497 million, with US$2,038 million in "Property, plant and equipment" and a further US$460 million within "Investments in equity accounted units"). During the year, capitalisation of US$325 million was partly offset by depreciation of US$324 million, inclusive of amounts recorded within equity accounted units (2022: US$411 million offset by depreciation of US$331 million). Depreciation of deferred stripping costs in respect of subsidiaries of US$216 million (2022: US$246 million; 2021: US$201 million) is included within "Depreciation for the year".

(b) Adjustment on currency translation represents the impact of exchange differences arising on the translation of the assets of entities with functional currencies other than the US dollar, recognised directly in the currency translation reserve. The adjustment in 2023 arose primarily from the strengthening of the Australian and Canadian dollars against the US dollar.

(c) Our average borrowing rate, excluding any project finance, used for capitalisation of interest is 7.50% (2022: 5.60%).

(d) Additions to "Property, plant and equipment" includes US$94 million of spend on carbon abatement (2022: US$86 million).

(e) In 2023, the impairment charges related primarily to our alumina refineries in the Aluminium segment. Refer to note 4 for details.

(f) "Transfers and other movements" includes reclassification between categories.

(g) Excludes assets held under capitalised lease arrangements. Non-current assets pledged as security represent amounts pledged as collateral against US$3,994 million (2022: US$3,965 million) of loans, which are included in note 20.

(h) In 2022, the acquisition relates to our purchase of Rincon, a lithium project in Argentina. Refer to note 5 for details.

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Impact of climate change on our business – useful economic lives of our power generating assets

The Group has committed to reducing Scope 1 and Scope 2 carbon emissions by 50% relative to our 2018 baseline by 2030 and achieving net zero emission across our operations by 2050. We expect to invest US$5 billion to US$6 billion on carbon abatement projects between 2022 and 2030 (revised from US$7.5 billion in prior year). Transitioning electricity from principally fossil fuel-based power generating assets to principally renewables is critical to achieving that goal. The carrying value of power generating assets is set out in the table below. The weighted average remaining useful economic life of plant and equipment for fossil fuel-based power generating assets is 10 years (2022: 13 years). Given the technical limitations of intermittent renewable energy generation and energy storage systems, and our need for reliable baseload electricity, we expect our current generation assets will be integral to those needs for the foreseeable future. We are investing in research and development and evaluating new market options that may overcome these technical challenges. Should pathways for eliminating fossil fuel power generating assets be identified we may need to accelerate depreciation or impair the assets; however, at this present moment the requirement for fossil fuel powered back-up means that early retirement of the assets is not expected and no change to depreciation rates is required.

	2023		2022	
Net book value	**Land and buildings US$m**	**Plant and equipment US$m**	Land and buildings US$m	Plant and equipment US$m
Fossil fuels	**87**	**932**	25	882
Renewables[(a)]	**201**	**2,456**	198	2,352

(a) The increase of US$104 million in renewables plant & equipment is primarily attributable to the Quebec power stations which are essential to the production of hydroelectricity for the manufacture of low-carbon aluminium in our newly expanded facility at Complexe Jonquière in Saguenay-Lac-Saint-Jean, as well as the Kemano hydropower station which continues to ensure the long-term, sustainable production of low-carbon aluminium at our smelter in Kitimat. Both assets are items of property, plant and equipment which are owned by Rio Tinto.

Right-of-use assets – leased

	2023			2022		
	Land and buildings US$m	**Plant and equipment US$m**	**Total US$m**	Land and buildings US$m	Plant and equipment US$m	Total US$m
Net book value						
At 1 January	**515**	**488**	**1,003**	549	585	1,134
Adjustment on currency translation	**11**	**4**	**15**	(35)	(16)	(51)
Additions	**96**	**420**	**516**	49	254	303
Depreciation for the year	**(88)**	**(305)**	**(393)**	(61)	(295)	(356)
Impairment charges[(a)]	**(1)**	**(7)**	**(8)**	—	—	—
Disposals	**—**	**(1)**	**(1)**	—	—	—
Transfers and other movements	**10**	**36**	**46**	13	(40)	(27)
At 31 December	**543**	**635**	**1,178**	515	488	1,003

(a) In 2023, the impairment charges related to our alumina refineries in the Aluminium segment. Refer to note 4 for details.

The leased assets of the Group include land and buildings (mainly office buildings) and plant and equipment, the majority of which are marine vessels. Lease terms are negotiated on an individual basis and contain a wide range of terms and conditions. Right-of-use assets are depreciated on a straight line basis over the life of the lease, taking into account any extensions that are likely to be exercised.

Notes to the 2023 financial statements

14 Close-down and restoration provisions

Recognition and measurement

The Group has provisions for close-down and restoration costs, which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. The obligation may occur during development or during the production phase of a facility. These provisions are based on all regulatory requirements and any other commitments made to stakeholders. The provision excludes the impact of future disturbance that is planned to occur during the life of mine, so that it represents only existing disturbance as at the balance sheet date.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated; instead a contingent liability is disclosed. Refer to note 37 for details. This applies primarily to certain Canadian smelters that have indefinite-lived water rights from local governments permitting electricity generation from hydropower stations and are not tied to a specific orebody.

Close-down and restoration costs are a normal consequence of mining or production, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their costs using current restoration standards, techniques and expected climate conditions. The costs are estimated on the basis of a closure plan, and are reviewed at each reporting period during the life of the operation to reflect known developments. The estimates are also subject to formal review, with appropriate external support, at regular intervals.

The timing of closure and the rehabilitation plans for the site can be uncertain and dependent upon future capital allocation decisions, which involve estimation of future economic circumstances and business cases. In such circumstances, the closure provision is estimated using probability weighting of the different remediation and closure scenarios.

The initial close-down and restoration provision is capitalised within "Property, plant and equipment". Subsequent movements in the close-down and restoration provisions for ongoing operations are treated as an adjustment to cost within "Property, plant and equipment". This includes those resulting from new disturbances related to expansions or other activities qualifying for capitalisation; updated cost estimates; changes to the estimated lives of operations; changes to the timing of closure activities; and revisions to discount rates.

Changes in closure provisions relating to closed and fully impaired operations are charged/credited to "Net operating costs" in the income statement.

Where rehabilitation is conducted systematically over the life of the operation, rather than at the time of closure, provision is made for the estimated outstanding continuous rehabilitation work at each balance sheet date and the cost is charged to the income statement.

The closure provision is represented by forecast future underlying cash flows expressed in real terms at the balance sheet date. These are discounted for the time value of money based on a long-term view of low-risk market yields which includes a review of historic trends plus risks and opportunities for which future cash flows have not been adjusted, namely potential improvements in closure practices between the reporting date and the point at which rehabilitation spend takes place. The real-terms discount rate used is 2.0% (2022: 1.5%) which is applied to all locations since we expect to meet closure cash flows principally from US dollar revenues and financing, with activities co-ordinated by the Group's central closure team.

To roll forward those real-terms cash flows between periods, we identify local rates of inflation based on Producer Price Inflation (PPI) indices and, together with the real-terms discount rate, unwind the discount through the line "Amortisation of discount on provisions", shown within "Finance items" in the income statement. This nominal rate for cost escalation in the current financial year is estimated at the start of each half-year and applied systematically for six months. At the end of each half-year we update the underlying cash flows for the latest estimate of experienced inflation, if it differs materially from our forecast, for the current financial year and record this as "changes to existing provisions". For operating sites this adjustment usually results in a corresponding adjustment to property, plant and equipment and for closed and fully impaired sites the adjustment is charged or credited to the income statement.

In some cases, our subsidiaries make a contribution to trust funds in order to meet or reimburse future environmental and decommissioning costs. Amounts due for reimbursement from trust funds are not offset against the corresponding closure provision unless payments into the fund have the effect of passing the closure obligation to the trust.

Environmental costs result from environmental damage that was not a necessary consequence of operations, and may include remediation, compensation and penalties. Provision is made for the estimated present value of such costs at the balance sheet date. These costs are charged to "Net operating costs", except for the unwinding of the discount which is shown within "Amortisation of discount on provisions".

Remediation procedures may commence soon after the time the disturbance, remediation process and estimated remediation costs become known, but can continue for many years depending on the nature of the disturbance and the remediation techniques used.

	Note	2023 US$m	2022 US$m
At 1 January		**15,759**	14,542
Adjustment on currency translation		**241**	(699)
Adjustments to mining properties/right-of-use assets:	13		
– increases to existing and new provisions		**629**	520
– change in discount rate		**(921)**	—
Charged/(credited) to profit:			
– increases to existing and new provisions[a]		**1,654**	541
– change in discount rate		**(168)**	—
– unused amounts reversed		**(195)**	(72)
– exchange (gains)/losses on provisions		**(16)**	17
– amortisation of discount		**955**	1,517
Utilised in year		**(777)**	(609)
Transfers and other movements		**(11)**	2
At 31 December[b]		**17,150**	15,759
Balance sheet analysis:			
Current		**1,523**	1,142
Non-current		**15,627**	14,617
Total		**17,150**	15,759

(a) Includes US$1,272 million arising from study updates in the second half of 2023 (2022: US$180 million) which have been excluded from underlying EBITDA. Refer to note 1 for details.
(b) Close-down, restoration and environmental liabilities at 31 December 2023 have not been adjusted for closure-related receivables amounting to US$366 million (2022: US$351 million) due from the ERA trust fund and other financial assets held for the purposes of meeting closure obligations. These are included within "Receivables and other assets" on the balance sheet.

Key judgement – Close-down, restoration and environmental obligations

We use our judgement and experience to determine the potential scope of closure rehabilitation work required to meet the Group's legal, statutory and constructive obligations, and any other commitments made to stakeholders, and the options and techniques available to meet those obligations in order to estimate the associated costs and the likely timing of those costs. Significant judgement is also required to then determine both the costs associated with that work and the other assumptions used to calculate the provision. External experts support the cost estimation process where appropriate but there remains significant estimation uncertainty.

The key judgement in applying this accounting policy is determining when an estimate is sufficiently reliable to make or adjust a closure provision. Adjustments are made to provisions when the range of possible outcomes becomes sufficiently narrow to permit reliable estimation. Depending on the materiality of the change, adjustments may require review and endorsement by the Group's Closure Steering Committee before the provision is updated.

Cost provisions are updated throughout the life of the operation with conceptual study estimates reviewed every five years. Within ten years from the expected closure date, closure cost estimates must comply with the Group's Capital Project Framework. This means, for example, that where an Order of Magnitude (OoM) study is required for closure, it must be of the same standard as an OoM study for a new mine, smelter or refinery.

In 2023, a reforecast for the Ranger Uranium mine operated by Energy Resources of Australia has resulted in an increase to the closure provision of US$850 million. The increase is principally attributed to closure activities taking longer due to a reassessment of the time taken to achieve Pit 3 consolidation coupled with transition to a lower risk approach which adversely impacts achievement of final landform and the quantity of water to be processed. When operations ceased at the end of 2020, rehabilitation was expected to be complete by 2026; we now expect the final completion will be delayed until 2034, subject to permitting. The majority of the provision increase is attributable to rehabilitation activities post 2027 and is subject to further study which could result in material change to the provision. These activities remain subject to a number of studies and are also potentially sensitive to external events such as rainfall. A previous study was completed in early 2022 and the preliminary information from that study resulted in an increase to closure liabilities of US$510 million in 2021.

In some cases, the closure study may indicate that monitoring and, potentially, remediation will be required indefinitely – for example, ground water treatment. In these cases, the underlying cash flows for the provision may be restricted to a period for which the costs can be reliably estimated, which on average is around 30 years. Where an alternative commercial arrangement to meet our obligations can be predicted with confidence, this period may be shorter.

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Notes to the 2023 financial statements

14 Close-down and restoration provisions *continued*

Analysis of close-down and restoration/environmental clean-up provisions

	2023 US$m	2022 US$m
Undiscounted close-down and environmental restoration obligations	**23,372**	20,433
Impact of discounting	**(6,222)**	(4,674)
Present value of close-down and restoration obligations	**17,150**	15,759
Attributable to:		
Operating sites	**12,021**	11,598
Non-operating sites	**5,129**	4,161
Total close-down and restoration provisions	**17,150**	15,759

Closure cost composition as at 31 December	2023 US$m	2022 US$m
Decommissioning, decontamination and demolition	**3,591**	3,386
Closure and rehabilitation earthworks[(a)]	**4,609**	4,760
Long-term water management costs[(b)]	**1,236**	1,092
Post closure monitoring and maintenance	**1,806**	1,846
Indirect costs, owners' costs and contingency[(c)]	**5,908**	4,675
Total	**17,150**	15,759

(a) A key component of earthworks rehabilitation involves re-landscaping the area disturbed by mining activities utilising largely diesel powered heavy mobile equipment. In developing low-carbon solutions for our mobile fleet, this may include electrification of the vehicles during the mine life. The forecast cash flows for the heavy mobile equipment in the closure cost estimate are based on existing fuel sources. The cost incurred during closure could reduce if these activities are powered by renewable energy.

(b) Long-term water management relates to the post-closure treatment of water due to acid rock drainage and other environmental commitments and is an area of research and development focus for our Closure team. The cost of this water processing can continue for many years after the bulk earthworks and demolition activities have completed and are therefore exposed to long-term climate change. This could materially affect rates of precipitation and therefore change the volume of water requiring processing. It is not currently possible to forecast accurately the impact this could have on the closure provision as some of our locations could experience drier conditions whereas others could experience greater rainfall. A further consideration relates to the alternative commercial use for the processed water, which could support ultimate transfer of these costs to a third party.

(c) Indirect costs, owners' costs and contingency include adjustments to the underlying cash flows to align the closure provision with a central-case estimate. This excludes allowances for quantitative estimation uncertainties, which are allocated to the underlying cost driver and presented within the respective cost categories above.

Geographic composition as at 31 December	2023 US$m	2022 US$m
Australia	**9,187**	7,983
USA	**4,682**	4,680
Canada	**1,722**	1,730
Other countries	**1,559**	1,366
Total	**17,150**	15,759

The geographic composition of the closure provision shows that our closure obligations are largely in countries with established levels of regulation in respect of mine and site closure.

Projected cash flows (undiscounted) for close-down and restoration/environmental clean-up provisions

	<1 year US$m	1-3 years US$m	3-5 years US$m	> 5 years US$m	Total US$m
At 31 December 2023	**1,523**	**2,365**	**2,005**	**17,479**	**23,372**
At 31 December 2022	1,142	1,986	1,426	15,879	20,433

Remaining lives of operations and infrastructure range from one to over 50 years with an average for all sites, weighted by present closure obligation, of around 14 years. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their respective costs based on current restoration standards, techniques and expected climate conditions.

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Key accounting estimate – close-down, restoration and environmental obligations

The most significant assumptions and estimates used in calculating the provision are:

- Closure timeframes. The weighted average remaining lives of operations is shown on the previous page. Some expenditure may be incurred before closure while the operation as a whole is in production.
- The length of any post-closure monitoring period. This will depend on the specific site requirements and the availability of alternative commercial arrangements; some expenditure can continue into perpetuity. The Rio Tinto Kennecott closure and environmental remediation provision includes an allowance for ongoing monitoring and remediation costs, including ground water treatment, of approximately US$0.7 billion.
- The probability weighting of possible closure scenarios. The most significant impact of probability weighting is at the Pilbara operations (Iron Ore) relating to infrastructure and incorporates the expectation that some infrastructure will be retained by the relevant State authorities post closure. The assignment of probabilities to this scenario reduces the closure provision by US$0.7 billion.
- Appropriate sources on which to base the calculation of the discount rate. The discount rate by nature is subjective and therefore sensitivities are shown below for how the provision balance, which at 31 December 2023 was US$17.2 billion, would change if discounted at alternative discount rates.

There is significant estimation uncertainty in the calculation of the provision and cost estimates can vary in response to many factors including:

- Changes to the relevant legal or local/national government requirements and any other commitments made to stakeholders;
- Review of remediation and relinquishment options;
- Additional remediation requirements identified during the rehabilitation;
- The emergence of new restoration techniques;
- Precipitation rates and climate change;
- Change in foreign exchange rates;
- Change in the expected closure date; and
- Change in the discount rate.

Experience gained at other mine or production sites may also change expected methods or costs of closure, although elements of the restoration and rehabilitation can be unique to each site. Generally, there is relatively limited restoration and rehabilitation activity and historical precedent elsewhere in the Group, or in the industry as a whole, against which to benchmark cost estimates.

The expected timing of expenditure can also change for other reasons, for example because of changes to expectations relating to ore reserves and mineral resources, production rates, renewal of operating licences or economic conditions.

Changes in closure cost estimates at the Group's ongoing operations could result in a material adjustment to assets and liabilities in the next 12 months and would also impact the depreciation and the unwinding of discount in future years.

Changes to closure cost estimates for closed operations, and changes to environmental cost estimates at any operation, could cause a material adjustment to the income statement and closure liability. We do not consider that there is significant risk of a change in estimates for these liabilities causing a material adjustment to the income statement in the next 12 months. Any new environmental incidents may require a material provision but cannot be predicted.

Project specific risks are embedded within the cash flows which are based on a central case estimate of closure activities assuming that the obligation is fulfilled by the Group. These cash flows are then discounted using a discount rate specific to the class of obligations.

Impact of climate change on our business – close-down, restoration and environmental costs

The underlying costs for closure have been estimated with varying degrees of precision based on a function of the age of the underlying asset and proximity to closure. For assets within ten years of closure, closure plans and cost estimates are supported by detailed studies which are refined as the closure date approaches. These closure studies consider climate change and plan for resilience to expected climate conditions with a particular focus on precipitation rates. For new developments, consideration of climate change and ultimate closure conditions are an important part of the approval process. For longer-lived assets, closure provisions are typically based on conceptual level studies that are refreshed at least every five years; these are evolving to incorporate greater consideration of forecast climate conditions at closure.

Notes to the 2023 financial statements

14 Close-down and restoration provisions *continued*

Sensitivity analysis

Provisions of US$17,150 million (2022: US$15,759 million) for close-down and restoration costs and environmental clean-up obligations are based on risk-adjusted cash flows expressed in real terms. The present volatility in interest rates has resulted in expectations of higher yields from long-dated bonds, including the 30-year US Treasury Inflation Protected Securities, which is a key input to our closure provision discount rate. On 30 June 2023, we revised the closure discount rate to 2.0% (from 1.5%), applied prospectively from that date. This assumption is based on the currency in which we plan to fund the closures and our expectation of long-term interest rate and exchange rate parity in the locations of our operations.

The impact of discounting on the provision - and the corresponding amount capitalised within "Property, plant and equipment" (for operating sites) or charged/(credited) to the income statement (for non-operating and fully impaired sites) - is illustrated below:

	At 31 December 2023			At 31 December 2022		
	Capitalised within "Property, plant and equipment" US$m	**Charged/(credited) to the income statement US$m**	**Total increase/ (decrease) in provision US$m**	Capitalised within "Property, plant and equipment" US$m	Charged/(credited) to the income statement US$m	Total increase/ (decrease) in provision US$m
Discount rate decreased to 1.0%	**2,300**	**300**	**2,600**	1,400	100	1,500
Discount rate increased to 3.0%	**(1,800)**	**(300)**	**(2,100)**	(2,700)	(300)	(3,000)

15 Deferred taxation

Recognition and measurement

The Group's accounting policy in relation to deferred taxation is outlined within note 10.

The movement in deferred tax (liabilities)/assets in the year ended 31 December is as follows:

	2023 US$m	2022 US$m Restated[a]
At 1 January	**(368)**	395
Adjustment on currency translation	**19**	96
Credited/(charged) to the income statement	**1,260**	(763)
Credited/(charged) to statement of comprehensive income[b]	**153**	(102)
Other movements[c]	**(24)**	6
At 31 December	**1,040**	(368)
Comprising:		
– deferred tax assets[d][e]	**3,624**	2,796
– deferred tax liabilities[f]	**(2,584)**	(3,164)

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) The amounts credited/(charged) directly to the statement of comprehensive income include provisions for tax on cash flow hedges and on re-measurement gains/(losses) on pension schemes and on post-retirement healthcare plans.
(c) "Other movements" include deferred tax relating to tax payable recognised by subsidiary holding companies on the profits of the equity accounted units to which it relates.
(d) Recognised deferred tax assets of US$1,182 million (2022: US$868 million) are subject to expiry if not recovered within certain time limits as specified in local tax legislation and investment agreements. Of those recognised assets US$nil (2022: US$nil) would expire within one year if not used, US$140 million (2022: US$105 million) would expire within one to five years, and US$1,042 million (2022: US$763 million) would expire in more than five years.
(e) Recognised and unrecognised deferred tax assets are shown in the table on page 202 and totalled US$10,040 million at 31 December 2023 (2022: US$8,089 million). Of this total, US$3,624 million has been recognised as deferred tax assets (2022: US$2,796 million), leaving US$6,416 million (2022: US$5,293 million) unrecognised, as recovery is not considered probable.
(f) Deferred tax liabilities are not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$2,249 million (2022: US$2,730 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$110 million (2022: US$140 million) would be payable.

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Analysis of deferred tax

Deferred tax balances for which there is a right of offset within the same tax jurisdiction are presented net on the face of the balance sheet as required by IAS 12. The closing deferred tax assets and liabilities, prior to this offsetting of balances, are shown below.

	2023 US$m	2022 US$m Restated[a]
Deferred tax assets arising from:		
Tax losses[b]	**1,474**	922
Provisions and other liabilities	**3,835**	3,637
Capital allowances	**961**	927
Post-retirement benefits	**210**	179
Unrealised exchange losses	**194**	189
Other temporary differences[c]	**1,433**	1,265
Total	**8,107**	7,119
Deferred tax liabilities arising from:		
Capital allowances	**(5,407)**	(5,935)
Unremitted earnings[d]	**(394)**	(372)
Capitalised interest	**(304)**	(330)
Post-retirement benefits	**(72)**	(149)
Unrealised exchange gains	**(15)**	(11)
Other temporary differences	**(875)**	(690)
Total	**(7,067)**	(7,487)
Credited/(charged) to the income statement		
Unrealised exchange losses	**(2)**	2
Tax losses	**531**	(525)
Provisions and other liabilities	**133**	3
Capital allowances	**628**	48
Tax on unremitted earnings	**5**	3
Post-retirement benefits	**(48)**	(59)
Other temporary differences	**13**	(235)
Total	**1,260**	(763)

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

(b) Recognised deferred tax assets of US$1,182 million (2022: US$868 million) are subject to expiry if not recovered within certain time limits as specified in local tax legislation and investment agreements. Of those recognised assets US$nil (2022: US$nil) would expire within one year if not used, US$140 million (2022: US$105 million) would expire within one to five years, and US$1,042 million (2022: US$763 million) would expire in more than five years.

(c) Other temporary differences include research and development, investment and other tax credits and allowances of US$583 million (2022: US$491 million).

(d) Deferred tax liabilities are not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$2,249 million (2022: US$2,730 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$110 million (2022: US$140 million) would be payable.

Other relevant judgements – Recoverability of deferred tax assets

In considering the recoverability of deferred tax assets, judgement is required regarding the extent to which certain risk factors are likely to affect the recovery of these assets. These risk factors include the risk of expiry of losses prior to utilisation, the impact of other legislation or tax regimes, such as minimum taxes, and consideration of factors that lead to the generation of losses or other deferred tax assets. IAS 12 requires us to consider whether taxable profits will be available against which deferred tax assets may be utilised.

The Mongolian Tax Authority has issued a number of tax assessments covering the fiscal years 2013 to 2020, the most recent of which was received in December 2023, which are inconsistent with the Oyu Tolgoi Investment Agreement and Mongolian legislation. The interpretation of the Investment Agreement and Mongolian legislation has been, and is expected to continue to be, subject to dispute through international arbitration. Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the amount and recovery of recognised deferred tax items, including tax losses. The arbitration process on matters of this complexity can typically take over 12 months to conclude.

Notes to the 2023 financial statements

15 Deferred taxation *continued*

Analysis of deferred tax assets

The recognised amounts in the table below do not include deferred tax assets that have been netted off against deferred tax liabilities.

	Recognised		Unrecognised	
At 31 December	2023 US$m	2022 US$m Restated[a]	2023 US$m	2022 US$m Restated[a]
France	–	–	**1,320**	1,204
Canada	**383**	482	**501**	580
US[b]	**204**	137	**977**	960
Australia	**991**	700	**842**	585
Mongolia[c]	**1,530**	1,218	**235**	257
Other countries	**516**	259	**2,541**	1,707
Total[d][e]	**3,624**	2,796	**6,416**	5,293

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Although our US group companies expect to generate sufficient taxable profits to utilise existing Federal deferred tax assets, the application of the new Corporate Alternative Minimum Tax rules has resulted in a position where no material future tax benefit will be derived from the utilisation of Federal deferred tax assets and consequently these deferred tax assets are included as 'unrecognised' in this table.
(c) Deferred tax assets in Mongolia include US$310 million (2022: US$73 million) from tax losses that expire if not recovered against taxable profits within eight years. In addition, amounts have been recognised as deferred tax assets relating to anticipated future deductions. Tax losses and other deferred tax assets have been calculated in accordance with the Oyu Tolgoi Investment Agreement and Mongolian legislation. The interpretation of the Investment Agreement by the Mongolian Tax Authority has been, and is expected to continue to be, subject to dispute. Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the amount and period of recovery of deferred tax assets.
(d) US$2,455 million (2022: US$1,490 million) of the unrecognised assets relate to realised or unrealised capital losses, the recovery of which depends on the existence of capital gains in future years. There are time limits, the shortest of which is one year, for the recovery of US$543 million of the unrecognised assets (2022: US$473 million).
(e) In addition to the unrecognised deferred tax assets in this table, the Group has accumulated UK foreign tax credits of US$1.3 billion (2022: US$1.3 billion). The credits are not refundable but would be available, if needed, to shelter any UK tax in respect of profits arising in the Escondida business.

16 Inventories

Recognition and measurement

Inventories are measured at the lower of cost and net realisable value, primarily on a weighted average cost basis. Third-party production purchased for our own use that is ordinarily interchangeable in accordance with IAS 2 "Inventories" is valued on the same basis, jointly with our own production. Average costs are calculated by reference to the cost levels experienced in the relevant month together with those in opening inventory.

The cost of raw materials and purchased components, and consumable stores, is the purchase price. The cost of work in progress and finished goods and goods for resale is generally the cost of production, including directly attributable labour costs, materials and contractor expenses, the depreciation of assets used in production and production overheads.

Work in progress includes ore stockpiles and other partly processed material. Stockpiles represent ore that has been extracted and is available for further processing. If there is significant uncertainty as to if and when the stockpiled ore will be processed, the cost of such ore is expensed as mined. If the ore will not be processed within 12 months after the balance sheet date, it is included within non-current assets and net realisable value is calculated on a discounted cash flow basis. Quantities of stockpiled ore are assessed primarily through surveys and assays. Certain estimates, including expected metal recoveries, are calculated using available industry, engineering and scientific data, and are periodically reassessed, taking into account technical analysis and historical performance.

	2023 US$m	2022 US$m
Raw materials and purchased components	**1,050**	1,235
Consumable stores	**1,520**	1,327
Work in progress	**2,467**	2,086
Finished goods and goods for resale	**1,836**	1,768
Total inventories	**6,873**	6,416
Comprising:		
Expected to be used within one year	**6,659**	6,213
Expected to be used after more than one year	**214**	203
Total inventories	**6,873**	6,416

During 2023, the Group recognised a net inventory write-off of US$60 million (2022: US$55 million write-off). This included inventory write-offs of US$94 million (2022: US$75 million) offset by a write-back of previously written down inventory due to an increase in realisable values amounting to US$34 million (2022: US$20 million).

At 31 December 2023, US$925 million (2022: US$850 million) of inventories were pledged as security for liabilities.

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17 Receivables and other assets

Recognition and measurement

Financial assets (except provisionally priced receivables) which are held under a hold to collect business model and have cash flows that meet the solely payments of principal and interest ('SPPI') criteria are recognised at amortised cost. Provisionally priced receivables are measured at fair value through profit or loss with subsequent fair value gains or losses taken to the income statement.

As a part of our working capital management, we offer receivables factoring and letter of credit programs for our customers/receivables. For our receivables under letter of credit programs, the business model of "hold to collect" has not changed and these continue to be recognised at amortised cost as the sale of the letter of credit is made close to maturity of receivables and discounting costs are immaterial. The receivables under our global factoring program do not meet the "hold to collect" model and therefore are recognised at fair value through profit or loss. US$475 million of receivables (2022: US$457 million) subject to factoring program and US$372 million (2022: US$430 million) of receivables subject to a letter of credit discounting program have been transferred to the participating banks and derecognised at the reporting date.

	2023			2022		
	Non-current US$m	**Current US$m**	**Total US$m**	Non-current US$m	Current US$m	Total US$m
Trade receivables[(a)]	**–**	**2,461**	**2,461**	–	2,179	2,179
Other financial receivables[(a)]	**234**	**548**	**782**	124	462	586
Other receivables[(b)]	**470**	**347**	**817**	383	382	765
Prepayment of tolling charges to jointly controlled entities[(c)]	**113**	**–**	**113**	218	–	218
Pension surpluses (note 28)	**466**	**–**	**466**	824	–	824
Other prepayments	**376**	**589**	**965**	344	455	799
Total[(d)]	**1,659**	**3,945**	**5,604**	1,893	3,478	5,371

(a) At 31 December 2023, trade and other financial receivables are stated net of allowances for expected credit losses of US$82 million (2022: US$59 million). We apply the "simplified approach" to trade receivables and receivables relating to net investment in finance leases and a "general approach" to all other financial assets.
(b) At 31 December 2023, other receivables include US$349 million (2022: US$329 million) related to Energy Resources of Australia Ltd's (ERA) deposit held in a trust fund which is controlled by the Government of Australia. ERA are entitled to reimbursement from the fund once specific phases of rehabilitation relating to the Ranger Project are completed. The fund is outside the scope of IFRS 9.
(c) These prepayments will be charged to Group operating costs as tolling services are rendered and product processing occurs.
(d) There is no material element of receivables and other assets that is interest-bearing or financing in nature. The fair value of current trade and other receivables and the majority of amounts classified as non-current trade and other receivables approximates to their carrying value.

Credit risk related to receivables

Our Commercial team manages customer credit risk by reference to our established policy, procedures and controls. The team establishes credit limits for all of our customers. Where customers are rated by an independent credit rating agency, these ratings are used as a guide to set credit limits. Where there are no independent credit ratings available, we assess the credit quality of the customer through a credit rating model and assign appropriate credit limits. The Commercial team monitors outstanding customer receivables regularly and highlights any credit concerns to senior management. Receivables to high-risk customers are often secured by letters of credit or other forms of credit enhancement.

The expected credit loss on our trade receivable portfolio is insignificant.

18 Trade and other payables

Recognition and measurement

Trade payables are measured at amortised cost, with the exception of provisionally priced contracts which are held at fair value as per IFRS 9.

The Group participates in supply chain finance arrangements whereby vendors may elect to receive early payment of their invoice from a third-party bank by factoring their receivable from Rio Tinto. These arrangements do not modify the terms of the original liability with respect to either counterparty terms, settlement date or amount due. Use of the early settlement facility is voluntary and at the vendors' discretion on an invoice-by-invoice basis. Financial liabilities subject to supply chain finance therefore continue to be classified as trade payables with the cash outflows showing in operating cash flows. At 31 December 2023, trade payables included US$821 million (2022: US$819 million) subject to early settlement election by vendors.

	2023			2022		
	Non-current US$m	**Current US$m**	**Total US$m**	Non-current US$m	Current US$m	Total US$m
Trade payables	**–**	**3,265**	**3,265**	3	3,269	3,272
Other financial payables	**238**	**913**	**1,151**	225	1,083	1,308
Other payables	**56**	**208**	**264**	63	131	194
Deferred income[(a)]	**103**	**280**	**383**	114	333	447
Accruals	**–**	**1,702**	**1,702**	–	1,611	1,611
Employee entitlements	**–**	**992**	**992**	–	878	878
Royalties and mining taxes	**3**	**868**	**871**	3	644	647
Amounts owed to equity accounted units	**196**	**10**	**206**	196	98	294
Total	**596**	**8,238**	**8,834**	604	8,047	8,651

(a) Deferred income includes contract liabilities of US$275 million (2022: US$345 million).

The fair value of trade payables and financial instruments within other financial payables approximates their carrying value.

Notes to the 2023 financial statements

Our capital and liquidity

Our overriding objective when managing capital and liquidity is to safeguard the business as a going concern. Capital is allocated in a consistent and disciplined manner. Essential capital remains our priority for capital allocation. It includes sustaining capital to ensure the integrity of our assets, high-returning replacement projects and decarbonisation investment. This is followed by ordinary dividends within our well-established returns policy. We then test investment in compelling growth projects against debt management and additional cash returns to shareholders.

Our Board and senior management regularly review the capital structure and liquidity of the Group. They take into account our strategic priorities, the economic and business conditions, and any identified investment opportunities, along with the expected returns to shareholders. We expect total cash returns to shareholders over the longer term to be in a range of 40–60% of underlying earnings in aggregate through the commodity cycle.

We consider various financial metrics when managing our capital structure and liquidity risk, including total capital, net debt, gearing, the overall level of borrowings and their maturity profile, liquidity levels, future cash flows, underlying EBITDA and interest cover ratios.

Our total capital as at 31 December is shown in the table below.

	Note	2023 US$m	2022 US$m
Equity attributable to owners of Rio Tinto (see Group balance sheet)		**54,586**	50,175
Equity attributable to non-controlling interests (see Group balance sheet)		**1,755**	2,099
Net debt	19	**4,231**	4,188
Total capital		**60,572**	56,462

We have access to various forms of financing including our US Shelf Programme, European Debt Issuance Programme, Commercial Paper and credit facilities.

In 2023, we exercised our option to extend the maturity of our US$7.5 billion multi-currency revolving credit facility by one year. The facility now matures in November 2028. The facility remained undrawn throughout the year. At 31 December 2023, the Group's subsidiaries had available in aggregate US$558 million (2022: US$558 million) of committed borrowing facilities; these amounts are available for use by the respective holders of each facility only and are not available for use across the Group.

Our credit ratings as at 31 December, as provided by Standard & Poor's and Moody's Investor Services, were:

	2023	2022
Long-term rating	**A/A1**	A/A2
Short-term rating	**A-1/P-1**	A-1/P-1
Outlook	**Stable/Stable**	Stable/Stable

Our unified credit status is maintained through cross guarantees, which mean the contractual obligations of Rio Tinto plc and Rio Tinto Limited are automatically guaranteed by the other.

Financial liability analysis

In the table below, we summarise the maturity profile of our financial liabilities on our balance sheet based on contractual undiscounted payments as at 31 December. When the amount payable is not fixed, the amount disclosed is determined by reference to the conditions existing at the end of the reporting period. This will, therefore, not necessarily agree with the amounts disclosed as the carrying value.

	2023					2022				
(Outflows)/Inflows	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 5 years US$m	After 5 years US$m	Total US$m	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 5 years US$m	After 5 years US$m	Total US$m
Non-derivative financial liabilities										
Trade and other financial payables[a]	**(5,769)**	**(57)**	**(68)**	**(308)**	**(6,202)**	(5,971)	(37)	(57)	(329)	(6,394)
Expected lease liability payments	**(385)**	**(285)**	**(442)**	**(574)**	**(1,686)**	(329)	(235)	(344)	(606)	(1,514)
Borrowings before swaps	**(845)**	**(17)**	**(2,385)**	**(10,011)**	**(13,258)**	(937)	(1,425)	(1,839)	(7,389)	(11,590)
Expected future interest payments[a]	**(803)**	**(781)**	**(2,156)**	**(4,886)**	**(8,626)**	(668)	(603)	(1,468)	(3,141)	(5,880)
Other financial liabilities	**(4)**	**—**	**—**	**—**	**(4)**	—	—	—	—	—
Derivative financial liabilities[b]										
Derivatives related to net debt – net settled	**(161)**	**(87)**	**(163)**	**—**	**(411)**	(92)	(106)	(47)	(8)	(253)
Derivatives related to net debt – gross settled[a]										
– gross inflows	**502**	**26**	**77**	**664**	**1,269**	37	481	72	651	1,241
– gross outflows	**(620)**	**(34)**	**(102)**	**(841)**	**(1,597)**	(69)	(615)	(102)	(875)	(1,661)
Derivatives not related to net debt – net settled	**(76)**	**(54)**	**(124)**	**(54)**	**(308)**	(78)	(60)	(129)	(77)	(344)
Derivatives not related to net debt – gross settled										
– gross inflows	**499**	**—**	**—**	**—**	**499**	71	—	—	—	71
– gross outflows	**(501)**	**—**	**—**	**—**	**(501)**	(71)	—	—	—	(71)
Total	**(8,163)**	**(1,289)**	**(5,363)**	**(16,010)**	**(30,825)**	(8,107)	(2,600)	(3,914)	(11,774)	(26,395)

(a) The interest payable at the year end is removed from trade and other financial payables and shown within expected future interest payments and derivatives related to net debt. Interest payments have been projected using interest rates applicable at the end of the applicable financial year. Where debt is subject to variable interest rates, future interest payments are subject to change in line with market rates.

(b) The maturity grouping is based on the earliest payment date.

Our weighted average debt maturity including leases and derivatives related to debt was approximately 12 years (2022: 11 years).

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19 Net debt

Analysis of changes in net debt

	2023					
	Financial liabilities			Other assets		
	Borrowings excluding overdrafts (note 20)[a] US$m	Lease liabilities (note 21)[b] US$m	Derivatives related to net debt (note 23)[c] US$m	Cash and cash equivalents including overdrafts (note 22)[a] US$m	Other investments (note 23)[d] US$m	Net debt US$m
At 1 January	**(11,070)**	**(1,200)**	**(690)**	**6,774**	**1,998**	**(4,188)**
Foreign exchange adjustment	**(87)**	**(21)**	**62**	**(23)**	**–**	**(69)**
Cash movements excluding exchange movements	**(1,523)**	**426**	**(4)**	**2,921**	**(1,157)**	**663**
Other non-cash movements	**(320)**	**(556)**	**203**	**–**	**36**	**(637)**
At 31 December	**(13,000)**	**(1,351)**	**(429)**	**9,672**	**877**	**(4,231)**

	2022					
	Financial liabilities			Other assets		
	Borrowings excluding overdrafts (note 20)[a] US$m	Lease liabilities (note 21)[b] US$m	Derivatives related to net debt (note 23)[c] US$m	Cash and cash equivalents including overdrafts (note 22)[a] US$m	Other investments (note 23)[d] US$m	Net cash/(debt) US$m
At 1 January	(12,166)	(1,363)	(101)	12,805	2,401	1,576
Foreign exchange adjustment	118	69	(92)	15	–	110
Cash movements excluding exchange movements	470	374	(3)	(6,046)	(352)	(5,557)
Other non-cash movements	508	(280)	(494)	–	(51)	(317)
At 31 December	(11,070)	(1,200)	(690)	6,774	1,998	(4,188)

(a) Borrowings excluding overdrafts of US$13,000 million (2022:US$11,070 million) differs from Borrowings on the balance sheet as it excludes bank overdrafts of US$1 million (2022: US$1 million) which has been included in cash and cash equivalents for the net debt reconciliation.
(b) Other non-cash movements in lease liabilities include the net impact of additions, modifications and terminations during the year.
(c) Included within "Derivatives related to net debt" are interest rate and cross currency interest rate swaps that are in hedge relationships with the Group's debt.
(d) Other investments includes US$877 million (2022: US$1,998 million) of highly liquid financial assets held in a separately managed portfolio of fixed income instruments classified as held for trading.

The table below summarises, by currency, our net debt, after taking into account relevant cross currency interest rate swaps and foreign exchange contracts:

	2023						2022
Net debt by currency	**Borrowings excluding overdrafts US$m**	**Lease liabilities US$m**	**Derivatives related to net debt US$m**	**Cash and cash equivalents US$m**	**Other investments US$m**	**Net debt US$m**	Net debt US$m
US dollar	**(12,629)**	**(511)**	**(429)**	**8,659**	**877**	**(4,033)**	(3,929)
Australian dollar	**(200)**	**(433)**	**–**	**447**	**–**	**(186)**	(455)
Canadian dollar	**(168)**	**(175)**	**–**	**96**	**–**	**(247)**	(158)
South African rand	**–**	**(2)**	**–**	**132**	**–**	**130**	171
Other	**(3)**	**(230)**	**–**	**338**	**–**	**105**	183
Total	**(13,000)**	**(1,351)**	**(429)**	**9,672**	**877**	**(4,231)**	(4,188)

Notes to the 2023 financial statements

20 Borrowings

Recognition and measurement

Borrowings are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost. Our policy is to predominantly borrow in US dollars (USD) at floating interest rates, either directly or through the use of derivatives, as:

- the majority of our sales are in USD
- historically a lower cost of borrowing has been observed from maintaining a floating rate exposure
- historically there has been a correlation between interest rates and commodity prices.

For bonds with fixed interest rates, we generally enter into interest rate swaps to convert them to floating rates. The tenor of the interest rate swaps is sometimes shorter than the tenor of the bond which means we remain exposed to long-term fixed-rate funding. As interest rate swaps mature, new medium dated swaps are generally transacted to maintain this floating rate exposure; however, we may elect to maintain a proportion of fixed-rate funding after considering market conditions, the cost and form of funding and other related factors.

We have designated the swaps to be in fair value hedge relationships with the corresponding period of future interest payments of the respective debt.

Where we borrow non-US denominated debt, we generally enter into cross currency interest rate swaps to convert the principal and fixed interest coupon to a USD notional with a USD interest coupon.

Borrowings at 31 December

The characteristics and carrying value of the Group's borrowings are summarised below.

	Carrying value 2023 US$m	Carrying value 2022 US$m	**Nominal value of hedged item 2023 US$m**	Nominal value of hedged item 2022 US$m	Weighted average interest rate after swaps (where applicable)[b]	Swap maturity (where applicable)
Rio Tinto Finance plc Euro Bonds 2.875% due 2024[a][b][c]	**452**	429	**463**	546	3 month SOFR +1.90%	2024
Rio Tinto Finance (USA) Limited Bonds 7.125% due 2028[a][b]	**804**	807	**750**	750	3 month SOFR +3.54%	2028
Alcan Inc. Debentures 7.25% due 2028[a]	**99**	97	**100**	100	3 month SOFR +5.69%	2024
Rio Tinto Finance plc Sterling Bonds 4.0% due 2029[a][b][c][d]	**611**	553	**639**	807	3 month SOFR +2.91%	2024
Alcan Inc. Debentures 7.25% due 2031[a][b]	**392**	384	**400**	400	3 month SOFR +5.98%	2025
Rio Tinto Finance (USA) plc Bonds 5.0% due 2033[e]	**646**	–	**–**	–		
Alcan Inc. Global Notes 6.125% due 2033[a][b]	**699**	673	**750**	750	3 month SOFR +5.93%	2025
Alcan Inc. Global Notes 5.75% due 2035[a][b]	**274**	264	**300**	300	3 month SOFR +5.44%	2025
Rio Tinto Finance (USA) Limited Bonds 5.2% due 2040[a][b][f]	**1,158**	1,144	**200**	–	6 month SOFR +1.05%	2033
Rio Tinto Finance (USA) plc Bonds 4.75% due 2042[a][g]	**492**	488	**–**	500		
Rio Tinto Finance (USA) plc Bonds 4.125% due 2042[a][h]	**731**	727	**–**	750		
Rio Tinto Finance (USA) Limited Bonds 2.75% due 2051[a][b]	**1,098**	1,065	**1,250**	1,250	6 month SOFR +1.57%	2028
Rio Tinto Finance (USA) plc Bonds 5.125% due 2053[a][e][i]	**1,151**	–	**1,100**	–	6 month SOFR +0.76%	2033
Oyu Tolgoi LLC MIGA Insured Loan SOFR plus 2.65% due 2032[j]	**602**	597	**–**	–		
Oyu Tolgoi LLC Commercial Banks "B Loan" SOFR plus 3.4% due 2032[j]	**1,392**	1,387	**–**	–		
Oyu Tolgoi LLC Export Credit Agencies Loan 4.72% due 2033[j]	**248**	237	**–**	–		
Oyu Tolgoi LLC Export Credit Agencies Loan SOFR plus 3.65% due 2034[j]	**816**	805	**–**	–		
Oyu Tolgoi LLC International Financial Institutions "A Loan" SOFR plus 3.78% due 2035[j]	**792**	744	**–**	–		
Other secured loans	**144**	194				
Other unsecured loans	**399**	475				
Bank overdrafts	**1**	1				
Total borrowings[k]	**13,001**	11,071				
Current borrowings	**824**	923				
Non-current borrowings	**12,177**	10,148				
Total borrowings[k]	**13,001**	11,071				

(a) The fair value movements of our borrowings and interest rate swaps that are in fair value hedge relationships are summarised in note 9.

(b) The LIBOR reference rates derivatives were transitioned to Secured Overnight Financing Rate (SOFR) with effect from 1 July 2023 in accordance with International Swaps and Derivatives Association (ISDA) Fallback Protocol. Weighted average interest rate after swaps for 2022 can be found in note 20 to the Financial Statements in our 2022 *Annual Report*.

(c) Rio Tinto has a US$10.0 billion (2022: US$10.0 billion) European Debt Issuance Program against which the cumulative amount utilised was US$1.1 billion equivalent at 31 December 2023 (2022: US$1.0 billion). The carrying value of these bonds after hedge accounting adjustments amounted to US$1.1 billion (2022: US$1.0 billion) in aggregate.

(d) We applied cash flow hedge accounting to this bond and the corresponding cross currency interest rate swap. The hedge is fully effective as the notional amount, maturity, payment and reset dates match. Since 2019, we swapped the resulting fixed US dollar annual interest coupon payments to floating rates. Fair value hedge accounting has been applied to this relationship in addition to the pre-existing cash flow hedge.

(e) On 7 March 2023, we issued US$650 million ten-year fixed rate and US$1.1 billion of 30-year fixed rate SEC-registered bonds.

(f) In November 2023, we entered into two new interest rate swaps with a notional of US$200 million, to convert our fixed coupon interest payments on this bond to 6 month SOFR +1.05%.

(g) In March 2023, our interest rate swap, which converted our fixed coupon interest payments on this bond to 3 month LIBOR +3.42%, matured.

(h) In February 2023, our interest rate swap which converted our fixed coupon interest payments on this bond to 3 month LIBOR +2.83% matured.

(i) In October 2023, we entered into a new interest rate swap to convert our fixed coupon interest payments on this bond to 6 month SOFR +0.76%.

(j) These borrowings relate to the Oyu Tolgoi LLC project finance facility and the due dates stated represent the final repayment date. The interest rates stated are pre-completion and will increase by 1.2% post-completion, which is expected to happen in 2029 subject to meeting certain conditions. Refer below on the refinancing of the facility made during the year.

(k) The Group's borrowings of US$13.0 billion (2022: US$11.1 billion) include US$4.0 billion (2022: US$4.0 billion) of subsidiary entity borrowings that are subject to various financial and general covenants with which the respective borrowers were in compliance as at 31 December 2023.

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We refinanced the Oyu Tolgoi project finance on 16 February 2023 with a syndicate of international financial institutions, export credit agencies and commercial lenders. The lenders have agreed to a deferral of the principal repayments by three years to June 2026 and to an extension of the final maturity date by five years from 2030 to 2035. As part of refinancing, the debt transitioned to the SOFR benchmark to which we applied the Phase 2 IBOR reform relief under IFRS 9. The refinancing did not result in a derecognition of the drawn down amount; however we recognised an accounting loss on modification of US$123 million related to changes other than the benchmark transition and capitalised transaction costs incurred of US$50 million.

Update on interest rate benchmark reform

We adopted, in prior periods, Interest Rate Benchmark Reform Amendments to IFRS 9 "Financial Instruments", IFRS 7 "Financial Instruments: Disclosures", IFRS 4 "Insurance Contracts" and IFRS 16 "Leases". The amendments address the financial reporting impact from reform of the LIBOR and other benchmark interest rates (collectively "IBOR reform"). We have taken relevant practical reliefs from certain requirements relating to changes in the basis for determining contractual cash flows of financial assets, financial liabilities and hedge accounting, described below. On 1 July 2023 we completed the transition of our US LIBOR derivatives to SOFR on cessation of US LIBOR at 30 June 2023. There has been no impact on our hedging arrangements because of the LIBOR reform reliefs we have taken as permitted under IFRS 9.

21 Leases

Recognition and measurement

IFRS 16 applies to the recognition, measurement, presentation and disclosure of leases. Certain leases are exempt from the standard, including leases to explore for or use minerals, oil, natural gas and similar non-regenerative resources. We apply the scope exemptions in paragraphs 3(e) and 4 of IFRS 16 and do not apply IFRS 16 to leases of any assets which would otherwise fall within the scope of IAS "38 Intangible Assets".

A significant proportion of our lease arrangements relate to dry bulk vessels and office properties. Other leases include land and non-mining rights, warehouses, ports, equipment and vehicles.

We recognise all lease liabilities and corresponding right-of-use assets on the balance sheet, with the exception of short-term (12 months or fewer) and low-value leases, where payments are expensed as incurred. Lease liabilities are recorded at the present value of fixed payments; variable lease payments that depend on an index or rate; amounts payable under residual value guarantees; and extension options expected to be exercised. Where a lease contains an extension option that we can exercise without negotiation, lease payments for the extension period are included in the liability if we are reasonably certain that we will exercise the option. Variable lease payments not dependent on an index or rate are excluded from the calculation of lease liabilities at initial recognition. Payments are discounted at the incremental borrowing rate of the lessee, unless the interest rate implicit in the lease can be readily determined. For lease agreements relating to vessels, ports and properties, non-lease components are excluded from the projection of future lease payments and recorded separately within operating costs as services are being provided. The lease liability is measured at amortised cost using the effective interest method. The right-of-use asset arising from a lease arrangement at initial recognition reflects the lease liability, initial direct costs, lease payments made before the commencement date of the lease, and capitalised provision for dismantling and restoration of the underlying asset, less any lease incentives.

We recognise depreciation on right-of-use assets and interest on lease liabilities in the income statement over the lease term. Repayments of lease liabilities are separated into a principal portion (presented within financing activities) and an interest portion (which the Group presents in operating activities) in the cash flow statement. Payments made before the commencement date are included within financing activities unless they in substance represent investing cash flows, for example where pre-commencement cash flows are significant relative to aggregate cash flows of the leasing arrangement.

Other relevant judgements – lease assessment

We have to apply judgement for certain contractual arrangements, such as renewable energy power purchase agreements (PPAs), in evaluating whether we have the right to obtain substantially all of the economic benefits from the use of the renewable energy assets, including the right to obtain physical energy these assets generate. Based on our evaluation, we determine whether an arrangement is a lease, an executory contract or a derivative. An immaterial amount was recognised as a lease at year end for a fixed component of the QMM renewable PPA. Amrun PPA is a lease, which has not yet commenced and is included in capital commitments (note 37).

Lessee arrangements

We have made the following payments during the year associated with leases:

Description of payment	Included within	2023 US$m	2022 US$m
Principal lease payments	Cash flows from financing activities	**426**	374
Interest payments on leases	Cash flows from operating activities	**50**	47
Payments for short-term leases	Net operating costs	**269**	465
Payments for variable lease components	Net operating costs	**40**	50
Payments for low value leases (>12 months in duration)	Net operating costs	**3**	1
Total lease payments		**788**	937

Notes to the 2023 financial statements

21 Leases *continued*

Lease liabilities

The maturity profile of lease liabilities recognised at 31 December is:

	2023 US$m	2022 US$m
Lease liabilities		
Due within 1 year	**385**	329
Between 1 and 3 years	**457**	388
Between 3 and 5 years	**270**	191
More than 5 years	**574**	606
Total undiscounted cash payments expected to be made	**1,686**	1,514
Effect of discounting	**(335)**	(314)
Present value of minimum lease payments	**1,351**	1,200
Comprising:		
Current lease liability per the balance sheet	**345**	292
Non-current lease liability per the balance sheet	**1,006**	908
Total lease liability	**1,351**	1,200

At 31 December 2023, commitments for leases not yet commenced were US$308 million (2022: US$481 million); commitments relating to short-term leases which had already commenced at 31 December 2023 were US$164 million (2022: US$132 million). These commitments are not included in the lease maturity profile table above.

22 Cash and cash equivalents

Recognition and measurement

For the purpose of the balance sheet, cash and cash equivalents covers cash on hand, deposits held with banks, and short-term, highly liquid investments (mainly money market funds and reverse repurchase agreements) that are readily convertible into known amounts of cash and which are subject to insignificant risk of changes in value. Bank overdrafts are shown as current liabilities on the balance sheet. For the purposes of the cash flow statement, cash and cash equivalents are shown net of overdrafts.

	Note	2023 US$m	2022 US$m
Cash at bank and in hand		**1,843**	1,889
Money market funds, reverse repurchase agreements and other cash equivalents		**7,830**	4,886
Total cash and cash equivalents per Group balance sheet		**9,673**	6,775
Bank overdrafts repayable on demand (unsecured)	20	**(1)**	(1)
Total cash and cash equivalents per Group cash flow statement		**9,672**	6,774

Restricted cash and cash equivalent analysis

Cash and cash equivalents of US$422 million (2022: US$391 million) are held in countries where there are restrictions on remittances. Of this balance, US$156 million (2022: US$268 million) could be used to repay subsidiaries' third-party borrowings.

There are also restrictions on a further US$553 million (2022: US$576 million) of cash and cash equivalents, the majority of which is held by partially owned subsidiaries and is not available for use in the wider Group due to legal and contractual restrictions currently in place. Of this balance US$129 million (2022: US$336 million) could be used to repay these subsidiaries' third-party borrowings.

Credit risk related to cash and cash equivalents

Our Treasury team manages credit risk from our investing activities in accordance with a credit risk framework which sets the risk appetite. We make investments of surplus funds only with approved investment grade (BBB+ and above) counterparties who have been assigned specific credit limits. The limits are set to minimise the concentration of credit risk and therefore mitigate the potential for financial loss through counterparty failure.

At 31 December 2023, we held US$2,775 million (2022: US$850 million) of reverse repurchase agreements, measured at amortised cost and reported within cash and cash equivalents as they are highly liquid products maturing within three months. We accepted collateral of investment grade quality in respect of these reverse repurchase agreements, with a fair value of US$2,924 million as at 31 December 2023 (2022: US$892 million). Collateral is not recognised on our balance sheet and if the counterparty were to default we would be able to sell it.

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23 Other financial assets and liabilities

Recognition and measurement

Derivatives are measured at fair value through profit or loss unless they are designated as hedging instruments. For details about our hedging strategy and risks, refer to note 24. The Group has made an irrevocable choice to measure investments in equity shares at fair value through other comprehensive income (FVOCI) except for those held for trading purposes.

Other financial assets

	2023			2022		
	Non-current US$m	**Current US$m**	**Total US$m**	Non-current US$m	Current US$m	Total US$m
Derivatives not related to net debt	**14**	**40**	**54**	39	28	67
Derivatives related to net debt	**87**	**–**	**87**	2	–	2
Equity shares and quoted funds	**163**	**18**	**181**	154	68	222
Other investments, including loans[(a)]	**217**	**1,060**	**1,277**	211	2,064	2,275
Total other financial assets	**481**	**1,118**	**1,599**	406	2,160	2,566

(a) Current "Other investments, including loans" includes US$877 million (2022: US$1,998 million) of highly liquid financial assets held in a separately managed portfolio of fixed income instruments classified as held for trading and included within our net debt definition.

Credit risk related to other financial assets

Our Treasury team manages credit risk in relation to applicable other financial assets in accordance with our counterparty credit framework (which is reviewed bi-annually) to minimise our counterparty risk and mitigate financial loss through counterparty failure. Derivatives and investments with any given counterparty are required to be within the credit limit (based on a quantitative credit risk model) for that counterparty as approved by the Group's Financial Risk Management Committee. Our investments are dictated by the Group's investment policy which sets out a number of criteria for eligible investments, including credit quality, duration, maturity and concentration limits.

Other financial liabilities

	2023			2022		
	Non-current US$m	**Current US$m**	**Total US$m**	Non-current US$m	Current US$m	Total US$m
Derivatives not related to net debt	**198**	**68**	**266**	220	61	281
Derivatives related to net debt	**315**	**201**	**516**	684	8	692
Other financial liabilities	**–**	**4**	**4**	–	–	–
Total other financial liabilities	**513**	**273**	**786**	904	69	973

Offsetting and enforceable master netting agreements

When we have a legally enforceable right to offset our financial assets and liabilities and an intention to settle on a net basis, or realise the asset and settle the liability simultaneously, we report the net amount in the consolidated balance sheet. Agreements with derivative counterparties are based on the International Swaps and Derivatives Association master netting agreements that do not meet the criteria for offsetting, but allow for the related amounts to be set-off in certain circumstances. During the year, there were no material amounts offset in the balance sheet.

24 Financial instruments and risk management

Recognition and measurement

We classify our financial assets into those held at amortised cost and those to be measured at fair value either through the profit and loss (FVTPL) or through other comprehensive income (FVOCI) based on the business model for managing the financial assets and the contractual terms of the cash flows.

Classification of financial asset	**Amortised cost**	**Fair value through profit and loss**	**Fair value through other comprehensive income**
Recognition and initial measurement	At initial recognition, trade receivables that do not have a significant financing component are recognised at their transaction price. Other financial assets are initially recognised at fair value plus related transaction costs.	The asset is initially recognised at fair value with transaction costs immediately expensed to the income statement.	The asset is initially recognised at fair value.
Subsequent measurement	Amortised cost using the effective interest method.	Fair value movements are recognised in the income statement.	Fair value gains or losses on revaluation of such equity investments, including any foreign exchange component, are recognised in other comprehensive income. Dividends are recognised in the income statement when the right to receive payment is established.
Derecognition	Any gain or loss on derecognition or modification of a financial asset held at amortised cost is recognised in the income statement.	Not applicable.	When the equity investment is derecognised, there is no recycling of fair value gains or losses previously recognised in other comprehensive income to the income statement.

Borrowings and other financial liabilities (including trade payables but excluding derivative liabilities) are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost.

Notes to the 2023 financial statements

24 Financial instruments and risk management *continued*

Financial risk management objectives

Our financial risk management objectives are:

- to have in place a robust capital structure to manage the organisation through the commodity cycle
- to allow our financial exposures, mainly commodity price, foreign exchange and interest rates to, in general, float with the market.

Our Treasury and Commercial teams manage the following key economic risks generated from our operations:

- capital and liquidity risk
- credit risk
- interest rate risk
- commodity price risk
- foreign exchange risk.

These teams operate under a strong control environment, within approved limits.

(i) Capital and liquidity risk

Our capital and liquidity risk arises from the possibility that we may not be able to settle or meet our obligations as they fall due. Refer to our capital and liquidity section on page 204.

(ii) Credit risk

Credit risk is the risk that our customers, or institutions that we hold investments with, are unable to meet their contractual obligations. We are exposed to credit risk in our operating activities (primarily from customer trade receivables); and from our investing activities that include government securities (primarily US Government), corporate and asset-backed securities, reverse re-purchase agreements, money market funds, and balances with banks and financial institutions. Refer to note 17, note 22 and note 23 for an understanding of the size of, and the credit risk related to, each balance.

(iii) Interest rate risk

Our interest rate management policy is generally to borrow and invest at floating interest rates. However, we may elect to maintain a proportion of fixed-rate funding after considering market conditions, the cost and form of funding and other related factors. After the impact of hedging, 68% (2022: 77%) of our borrowings (including leases) were at floating rates. To understand how we manage interest rate risk, refer to note 20.

Sensitivity to interest rate changes

Based on our floating rate financial instruments outstanding at 31 December 2023, the effect on our net earnings of a 100 basis point increase in US dollar Secured Overnight Financing Rate (SOFR) interest rates, with all other variables held constant, would be an expense of US$5 million (2022: US$26 million). This reflects the net debt position in 2023 and 2022.

We are also exposed to interest rate volatility within shareholders' equity. This is because we have designated some cross currency interest rate swaps to be in a cash flow hedge relationship with our 2029 British pound sterling (GBP) loan. As we receive fixed GBP interest and pay fixed United States dollar (USD) interest any change in the GBP interest rate or the USD interest rate will have an impact on the fair value of the derivative within shareholders' equity. With all factors remaining constant, a 100 basis point increase in interest rates in each of the currencies in isolation would impact equity, before tax, by a charge of US$33 million (2022: US$35 million) for GBP and a credit of US$42 million (2022: US$48 million) for USD. A 100 basis point decrease would have broadly the same impact in the opposite direction.

(iv) Commodity price risk

Our broad commodity base means our exposure to commodity prices is diversified. Our normal policy is to sell our products at prevailing market prices. For certain physical commodity transactions for which the price was fixed at the contract date, we enter into derivatives to achieve the prevailing market prices at the point of revenue recognition. We do not generally consider that using derivatives to fix commodity prices would provide a long-term benefit to our shareholders.

Exceptions to this rule are subject to limits, and to defined market risk tolerances and internal controls.

Substantially all iron ore and aluminium sales are reflected at final prices at each reporting period. Final prices for copper concentrate, however, are normally determined between 30 and 180 days after delivery to our customer.

At 31 December 2023, we had 92 million pounds of copper sales (31 December 2022: 83 million pounds), that were provisionally priced at US 387 cents per pound (2022: US 380 cents per pound). The final price of these sales will be determined during the first half of 2024. A 10% change in the price of copper realised on the provisionally priced sales, with all other factors held constant, would increase or reduce net earnings by US$22 million (2022: US$19 million).

Power costs represent a significant portion of costs in our aluminium business and, therefore, we are exposed to fluctuations in power prices.

To mitigate our exposure to changes in the relationship between aluminium prices and power prices, we have a number of electricity purchase contracts that are directly linked to the daily official LME cash ask price for high-grade aluminium (LME price) and to the US Midwest Transaction Premium (Midwest premium).

In accordance with IFRS 9, we apply hedge accounting to two embedded derivatives within our power contracts. The embedded derivatives (notional aluminium forward sales) have been designated as the hedging instrument. The forecast aluminium sales, priced using the LME price and the Midwest premium, represent the hedged item.

The hedging ratio is 1:1, as the quantity of sales designated as being hedged matches the notional amount of the hedging instrument. The hedging instrument's notional amount, expressed in equivalent metric tonnes of aluminium, is derived from our expected electricity consumption under the power contracts as well as other relevant contract parameters.

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When we designate such embedded derivatives as the hedging instrument in a cash flow hedge, we recognise the effective portion of the change in the fair value of the hedging instrument in other comprehensive income, and it is accumulated in the cash flow hedge reserve. The amount that is recognised in other comprehensive income is limited to the lesser of the cumulative change in the fair value of the hedging instrument and the cumulative change in the fair value of the hedged item, in absolute terms. On realisation of the hedges, realised amounts are reclassified from reserves to consolidated sales revenue in the income statement.

We recognise any ineffectiveness relating to the hedging relationship immediately in the income statement.

Sources of ineffectiveness include differences in the timing of the cash flows between the hedged item and the hedging instrument, non-zero initial fair value of the hedging instrument, the existence of a cap on the Midwest premium in the hedging instrument and counterparty credit risk.

We held the following notional aluminium forward sales contracts embedded in the power contracts as at 31 December:

	2023			
	Total	**Within 1 year**	**Between 1 and 5 years**	**Between 5 and 10 years**
Notional amount (in tonnes)	**428,686**	**72,617**	**289,801**	**66,268**
Notional amount (in US$ millions)	**1,050**	**169**	**711**	**170**
Average hedged rate (in US$ per tonne)	**2,449**	**2,331**	**2,452**	**2,564**

	2022			
	Total	Within 1 year	Between 1 and 5 years	Between 5 and 10 years
Notional amount (in tonnes)	501,498	72,812	289,868	138,818
Notional amount (in US$ millions)	1,216	166	697	353
Average hedged rate (in US$ per tonne)	2,425	2,282	2,404	2,542

The impact on our financial statements of these hedging instruments and hedging items are:

	Aluminium embedded derivatives separated from the power contract (Hedging instrument)[a]			**Highly probable forecast aluminium sales (Hedged item)**				
	Nominal US$m	**Carrying amount US$m**	**Change in fair value in the period US$m**	**Cash flow hedge reserve[b] US$m**	**Change in fair value in the period US$m**	**Total hedging losses recognised in reserves US$m**	**Hedge ineffective-ness in the period gains/ (losses)[c] US$m**	**Losses reclassified from reserves to income statement[d] US$m**
2023	**1,050**	**(174)**	**3**	**(91)**	**(16)**	**(1)**	**4**	**(2)**
2022	1,216	(189)	(119)	(87)	133	(110)	(9)	34

(a) Aluminium embedded derivatives (forward contracts and options) are contained within certain aluminium smelter electricity purchase contracts. The carrying amount of US$174 million (2022: US$189 million) is shown within "Other financial assets and liabilities".
(b) The difference between this amount and the total cash flow hedge reserve of the Group (shown in note 35) relates to our cash flow hedge on the sterling bond (refer to interest rate risk section).
(c) Hedge ineffectiveness is included in "net operating costs" (within "raw materials, consumables, repairs and maintenance" - refer to note 7) in the income statement.
(d) On realisation of the hedge, realised amounts are reclassified from reserves to consolidated sales revenue in the income statement.

There was no cost of hedging recognised in 2023 or 2022 relating to this hedging relationship.

Sensitivity analysis

Our commodity derivatives are impacted by changes in market prices. The table below summarises the impact that changes in aluminium market prices have on aluminium forward and option contracts embedded in power supply agreements outstanding at 31 December 2023. Any change in price will result in an offsetting change in our future earnings.

	Change in market prices	**2023 US$m**	2022 US$m
Effect on net earnings	**+10 %**	**(52)**	(57)
	(10)%	**67**	83
Effect on equity	**+10 %**	**(81)**	(90)
	(10)%	**70**	65

We exclude our "own use contracts" from this sensitivity analysis as they are outside the scope of IFRS 9. Our business units continue to hold these types of contracts to satisfy their expected purchase, sale or usage requirements.

Impact of climate change on our business - Upper Calliope Solar Farm power purchase agreement in Queensland

On 22 December 2023, as part of the program to develop renewable energy solutions for our Queensland aluminium assets, we entered into a long-term renewable 1.1GW power purchase agreement to buy renewable electricity and associated green products to be generated in the future from Upper Calliope Solar Farm. The contract is accounted for as a financial derivative with a zero fair value at inception and an immaterial fair value at year-end. It will require complex derivative measurement over the contract's term categorised under level 3 with significant unobservable inputs related to future energy prices.

Notes to the 2023 financial statements

24 Financial instruments and risk management *continued*

(v) Foreign exchange risk

The broad geographic spread of our sales and operations means that our earnings, cash flows and shareholders' equity are influenced by a wide variety of currencies. The majority of our sales are denominated in USD.

Our operating costs are influenced by the currencies of those countries where our mines and processing plants are located, and by those currencies in which we buy imported equipment and services. The USD, the Australian dollar (AUD) and the Canadian dollar (CAD) are the most important currencies influencing our costs. In any particular year, currency fluctuations may have a significant impact on our financial results. A strengthening of the USD against the currencies in which our costs are partly denominated has a positive effect on our net earnings. However, a strengthening of the USD reduces the value of non-USD denominated net assets, and therefore total equity.

In most cases our debt and other financial assets and liabilities, including intragroup balances, are held in the functional currency of the relevant subsidiary. There are instances where these balances are held in currencies other than the functional currency of the relevant subsidiary. This means we recognise exchange gains and losses in our income statement (except where they can be taken to equity) as these balances are translated into the functional currency of the relevant subsidiary. Our income statement also includes exchange gains and losses arising on USD net debt and intragroup balances. On consolidation, these balances are retranslated to our USD presentational currency and there is a corresponding and offsetting exchange difference recognised directly in the currency translation reserve. There is no impact on total equity.

Under normal market conditions, we do not consider that active currency hedging of transactions would provide long-term benefits to shareholders. We review our exposure on a regular basis and will undertake hedging if deemed appropriate. We may deem currency protection measures appropriate in specific commercial circumstances. Capital expenditures and other significant financial items such as acquisitions, disposals, tax and dividend cash flows may be economically hedged.

Sensitivity analysis

The table below shows the estimated retranslation effect on financial assets and financial liabilities at 31 December, including intragroup balances, of a 10% strengthening in the closing exchange rate of the USD against significant currencies. We deem 10% to be the annual exchange rate movement that is reasonably probable (on an annual basis over the long run) for any of our significant currencies and therefore an appropriate representation for the sensitivity analysis.

	2023			2022		
Currency exposure	**Closing exchange rate US cents**	**Effect on net earnings US$m**	**Impact directly on equity US$m**	Closing exchange rate US cents	Effect on net earnings US$m	Impact directly on equity US$m
Australian dollar	**69**	**228**	**(1,036)**	68	(319)	(986)
Canadian dollar	**76**	**(361)**	**–**	74	(219)	–

We calculate sensitivities in relation to the functional currencies of our individual entities. We translate the impact of these on net earnings into USD at the exchange rates on which the sensitivities are based. The impact to net earnings associated with a 10% weakening of a particular currency, shown above, is broadly offset within equity through movements in the currency translation reserve and therefore generally has no impact on our net assets. The offsetting currency translation movement is not shown in the table above. The impact is expressed in terms of the effect on net earnings and equity, assuming that each exchange rate moves in isolation. The sensitivities are based on financial assets and financial liabilities held at 31 December 2023, where balances are not denominated in the functional currency of the subsidiary or joint operation, and exclude financial assets and liabilities held by equity accounted units. These balances will not remain constant throughout 2024 and therefore this illustrative information should be used with caution.

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Valuation hierarchy of financial instruments carried at fair value on a recurring basis

The table below shows the classifications of our financial instruments by valuation method in accordance with IFRS 13 "Fair Value Measurement" at 31 December.

All instruments shown as being held at fair value have been classified as fair value through the profit and loss unless specifically footnoted.

		2023					2022				
		Held at fair value			Held at amortised cost		Held at fair value			Held at amortised cost	
	Note	Level 1[a] US$m	Level 2[b] US$m	Level 3[c] US$m	US$m	Total US$m	Level 1[a] US$m	Level 2[b] US$m	Level 3[c] US$m	US$m	Total US$m
Assets											
Cash and cash equivalents[d]	22	**2,722**	**–**	**–**	**6,951**	**9,673**	2,725	–	–	4,050	6,775
Investments in equity shares and funds[e]	23	**85**	**–**	**96**	**–**	**181**	147	–	75	–	222
Other investments, including loans[f]	23	**896**	**–**	**228**	**153**	**1,277**	2,018	–	229	28	2,275
Trade and other financial receivables[g]	17	**9**	**1,383**	**–**	**1,851**	**3,243**	18	1,306	–	1,441	2,765
Forward, option and embedded derivatives contracts, not designated as hedges[h]	23	**–**	**28**	**26**	**–**	**54**	–	16	51	–	67
Derivatives related to net debt[i]	23	**–**	**87**	**–**	**–**	**87**	–	2	–	–	2
Liabilities											
Trade and other financial payables[j]	18	**–**	**(47)**	**–**	**(6,277)**	**(6,324)**	–	(30)	–	(6,455)	(6,485)
Forward, option and embedded derivatives contracts, designated as hedges[h]	23	**–**	**–**	**(174)**	**–**	**(174)**	–	–	(189)	–	(189)
Forward, option and embedded derivatives contracts, not designated as hedges[h]	23	**–**	**(63)**	**(29)**	**–**	**(92)**	–	(57)	(35)	–	(92)
Derivatives related to net debt[i]	23	**–**	**(516)**	**–**	**–**	**(516)**	–	(692)	–	–	(692)

(a) Valuation is based on unadjusted quoted prices in active markets for identical financial instruments.

(b) Valuation is based on inputs that are observable for the financial instruments, which include quoted prices for similar instruments or identical instruments in markets which are not considered to be active, or inputs, either directly or indirectly based on observable market data.

(c) Valuation is based on inputs that cannot be observed using market data (unobservable inputs). The change in valuation of our level 3 instruments for the year to 31 December is as follows:

Level 3 financial assets and liabilities	2023 US$m	2022 US$m
Opening balance	**131**	177
Currency translation adjustments	**(2)**	(4)
Total realised gains/(losses) included in:		
– consolidated sales revenue	**12**	16
– net operating costs	**(18)**	365
Total unrealised gains included in:		
– net operating costs	**43**	124
Total unrealised losses transferred into other comprehensive income through cash flow hedges	**(1)**	(110)
Additions to financial assets	**29**	41
Disposals/maturity of financial instruments	**(47)**	(478)
Closing balance	**147**	131
Net gains included in the income statement for assets and liabilities held at year end	**31**	103

(d) Our "cash and cash equivalents" of US$9,673 million (2022: US$6,775 million), includes US$2,722 million (2022: US$2,725 million) relating to money market funds which are treated as fair value through profit or loss (FVPL) under IFRS 9 with the fair value movements going into finance income.

(e) Investments in equity shares and funds include US$157 million (2022: US$153 million) of equity shares, not held for trading, where we have irrevocably elected to present fair value gains and losses on revaluation in other comprehensive income (FVOCI). The election is made at an individual investment level.

(f) Other investments, including loans, covers cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty receivables.

(g) Trade receivables include provisionally priced invoices. The related revenue is initially based on forward market selling prices for the quotation periods stipulated in the contracts with changes between the provisional price and the final price recorded separately within "Other revenue". The selling price can be measured reliably for the Group's products, as it operates in active and freely traded commodity markets. At 31 December 2023, US$1,362 million (2022: US$1,234 million) of provisionally priced receivables were recognised.

(h) Level 3 derivatives mainly consist of derivatives embedded in electricity purchase contracts linked to the LME, midwest premium and billet premium with terms expiring between 2025 and 2036 (2022: 2025 and 2036).

(i) Net debt derivatives include interest rate swaps and cross-currency swaps. As part of the ISDA Fallbacks Protocol, on 1 July 2023 we completed the transition of our US LIBOR derivatives to SOFR on cessation of US LIBOR at 30 June 2023. There has been no impact on our hedging arrangements after taking into account the IFRS 9 LIBOR reform reliefs.

(j) Trade and other financial payables comprise trade payables, other financial payables, accruals and amounts due to equity accounted units within note 18.

There were no material transfers between level 1 and level 2, or between level 2 and level 3 in the current or prior year.

Notes to the 2023 financial statements

24 Financial instruments and risk management *continued*

Valuation techniques and inputs

The techniques used to value our more significant fair value assets/(liabilities) categorised under level 2 and level 3 are summarised below:

	2023	2022		
Description	**Fair value US$m**	Fair value US$	Valuation technique	Significant Inputs
Level 2				
Interest rate swaps	**(163)**	(356)	Discounted cash flows	– Applicable market quoted swap yield curves – Credit default spread
Cross currency interest rate swaps	**(266)**	(334)	Discounted cash flows	– Applicable market quoted swap yield curves – Credit default spread – Market quoted FX rate
Provisionally priced receivables	**1,362**	1,234	Closely related listed product	– Applicable forward quoted metal price
Level 3				
Derivatives embedded in electricity contracts	**(186)**	(208)	Option pricing model	– LME forward aluminium price – Midwest premium and billet premium
Royalty receivables	**214**	209	Discounted cash flows	– Forward commodity price – Mine production

Sensitivity analysis in respect of level 3 financial instruments

For assets/(liabilities) classified under level 3, the effect of changing the significant unobservable inputs on carrying value has been calculated using a movement that we deem to be reasonably probable.

To value the long-term aluminium embedded power derivatives, we use unobservable inputs when the term of the derivative extends beyond observable market prices. Changing the level 3 inputs to reasonably possible alternative assumptions does not change the fair value significantly, taking into account the expected remaining term of contracts for either reported period. The fair value of these derivatives is a net liability of US$186 million at 31 December 2023 (2022: US$208 million).

Impact of climate change on our business – coal royalty receivables

At 31 December 2023, royalty receivables include amounts arising from our divested coal businesses with a carrying value of US$214 million (2022: US$209 million). These are classified as "Other investments, including loans" within note 23. The fair values are determined using level 3 unobservable inputs. These royalty receivables include US$90 million from forecast production beyond 2030. These have not been adjusted for potential changes in production rates that could occur due to climate change targets impacting the operator.

The main unobservable input is the long-term coal price used over the life of these royalty receivables. A 15% increase in the coal spot price would result in a US$64 million increase (2022: US$68 million) in the carrying value. A 15% decrease in the coal spot price would result in a US$39 million decrease (2022: US$18 million) in the carrying value. We have used a 15% assumption to calculate our exposure as it represents the annual coal price movement that we deem to be reasonably probable (on an annual basis over the long run).

Fair values disclosure of financial instruments

The following table shows the carrying amounts and fair values of our borrowings including those which are not carried at an amount which approximates their fair value at 31 December. The fair values of some of our financial instruments approximate their carrying values because of their short maturity, or because they carry floating rates of interest.

	2023		2022	
	Carrying value US$m	**Fair value US$m**	Carrying value US$m	Fair value US$m
Listed bonds	**8,607**	**8,672**	6,631	6,649
Oyu Tolgoi project finance	**3,850**	**4,090**	3,770	3,928
Other	**544**	**494**	670	615
Total borrowings (including overdrafts)	**13,001**	**13,256**	11,071	11,192

Borrowings relating to listed bonds are categorised as level 1 in the fair value hierarchy while those relating to project finance drawn down by Oyu Tolgoi use a number of level 3 valuation inputs. Our remaining borrowings have a fair value measured by discounting estimated cash flows with an applicable market quoted yield, and are categorised as level 2 in the fair value hierarchy.

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Our people

Summarised below are the key financial metrics relating to our people.

25 Average number of employees

	Subsidiaries and joint operations			Equity accounted units (Rio Tinto share)			Total		
	2023	2022	2021	**2023**	2022	2021	**2023**	2022	2021
Principal locations of employment:									
Australia and New Zealand	**25,045**	23,829	21,861	**725**	704	648	**25,770**	24,533	22,509
Canada	**13,864**	13,344	12,270	**5**	—	—	**13,869**	13,344	12,270
UK	**323**	202	189	**—**	—	—	**323**	202	189
Europe	**912**	994	1,003	**25**	—	—	**937**	994	1,003
Africa	**3,180**	2,797	2,484	**1,176**	1,218	1,253	**4,356**	4,015	3,737
US	**3,973**	3,655	3,471	**58**	—	—	**4,031**	3,655	3,471
Mongolia	**4,700**	4,175	3,513	**—**	—	—	**4,700**	4,175	3,513
South America	**389**	286	213	**1,414**	1,383	1,353	**1,803**	1,669	1,566
India	**611**	396	354	**—**	—	—	**611**	396	354
Singapore	**469**	454	450	**—**	—	—	**469**	454	450
Other countries[a]	**305**	289	283	**—**	—	—	**305**	289	283
Total	**53,771**	50,421	46,091	**3,403**	3,305	3,254	**57,174**	53,726	49,345

(a) "Other countries" primarily includes employees in the Middle East (excluding Oman which is included in Africa), and other countries in Asia which are not shown separately in the table above.

Employee numbers, which represent the average for the year, include 100% of employees of subsidiary companies. Employee numbers for joint operations and equity accounted units are proportional to the Group's interest under contractual agreements. Average employee numbers include a part-year effect for companies acquired or disposed of during the year.

Part-time employees are included on a full-time-equivalent basis. Temporary employees are included in employee numbers.

People employed by contractors are not included.

26 Employment costs and provisions

	Note	**2023 US$m**	2022 US$m	2021 US$m
Total employment costs				
– Wages and salaries		**5,625**	5,115	4,699
– Social security costs		**470**	425	386
– Net post-retirement charge	28	**449**	559	554
– Share-based payment charge	27	**144**	122	126
		6,688	6,221	5,765
Less: charged within movement in provisions (see below)		**(52)**	(219)	(252)
Total employment costs	7	**6,636**	6,002	5,513

	2023			2022
Employment provisions	**Pensions and post-retirement healthcare[a] US$m**	**Other employee entitlements[b] US$m**	**Total US$m**	Total US$m
At 1 January	**1,294**	**364**	**1,658**	2,492
Adjustment on currency translation	**25**	**7**	**32**	(99)
Charged/(credited) to profit:				
– increases to existing and new provisions	**–**	**78**	**78**	231
– unused amounts reversed	**(6)**	**(20)**	**(26)**	(12)
Utilised in year	**(216)**	**(61)**	**(277)**	(254)
Re-measurement losses/(gains) recognised in other comprehensive income	**102**	**–**	**102**	(701)
Transfers and other movements	**(10)**	**1**	**(9)**	1
At 31 December	**1,189**	**369**	**1,558**	1,658
Balance sheet analysis:				
Current	**68**	**293**	**361**	353
Non-current	**1,121**	**76**	**1,197**	1,305
Total employment provisions	**1,189**	**369**	**1,558**	1,658

(a) The main assumptions used to determine the provision for pensions and post-retirement healthcare, and other information, including the expected level of future funding payments in respect of those arrangements, are given in note 28.

(b) The provision for other employee entitlements includes a provision for long service leave of US$296 million (2022: US$271 million), based on the relevant entitlements in certain Group operations, and includes US$17 million (2022: US$32 million) of provision for redundancy and severance payments.

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27 Share-based payments

The Rio Tinto plc and Rio Tinto Limited share-based incentive plans are as follows.

UK Share Plan

The fair values of Matching and Free Share awards are the market value of the shares on the date of purchase. The awards are settled in equity.

Equity Incentive Plan

Since 2018, all long-term incentive awards have been granted under the 2018 Equity Incentive Plan which allows for awards in the form of Performance Share Awards (PSA), Management Share Awards (MSA) and Bonus Deferral Awards (BDA) to be granted. In general, these awards will be settled in equity, including the dividends accumulated from date of award to vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions.

Performance Share Awards

Participants are generally assigned shares in settlement of their PSA on vesting. Therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions, including the dividends accumulated from date of award to vesting.

The awards are subject to Total Shareholder Return (TSR) performance conditions, as set out in the Remuneration Report. The fair value of the awards is calculated using a Monte Carlo simulation model taking into account the TSR performance conditions. Forfeitures prior to vesting are assumed at 5% per annum of outstanding awards (2022: 5% per annum).

Management Share Awards

The vesting of these awards is dependent on service conditions being met; no performance conditions apply.

The fair value of each award on the day of grant is based on the share price on the day of grant. Forfeitures prior to vesting are assumed at 7% per annum of outstanding awards (2022: 7% per annum).

Bonus Deferral Awards

Bonus Deferral Awards provide for the mandatory deferral of 50% of the bonuses for Executive Directors and Executive Committee members.

The vesting of these awards is dependent only on service conditions being met. The fair value of each award on the day of grant is based on the share price on the day of grant. Forfeitures prior to vesting are assumed at 3% per annum of outstanding awards (2022: 3% per annum).

Global Employee Share Plans

The Global Employee Share Plans were introduced in 2012 and re-approved by shareholders in 2021. Under these plans, the companies provide a Matching share award for each Investment share purchased by a participant. The vesting of Matching awards is dependent on service conditions being met and the continued holding of Investment shares by the participant until vesting. These awards are settled in equity including the dividends accumulated from date of award to vesting. The fair value of each Matching share on the day of grant is equal to the share price on the date of purchase less a deduction of 15% (5% per annum) for estimated cancellations (caused by employees withdrawing their Investment shares prior to vesting) in addition to a deduction for forfeitures prior to vesting which are assumed at 5% per annum of outstanding awards (2022: 5% per annum).

The PSA, MSA, BDA and awards under the Global Employee Share Plans and UK Share Plan together represent 100% (2022: 100%) of the total IFRS 2 "Share-based Payment" charge for Rio Tinto plc and Rio Tinto Limited plans in 2023.

Recognition and measurement

These plans are accounted for in accordance with the fair value recognition provisions of IFRS 2.

The fair value of the Group's share plans is recognised as an expense over the expected vesting period with an offset to retained earnings for Rio Tinto plc plans and to other reserves for Rio Tinto Limited plans.

The Group uses fair values provided by independent actuaries calculated using a Monte Carlo simulation model.

The terms of each plan are considered at the balance sheet date to determine whether the plan should be accounted for as equity-settled or cash-settled. The Group does not operate any material plans as cash-settled although certain awards can be settled in cash at the discretion of the directors or where settling awards in equity is challenging or prohibited by local laws and regulations. The value of these awards is immaterial.

The Group's equity-settled share plans are settled either by the issuance of shares by the relevant parent company; the purchase of shares on market; or the use of shares held in treasury. If the cost of shares acquired to satisfy the plans differs from the expense charged, the difference is taken to retained earnings or other reserves, as appropriate.

The charge that has been recognised in the income statement for Rio Tinto's share-based incentive plans, and the related liability (for cash-settled awards), is set out in the table below.

	Charge recognised for the year			Liability at the end of the year	
	2023 US$m	2022 US$m	2021 US$m	**2023 US$m**	2022 US$m
Equity-settled awards	**140**	117	122	**–**	–
Cash-settled awards	**4**	5	4	**6**	7
Total	**144**	122	126	**6**	7

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Performance Share Awards (granted under either the Performance Share Plans or the Equity Incentive Plans)

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2023 number	**Weighted average fair value at grant date 2023 £**	2022 number	Weighted average fair value at grant date 2022 £	**2023 number**	**Weighted average fair value at grant date 2023 A$**	2022 number	Weighted average fair value at grant date 2022 A$
Unvested awards at 1 January	**2,903,449**	**24.36**	3,376,072	24.26	**1,040,240**	**52.51**	1,276,694	50.46
Awarded	**562,747**	**28.40**	518,950	25.60	**287,714**	**61.66**	256,508	51.21
Forfeited	**(166,376)**	**27.94**	(9,973)	31.68	**(28,789)**	**51.91**	(38,733)	51.09
Failed performance conditions	**—**	**—**	(326,522)	32.83	**—**	**—**	(149,788)	61.40
Vested	**(703,009)**	**26.84**	(655,078)	20.49	**(287,973)**	**53.88**	(304,441)	38.68
Unvested awards at 31 December	**2,596,811**	**24.34**	2,903,449	24.36	**1,011,192**	**54.74**	1,040,240	52.51

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2023 number	**Weighted average share price at vesting 2023 £**	2022 number	Weighted average share price at vesting 2022 £	**2023 number**	**Weighted average share price at vesting 2023 A$**	2022 number	Weighted average share price at vesting 2022 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting)	**767,439**	**59.21**	632,533	54.96	**238,405**	**122.58**	247,216	115.25
Vested awards settled in cash during the year (including dividend shares applied on vesting)	**181,492**	**58.36**	230,006	54.67	**140,690**	**123.40**	140,479	115.35

In addition to the equity-settled awards shown above, there were 24,365 Rio Tinto plc and 19,881 Rio Tinto Limited cash-settled awards outstanding at 31 December 2023 (2022: 26,394 Rio Tinto plc and 23,917 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2023 was US$1 million (2022: US$2 million).

Management Share Awards, Bonus Deferral Awards (granted under the Equity Incentive Plans), Global Employee Share Plans and UK Share Plan (combined)

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2023 number	**Weighted average fair value at grant date 2023 £**	2022 number	Weighted average fair value at grant date 2022 £	**2023 number**	**Weighted average fair value at grant date 2023 A$**	2022 number	Weighted average fair value at grant date 2022 A$
Unvested awards at 1 January[b]	**2,585,679**	**47.22**	2,493,826	43.55	**2,340,705**	**95.27**	2,164,568	92.31
Awarded	**1,298,578**	**49.59**	1,187,887	50.37	**1,159,498**	**107.86**	1,068,556	95.69
Forfeited	**(113,473)**	**57.02**	(146,816)	56.66	**(144,531)**	**102.40**	(155,631)	96.46
Cancelled	**(71,160)**	**46.21**	(65,267)	44.99	**(61,993)**	**93.15**	(46,300)	86.44
Vested	**(889,496)**	**39.59**	(883,951)	39.69	**(712,686)**	**86.09**	(690,488)	86.96
Unvested awards at 31 December[b]	**2,810,128**	**50.36**	2,585,679	47.22	**2,580,993**	**103.11**	2,340,705	95.27
Comprising:								
– Management Share Awards	**1,321,207**	**54.05**	1,220,559	48.82	**1,211,757**	**113.03**	1,150,641	103.00
– Bonus Deferral Awards	**102,388**	**55.64**	139,782	55.96	**56,597**	**113.90**	60,862	113.13
– Global Employee Share Plan	**1,350,559**	**46.22**	1,191,738	44.51	**1,312,639**	**93.50**	1,129,202	86.43
– UK Share Plan	**35,974**	**54.68**	33,600	49.05	**–**	**–**	–	–
Unvested awards at 31 December[b]	**2,810,128**	**50.36**	2,585,679	47.22	**2,580,993**	**103.11**	2,340,705	95.27

(a) Awards of Rio Tinto American Depositary Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables.
(b) These numbers are presented and calculated in accordance with IFRS 2 and represent awards for which an IFRS 2 charge continues to be accrued for.

Notes to the 2023 financial statements

27 Share-based payments *continued*

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2023 number	**Weighted average share price at vesting 2023 £**	2022 number	Weighted average share price at vesting 2022 £	**2023 number**	**Weighted average share price at vesting 2023 A$**	2022 number	Weighted average share price at vesting 2022 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting):								
– Management Share Awards	**537,748**	**57.86**	529,054	54.59	**476,813**	**121.87**	486,587	113.18
– Bonus Deferral Awards	**87,475**	**55.43**	136,317	55.11	**23,569**	**123.91**	32,080	107.78
– Global Employee Share Plan	**493,187**	**55.05**	478,204	51.52	**374,232**	**118.12**	337,782	104.82
– UK Share Plan	**6,791**	**53.28**	12,176	55.20	**–**	**–**	–	–
Vested awards settled in cash during the year (including dividend shares applied on vesting):								
– Bonus Deferral Awards	**–**	**–**	23,611	55.98	**–**	**–**	12,699	113.23

(a) Awards of Rio Tinto American Depositary Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables.

In addition to the equity-settled awards shown above, there were 90,331 Rio Tinto plc and 7,913 Rio Tinto Limited cash-settled awards outstanding at 31 December 2023 (2022: 90,748 Rio Tinto plc and 9,685 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2023 was US$5 million (2022: US$5 million).

28 Post-retirement benefits

Description of plans

The Group operates a number of pension and post-retirement healthcare plans which provide lump sums, pensions, medical benefits and life insurance to retirees. Some of these plans are defined contribution and some are defined benefit, with assets held in separate trusts, foundations and similar entities.

Defined benefit pension and post-retirement healthcare plans expose the Group to a number of risks.

Uncertainty in benefit payments	The value of the Group's liabilities for post-retirement benefits will ultimately depend on the amount of benefits paid out. This in turn will depend on the level of future pay increases, the level of inflation (for those benefits that are subject to some form of inflation protection) and how long individuals live.
Volatility in asset values	The Group is exposed to future movements in the values of assets held in pension plans to meet future benefit payments.
Uncertainty in cash funding	Movements in the values of the obligations or assets may result in the Group being required to provide higher levels of cash funding, although changes in the level of cash required can often be spread over a number of years. In some countries control over the rate of cash funding or over the investment policy for pension assets might rest to some extent with a trustee body or other body that is not under the Group's direct control. In addition the Group is also exposed to adverse changes in pension regulation.

For these reasons, the Group has a policy of moving away from defined benefit pension provisions and towards defined contribution arrangements. The defined benefit pension plans for non-unionised employees are closed to new entrants in all countries. For unionised employees, some plans remain open.

The Group does not usually participate in multi-employer plans in which the risks are shared with other companies using those plans. The Group's participation in such plans is immaterial and therefore no detailed disclosures are provided in this note.

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Pension plans

The majority of the Group's defined benefit pension obligations are in Canada, the UK, the US and Switzerland. In Australia the main arrangements are principally defined contribution in nature, but there are sections providing defined benefits linked to final pay. The features of the Group's defined benefit pension obligations are summarised as follows.

	Calculation of benefit	Regulatory requirements	Governing body
Canada	Linked to final average pay for non-unionised employees. For unionised employees linked to final average pay or to a flat monetary amount per year of service.	Regulatory requirements in the relevant provinces and territories (predominantly Quebec).	Pension committee, a number of members are appointed by the sponsor and a number appointed by plan participants. In some cases, independent committee members are also appointed.
UK	Linked to final pay, subject to an earnings cap.	Regulatory requirements that apply to UK pension plans.	Trustee board, a number of directors appointed by the sponsor and a number appointed by plan participants and an independent trustee director.
US	Linked to final average pay for non-unionised employees and to a flat monetary amount per year of service for unionised employees.	US regulations.	Benefit Governance Committee. Members are appointed by the sponsor.
Switzerland	Linked to final average pay.	Swiss regulations.	Trustee board. Members are appointed by the plan sponsor, by employees and by retirees.
Australia	Linked to final pay and typically paid in lump sum form.	Local regulations in Australia.	An independent financial institution. One third of the board positions are nominated by employers. Remaining positions are filled by independent directors and directors nominated by participants.

The Group also operates a number of unfunded defined benefit plans, which are included in the reported defined benefit obligations.

Post-retirement healthcare plans

Certain subsidiaries of the Group, mainly in the US and Canada, provide healthcare and life insurance benefits to retired employees and in some cases to their beneficiaries and covered dependants. Eligibility for coverage is dependent upon certain age and service criteria. These arrangements are unfunded, and are included in the reported defined benefit obligations.

Recognition and measurement

For post-employment defined benefit schemes, in accordance with IAS 19 "Employee Benefits", local actuaries calculate the fair value of the plan assets and the present value of the plan obligations using a variety of valuation techniques dependent on the type of asset or liability. The difference is recognised as an asset or liability in the balance sheet.

Where appropriate, the recognition of assets may be restricted to the present value of any amounts the Group expects to recover by way of refunds from the plan or reductions in future contributions. In determining the extent to which a refund will be available the Group considers whether any third party, such as a trustee or pension committee, has the power to enhance benefits or to wind up a pension plan without the Group's consent.

The current service cost, any past service cost and the effect of any curtailment or settlements and the interest cost less interest income on assets held in the plans are recognised in the income statement. Actuarial gains/(losses) and returns from assets are recognised in other comprehensive income.

The Group's contributions to defined contribution plans are charged to the income statement in the period to which the contributions relate.

All amounts charged to the income statement in respect of these plans are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

Plan assets

The assets of the pension plans are invested predominantly in a diversified range of bonds, equities, property and qualifying insurance policies. Consequently, the funding level of the pension plans is affected by movements in interest rates and also in the level of equity markets. The Group monitors its exposure to changes in interest rates and equity markets and also measures its balance sheet pension risk using a value at risk approach. These measures are considered when deciding whether significant changes in investment strategy are required.

Investment strategy reviews are conducted on a periodic basis to determine the optimal investment mix. This is performed while bearing in mind the risk tolerance of the Group and local sponsor companies, and the views of the Pension Committees and trustee boards who are legally responsible for the plans' investments. The assets of the pension plans may also be invested in qualifying insurance policies which provide a stream of payments to match the benefits being paid out by the plans. This would therefore remove the investment, inflation and longevity risks.

In Canada, the UK and Switzerland, the Group works with the governing bodies to ensure that the investment policy adopted is consistent with the Group's tolerance for risk. In the US the Group has direct control over the investment policy, subject to local investment regulations.

Notes to the 2023 financial statements

28 Post-retirement benefits *continued*

The proportions of the total fair value of assets in the pension plans for each asset class at 31 December were as follows.

	2023		2022	
Equities	**16.6%**		18.0%	
– Quoted[a]		**11.1%**		12.3%
– Private[b]		**5.5%**		5.7%
Bonds[c]	**47.4%**		58.1%	
– Government fixed income		**21.6%**		24.6%
– Government inflation-linked		**1.6%**		5.0%
– Corporate and other publicly quoted		**16.5%**		19.6%
– Private		**7.7%**		8.9%
Property[d]	**8.7%**		10.0%	
– Quoted property funds		**2.5%**		2.9%
– Unquoted property funds		**6.2%**		7.1%
Qualifying insurance policies[e]	**24.9%**		9.7%	
Cash and other[f][g]	**2.4%**		4.2%	
Total	**100.0%**		100.0%	

(a) The holdings of quoted equities are invested in either pooled funds or segregated accounts held in the name of the relevant pension funds. These equity portfolios are well diversified in terms of the geographic distribution and market sectors.

(b) Investments in private equity, private debt and property are less liquid than the other investment classes listed above and therefore the Group's investment in those asset classes is restricted to a level that does not endanger the liquidity of the pension plans.

(c) The holdings of government bonds are generally invested in the debt of the country in which a pension plan is situated. Corporate and other quoted bonds are usually of investment grade. Private debt is mainly held in the North American and UK pension funds and is invested in North American and European companies.

(d) The property funds held by pension plans are invested in a diversified range of properties.

(e) Qualifying insurance policies are held with insurance companies that are regulated by the relevant local authorities. In October 2023, the trustee of the Rio Tinto 2009 Pension Fund purchased a buy-in contract for US$1.7 billion, largely through an in specie transfer of assets. The value of those policies is calculated by the local actuaries using assumptions consistent with those adopted for valuing the insured obligations.

(f) The holdings of cash and other are predominantly cash and short-term money market instruments.

(g) The Group makes limited use of futures, repurchase agreements and other instruments to manage the interest rate risk in some of its plans. Fund managers may also use derivatives to hedge currency movements within their portfolios and, in the case of bond managers, to take positions that could be taken using direct holdings of bonds but more efficiently. Exposure to these instruments is closely monitored and maintained at a level that does not endanger the liquidity of any pension plan.

The assets of the plans are managed on a day-to-day basis by external specialist fund managers. These managers may invest in the Group's securities subject to limits imposed by the relevant fiduciary committees and local legislation. The approximate total holding of Group securities within the plans is US$2 million (2022: US$2 million).

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Maturity of defined benefit obligations

An approximate analysis of the maturity of the obligations is given in the table below.

	Pension benefits	Other benefits	2023 Total	2022 Total	2021 Total
Proportion relating to current employees	**17%**	**15%**	**17%**	18%	20%
Proportion relating to former employees not yet retired	**9%**	**–%**	**9%**	9%	11%
Proportion relating to retirees	**74%**	**85%**	**74%**	73%	69%
Total	**100%**	**100%**	**100%**	100%	100%
Average duration of obligations (years)	**10.8**	**10.8**	**10.8**	11.4	13.8

Most of the Group's defined benefit pension plans are closed to new entrants, therefore the carrying value of the Group's post-employment obligations is less sensitive to assumptions about future salary increases than to other assumptions such as future inflation.

Geographical distribution of defined benefit obligations

An approximate analysis of the geographic distribution of the obligations is given in the table below:

	Pension benefits	Other benefits	2023 Total	2022 Total	2021 Total
Canada	**58%**	**50%**	**57%**	58%	55%
UK	**26%**	**1%**	**25%**	24%	28%
US	**8%**	**46%**	**10%**	10%	10%
Switzerland	**6%**	**–%**	**6%**	6%	5%
Other	**2%**	**3%**	**2%**	2%	2%
Total	**100%**	**100%**	**100%**	100%	100%

Total expense recognised in the income statement

	Pension benefits US$m	Other benefits US$m	2023 Total US$m	2022 Total US$m	2021 Total US$m
Current employer service cost for defined benefit plans	**(76)**	**(3)**	**(79)**	(143)	(167)
Past service credit/(cost)	**88**	**(1)**	**87**	–	(2)
Settlement losses	**–**	**–**	**–**	–	(3)
Net interest on net defined benefit liability	**13**	**(34)**	**(21)**	(36)	(52)
Non-investment expenses paid from the plans	**(20)**	**–**	**(20)**	(13)	(15)
Total defined benefit credit/(expense)	**5**	**(38)**	**(33)**	(192)	(239)
Current employer service cost for defined contribution and industry-wide plans	**(414)**	**(2)**	**(416)**	(367)	(315)
Total expense recognised in the income statement	**(409)**	**(40)**	**(449)**	(559)	(554)

These expense amounts are included as an employee cost within net operating costs.

The settlement loss in 2021 resulted from pension obligations in France being transferred to an external insurance company.

Total amount recognised in other comprehensive income before tax

	2023 US$m	2022 US$m	2021 US$m
Actuarial (losses)/gains	**(407)**	3,410	655
Impact of buy-in[(a)]	**(216)**	–	–
Return on assets, net of interest on assets	**222**	(2,831)	371
Losses on application of asset ceiling	**(60)**	(1)	–
Re-measurement (losses)/gains on pension and post-retirement healthcare plans	**(461)**	578	1,026

(a) In October 2023, the trustee of the Rio Tinto 2009 Pension Fund (RT09), a UK based scheme, purchased a bulk annuity contract – buy-in contract – which covers all scheme members. The bulk annuity contract is a Fund asset which provides an income to the RT09 which matches the pension paid out by the Fund. No formal decision to progress to buy-out and winding up of the RT09 can be made until such time as the Company and trustee agree on a number of key areas, including use of any residual surplus. As such, the trustee retains the legal responsibility to make benefit payments and the loss arising on this transaction was charged to Other Comprehensive Income.

Notes to the 2023 financial statements

28 Post-retirement benefits *continued*

Amounts recognised in the balance sheet

The following amounts were measured in accordance with IAS 19 at 31 December.

	2023			2022
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Total fair value of plan assets	**11,138**	**–**	**11,138**	10,708
Present value of obligations – funded	**(10,799)**	**–**	**(10,799)**	(10,226)
Present value of obligations – unfunded	**(368)**	**(628)**	**(996)**	(951)
Present value of obligations – total	**(11,167)**	**(628)**	**(11,795)**	(11,177)
Effect of asset ceiling	**(66)**	**–**	**(66)**	(1)
Net deficit to be shown in the balance sheet	**(95)**	**(628)**	**(723)**	(470)
Comprising:				
– Deficits	**(561)**	**(628)**	**(1,189)**	(1,294)
– Surpluses	**466**	**–**	**466**	824
Net (deficit)/surplus on pension plans	**(95)**	**–**	**(95)**	152
Unfunded post-retirement healthcare obligation	**–**	**(628)**	**(628)**	(622)

The surplus amounts shown above are included in the balance sheet as "Receivables and other assets". See note 17.

Deficits are shown in the balance sheet within "Provisions (including post-retirement benefits)". See note 26.

Funding policy and contributions to plans

The Group reviews the funding position of its pension plans on a regular basis and considers whether to provide funding above the minimum level required in each country. In Canada and the US the minimum level is prescribed by legislation. In the UK and Switzerland the minimum level is negotiated with the local trustee in accordance with the funding guidance issued by the local regulators. In deciding whether to provide funding above the minimum level, we consider other possible uses of cash elsewhere, the local sponsoring entity's tax situation and any strategic advantage we might obtain. The Group does not generally pre-fund post-retirement healthcare arrangements.

	2023			2022	2021
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m	Total US$m
Contributions to defined benefit plans	**205**	**32**	**237**	211	464
Contributions to defined contribution plans	**408**	**2**	**410**	363	311
Total	**613**	**34**	**647**	574	775

The level of surplus in the Rio Tinto Pension Fund in the UK is such that it may be used to pay for the employer contributions to the defined contribution section of that Fund, in accordance with the funding arrangements agreed with the Trustee of that Fund. Consequently, the cash paid to defined contribution plans is lower than the defined contribution service cost by US$6 million. Contributions to defined benefit pension plans are kept under regular review and actual contributions will be determined in line with the Group's wider financing strategy, taking into account relevant minimum funding requirements.

In 2021, additional cash of US$294 million was paid in order to settle pension obligations in France. This amount was paid to an external insurer, along with the transfer of existing pension assets in order to transfer the obligations to that insurer.

As contributions to many plans are reviewed on at least an annual basis, the contributions for 2024 and subsequent years cannot be determined precisely in advance. Most of the Group's largest pension funds are fully funded on their local funding basis and at present do not require long-term funding commitments. Contributions to defined benefit pension plans for 2024 are estimated to be around US$70 million but may be higher or lower than this depending on the evolution of financial markets and voluntary funding decisions taken by the Group. Contributions for subsequent years are expected to be at similar levels. Healthcare plans are generally unfunded and contributions for future years will be equal to benefit payments net of participant contributions. The Group's contributions for healthcare plans in 2024 are expected to be similar to the amounts paid in 2023.

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Movements in the net defined benefit liability

A summary of the movement in the net defined benefit liability is shown in the first table below. The subsequent tables provide a more detailed analysis of the movements in the present value of the obligations and the fair value of assets.

	2023			2022
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in the net defined benefit liability				
Net defined benefit surplus/(liability) at the start of the year	**152**	**(622)**	**(470)**	(1,028)
Amounts recognised in income statement	**5**	**(38)**	**(33)**	(192)
Amounts recognised in other comprehensive income	**(468)**	**7**	**(461)**	578
Employer contributions	**205**	**32**	**237**	211
Assets transferred to defined contribution section	**(6)**	**–**	**(6)**	(4)
Currency exchange rate gains/(losses)	**17**	**(7)**	**10**	(35)
Net defined benefit liability at the end of the year	**(95)**	**(628)**	**(723)**	(470)

	2023			2022
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in present value of obligation				
Present value of obligation at the start of the year	**(10,555)**	**(622)**	**(11,177)**	(15,728)
Current employer service costs	**(76)**	**(3)**	**(79)**	(143)
Past service credit/(cost)	**88**	**(1)**	**87**	–
Settlements	**4**	**–**	**4**	–
Interest on obligation	**(499)**	**(34)**	**(533)**	(370)
Contributions by plan participants	**(19)**	**–**	**(19)**	(20)
Benefits paid	**716**	**32**	**748**	783
Experience (losses)/gains	**(69)**	**29**	**(40)**	(170)
Changes in financial assumptions (losses)/gains	**(393)**	**(25)**	**(418)**	3,563
Changes in demographic assumptions gains	**48**	**3**	**51**	17
Currency exchange rate (losses)/gains	**(412)**	**(7)**	**(419)**	891
Present value of obligation at the end of the year	**(11,167)**	**(628)**	**(11,795)**	(11,177)

	2023			2022
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in plan assets				
Fair value of plan assets at the start of the year	**10,708**	**–**	**10,708**	14,700
Settlements	**(4)**	**–**	**(4)**	–
Interest on assets	**512**	**–**	**512**	334
Contributions by plan participants	**19**	**–**	**19**	20
Contributions by employer	**205**	**32**	**237**	211
Benefits paid	**(716)**	**(32)**	**(748)**	(783)
Non-investment expenses	**(20)**	**–**	**(20)**	(13)
Return on plan assets, net of interest on assets	**222**	**–**	**222**	(2,831)
Impact of buy-in	**(216)**	**–**	**(216)**	–
Assets transferred to defined contribution section	**(6)**	**–**	**(6)**	(4)
Currency exchange rate gains/(losses)	**434**	**–**	**434**	(926)
Fair value of plan assets at the end of the year	**11,138**	**–**	**11,138**	10,708

The impact of lower interest rates on bonds and qualifying insurance policies explains most of the return on plan assets, net of interest on assets in 2023.

The resulting effect of applying an asset ceiling is a loss of US$60 million and a loss of US$5 million for the change in currency exchange rate during the year. In determining the extent to which the asset ceiling has an effect, the Group considers the funding legislation in each country and the rules specific to each pension plan. The calculation takes into account any minimum funding requirements that may be applicable to the plan, whether any reduction in future Group contributions is available, and whether a refund of surplus may be available. In considering whether any refund of surplus is available, the Group considers the powers of trustee boards and similar bodies to augment benefits or wind up a plan. Where such powers are unilateral, the Group does not consider a refund to be available at the end of the life of a plan. Where the plan rules and legislation both permit the employer to take a refund of surplus, the asset ceiling may have no effect, although it may be the case that a refund will only be available many years in the future.

Notes to the 2023 financial statements

28 Post-retirement benefits *continued*

Main assumptions (rates per annum)

Key estimate – Estimation of obligations for post-employment costs

The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. The most significant assumptions used in accounting for pension plans are:

- The discount rate – used to determine the net present value of the obligations, the interest cost on the obligations and the interest income on plan assets. We use the yield from high-quality corporate bonds with maturities and terms that match those of the post-employment obligations as closely as possible. Where there is no developed corporate bond market in a currency, the rate on government bonds is used.
- The long-term inflation rate – used to project increases in future benefit payments for those plans that have benefits linked to inflation. The assumption regarding future inflation is based on market yields on inflation linked instruments, where possible, combined with consensus views.
- The mortality rates – used to project the period over which benefits will be paid, which is then discounted to arrive at the net present value of the obligations. The Group reviews the actual mortality rates of retirees in its major pension plans on a regular basis and uses these rates to set its current mortality assumptions. It also uses its judgement with respect to allowances for future improvements in longevity having regard to standard improvement scales in each relevant country and after taking external actuarial advice.

The weighted-average assumptions used for the valuation at year end are summarised below:

	Canada	UK	US	Switzerland
At 31 December 2023				
Discount rate	**4.6%**	**4.5%**	**4.8%**	**1.5%**
Long-term inflation[(a)]	**1.9%**	**3.1%**	**2.2%**	**1.2%**
Rate of increase in pensions	**0.2%**	**2.6%**	**–%**	**2.3%**
At 31 December 2022				
Discount rate	5.0%	4.9%	5.3%	2.3%
Long-term inflation[(a)]	2.1%	3.3%	2.4%	1.2%
Rate of increase in pensions	0.5%	2.8%	–%	3.4%

(a) The long-term inflation assumption shown for the UK is for the Retail Price Index. The assumption for the Consumer Price Index at 31 December 2023 was 2.5% (2022: 2.7%).

The main financial assumptions used for the healthcare plans, which are predominantly in the US and Canada, were: discount rate: 5.0% (2022: 5.4%); medical trend rate: 8.3% reducing to 4.7% by the year 2032 broadly on a straight line basis (2022: 7.1%, reducing to 4.8% by the year 2031); claims costs based on individual company experience.

For both the pension and healthcare arrangements, the post-retirement mortality assumptions allow for future improvements in longevity. The mortality tables used imply that a man aged 60 at the balance sheet date has a weighted average expected future lifetime of 27 years (2022: 27 years) and that a man aged 60 in 2041 would have a weighted average expected future lifetime of 28 years (2022: 28 years). The mortality tables are generally based upon the latest standard tables published in each country, adjusted appropriately to reflect the actual mortality experience of the plan participants where credible data is available. Adjustments have been made to some of our plans within the demographic assumptions for the impact of the Covid-19 pandemic.

Sensitivity analysis

The values reported for the defined benefit obligations are sensitive to the actuarial assumptions used for projecting future benefit payments and discounting those payments. In order to estimate the sensitivity of the obligations to changes in assumptions, we calculate what the obligations would be if we were to make changes to each of the key assumptions in isolation. The difference between this figure and the figure calculated using our stated assumptions is an indication of the sensitivity to reasonably possible changes in each assumption. The results of this sensitivity analysis are summarised in the table below. Note that this approach is valid for small changes in the assumptions but will be less accurate for larger changes in the assumptions. The sensitivity to inflation includes the impact on pension increases, which are generally linked to inflation where they are granted.

		2023		2022	
		Approximate (increase)/ decrease in obligations		Approximate (increase)/ decrease in obligations	
Assumption	**Change in assumption**	**Pensions US$m**	**Other US$m**	Pensions US$m	Other US$m
Discount rate	Increase of 0.5 percentage points	**460**	**31**	483	32
	Decrease of 0.5 percentage points	**(514)**	**(33)**	(510)	(34)
Long-term inflation	Increase of 0.5 percentage points	**(183)**	**(9)**	(174)	(10)
	Decrease of 0.5 percentage points	**176**	**8**	168	9
Demographic – allowance for future improvements in longevity	Participants assumed to have the mortality rates of individuals who are one year older	**244**	**7**	241	8
	Participants assumed to have the mortality rates of individuals who are one year younger	**(244)**	**(7)**	(241)	(8)

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29 Directors' and key management remuneration

Aggregate remuneration, calculated in accordance with the UK Companies Act 2006, of the Directors of the parent companies was as follows.

	2023 US$'000	2022 US$'000	2021 US$'000
Emoluments	**7,461**	6,726	6,568
Long-term incentive plans	**8,746**	4,691	1,587
	16,207	11,417	8,155
Pension contributions: defined contribution plans	**20**	10	9

The Group defines key management personnel as the Directors and certain members of the Executive Committee, as described on page 127. The Executive Committee includes the Executive Directors, product group Chief Executive Officers and Group executives. Details of the Directors and members of the Executive Committee identified as key management are shown in the Directors' Report on pages 92 to 95.

The aggregate remuneration including pension contributions incurred by Rio Tinto plc in respect of its directors was US$15,184,000 (2022: US$10,692,000; 2021: US$7,522,000). The aggregate pension contribution to defined contribution plans was US$20,000 (2022: US$10,000; 2021: US$9,000). The aggregate remuneration, including pension contributions and other retirement benefits, incurred by Rio Tinto Limited in respect of its directors was US$1,043,000 (2022: US$735,000; 2021: US$642,000). The aggregate pension contribution to defined contribution plans was US$nil (2022: US$nil; 2021: US$nil).

During 2023, no director (2022: nil; 2021: nil) accrued retirement benefits under defined benefit arrangements, and two directors (2022: two; 2021: two) accrued retirement benefits under defined contribution arrangements.

Emoluments included in the table above have been translated from local currency at the average exchange rate for the year with the exception of bonus payments, which have been translated at the year-end rate.

Aggregate compensation, representing the expense recognised, under IFRS as defined in the "Basis of preparation" section, of the Group's key management, including directors, was as follows.

	2023 US$'000	2022 US$'000	2021 US$'000
Short-term employee benefits and costs	**16,159**	14,258	18,184
Post-employment benefits	**155**	174	300
Employment termination benefits	**155**	–	–
Share-based payments	**10,305**	10,846	10,303
Total	**26,774**	25,278	28,787

The figures shown above include employment costs which cover social security and accident premiums in Canada, the UK and payroll taxes in Australia paid by the employer as a direct additional cost of hire. In total, they amount to US$1,321,000 (2022: US$1,173,000; 2021: US$1,511,000) and, although disclosed here, are not included in table 1 of the Remuneration Report.

Notes to the 2023 financial statements

Our Group structure

The Group's principal subsidiaries (note 30), joint operations (note 31), joint ventures and associates (note 32) are in most cases held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited. This section of the notes only includes those companies that have a more significant impact on the profit or operating assets of the Group. Refer to note 42 for a complete list of related undertakings.

30 Principal subsidiaries

The Group's principal subsidiaries at 31 December 2023 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Class of shares held	Proportion of class held (%)	Group interest (voting %)	Other interest (voting %)
Australia					
Argyle Diamonds Limited	Mining and processing of diamonds (until November 2020)	Class A Class B	100 100	100	–
Dampier Salt Limited	Salt and gypsum production	Ordinary	68.36	68.36	31.64
Energy Resources of Australia Ltd	Uranium processing (until January 2021)	Class A Ordinary	86.33 86.33	86.33	13.67
Hamersley Iron Pty Limited	Iron ore mining	Ordinary	100	100	–
North Mining Limited[a]	Iron ore mining	Ordinary Preference	100 100	100	–
Rio Tinto Aluminium (Holdings) Limited	Bauxite mining, alumina production, primary aluminium smelting	Ordinary	100	100	–
Robe River Mining Co Pty Ltd[a]	Iron ore mining	Class A Class B	40 76.36	73.61	26.39
Argentina					
Rincon Mining Pty Limited[b]	Exploration and development of lithium asset.	Ordinary	100	100	–
Brazil					
Rio Tinto do Brasil Ltda.[c]	Alumina production and bauxite mining	Quota	100	100	–
Canada					
Diavik Diamond Mines (2012) Inc.	Diamond mining and processing	Common	100	100	–
Iron Ore Company of Canada[d]	Iron ore mining; iron ore pellets production	Series A Series E Series F	91.41 100 100	58.72	41.28
Rio Tinto Alcan Inc.	Bauxite mining; alumina refining; aluminium smelting	Common	100	100	–
Rio Tinto Fer et Titane Inc.	Titanium dioxide feedstock; high purity iron and steel production	Common Class B preference Preference	100 100 100	100	–
Guinea					
Simfer Jersey Limited[e]	Iron ore project	Ordinary	53	53	47
Madagascar					
QIT Madagascar Minerals SA[f]	Ilmenite mining	Common Investment certificates	84.20 100	79.98	20.02
Mongolia					
Oyu Tolgoi LLC	Copper and gold mining	Common	66	66	34
Singapore					
Rio Tinto Singapore Holdings Pte Ltd	Commercial activities	Ordinary	100	100	–
South Africa					
Richards Bay Titanium (Proprietary) Limited[g]	Titanium dioxide, high purity iron production	B Ordinary B Preference Parent Preference	100 100 100	74	26
Richards Bay Mining (Proprietary) Limited[g]	Ilmenite, rutile and zircon mining	B Ordinary B Preference Parent Preference	100 100 100	74	26
United States					
Kennecott Holdings Corporation (including Kennecott Utah Copper and Kennecott Exploration)	Copper and gold mining, smelting and refining and exploration activities	Common	100	100	–
Nuton LLC	Technology venture including investments and collaborations related to proprietary nature-based copper leach technologies and capabilities	Unit shares	100	100	–
U.S. Borax Inc.	Mining, refining and marketing of borates	Common	100	100	–
Resolution Copper Mining LLC	Exploration and development of copper	–	–	55	45

(a) Robe River Mining Co Pty Ltd (which is 60% owned by the Group) holds a 30% economic interest in Robe River Iron Associates (Robe River). North Mining Ltd (which is wholly owned by the Group) holds a 35% economic interest in Robe River. Through these companies the Group recognises a 65% share of the assets, liabilities, revenues and expenses of Robe River, with a 12% non-controlling interest. The Group therefore has a 53% economic interest in Robe River.
(b) Rincon Mining Pty Limited incorporated in Australia but operates in Argentina.
(c) Rio Tinto do Brasil Ltda holds the Group's 10% interest in Consórcio de Alumínio do Maranhão, a joint operation in which the Group participates but is not a joint operator. The Group recognises its share of assets, liabilities, revenues and expenses relating to this arrangement.
(d) Iron Ore Company of Canada is incorporated in the US, but operates in Canada.
(e) Rio Tinto Simfer UK Limited (which is wholly owned by the Group) holds a 53% interest in Simfer Jersey Limited (Simfer Jersey), a company incorporated in Jersey. Simfer Jersey, in turn, has an 85% interest in Simfer S.A., the company that operates the Simandou mining project in Guinea. As at 31 December 2023, Simfer Jersey also owns 100% of Simfer InfraCo Guinée S.A., a company incorporated in Guinea, which will deliver Simfer's scope of the co-developed rail and port infrastructure. The Group therefore has a 45.05% indirect interest in Simfer S.A. and a 53% indirect interest in Simfer InfraCo Guinée S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.
(f) The Group's shareholding in QIT Madagascar Minerals SA (QMM) carries an 80% economic interest and 80% of the total voting rights; a further 5% economic interest is held through non-voting investment certificates to give an economic interest of 85%. During the year, a Memorandum of Understanding (MoU) was signed with the Malagasy Government in relation to their fiscal regime for QMM which expired at the end of May 2023. The MoU gives effect to the application of a new fiscal regime for the next 25 years, with terms effective as of 1 July 2023. Terms of the MoU includes the granting of a 15% free-carry equity stake to the Malagasy Government that can no longer be diluted, while maintaining their current 20% of the voting rights. As a result, the Malagasy Government's non-controlling interest has been recognised for the first time, and QMM's net earnings has been presented net of amounts attributable to non-controlling interests from 1 July 2023. The initial recognition of non-controlling interests, and any subsequent recognition arising from future contributions, gives rise to a charge within equity as the transaction is between Rio Tinto and the Malagasy Government acting in their capacity as shareholders and there are no changes to the net assets of QMM. As at 31 December 2023, the value of QMM's non-controlling interest is US$16 million.
(g) Additional classes of shares issued by Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited representing non-controlling interests are not shown. The Group's total legal and beneficial interest in Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited is 74%.

Summary financial information for subsidiaries that have non-controlling interests that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the subsidiaries' financial statements prepared in accordance with IFRS in line with the Group's accounting policies, including fair value adjustments, and before intercompany eliminations.

Income statement summary for the year ended 31 December	**Iron Ore Company of Canada 2023 US$m**	Iron Ore Company of Canada 2022 US$m restated[a]	**Oyu Tolgoi LLC[b][c] 2023 US$m**	Oyu Tolgoi LLC[b][c] 2022 US$m restated[a]
Revenue	**2,314**	2,634	**1,625**	1,424
Profit/(loss) after tax	**445**	756	**(1,024)**	(224)
– attributable to non-controlling interests	**184**	312	**(352)**	(159)
– attributable to Rio Tinto	**261**	444	**(672)**	(65)
Other comprehensive income/(loss)	**60**	(111)	**–**	–
Total comprehensive income/(loss)	**505**	645	**(1,024)**	(224)

Balance sheet summary as at 31 December	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m
Non-current assets	**3,170**	2,963	**15,335**	13,667
Current assets	**866**	774	**511**	753
Current liabilities	**(519)**	(499)	**(4,920)**	(4,253)
Non-current liabilities	**(1,005)**	(973)	**(12,544)**	(10,731)
Net assets	**2,512**	2,265	**(1,618)**	(564)
– attributable to non-controlling interests	**1,052**	946	**(558)**	(207)
– attributable to Rio Tinto	**1,460**	1,319	**(1,060)**	(357)

Cash flow statement summary for the year ended 31 December	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m
Cash flow from operations	**801**	1,153	**345**	406
Dividends paid to non-controlling interests	**(103)**	(142)	**–**	–

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) On 16 December 2022, we purchased the remaining 49% share of Turquoise Hill Resources Ltd. The Group now holds a 66% direct interest in Oyu Tolgoi LLC. Up until 15 December 2022 the Group had a 51% interest in Turquoise Hill Resources Ltd, which held a 66% interest in OT and, therefore, had a 34% indirect interest in OT. Refer to note 5 for details.
(c) Under the terms of the project finance facility held by Oyu Tolgoi LLC, there are certain restrictions on the ability of Oyu Tolgoi LLC to make shareholder distributions.

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Notes to the 2023 financial statements

30 Principal subsidiaries *continued*

Income statement summary for the year ended 31 December	**Robe River Mining Co Pty 2023 US$m**	Robe River Mining Co Pty 2022 US$m restated[a]	**Other companies and eliminations[b] 2023 US$m**	Other companies and eliminations[b] 2022 US$m restated[a]	**Robe River 2023 US$m**	Robe River 2022 US$m restated[a]
Revenue	**1,753**	1,703	**2,045**	1,987	**3,798**	3,690
Profit after tax	**848**	814	**825**	865	**1,673**	1,679
– attributable to non-controlling interests	**339**	323	**–**	–	**339**	323
– attributable to Rio Tinto	**509**	491	**825**	865	**1,334**	1,356
Other comprehensive loss	**40**	(206)	**36**	(112)	**76**	(318)
Total comprehensive income	**888**	608	**861**	753	**1,749**	1,361

Balance sheet summary as at 31 December	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m
Non-current assets	**2,899**	2,846	**4,026**	3,975	**6,925**	6,821
Current assets	**808**	756	**711**	609	**1,519**	1,365
Current liabilities	**(157)**	(112)	**(358)**	(2,724)	**(515)**	(2,836)
Non-current liabilities	**(443)**	(410)	**(2,554)**	(550)	**(2,997)**	(960)
Net assets	**3,107**	3,080	**1,825**	1,310	**4,932**	4,390
– attributable to non-controlling interests	**1,241**	1,230	**–**	–	**1,241**	1,230
– attributable to Rio Tinto	**1,866**	1,850	**1,825**	1,310	**3,691**	3,160

Cash flow statement summary for the year ended 31 December	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m	**2023 US$m**	2022 US$m
Cash flow from operations	**1,480**	1,435	**1,640**	1,981	**3,120**	3,416
Dividends paid to non-controlling interests	**(345)**	(278)	**–**	–	**(345)**	(278)

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) "Other companies and eliminations" includes North Mining Limited (a wholly-owned subsidiary of the Group which accounts for its interest in Robe River) and goodwill of US$342 million (2022: US$337 million) that arose on the Group's acquisition of its interest in Robe River.

31 Principal joint operations

The Group's principal joint operations at 31 December 2023 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Group interest (%)
Australia		
Tomago Aluminium Joint Venture	Aluminium smelting	51.6
Gladstone Power Station Joint Venture	Power generation	42.1
Hope Downs Joint Venture	Iron ore mining	50
Western Range Joint Venture[a]	Iron ore mining	54
Queensland Alumina Limited[b][c]	Alumina production	80
Pilbara Iron Arrangements	Infrastructure, corporate and mining services	See other relevant judgements call out box below
Canada		
Aluminerie Alouette Inc.	Aluminium production	40
Pechiney Reynolds Quebec Inc[c][d]	Aluminium smelting	50.2
New Zealand		
New Zealand Aluminium Smelters Limited[b][c]	Aluminium smelting	79.4

(a) The Group owns a 54% interest in the Western Range Joint Venture (WRJV), an unincorporated arrangement in the Pilbara. The Group recognises its equity share of assets, revenue and expenses relating to this arrangement. Liabilities are recognised at 54% with the exception of the close-down and restoration provision, which is recognised at 100% according to WRJV's contractual obligations, with a corresponding 46% receivable from China Baowu Group, for the co-owner's share.
(b) Although the Group has a 79.4% interest in New Zealand Aluminium Smelters Limited and an 80% interest in Queensland Alumina Limited, decisions about activities that significantly affect the returns that are generated require agreement of both parties to the joint arrangement, giving rise to joint control.
(c) Queensland Alumina Limited, New Zealand Aluminium Smelters Limited and Pechiney Reynolds Quebec Inc. are joint arrangements that are primarily designed for the provision of output to the parties sharing joint control. This indicates that the parties have rights to substantially all the economic benefits of the assets. The liabilities of the arrangements are in substance satisfied by cash flows received from the parties. This dependence indicates that the parties in effect have obligations for the liabilities. It is these facts and circumstances that give rise to the classification of these entities as joint operations.
(d) Pechiney Reynolds Quebec Inc., an entity incorporated in the United States, has a 50.1% interest in the Aluminerie de Bécancour, Inc. aluminium smelter, which is located in Canada. As Rio Tinto owns 50.2% of Pechiney Reynolds Quebec Inc our effective ownership of the Bécancour smelter is 25.2%.

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Other relevant judgements – accounting for the Pilbara Iron Arrangements

A number of arrangements are in place amongst the Australian Iron Ore operations, managed by Rio Tinto, which allow their respective assets to be operated as a single integrated network across the Pilbara region. In assessing the Pilbara Iron Arrangements, it has been concluded that they collectively constitute a joint operation on the basis that decisions about relevant activities require unanimous consent. The resulting efficiencies are shared between Rio Tinto and Robe River Iron Associates (Robe River), and the parties fund all of the cash flow requirements of Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.

Each of the partners in the joint operation is able to request the other to construct assets on their tenure to increase the capacity of the rail and port infrastructure network. The requesting partner's (Asset User's) share of the capacity of the network will increase by the capacity of the newly constructed asset, but generally that capacity may be provided from any of the network assets. The Asset User will pay an annual charge, Committed Use Charge (CUC) over a contractually specified period irrespective of network usage. The constructing partner (Asset Owner) has an ongoing obligation to make available capacity from those assets and to maintain the assets in good working order as required under relevant State Agreements and associated tenure. The arrangements are managed through two wholly-owned subsidiaries: Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.

We have also considered whether the CUC arrangements give rise to a lease between the Asset Owner and the Asset User. We have concluded that they do not, as there is no specified asset; rather the Asset User has a first priority right to the capacity in the CUC asset. This treatment was grandfathered on adoption of IFRS 16 on 1 January 2019, following an assessment under the preceding standards IAS 17 "Leases" and IFRIC 4 "Determining whether an arrangement contains a lease", with no change to the conclusion under IFRS 16 for subsequent expenditure subject to the existing CUC arrangements. Management considers that these arrangements are unique and has used judgement to apply the principles of IFRS to the accounting for the arrangements as described above. The obligation of the Asset Owner to make capacity available is fulfilled over time and not at a point in time. The CUC arrangement is therefore an executory contract as defined under IAS 37, whereby neither party has performed any of its obligations, or both parties have partially performed their obligations to an equal extent, and so the CUC payments are expensed as incurred. An alternative interpretation of the fact pattern could have resulted in a gross presentation in the Group's balance sheet with an asset and a corresponding liability to reflect the present value of the CUC payments. The Asset User is a wholly-owned subsidiary of Rio Tinto, whereas the Asset Owner is a joint operation. This impact would be some US$1,009 million (calculated on the basis of grossing up the tax written down value of the CUC assets). Other methods of calculating the gross-up might give rise to different numbers.

32 Principal joint ventures and associates

Principal joint ventures

The Group's principal joint ventures at 31 December 2023 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Canada					
Matalco Canada Inc.	Aluminium recycling	195,000	Class B Common	100	50
Chile					
Minera Escondida Ltda[a]	Copper mining and refining	–	–	–	30
Oman					
Sohar Aluminium Co. L.L.C.[b]	Aluminium smelting, power generation	37,500	Ordinary	20	20
United States					
Matalco USA, LLC	Aluminium recycling	525,000	Unit shares	50	50

(a) The year-end of Minera Escondida Ltda is 30 June. The amounts included in the consolidated financial statements of Rio Tinto are however, based on financial statements of Minera Escondida Ltda that are coterminous with those of the Group. The company has no share class.
(b) Although the Group holds a 20% interest in Sohar Aluminium Co. L.L.C, decisions about relevant activities that significantly affect the returns that are generated require agreement of all parties to the arrangement. It is therefore determined that Rio Tinto has joint control.

Other relevant judgements – accounting for Minera Escondida Ltda

Judgement has been applied on the determination that Escondida is a joint venture. We have based this on the nature of significant commercial decisions, including those in relation to capital expenditure, which require approval of both Rio Tinto and its partner BHP (holders of a 57.5% interest). In contrast, our partner has assessed Rio Tinto's rights as protective and concluded that it controls Escondida through its rights to direct relevant activities. Adoption of the equivalent judgement by the Group would result in reclassification of Escondida from a joint venture to an associate, with no other financial reporting consequence since accounting under the equity method would remain in place.

Notes to the 2023 financial statements

32 Principal joint ventures and associates *continued*

Summary information for joint ventures that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the joint ventures' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Minera Escondida Ltda[a] 2023 US$m	Minera Escondida Ltda[a] 2022 US$m
Revenue	**9,187**	8,760
Depreciation and amortisation	**(1,183)**	(1,100)
Other operating costs	**(3,784)**	(3,280)
Operating profit	**4,220**	4,380
Finance expense	**(283)**	(207)
Income tax[b]	**(1,773)**	(1,590)
Profit after tax	**2,164**	2,583
Other comprehensive (loss)/income	**(13)**	17
Total comprehensive income	**2,151**	2,600
Non-current assets	**12,480**	11,853
Current assets	**2,751**	2,563
Current liabilities	**(1,607)**	(1,450)
Non-current liabilities	**(5,192)**	(5,063)
Net assets	**8,432**	7,903
Assets and liabilities above include:		
– cash and cash equivalents	**360**	377
– current financial liabilities	**(677)**	(340)
– non-current financial liabilities	**(2,770)**	(3,060)
Dividends received from joint venture (Rio Tinto share)	**578**	813

Reconciliation of the above amounts to the investment recognised in the Group balance sheet

Group interest	**30 %**	30 %
Net assets (100%)	**8,432**	7,903
Group's ownership interest	**2,530**	2,371
Carrying value of Group's interest	**2,530**	2,371

(a) In addition to its "Investment in equity accounted units", the Group recognises deferred tax liabilities of US$354 million (2022: US$328 million) relating to tax on unremitted earnings of equity accounted units.

(b) Income tax in 2023 includes a charge of US$252 million for the revaluation of deferred tax balances following the substantive enactment of the Chilean Royalty Bill which, effective from 1 January 2024, will implement a 1 percent royalty on revenues, a margin based tax with rates ranging between 8% and 26%, and a 46% cap to the overall Chilean tax burden of mining companies.

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Principal associates

The Group's principal associates at 31 December 2023 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Australia					
Boyne Smelters Limited[a]	Aluminium smelting	153,679,560	Ordinary	59.4	59.4
Brazil					
Mineração Rio do Norte S.A.[b]	Bauxite mining	50,000,000,000	Ordinary	25	22
		82,000,000,000	Preferred	20.5	
United States					
Halco (Mining) Inc.[c]	Bauxite mining	4,500	Common	45	45

(a) The parties that collectively control Boyne Smelters Limited do so through decisions that are determined on an aggregate voting interest that can be achieved by several combinations of the parties. Although each combination requires Rio Tinto's approval, this is not joint control as defined under IFRS 11 "Joint Arrangements". Rio Tinto is therefore determined to have significant influence over this company.
(b) On 1 December 2023, we acquired a 10% equity interest (12.5% voting right) in Mineração Rio do Norte S.A. (MRN) from Companhia Brasileira de Aluminio (CBA) for a nominal amount which resulted in an increase of our interest in MRN from 12% to 22% (25% voting right). In prior years, it was determined that we had significant influence through representation on MRN's board of directors and consequently the ability to participate in financial and operating policy decisions. Therefore, the increase in equity does not change the basis of consolidation and MRN remains treated as an associate.
(c) Halco (Mining) Inc. has a 51% indirect interest in Compagnie des Bauxites de Guinée, a bauxite mine, the core assets of which are located in Guinea.

Summary information for joint ventures and associates that are not individually material to the Group

	2023 US$m	2022 US$m adjusted[a]
Carrying value of Group's interest[b]	**1,878**	927
Profit after tax	**26**	2
Other comprehensive income/(loss)	**15**	(27)
Total comprehensive income/(loss)	**41**	(25)

(a) Summary information for joint ventures and associates has been adjusted to exclude Sohar Aluminium Co. L.L.C as it is no longer considered individually material to the Group for disclosure.
(b) The increase in carrying value primarily relates to our investment in Matalco Canada Inc and Matalco USA, LLC on 1 December 2023. Refer to note 5 for details.

33 Related-party transactions

Information about material related-party transactions of the Rio Tinto Group is set out below.

Subsidiary companies and joint operations

Details of investments in principal subsidiary companies are disclosed in note 30. Information relating to joint operations can be found in note 31.

Equity accounted units

Transactions and balances with equity accounted units are summarised below. Purchases, trade and other receivables, and trade and other payables, relate largely to amounts charged by equity accounted units for toll processing of alumina and purchasing of bauxite and aluminium. Sales relate largely to sales of alumina to equity accounted units for smelting into aluminium.

	2023 US$m	2022 US$m	2021 US$m
Income statement items			
Purchases from equity accounted units	**(1,163)**	(1,429)	(1,167)
Sales to equity accounted units	**349**	563	432
Cash flow statement items			
Dividends from equity accounted units	**610**	879	1,431
Net (funding of)/receipts from equity accounted units	**(144)**	(75)	6
Balance sheet items			
Investments in equity accounted units[a]	**4,407**	3,298	3,504
Loans related to equity accounted units[b]	**100**	–	–
Trade and other receivables: amounts due from equity accounted units[c]	**189**	297	251
Trade and other payables: amounts due to equity accounted units	**(206)**	(294)	(253)

(a) Investments in equity accounted units include quasi-equity loans. Further information about investments in equity accounted units is set out in note 32.
(b) Includes initial funding for Simandou infrastructure, classified as "Other investments, including loans" pending finalisation of the project shareholder agreements.
(c) This includes prepayments of tolling charges.

Pension funds

Information relating to pension fund arrangements is set out in note 28.

Directors and key management

Details of Directors' and key management's remuneration are set out in note 29 and in the Remuneration Report on pages 113 to 145.

Notes to the 2023 financial statements

Our equity

34 Share capital

Recognition and measurement

Ordinary shares are classified as equity. Incremental costs directly attributable to the issuance of new shares are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Group's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to owners of Rio Tinto. Where such shares are subsequently reissued, any consideration received, net of any directly attributable incremental costs and the related income tax effects, is included in equity attributable to owners of Rio Tinto. If purchased Rio Tinto plc shares are cancelled, an amount equal to the nominal value of the cancelled share is credited to the capital redemption reserve.

Rio Tinto plc

	2023 Number (million)	2022 Number (million)	2021 Number (million)	**2023 US$m**	2022 US$m	2021 US$m
Issued and fully paid up share capital of 10p each						
At 1 January	**1,255.845**	1,255.795	1,255.756	**207**	207	207
Ordinary shares issued under the Global Employee Share plan (GESP)	**0.047**	0.050	0.039	**–**	–	–
Shares purchased and cancelled[a]	**–**	–	–	**–**	–	–
At 31 December	**1,255.892**	1,255.845	1,255.795	**207**	207	207
Shares held by public						
At 1 January	**1,249.655**	1,248.141	1,246.904			
Shares reissued from treasury under the GESP	**1.619**	1.464	1.198			
Ordinary shares issued under the GESP	**0.047**	0.050	0.039			
Shares purchased and cancelled[a]	**–**	–	–			
At 31 December	**1,251.321**	1,249.655	1,248.141			
Shares held in treasury	**4.571**	6.190	7.654			
Shares held by public	**1,251.321**	1,249.655	1,248.141			
Total share capital	**1,255.892**	1,255.845	1,255.795			
Other share classes						
Special Voting Share of 10p each[b]	**1 only**	1 only	1 only			
DLC Dividend Share of 10p each[b]	**1 only**	1 only	1 only			

(a) The authority for the company to buy back its ordinary shares was renewed at the 2021 annual general meeting. No shares were bought back and cancelled in 2023, 2022 or 2021 under the on-market buy-back programme.
(b) The Special Voting Share was issued to facilitate the joint voting by shareholders of Rio Tinto plc and Rio Tinto Limited on Joint Decisions, following the DLC Merger. The DLC Dividend Share was issued to a subsidiary of Rio Tinto Limited to facilitate the efficient management of funds within the DLC structure. In addition, an Equalisation Share is authorised but not issued and is governed by the terms of the DLC Merger Sharing Agreement.

During 2023, US$17 million of shares and ADRs (2022: US$16 million; 2021: US$18 million) were purchased by employee share ownership trusts on behalf of Rio Tinto plc to satisfy employee share awards on vesting. At 31 December 2023, 253,371 shares (2022: 232,621; 2021: 259,583) and 45,694 ADRs (2022: 49,777; 2021: 46,977) shares were held in the employee share ownership trusts on behalf of Rio Tinto plc.

Rio Tinto Limited

	2023 Number (million)	2022 Number (million)	2021 Number (million)	**2023 US$m**	2022 US$m	2021 US$m
Issued and fully paid up share capital						
At 1 January	**371.21**	371.21	371.21	**3,330**	3,570	3,781
Adjustment on currency translation				**47**	(240)	(211)
At 31 December	**371.21**	371.21	371.21	**3,377**	3,330	3,570
– Special Voting Share[a]	**1 only**	1 only	1 only			
– DLC Dividend Share[a]	**1 only**	1 only	1 only			
Total share capital	**371.21**	371.21	371.21			

(a) The Special Voting Share was issued to facilitate the joint voting by shareholders of Rio Tinto Limited and Rio Tinto plc on Joint Decisions following the DLC Merger. The DLC Dividend Share was issued to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2023, US$78 million of shares (2022: US$84 million; 2021: US$95 million) were purchased by employee share ownership trusts on behalf of Rio Tinto Limited to satisfy employee share awards on vesting. At 31 December 2023, 794,282 shares (2022: 979,495; 2021: 995,173) were held in the employee share ownership trusts on behalf of Rio Tinto Limited.

Information relating to share-based incentive schemes is in note 27.

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35 Other reserves and retained earnings

	2023 US$m	2022 US$m restated[a]	2021 US$m restated[a]
Capital redemption reserve[b]			
At 1 January and 31 December	**51**	51	51
Cash flow hedge reserve			
At 1 January	**(51)**	(11)	124
Cash flow hedge gains/(losses)	**30**	(167)	(211)
Cash flow hedge (gains)/losses transferred to the income statement	**(39)**	106	14
Tax on the above	**1**	21	62
At 31 December	**(59)**	(51)	(11)
Fair value through other comprehensive income reserve			
At 1 January	**2**	2	(2)
(Losses)/gains on equity investments	**(24)**	–	4
At 31 December	**(22)**	2	2
Cost of hedging reserve			
At 1 January	**(17)**	(21)	(3)
Cost of hedging deferred to reserves during the year	**4**	4	(18)
Transfer of cost of hedging to the income statement	**1**	–	–
At 31 December	**(12)**	(17)	(21)
Other reserves[c]			
At 1 January	**11,554**	11,582	11,628
Own shares purchased from Rio Tinto Limited shareholders to satisfy share awards	**(78)**	(84)	(95)
Employee share options: value of services	**62**	56	55
Deferred tax on share options	**4**	–	(6)
At 31 December	**11,542**	11,554	11,582
Foreign currency translation reserve[d]			
At 1 January	**(3,784)**	(1,627)	162
Parent and subsidiaries' currency translation and exchange adjustments	**598**	(2,235)	(1,777)
Equity accounted units currency translation adjustments	**14**	(27)	(12)
Currency translation reclassified on disposal[e]	**–**	105	–
At 31 December	**(3,172)**	(3,784)	(1,627)
Total other reserves per balance sheet	**8,328**	7,755	9,976
Retained earnings[f]			
At 1 January as previously reported[g]	**34,511**	33,320	26,792
Adjustment for transition to new accounting pronouncements[h]	**509**	537	516
Revised 1 January	**35,020**	33,857	27,308
Parent and subsidiaries' profit for the year	**9,385**	11,817	20,073
Equity accounted units' profit after tax for the year	**673**	575	1,042
Re-measurement (losses)/gains on pension and post-retirement healthcare plans[i]	**(459)**	568	1,015
Tax relating to components of other comprehensive income	**151**	(118)	(297)
Total comprehensive income for the year	**9,750**	12,842	21,833
Dividends paid	**(6,466)**	(11,716)	(15,385)
Change in equity interest held by Rio Tinto[j]	**(13)**	701	76
Own shares purchased/treasury shares reissued for share awards and other movements	**(17)**	(16)	(18)
Equity issued to holders of non-controlling interests[i]	**–**	(711)	–
Employee share options and other IFRS 2 charges taken to the income statement	**76**	63	60
At 31 December	**38,350**	35,020	33,874

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) The capital redemption reserve was set up to comply with section 733 of the UK *Companies Act 2006* (previously section 170 of the UK *Companies Act 1985*) when shares of a company are redeemed or purchased wholly out of the company's profits. Balances reflect the amount by which the company's issued share capital is diminished in accordance with this section.
(c) Other reserves includes US$11,936 million which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009. No share premium was recorded in the Rio Tinto plc financial statements through the operation of the merger relief provisions of the UK *Companies Act 1985*.
Other reserves also include the cumulative amount recognised under IFRS 2 in respect of awards granted but not exercised to acquire shares in Rio Tinto Limited, less, where applicable, the cost of shares purchased to satisfy share awards exercised. The cumulative amount recognised under IFRS 2 in respect of awards granted but not exercised to acquire shares in Rio Tinto plc is recorded in retained earnings.
(d) Exchange differences arising on the translation of the Group's net investment in foreign controlled companies are taken to the foreign currency translation reserve. The cumulative differences relating to an investment are transferred to the income statement when the investment is disposed of.
(e) The sale of our Roughrider undeveloped project in 2022 led to the recycling of currency translation reserve losses of US$105 million relating to the entity that owns the project.
(f) Retained earnings and movements in reserves of subsidiaries include those arising from the Group's share of joint operations.
(g) In 2022, the opening balance includes a US$17 million adjustment for the prospective adoption of Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets", as reported in the prior year financial statements.
(h) The impact of adopting the narrow-scope amendments to IAS 12. Refer to page 166 for details.
(i) There were US$3 million re-measurement gains relating to equity accounted units in 2023 (2022: US$5 million gains, 2021: US$12 million gains).
(j) In 2022, the amount relates to forgiveness by Turquoise Hill Resources Ltd of the accrued interest and funding balances from Erdenes Oyu Tolgoi and the purchase of the non-controlling interest of Turquoise Hill Resources Ltd.

Notes to the 2023 financial statements

Other notes

36 Other provisions

Recognition and measurement

Other provisions are recognised when it is more likely than not that we will become obliged, legally or constructively, to future expenditure because of a past event. The provision reflects the best estimate of the expenditure needed to settle the obligation which existed at the balance sheet date. Where there is sufficient objective evidence of reasonably expected future events (such as changes in technology and new legislation) we reflect this in the amounts recognised. Other provisions includes provision for legal claims, residual consideration payable to Turquoise Hill Resources shareholders that dissented to the 2022 transaction, onerous contracts and claims for past royalties.

	2023 US$m	2022 US$m
Opening balance at 1 January as previously reported	**1,298**	1,019
Adjustment on currency translation	**14**	(43)
Adjustments to mining properties/right-of-use assets:		
– decrease to existing and new provisions	**–**	4
Charged/(credited) to profit:		
– increases to existing and new provisions	**214**	365
– change in discount rate	**(18)**	—
– unused amounts reversed	**(31)**	(66)
– exchange gain on provisions	**(1)**	–
– amortisation of discount	**22**	2
Utilised in year	**(104)**	(176)
Transfers and other movements[(a)]	**(23)**	193
Closing balance at 31 December	**1,371**	1,298
Balance sheet analysis:		
Current	**637**	554
Non-current	**734**	744
Total	**1,371**	1,298

(a) In 2022, Transfers and other movements included US$211 million for additional consideration to be paid to the dissenting shareholders of the Turquoise Hill Resources transaction. It represented the difference between the initial consideration of C$34.4 per share paid and C$43 per share paid to all other shareholders, with the final amount and timing to be determined by dissent proceedings. At 31 December 2023 those dissent proceedings remained ongoing and the provision is unchanged.

37 Contingencies and commitments

Recognition and measurement

Contingent liabilities, indemnities and other performance guarantees represent the potential outflow of funds from the Group for the satisfaction of obligations, including those under contractual arrangements (for example, undertakings related to supplier agreements) not provided for on the balance sheet, where the likelihood of the contingent liabilities, guarantees or indemnities being called is assessed as possible rather than probable or remote.

Other relevant judgements – contingencies

Disclosure is made for material contingent liabilities unless the possibility of any loss arising is considered remote based on our judgement and legal advice. These are quantified unless, in our judgement, the amount cannot be reliably estimated. The unit of account for claims is the matter taken as a whole and therefore when a provision has been recorded for the best estimate of the cost to settle the obligation there is no further contingent liability component. This means that when a provision is recognised for the best estimate of the expenditure required to settle the present obligation from a single past event, a further contingent liability is not reported for the maximum potential exposure in excess of that already provided.

We have not established provisions for certain additional legal claims in cases where we have assessed that a payment is either not probable or cannot be reliably estimated. A number of our companies are, and will likely continue to be, subject to various legal proceedings and investigations that arise from time to time. As a result, the Group may become subject to substantial liabilities that could affect our business, financial position and reputation. Litigation is inherently unpredictable and large judgements may at times occur. The Group may in the future incur judgements or enter into settlements of claims that could lead to material cash outflows. We do not believe that any of these proceedings will have a materially adverse effect on our financial position.

Contingent liabilities (subsidiaries, joint operations, joint ventures and associates)

	2023 US$m	2022 US$m
Contingent liabilities, indemnities and other performance guarantees[(a)]	**435**	498

(a) There were no material contingent liabilities arising in relation to the Group's joint ventures and associates.

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Contingent liabilities – not quantifiable

The current status of contingent liabilities where it is not practicable to provide a reliable estimate of possible financial exposure is:

Litigation disputes

Litigation matter	Latest update
2011 Contractual payments in Guinea	On 6 March 2023, we resolved a previously self-disclosed investigation by the SEC into certain contractual payments totalling US$10.5 million made to a consultant who had provided advisory services in 2011, relating to the Simandou project in the Republic of Guinea. Without admitting to or denying the SEC's findings, Rio Tinto paid a US$15 million civil penalty for violations of the books and records and internal controls provisions of the *Foreign Corrupt Practices Act*. In August 2023, the UK Serious Fraud Office announced that it was not in the public interest to proceed with a prosecution and closed its case. It also announced that the Australian Federal Police maintains a live investigation into the matter. Rio Tinto continues to co-operate fully with relevant authorities in connection with open investigations. In August 2018, the court dismissed a related US class action commenced on behalf of securities holders. No provision has been recognised for other related investigations.

At 31 December 2023, the outcome of this investigation remains uncertain, but it could ultimately expose the Group to material financial cost. We believe this case is unwarranted and will defend the allegation vigorously. A dedicated Board committee continues to monitor the progress of this matter, as appropriate.

In November 2023, we reached a court approved settlement with the SEC in relation to Rio Tinto's disclosures and timing of the impairment of Rio Tinto Coal Mozambique (RTCM), which was reflected in Rio Tinto's 2012 year-end accounts. This was previously disclosed as a contingent liability – not quantifiable at 31 December 2022. Without admitting to or denying the SEC's allegations related to its books, records and reporting requirements, Rio Tinto paid a US$28 million penalty and agreed to retain an independent consultant to advise on its current policies, procedures, and controls related to impairment, disclosures and project risk. Rio Tinto settled claims brought by the Australian Securities and Investment Commission in 2022 and the United Kingdom's Financial Conduct Authority in 2017 relating to the same RTCM impairment. The U.S. Court who approved the SEC settlement previously dismissed a related private putative securities class action in 2019. An appeals court affirmed the dismissal.

Former Chief Executive Tom Albanese has also reached a settlement with the SEC and will pay a US$50,000 penalty, without admitting to or denying the allegations related to books and records and internal controls.

With this settlement, all investigations of Rio Tinto regarding this matter have been finalised.

Other contingent liabilities

We continue to modernise agreements with Traditional Owner groups in response to the Juukan Gorge incident. We have created provisions, within "Other provisions", based on our best estimate of historical claims. However, the process is incomplete and it is possible that further claims could arise relating to past events.

Close-down and restoration provisions are not recognised for those operations that have no known restrictions on their lives as the date of closure cannot be reliably estimated. This applies primarily to our Canadian aluminium smelters, which are not dependent upon a specific orebody and have access to indefinite-lived power from owned hydropower stations with water rights permitted by local governments. In these instances, a closure obligation may exist at the reporting date. However, due to the indefinite nature of asset lives it is not possible to arrive at a sufficiently reliable estimate for the purposes of recognising a provision. Close-down and restoration provisions are recognised at these operations for separately identifiable closure activities which can be reasonably estimated, such as the demolition and removal of fixed structures after a pre-determined period. Any contingent liability for these assets will crystallise into a closure provision if and when a decision is taken to cease operations.

Contingent assets

The Group has, from time to time, various insurance claims outstanding with reinsurers. Recognition of any assets arising takes place once the insurance company has agreed to refund the claims and the amount is quantifiable. This is usually in the same period as payment is received.

Capital commitments

Our capital commitments includes:

– open purchase orders for managed operations and non-managed tolling entities;

– expenditure on major projects already authorised by our Investment Committee for non-managed operations.

On a legally enforceable basis, capital commitments would be approximately US$1.4 billion (2022: US$1.0 billion) as many of the contracts relating to the Group's projects have various cancellation clauses.

The Group's share of joint venture capital commitments was US$227 million at 31 December 2023 (2022: US$15 million).

Impact of climate change on our business – decarbonisation capital commitments

Capital commitments do not include the estimated incremental capital expenditure relating to decarbonisation projects of US$5 billion to US$6 billion between 2022 and 2030 unless otherwise contractually committed (revised from US$7.5 billion in prior year). Included in capital commitments in 2023 are contractually committed decarbonisation capital commitments of US$123 million (US$8 million in 2022), inclusive of Amrun power purchase agreement, which is a treated as a lease, which has not yet commenced (disclosed in note 21).

Notes to the 2023 financial statements

37 Contingencies and commitments *continued*

	2023 US$m	2022 US$m
Capital commitments excluding the Group's share of joint venture capital commitments		
Within 1 year	**3,662**	2,313
Between 1 and 3 years	**597**	866
Between 3 and 5 years	**27**	86
After 5 years	**99**	89
Total	**4,385**	3,354
Group's share of joint venture capital commitments		
Within 1 year	**128**	15
Between 1 and 3 years	**99**	–
Total	**227**	15

Other commitments

The Group has also made other commitments to incur a minimum amount of expenditure on community development initiatives as part of its agreements with various stakeholders. As of 31 December 2023, a total of US$173 million (2022: US$nil) of such expenditure is estimated to be incurred over the next 25 years, out of which US$10 million is expected to be incurred within the next year.

Unrecognised commitments to contribute funding or resources to joint ventures

Along with the other joint venture partners, we have commitments to provide emergency funding (such as funding required to preserve the life or assets of the company or to comply with applicable laws) if required by Sohar Aluminium Company L.L.C., subject to approved thresholds.

At 31 December 2023, Minera Escondida Ltda held an undrawn shareholder line of credit for US$225 million (Rio Tinto share) (2022: US$225 million). The current facility has been extended during the year and will now mature in September 2024.

Purchase obligations

Purchase obligations are enforceable and legally binding agreements to buy goods or services. They specify all significant terms, including fixed or minimum quantities to be purchased or consumed; fixed, minimum or variable price provisions; and the approximate timing of the transactions.

Purchase obligations for goods mainly relate to purchases of raw materials and consumables, and purchase obligations for services mainly relate to charges for the use of infrastructure, commitments to purchase power and freight contracts. These goods and services are expected to be used in the business. To the extent that this changes, a provision for onerous obligations may be made.

Purchases from joint arrangements or associates are included if the quantity to be purchased is in excess of our ownership interest in the entity. However, purchase obligations exclude contracted purchases of bauxite, alumina and aluminium from joint arrangements and associates and contracted purchases of alumina from third parties. This is because these purchases are made for commercial reasons and the Group is, overall, a net seller of these commodities.

The aggregate amount of future payment commitments under purchase obligations outstanding at 31 December is shown in the table below.

	2023 US$m	2022 US$m
Within 1 year	**2,927**	3,618
Between 1 and 2 years	**1,663**	2,091
Between 2 and 3 years	**1,496**	1,632
Between 3 and 4 years	**1,147**	1,309
Between 4 and 5 years	**948**	907
After 5 years	**6,365**	6,574
Total	**14,546**	16,131

Guarantees by parent companies

Rio Tinto plc and Rio Tinto Limited have, jointly and severally, fully and unconditionally guaranteed the following securities issued by the following 100% owned finance subsidiaries: US$6.2 billion (2022: US$4.4 billion) Rio Tinto Finance (USA) Limited and Rio Tinto Finance (USA) plc bonds with maturity dates up to 2053; and US$1.1 billion (2022: US$1.0 billion) on the European Debt Issuance Programme. In addition, Rio Tinto Finance plc and Rio Tinto Finance Limited have entered into undrawn facility arrangements for an aggregate amount of US$7.5 billion (2022: US$7.5 billion). The facilities are guaranteed by Rio Tinto plc and Rio Tinto Limited.

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. During the year, a wholly owned subsidiary of Rio Tinto plc became a lender under the project finance facility ranking pari passu with the external lenders.

At 31 December 2023, a total of US$4.7 billion of project finance debt was outstanding under this facility of which US$3.9 billion is owed to external third party lenders (2022: US$3.9 billion). Rio Tinto plc, through its subsidiaries, owns 66% of Oyu Tolgoi LLC, with the remaining share owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia. The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility. The CSU contains a carve-out for certain political risk events.

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38 Auditors' remuneration

Group auditors' remuneration[a]

	2023 US$m	2022 US$m	2021 US$m
Audit of the Group	**19.1**	17.3	13.7
Audit of subsidiaries	**7.5**	8.4	7.5
Total audit	**26.6**	25.7	21.2
Audit-related assurance service	**1.1**	1.0	1.0
Other assurance services[b]	**3.0**	2.3	2.7
Total assurance services	**4.1**	3.3	3.7
Tax compliance	**–**	–	–
Other non-audit services not covered above	**0.1**	0.3	0.2
Total non-audit services	**4.2**	3.6	3.9
Total Group auditors' remuneration	**30.8**	29.3	25.1
Audit fees payable to other accounting firms			
Audit of the financial statements of the Group's subsidiaries	**0.3**	0.2	0.3
Fees in respect of pension scheme audits	**0.1**	0.1	0.1
Total audit fees payable to other accounting firms	**0.4**	0.3	0.4

(a) The remuneration payable to KPMG, the Group auditors, is approved by the Audit and Risk Committee. The Committee sets the policy for the award of non-audit work to the auditors and approves the nature and extent of such work, and the amount of the related fees, to ensure that independence is maintained. The fees disclosed above consolidate all payments, including overruns, made to member firms of KPMG by the companies and their subsidiaries, along with fees in respect of joint operations paid for by the Group. Non-audit services arise largely from assurance and regulation related work.

(b) Other assurance services relates to the review of non-statutory financial information including sustainability reporting.

Under SEC regulations, the remuneration to KPMG firms and associates of US$30.8 million (2022: US$29.3 million; 2021: US$25.1 million) is required to be analysed as follows: audit fees US$27.7 million (2022: US$27.0 million; 2021: US$22.6 million), audit-related fees US$3.0 million (2022: US$2.0 million; 2021: US$2.3 million), Tax fees US$nil (2022: US$nil; 2021: US$nil) and all other fees US$0.1 million (2022: US$0.3 million; 2021: US$0.2 million)

39 Events after the balance sheet date

On 1 February 2024 the Federal Court of Australia dismissed the proceeding filed by Rusal entities in 2022 over access to alumina supply from the QAL refinery, following the imposition of the Australian sanctions against Russia, and QAL's actions to invoke step-in rights. The Court upheld that the Australian sanctions restrict Rio Tinto from supplying bauxite to Rusal entities and restrict QAL from processing bauxite for Rusal entities and supplying it with alumina. The Rusal entities can file an appeal of the decision by 29 February 2024.

On 15 January 2024 we announced that Dampier Salt had entered into a sales agreement for the Lake MacLeod salt and gypsum operation in Carnavon, Western Australia, with privately-owned salt company Leichhardt Industrials Group for A$375 million (US$251 million).

Notes to the 2023 financial statements

40 New standards issued but not yet effective

We have not early adopted any new accounting standards or amendments that have been issued but are not yet effective. The assessment is ongoing in relation to the amendments listed below, but no material impact has been identified to date:

- Classification of liabilities as current or non-current and non-current liabilities with covenants (Amendments to IAS 1 "Presentation of Financial Statements", mandatory in 2024);
- Lease liability in a sale and leaseback (Amendments to IFRS 16 "Leases", mandatory in 2024);
- Supplier finance arrangements (Amendments to IAS 7 "Cash Flow Statement" and IFRS 7 "Financial Instruments: Disclosures", mandatory in 2024); and
- Lack of exchangeability (Amendments to IAS 21 "The Effects Of Changes In Foreign Exchange Rates", mandatory in 2025).

41 Rio Tinto Limited parent company disclosures

As at 31 December	2023 A$m	2022 A$m
Assets		
Current assets	**13,451**	11,712
Non-current assets	**2,659**	2,646
Total assets	**16,110**	14,358
Liabilities		
Current liabilities	**(1,831)**	(616)
Non-current liabilities	**(1)**	(36)
Total liabilities	**(1,832)**	(652)
Net assets	**14,278**	13,706
Shareholders' equity		
Share capital	**3,504**	3,504
Other reserves	**307**	301
Retained earnings	**10,467**	9,901
Total equity	**14,278**	13,706
Profit of the parent company	**11,344**	11,355
Total comprehensive income of the parent company	**11,344**	11,355

Prepared under Australian Accounting Standards (AAS) and in accordance with Australian *Corporations Act 2001* (see page 265). In relation to Rio Tinto Limited there are no significant measurement differences between AAS and IFRS as defined on page 158. Rio Tinto Limited has an Australian dollar functional currency and this balance sheet and related disclosures are also presented in Australian dollars.

Rio Tinto Limited guarantees

Rio Tinto Limited provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme. At 31 December 2023 this totalled A$10.6 billion (2022: A$8.1 billion). These entities also jointly guarantee the Group's undrawn credit facility, A$10.9 billion at 31 December 2023 (2022: A$11.1 billion).

Rio Tinto Limited has guaranteed other external debt held by Rio Tinto Group entities which totalled A$0.1 billion at 31 December 2023 (31 December 2022: A$0.1 billion).

In addition, Rio Tinto Limited has provided a guarantee of all third-party obligations, including contingent obligations, of Rio Tinto Finance Limited, a wholly-owned subsidiary.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

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42 Related undertakings

In accordance with section 409 of the UK Companies Act 2006, disclosed below is a full list of related undertakings of the Group. Related undertakings include "subsidiaries", "associated undertakings", and "significant holdings in undertakings other than subsidiary companies". The registered office address, country of incorporation, classes of shares and the effective percentage of equity owned by the Group calculated by reference to voting rights, are disclosed as at 31 December 2023.

The definition of a subsidiary undertaking in accordance with the UK Companies Act 2006 is different from the definition under IFRS. As a result, the related undertakings included within this list may not be the same as the related undertakings consolidated in the Group IFRS financial statements. Unless otherwise disclosed, all undertakings with an effective equity holding of greater than 50% are considered subsidiary undertakings for the purpose of this note.

Refer to the "Basis of consolidation" on page 158 for further information on accounting policies, basis of consolidation, principal subsidiaries, joint operations, joint ventures and associates.

An explanation of the dual listed companies structure of Rio Tinto plc and Rio Tinto Limited can be found on pages 347 to 348. For completeness, the effective ownership by the Group relates to effective holdings by both entities either together or individually.

Wholly-owned subsidiary undertakings

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
1043802 Ontario Ltd	Canada	CAD Ordinary shares	100	100	5300-66 Wellington Street West, Toronto ON M5K 1E6, Canada
10676276 Canada Inc.	Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
1109723 B.C. Ltd.[(d)]	Canada	CAD Common shares	100	100	1800-510 West Georgia Street, Vancouver BC V6B 0M3, Canada
15304644 Canada Inc.	Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
46106 YUKON INC.	Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
AGM Holding Company Pte. Ltd.	Singapore	US$ Ordinary shares	100	100	77 Robinson Road #13-00, 068896, Singapore
Alcan Asia Limited	Hong Kong	HKD Ordinary shares	100	100	6/F, Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Alcan Betriebs- und Verwaltungsgesellschaft GmbH	Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Chemicals Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Composites Brasil Ltda	Brazil	BRL0.01 Ordinary shares	100	100	Avenida das Nações Unidas, 12 551 - 19th floor - Suite 1.911, São Paulo, SP, 04578-00, Brazil
Alcan Corporation	United States	US$0.01 Ordinary shares	100	100	211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Farms Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Gove Development Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Alcan Holdings Australia Pty Limited	Australia	A$ Class A shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Ordinary shares	100		
Alcan Holdings Europe B.V.	Netherlands	€4,570,000,000.00 Common shares	100	100	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands
Alcan Holdings Nederland B.V.	Netherlands	€4,555.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands

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42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alcan Holdings Switzerland AG (SA/Ltd.)	Switzerland	CHF0.01 Registered shares	100	100	Badenerstrasse 549, CH-8048, Zürich, Switzerland
Alcan International Network U.S.A. Inc.	United States	US$ Ordinary shares	100	100	80 State Street, Albany NY 12207-2543, United States
Alcan Lebensmittelverpackungen GmbH	Germany	€51.12918 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Management Services Canada Limited / Societe de Services de Gestion Alcan Canada Limitee	Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Alcan Northern Territory Alumina Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Alcan Packaging Mühltal Gmbh & Co. KG	Germany	€51.129188 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Primary Metal Australia Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Alcan Primary Products Company LLC	United States	US$ Unit shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Alcan Primary Products Corporation	United States	US$0.01 Ordinary shares	100	100	211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Realty Limited / Societe Immobiliere Alcan Limitee	Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Alcan South Pacific Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Alcan Trading AG (SA/Ltd.)	Switzerland	CHF1,000.00 Registered shares	100	100	Badenerstrasse 549, CH-8048, Zürich, Switzerland
AML Properties Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Anglesey Aluminium Metal Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
AP Service	France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38340, Voreppe, France
Argyle Diamond Mines Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds Limited[a]	Australia	A$ Class A shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
		A$ Class B shares	100		
Ashton Mining Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Ashton Nominees Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Asia Gold Mongolia LLC	Mongolia	MNT1,250.00 Common shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Asia Naran Bulag LLC	Mongolia	MNT1,000.00 Common shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Australian Coal Holdings Pty. Limited[a]	Australia	A$ A shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Ordinary shares	100		
Australian Mining & Smelting Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Borax España, S.A.	Spain	€150.00 Ordinary shares	100	100	CN 340, Km 954, 12520 NULES, Castellon, Spain
Borax Europe Limited	United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Borax Francais	France	€2.75 Ordinary shares	100	100	89 Route de Bourbourg, 59210, Coudekerque-Branche, France
Borax Malaysia Sdn Bhd	Malaysia	RM1.00 Ordinary shares	100	100	Suite 13.03, 13th Floor, Menara Tan & Tan, 207 Jalan Tun Razak, 50400 Kuala Kumpur, Malaysia
Borax Rotterdam BV	Netherlands	€3,000,000.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands
British Alcan Aluminium Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Canning Resources Pty Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Capricorn Diamonds Investments Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Cathjoh Holdings Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Channar Management Services Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Channar Mining Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
CRA Investments Pty. Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
CRA Pty Ltd[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Cuprum Metals Pte. Ltd.	Singapore	US$ Ordinary sha res	100	100	77 Robinson Road #13-00, 068896, Singapore
Daybreak Development LLC	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Daybreak Property Holdings LLC[(c)]	United States	-	-	100	15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Daybreak Secondary Water Distribution Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Daybreak Water Holding LLC	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
DB Medical I LLC	United States	US$ Unit shares	100	100	15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
DBVC1 LLC[(c)]	United States	-	-	100	15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Diavik Diamond Mines (2012) Inc.	Canada	CAD Common shares	100	100	300-5201 50th Avenue, Yellowknife NT X1A 2P8, Canada
Eastland Management Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Electric Power Generation Limited[(a)]	New Zealand	NZD1.00 Ordinary shares	100	100	1530 Tiwai Road, Tiwai Point, Invercargill, 9877, New Zealand
Element North 21 GP Inc. / Element Nord 21 GP Inc.	Canada	CAD1.00 Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Element North 21 Limited Partnership / Elément Nord 21 Société en Commandite	Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada

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42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Empresa de Mineracao Finesa Ltda.	Brazil	BRL Quotas shares	100	100	SIG, QUADRA 04, Lote 75, Sala 109 Parte C, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440, Brazil
Flambeau Mining Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Fondation Rio Tinto[(c)]	Guinea	-	-	100	Manquépas - Commune de Kaloum, République de Guinée, Guinea
Fundsprops Pty. Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Gladstone Infrastructure Pty Ltd	Australia	A$ Class G redeemable preference shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Ordinary shares	100		
Gove Aluminium Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
GPS Energy Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
GPS Nominee Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
GPS Power Pty. Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Hamersley Exploration Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Hamersley HMS Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Hamersley Holdings Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Hamersley Iron - Yandi Pty Limited[(a)]	Australia	A$ Class B shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
		A$ Class C shares	100		
		A$ Ordinary shares	100		
Hamersley Iron Pty. Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Hamersley Resources Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
		A$ Z Class Ordinary shares	100		
Hamersley WA Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Henlopen Manufacturing Co., Inc.	United States	US$100.00 Ordinary shares	100	100	80 State Street, Albany NY 12207-2543, United States
Heruga Exploration LLC	Mongolia	MNT12,500.00 Common shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
High Purity Iron Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
HIsmelt Corporation Pty Limited[(a)]	Australia	A$ A Class shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Hunter Valley Resources Pty Ltd	Australia	A$ Class A shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Class B shares	100		
IEA Coal Research Limited	United Kingdom	£1.00 Ordinary shares	100	100	International Centre for Sustainable Carbon, 27 Old Gloucester Street, London, England, WC1N 3AX, United Kingdom

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
IEA Environmental Projects Limited	United Kingdom	£1.00 Ordinary shares	100	100	Pure Offices Cheltenham Office Park, Hatherley Lane, Cheltenham, GL51 6SH, United Kingdom
Integrity Land and Cattle LLC	United States	US$ Unit shares	100	100	8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021, United States
IOC Sales Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Jadar Free Zone Management Company DOO Beograd – Novi Beograd	Serbia	RSD1.00 Ordinary shares	100	100	Bulevar Milutina Milankovica 1i, 5th Floor, Novi Beograd, 11070, Serbia
Johcath Holdings Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Juna Station Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Kalimantan Gold Pty Limited	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Kelian Pty. Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Kembla Coal & Coke Pty. Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Kennecott Barneys Canyon Mining Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Exploration Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Holdings Corporation	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Land Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Land Investment Company LLC[(c)]	United States	–	–	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Nevada Copper Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Ridgeway Mining Company	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Royalty Company	United States	US$100.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Services Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Uranium Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Utah Copper LLC	United States	US$ Unit shares	100	100	15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Kennecott Water Distribution LLC	United States	US$ Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States

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42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Kutaibar Holdings Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Lao Sanxai Minerals Sole Company Limited	Lao People's Democratic Republic	US$1.00 Ordinary shares	100	100	5th Floor, AGL Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital, Lao People's Democratic Republic
Lawson Mardon Flexible Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Lawson Mardon Smith Brothers Ltd.	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Lithium Extraction Technologies (Australia) Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Metallwerke Refonda AG	Switzerland	CHF125.00 Registered shares	100	100	Badenerstrasse 549, CH-8048, Zürich, Switzerland
Metals & Minerals Insurance Pte. Limited	Singapore	SGD Ordinary shares	100	100	2 Shenton Way #26-01, SGX Centre I, 068804, Singapore
		SGD Redeemable preference shares	100		
Minera Kennecott, S.A. de C.V.[d]	Mexico	MXN1.00 Series "B" shares	100	100	Florencia 57, Piso 3, Col. Juarez, Delegacion Cuauhtemoc, Mexico, D.F., 06600, Mexico
Mineracao Tabuleiro Ltda	Brazil	BRL Quotas shares	100	100	SIG, QUADRA 04, Lote 75, Sala 109 Parte D, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440, Brazil
MineSmith Australasia Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Mitchell Plateau Bauxite Co. Pty. Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Mount Bruce Mining Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Mutamba Mineral Sands S.A.	Mozambique	MZN100.00 Ordinary shares	100	100	Av. da Marginal Nº 4985, 1º andar – Prédio ZEN, Maputo, Mozambique
NBH Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Nhulunbuy Corporation Limited[c]	Australia	-	-	100	19 Westal Street, Nhulunbuy NT 0880, Australia
Norgold Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
North Gold (W.A.) Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
North Insurances Pty. Ltd.	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
North IOC (Bermuda) Holdings Limited	Bermuda	US$1.00 Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
North IOC (Bermuda) Limited	Bermuda	US$143.64 Class A Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
		US$1.00 Ordinary shares	100		
		US$100,000.00 Preferred shares	100		
North IOC Holdings Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
North Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
North Mining Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Nuton LLC	United States	US$ Unit shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Oyu Tolgoi Netherlands BV	Netherlands	€100.00 Ordinary shares	100	100	Unit 02.01, Kingsforweg 151, 1043 GR, Amsterdam, Netherlands
Pacific Aluminium (New Zealand) Limited	New Zealand	NZD1.00 Ordinary shares	100	100	1530 Tiwai Road, Tiwai Point, Invercargill, 9877, New Zealand
		NZD2.00 Ordinary shares	100		
Pacific Aluminium Pty. Limited[a]	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Pacific Coast Mines, Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Aviatube Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Pechiney Bâtiment	France	€15.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Pechiney Bécancour, Inc.	United States	US$1.00 Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Cast Plate, Inc.	United States	US$1.00 Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Consolidated Australia Pty Limited	Australia	US$1.00 Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		US$1.00 Preference shares	100		
Pechiney Holdings, Inc.	United States	US$1.00 Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Metals LLC[c]	United States	-	-	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Philippines Inc.[d]	Philippines	PHP10.00 Ordinary shares	100	100	Room 306, ITC Building, 337 Sen Gil Puyat Avenue, Markati, Metro Manila, Philippines
Pechiney Plastic Packaging, Inc.	United States	US$ Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Sales Corporation	United States	US$1.00 Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Peko Exploration Pty Ltd.	Australia	A$ Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Peko-Wallsend Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Company (Services) Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Project Generation Group Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
QIT Madagascar Minerals Ltd	Bermuda	US$1.00 Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda

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42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Queensland Coal Pty. Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Química e Metalúrgica Mequital Ltda.	Brazil	BRL Ordinary shares	100	100	Av. das Nações Unida, 12551 19o, andar, CJ 1911, 04578-000, São Paulo, SP, Brazil
Ranges Management Company Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Ranges Mining Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Resolution Copper Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rhodes Ridge Account Manager Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rhodes Ridge Management Services Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Richards Bay Mining Holdings (Proprietary) Limited	South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, 3900, South Africa
		ZAR1.00 B Ordinary shares	100		
Richards Bay Titanium Holdings (Proprietary) Limited	South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, 3900, South Africa
		ZAR1.00 B Ordinary shares	100		
Rincon Mining Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio de Contas Desenvolvimentos Minerais Ltda	Brazil	BRL Quota shares	100	100	Rua Coronel Durval Matos, S/N Centro, Municipio de Jaguaquara, Estado da Bahia, CEP, 45345-000, Brazil
Rio Santa Rita Empreenimentos e-Particiacoes Ltda	Brazil	BRL Quota shares	100	100	SIG, QUADRA 04, Lote 75, Sala 109 Parte E, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440, Brazil
Rio Sava Exploration DOO	Serbia	US$ Founder's shares	100	100	Bulevar Milutina Milankovica 1i, 5th Floor, Novi Beograd, 11070, Serbia
Rio Tinto (Commercial Paper) Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Advisory Services Pty Limited	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Alcan Fund Inc.	Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan Inc.	Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan International Ltd. / Rio Tinto Alcan International Ltee	Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan Technology Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium (Bell Bay) Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium (Holdings) Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Bell Bay Sales Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Aluminium Pechiney	France	€10.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38340, Voreppe, France
Rio Tinto Aluminium Services Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto America Holdings Inc.	United States	US$0.01 Class A Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
		US$100.00 Series A Preferred shares	100		
Rio Tinto America Inc.	United States	US$100.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Angola (SU), LDA.	Angola	AOK Common shares	100	100	Edificio Kilamba, 20. andar, Avenida 4 de Fevereiro, Marginal de Luanda, Luanda, Angola
Rio Tinto Asia Ltd	Hong Kong	HKD Ordinary shares	100	100	6/F, Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Rio Tinto Asia Pty. Limited[a]	Australia	A$ Class A shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
		A$ Ordinary shares	100		
Rio Tinto AuM Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Australian Holdings Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$0.3218 Ordinary shares	100		
Rio Tinto Bahia Holdings Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Biofuels Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Canada Finance Limited[e]	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Canada Inc	Canada	CAD Class B shares	100	100	400–1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
		CAD Class C shares	100		
		CAD Class D shares	100		
		CAD Class J shares	100		
Rio Tinto Canada Management Inc./ Rio Tinto Gestion Canada Inc.	Canada	CAD Common shares	100	100	400–1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada

Notes to the 2023 financial statements

42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Chile SpA	Chile	US$1.00 Ordinary shares	100	100	Av. Presidente Riesco 5435, Of. 1302, Las Condes, Santiago, Chile
Rio Tinto Closure Pty Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Coal (Clermont) Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Australia Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Coal NSW Holdings Limited[a]	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Rio Tinto Commercial Americas Inc.	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Commercial GmbH	Germany	€1.00 Common shares	100	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Commercial Pte. Ltd.	Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Copper Holdings Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Copper Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Desenvolvimentos Minerais Ltda.	Brazil	BRL Quotas shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edificio Capital Financial Center, Brasilia, CEP 70610-440, Brazil
Rio Tinto Diamonds Netherlands B.V.	Netherlands	€500.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands
Rio Tinto Diamonds NV	Belgium	€ Ordinary shares	100	100	Hoveniersstraat 53, 2018 Antwerp, Belgium
Rio Tinto do Brasil Ltda.	Brazil	BRL1.00 Quota shares	100	100	Avenida Engenheiro Emiliano Macieira, 1 - km 18, Pedrinhas, Sao Luis, MA, 65095-603, Brazil
Rio Tinto Eastern Investments B.V.	Netherlands	US$12,510,234,217.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto EN21 Australia Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio Tinto EN21 Op Co Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio Tinto Energy America Inc.	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Energy and Climate Investments Australia Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Energy and Climate Investments Canada Inc.	Canada	CAD1.00 Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Energy Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Energy Services Inc.	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Energy Services Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Escondida Limited	Bermuda	US$1.00 Common shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
Rio Tinto European Holdings Limited[b]	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Exploration (Asia) Holdings Pte. Ltd.[d]	Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Exploration (PNG) Limited[a]	Papua New Guinea	PGK1.00 Ordinary shares	100	100	Section 15, Lot 15, Bernal Street, National Capital District, Port Moresby, Papua New Guinea
Rio Tinto Exploration Canada Inc.	Canada	CAD Class B shares	100	100	1212-1175 Douglas Street, Victoria BC V8W 2E1, Canada
		CAD Class C shares	100		
		CAD Class D shares	100		

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Exploration Dunav d.o.o. Beograd - Novi Beograd[c]	Serbia	-	-	100	Bulevar Milutina Milankovica 1i, 5th Floor, Novi Beograd, 11070, Serbia
Rio Tinto Exploration Finland OY	Finland	€ Ordinary shares	100	100	PL 18, Helsinki, 00271, Finland
Rio Tinto Exploration India Private Limited[d]	India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No. 5, Tower A, DLF Cyber City Phase III, Gurgaon, Haryana, 122002, India
Rio Tinto Exploration Kazakhstan LLP[c]	Kazakhstan	-	-	100	Dostyk 310/G, Almaty, 050020, Kazakhstan
Rio Tinto Exploration Pty Limited[a]	Australia	A$ Class B shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
		A$ Class C shares	100		
		A$ Ordinary shares	100		
Rio Tinto Exploration Rwanda Limited	Rwanda	RWF1.00 Ordinary shares	100	100	9 (Plot 526), KG 668 St, Kimihurura, Gasabo, Kigali, Rwanda
Rio Tinto Exploration Zambia Limited	Zambia	ZMW1.00 Ordinary shares	100	100	Suit FF08, No.4 Bishops Road, Kabulonga, Lusaka, Zambia
Rio Tinto FalCon Diamonds Inc.	Canada	CAD1,000.00 Common shares	100	100	300-815 West Hastings Street, Vancouver BC V6C 1B4, Canada
Rio Tinto Fer et Titane Inc.	Canada	CAD Common shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
Rio Tinto Finance (Rhodes Ridge) Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance (USA) Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Finance (USA) Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance (USA) plc	United Kingdom	£1.00 Ordinary Shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Finance Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance plc	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto France S.A.S.	France	€10.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Rio Tinto Global Employment Company Pte. Ltd.	Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Guinée S.A.	Guinea	GNF100,000.00 Ordinary shares	100	100	Immeuble Camayenne Corniche Nord, Commune de Dixinn, BP 848,, Conakry, République de Guinée, Guinea
Rio Tinto Holding PNG Limited	Papua New Guinea	PGK1.00 Ordinary shares	100	100	C/- Bdo, Section 15, Lot 15, Bernal Street, Port Moresby, National Capital District, Papua New Guinea
Rio Tinto Holdings LLC	Mongolia	MNT20,000.00 Ordinary shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Rio Tinto Hydrogen Energy LLC[c]	United States	-	-	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Iceland Ltd.	Iceland	ISK1.00 Registered shares	100	100	P.O. Box 244, IS-222, Hafnarfjördur, Iceland
Rio Tinto India Private Limited	India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No. 5, Tower A, DLF Cyber City, Phase-III, Gurugram, Haryana, 122022, India
Rio Tinto Indonesian Holdings Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto International Holdings Limited[b]	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Investments One Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio Tinto Investments Two Pty Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia

Notes to the 2023 financial statements

42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Iron & Titanium (Suzhou) Co., Ltd	China	US$1.00 Ordinary shares	100	100	418 Nanshi Street, Suzhou Industrial Park, Suzhou, 215021, China
Rio Tinto Iron & Titanium GmbH[(c)]	Germany	-	-	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Iron & Titanium Holdings GmbH[(c)]	Germany	-	-	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Iron & Titanium Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron and Titanium Canada Inc. / Rio Tinto Fer et Titane Canada Inc.	Canada	CAD Common shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
Rio Tinto Iron Ore (Pilbara) Sales Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio Tinto Iron Ore Atlantic Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron Ore Europe S.A.S.	France	€100.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Rio Tinto Iron Ore Trading China Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Japan Ltd	Japan	JPY500.00 Ordinary shares	100	100	8th Floor, Kojimachi Diamond Building, 1 Kojimachi 4-chome, Chiyoda-ku, Tokyo 102-0083, Japan
Rio Tinto Jersey Holdings 2010 Limited	Jersey	US$ Ordinary shares	100	100	3rd Floor, IFC 5, Castle Street, St Helier, JE2 3BY, Jersey
Rio Tinto Korea Ltd	Korea, Republic of	KRW10,000.00 Ordinary shares	100	100	2nd Floor, JS Tower, 6 Teheran-ro 79-gil, Gangnam-Gu, Seoul, 06158, Korea
Rio Tinto London Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Management Services South Africa (Proprietary) Ltd	South Africa	ZAR2.00 Ordinary shares	100	100	1 Harries Road, Illovo, Sandton, 2196, South Africa
Rio Tinto Marketing Pte. Ltd.	Singapore	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
		US$1.00 Ordinary shares	100		
Rio Tinto Medical Plan Trustees Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Metals Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto Mineracao do Brasil Ltda	Brazil	BRL1.00 Quotas shares	100	100	SIG Quadra 04, Lote 75, Torre A Sala, 109 Parte B, Edificio Capital Financial Center, Brasilia, CEP, 70610-440, Brazil
Rio Tinto Minerals Asia Pte Ltd	Singapore	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
		US$1.00 Ordinary shares	100		
Rio Tinto Minerals Development (Lao) Sole Co., Ltd.	Lao People's Democratic Republic	US$1.00 Common shares	100	100	5th Floor, AGL Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital, Lao People's Democratic Republic
Rio Tinto Minerals Development Limited	United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto Minerals Exploration (Beijing) Co., Ltd	China	US$1.00 Ordinary shares	100	100	Units 15 - 16, 18/F, China World Office Building 2, No. 1 Jianguomenwai Dajie, Chaoyang District, Beijing, China
Rio Tinto Minerals Inc.	United States	US$0.01 Common shares	100	100	15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Rio Tinto Minerals Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Mining and Exploration Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Mining and Exploration Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto Mining and Exploration S.A.C.	Peru	PEN0.50 Ordinary shares	100	100	Av. La Paz 1049, Oficina 503, Miraflores, Lima, 18, Peru
Rio Tinto Mining Commercial (Shanghai) Co., Ltd.	China	CNY1.00 Ordinary shares	100	100	Room 328, 3rd Floor, Unit 2, 231 Shibocun Road, Shanghai, Pilot Free Trade Zone, 200125 , China
Rio Tinto Mongolia LLC	Mongolia	MNT1,240.00 Common shares	100	100	Level 17, Shangri-La Center, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14214, Mongolia
Rio Tinto Nominees Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto OT Management Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Overseas Holdings Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto PACE Australia Pty Limited[a]	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Rio Tinto PACE Canada Inc. / Gestion Rio Tinto PACE Canada Inc.	Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Potash Management Inc. / Rio Tinto Potasse Management Inc.	Canada	CAD Common shares	100	100	300-815 West Hastings Street, Vancouver BC V6C 1B4, Canada
Rio Tinto Procurement (Singapore) Pte Ltd	Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Pte Ltd [d]	Singapore	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Saskatchewan Management Inc.	Canada	CAD Common shares	100	100	300-815 West Hastings Street, Vancouver BC V6C 1B4, Canada
Rio Tinto Saskatchewan Potash Holdings General Partner Inc.	Canada	CAD Common shares	100	100	5300-66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Saskatchewan Potash Holdings Limited Partnership[c]	Canada	-	-	100	5300-66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Secretariat Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Services Inc.	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Services Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Shared Services Pty Limited	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Shipping (Asia) Pte. Ltd.	Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
Rio Tinto Shipping Pty. Limited.[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Simfer UK Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Singapore Holdings Pte Ltd	Singapore	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
		US$ Ordinary shares	100		

Notes to the 2023 financial statements

42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto South East Asia Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto Staff Fund (Retired) Pty Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Sulawesi Holdings Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Technological Resources Inc.	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Technological Resources UK Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Technology Holdings Corporation	United States	US$ Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Trading (Shanghai) Co., Ltd.	China	US$1.00 Ordinary shares	100	100	41/F Wheelock Square, No. 1717 West Nanjing Road, Jing'an District, Shanghai, 200040, China
Rio Tinto Western Holdings Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$1.00 Ordinary shares	100		
Rio Tinto Winu Pty Limited[(a)]	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Riversdale Connections (Proprietary) Ltd	South Africa	ZAR1.00 Ordinary shares	100	100	Ground Floor–Cypress Place North, Woodmead Business Park, 140/142 Western Service Road, Woodmead, 2191, South Africa
Robe River Limited	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Rocklea Station Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
RTA AAL Australia Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Ordinary 1 shares	100		
RTA Boyne Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Gove Pty Limited	Australia	A$ Class A shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Class B shares	100		
RTA Holdco 1 Limited	United Kingdom	US$0.0001 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTA Holdco 4 Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
		US$0.732815 Ordinary shares	100		
RTA Holdco 7 Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTA Holdco 8 Limited	United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTA Holdco Australia 1 Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 3 Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 5 Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 6 Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
RTA HOLDCO FRANCE 1 S.A.S.	France	€10.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
RTA HOLDCO FRANCE 2 S.A.S.	France	€10.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
RTA Pacific Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Sales Pty Ltd	Australia	A$ Class A shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Class B shares	100		
RTA Smelter Development Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Weipa Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTA Yarwun Pty Ltd	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
RTAlcan 2 LLC	United States	US$ Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
RTAlcan 3 LLC	United States	US$ Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
RTLDS Aus Pty Ltd[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
RTLDS UK Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTPDS Aus Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Scheuch Unterstuetzungskasse GmbH	Germany	€51.129 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
SGLS LLC	Mongolia	MNT10,000.00 Common shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Sharp Strategic Funding Pte. Ltd.	Singapore	US$ Ordinary A shares	100	100	77 Robinson Road #13-00, 068896, Singapore
		US$ Ordinary B shares	100		
Singapore Metals Pte. Ltd.	Singapore	US$ Ordinary shares	100	100	77 Robinson Road #13-00, 068896, Singapore
Skymont Corporation	United States	US$ Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Sohio Western Mining Company	United States	US$100.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Solwezi Metals Exploration Limited	Zambia	ZMW1.00 Ordinary shares	100	100	Block A, Suites GF05-GF08, 4 Bishops Office Park, Bishops Road, Kabulonga, Lusaka, Zambia
Southern Copper Pty. Limited	Australia	A$ A shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
		A$ B shares	100		
		A$ Ordinary shares	100		
Swift Current Land & Cattle LLC[c]	United States	-	-	100	8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021, United States
Swiss Aluminium Australia Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ Stock Unit A shares	100		
		A$ Stock Unit B shares	100		
		A$ Stock Unit C shares	100		
TBAC Limited	United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Technological Resources Pty. Limited[a]	Australia	A$ A shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
		A$ B shares	100		

Notes to the 2023 financial statements

42 Related undertakings *continued*

Wholly-owned subsidiary undertakings *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
The Kelian Community and Forest Protection Trust[c]	Singapore	-	-	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
The Pyrites Company, Inc.	United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
The Roberval and Saguenay Railway Company/ La Compagnie du Chemin de Fer Roberval Saguenay	Canada	CAD100.00 Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
		CAD100.00 Preference shares 6% Non-Cumulative	100		
The Zinc Corporation Pty Ltd	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
		A$ Z Class Ordinary shares	100		
Thos. W. Ward Limited	United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
THR Copper Limited	United Kingdom	US$0.10 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
THR Kharmagtai Pte. Ltd.	Singapore	US$ Ordinary shares	100	100	77 Robinson Road #13-00, 068896, Singapore
THR Mines Services Co. Ltd.	Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 1Z4, Canada
THR OYU TOLGOI LTD.	Virgin Islands, British	US$1.00 Ordinary shares	100	100	Road Town, Tortolla, VG1110, Virgin Islands, British
Three Crowns Insurance Company	United States	US$2.00 Common shares	100	100	1108 E. South Union Avenue, Midvale UT 84047, United States
Tinto Holdings Australia Pty. Limited	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Trans Territory Pipeline Pty Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
TRQ Australia Pty. Ltd.	Australia	A$ Ordinary shares	100	100	Level 25, Suite 2, 100 Miller Street, North Sydney NSW 2060, Australia
Turquoise Hill (Beijing) Services Company Ltd[c]	China	-	-	100	Unit 304-21, 3rd Floor, Building B, Workers Stadium North Road, Chaoyang District, Beijing, JIA NO. 2, China
Turquoise Hill Resources Ltd.	Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 1Z4, Canada
Turquoise Hill Resources Singapore Pte Ltd.[d]	Singapore	SGD1.00 Common shares	100	100	2 Venture Drive, #24-01, Vision Exchange, 608526, Singapore
U.S. Borax Inc.	United States	US$0.10 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Victoria Technology Inc.[a]	United States	US$1.00 Ordinary shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Waste Solutions and Recycling LLC	United States	US$ Unit shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
West Kutai Foundation Limited[c]	Singapore	-	-	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
Wimmera Industrial Minerals Pty. Limited[a]	Australia	A$ Ordinary shares	100	100	Level 43, 120 Collins Street, Melbourne VIC 3000, Australia
Winchester South Development Company Proprietary Limited	Australia	A$ Ordinary shares	100	100	155 Charlotte Street, Brisbane QLD 4000, Australia
Wyoming Coal Resources Company	United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States

Financial statements

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Other Group entities, including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
201 Logistics Center, LLC[c]	United States	-	-	50	1209 Orange Street, Wilmington DE 19801, United States
7600 West Center, LLC[c]	United States	-	-	50	9090 S. Sandy Parkway, Sandy UT 84070, United States
Alufluor AB	Sweden	SEK1,000.00 Ordinary shares	50	50	Industrigatan 70, Box 902, S-25109, Helsingborg, Sweden
Aluminerie Alouette Inc.	Canada	CAD Ordinary shares	40	40	400, Chemin de la Pointe-Noire, C.P. 1650, Sept-Îles, Québec G4R 5M9, Canada
Aluminerie De Bécancour, Inc.	Canada	CAD1.00 Ordinary shares	50.1	25.2	5555 Pierre Thibault Street, PO 30, Bécancour, Quebec G0X 1B, Canada
Aluminium & Chemie Rotterdam B.V.	Netherlands	€4,555.00 Ordinary shares	65.8	65.8	Oude Maasweg 80, NL-3197 KJ, Botlek, Rotterdam, Netherlands
Australia-Japan Innovation Fund[c]	Australia	-	-	33.3	25 St James Park Drive, Brighton VIC 3186, Australia
Balkhash Saryshagan LLP[c]	Kazakhstan	-	-	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Bektau B.V.	Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands
Boké Investment Company	United States	US$100.00 Ordinary shares	100	45	251 Little Falls Drive, Wilmington DE 19808, United States
Boké Services Company SA	Belgium	US$68,296.00 Ordinary shares	100	45	187 Chaussée de la Hulpe, B-01170 Brussels, Brussels, Belgium
Boké Services Management, Inc.	United States	US$ Ordinary shares	100	45	323 North Shore Drive, Suite 510, Pittsburgh PA 15212, United States
Boké Trading Inc.	United States	US$1,000.00 Ordinary shares	100	45	323 North Shore Drive, Suite 510, Pittsburgh PA 15212, United States
Boyne Smelters Limited	Australia	A$ A1 Class shares	100	59.4	155 Charlotte Street, Brisbane QLD 4000, Australia
		A$ A2 Class shares	100		
		A$ B1 Class shares	100		
CanPacific Potash Inc.[c]	Canada	-	-	32	374 Third Avenue South, Saskatoon SK S7K 1M5, Canada
Chlor Alkali Unit Pte Ltd	Singapore	SGD1.00 Ordinary shares	100	68.4	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982, Singapore
		US$1.00 Ordinary shares	68.4		
CIA. Inmobiliaria e Inversiones Cosmos S.A.C.	Peru	PEN1,000.00 Ordinary shares	100	45	Av. Felipe y Aliaga 652, San Isidro, Lima, Peru
Compagnie des Bauxites de Guinée	United States	US$20.00 Common Stock shares	51	23	251 Little Falls Drive, Wilmington DE 19808, United States
Compania de Transmision Sierraoriente S.A.C.	Peru	PEN1,000.00 Ordinary shares	100	45	Calle Santa Maria No. 110 Urb., Miraflores, Lima, Peru
Dampier Salt Limited	Australia	A$ Ordinary shares	68.4	68.4	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Electralith Pty Ltd	Australia	A$ Ordinary shares	30.8	30.8	IP Group Australia, Level 35, 360 Elizabeth Street, Melbourne VIC 3000, Australia
Elysis Limited Partnership / Elysis Societe en Commandite	Canada	US$1,000.00 Class B shares	100	48.2	2323-1, Place Ville Marie, Montréal QC H3B 5M5, Canada
Energy Resources of Australia Ltd	Australia	A$ Class A shares	86.3	86.3	Level 5 NICTA Building B, 7 London Circuit, Canberra City ACT 2601, Australia
		A$ Ordinary shares	86.3		
Fabrica De Plasticos Mycsa, S.A.[d]	Venezuela, Bolivarian Republic of	VEF1.00 Common shares	49	49	Urbanización Industrial San Ignacio, parcela 2-A, vía San Pedro, Los Teques, Estado Miranda, Venezuela
Global Hubco BV	Netherlands	€1.00 Ordinary shares	33.3	33.3	Luna Arena, Herikerbergweg 238, 1101, CM, Amsterdam Zuidoost, Netherlands
Gulf Power Company / La Compagnie Gulf Power	Canada	CAD100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Halco (Mining) Inc.	United States	US$100.00 Ordinary shares	45	45	30 Isabella Street, 3rd Floor, Pittsburgh, PA, 15212, United States

Notes to the 2023 financial statements

42 Related undertakings *continued*

Other Group entities, including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies *continued*

Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Hope Downs Marketing Company Pty Ltd	Australia	A$ A Class shares	100	50	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Iron Ore Company of Canada	United States	US$1,000.00 Series A shares	91.4	58.7	1209 Orange Street, Wilmington DE 19801, United States
		US$1,000.00 Series E shares	100		
		US$1,000.00 Series F shares	100		
Korgantas LLP[c]	Kazakhstan	–	–	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
La Compagnie du Transguinéen S.A.	Guinea	GNF Ordinary shares	42.5	22.5	5D Bloc A, Résidence Hamade, Cité Ministérielle Fondis, Commune de Dixinn, Conakry, Guinea
La Granja UK Holdings Limited	United Kingdom	US$0.63327898 Ordinary shares	45	45	4th Floor , The Charlotte Building, 17 Gresse Street, London, W1T 1QL, United Kingdom
La Granja Holdings Nominees Limited	United Kingdom	US$1.00 Ordinary shares	100	45	4th Floor, The Charlotte Building, 17 Gresse Street, London, W1T 1QL, United Kingdom
Magma Arizona Railroad Company	United States	US$100.00 Common shares	100	55	8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021, United States
Matalco Canada Inc.	Canada	US$ Class B Common shares	100	50	301-1 Kenview Boulevard, Brampton ON L6T 5E6, Canada
Matalco USA, LLC	United States	US$ Unit shares	50	50	1209 Orange Street, Wilmington DE 19801, United States
Minera Escondida Ltda[c]	Chile	–	–	30	Cerro el Plomo 6000, Piso 15, Santiago, 7560623, Chile
Minera La Granja S.A.C.	Peru	PEN100.00 Ordinary shares	100	45	Calle Esquilache 371, Piso 14, San Isidro, Peru
Mineração Rio do Norte S.A.	Brazil	BRL Ordinary shares	25	22	Rua Jari, S/N Porto Tombetas, Municipio de Oriximina, Para, CEP 68275-000, Brazil
		BRL Preferred shares	20.5		
Minmetals Rio Tinto Exploration Company Limited	China	CNY1.00 Ordinary shares	50	50	422-2, 4th Floor, Building #1 of Yongyou Industrial Park, Yazhou Bay Science & Technology City, Yazhou District, Sanya City, Hainan Province, China
New Zealand Aluminium Smelters Ltd	New Zealand	NZD1.00 Class A Ordinary shares	100	79.4	1530 Tiwai Road, Tiwai Point, Invercargill, 9877, New Zealand
Nuevo Cobre S.A.	Chile	CLP Ordinary Series B shares	100	57.7	Av. Ricardo Lyon #222, Office 1403, Providencia, Santiago, Metropolitan Region, Chile
NZAS Retirement Fund Trustee Limited	New Zealand	NZD Ordinary shares	100	79.4	Level 2, 20 Customhouse Quay, Wellington, 6011, New Zealand
Oyu Tolgoi Catalyst Fund for Khanbogd Development[c]	Mongolia	–	–	66	3rd Bagh, Dalanzadgad Soum, Ummugovi Aimag, Mongolia
Oyu Tolgoi LLC[e]	Mongolia	MNT10,000.00 Common shares	66	66	Level 12 Monnis Tower, Chinggis Avenue-15, 1st khoroo, Sukhbaatar District, Ulaanbaatar, 14240, Mongolia
Panguna Legacy Assessment Company Limited[c]	Australia	–	–	33.3	Level 10 , 12 Creek Street, Brisbane QLD 4000, Australia
Pechiney Reynolds Quebec, Inc.	United States	US$10.00 Common shares	50	50.2	233 South 13th Street, Suite 1900, Lincoln NE 68508, United States
		US$100.00 Preferred shares	100		
Port d'Ehoala S.A.	Madagascar	US$100.00 Ordinary shares	100	80	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, Antananarivo, 101 , Madagascar
Procivis Savoie	France	€19.00 Ordinary shares	22.1	22.1	116 Quai Charles Roissard, 73000, Chambéry, France
PT Hutan Lindung Kelian Lestari	Indonesia	IDR9,803.00 Ordinary shares	99	99	Kelian Mine Site, West Kutai, East Kalimantan, Indonesia
PT Kelian Equatorial Mining	Indonesia	IDR1,080.00 Ordinary shares	90	90	Sampoerna Strategic Square, South Tower, Level 30, Jl. Jenderal Sudirman Kav. 45-46, Jakarta, 12930, Indonesia
QIT Madagascar Minerals SA	Madagascar	US$10.00 Common shares	84.2	80	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, Antananarivo, 101 , Madagascar
Quebec North Shore and Labrador Railway Company Inc. / Compagnie de Chemin de Fer du Littoral Nord de Quebec et du Labrador Inc.	Canada	CAD27.59 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada

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Name of undertaking	Country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Queensland Alumina Limited	Australia	A$ Class B shares	100	80	Plant Operations Building, Parsons Point, Gladstone QLD 4680, Australia
		A$ Class C shares	100		
		A$ Class D shares	100		
Regeneration Enterprises, Inc.	United States	US$ Class A shares	25	25	2657 Windmill Parkway #302, Henderson NV 89074, United States
Resolution Copper Mining LLC[c]	United States	-	-	55	251 Little Falls Drive, Wilmington DE 19808, United States
Richards Bay Mining (Proprietary) Limited	South Africa	ZAR0.01 B Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, 3900, South Africa
Richards Bay Titanium (Proprietary) Limited	South Africa	ZAR0.01 B Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, 3900, South Africa
Rightship Pty Ltd	Australia	A$ Ordinary shares	33.3	33.3	Level 8, 550 Bourke Street, Melbourne VIC 3000, Australia
Rio Tinto Orissa Mining Private Ltd	India	INR100.00 Ordinary shares	51	51	220, 2nd Floor, DLF Cyber City, Chandaka Industrial Area, Patia, Bhubneshwar, Odisha, 751024, India
Rio Tinto Sohar Logistics LLC[d]	Oman	OMR1.00 Ordinary shares	70	70	P.O. Box 686, Ruwi, 112, Oman
Robe River Mining Co. Pty. Ltd.	Australia	A$ Class A shares	40	73.6	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
		A$ Class B shares	76.4		
Robe River Ore Sales Pty. Ltd.	Australia	A$ Ordinary shares	65	57.1	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Saryarka B.V.	Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek, Rotterdam, Netherlands
Simfer InfraCo Guinée S.A.	Guinea	GNF100,000.00 Ordinary shares	100	53	Immeuble Camayenne, Corniche Nord, 536-Commune de Dixinn, Conakry, République de Guinée, BP848, Guinea
Simfer InfraCo Ltd	United Kingdom	US$1.00 Ordinary shares	100	53	6 St James's Square, London, SW1Y 4AD, United Kingdom
Simfer Jersey Limited	Jersey	US$ Ordinary shares	53	53	PO Box 536, 13-14 Esplanade, St Helier, JE4 5UR, Jersey
Simfer Jersey Nominee Limited	United Kingdom	£1.00 Ordinary shares	100	53	6 St James's Square, London, SW1Y 4AD, United Kingdom
SIMFER S.A.[e]	Guinea	GNF100,000.00 Ordinary shares	85	45	Immeuble Camayenne, Corniche Nord , Commune de Dixinn, BP 848, Conakry, République de Guinée, Guinea
Société Minière Et De Participations Guinée-Alusuisse[c]	Guinea	-	-	50	Tougue, Guinea
Sohar Aluminium Co. L.L.C.	Oman	OMR1.00 Ordinary shares	20	20	Sohar Industrial Estate, P.O. Box 80, PC 327, Sohar, Oman
Tomago Aluminium Company Pty Limited	Australia	A$ Ordinary shares	51.6	51.6	638 Tomago Road, Tomago NSW 2322, Australia
Yalleen Pastoral Co. Pty. Ltd.	Australia	A$ Ordinary shares	65.7	57.4	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia

Notes to the 2023 financial statements

42 Related undertakings *continued*

Other Group entities, including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies *continued*

In addition, the Group participates in the following unincorporated arrangements:

Name of undertaking and country of incorporation	Country of incorporation	Interest % owned by the Group	Address or principal place of business
Bao-HI Ranges Joint Venture[(c)]	Australia	54	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Cape Bougainville Joint Venture[(c)]	Australia	67.5	155 Charlotte Street, Brisbane QLD 4000, Australia
Gladstone Power Station Joint Venture[(c)]	Australia	42.1	NRG Gladstone Operating Service, Power Station, Gladstone QLD 4680, Australia
Green Mountain Mining Venture[(c)]	United States	100	251 Little Falls Drive, Wilmington DE 19808, United States
Hope Downs Joint Venture[(c)]	Australia	50	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Mitchell Plateau Joint Venture[(c)]	Australia	65.6	155 Charlotte Street, Brisbane QLD 4000, Australia
Rhodes Ridge Joint Venture[(c)]	Australia	50	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Robe River Iron Associates Joint Venture[(c)]	Australia	57.1	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Tomago Aluminium Joint Venture[(c)]	Australia	51.6	638 Tomago Road, Tomago NSW 2322, Australia
Western Range Joint Venture[(c)]	Australia	54	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia
Winter Road Joint Venture[(c)]	Canada	33.3	300-5201 50th Avenue, Yellowknife NT X1A 2P9, Canada
Yarraloola Pastoral Co[(c)]	Australia	57.1	Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000, Australia

(a) Directly held by Rio Tinto Limited.
(b) Directly held by Rio Tinto plc.
(c) Group ownership is held through an interest in capital. The entity has no classes of shares.
(d) In liquidation or application for dissolution filed.
(e) Classed as a subsidiary in accordance with section 1162 (4)(a) of the UK Companies Act 2006 on the grounds of dominant influence.

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Rio Tinto plc

Company Balance Sheet

As at 31 December	Note	2023 US$m	2022 US$m
Non-current assets			
Investments	B	**36,218**	36,250
Trade and other receivables		**24**	79
		36,242	36,329
Current assets			
Trade and other receivables	C	**5,025**	14,916
Cash at bank and in hand		**18**	19
		5,043	14,935
Total assets		**41,285**	51,264
Current liabilities			
Trade and other payables	D	**(6,245)**	(13,438)
Dividends payable		**(25)**	(26)
Other financial liabilities	G	**(25)**	(48)
		(6,295)	(13,512)
Non-current liabilities			
Other financial liabilities	G	**(12)**	(48)
Total liabilities		**(6,307)**	(13,560)
Net assets		**34,978**	37,704
Capital and reserves			
Share capital	E	**207**	207
Share premium account		**4,324**	4,322
Other reserves	F	**12,005**	12,005
Retained earnings		**18,442**	21,170
Total equity		**34,978**	37,704

The Rio Tinto plc financial statements have been prepared in accordance with Financial Reporting Standard 101 "Reduced Disclosure Framework" (FRS 101). Note A explains the principal accounting policies.

Profit after tax and total comprehensive income for the year amounted to US$2,217 million (2022: US$7,122 million). As permitted by section 408 of the UK Companies Act 2006, no statement of comprehensive income for the Rio Tinto plc parent company is shown.

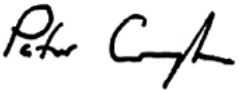
The Rio Tinto plc company balance sheet, statement of comprehensive income and the related notes were approved by the Directors on 21 February 2024 and the balance sheet is signed on their behalf by



Dominic Barton
Chair



Jakob Stausholm
Chief Executive



Peter Cunningham
Chief Financial Officer

Rio Tinto plc

Registered number: 719885

Rio Tinto plc (the "Company") is incorporated in the United Kingdom, registered in England and Wales, and domiciled in the United Kingdom.

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Rio Tinto plc

Company Statement of Changes in Equity

Year ended 31 December 2023	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	**207**	**4,322**	**12,005**	**21,170**	**37,704**
Profit for the financial year (comprehensive income)	**–**	**–**	**–**	**2,217**	**2,217**
Dividends	**–**	**–**	**–**	**(5,022)**	**(5,022)**
Proceeds from issue of shares	**–**	**2**	**–**	**–**	**2**
Share-based payments	**–**	**–**	**–**	**77**	**77**
Total	**207**	**4,324**	**12,005**	**18,442**	**34,978**

Year ended 31 December 2022	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	207	4,320	12,005	22,919	39,451
Profit for the financial year (comprehensive income)	–	–	–	7,122	7,122
Dividends	–	–	–	(8,932)	(8,932)
Proceeds from issue of shares	–	2	–	–	2
Share-based payments	–	–	–	61	61
Total	207	4,322	12,005	21,170	37,704

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Notes to the Rio Tinto plc Financial Statements

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A Principal accounting policies

a. Basis of preparation

The Rio Tinto plc company financial statements have been prepared using the historical cost convention, as modified by the revaluation of certain financial liabilities and in accordance with the UK Companies Act 2006 and Financial Reporting Standard 101 Reduced Disclosure Framework ("FRS 101"). The financial statements have been prepared on a going concern basis.

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of UK-adopted international accounting standards, but makes amendments where necessary in order to comply with Companies Act 2006.

The accounting policies set out below have been applied consistently to all periods presented in these financial statements. The following exemptions available under FRS 101 have been applied:

- Paragraphs 45(b) and 46 to 52 of IFRS 2 "Share-based Payment" (details of the number and weighted average exercise prices of share options and how the fair value of goods and services received was determined).
- Paragraphs 91-99 of IFRS 13 "Fair Value Measurement" (disclosure of valuation techniques and inputs used for fair value measurement of assets and liabilities).
- IFRS 7 "Financial Instruments: Disclosures".
- Paragraph 38 of IAS 1 "Presentation of financial statements", comparative information requirements in respect of Paragraph 79(a)(iv) of IAS 1.
- The following paragraphs of IAS 1 "Presentation of financial statements":
  - 10 (d) (statement of cash flows);
  - 16 (statement of compliance with all IFRS);
  - 38A (requirement for minimum of two primary statements, including cash flow statements);
  - 38B-D (additional comparative information);
  - 111 (cash flow statement information); and
  - 134-136 (capital management disclosures).
- IAS 7 "Statement of Cash Flows".
- Paragraph 30 and 31 of IAS 8 "Accounting policies, changes in accounting estimates and errors" (requirement for the disclosure of information when an entity has not applied a new IFRS that has been issued and is not yet effective).
- Paragraph 17 of IAS 24 "Related party disclosures" (key management compensation).
- The requirements of IAS 24, "Related party disclosures" to disclose related party transactions entered into between two or more members of a group.

b. Judgements in applying accounting policies and key sources of estimation uncertainty

The preparation of the financial statements requires management to make assumptions, judgements and estimates and to use judgement in applying accounting policies and making critical accounting estimates. These judgements, estimates and assumptions are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements.

The key area of judgement that has the most significant effect on the amounts recognised in the financial statements is the review for impairment of investment carrying values.

Investments in subsidiaries are reviewed for impairment where events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable. The unit of account being the equity of the subsidiary taken as a whole, which may include interests in multiple cash-generating units.

If any such indication exists, Rio Tinto plc makes an assessment of the recoverable amount. If the asset is determined to be impaired, an impairment loss will be recorded and the asset will be written down based on the amount by which the asset carrying amount exceeds the higher of fair value less cost of disposal and value in use. An impairment loss is recognised immediately in the income statement.

c. Currency translation

Items included in the financial statements are measured using the currency of the primary economic environment in which the Company operates (the functional currency). The financial statements are presented in US dollars, which is the Company's functional and presentation currency. Transactions denominated in other currencies, including the issue of shares, are translated into the functional currency using the exchange rates prevailing at the date of the transaction.

Foreign exchange gains and losses resulting from the settlement of such transactions, and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies, are recognised in the profit and loss account.

Exchange rates used are consistent with the rates used by the Group as disclosed in the consolidated financial statements on page 161.

d. Investments

Investments in Group companies are valued at cost less accumulated impairment losses. Investments are reviewed for impairment if events or changes in circumstances indicate that the carrying amount may not be recoverable.

e. Financial guarantees

Financial guarantees are recognised initially at fair value. Subsequently, the liability is measured at the higher of the best estimate of the expenditure required to settle the present obligation and the amount initially recognised less cumulative amortisation.

f. Share-based payments

The Company operates a number of share-based payment plans for Group employees, the details of which are included in the consolidated financial statements (note 27). The fair value of the Company's share plans is recognised as an addition to the cost of the investment in the subsidiary in which the relevant employees work over the expected vesting period, with a corresponding entry to retained earnings. Payments received from the Company's subsidiaries in respect of these share-based payments are recognised as a reduction in the cost of the investment. The Company uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model. The fair value of the share plans is determined at the date of grant, taking into account any market-based vesting conditions attached to the award.

Non-market vesting conditions (for example, relative EBIT margin performance targets) are taken into account in estimating the number of awards likely to vest. The estimate of the number of awards likely to vest is reviewed at each balance sheet date up to the vesting date, at which point the estimate is adjusted to reflect the actual awards issued. No adjustment is made after the vesting date even if the awards are forfeited or not exercised.

g. Dividend income

Dividend income is recognised when the right to receive payment is established.

h. Treasury shares

The consideration paid for shares repurchased by the Company and held as treasury shares is recognised as a reduction in shareholders' funds through retained earnings.

Notes to the Rio Tinto plc Financial Statements

B Investments

	2023 US$m	2022 US$m
Investments in Group companies:		
At 1 January	**36,250**	36,280
Additions	**77**	61
Other adjustments	**(109)**	(91)
At 31 December	**36,218**	36,250

At 31 December 2023, the Company had the following principal subsidiaries:

Company	Principal activity	Country of incorporation	Percentage shareholding
Rio Tinto International Holdings Limited	Holding company	UK	100%
Rio Tinto European Holdings Limited	Holding company	UK	100%

In accordance with section 409 of the UK Companies Act 2006, a full list of related undertakings is disclosed in the consolidated financial statements (note 42).

C Trade and other receivables

Trade and other receivables includes US$5,025 million (31 December 2022: US$14,832 million), which is subject to interest based on SOFR reference rate and is unsecured and repayable on demand.

D Trade and other payables

Trade and other payables includes US$6,151 million (31 December 2022: US$13,354 million) which is subject to interest rates based on SOFR and is unsecured and repayable on demand.

E Share capital

	2023 US$m	2022 US$m
Issued and fully paid up share capital of 10p each[(a)]		
At 1 January	**207**	207
Ordinary shares purchased and cancelled[(b)]	**–**	–
At 31 December	**207**	207
Special Voting Share of 10p each[(c)]	**1 only**	1 only
DLC Dividend Share of 10p each[(c)]	**1 only**	1 only
Equalisation Share of 10p each[(c)]	**1 only**	1 only

(a) 48,290 new shares (2022: 48,931 new shares) were issued during the year and 1,618,181 shares (2022: 1,465,113 shares) were reissued from Treasury during the year resulting from the vesting of awards and the exercise of options under Rio Tinto plc employee share-based payment plans, with exercise prices and market values between £45.10 and £64.06 per share.

(b) The authority for the Company to buy back its ordinary shares was renewed at the 2022 annual general meeting. No shares were bought back and cancelled in 2023 or in 2022 under the on-market buy-back programme.

(c) The "Special Voting Share" was issued to facilitate the joint voting by shareholders of Rio Tinto plc and Rio Tinto Limited on Joint Decisions, following the DLC Merger. The "DLC Dividend Share" was issued to a subsidiary of Rio Tinto Limited to facilitate the efficient management of funds within the DLC structure. In addition, an Equalisation Share is authorised but not issued and is governed by the terms of the DLC Merger Sharing Agreement.

F Other reserves

Other reserves includes US$11,936 million (2022: US$11,936 million) which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009.

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G Rio Tinto plc guarantees

Rio Tinto plc provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled US$7.3 billion at 31 December 2023 (31 December 2022: US$5.4 billion). In addition, these entities also jointly guarantee the Group's undrawn credit facility which was US$7.5 billion at 31 December 2023 (31 December 2022: US$7.5 billion). Rio Tinto plc has provided guarantees in respect of certain derivative contracts that are in a liability position of US$381 million at 31 December 2023 (31 December 2022: US$523 million).

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. During the year, a wholly owned subsidiary of Rio Tinto plc became a lender under the project finance facility ranking pari passu with the external lenders.

At 31 December 2023, a total of US$4.7 billion of project finance debt was outstanding under this facility of which US$3.9 billion is owed to external third party lenders (31 December 2022: US$3.9 billion). Rio Tinto plc, through its subsidiaries, owns 66% of Oyu Tolgoi LLC with the remaining share owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia. The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility. The CSU contain a carve-out for certain political risk events.

During 2023, fees of US$77 million (2022: US$75 million) were received from Oyu Tolgoi LLC as consideration for the provision of the CSU.

Rio Tinto plc has provided a number of guarantees in relation to various pension funds. Subject to certain conditions, Rio Tinto plc would pay any contributions due from Group companies participating in these funds should the companies fail to meet their contribution requirements. The guarantees were not called upon in 2023. The aggregate of company contributions to these plans in 2023 was US$8 million (2022: US$9 million).

Other guarantees issued by Rio Tinto plc in relation to Rio Tinto Group entities as at 31 December 2023 amount to US$525 million (31 December 2022: US$458 million). Included within this balance is US$17 million (31 December 2022: US$23 million) in relation to non-wholly-owned subsidiaries.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

The liability recognised for financial guarantees is US$37 million (31 December 2022: US$96 million) presented in "Other financial liabilities" in the balance sheet.

Subsidiary audit exemptions

The following UK subsidiary undertakings are exempt from the requirements of the Companies Act 2006 (the Act) relating to the audit of individual accounts by virtue of section 479A of the Act. All these companies are included in the consolidated subsidiaries listed in note 42.

Name	Company number	Name	Company number
Anglesey Aluminium Metal Limited	909645	Rio Tinto Minerals Development Limited	281218
Borax Europe Limited	36374	Rio Tinto Minerals Limited	13807147
British Alcan Aluminium Limited	385816	Rio Tinto OT Management Limited	09247092
IOC Sales Limited	11576814	Rio Tinto Overseas Holdings Limited	280423
Pechiney Aviatube Limited	4124570	Rio Tinto Canada Finance Limited	13575404
Rio Tinto Bahia Holdings Limited	1338672	Rio Tinto Simfer UK Limited	06375648
Rio Tinto European Holdings Limited	993068	Rio Tinto South East Asia Limited	3699290
Rio Tinto Indonesian Holdings Limited	3074852	Rio Tinto Technological Resources UK Limited	8270236
Rio Tinto International Holdings Limited	425864	Rio Tinto Western Holdings Limited	00007132
Rio Tinto Iron & Titanium Limited	2796146	RTA Holdco 4 Limited	06404791
Rio Tinto Iron Ore Atlantic Limited	5516177	RTA Holdco 8 Limited	07105547
Rio Tinto Iron Ore Trading China Limited	08651526	Thos. W Ward Limited	81020
Rio Tinto Metals Limited	147115	Rio Tinto Copper Holdings Limited	14549568
Rio Tinto Copper Limited	15070996	THR Copper Limited	15130606
Rio Tinto Australian Holdings Limited	464176		

Rio Tinto Plc will guarantee all outstanding liabilities that these subsidiaries are subject to as at 31 December 2023 in accordance with section 479C of the Act, as amended by the Companies and Limited Liability Partnerships (Accounts and Audit Exemptions and Change of Accounting Framework) Regulations 2012. In addition, Rio Tinto plc will guarantee any contingent and prospective liabilities that these subsidiaries are subject to.

Notes to the Rio Tinto plc Financial Statements

H Contingent liabilities

Details of contingent liabilities are included in note 37 to the Group financial statements.

I Auditor's remuneration

Amounts receivable by the Company's auditor and its associates in respect of services to the Company and its associates have not been disclosed as the information is required instead to be disclosed on a consolidated basis in the consolidated financial statements.

J Events after the balance sheet date

There were no significant events after the balance sheet date requiring disclosure.

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Australian Corporations Act – Summary of ASIC Relief

Pursuant to section 340 of the Australian Corporations Act 2001 (Corporations Act), the Australian Securities and Investments Commission issued an order dated 16 July 2021 that granted relief to Rio Tinto Limited from certain requirements of the Corporations Act in relation to its financial statements and associated reports. The order essentially continues the relief that has applied to Rio Tinto Limited since the formation of the Group's dual listed companies (DLC) structure in 1995. The order applies to Rio Tinto Limited's financial reporting obligations for the financial years up to and including 31 December 2023.

In essence, instead of being required under the Corporations Act to prepare consolidated financial statements covering Rio Tinto Limited and its controlled entities, it allows the Company to prepare consolidated financial statements in which it, Rio Tinto plc and their respective controlled entities are treated as a single economic entity. In addition, those consolidated financial statements are to be prepared:

- in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the United Kingdom (UK IFRS) rather than the Australian Accounting Standards (AAS) (except for one limited instance in the case of any concise report), and in accordance with UK financial reporting obligations generally;
- on the basis that the transitional provisions of International Financial Reporting Standard 1, First-time Adoption of International Financial Reporting Standards, should be applied using the combined financial statements previously prepared for Rio Tinto Limited, Rio Tinto plc and their respective controlled entities under Generally Accepted Accounting Principles in the United Kingdom, under which the DLC Merger between Rio Tinto Limited and Rio Tinto plc was accounted for using "merger", rather than "acquisition", accounting (reflecting that neither Rio Tinto Limited nor Rio Tinto plc was acquired by, or is controlled by, the other; and meaning that the existing carrying amounts, rather than fair values, of assets and liabilities at the time of the DLC Merger were used to measure those assets and liabilities at formation);
- on the basis that Rio Tinto Limited and Rio Tinto plc are a single company (with their respective shareholders being the shareholders in that single company); and
- with a reconciliation, from UK IFRS to AAS, of the following amounts: consolidated loss/profit for the financial year, total consolidated comprehensive loss/income for the financial year and total consolidated equity at the end of the financial year (see page 167).

Those consolidated financial statements must also be audited in relation to their compliance with relevant Australian and UK requirements. Rio Tinto Limited must also prepare a Directors' Report which satisfies the content requirements of the Corporations Act (applied on the basis that for these purposes, the consolidated entity is the Group, and the consolidated financial statements cover the Group). This includes a Remuneration Report (see pages 113 to 145) prepared in accordance with the requirements of the Corporations Act.

Rio Tinto Limited is also required to comply generally with the lodgement and distribution requirements of the Corporations Act (including timing requirements) in relation to those consolidated financial statements (including any concise financial statements), the Auditors' report and the Directors' Report. The Corporations Act also requires that a non-binding resolution to adopt the Remuneration Report be voted on by shareholders at Rio Tinto Limited's annual general meeting.

Rio Tinto Limited is not required to prepare separate consolidated financial statements solely for it and its controlled entities. Rio Tinto Limited is also not required to prepare and lodge parent entity financial statements for itself in respect of each relevant financial year.

Rio Tinto Limited must, however, in accordance with the Corporations Act include in the consolidated financial statements for the Group, as a note, various parent entity information regarding Rio Tinto Limited (including in relation to assets, liabilities, shareholders' equity, profit and loss, income, guarantees, contingent liabilities, and contractual commitments) prepared in accordance with AAS (see page 238).

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Directors' declaration

Directors' statement of responsibilities in relation to the Group financial statements, Rio Tinto plc financial statements and Rio Tinto Limited financial statements.

The Directors are responsible for preparing the Annual Report, the Remuneration Report and the financial statements in accordance with applicable law and regulations.

UK and Australian company law requires the Directors to prepare financial statements for each financial year. Under UK law, our Directors have elected to prepare the Group financial statements in accordance with UK-adopted international accounting standards and applicable law. We have elected to prepare the parent company financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 101 Reduced Disclosure Framework, and applicable law). Under Australian law, the Directors are also required to prepare certain Rio Tinto Limited parent company financial statements in accordance with Australian Accounting Standards (AAS). In preparing the Group financial statements, the Directors have also elected to comply with IFRS, issued by the International Accounting Standards Board (IASB).

Under UK and Australian company law, the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the companies as at the end of the financial year, and of the profit or loss of the companies and Group for the period (as applicable).

In preparing these financial statements, the Directors are required to:

- select suitable accounting policies and apply them consistently;
- make judgements and estimates that are reasonable, relevant, reliable and prudent;
- state whether applicable UK adopted international accounting standards and AAS have been followed, subject to any material departures disclosed and explained in the Group and parent company financial statements respectively;
- assess the Group and companies' ability to continue as a going concern, disclosing as applicable matters related to going concern;
- use the going concern basis of accounting unless they either intend to liquidate the Group or the companies or to cease operations, or have no realistic alternative but to do so.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the transactions of the companies and the Group and disclose with reasonable accuracy at any time the financial position of the companies and the Group and enable them to ensure that:

- the Group financial statements comply with the UK Companies Act 2006 and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021;
- the Rio Tinto plc financial statements comply with the UK Companies Act 2006;
- the Rio Tinto Limited parent company disclosures comply with the Corporations Act as amended by the Australian Securities and Investments Commission Order dated 16 July 2021; and
- the Remuneration Report complies with the UK Companies Act 2006 and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021.

The Directors are also responsible for safeguarding the assets of the companies and the Group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Directors are responsible for the maintenance and integrity of the Group's website. Legislation governing the preparation and dissemination of financial statements may differ between jurisdictions in which the Group reports.

Each of the current Directors, whose names and function are listed on pages 92 and 93 in the Governance section, confirm that, to the best of their knowledge:

- the Rio Tinto Group financial statements and notes, which have been prepared in accordance with international accounting standards in conformity with the requirements of UK-adopted international accounting standards, the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021 and the UK Companies Act 2006, give a true and fair view of the assets, liabilities, financial position and profit of the Group;
- the Rio Tinto plc financial statements and notes, which have been prepared in accordance with United Kingdom Generally Accepted Accounting Practice, give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Rio Tinto Limited parent company disclosures, which have been prepared in accordance with the AAS and Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021, give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Strategic Report section of the Annual Report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties that it faces; and
- there are reasonable grounds to believe that each of the Rio Tinto Group, Rio Tinto plc and Rio Tinto Limited will be able to pay its debts as and when they become due and payable.

The Directors have been given the declarations by the Chief Executive and Chief Financial Officer required by section 295A of the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021.

Disclosure of information to auditors

The Directors in office at the date of this report have each confirmed that:

- so far as they are aware, there is no relevant audit information of which the Group's auditors are unaware; and
- they have taken all the steps that they ought to have taken as a Director to make themselves aware of any relevant audit information and to establish that the Group's auditors are aware of that information.

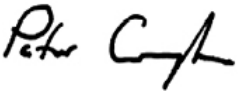
This declaration is made in accordance with a resolution of the Board.



Dominic Barton
Chair



Jakob Stausholm
Chief Executive



Peter Cunningham
Chief Financial Officer

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Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

REPORT ON THE AUDITS OF THE FINANCIAL STATEMENTS

1. OPINIONS: OUR OPINIONS ARE UNMODIFIED

In KPMG UK's opinion:

- the financial statements give a true and fair view of the state of the Group's and of the UK parent company, Rio Tinto plc's, affairs as at 31 December 2023, and of the Group's profit for the year then ended;
- the Group financial statements have been properly prepared in accordance with UK-adopted international accounting standards and IFRSs as issued by the International Accounting Standards Board (IASB). As explained on page 158 to the financial statements, the Group, in addition to complying with its legal obligation to apply UK-adopted international accounting standards, has applied IFRSs as issued by the IASB;
- the Rio Tinto plc company financial statements have been properly prepared in accordance with UK accounting standards, including FRS 101 "Reduced Disclosure Framework"; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006.

In KPMG Australia's opinion:

- The accompanying Group financial statements are in accordance with the Australian Corporations Act 2001, as amended by the Australian Securities and Investments Commission Order dated 16 July 2021 (the "ASIC Class Order") including:
  - giving a true and fair view of the Group's financial position as at 31 December 2023 and of its financial performance for the year then ended; and
  - complying with UK-adopted international accounting standards and the Australian Corporations Regulations 2001.

For the purpose of these reports, the terms 'we' and 'our' denote KPMG UK in relation to UK responsibilities and reporting obligations to the members of Rio Tinto plc, and KPMG Australia in relation to Australian responsibilities and reporting obligations to the members of Rio Tinto Limited. Rio Tinto ('the Group' or 'Rio Tinto Group') consists of Rio Tinto plc, Rio Tinto Limited (individually 'the Company' or together 'the Companies') and their respective subsidiaries including the Group's share of joint arrangements and associates, as at and during the financial year ended 31 December 2023. The 'Group financial statements' denotes the financial statements prepared for the Rio Tinto Group. 'Rio Tinto plc company financial statements' denotes the company only financial statements for the UK parent company, Rio Tinto plc. The 'Group financial statements' and 'Rio Tinto plc company financial statements' taken together are referred to as 'financial statements'.

What our opinions cover

We have audited the Group financial statements as at and for the year ended 31 December 2023 ('FY23') included in the Annual Report, which comprise:

Rio Tinto Group
Group Income Statement
Group Statement of Comprehensive Income
Group Cash Flow Statement
Group Balance Sheet
Group Statement of Changes in Equity
Notes[a] to the Group financial statements, including material Group accounting policy information and other explanatory information covered on pages 173 to 258 and in the 'about the presentation of our financial statements' section on pages 158 to 167.

KPMG UK has also audited the UK parent company, Rio Tinto plc's financial statements for FY23, which comprise the UK parent company balance sheet on page 259, the UK parent company statement of changes in equity on page 260 and related notes on pages 261 to 264 which include a description of material Group accounting policy information and other explanatory information.

KPMG Australia has also considered the Directors' declaration on page 266, the Reconciliation with Australian Accounting Standards note on page 167 and the Australian Corporations Act – Summary of ASIC relief note on page 265 to be part of the Group financial statements when forming its opinion under the requirements of the Australian Corporations Act 2001, as amended by the ASIC Class Order. KPMG Australia has also audited the Remuneration Report information of Rio Tinto Limited, required by the Australian Corporations Act 2001, included in the Directors' report pages 113 to 145 for FY23.

Basis for opinions

We conducted our audits in accordance with International Standards on Auditing (UK) ("ISAs (UK)") (KPMG UK) and Australian Auditing Standards ("ASAs") (KPMG Australia) and applicable laws. Our responsibilities under those standards are further described in the Auditors' responsibilities for the audits of the financial statements section of our report. We believe that the audit evidence we have obtained is a sufficient and appropriate basis for our opinions. Our audit opinions and matters included in this report are consistent with our report to the Audit and Risk committee. We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities; the Australian Corporations Act 2001 as amended by the ASIC Class Order; and the relevant ethical requirements of the Australian Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants (including Independence Standards).

[a] KPMG UK has considered the 'about the presentation of our financial statements' section on pages 158 to 167 and notes 1 – 40 and note 42 and KPMG Australia has considered the 'about the presentation of our financial statements' section on pages 158 to 167 and notes 1 – 42 in forming their respective opinions.

KPMG Australia's liability is limited by a scheme approved under Professional Standards Legislation.

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of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

2. OVERVIEW OF OUR AUDITS

Factors driving our view of risks

Following our FY22 audits and considering developments including regulatory changes affecting the Rio Tinto Group since then, our assessment of risks and our view of how these impact the audit of the financial statements has been reassessed for the current year.

In the current year, our assessment of risk on specific closure provisions remained consistent with prior year. The closure provisions for Rio Tinto Iron Ore remains as a key audit matter ('KAM') in FY23.

Our view of the risk associated with the Group's assessment of impairment or impairment reversal of property, plant and equipment remains unchanged and continues to be a key audit matter.

We continued to focus on the Oyu Tolgoi CGU due to the significance of the operation and associated complexity, which has a heightened risk of impairment or impairment reversal. The risk associated to the Kitimat CGU identified in the previous year has reduced as production has ramped back up towards full capacity and is therefore not a key audit matter in the current year.

Our focus has been on changes in the forecast long-term commodity prices, in addition to the ongoing development of the underground mine and its operational performance, which were the key factors driving our view of risks.

Our assessment of risk of recoverability of the UK Parent company's investment in subsidiaries has remained consistent and remains as a Key Audit Matter for the UK Parent company.

		Audit risk significance FY23 vs FY22	Item
Recurring key audit matters	Evaluation of specific provisions for close-down, restoration and environmental obligations ('closure provisions')	↔	4.1
	Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU')	↔	4.2
	Evaluation of recoverability of Rio Tinto plc's Investments in subsidiaries (KPMG UK only)	↔	4.3

Audit and Risk committee interaction

In relation to FY23, the Audit and Risk committee ('ARC') met six times. KPMG are invited to attend all Audit and Risk committee meetings and are provided with an opportunity to meet with the ARC in private sessions without Executive Directors or management being present. For each Key Audit Matter, we have set out communications with the Audit and Risk committee in Section 4, including matters that required particular judgement for each.

The matters included in the Audit and Risk committee Chair's report on page 108 are materially consistent with our observations of those meetings.

Our independence

We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities; the Australian Corporations Act 2001 as amended by the ASIC Class Order; and the relevant ethical requirements of the Australian Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants (including Independence Standards).

We were first appointed as auditors by the members for the financial year ended 31 December 2020. The period of total uninterrupted engagement is for the four financial years ended 31 December 2023. The Group engagement partners are required to rotate every 5 years. Trevor Hart and Jonathan Downer are required to rotate off after the FY24 and FY25 audits respectively. The average tenure of partners responsible for component audits is 3.7 years, with the shortest being 1 year and the longest being 5 years.

We have not performed any non-audit services during the year ended 31 December 2023 or subsequently which are prohibited by the FRC Ethical Standard.

Total fees	US$30.8m
Audit and audit-related fees (including interim review)	US$27.6m
Other services	US$3.2m
Non-audit fee as a % of audit and audit-related fee	11.5%
Date appointed by members	KPMG UK 08 April 2020 KPMG Australia 05 May 2020
Uninterrupted audit tenure	4 financial years
Next financial period which requires a tender	31-Dec-30

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Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

2. OVERVIEW OF OUR AUDITS (CONT'D)

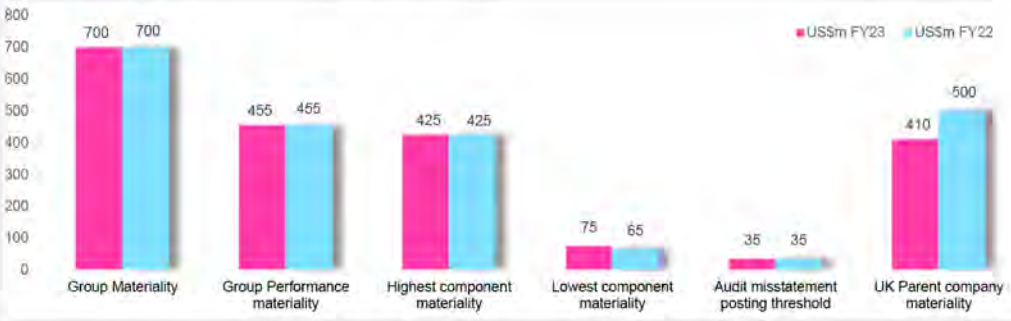
Materiality (Section 6 below)

The scope of our work is influenced by our view of materiality and our assessment of the risks of material misstatement.

We have determined overall materiality for the Group financial statements as a whole at US$700m (FY22: US$700m). For both FY23 and FY22, we determined profit before taxation to be an appropriate benchmark ('the benchmark') and considered qualitative factors that impact our assessment of materiality.

In FY23, we adjusted profit before taxation to exclude certain items that were significant and did not represent normal, continuing operations of the Group in determining our materiality ('normalised Group profit before taxation'). This exclusion was US$936m related to the net pre-tax impairment charge as noted in Note 4 of the Group's financial statements. In FY22, no items met our assessment for adjustment. The Group materiality for FY23 represented 4.8% of the normalised Group profit before taxation (FY22: 3.8% of Group profit before taxation), which falls within KPMG's acceptable range of up to 5% for public interest entities.

KPMG UK has determined the materiality for Rio Tinto plc company financial statements as a whole at US$410m (FY22: US$500m). Consistent with FY22, we determined total assets remained an appropriate benchmark for determining materiality for Rio Tinto plc company financial statements. The materiality represented 1% in FY23 (FY22: 1%) of this benchmark.



Group scope (Section 7 below)

We performed our risk assessment and planning procedures to determine which of the Group's components are likely to include risks of material misstatement to the Group financial statements, the type of procedures to be performed at these components and the extent of involvement required from our component auditors around the world. We identified those components which we considered to be of individual financial significance, those which were significant due to risk and those remaining components on which we required procedures to be performed to provide us with the evidence to conclude on the group financial statements as a whole. Refer to section 7 below for further detail of these components.

We consider the scope of our audits, as discussed with the Audit and Risk committee, to be an appropriate basis for our audit opinions. The total number of components within the scope of our work was:

	Number of components	
	FY23	FY22
Full scope audits	9	9
Audits of one or more account balances	6	8
Total	**15**	**17**

The components within the scope of our work accounted for the percentages illustrated below:



2. OVERVIEW OF OUR AUDITS (CONT'D)

The impact of climate change on our audits

As a part of our risk assessment throughout the audits, we considered the potential impacts of climate change on the Group's business and the financial statements, based on our knowledge of the Group's operations and their stated strategy with respect to climate change. Recognising the increased shareholder focus on the impact of climate change in financial reporting and financial statement audits, we are providing enhanced disclosure on the impact of climate change on our audit in this report. We do not identify the impact of climate change as a separate Key Audit Matter in our audit given the nature of the Group's operations, the impact of climate on the Group's key judgements and estimates, and the resulting impact on our audit effort.

The context of climate change for the Group

The Group does not mine or extract hydrocarbons such as coal, natural gas, or oil. It does, however, emit greenhouse gases directly from energy used in its mining operations, the processing of metals and minerals, and the transportation of its products. Certain of the Group's products are used in energy and carbon intensive industries including steel and aluminium production. Other of the Group's products, such as copper, are expected to continue to be important in the transition to a low-carbon economy.

Targets and expected capital expenditure

Within page 162 of the Group's financial statements, the Group has discussed its targets to reduce scope 1 and 2 carbon emissions relative to its 2018 baseline by 15% in 2025, by 50% in 2030 and an aim to achieve net zero emissions by 2050.

Within page 162, the Group has explained the downward revision to its initial expectation of capital expenditure associated with decarbonisation projects between 2022 and 2030 from US$7.5 billion down to US$5-6 billion. Further, whilst the Group expects to have made financial commitments to abatement projects designed to achieve the 15% emissions reduction by 2025, the actual emissions abatement will lag these.

Climate change scenarios

The Group has detailed within page 163 its two core climate change scenarios, which are used to generate a central reference case for commodity forecasts and valuations, to support its strategic decision making, capital allocation and financial reporting. As noted, these scenarios have not fundamentally changed in FY23.

The Group has also detailed an 'Aspirational leadership' scenario which, although aligned to the Group's view of the stretch goals of the Paris Agreement, is not considered by the Group to be a core scenario.

Group's assessment of financial reporting consequences

IFRS requires the Group's financial reporting to be based, amongst other things, on the Group's best estimate of assumptions that are reasonable and supportable as at the date of reporting. Those assumptions may not align with the ways in which the global economy, society and government policies will need to change to meet the targets to limit global warming to 1.5°c, which is aligned with the stretch goal of the 2015 COP 21 Paris Agreement.

The Group has detailed how it has considered the financial reporting consequences of climate change on pages 162 to 165 of the financial statements including cross references where further disclosure is included in notes to the Group financial statements.

Our audit response

General risk assessment procedures

As part of our risk assessment procedures, we made inquiries, with the assistance of our sustainability specialists, of key members of management. Our inquiries focussed on understanding the progress of the Group's climate related strategy and identifying those areas where climate change could have a potentially material impact on the financial statements. Our inquiries also focussed on understanding the progress made by the Group in meeting its Scope 1 and Scope 2 targets, progress of its decarbonisation programmes including change in the expected capital investment from US$7.5 billion to US$5 to 6 billion and understanding the Group's actual capital expenditure in relation to its decarbonisation strategy. We involved our sustainability specialists in our internal risk assessment and planning discussions, where we discussed the Group's climate strategy, and considered potential material impacts to the financial statements.

Specific risk assessment procedures with regards to the carrying values of the Group's assets, consideration of asset obsolescence and assessment of useful economic lives

As the Group continues to progress its climate change strategy, we have considered the impact of climate change when evaluating whether there were indicators of impairment of property, plant and equipment or cash-generating units ('CGUs') including when responding to the Key Audit Matter ('KAM') with respect to the Oyu Tolgoi CGU.

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2. OVERVIEW OF OUR AUDITS (CONT'D)

The impact of climate change on our audits	**Our audit response (cont'd)** Our climate risk assessment procedures, including making specific inquiries with Group personnel, included: • the status of the plans relating to renewable energy solutions for the Australian Aluminium assets and related considerations for asset obsolescence or re-estimation of useful lives; and • understanding the status of the Group's plans to decarbonise elements of its operations, including attaining net zero shipping vessels by 2030, decarbonising elements of its existing mobile fleet including locomotives, in the Pilbara, and related considerations for asset obsolescence or re-estimation of useful lives; • understanding the Group's process to continue assessing the impact of climate change on physical risk to its operations and the accounting impacts, if any. This included, for example, understanding whether physical risk had impacted the Group's judgement on the useful economic life of its water rights in Quebec (currently indefinite-lived intangible assets). As a result of our risk assessment procedures, considering factors such as the stage of development and expected timing of asset replacement projects compared to existing useful economic lives, we have not identified a separate risk of material misstatement arising from the impact of climate change to these financial statements. As the Group continues implementing its climate strategy, there may be material accounting considerations and consequences in the future, including impacts on recoverable amounts of key assets and re-estimation of useful economic lives. Other audit procedures During the course of our audits, we carried out the following additional audit procedures including: (a) evaluating the potential impact of new and emerging climate-related legislation on the Group. This included the Australian Safeguard mechanisms, one of the factors which led to an impairment of the carrying value of Queensland Alumina and Yarwun Alumina refineries. We also considered its relevance to other Australian assets of the Group; (b) evaluating the Group's impairment assessment of property, plant, and equipment of the Queensland Alumina and Yarwun Alumina refineries. This included assessing the appropriateness of key elements considered by management including carbon prices, impact on the useful economic life of the assets, and future cash flows expected from the energy efficiency digestion project; (c) evaluating certain material closure provisions of the Group where cost estimates consider the impact of climate change in inputs such as expected precipitation rates. This consideration was not significant to warrant separate discussion in our KAM on evaluation of specific provisions for close-down, restoration and environment; (d) evaluating the Group's disclosures related to climate change in the financial statements; (e) reading the disclosures related to climate change in the Directors' Report and Strategic Report, including the TCFD recommended disclosures, and considering their consistency with the financial statements and our audit knowledge; and (f) assessing the consistency between the Group's expectation of the capital expenditure planned for decarbonisation with cash flows used in the going concern and viability assessments. Our specialists, including sustainability specialists, assisted us in procedures (a) to (e).

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3. GOING CONCERN, VIABILITY AND PRINCIPAL RISKS AND UNCERTAINTIES (KPMG UK ONLY)

The Directors have prepared the financial statements on the going concern basis as they do not intend to liquidate the UK parent company or the Group or to cease their operations, and they have concluded that the UK parent company's and the Group's financial position means that this is realistic. They have also concluded that there are no material uncertainties that could have cast significant doubt over their ability to continue as a going concern for at least a year from the date of approval of the financial statements ("the going concern period").

Going concern

We used our knowledge of the Group, its industry, and the general economic environment to identify the inherent risks to its business model and analysed how those risks might affect the Group's financial resources or ability to continue operations over the going concern period. The risks we consider as most relevant to the level of the Group's financial resources over this period relate to levels of demand and commodity pricing of key products.

We critically assessed the assumptions in the Directors' downside scenarios relevant to liquidity and covenant metrics, in particular in relation to revenue growth by assessing:

- The directors' forecasting by comparing previous forecasts with actual results;
- The assumptions in the Group's forecast of reasonably possible downsides; and
- The impact of applying more severe downside scenarios

The extent of our work was influenced by the level of liquidity. We also assessed the completeness of the going concern disclosure.

Accordingly, based on those procedures, we found the directors' use of the going concern basis of accounting without any material uncertainty for the Group and UK Parent Company to be acceptable. However, as we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgements that were reasonable at the time they were made, the above conclusions are not a guarantee that the Group or the Parent Company will continue in operation.

Our conclusions

We consider that the Directors' use of the going concern basis of accounting in the preparation of the Group's and UK parent company's financial statements is appropriate.

We have not identified and concur with the Directors' assessment that there is not a material uncertainty related to events or conditions that, individually or collectively, may cast significant doubt on the Group's or UK parent company's ability to continue as a going concern for the going concern period.

We have nothing material to add or draw attention to in relation to the Directors' statement in the section 'about the presentation of financial statements' in the financial statements on the use of the going concern basis of accounting with no material uncertainties that may cast significant doubt over the Group and UK parent company's use of that basis for the going concern period, and we found the going concern disclosure in to be acceptable.

The related statement under the UK Listing Rules set out on pages 151 is materially consistent with the financial statements and our audit knowledge.

Disclosures on emerging and principal risks and longer-term viability

Our responsibility

We are required to perform procedures to identify whether there is a material inconsistency between the directors' disclosures in respect of emerging and principal risks and the viability statement, and the financial statements and our audit knowledge.

Based on those procedures, we have nothing material to add or draw attention to in relation to:

- the directors' confirmation within the longer-term viability statement on page 80 that they have carried out a robust assessment of the emerging and principal risks facing the Group, including those that would threaten its business model, future performance, solvency and liquidity;
- the Principal Risks and uncertainties disclosures describing these risks and how emerging risks are identified and explaining how they are being managed and mitigated; and
- the directors' explanation in the longer-term viability statement of how they have assessed the prospects of the Group, over what period they have done so and why they considered that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We are also required to review the longer-term viability statement set out on page 80 under the Listing Rules.

Our work is limited to assessing these matters in the context of only the knowledge acquired during our financial statements audits. As we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgements that were reasonable at the time they were made, the absence of anything to report on these statements is not a guarantee as to the Group's and UK parent company's longer-term viability.

Our reporting

We have nothing material to add or draw attention to in relation to these disclosures.

We have concluded that these disclosures are materially consistent with the financial statements and our audit knowledge.

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4. KEY AUDIT MATTERS

What we mean

Key audit matters are those matters that, in our professional judgement, were of most significance in our audits of the current year financial statements and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by us, including those which had the greatest effect on:

- the overall audit strategies;
- the allocation of resources in the audits; and
- directing the efforts of the engagement teams.

We include below the key audit matters for the Group and Rio Tinto plc, in decreasing order of audit significance, together with our key audit procedures to address those matters and, as required for public interest entities, our results from those procedures. These matters were addressed in the context of, and our results are based on, procedures undertaken specific to each of our audits of the financial statements as a whole and in forming our opinions thereon, and consequently are incidental to those opinions, and we do not provide separate opinions on these matters.

4.1 Evaluation of specific provisions for close-down, restoration and environmental obligations ('closure provisions')

Financial statement elements			Our assessment of risk vs FY22	Our results
	FY23	FY22		
Carrying value of the closure provisions within Rio Tinto Iron ore ('Pilbara')	Included in US$17,150m	Included in US$15,759m	↔ Our assessment of risk on specific closure provisions remained consistent with prior year. The closure provision for Rio Tinto Iron Ore remains a key audit matter ('KAM') in FY23.	**FY23: Acceptable (FY22: Acceptable)**

Description of the Key Audit Matter

The Group incurs legal and constructive obligations for close-down and restoration activities which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. Generally, there is relatively limited activity within the Group or broader industry of completing large scale restoration and rehabilitation projects, and elements of restoration and rehabilitation of each site are relatively unique to the site. As such, there are limited comparable historical precedents against which to assess estimates of future costs, which increases estimation uncertainty for the Group, and increases audit focus for us.

A significant proportion of the Group's assets have long remaining lives, which also increases the estimation uncertainty relating to the restoration and rehabilitation activities required and the timing and amount of the associated future cash flows. Because of this, the effect of the time value of money is significant.

Close-down, restoration and environmental remediation activities are governed by a combination of legislative requirements, and the Group's policies. These vary across location, product and operation.

The Group has disclosed that the determination of when an estimate associated with close-down, restoration and environmental obligations is sufficiently reliable to update is an area of judgement that may have a significant effect on the amounts recognised in the financial statements.

Our response to the risk

Our procedures to address the risk included:

Control operation

Evaluating the design, implementation and testing the operating effectiveness of certain internal controls over the Group's process to estimate provisions for close-down, restoration and environmental obligations including the Group's selection of key assumptions to be used.

Tests of detail

- We evaluated the scope, competency and objectivity of the Group's experts, both internal and external to the Group, who produce the cost estimates, by examining the work they were involved to perform, their professional qualifications and experience;
- We inspected the most recent closure studies and other technical material prepared by the Group relating to changes in the closure provision to assess the nature and scope of restoration work planned to be undertaken. This included assumptions relating to the life of the operation and the probability, nature and timing of closure and rehabilitation activities and strategy;
- We compared a sample of previous forecast cost assumptions to actual costs to assess the Group's ability to accurately forecast closure costs;
- On a sample basis, we compared the nature, timing and quantum of costs contained in the Group's provisions to the Group's third-party expert reports and internal and external underlying documentation; and
- We evaluated the completeness of the provisions against the Group's analysis of where disturbance requires rehabilitation and comparing to our understanding of the Pilbara sites, including the probability, nature and timing of possible closure and rehabilitation activities.

4. KEY AUDIT MATTERS (CONT'D)

4.1 Evaluation of specific provisions for close-down, restoration and environmental obligations ('closure provisions') (cont'd)

Description of the Key Audit Matter	Our response to the risk
The evaluation of closure provisions for Rio Tinto Iron Ore ('Pilbara') is a key audit matter due to the significant amount of the provision and the judgement and specialised skills involved in our audit testing of key assumptions used by the Group to determine the provision, including: • the future close-down and restoration costs including costs associated with post-closure monitoring ('closure costs'); and • the life of the operation and the probability, nature and timing of closure and rehabilitation activities. Refer to note 14, and the Audit and Risk committee's views set out on page 108.	Our closure expertise We involved our own mine closure professionals with specialised skills and knowledge who evaluated the methodology applied by the Group's third-party experts and assisted us in assessing certain assumptions regarding the forecast costs of closure activities based on their experience and familiarity with applicable legislative requirements and industry practice and the Group's closure commitments. Assessing disclosures We have assessed the disclosures in note 14 of the Group financial statements, including the accounting policy, using our understanding obtained from our testing, against the requirements of the accounting standard. This included evaluating the current and non-current closure provision disclosure for consistency to the planned timing of the expenditure, and whether the disclosure reflected the risks inherent in the estimation of the provision.

Communications with the Rio Tinto Audit and Risk committee

Our discussions with and reporting to the Audit and Risk committee included:

- Key procedures performed as listed above;
- Involvement of our mine closure professionals, in assessing certain assumptions regarding the forecast closure costs of closure activities within Pilbara; and
- Conclusions drawn from our audit procedures.

Areas of particular auditor judgement

There is inherent judgement and complexity in evaluating the Group's assumptions related to the probability, nature and timing of possible closure and rehabilitation activities, and future close-down and restoration costs including costs associated with post-closure monitoring ('closure costs').

Our results

Based on the risk identified and our procedures performed, we consider that the level of provisions for close-down, restoration and environmental obligations for Rio Tinto Iron Ore ('Pilbara') to be acceptable.

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4. KEY AUDIT MATTERS (CONT'D)

4.2 Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU')

Financial statement elements			Our assessment of risk vs FY22	Our results
	FY23	FY22		
Carrying value of the Oyu Tolgoi copper-gold mine ('Oyu Tolgoi CGU')	Included in US$66,468m of property, plant and equipment	Included in US$64,734m of property, plant and equipment	↔	FY23: Acceptable (FY22: Acceptable)[b]

In the current year, our view of the risk associated with the Group's assessment of impairment or impairment reversal of property, plant and equipment remains unchanged and continues to be a key audit matter.

We continued to focus on the Oyu Tolgoi CGU due to the significance of the operation and associated complexity, which has a heightened risk of impairment or impairment reversal. The risk associated to the Kitimat CGU identified in the previous year has reduced as production has ramped back up towards full capacity and is therefore not a key audit matter in the current year.

Our focus has been on changes in the forecast long-term commodity prices, in addition to the ongoing development of the underground mine and its operational performance, which were the key factors driving our view of risks.

Description of the Key Audit Matter	Our response to the risk
The Group has determined that there were no indicators of impairment or impairment reversal of property, plant and equipment in the Oyu Tolgoi CGU. The assessment of whether indicators of impairment or impairment reversal exist over the Oyu Tolgoi CGU is a key audit matter due to: • the history of impairment in the CGU meaning it is more susceptible to further indicators of impairment or impairment reversal; • the level of auditor judgement required in challenging the Group's determination that there were no indicators of impairment or impairment reversal, requiring involvement of valuation specialists alongside our senior audit team members. We focussed on the internal and external factors impacting the Oyu Tolgoi CGU, including: • the ramp up of underground mine production as a key development and operational milestone; • volatility in forecast long term commodity prices which are subject to greater uncertainty in the current economic environment; and • outcome of ongoing refinements to the future mine design of Panel 1 and 2 and the associated cost. Refer to note 4	Our procedures to address the risk included: Control operation Evaluating the design, implementation and operating effectiveness of certain internal controls of the Group related to the identification of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi CGU. Tests of detail We performed the following procedures, amongst others, to challenge the Group's determination of indicators of impairment or impairment reversal: • evaluated the Group's assessment with reference to our knowledge of the Group, our industry experience, current economic conditions and requirements of IAS 36 – Impairment of Assets; • involved our valuation professionals with specialised skills and knowledge who assisted us in assessing the forecast long-term commodity prices used in the Group's assessments, by comparing them to, and considering changes in, market observable price forecasts; and • evaluated the impact of the underground progress in the period and refinements to the future mine design of Panel 1 and 2, by comparing the Group's assessment of timing, production ramp up and capital costs with the equivalent assumptions in the FY22 indicators of impairment or impairment reversal assessment. We also inquired of operational management to corroborate certain changes in assumptions, and compared actual outcomes in the year to the Group's plans. Assessing disclosures We assessed the related disclosures in note 4, for compliance with the relevant accounting and reporting requirements and against the results of our work.

[b] In the previous year, conclusion on the KAMs included indicator of impairment or impairment reversal of property, plant and equipment for the Kitimat CGU

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4. KEY AUDIT MATTERS (CONT'D)

4.2 Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU') (cont'd)

Communications with the Rio Tinto Audit and Risk committee

Our discussions with and reporting to the Audit and Risk committee included:

- Factors listed above which impacted our assessment of the risk for the Oyu Tolgoi CGU;
- Key procedures performed to respond to the risk as listed above; and
- Involvement of our own specialist, who assisted us in assessing the forecast commodity prices.

Areas of particular auditor judgement

Particular auditor judgement was required to assess whether certain internal and external factors impacting the Oyu Tolgoi CGU, in particular the volatility on forecast long-term commodity prices and ramp up of underground mine production as a key development and operational milestone for the Oyu Tolgoi CGU, result in indicators of impairment or impairment reversal.

Our results

Based on the risk identified and our procedures performed, we found the Group's determination that there were no indicators of impairment or impairment reversal in respect of the Oyu Tolgoi cash generating unit (CGU) to be acceptable.

4.3 Evaluation of recoverability of Rio Tinto plc's investments in subsidiaries (KPMG UK only)

Financial statement elements			Our assessment of risk vs FY22	Our results
	FY23	FY22		
Carrying value of Rio Tinto plc's investments in Group companies	US$36,218m	US$36,250m	↔ Our assessment of risk of recoverability of Rio Tinto plc's investment in its subsidiaries of the Group has remained consistent and remains as a Key Audit Matter for the UK Parent company.	FY23: Acceptable (FY22: Acceptable)

Description of the Key Audit Matter	Our response to the risk
In respect of KPMG UK's audit of the UK parent company, Rio Tinto plc, the sole key audit matter relates to the recoverability of its investment in its subsidiaries of the Group. The carrying amount of the UK parent Company's investments in subsidiaries as noted in Note B of the Rio Tinto plc company financial statements represents 87.7% (FY22: 70.7%) of the UK parent Company's total assets. Their recoverability is not at a high risk of significant misstatement or subject to significant judgement. However, due to the value of these investments in the context of the UK parent company's financial statements, this is the area that had the greatest effect overall on our UK parent company audit. Refer to note B of the Rio Tinto plc company financial statements on page 262	We performed the tests below rather than seeking to rely on any of the company's controls because the nature of the balance is such that we would expect to obtain audit evidence primarily through the detailed procedures described. Our procedures to address the risk included: Tests of detail We performed the following procedures: • compared the carrying amount of its investments with the relevant subsidiaries' draft balance sheet to identify whether their net assets, being an approximation of their minimum recoverable amount, were in excess of their carrying amount; and • evaluated the UK parent company's considerations of indicators of impairment or impairment reversal of the Group's CGUs within the subsidiaries owned by the UK parent company.

Communications with the Audit and Risk committee

We reported to the Audit and Risk committee that based on the risk identified and our procedures performed, we found the company's conclusion that there is no impairment of its investments in subsidiaries to be acceptable.

Areas of particular auditor judgement

There were no areas of particular auditor judgement.

Our results

We found the company's conclusion that there is no impairment of its investments in subsidiaries to be acceptable.

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5. KPMG UK'S REPORTING ON OUR ABILITY TO DETECT IRREGULARITIES, AND OUR RESPONSE

Fraud – Identifying and responding to risks of material misstatements due to fraud

Fraud risk assessment	To identify risks of material misstatement due to fraud ("fraud risks") we assessed events or conditions that could indicate an incentive or pressure by the Directors and other management to commit, or provide an opportunity to commit, fraud. Our risk assessment procedures included:
	• Inquiries of the Directors, other management, internal audit and the Audit and Risk committee, including obtaining and reviewing underlying documentation, concerning the Group's policies and procedures relating to:
	  ○ detecting and responding to the risks of fraud; and
	  ○ internal controls established to mitigate risks related to fraud;
	• Inquiries of the Directors, other management, internal audit and the Audit and Risk committee as to whether they had knowledge of any actual, suspected or alleged fraud;
	• Reading Board and Audit and Risk Committee minutes;
	• Considering remuneration incentive schemes and performance targets for Directors and other management, including the flexed and unflexed underlying earnings and STIP free cash flow target ranges for executive remuneration;
	• Using analytical procedures to identify any unusual or unexpected relationships between financial statement line items; and
	• Discussions among the engagement team regarding how and where fraud might occur in the financial statements and any potential indicators of fraud. The engagement team includes audit partners and staff who have extensive experience of working with companies in the mining sector, and this experience was relevant to the discussion about where fraud risks may arise. The discussions also involved our own forensic specialists to assist us in identifying fraud risks based on discussions of the circumstances of the Group, who advised the engagement team of fraud schemes that had arisen in similar sectors and industries and participated in the initial fraud risk assessment discussions.

Risk communications	We communicated identified fraud risks throughout the audit team and remained alert to any indications of fraud throughout the audits. This included communication from the group audit team to component audit teams of relevant fraud risks identified at the group level and requests to component audit teams to report to the group audit team any instances of fraud that could give rise to a material misstatement of the Group financial statements.
Fraud risks	As required by UK auditing standards we addressed the risk of management override of controls and the risk of fraudulent revenue recognition. In particular we considered the risk that revenue is recorded in the wrong period, specifically overstated and the risk that Group and component management may be in a position to make inappropriate accounting entries, and the risk of bias in accounting estimates and judgements.
Procedures to address fraud risks	Our audit procedures included evaluating the design, implementation, and operating effectiveness of internal controls relevant to mitigate these risks. We also performed substantive audit procedures including: • Comparing journal entries to supporting documentation for a selection based on risk including, for example, those posted by senior finance management, those posted to unusual accounts or those containing unusual journal descriptions; • Assessing significant accounting estimates for bias; • Obtaining third party confirmations for all material cash balances; and • Assessing when revenue was recognised, particularly focusing on revenue recognised in the days before year end date, and whether it was recognised in the appropriate year in line with the requirements of the accounting standards. Work on the fraud risks was performed by a combination of component auditors and the group audit team.

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5. KPMG UK'S REPORTING ON OUR ABILITY TO DETECT IRREGULARITIES, AND OUR RESPONSE (CONT'D)

Laws and regulations – Identifying and responding to risks of material misstatement relating to compliance with laws and regulations

Risk assessment	We identified areas of laws and regulations that could reasonably be expected to have a material effect on the financial statements: • from our general commercial and mining sector experience; • through discussion with the Directors and other management (as required by auditing standards); • from inspection of the Group's regulatory and legal correspondence; and • discussed with the Directors and other management about the policies and procedures regarding compliance with laws and regulations. As the Group operates in a regulated environment, our assessment of risks of material misstatement also involved gaining an understanding of control environment including the Group's higher-level procedures for complying with regulatory requirements.
Risk communications	Communication of identified laws and regulations risks was made throughout our team, and we remained alert to any indications of non-compliance throughout the audits. This included communication from the group audit team to all component audit teams of relevant laws and regulations identified at group level, and a request for component auditors to report to the group audit team any instances of non-compliance with laws and regulations that could give rise to a material misstatement of the Group financial statements.
Direct laws context and link to the audits	The potential effect of these laws and regulations on the financial statements varies considerably. Firstly, the Group is subject to laws and regulations that directly affect the financial statements including: • financial reporting legislation (including related companies' legislation); • distributable profits legislation; • taxation legislation (direct and indirect); and • pensions legislation. We assessed the extent of compliance with these laws and regulations as part of our procedures on the related financial statement items.
Most significant indirect law/regulation areas	Secondly, the Group is subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation or harm to the Group's license to operate. We identified the following areas as those most likely to have such an effect: • anti-bribery, fraud and corruption; • health and safety legislation; • employment and social security legislation; • environmental protection legislation; and • competition legislation. Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the Directors and other management and inspection of regulatory and legal correspondence, if any. Therefore, if a breach of law or regulations is not disclosed to us or evident from relevant correspondence, our audits will not detect that breach.
Known actual matters	For the contingent liabilities disclosed in note 37 we assessed disclosures against our understanding from legal confirmations received from external counsel.

Context

Context of the ability of the audits to detect fraud or breaches of law or regulation	Owing to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audits in accordance with auditing standards. For example, the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely the inherently limited procedures required by UK auditing standards would identify it. In addition, as with any audit, there remained a higher risk of non-detection of fraud, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. Our audit procedures are designed to detect material misstatement. We are not responsible for preventing non-compliance or fraud and cannot be expected to detect non-compliance with all laws and regulations.

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6. OUR DETERMINATION OF MATERIALITY

The scope of our audits was influenced by our application of materiality. We set quantitative thresholds and use qualitative considerations to help us determine the scope of our audits and the nature, timing and extent of our procedures, and in evaluating the effect of misstatements, both individually and in the aggregate, on the distinct financial statements as a whole.

US$700m **(FY22: US$700m)** **Materiality for the Group financial statements as a whole**	**What we mean by materiality for the financial statements as a whole** A quantitative reference for the purpose of planning and performing our audits. **Basis for determining materiality and judgements applied** We have determined overall materiality for the Group financial statements as a whole at US$700m (FY22: US$700m). For both FY23 and FY22, we determined profit before taxation to be an appropriate benchmark ('the benchmark') and considered qualitative factors that impact our assessment of materiality. In FY23, we adjusted profit before taxation to exclude certain items that were significant and did not represent normal, continuing operations of the Group in determining our materiality ('normalised Group profit before taxation'). This exclusion was US$936m related to the net pre-tax impairment charge as noted in Note 4 of the Group's financial statements. In FY22, no items met our assessment for adjustment. The Group materiality for FY23 represented 4.8% of the normalised Group profit before taxation (FY22: 3.8% of Group profit before taxation), which falls within KPMG's acceptable range of up to 5% for public interest entities. KPMG UK has determined the materiality for Rio Tinto plc company financial statements as a whole at US$410m (FY22: US$500m). Consistent with FY22, we determined total assets remained an appropriate benchmark for determining materiality for Rio Tinto plc company financial statements. The materiality represented 1% in FY23 (FY22: 1%) of this benchmark.
US$455m **(FY22: US$455m)** **Performance materiality for the Group financial statements**	**What we mean by performance materiality** Our procedures on individual account balances and disclosures were performed to a lower threshold, performance materiality, so as to reduce to an acceptable level the risk that individually immaterial misstatements in individual account balances might add up to a material amount across the financial statements as a whole. **Basis for determining performance materiality and judgements applied** We have considered performance materiality at a level of 65% (FY22: 65%) of materiality for the Rio Tinto Group financial statements as a whole to be appropriate, equating to US$455m (FY22:US$455m). We continued to apply this percentage in our determination of performance materiality based on our expectation of control risk at the start of the audit and based on the findings of previous audits. We have considered performance materiality at a level of 75% (FY22: 75%) of materiality for the Rio Tinto plc company financial statements as a whole to be appropriate, equating to US$307m (FY22:US$375m). KPMG UK applied this percentage in the determination of performance materiality because we did not identify any factors indicating an elevated level of risk.
US$35m **(FY22: US$35m)** **Audit misstatement posting threshold for the Group financial statements**	**What we mean by Audit misstatement posting threshold** This is the amount below which identified misstatements are considered to be clearly trivial from a quantitative point of view. We may become aware of misstatements below this threshold which could alter the nature, timing and extent of our audit procedures, for example if we identify smaller misstatements which are indicators of fraud. This is also the amount above which all misstatements identified are communicated to Rio Tinto's Audit and Risk committee. **Basis for determining the audit misstatement reporting threshold and judgements applied** We set our audit misstatement posting threshold at 5% (FY22: 5%) of our materiality for each of the Group financial statements and the UK parent company financial statements. This equated to US$35m (FY22: US$35m) for the Group and US$20m (FY22: US$25m) for the UK parent company audit. We also report to the Audit and Risk committee any items that warrant reporting on qualitative grounds.

Materiality for the Group financial statements was set at US$700m (FY22: US$700m) which compared to the following main Group financial statement caption amounts as follows:

		Total Group revenue	Group profit before taxation	Total Group assets
FY23	Group financial statement caption	US$54,041m	US$13,785m	US$103,549m
	Group materiality as % of caption	1.3%	5.0%	0.7%
FY22	Group financial statement caption	US$55,554m	US$18,662m	US$96,774m
	Group materiality as % of caption	1.3%	3.8%	0.7%

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7. THE SCOPE OF OUR AUDITS

What we mean

How we determined the procedures to be performed across the Group.

In order to determine the work performed at a component, and after performing relevant risk assessment and planning procedures, we identified those components of the Group which we considered to be of individual financial significance, those which were significant due to risk and those remaining components on which we required procedures to be performed to provide us with the evidence in order to conclude on the group financial statements as a whole.

We determined individually financially significant components as those contributing at least 10% (FY22: 10%) of Total revenue or Total assets. We identified three (FY22: four) components as individually financially significant components and performed full scope audits on these components.

We further identified three (FY22: three) components as significant due to risk of material misstatement associated only to revenue and no components as significant due to risk of material misstatement associated only to provision for closedown, restoration, and environmental obligations in the current year (FY22: one). Of the three (FY22: four) components identified as significant due to risk, we performed full scope audits for two components (FY22: two) and performed audits of one or more account balances on one component (FY22: two).

In addition, to enable us to obtain sufficient appropriate audit evidence for the group financial statements as a whole, we selected a further nine (FY22: nine) components on which to perform procedures. Of these components, we performed full scope audits for 4 components (FY22: three) and performed audits of one or more account balances on 5 components (FY22: six).

	Range of component materialities applied FY23	Number of components	
		FY23	FY22
Full scope audits	US$75m - US$425m (FY22: US$75m - US$425m)	9	9
Audits of one or more account balances	US$75m - US$150m (FY22: US$65m - US$150m)	6	8
Total		**15**	**17**

Group scope

Certain Group sales and purchase transactions that originate in various countries are processed in Singapore and Delhi respectively where we have established audit teams to perform testing on behalf of our component teams. Our audit teams in Singapore and Delhi, while performing procedures on transactions, also test key underlying Group controls. We have also performed audit procedures centrally across the Group, in the following key areas:

- Testing of IT systems and configurations;
- Consolidation of the financial information;
- Climate considerations and impact on the financial statements;
- Identifying journal entries with a defined high-risk criteria; and
- Pensions and post-retirement benefits.

The components within the scope of our work accounted for the following percentages of the Group's total revenue, profit before taxation and total assets:

	Total Group revenue	Group profit before taxation	Total Group assets
Full scope audits	84% (FY22: 82%)	68% (FY22: 69%)	78% (FY22: 71%)
Audits of one or more account balances	5% (FY22: 5%)	14% (FY22: 13%)	5% (FY22: 16%)
Remaining components	11% (FY22: 13%)	18% (FY22: 18%)	17% (FY22: 13%)

None of the remaining components individually represented more than 3% (FY22: 3%) of any of total Group revenue, total profits and losses making up Group profit before taxation, or Group assets. The work on 14 of the 15 in-scope components (FY22: 16 of the 17 components) was performed by KPMG member firms, with the remaining component audited by a non-KPMG component auditor. In addition, we have performed Group level analysis on the remaining components to determine whether further risks of material misstatement existed in those components. The audit of the UK parent company, Rio Tinto plc company financial statements was performed by the group audit team.

Approach to controls

For the audit of the Group financial statements, we were able to rely upon the Group's internal controls over financial reporting in several areas of our audit, where our controls testing supported this approach, which enabled us to reduce the scope of our substantive audit work; in the other areas the scope of the audit work performed was fully substantive. For the audit of the Rio Tinto plc company financial statements, the scope of the audit work performed was fully substantive.

Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

7. THE SCOPE OF OUR AUDIT (CONT'D)

Group audit team oversight

What we mean

The extent of the Group audit team's involvement in component audits.

In working with component auditors, we:

- Held planning calls with component audit teams to discuss the significant areas of the audit relevant to the components, including the key audit matters in respect of:
  - Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU'); and
  - Evaluation of specific provisions for close-down, restoration and environmental obligations ('closure provisions').
- Issued group audit instructions to component auditors on the scope of their work, which included significant areas to be covered, relevant risks and the information to be reported back. The group audit team approved the component materialities, which ranged from US$75m to US$425m, having regard to the mix of size and risk profile across the components.
- Held risk workshops with component audit teams before the commencement of the final phases of the audit.
- As a part of determining and executing the audit plan and strategy, the group audit team physically visited various Rio Tinto sites with the component audit teams in the current year. This was in addition to frequent video conferences held throughout the audit where we discussed and challenged component teams' key observations, inspected key work papers related to significant risks and assessed the conclusions and consistencies between reported findings and work performed.

Sites visited along with our component auditors, where we also held meetings with relevant Rio Tinto personnel:

	FY23	FY22
Sites visited	• Pilbara operations • Oyu Tolgoi operations • Kitimat operations • Iron Ore Canada operations • Group services hub in Delhi, Brisbane, Perth and Montreal • Commercial Hub in Singapore	• Pilbara operations • Oyu Tolgoi operations • Saguenay operations • Kennecott Utah operations • Weipa operations • Group services hub in Delhi, Brisbane, Perth and Montreal

8. KPMG AUSTRALIA'S REPORT ON THE REMUNERATION REPORT

Opinion

In our opinion, the Remuneration Report information of Rio Tinto Limited for the year ended 31 December 2023 complies with Section 300A of the Australian Corporations Act 2001, as amended by the ASIC Class Order.

Our responsibilities

KPMG Australia has audited the Remuneration Report information of Rio Tinto Limited, required by the Australian Corporations Act 2001, included in pages 113 to 145 of the Directors' report for the year ended 31 December 2023. Our responsibility is to express an opinion on the Remuneration Report information, based on our audit conducted in accordance with Australian Auditing Standards.

Directors' responsibilities

The Directors of Rio Tinto Limited are responsible for the preparation and presentation of the Remuneration Report information in accordance with Section 300A of the Corporations Act 2001.

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Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

9. OTHER INFORMATION IN THE ANNUAL REPORT

The Directors are responsible for the other information presented in the Annual Report together with the financial statements. Other Information is financial and non-financial information in Rio Tinto's annual report which is provided in addition to the financial statements and the Auditors' Report. Our opinions on the financial statements do not cover the other information and, accordingly, we do not express an audit opinion or, except as explicitly stated below, in section 8, and on pages 344 to 346 any form of assurance conclusion thereon.

All other information

Our responsibility	Our reporting
Our responsibility is to read the other information and, in doing so, consider whether, based on our audit work, the information therein is materially inconsistent with the financial statements, our audit knowledge or otherwise appears to be materially misstated.	Based solely on that work we have not identified material misstatements or inconsistencies in the other information.

Strategic report and directors' report (KPMG UK only)

Our responsibility and reporting

Based solely on our work on the other information described above we report to you as follows:

- we have not identified material misstatements in the strategic report and the directors' report;
- in our opinion the information given in those reports for FY23 is consistent with the financial statements; and
- in our opinion those reports have been prepared in accordance with the Companies Act 2006.

Directors' remuneration report (KPMG UK only)

Our responsibility	Our reporting
KPMG UK is required to form an opinion as to whether the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.	In our opinion the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.

Corporate governance disclosures (KPMG UK only)

Our responsibility	Our reporting
We are required to perform procedures to identify whether there is a material inconsistency between the financial statements and our audit knowledge, and: • the Directors' statement that they consider that the annual report and financial statements taken as a whole is fair, balanced and understandable, and provides the information necessary for the Rio Tinto plc's members to assess the Group's position and performance, business model and strategy; • the section of the annual report describing the work of the Audit and Risk committee, including the significant issues that the Audit and Risk committee considered in relation to the financial statements, and how these issues were addressed; and • the section of the annual report that describes the review of the effectiveness of the Group's risk management and internal control systems.	Based on those procedures, we have concluded that each of these disclosures is materially consistent with the financial statements and our audit knowledge.
We are also required to review the part of Corporate Governance Statement relating to the Group's compliance with the provisions of the UK Corporate Governance Code specified by the UK Listing Rules for our review.	We have nothing to report in this respect.

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Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

9. OTHER INFORMATION IN THE ANNUAL REPORT (CONT'D)

Other matters on which we are required to report by exception (KPMG UK only)

Our responsibility

Under the Companies Act 2006, we are required to report to you if, in our opinion:

- adequate accounting records have not been kept by the UK parent company, or returns adequate for our audits have not been received from branches not visited by us; or
- the UK parent company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of Directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audits.

Our reporting

We have nothing to report in these respects.

10. RESPECTIVE RESPONSIBILITIES

Directors' responsibilities for the financial statements

As explained more fully in their statement set out on page 266 of the financial statements, the Directors are responsible for: the preparation of the financial statements, including being satisfied that they give a true and fair view in accordance with the relevant financial reporting frameworks; implementing such internal control as they determine is necessary to enable the preparation of financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error; assessing the Group, Rio Tinto plc's and Rio Tinto Limited's ability to continue as a going concern and whether the use of the going concern basis of accounting is appropriate, disclosing, as applicable, matters related to going concern; and using the going concern basis of accounting unless they either intend to liquidate the Group, Rio Tinto plc and Rio Tinto Limited or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audits of the financial statements

Our objectives are to obtain reasonable assurance about whether each of the distinct financial statements as a whole are free from material misstatement, whether due to fraud or other irregularities, or error, and to issue our opinions in an auditor's report. Reasonable assurance is a high level of assurance but does not guarantee that an audit conducted in accordance with ISAs (UK) or ASAs will always detect a material misstatement when it exists. Misstatements can arise from fraud, other irregularities or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

A fuller description of KPMG UK's responsibilities is provided on the FRC's website at www.frc.org.uk/auditorsresponsibilities. A further description of KPMG Australia's responsibilities for the audit of the Group financial Statements is located at the Auditing and Assurance Standards Board website at: https://www.auasb.gov.au/admin/file/content102/c3/ar1_2020.pdf. This description forms part of our Australian auditor's report.

The UK Parent Company is required to include these financial statements in an annual financial report prepared using Disclosure Guidance and Transparency Rule ("DTR") 4.1.17R and 4.1.8R. Our auditors' report provides no assurance over whether the annual financial report has been prepared in accordance with that format.

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Independent auditors' reports

of KPMG LLP ('KPMG UK') to the members of Rio Tinto plc
and of KPMG ('KPMG Australia') to the members of Rio Tinto Limited

11. THE PURPOSE OF OUR AUDIT WORK AND TO WHOM WE OWE OUR RESPONSIBILITIES

KPMG UK's report is made solely to Rio Tinto plc's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and the terms of our engagement by that company. Our audit work has been undertaken so that we might state to the members of Rio Tinto plc those matters we are required to state to them in an auditor's report, and the further matters we are required to state to them in accordance with the terms agreed with Rio Tinto plc, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto plc's members, as a body, for our audit work, for this report, or for the opinion we have formed.

KPMG Australia's report is made solely to Rio Tinto Limited's members, as a body, in accordance with the Australian Corporations Act 2001 as amended by the ASIC Class Order dated 16 July 2021. Our audit work has been undertaken so that we might state to the members of Rio Tinto Limited those matters we are required to state to them in an auditor's report, and the further matters we are required to state to them in accordance with the terms agreed with Rio Tinto Limited, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto Limited's members, as a body, for our audit work, for this report, or for the opinions we have formed.



Jonathan Downer (Senior Statutory Auditor)
for and on behalf of KPMG LLP, Statutory Auditor
Chartered Accountants
London, United Kingdom
21 February 2024



Trevor Hart
Partner
KPMG
Perth, Australia
21 February 2024

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Lead Auditor's Independence Declaration

under Section 307C of the Corporations Act 2001

To the Directors of Rio Tinto Limited

I declare that, to the best of my knowledge and belief, in relation to the audit of Rio Tinto Limited for the financial year ended 31 December 2023 there have been:

i. no contraventions of the auditor independence requirements as set out in the Australian *Corporations Act 2001* in relation to the audit; and

ii. no contraventions of any applicable code of professional conduct in relation to the audit.

This declaration is in respect of Rio Tinto Limited and the entities it controlled during the period.

KPMG

KPMG

Trevor Hart
Partner
Perth
21 February 2024
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Rio Tinto Financial Information by Business Unit

	Rio Tinto interest %	Segmental revenue[c] for the year ended 31 December			Underlying EBITDA[c] for the year ended 31 December			Depreciation and amortisation for the year ended 31 December			Underlying earnings[c] for the year ended 31 December		
		2023 US$m	2022 US$m Adjusted[a]	2021 US$m Adjusted[a]	2023 US$m	2022 US$m Adjusted[a]	2021 US$m Adjusted[a]	2023 US$m	2022 US$m Adjusted[a]	2021 US$m Adjusted[a]	2023 US$m	2022 US$m Restated[a][b]	2021 US$m Restated[a][b]
Iron Ore													
Pilbara	(d)	**30,867**	29,313	39,111	**19,828**	18,474	27,837	**2,128**	2,011	2,003	**11,945**	11,106	17,568
Dampier Salt	68.4	**422**	352	298	**120**	56	39	**21**	19	20	**49**	19	10
Evaluation projects/other	(e)	**2,701**	2,711	2,147	**57**	33	(81)	**–**	–	–	**(89)**	53	(79)
Intra-segment	(e)	**(1,741)**	(1,470)	(1,974)	**(31)**	49	(203)	**–**	–	–	**(23)**	35	(152)
Total Iron Ore Segment		**32,249**	30,906	39,582	**19,974**	18,612	27,592	**2,149**	2,030	2,023	**11,882**	11,213	17,347
Aluminium													
Bauxite		**2,390**	2,396	2,203	**662**	618	619	**373**	361	328	**141**	101	187
Alumina		**2,882**	3,215	2,743	**136**	289	569	**170**	200	165	**(56)**	18	307
North American Aluminium[m]		**6,581**	7,561	6,706	**1,480**	2,426	2,592	**710**	704	694	**566**	1,266	1,454
Pacific Aluminium		**2,613**	3,102	2,947	**169**	497	693	**165**	135	103	**18**	261	396
Intra-segment and other		**(2,953)**	(3,138)	(2,718)	**(11)**	12	14	**–**	–	(1)	**(15)**	(8)	192
Integrated operations		**11,513**	13,136	11,881	**2,436**	3,842	4,487	**1,418**	1,400	1,289	**654**	1,638	2,536
Other product group items		**772**	973	814	**9**	25	26	**–**	–	–	**5**	15	17
Product group operations		**12,285**	14,109	12,695	**2,445**	3,867	4,513	**1,418**	1,400	1,289	**659**	1,653	2,553
Evaluation projects/other		**–**	–	–	**(163)**	(195)	(131)	**–**	–	–	**(121)**	(149)	(101)
Total Aluminium Segment		**12,285**	14,109	12,695	**2,282**	3,672	4,382	**1,418**	1,400	1,289	**538**	1,504	2,452
Copper													
Kennecott	100.0	**1,430**	1,923	2,528	**178**	857	1,142	**500**	624	538	**(328)**	12	531
Escondida	30.0	**2,756**	2,628	2,935	**1,619**	1,641	2,013	**355**	330	348	**684**	798	1,003
Oyu Tolgoi	(f)	**1,625**	1,424	1,971	**639**	449	1,213	**476**	194	213	**161**	130	326
Product group operations		**5,811**	5,975	7,434	**2,436**	2,947	4,368	**1,331**	1,148	1,099	**517**	940	1,860
Evaluation projects/other[a]		**867**	724	393	**(532)**	(382)	(341)	**5**	5	4	**(384)**	(253)	(219)
Total Copper Segment		**6,678**	6,699	7,827	**1,904**	2,565	4,027	**1,336**	1,153	1,103	**133**	687	1,641
Minerals													
Iron Ore Company of Canada	58.7	**2,500**	2,818	3,526	**942**	1,381	2,026	**214**	207	197	**293**	475	734
Rio Tinto Iron & Titanium	(g)	**2,172**	2,366	1,791	**582**	799	470	**222**	224	213	**221**	374	176
Rio Tinto Borates	100.0	**802**	742	592	**212**	155	89	**58**	54	51	**125**	80	32
Diamonds	(h)	**444**	816	501	**44**	330	180	**35**	45	12	**26**	151	99
Product group operations		**5,918**	6,742	6,410	**1,780**	2,665	2,765	**529**	530	473	**665**	1,080	1,041
Evaluation projects/other		**16**	12	71	**(366)**	(246)	(162)	**1**	1	1	**(353)**	(226)	(153)
Total Minerals Segment		**5,934**	6,754	6,481	**1,414**	2,419	2,603	**530**	531	474	**312**	854	888
Reportable segments total		**57,146**	58,468	66,585	**25,574**	27,268	38,604	**5,433**	5,114	4,889	**12,865**	14,258	22,328
Simandou iron ore project	(i)	**–**	–	–	**(539)**	(189)	(58)	**–**	–	–	**(160)**	(145)	(43)
Other operations	(j)	**142**	192	251	**(39)**	(16)	(28)	**290**	272	199	**(250)**	(347)	(88)
Inter-segment transactions		**(231)**	(256)	(268)	**8**	24	42				**4**	26	19
Central pension costs, share-based payments, insurance and derivatives					**168**	377	110				**48**	374	133
Restructuring, project and one-off costs					**(190)**	(173)	(80)				**(112)**	(85)	(53)
Central costs					**(990)**	(766)	(613)	**95**	94	106	**(898)**	(651)	(585)
Central exploration and evaluation					**(100)**	(253)	(257)				**(60)**	(209)	(215)
Net interest											**318**	138	(95)
Underlying EBITDA/earnings					**23,892**	26,272	37,720				**11,755**	13,359	21,401
Items excluded from underlying EBITDA/earnings					**(1,257)**	269	(811)				**(1,697)**	(967)	(286)
Reconciliation to Group income statement													
Share of equity accounted unit sales and intra-subsidiary/equity accounted unit sales		**(3,016)**	(2,850)	(3,073)									
Impairment charges					**(936)**	(52)	(269)						
Depreciation and amortisation in subsidiaries excluding capitalised depreciation					**(4,976)**	(4,871)	(4,525)						
Depreciation and amortisation in equity accounted units					**(484)**	(470)	(497)	**(484)**	(470)	(497)			
Taxation and finance items in equity accounted units					**(741)**	(640)	(759)						
Finance items					**(1,713)**	(1,846)	(26)						
Consolidated sales revenue/profit before taxation/ depreciation and amortisation/net earnings		**54,041**	55,554	63,495	**13,785**	18,662	30,833	**5,334**	5,010	4,697	**10,058**	12,392	21,115

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	Rio Tinto interest %	Capital expenditure[c][k] for the year ended 31 December			Operating assets[l] as at 31 December			Employees for the year ended 31 December		
		2023 US$m	2022 US$m Adjusted[a]	2021 US$m Adjusted[a]	**2023 US$m**	2022 US$m Restated[a][b]	2021 US$m Restated[a][b]	**2023**	2022 Adjusted[a]	2021 Adjusted[a]
Iron Ore										
Pilbara	(d)	**2,563**	2,906	3,928	**17,959**	17,785	17,113	**15,181**	14,319	12,810
Dampier Salt	68.4	**25**	34	19	**146**	153	159	**430**	436	388
Evaluation projects/other	(e)	**–**	–	–	**780**	835	1,283	**22**	20	16
Intra-segment	(e)	**–**	–	–	**(243)**	(220)	(255)	**–**	–	–
Total Iron Ore Segment		**2,588**	2,940	3,947	**18,642**	18,553	18,300	**15,633**	14,775	13,214
Aluminium										
Bauxite		**159**	161	155	**2,649**	2,458	2,591	**3,008**	2,966	2,972
Alumina		**325**	356	362	**1,315**	2,400	2,287	**2,600**	2,626	2,463
North American Aluminium [m]		**748**	752	690	**10,582**	9,343	9,734	**6,886**	6,693	6,280
Pacific Aluminium		**99**	108	93	**340**	159	218	**2,563**	2,480	2,450
Intra-segment and other		**–**	–	–	**997**	629	839	**256**	234	185
Total Aluminium Segment		**1,331**	1,377	1,300	**15,883**	14,989	15,669	**15,313**	14,999	14,350
Copper										
Kennecott	100.0	**735**	563	411	**2,606**	2,027	2,513	**2,411**	2,176	2,051
Escondida	30.0	**–**	–	–	**2,844**	2,792	2,515	**1,203**	1,205	1,166
Oyu Tolgoi	(f)	**1,230**	1,056	911	**15,334**	13,479	9,000	**4,515**	4,060	3,508
Product group operations		**1,965**	1,619	1,322	**20,784**	18,298	14,028	**8,129**	7,441	6,725
Evaluation projects/other [a]		**11**	3	6	**262**	165	210	**333**	245	228
Total Copper Segment		**1,976**	1,622	1,328	**21,046**	18,463	14,238	**8,462**	7,686	6,953
Minerals										
Iron Ore Company of Canada	58.7	**364**	366	377	**1,347**	1,147	1,077	**3,206**	3,075	2,877
Rio Tinto Iron & Titanium	(g)	**240**	217	184	**3,386**	3,351	3,367	**4,415**	4,273	4,129
Rio Tinto Borates	100.0	**49**	34	43	**502**	496	491	**1,013**	1,009	978
Diamonds	(h)	**66**	48	25	**29**	(84)	4	**871**	853	646
Product group operations		**719**	665	629	**5,264**	4,910	4,939	**9,505**	9,210	8,630
Evaluation projects/other		**27**	14	15	**873**	874	43	**328**	224	136
Total Minerals Segment		**746**	679	644	**6,137**	5,784	4,982	**9,833**	9,434	8,766
Reportable segments total		**6,641**	6,618	7,219	**61,708**	57,789	53,189	**49,241**	46,894	43,283
Simandou iron ore project	(i)	**266**	–	–	**738**	(22)	13	**571**	343	101
Other operations	(j)	**57**	53	(13)	**(2,634)**	(1,850)	(1,489)	**665**	630	297
Inter-segment transactions					**20**	12	(12)			
Other items		**113**	79	117	**(1,015)**	(1,107)	(1,330)	**6,697**	5,859	5,664
Total		**7,077**	6,750	7,323	**58,817**	54,822	50,371	**57,174**	53,726	49,345
Add back: Proceeds from disposal of property, plant and equipment		**9**	–	61						
Total purchases of property, plant & equipment and intangibles as per cash flow statement		**7,086**	6,750	7,384						
Add: Net (debt)/cash					**(4,231)**	(4,188)	1,576			
Equity attributable to owners of Rio Tinto					**54,586**	50,634	51,947			
Total employees								**57,174**	53,726	49,345

Notes to Financial Information by Business Unit

Business units are classified according to the Group's management structure. Our management structure is based on product groups together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to our Chief Executive who is the chief operating decision maker and is responsible for allocating resources and assessing performance of the operating segments. Finance costs and net debt are managed on a Group-wide basis and are therefore excluded from the segmental results.

The disclosures in this note include certain non-IFRS financial measures (non-IFRS measures). For more information on the non-IFRS measures used by the Group, including definitions and calculations, refer to section entitled alternative performance measures (pages 289 to 294).

(a) The financial information by business unit has been adjusted to reflect a change in management responsibility for the Simandou iron ore project from Copper to the Chief Technical Officer. As a result, we have moved Simandou outside of reportable segments and accordingly adjusted prior period comparatives.

(b) Underlying earnings for the year ended 31 December 2022 and 2021 and operating assets as at 31 December 2022 and 2021 have been restated for the impact of narrow-scope amendments to IAS 12. Refer to page 166 for details.

(c) Segmental revenue, Underlying EBITDA and Capital expenditure are defined and calculated in note 1 from pages 173 to 175. Underlying Earnings is defined and calculated within the Alternative performance measures section on pages 290 and 291.

(d) Pilbara represents the Group's 100% holding in Hamersley, 50% holding in Hope Downs Joint Venture, 54% holding in Western Range Joint Venture and 65% holding in Robe River Iron Associates. The Group's net beneficial interest in Robe River Iron Associates is 53%, as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary.

(e) Segmental revenue, Underlying EBITDA, Underlying earnings and Operating assets within Evaluation projects/other include activities relating to the shipment and blending of Pilbara and Iron Ore Company of Canada (IOC) iron ore inventories held portside in China and sold to domestic customers. Transactions between Pilbara and our portside trading business are eliminated through the Iron Ore "intra-segment" line and transactions between IOC and the portside trading business are eliminated through "inter-segment transactions".

(f) Until 16 December 2022, our interest in Oyu Tolgoi was held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset was its 66% investment in Oyu Tolgoi LLC, which owned the Oyu Tolgoi copper-gold mine. Following the purchase of TRQ we now directly hold a 66% investment in Oyu Tolgoi LLC.

(g) Includes our interests in Rio Tinto Iron and Titanium Quebec Operations (100%), QIT Madagascar Minerals (QMM, 80%) and Richards Bay Minerals (attributable interest of 74%).

(h) Includes our interests in Argyle (100%) residual operations which relate to the sale of remaining inventory and Diavik. Until 18 November 2021 we recognised our 60% share of assets, revenue and expenses relating to the Diavik joint venture. Liabilities were recognised according to Diavik Diamond Mine Inc's contractual obligations at 100%, with a corresponding 40% receivable or contingent asset representing the co-owner's share where applicable. Post acquisition, we now consolidate (100%) of the Diavik.

(i) Rio Tinto Simfer UK Limited (which is wholly owned by the Group) holds a 53% interest in Simfer Jersey Limited (Simfer Jersey), a company incorporated in Jersey. Simfer Jersey, in turn, has an 85% interest in Simfer S.A., the company that operates the Simandou mining project in Guinea. As at 31 December 2023, Simfer Jersey also owns 100% of Simfer InfraCo Guinée S.A., a company incorporated in Guinea, which will deliver Simfer's scope of the co-developed rail and port infrastructure. The Group therefore has a 45.05% indirect interest in Simfer S.A. and a 53% indirect interest in Simfer InfraCo Guinée S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.

(j) Other operations includes our 86% interest in Energy Resources of Australia, sites being rehabilitated under the management of Rio Tinto Closure, Rio Tinto Marine, and the remaining legacy liabilities of Rio Tinto Coal Australia. These include provisions for onerous contracts, in relation to rail infrastructure capacity, partly offset by financial assets and receivables relating to contingent royalties and disposal proceeds. From 16 June 2022, Commercial Treasury and related central costs are reported as part of 'Other operations' instead of 'Other items' in previous periods.

(k) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets as derived from the Group cash flow statement. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations but exclude equity accounted units.

(l) Operating assets of the Group represents equity attributable to Rio Tinto adjusted for net (debt)/cash. Operating assets of subsidiaries, joint operations and the Group's share relating to equity accounted units are made up of net assets adjusted for net (debt)/cash and post-retirement assets and liabilities, net of tax. Operating assets are stated after the deduction of non-controlling interests; these are calculated by reference to the net assets of the relevant companies (i.e. inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).

(m) North American Aluminium comprises our reporting unit formerly known as Primary Metal and from 1 December 2023 our 50% interest in Matalco which focuses on recycling of aluminium. The operations are principally located in Canada and USA, however this reporting unit also includes our interests in ISAL (Iceland) and Sohar (Oman).

Financial Statements

Alternative Performance Measures

The Group presents certain non-IFRS financial measures (non-IFRS measures) which are reconciled to directly comparable IFRS financial measures below. These non-IFRS measures hereinafter referred to as alternative performance measures (APMs) are used by management to assess the performance of the business and provide additional information, which investors may find useful. APMs are presented in order to give further insight into the underlying business performance of the Group's operations.

APMs are not consistently defined and calculated by all companies, including those in the Group's industry. Accordingly, these measures used by the Group may not be comparable with similarly titled measures and disclosures made by other companies. Consequently, these APMs should not be regarded as a substitute for the IFRS measures and should be considered supplementary to those measures.

The following tables present the Group's key financial measures not defined according to IFRS and a reconciliation between those APMs and their nearest respective IFRS measures.

Reconciliation of APMs to the nearest comparable IFRS financial measures for the year 2020 and 2019 can be found in the section APM of our 2020 *Annual Report*. Reconciliation of underlying return on capital employed and Net (debt)/cash for the year 2021 can be found in our 2021 *Annual Report*.

APMs derived from the income statement

The following income statement measures are used by the Group to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods. They indicate the underlying commercial and operating performance of our assets including revenue generation, productivity and cost management.

Segmental revenue

Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units in proportion to our equity interest (after adjusting for sales to/from subsidiaries). The reconciliation can be found in "Our financial performance" on page 173.

Underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items that do not reflect the underlying performance of our reportable segments. The reconciliation of profit after tax to underlying EBITDA can be found in "Our financial performance" on page 175.

Underlying EBITDA margin

Underlying EBITDA margin is defined as Group underlying EBITDA divided by the aggregate of consolidated sales revenue and our share of equity account unit sales after eliminations.

	2023 US$m	2022 US$m	2021 US$m
Underlying EBITDA	**23,892**	26,272	37,720
Consolidated sales revenue	**54,041**	55,554	63,495
Share of equity accounted unit sales and inter-subsidiary/equity accounted unit sales eliminations	**3,016**	2,850	3,073
	57,057	58,404	66,568
Underlying EBITDA margin	**42 %**	45 %	57 %

Pilbara underlying FOB EBITDA margin

The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara segmental revenue, excluding freight revenue.

	2023 US$m	2022 US$m	2021 US$m
Pilbara			
Underlying EBITDA	**19,828**	18,474	27,837
Pilbara segmental revenue	**30,867**	29,313	39,111
Less: Freight revenue	**(2,098)**	(2,206)	(2,707)
Pilbara segmental revenue, excluding freight revenue	**28,769**	27,107	36,404
Pilbara underlying FOB EBITDA margin	**69 %**	68 %	76 %

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Alternative Performance Measures

Underlying EBITDA margin from Aluminium integrated operations

Underlying EBITDA margin from integrated operations is defined as underlying EBITDA divided by segmental revenue.

	2023 US$m	2022 US$m	2021 US$m
Aluminium			
Underlying EBITDA – integrated operations	**2,436**	3,842	4,487
Segmental revenue – integrated operations	**11,513**	13,136	11,881
Underlying EBITDA margin from integrated operations	**21 %**	29 %	38 %

Underlying EBITDA margin (product group operations)

Underlying EBITDA margin (product group operations) is defined as underlying EBITDA divided by segmental revenue.

	2023 US$m	2022 US$m	2021 US$m
Copper			
Underlying EBITDA – product group operations	**2,436**	2,947	4,368
Segmental revenue – product group operations	**5,811**	5,975	7,434
Underlying EBITDA margin – product group operations	**42 %**	49 %	59 %

	2023 US$m	2022 US$m	2021 US$m
Minerals			
Underlying EBITDA – product group operations	**1,780**	2,665	2,765
Segmental revenue – product group operations	**5,918**	6,742	6,410
Underlying EBITDA margin – product group operations	**30 %**	40 %	43 %

Underlying earnings

Underlying earnings represents net earnings attributable to the owners of Rio Tinto, adjusted to exclude items that do not reflect the underlying performance of the Group's operations.

Exclusions from underlying earnings are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into underlying business performance.

The following items are excluded from net earnings in arriving at underlying earnings in each year irrespective of materiality:

- net gains/(losses) on disposal of interests in subsidiaries;
- impairment charges and reversals;
- profit/(loss) after tax from discontinued operations;
- exchange and derivative gains and losses. This exclusion includes exchange gains/(losses) on external net debt and intragroup balances, unrealised gains/(losses) on currency and interest rate derivatives not qualifying for hedge accounting, unrealised gains/(losses) on certain commodity derivatives not qualifying for hedge accounting, and unrealised gains/(losses) on embedded derivatives not qualifying for hedge accounting; and
- adjustments to closure provisions where the adjustment is associated with an impairment charge, or for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgemental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance.

Exclusions from underlying earnings relating to equity accounted units are stated after tax and included in the column "Pre-tax".

Forward-looking

	Pre-tax 2023 US$m	Taxation 2023 US$m	Non-controlling interests 2023 US$m	Net amount 2023 US$m	Net amount 2022 US$m Restated[a]	Net amount 2021 US$m Restated[a]
Net earnings	**13,785**	**(3,832)**	**105**	**10,058**	12,392	21,115
Items excluded from underlying earnings						
Impairment charges net of reversals (note 4)	**936**	**(499)**	**215**	**652**	52	197
Foreign exchange and derivative (losses)/gains:						
– Exchange losses/(gains) on external net debt, intragroup balances and derivatives[b]	**253**	**(12)**	**2**	**243**	(216)	(726)
– Losses on currency and interest rate derivatives not qualifying for hedge accounting[c]	**58**	**30**	**(1)**	**87**	373	127
– (Gains)/losses on embedded commodity derivatives not qualifying for hedge accounting[d]	**(21)**	**6**	**(8)**	**(23)**	(20)	53
Change in closure estimates (non-operating and fully impaired sites)[e]	**1,272**	**(51)**	**(119)**	**1,102**	178	971
Deferred tax arising on internal sale of assets in Canadian operations[f]	**–**	**(364)**	**–**	**(364)**	–	–
Gains recognised by Kitimat relating to LNG Canada's project[g]	**–**	**–**	**–**	**–**	(106)	(336)
Loss on disposal of interest in subsidiary (note 4)	**–**	**–**	**–**	**–**	105	–
Gain on sale of the Cortez royalty[h]	**–**	**–**	**–**	**–**	(331)	–
Write-off of Federal deferred tax assets in the United States[i]	**–**	**–**	**–**	**–**	932	–
Total excluded from underlying earnings	**2,498**	**(890)**	**89**	**1,697**	967	286
Underlying earnings	**16,283**	**(4,722)**	**194**	**11,755**	13,359	21,401

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

(b) Exchange losses on external net debt and intragroup balances includes post-tax foreign exchange losses on net debt of US$316 million offset by post-tax gains of US$73 million on intragroup balances, primarily as a result of the Australian dollar strengthening against the US dollar. In 2022, exchange gains on external net debt and intragroup balances included post-tax foreign exchange losses on net debt of US$262 million offset by post-tax gains of US$478 million on intragroup balances, primarily as a result of the Australian dollar weakening against the US dollar during the year. In 2021, exchange gains on external net debt and intragroup balances included post-tax foreign exchange gains on intragroup balances of US$913 million partially offset by post-tax losses of US$187 million on external net debt, primarily as a result of the weakening Australian dollar against the US dollar.

(c) Valuation changes on currency and interest rate derivatives, which are ineligible for hedge accounting, other than those embedded in commercial contracts, and the currency revaluation of embedded US dollar derivatives contained in contracts held by entities whose functional currency is not the US dollar.

(d) Valuation changes on derivatives, embedded in commercial contracts that are ineligible for hedge accounting but for which there will be an offsetting change in future Group earnings. Mark-to-market movements on commodity derivatives entered into with the commercial objective of achieving spot pricing for the underlying transaction at the date of settlement are included in underlying earnings.

(e) In 2023, the charge includes US$0.9 billion related to the closure provision update announced by Energy Resources of Australia on 12 December 2023 together with the update included in their half year results for the period ended 30 June 2023, published in August. This update was considered material and therefore it was aggregated with other closure study updates which were similar in nature and have been excluded from underlying earnings. The other closure study updates were at legacy sites managed by our central closure team as well as an update at Yarwun alumina refinery which was expensed due to the impairment earlier in the year. In 2022, the charge related to re-estimates of underlying closure cash flows for legacy sites where the environmental damage preceded ownership by Rio Tinto. In 2021, the closure provision increase excluded from underlying earnings was attributable to study updates at Energy Resources of Australia, Diavik, Gove refinery, and a number of the Group's legacy sites where the environmental damage preceded ownership by Rio Tinto.

(f) During the year the Canadian aluminium business completed an internal sale of assets which resulted in the utilisation of previously unrecognised capital losses and an uplift in the tax depreciable value of assets on which a deferred tax asset of US$364 million is recognised.

(g) During 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying earnings consistent with prior years as it was part of a series of transactions that together were material. On 3 December 2021, we gained control over a new wharf at Kitimat, Canada that was built and paid for by LNG Canada. The gain on recognition was excluded from underlying earnings on the grounds of individual magnitude and consistency with the associated impairment charge. Refer to note 4 for details.

(h) On 2 August 2022, we completed the sale of a gross production royalty which was retained following the disposal of the Cortez Complex in 2008. The gain recognised on sale of the royalty was excluded from underlying earnings on the grounds of individual magnitude.

(i) In 2022, we wrote down our deferred tax assets in the United States following the introduction of the Corporate Alternative Minimum Tax regime. Refer to note 10 for details. The amount has been restated from US$820 million as previously reported to US$932 million to reflect the adoption of narrow-scope amendments to IAS 12 as referred to in footnote (a).

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Alternative Performance Measures

Basic underlying earnings per share

Basic underlying earnings per share is calculated as underlying earnings divided by the weighted average number of shares outstanding during the year.

	2023 (cents)	2022 (cents) Restated[a]	2021 (cents) Restated[a]
Basic earnings per ordinary share	**620.3**	765.0	1,304.7
Items excluded from underlying earnings per share[b]	**104.7**	59.7	17.7
Basic underlying earnings per ordinary share	**725.0**	824.7	1,322.4

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Calculation of items excluded from underlying earnings per share:

	2023	2022 Restated[a]	2021 Restated[a]
Items excluded from underlying earnings (US$m) (refer to pages 290 and 291)	**1,697.0**	967.0	286.0
Weighted average number of shares (millions)	**1,621.4**	1,619.8	1,618.4
Items excluded from underlying earnings per share (cents)	**104.7**	59.7	17.7

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

We have provided basic underlying earnings per share as this allows the comparability of financial performance adjusted to exclude items that do not reflect the underlying performance of the Group's operations.

Interest cover

Interest cover is a financial metric used to monitor our ability to service debt. It represents the number of times finance income and finance costs (including amounts capitalised) are covered by profit before taxation, before finance income, finance costs, share of profit after tax of equity accounted units and items excluded from underlying earnings, plus dividends from equity accounted units.

	2023 US$m	2022 US$m
Profit before taxation	**13,785**	18,662
Add back		
Finance income	**(536)**	(179)
Finance costs	**967**	335
Share of profit after tax of equity accounted units	**(675)**	(777)
Items excluded from underlying earnings	**2,498**	(49)
Add: Dividends from equity accounted units	**610**	879
Calculated earnings	**16,649**	18,871
Finance income	**536**	179
Finance costs	**(967)**	(335)
Add: Amounts capitalised	**(279)**	(416)
Total net finance costs before capitalisation	**(710)**	(572)
Interest cover	**23**	33

Payout ratio

The payout ratio is used by us to guide the dividend policy we implemented in 2016, under which we have sought to return 40-60% of underlying earnings, on average through the cycle, to shareholders as dividends. It is calculated as total equity dividends per share to owners of Rio Tinto declared in respect of the financial year divided by underlying earnings per share (as defined above). Dividends declared usually include an interim dividend paid in the year, and a final dividend paid after the end of the year. Any special dividends declared in respect of the financial year are also included.

	2023 (cents)	2022 (cents) Restated[a]
Interim dividend declared per share	**177.0**	267.0
Final dividend declared per share	**258.0**	225.0
Total dividend declared per share for the year	**435.0**	492.0
Underlying earnings per share	**725.0**	824.7
Payout ratio	**60 %**	60 %

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

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APMs derived from cash flow statement

Capital expenditure

Capital expenditure includes the net sustaining and development expenditure on property, plant and equipment, and on intangible assets. This is equivalent to "Purchases of property, plant and equipment and intangible assets" in the cash flow statement less "Sales of property, plant and equipment and intangible assets".

This measure is used to support management's objective of effective and efficient capital allocation as we need to invest in existing assets in order to maintain and improve productive capacity, and in new assets to grow the business.

Rio Tinto share of capital investment

Rio Tinto's share of capital investment represents our economic investment in capital projects. This measure was introduced in 2022 to better represent the Group's share of funding for capital projects which are jointly funded with other shareholders and which may differ from the consolidated basis included in the Capital expenditure APM. This better reflects our approach to capital allocation.

The measure is based upon the Capital expenditure APM, adjusted to deduct equity or shareholder loan financing provided to partially owned subsidiaries by non-controlling interests in respect of major capital projects in the period. In circumstances where the funding to be provided by non-controlling interests is not received in the same period as the underlying capital investment, this adjustment is applied in the period in which the underlying capital investment is made, not when the funding is received. Where funding which would otherwise be provided directly by shareholders is replaced with project financing, an adjustment is also made to deduct the share of project financing attributable to the non-controlling interest. This adjustment is not made in cases where Rio Tinto has unilaterally guaranteed this project financing. Lastly, funding contributed by the Group to Equity Accounted Units for its share of investment in their major capital projects is added to the measure. No adjustment is made to the Capital expenditure APM where capital expenditure is funded from the operating cash flows of the subsidiary or Equity Accounted Unit.

	2023 US$m	2022 US$m	2021 US$m
Purchase of property, plant and equipment and intangible assets	**7,086**	6,750	7,384
Less: Equity or shareholder loan financing received/due from non-controlling interests	**(125)**	–	–
Rio Tinto share of capital investment	**6,961**	6,750	7,384

Free cash flow

Free cash flow is defined as net cash generated from operating activities minus purchases of property, plant and equipment and intangibles and payments of lease principal, plus proceeds from the sale of property, plant and equipment and intangible assets.

This measures the net cash returned by the business after the expenditure of sustaining and development capital. This cash can be used for shareholder returns, reducing debt and other investing/financing activities.

	2023 US$m	2022 US$m	2021 US$m
Net cash generated from operating activities	**15,160**	16,134	25,345
Less: Purchase of property, plant and equipment and intangible assets	**(7,086)**	(6,750)	(7,384)
Less: Lease principal payments	**(426)**	(374)	(358)
Add: Sales of property, plant and equipment and intangible assets	**9**	–	61
Free cash flow	**7,657**	9,010	17,664

Alternative Performance Measures

APMs derived from the balance sheet

Net debt

Net debt is total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net debt.

Net debt measures how we are managing our balance sheet and capital structure. Refer to note 19 on page 205 for the reconciliation.

Net gearing ratio

Net gearing ratio is defined as net debt divided by the sum of net debt and total equity at the end of each year. It demonstrates the degree to which the Group's operations are funded by debt versus equity.

	2023 US$m	2022 US$m Restated[a]
Net debt	**(4,231)**	(4,188)
Net debt	**(4,231)**	(4,188)
Total equity	**(56,341)**	(52,741)
Net debt plus total equity	**(60,572)**	(56,929)
Net gearing ratio	**7%**	7%

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

Underlying return on capital employed

Underlying return on capital employed ("ROCE") is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Underlying ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

	2023 US$m	2022 US$m Restated[a]
Profit after tax attributable to owners of Rio Tinto (net earnings)	**10,058**	12,392
Items added back to derive underlying earnings (refer to pages 290 and 291)	**1,697**	967
Underlying earnings	**11,755**	13,359
Add/(deduct):		
Finance income per the income statement	**(536)**	(179)
Finance costs per the income statement	**967**	335
Tax on finance cost	**(373)**	(238)
Non-controlling interest share of net finance costs	**(429)**	(98)
Net interest cost in equity accounted units (Rio Tinto share)	**53**	42
Net interest	**(318)**	(138)
Adjusted underlying earnings	**11,437**	13,221
Equity attributable to owners of Rio Tinto – beginning of the year (restated, refer to page 166)	**50,634**	51,930
Net debt/(cash) – beginning of the year	**4,188**	(1,576)
Operating assets – beginning of the year	**54,822**	50,354
Equity attributable to owners of Rio Tinto – end of the year (restated, refer to page 166)	**54,586**	50,634
Net debt – end of the year	**4,231**	4,188
Operating assets – end of the year	**58,817**	54,822
Average operating assets	**56,820**	52,588
Underlying return on capital employed	**20 %**	25 %

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.

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Financial summary 2014–2023

US$m	2014	2015	2016	2017	2018	2019	2020	2021 Restated[a]	2022 Restated[a]	2023
Consolidated sales revenue	47,664	34,829	33,781	40,030	40,522	43,165	44,611	63,495	55,554	**54,041**
Underlying EBITDA	19,665	12,621	13,510	18,580	18,136	21,197	23,902	37,720	26,272	**23,892**
Depreciation and amortisation	(4,828)	(4,553)	(4,691)	(4,302)	(3,909)	(4,272)	(4,074)	(4,525)	(4,871)	**(4,976)**
Depreciation, amortisation, interest and tax relating to equity accounted units	(1,231)	(738)	(767)	(920)	(1,022)	(949)	(1,019)	(1,256)	(1,110)	**(1,225)**
Finance costs	(3,008)	(4,702)	(773)	(1,658)	(33)	(648)	(1,751)	(26)	(1,846)	**(1,713)**
Other exclusions from underlying EBITDA[b]	(1,046)	(3,354)	(936)	1,116	4,995	(4,209)	(1,667)	(1,080)	217	**(2,193)**
Profit/(loss) before taxation (PBT)	9,552	(726)	6,343	12,816	18,167	11,119	15,391	30,833	18,662	**13,785**
Tax on exclusions	423	567	(155)	(596)	(801)	391	204	224	(1,014)	**890**
Tax on underlying PBT	(3,476)	(1,560)	(1,412)	(3,369)	(3,441)	(4,538)	(5,195)	(8,460)	(4,600)	**(4,722)**
Attributable to non-controlling interests	28	853	(159)	(89)	(287)	1,038	(631)	(1,482)	(656)	**105**
Net earnings/(loss)	6,527	(866)	4,617	8,762	13,638	8,010	9,769	21,115	12,392	**10,058**
Underlying earnings[c]	9,305	4,540	5,100	8,627	8,808	10,373	12,448	21,401	13,359	**11,755**
Earnings/(loss) per share (basic) – continuing operations	353.1c	(47.5)c	256.9c	490.4c	793.2c	491.4c	604.0c	1304.7c	765.0c	**620.3c**
Underlying earnings per share (basic) – continuing operations	503.4c	248.8c	283.8c	482.8c	512.3c	636.3c	769.6c	1322.4c	824.7c	**725.0c**
Dividends per share: declared for year[d]										
Rio Tinto shareholders (US cents)	215.00c	215.00c	170.00c	290.00c	307.00c	443.00c	557.00c	1040.00c	492.00c	**435.00c**
Rio Tinto plc (pence)	134.88p	143.13p	134.36p	212.56p	232.78p	350.61p	408.37p	756.42p	406.98p	**341.44p**
Rio Tinto Limited (Aus cents)	256.07c	296.80c	222.75c	366.25c	421.73c	657.32c	733.88c	1422.90c	710.19c	**653.67c**
Net assets										
Fixed assets[e]	80,669	70,226	68,104	70,735	64,351	64,902	70,347	72,142	72,503	**76,061**
Other assets less liabilities	4,596	4,037	4,128	2,495	2,498	2,314	3,124	4,549	6,305	**7,174**
Provisions (including deferred tax liabilities)	(18,176)	(16,352)	(16,915)	(18,270)	(17,281)	(18,323)	(20,904)	(21,154)	(21,879)	**(22,663)**
Net (debt)/cash	(12,495)	(13,783)	(9,587)	(3,845)	255	(3,651)	(664)	1,576	(4,188)	**(4,231)**
Non-controlling interests	(8,309)	(6,779)	(6,440)	(6,404)	(6,137)	(4,710)	(4,849)	(5,166)	(2,107)	**(1,755)**
Equity attributable to owners of Rio Tinto	46,285	37,349	39,290	44,711	43,686	40,532	47,054	51,947	50,634	**54,586**
Capital expenditure[f]	(8,162)	(4,685)	(3,012)	(4,482)	(5,430)	(5,488)	(6,189)	(7,384)	(6,750)	**(7,086)**
Acquisitions	–	(3)	–	–	(5)	–	–	–	(850)	**(834)**
Disposals	887	(38)	761	2,675	7,733	(80)	10	4	80	**–**
Net cash generated from operating activities[g]	14,286	9,383	8,465	13,884	11,821	14,912	15,875	25,345	16,134	**15,160**
Cash flows before financing activities[h]	7,783	4,783	6,361	11,511	13,142	9,411	9,319	18,186	9,427	**8,198**
Ratios										
Net (debt)/cash to total capital[i]	(19)%	(24)%	(17)%	(7)%	1%	(7)%	(1)%	3%	(7)%	**(7)%**
Underlying earnings: owners' equity[j]	20%	11%	13%	21%	20%	25%	28%	43%	26%	**22%**
Interest cover[k]	13	7	7	14	22	28	39	59	33	**23**

(a) Comparative information has been restated to reflect the adoption of narrow-scope amendments to IAS 12. Refer to page 166 for details.
(b) Underlying EBITDA is a performance measure adjusted to exclude the EBITDA impact of items that do not reflect the underlying performance of our reportable segments. For additional information on items excluded from underlying EBITDA, refer to page 175.
(c) Underlying earnings is an additional measure of earnings, which is reported by Rio Tinto with its IFRS (as defined on page 158) results to provide greater understanding of the underlying business performance of its operations. Underlying profit before interest and tax (PBIT) is similar to underlying earnings except that it is stated before interest and tax.
(d) Dividends per share are the amounts declared in respect of each financial year excluding share buy-backs and special dividends relating to the return of divestment proceeds. These usually include an interim dividend paid in the year, a final dividend paid after the end of the year and special dividends where applicable.
(e) Fixed assets includes: property, plant and equipment, intangible assets, goodwill, and investments in, and long-term loans to, equity accounted units. From 1 January 2019, it also includes the impact of adopting IFRS 16.
(f) Capital expenditure is presented gross, before taking into account any disposals of property, plant and equipment or intangible assets.
(g) Net cash generated from operating activities represents the cash generated by the Group's consolidated operations, after payment of interest, taxes, and dividends to non-controlling interests in subsidiaries.
(h) Cash flow before financing activities is stated before deducting dividends payable to owners of Rio Tinto.
(i) Total capital includes equity attributable to owners of Rio Tinto plus net debt and non-controlling interests.
(j) Underlying earnings: owners' equity represents underlying earnings expressed as a percentage of the mean of opening and closing equity attributable to owners of Rio Tinto.
(k) Interest cover is a financial metric used to monitor our ability to service debt. It represents the number of times finance income and finance costs (including amounts capitalised) are covered by profit before taxation, before finance income, finance costs, share of profit after tax of equity accounted units and items excluded from underlying earnings, plus dividends from equity accounted units.

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Production, Ore Reserves, Mineral Resources and Operations

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Mines and production facilities	324

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Oyu Tolgoi, Mongolia

Metals and minerals production

	Rio Tinto % share[1] at 31 Dec 2023	2023 Production		2022 Production		2021 Production	
		Total	Rio Tinto share	Total	Rio Tinto share	Total	Rio Tinto share
ALUMINA ('000 tonnes)							
Jonquière (Vaudreuil) (Canada)[2]	100.0 %	1,392	1,392	1,364	1,364	1,364	1,364
Jonquière (Vaudreuil) specialty plant (Canada)	100.0 %	109	109	114	114	107	107
Queensland Alumina (Australia)	80.0 %	3,366	2,693	3,425	2,740	3,705	2,964
São Luis (Alumar) (Brazil)	10.0 %	3,375	338	3,771	377	3,662	366
Yarwun (Australia)	100.0 %	3,006	3,006	2,949	2,949	3,093	3,093
Rio Tinto total			7,537		7,544		7,894
ALUMINIUM ('000 tonnes)							
Alma (Canada)	100.0 %	484	484	482	482	471	471
Alouette (Sept-Îles) (Canada)	40.0 %	634	253	628	251	629	251
Arvida (Canada)	100.0 %	172	172	171	171	168	168
Arvida AP60 (Canada)	100.0 %	59	59	58	58	60	60
Bécancour (Canada)	25.1 %	465	117	459	115	463	116
Bell Bay (Australia)	100.0 %	186	186	185	185	189	189
Boyne Island (Australia)	59.4 %	496	295	450	267	502	298
Grande-Baie (Canada)	100.0 %	229	229	232	232	230	230
ISAL (Reykjavik) (Iceland)	100.0 %	209	209	202	202	203	203
Kitimat (Canada)	100.0 %	377	377	145	145	263	263
Laterrière (Canada)	100.0 %	244	244	253	253	252	252
Sohar (Oman)	20.0 %	398	80	395	79	395	79
Tiwai Point (New Zealand)	79.4 %	334	265	336	267	333	264
Tomago (Australia)	51.6 %	589	304	586	302	592	305
Rio Tinto total			3,272		3,009		3,151
BAUXITE ('000 tonnes)							
Gove (Australia)	100.0 %	11,566	11,566	11,510	11,510	11,763	11,763
Porto Trombetas (MRN) (Brazil)[3]	22.0 %	11,472	1,502	11,100	1,332	11,383	1,366
Sangarédi (Guinea)[4]	23.0 %	14,278	6,425	16,115	7,252	15,797	7,109
Weipa (Australia)	100.0 %	35,126	35,126	34,525	34,525	34,088	34,088
Rio Tinto total			54,619		54,618		54,326
BORATES ('000 tonnes)[5]							
Rio Tinto Borates – Boron (US)	100.0 %	495	495	532	532	488	488
COPPER (mined) ('000 tonnes)							
Bingham Canyon (US)	100.0 %	151.6	151.6	179.2	179.2	159.4	159.4
Escondida (Chile)	30.0 %	999.7	299.9	995.3	298.6	931.8	279.5
Oyu Tolgoi (Mongolia)[6]	66.0 %	168.1	110.9	129.5	43.4	163.0	54.6
Rio Tinto total			562.4		521.1		493.5
COPPER (refined) ('000 tonnes)							
Escondida (Chile)	30.0 %	222.2	66.7	203.1	60.9	195.3	58.6
Kennecott (US)	100.0 %	108.6	108.6	148.3	148.3	143.3	143.3
Rio Tinto total			175.2		209.2		201.9
DIAMONDS ('000 carats)							
Diavik (Canada)[7]	100.0 %	3,340	3,340	4,651	4,651	5,843	3,847
GOLD (mined) ('000 ounces)							
Bingham Canyon (US)	100.0 %	104.8	104.8	122.7	122.7	139.5	139.5
Escondida (Chile)	30.0 %	199.2	59.7	168.7	50.6	161.7	48.5
Oyu Tolgoi (Mongolia)[6]	66.0 %	177.3	117.0	183.8	61.6	468.1	156.9
Rio Tinto total			281.5		235.0		344.9

See notes on page 298.

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	Rio Tinto % share[1] at 31 Dec 2023	2023 Production		2022 Production		2021 Production	
		Total	Rio Tinto share	Total	Rio Tinto share	Total	Rio Tinto share
GOLD (refined) ('000 ounces)							
Kennecott (US)	100.0 %	74.2	74.2	113.9	113.9	176.4	176.4
IRON ORE ('000 tonnes)							
Hamersley mines (Australia)	(see note 8)	225,898	225,898	218,304	218,304	210,329	210,329
Hope Downs (Australia)	50.0 %	46,482	23,241	48,850	24,425	49,284	24,642
Robe River – Robe Valley (Australia)	53.0 %	29,162	15,456	25,558	13,546	25,497	13,514
Robe River – West Angelas (Australia)	53.0 %	29,999	15,899	31,435	16,660	34,613	18,345
Iron Ore Company of Canada (Canada)	58.7 %	16,478	9,676	17,562	10,312	16,564	9,727
Rio Tinto total			290,171		283,247		276,557
MOLYBDENUM ('000 tonnes)							
Bingham Canyon (US)	100 %	1.8	1.8	3.3	3.3	7.6	7.6
SALT ('000 tonnes)							
Dampier Salt (Australia)	68.4 %	8,737	5,973	8,422	5,757	8,555	5,848
SILVER (mined) ('000 ounces)							
Bingham Canyon (US)	100.0 %	1,618	1,618	2,057	2,057	2,228	2,228
Escondida (Chile)	30.0 %	4,921	1,476	5,301	1,590	5,305	1,591
Oyu Tolgoi (Mongolia)[6]	66.0 %	1,086	717	871	292	977	328
Rio Tinto total			3,811		3,940		4,148
SILVER (refined) ('000 ounces)							
Kennecott (US)	100.0 %	1,407	1,407	1,950	1,950	2,671	2,671
TITANIUM DIOXIDE SLAG ('000 tonnes)							
Rio Tinto Iron and Titanium (Canada/South Africa)[9]	100.0 %	1,111	1,111	1,200	1,200	1,014	1,014
URANIUM ('000 lbs U_3O_8)							
Energy Resources of Australia (Australia)[10]	86.3 %	–	–	–	–	75	65
Rio Tinto total			–		–		65

Production data notes

Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which can represent production of marketable quantities of ore plus concentrates and pellets. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result from calculation of Rio Tinto share of production.

1. Rio Tinto percentage share, shown above, is as at 31 December 2023. The footnotes below include all ownership changes over the three years.
2. Jonquière's (Vaudreuil) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.
3. On 30 November 2023, Rio Tinto's ownership interest in Porto Trombetas increased from 12% to 22%. Production is reported including this change from 1 December 2023.
4. Rio Tinto has a 22.95% shareholding in the Sangarédi mine, but benefits from 45% of production.
5. Borate quantities are expressed as B_2O_3.
6. On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership in Oyu Tolgoi from 33.52% to 66%. Production is reported including this change from 1 January 2023.
7. On 17 November 2021, our ownership interest in Diavik increased from 60% to 100%. Production from 1 November 2021 is reported including this change.
8. Includes 100% of production from Paraburdoo, Mount Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri and the Eastern Range mines. While we own 54% of the Eastern Range mine, under the terms of the joint venture agreement, Hamersley Iron manages the operation and is obliged to purchase all mine production from the joint venture and, therefore, all of the production is included in Rio Tinto's share of production. Our ownership interest in Channar mine increased from 60% to 100%, following conclusion of its joint venture with Sinosteel Corporation upon reaching planned 290 million tonnes production on 22 October 2020.
9. Quantities comprise 100% of Rio Tinto Iron and Titanium Quebec Operations and our 74% share of Richards Bay Minerals' production. Ilmenite mined in Madagascar is processed in Canada.
10. Energy Resources of Australia (ERA) reports drummed U_3O_8. ERA ceased processing operations on 8 January 2021, as required by the Ranger Authority. In February 2020, our interest in ERA increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area. Production is reported including this change from 1 March 2020.

Forward looking

Mineral Resources and Ore Reserves

Mineral Resources and Ore Reserves for Rio Tinto managed operations are reported in accordance with the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 edition* (the JORC Code), as required by the Australian Securities Exchange (ASX). Rio Tinto also files an annual report on Form 20-F (Form 20-F) with the US Securities and Exchange Commission (SEC) and prepares the Form 20-F Mineral Resources and Mineral Reserves in accordance with subpart 1300 of Regulation S-K (SK-1300). Mineral Reserves under SK-1300 are the equivalent of Ore Reserves under ASX. Some variations may occur between the reporting in accordance with the JORC Code and SK-1300.

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality) and quantity that there are reasonable prospects for eventual economic extraction. Estimates of such material are based largely on geological information with only preliminary consideration of mining, economic and other factors. While in the judgement of the Competent Person there are realistic expectations that all or part of the Mineral Resources will eventually become Proved or Probable Ore Reserves, there is no guarantee that this will occur, as the result depends on further technical and economic studies and prevailing economic conditions in the future.

An Ore Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted. It is defined by studies at pre-feasibility or feasibility level as appropriate, with the application of modifying factors. Such studies demonstrate that, at the time of reporting, extraction can reasonably be justified.

Rio Tinto's Mineral Resources are reported as additional (exclusive) to the reported Ore Reserves.

For Mineral Resource and Ore Reserve reporting, the JORC Code envisages the use of reasonable investment assumptions to test the economic viability of the Ore Reserves and the reasonable prospects of eventual economic extraction for the Mineral Resources. To achieve this, Rio Tinto uses internally generated, projected long-term commodity prices.

SK-1300 requires the use of a justifiable commodity price to test the economic viability of the Mineral Reserves and the reasonable prospects of economic extraction for the Mineral Resources, and prices used in calculating the estimates must be disclosed. As a result of the commercial sensitivity of Rio Tinto's long-term commodity prices, we use commercially available consensus pricing or historical pricing for SEC reporting. For this reason and others, some Mineral Resources and Mineral Reserves reported to the SEC in the Form 20-F may differ from those Mineral Resources and Ore Reserves reported below.

Mineral Resources and Ore Reserves information in the following tables is based on information compiled by Competent Persons (as defined by the JORC Code), most of whom are full-time employees of Rio Tinto or related companies. Each has had a minimum of five years' relevant experience and is a member of a recognised professional body whose members are bound by a professional code of ethics. These bodies include the Australasian Institute of Mining and Metallurgy (AusIMM), Australian Institute of Geoscientists (AIG) or recognised professional organisations (RPO). Each Competent Person consents to the inclusion in this Annual Report of information they have provided in the form and context in which it appears. Competent Persons responsible for the estimates are listed on page 323, by operation, along with their professional affiliation, employer, and accountability for Mineral Resources and/or Ore Reserves.

Mineral Resources and Ore Reserves from externally managed operations, in which Rio Tinto holds a minority share, are reported as received from the managing entity and in accordance with the JORC Code.

Mineral Resources and Ore Reserves from our managed operations are the responsibility of the managing directors of the business units and estimates are carried out by the Competent Persons.

The Mineral Resources and Ore Reserves figures in the following tables are as of 31 December 2023. Summary data for year end 2022 are shown for comparison. Metric units are used throughout. The figures used to calculate Rio Tinto's Mineral Resources and Ore Reserves are more precise than the rounded numbers shown in the tables, hence small differences might result if the calculations are repeated using the tabulated figures.

JORC Table 1 reports for new or materially changed significant deposits are released to the market. They are also available at riotinto.com/resourcesandreserves. JORC Table 1, SEC Technical Report Summaries and NI 43-101 Technical Reports generated by non-managed units or joint venture partners are referenced within the reporting footnotes, with the location and initial reporting date identified.

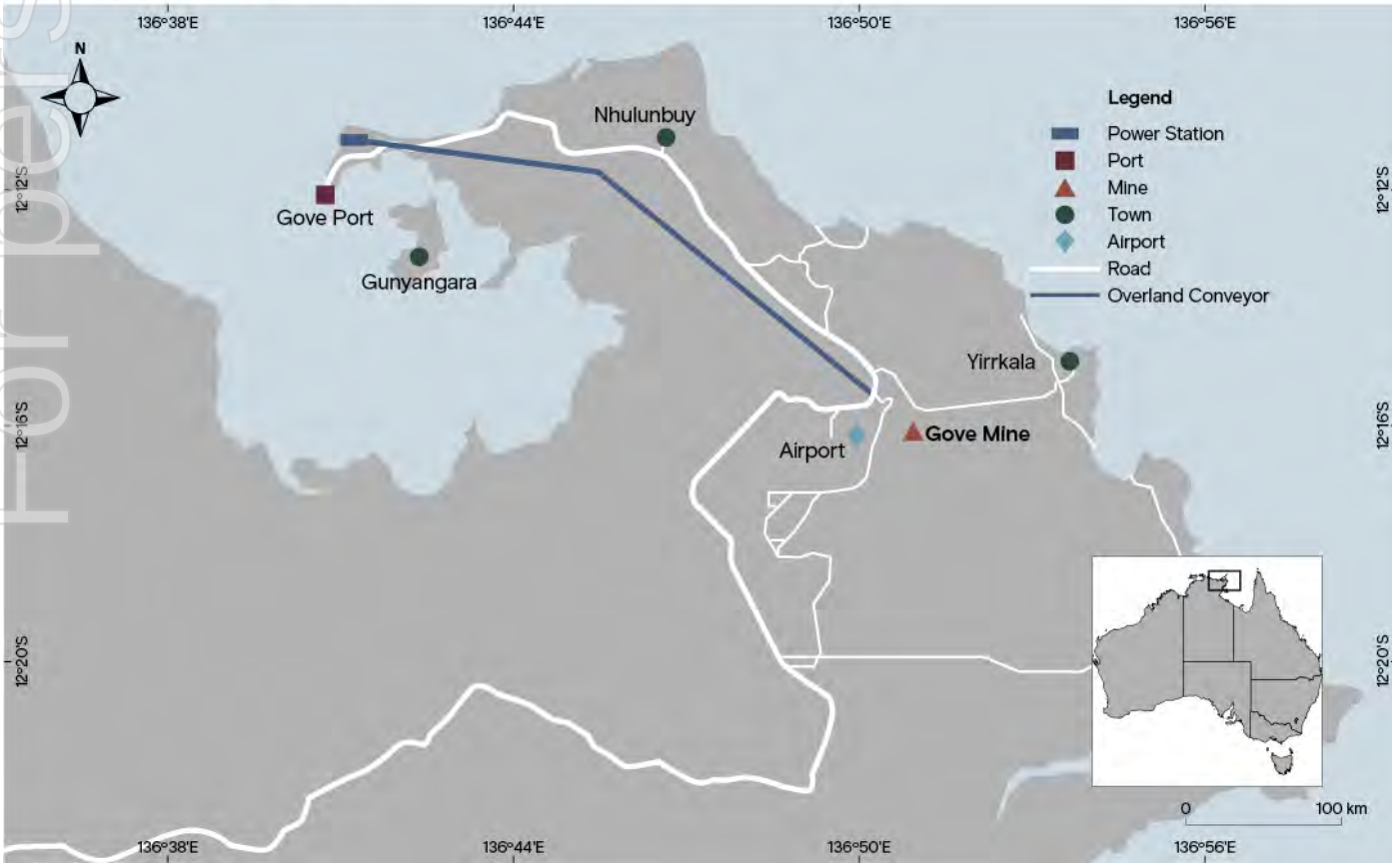
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Ore Reserves

	Type of mine[1]	Proved Ore Reserves as at 31 December 2023			Probable Ore Reserves as at 31 December 2023		
		Tonnage	Grade		Tonnage	Grade	
Bauxite[2]		Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2
Rio Tinto Aluminium (Australia)[3]							
– Amrun	O/P	263	53.9	9.2	688	54.5	9.0
– East Weipa and Andoom	O/P	69	50.5	7.9	3	49.5	8.7
– Gove	O/P	57	50.2	6.4	0.7	50.5	5.0
Total (Australia)		**388**	**52.8**	**8.6**	**692**	**54.4**	**9.0**
Porto Trombetas (MRN) (Brazil)[4]	O/P	43	48.9	4.9	3	49.0	4.9
Sangarédi (Guinea)[5]	O/P	333	47.0	1.9	17	48.9	2.5
Total bauxite		**765**	**50.0**	**5.4**	**711**	**54.3**	**8.8**

1. Type of mine: O/P = open pit/surface.
2. Bauxite Ore Reserves are stated as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
3. Australian bauxite Ore Reserves are stated as dry tonnes and total alumina and silica grade.
4. Porto Trombetas (MRN) Ore Reserves are stated as dry tonnes, available alumina grade and reactive silica grade.
5. Sangarédi Ore Reserves tonnes are reported on a 3% moisture basis and total alumina and silica grade.

Gove operations – Australia



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	Total Ore Reserves as at 31 December 2023					Total Ore Reserves as at 31 December 2022		
	Tonnage	Grade			Rio Tinto share recoverable mineral	Tonnage	Grade	
	Mt	% Al_2O_3	% SiO_2	%	Mt	Mt	% Al_2O_3	% SiO_2
	950	**54.3**	**9.1**	100.0	**950**	801	54.6	8.9
	72	**50.5**	**8.0**	100.0	**72**	59	51.7	7.1
	58	**50.2**	**6.4**	100.0	**58**	56	50.5	5.8
	1,080	**53.8**	**8.8**		**1,080**	916	54.2	8.6
	46	**48.9**	**4.9**	22.0	**10**	47	48.2	5.1
	350	**47.1**	**1.9**	23.0	**80**	362	47.1	1.9
	1,476	**52.1**	**7.1**		**1,170**	1,325	52.1	6.6

Rio Tinto Aluminium

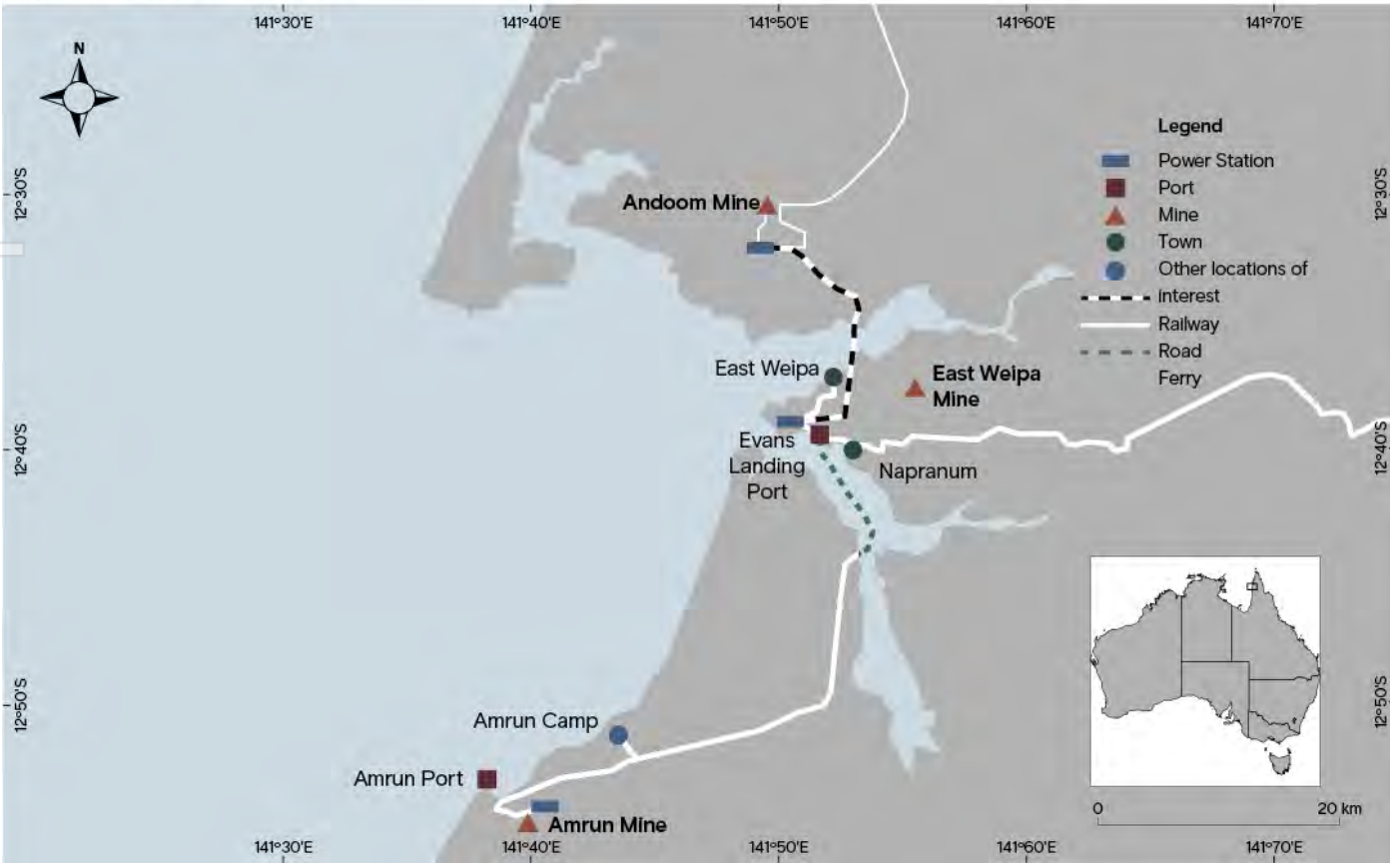
Amrun Ore Reserves tonnes increase is associated with a routine review of price assumptions over the life of the mine and updated orebody knowledge. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

Andoom and Gove Ore Reserves tonnes increase is associated with a routine review of price assumptions over the life of the mine. Cessation of mining at East Weipa in 2024 will result in no future reporting of Ore Reserves for that operation.

Porto Trombetas (MRN)

On 30 November 2023, Rio Tinto completed an acquisition of Companhia Brasileira de Alumínio's 10% equity in the Mineracão Rio do Norte bauxite mine (MRN) in Brazil, raising our stake from 12% to 22%.

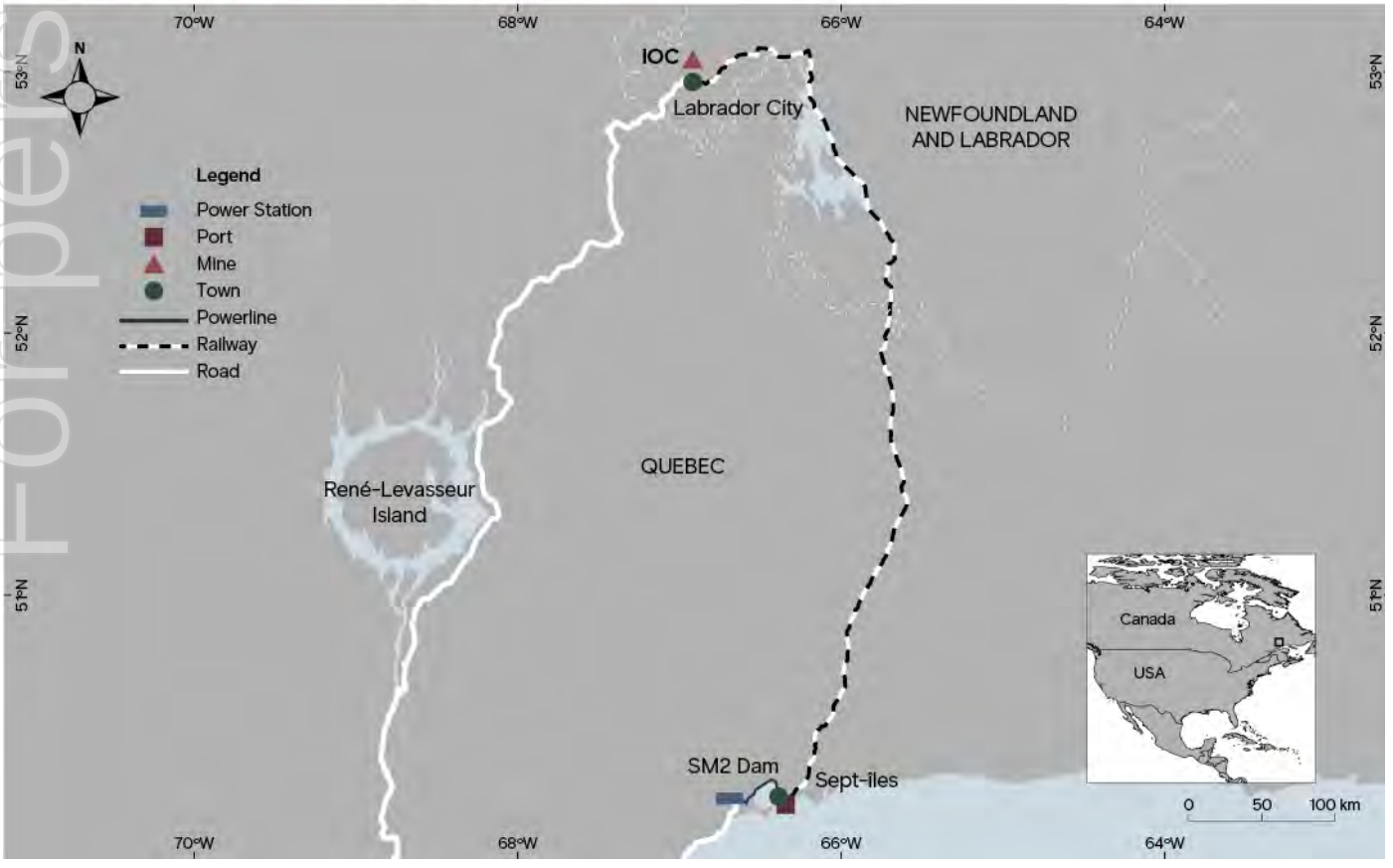
Weipa operations – Australia



	Type of mine[1]	Proved Ore Reserves as at 31 December 2023						Probable Ore Reserves as at 31 December 2023					
		Tonnage	Grade					Tonnage	Grade				
Iron ore[2]		Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
Australia[3,4]													
– Brockman Ore[5]	O/P	485	62.1	3.3	1.9	0.14	5.3	941	61.6	3.7	2.0	0.12	5.6
– Marra Mamba Ore[6]	O/P	271	62.7	2.7	1.6	0.06	5.4	416	61.6	3.3	2.0	0.06	5.8
– Pisolite (Channel Iron) Ore[7]	O/P	474	57.5	4.8	2.0	0.05	10.4	93	56.4	5.2	2.4	0.04	11.0
Total (Australia)		**1,230**	**60.5**	**3.7**	**1.9**	**0.09**	**7.3**	**1,450**	**61.3**	**3.7**	**2.0**	**0.10**	**6.0**
Iron Ore Company of Canada (Canada)[8]	O/P	149	65.0	2.8	–	–	–	275	65.0	2.8	–	–	–
Simandou (Guinea)[9,10]	O/P	273	66.4	1.0	1.2	0.07	2.5	1,226	65.0	0.9	1.8	0.10	3.9
Total iron ore		**1,651**	**61.9**	**3.2**	**1.6**	**0.08**	**5.9**	**2,951**	**63.2**	**2.4**	**1.7**	**0.09**	**4.6**

1. Type of mine: O/P = open pit/surface.
2. Ore Reserves of iron ore are shown as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
3. Australian iron ore Ore Reserves tonnes are reported on a dry weight basis.
4. Australian iron ore Ore Reserves are all located on State Agreement mining leases. Prior to mining, state government approvals (including environmental and heritage) are required. Reported Ore Reserves include select areas where one or more approvals remain outstanding. In these areas, it is expected that these approvals will be obtained within the timeframes required in the current production schedule.
5. Ore Reserves of Brockman Ore are 87.7% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture and the Hope Downs joint venture.
6. Ore Reserves of Marra Mamba Ore are 80.9% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture and the Robe River joint venture.
7. Ore Reserves of Pisolite Ore are 80.0% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Robe River joint venture.
8. Iron Ore Company of Canada (IOC) Ore Reserves are reported as marketable product (57% pellets and 43% concentrate for sale) at a natural moisture content of 2%. The marketable product is derived from mined material comprising 357 million dry tonnes at 38% iron, 36% silica, 0.23% alumina, 0.022% phosphorus (Proved) and 651 million dry tonnes at 38% iron, 35% silica, 0.19% alumina, 0.023% phosphorus (Probable) using process recovery factors derived from current IOC concentrating and pellet operations. No meaningful relationship has been established between the product and feed grades of alumina and phosphorus, so these grades cannot be reported for Ore Reserves. Saleable product is produced to meet silica grade specifications, so the Ore Reserve silica grade is the targeted silica grade for the currently anticipated long-term product mix. Loss on Ignition (LOI) is not determined for resource drilling samples, so no estimate of % LOI is available for Ore Reserves.
9. Simandou Ore Reserves tonnes are reported on a dry weight basis.
10. Simandou Ore Reserves are reported for the first time since 2016 and relate to the Ouéléba portion only of the Simfer Iron Ore Project.

Iron Ore Company of Canada operations – Canada



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Total Ore Reserves as at 31 December 2023						Rio Tinto interest	Rio Tinto share marketable product	Total Ore Reserves as at 31 December 2022					
Tonnage	Grade							Tonnage	Grade				
Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	%	Mt	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
1,427	**61.8**	**3.5**	**2.0**	**0.13**	**5.5**	87.7	**1,251**	1,330	61.9	3.5	2.0	0.13	5.4
687	**62.0**	**3.1**	**1.9**	**0.06**	**5.7**	80.9	**555**	729	62.0	3.1	1.9	0.06	5.7
566	**57.3**	**4.8**	**2.1**	**0.05**	**10.5**	80.0	**453**	618	57.5	4.8	2.0	0.05	10.5
2,680	**60.9**	**3.7**	**2.0**	**0.09**	**6.6**		**2,260**	2,678	60.9	3.7	2.0	0.09	6.7
423	**65.0**	**2.8**	**–**	**–**	**–**	58.7	**249**	453	65.0	3.0	–	–	–
1,499	**65.3**	**0.9**	**1.7**	**0.09**	**3.6**	45.1	**675**	–	–	–	–	–	–
4,602	**62.7**	**2.7**	**1.7**	**0.09**	**5.0**		**3,184**	3,130	61.5	3.6	1.7	0.08	5.7

Australian Iron Ore

Ore Reserves updates for Brockman, Marra Mamba and Pisolite Ore include mining depletion, the addition of new deposits (primarily at Brockman 4, West Angelas and Greater Nammuldi) and changes to cut-off grades.

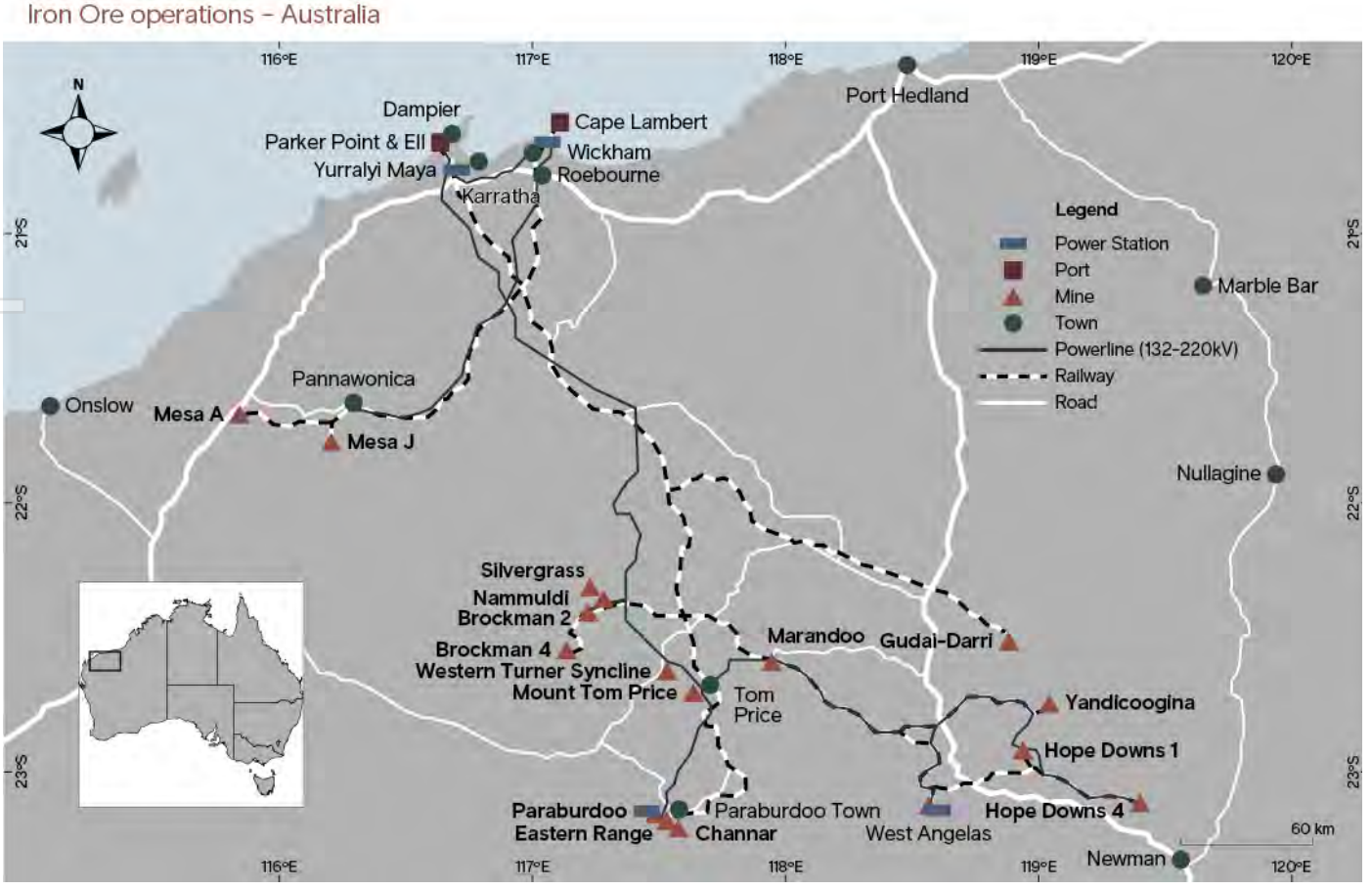
Ore Reserves classification is determined based on confidence in all the modifying factors. Generally, Proved Ore Reserves are derived from Measured Mineral Resources, and Probable Ore Reserves are derived from Indicated Mineral Resources. In 2023, portions of the Ore Reserves derived from Measured Mineral Resources have been classified as Probable Ore Reserves. This classification primarily represents areas where one or more state government approvals remain outstanding or specific Traditional Owner engagement is required prior to mining.

Iron Ore Company of Canada

Ore Reserves updates include depletion, plus a change in the methodology for distinguishing between Proved and Probable Ore Reserves, which has resulted in reclassification of a significant proportion of the Proved Ore Reserves to Probable Ore Reserves. The change is based on the density of geometallurgical data available to estimate iron recovery and ore grind energy in the concentrator. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resources-and-reserves.

Simandou

A JORC Table 1 in support of the Ore Reserves was released to the market on 6 December 2023 and can be viewed at riotinto.com/resourcesandreserves.

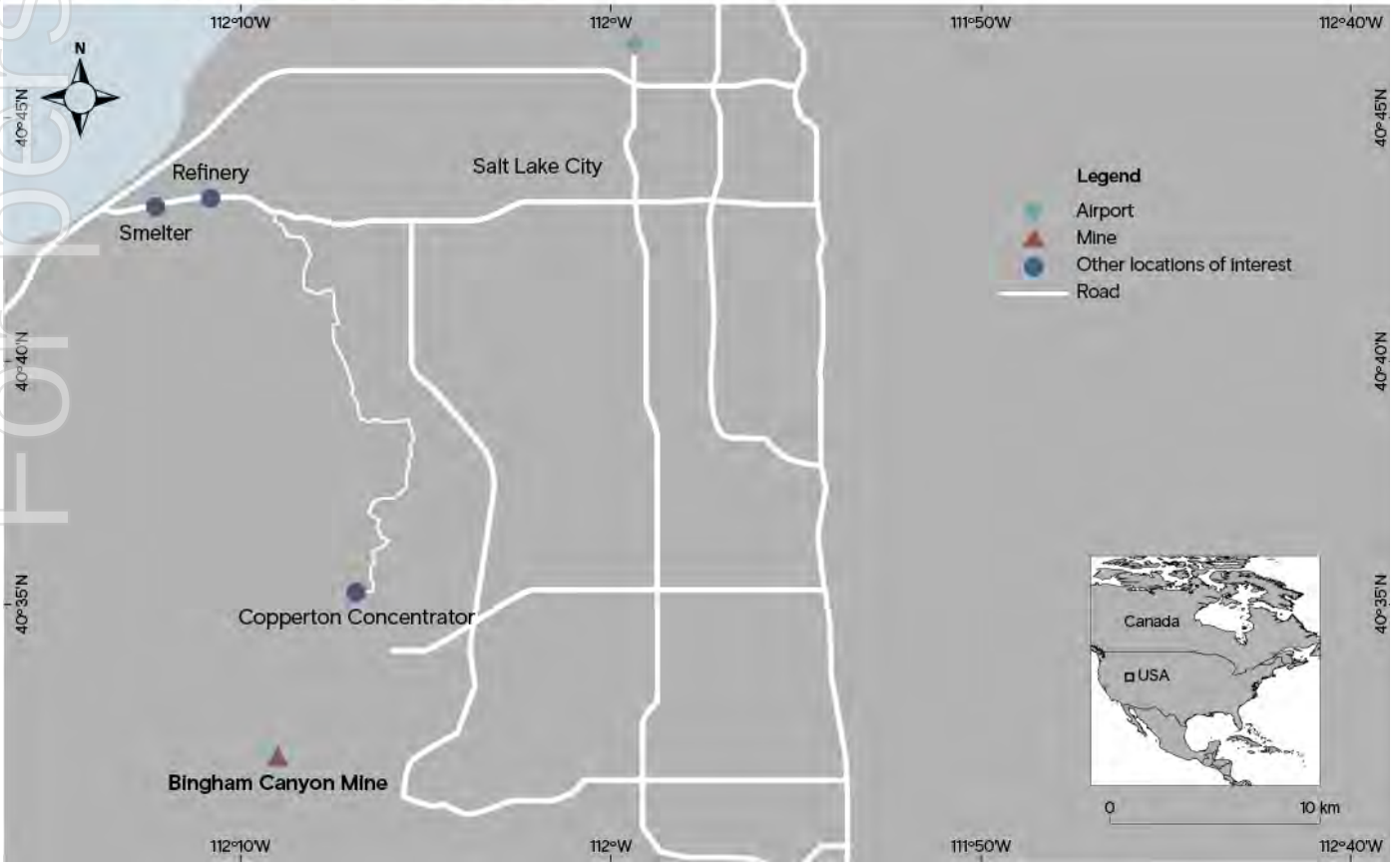


	Type of mine[1]	Proved Ore Reserves as at 31 December 2023					Probable Ore Reserves as at 31 December 2023				
		Tonnage	Grade				Tonnage	Grade			
Copper[2]		Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo
Bingham Canyon (US)											
– Bingham Open Pit[3]	O/P	470	0.37	0.18	1.98	0.038	360	0.36	0.18	1.98	0.028
– Underground Skarns	U/G	–	–	–	–	–	5	2.22	1.39	15.52	0.022
Total (US)		**470**	**0.37**	**0.18**	**1.98**	**0.038**	**364**	**0.38**	**0.20**	**2.16**	**0.028**
Escondida (Chile)											
– oxide	O/P	114	0.57	–	–	–	37	0.51	–	–	–
– sulphide	O/P	3,079	0.69	–	–	–	1,639	0.57	–	–	–
– sulphide leach	O/P	1,376	0.42	–	–	–	268	0.41	–	–	–
Total (Chile)		**4,568**	**0.60**	**–**	**–**	**–**	**1,944**	**0.55**	**–**	**–**	**–**
Oyu Tolgoi (Mongolia)											
– Hugo Dummett North[4]	U/G	–	–	–	–	–	402	1.55	0.31	3.21	–
– Hugo Dummett North Extension	U/G	–	–	–	–	–	38	1.60	0.56	3.80	–
– Oyut open pit	O/P	240	0.53	0.39	1.30	–	374	0.41	0.25	1.14	–
– Oyut stockpiles	S/P	–	–	–	–	–	58	0.31	0.12	1.04	–
Total (Mongolia)		**240**	**0.53**	**0.39**	**1.30**	**–**	**871**	**0.98**	**0.28**	**2.20**	**–**
Total copper		**5,278**	**0.58**	**0.03**	**0.23**	**0.003**	**3,179**	**0.65**	**0.10**	**0.85**	**0.003**

1. Type of mine: O/P = open pit/surface, S/P = stockpile, U/G = underground.
2. Copper Ore Reserves are reported as dry mill feed tonnes.
3. Bingham Canyon Open Pit Ore Reserves molybdenum grades interpolated from exploration drilling assays have been factored based on a long reconciliation history to blast hole and mill samples.
4. The Hugo Dummett North Ore Reserves include approximately 2.3 million tonnes of stockpiled material at a grade of 0.46% copper, 0.14 g/t gold and 1.12 g/t silver.

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Bingham Canyon operations – United States



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Total Ore Reserves as at 31 December 2023					Average mill recovery %				Rio Tinto interest	Rio Tinto share recoverable metal				Total Ore Reserves as at 31 December 2022				
Tonnage	Grade													Tonnage	Grade			
Mt	% Cu	g/t Au	g/t Ag	% Mo	Cu	Au	Ag	Mo	%	Mt Cu	Moz Au	Moz Ag	Mt Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo
829	**0.37**	**0.18**	**1.98**	**0.033**	89	69	71	63	100.0	**2.681**	**3.257**	**37.686**	**0.176**	880	0.38	0.18	1.97	0.033
5	**2.22**	**1.39**	**15.52**	**0.022**	92	70	68	54	100.0	**0.096**	**0.146**	**1.596**	**0.001**	1.7	1.90	0.71	10.07	0.044
834	**0.38**	**0.19**	**2.06**	**0.033**						**2.777**	**3.403**	**39.281**	**0.176**	881	0.38	0.18	1.99	0.033
151	**0.56**	**–**	**–**	**–**	54	–	–	–	30.0	**0.137**	**–**	**–**	**–**	178	0.56	–	–	–
4,717	**0.65**	**–**	**–**	**–**	85	–	–	–	30.0	**7.766**	**–**	**–**	**–**	4,846	0.65	–	–	–
1,644	**0.42**	**–**	**–**	**–**	41	–	–	–	30.0	**0.841**	**–**	**–**	**–**	1,645	0.42	–	–	–
6,512	**0.59**	**–**	**–**	**–**						**8.743**	**–**	**–**	**–**	6,670	0.59	–	–	–
402	**1.55**	**0.31**	**3.21**	**–**	92	79	81	–	66.0	**3.804**	**2.068**	**22.094**	**–**	410	1.54	0.30	3.18	–
38	**1.60**	**0.56**	**3.80**	**–**	92	81	83	–	56.1	**0.312**	**0.310**	**2.149**	**–**	37	1.61	0.56	3.82	–
614	**0.46**	**0.30**	**1.20**	**–**	76	67	55	–	66.0	**1.411**	**2.648**	**8.576**	**–**	647	0.45	0.30	1.20	–
58	**0.31**	**0.12**	**1.04**	**–**	71	52	51	–	66.0	**0.083**	**0.079**	**0.641**	**–**	55	0.32	0.12	1.04	–
1,111	**0.88**	**0.30**	**2.01**	**–**						**5.611**	**5.105**	**33.460**	**–**	1,149	0.87	0.30	1.98	–
8,457	**0.60**	**0.06**	**0.47**	**0.003**						**17.131**	**8.508**	**72.741**	**0.176**	8,701	0.61	0.06	0.46	0.003

Bingham Canyon

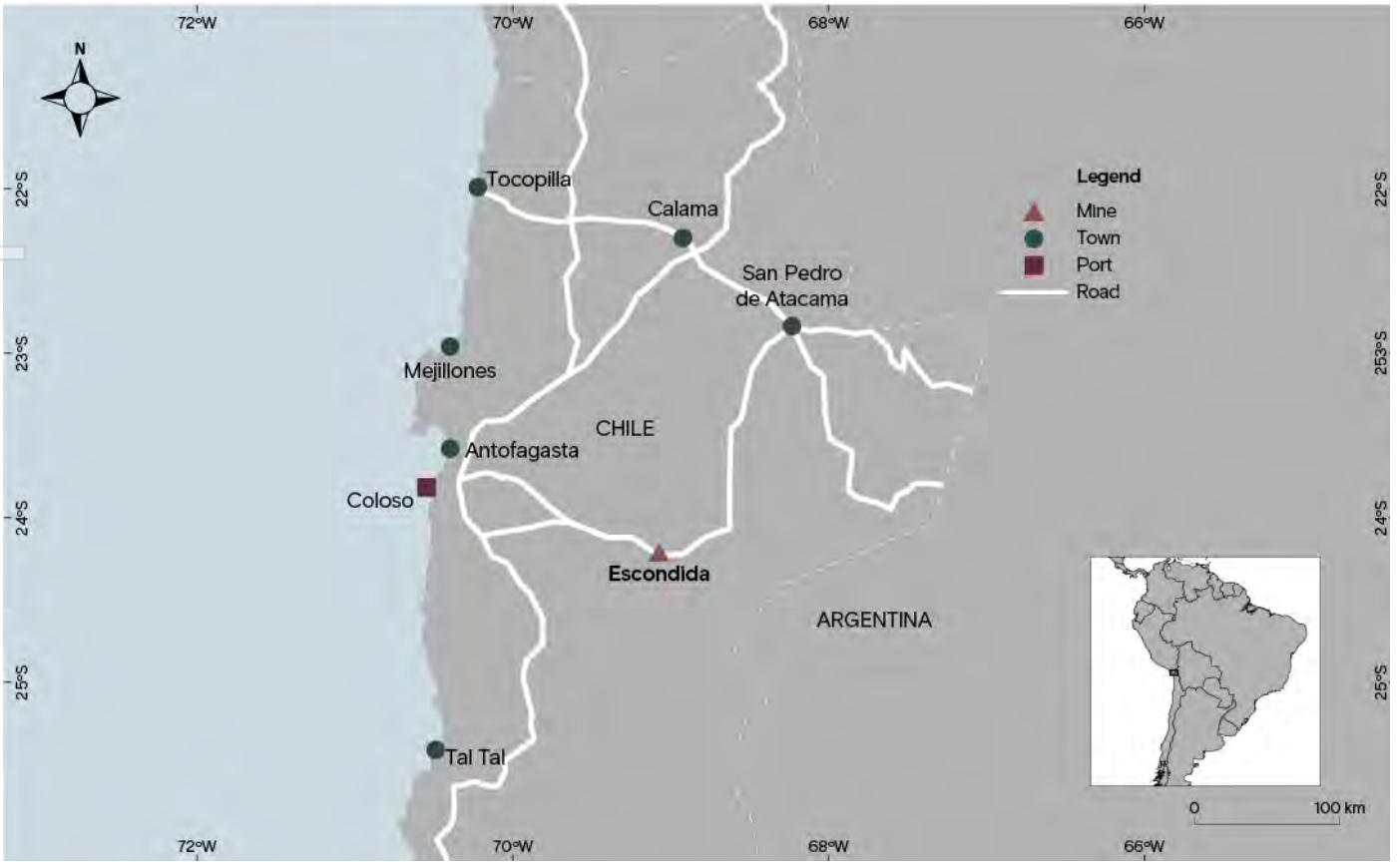
Underground Skarns Mineral Reserves comprise the Lower Commercial Skarns (LCS) Ore Reserves and the North Rim Skarn (NRS) Ore Reserves. An initial NRS Probable Ore Reserve of 3.0 million tonnes at 2.39% copper, 1.77 g/t gold, 18.59 g/t silver, and 0.010% molybdenum was released to the market by Rio Tinto on 20 June 2023 with a supporting JORC Table 1 and can be viewed at riotinto.com/resourcesandreserves.

It is noted that the Underground Skarns Ore Reserves are only economically viable while the current open pit is in operation.

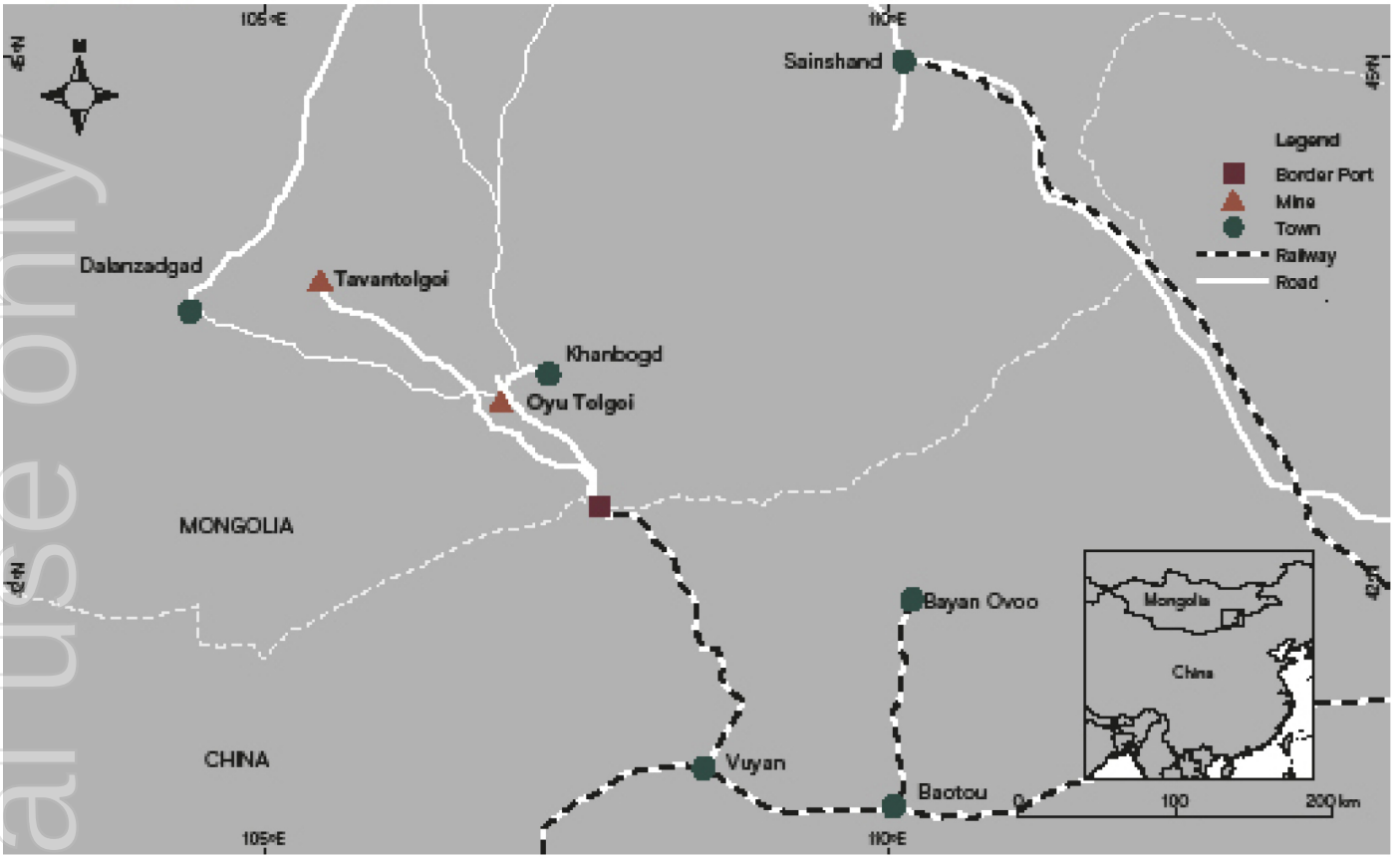
Oyu Tolgoi

Sustainable production from the Hugo Dummett North L1 underground mine commenced in March 2023.

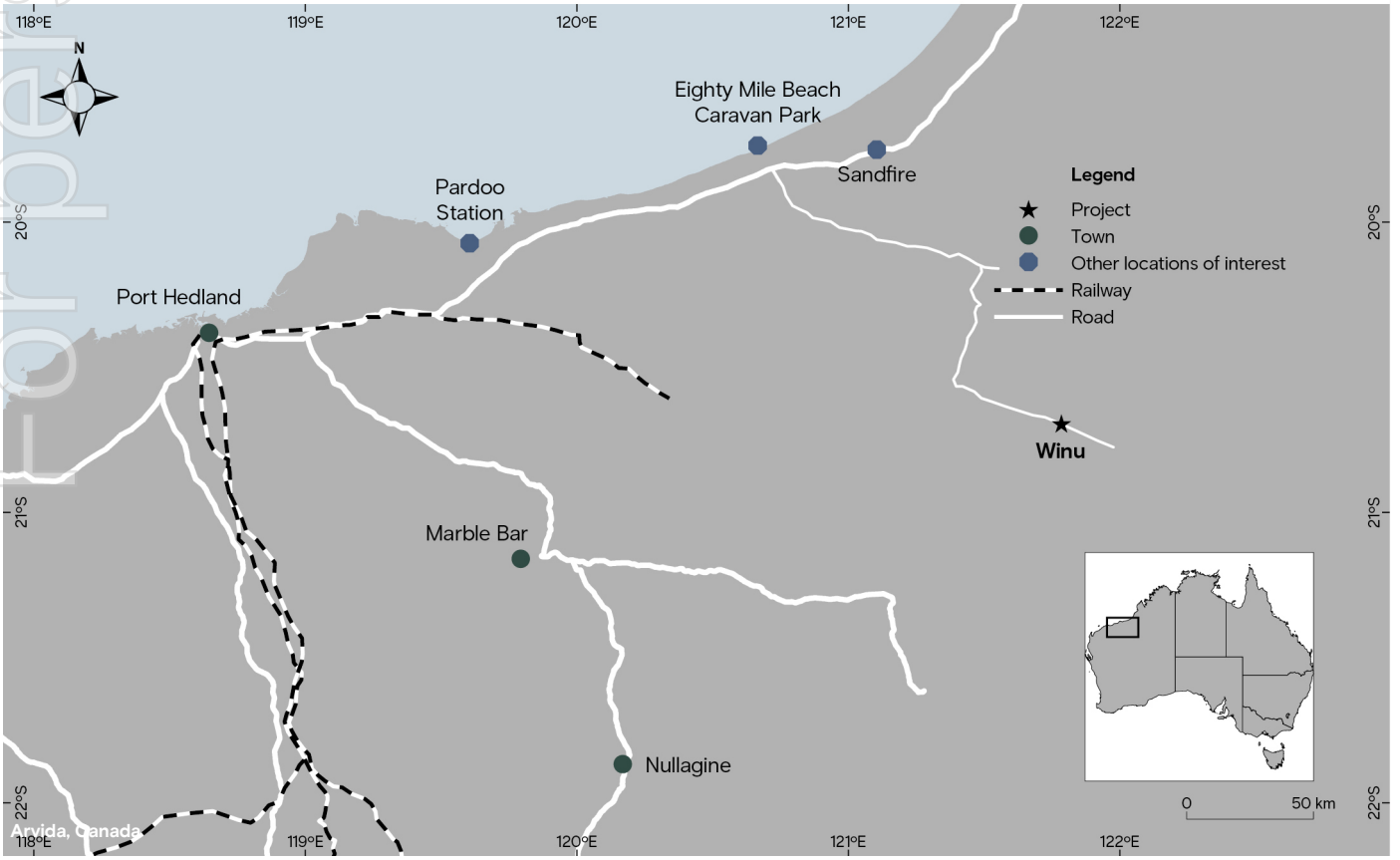
Escondida operations – Chile



Oyu Tolgoi operations – Mongolia



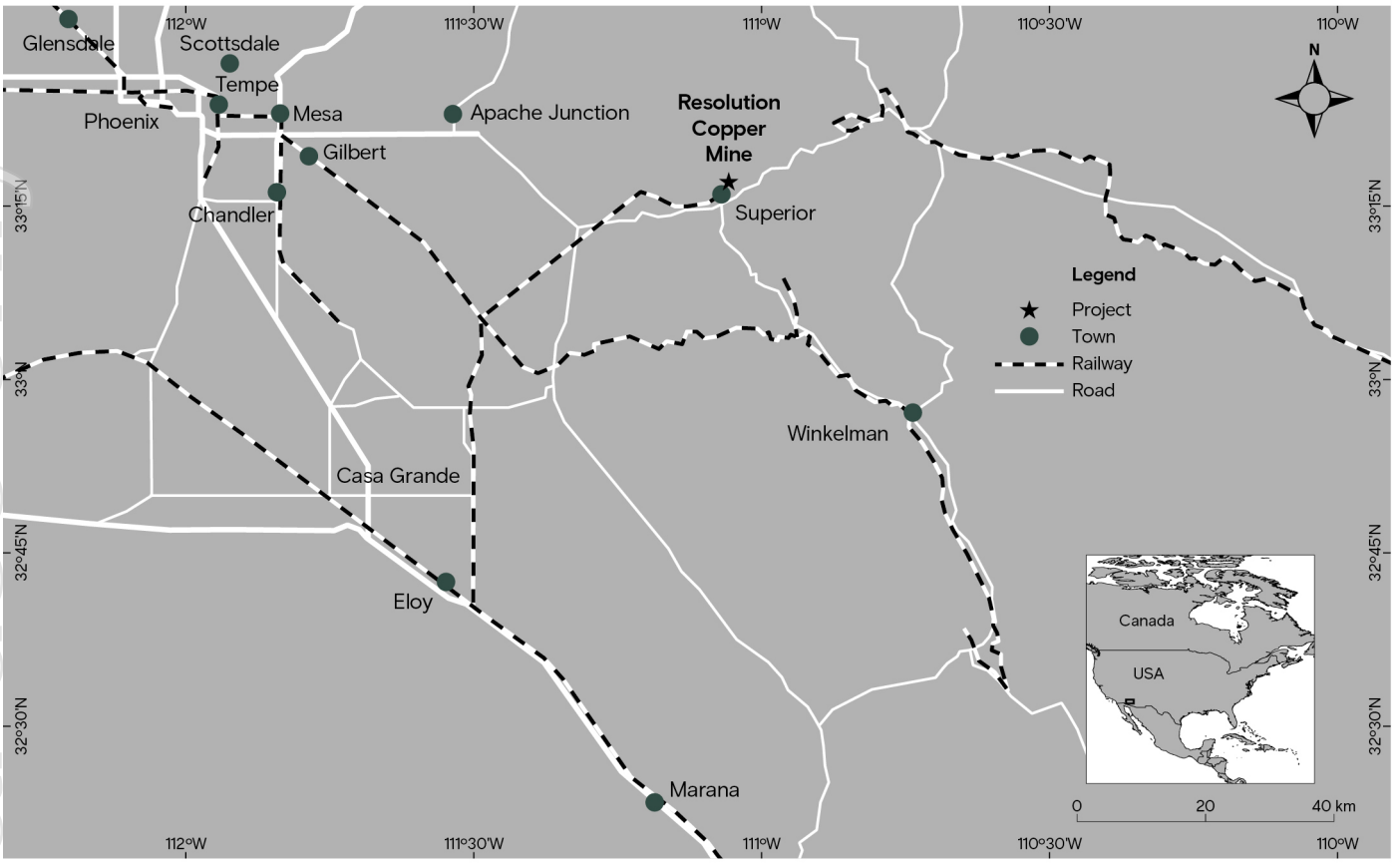
Winu project – Australia



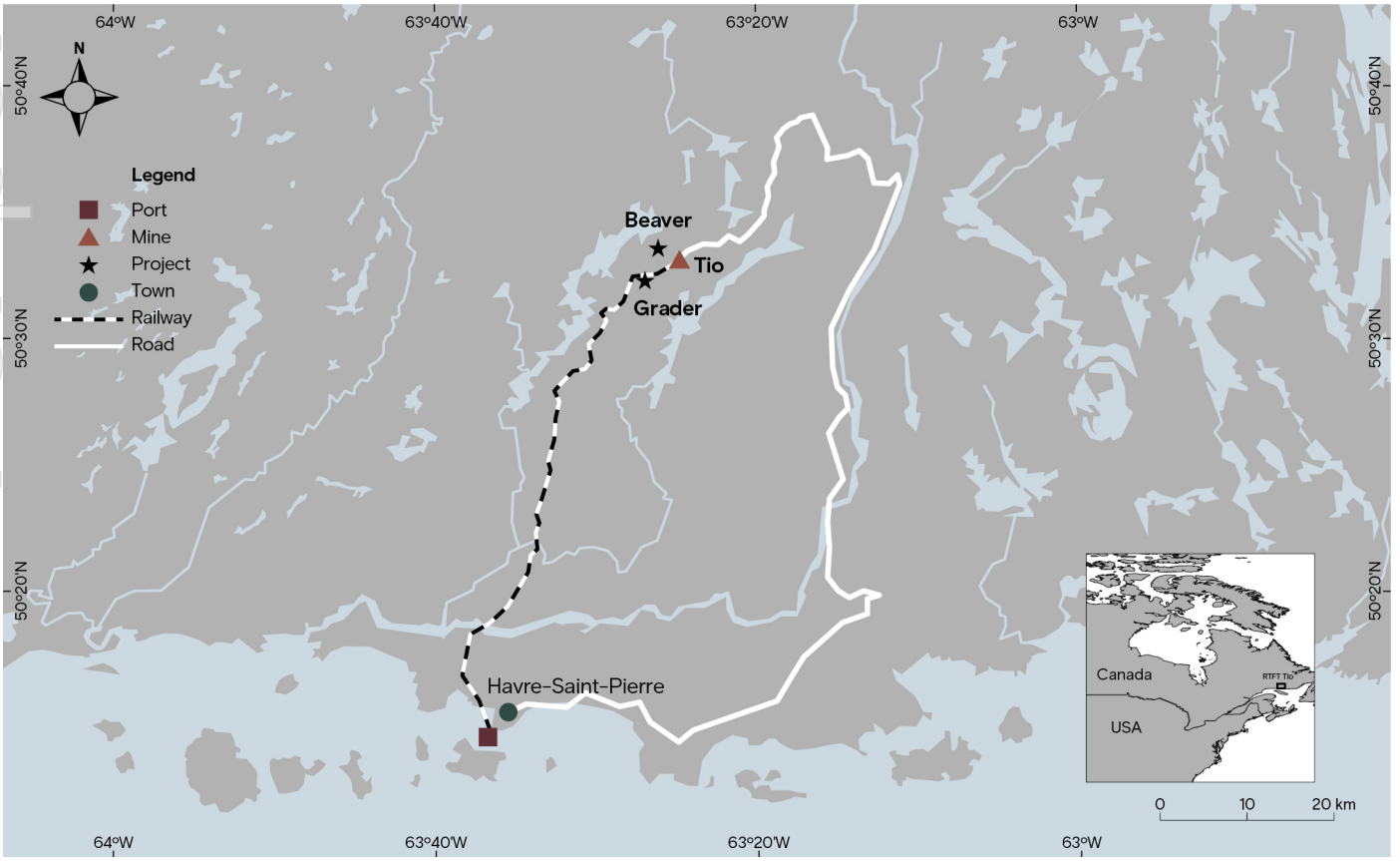
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Resolution project – United States



Rio Tinto Iron and Titanium Quebec Operations – Canada



	Type of mine[1]	Proved Ore reserves as at 31 December 2023			Probable Ore Reserves as at 31 December 2023		
		Tonnage	Grade		Tonnage	Grade	
Titanium dioxide feedstock[2]		Mt	% Ti minerals	% Zircon	Mt	% Ti minerals	% Zircon
QIT Madagascar Minerals (QMM) (Madagascar)	O/P	212	3.4	0.2	87	3.0	0.1
Richards Bay Minerals (RBM) (South Africa)	O/P	485	1.5	0.2	702	3.1	0.4
Rio Tinto Iron and Titanium (RTIT) Quebec Operations (Canada)	O/P	–	–	–	151	80.0	–
Total titanium dioxide feedstock		**697**	**2.1**	**0.2**	**940**	**15.5**	**0.3**

1. Type of mine: O/P = open pit/surface.
2. The marketable product (zircon at RBM and zirsil at QMM) is shown after all mining and processing losses. Titanium dioxide feedstock Ore Reserves are reported as dry in situ tonnes.

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QIT Madagascar Minerals operations – Madagascar



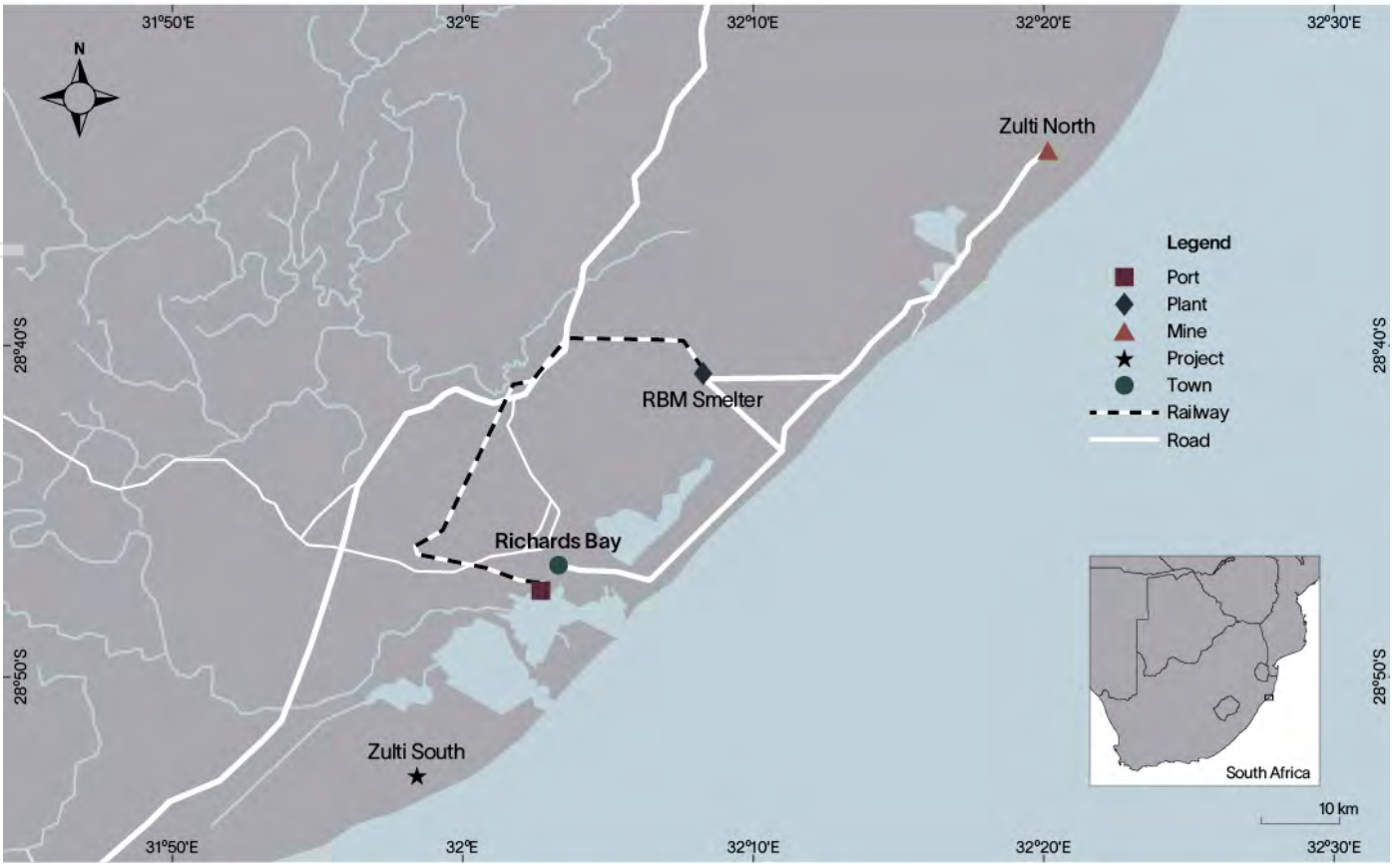
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	Total Ore Reserves as at 31 December 2023			Rio Tinto interest	Rio Tinto share marketable product		Total Ore Reserves as at 31 December 2022		
	Tonnage	Grade					Tonnage	Grade	
	Mt	% Ti minerals	% Zircon	%	Mt Titanium dioxide feedstock	Mt Zircon	Mt	% Ti minerals	% Zircon
	299	**3.3**	**0.1**	80.0	**3.6**	**0.2**	332	3.4	0.2
	1,187	**2.5**	**0.3**	74.0	**9.8**	**2.3**	1,284	2.4	0.3
	151	**80.0**	**–**	100.0	**47.8**	**–**	152	80.0	–
	1,637	**9.8**	**0.3**		**61.2**	**2.5**	1,768	9.3	0.3

QIT Madagascar Minerals (QMM)

Ore Reserve tonnes decreased following mining depletion and mine design and schedule changes.

Richards Bay Minerals operations – South Africa



	Type of mine[1]	Proved Ore Reserves as at 31 December 2023	Probable Ore Reserves as at 31 December 2023	**Total Ore Reserves as at 31 December 2023**
		Tonnage	Tonnage	**Tonnage**
Borates[2]		Mt	Mt	**Mt**
Boron (US)	O/P	8	5	**13**

	Type of mine[1]	Proved Ore Reserves as at 31 December 2023		Probable Ore Reserves as at 31 December 2023		**Total Ore Reserves as at 31 December 2023**	
		Tonnage	Grade	Tonnage	Grade	**Tonnage**	**Grade**
Diamonds[3]		Mt	Carats per tonne	Mt	Carats per tonne	**Mt**	**Carats per tonne**
Diavik (Canada)[4]	O/P & U/G	1.9	2.1	1.3	2.3	**3.1**	**2.2**

1. Type of mine: O/P = open pit/surface, U/G = underground.
2. Ore Reserves of borates are expressed in terms of marketable product (B_2O_3) tonnes after all mining and processing losses.
3. Ore Reserves of diamonds are shown as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
4. Diavik Ore Reserves are based on a nominal 1 millimetre lower cut-off size and a final re-crushing size of 6 millimetres.

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Boron operations – United States



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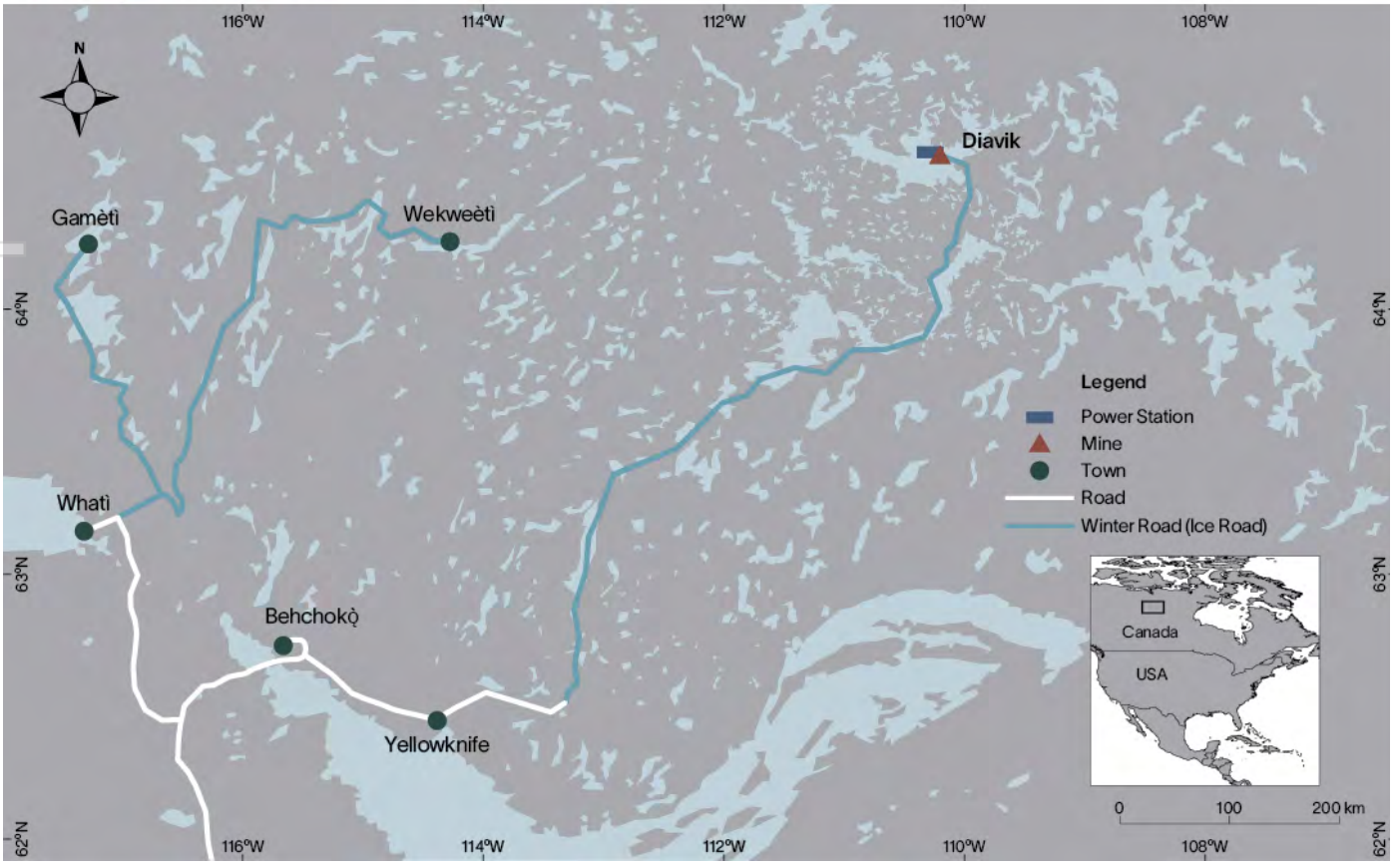
	Rio Tinto interest	**Rio Tinto share marketable product**	Total Ore Reserves as at 31 December 2022
			Tonnage
	%	**Mt**	Mt
	100.0	**13**	14

	Rio Tinto interest	**Rio Tinto share recoverable diamonds**	Total Ore Reserves as at 31 December 2022	
			Tonnage	Grade
	%	**M carats**	Mt	Carats per tonne
	100.0	**7.0**	4.4	2.1

Diavik

Ore Reserves tonnes decreased following mining depletion.

Diavik operations – Canada



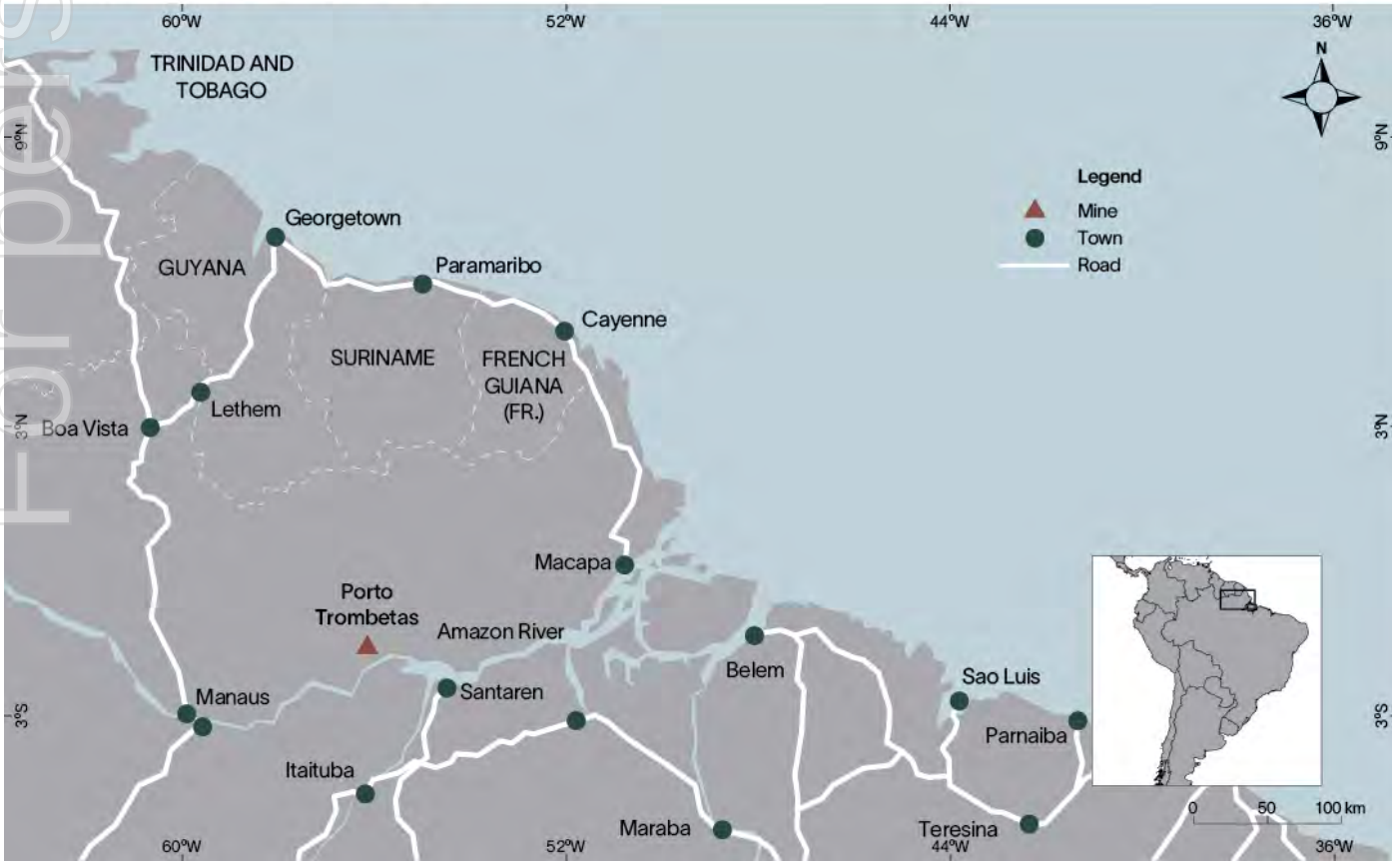
Mineral Resources

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023			Indicated Mineral Resources as at 31 December 2023			Total Measured and Indicated Mineral Resources as at 31 December 2023		
		Tonnage	Grade		Tonnage	Grade		Tonnage	Grade	
Bauxite		Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2	**Mt**	**% Al_2O_3**	**% SiO_2**
Rio Tinto Aluminium (Australia)[2]										
– Amrun	O/P	115	49.2	11.7	388	49.7	11.7	**504**	**49.6**	**11.7**
– East Weipa and Andoom	O/P	43	49.9	8.8	–	–	–	**43**	**49.9**	**8.8**
– Gove	O/P	9	48.1	8.9	0.4	47.8	8.9	**9**	**48.1**	**8.9**
– North of Weipa	O/P	–	–	–	202	52.0	11.1	**202**	**52.0**	**11.1**
Total (Australia)		**167**	**49.3**	**10.8**	**591**	**50.5**	**11.5**	**759**	**50.2**	**11.4**
Porto Trombetas (MRN) (Brazil)[3]	O/P	422	47.3	5.3	3	48.9	2.5	**425**	**47.3**	**5.3**
Sangarédi (Guinea)[4]	O/P	323	43.7	2.1	5,961	46.6	2.3	**6,284**	**46.5**	**2.3**
Total bauxite		**912**	**46.4**	**5.2**	**6,556**	**47.0**	**3.1**	**7,468**	**46.9**	**3.4**

1. Likely mining method: O/P = open pit/surface.
2. Rio Tinto Aluminium bauxite Mineral Resources are stated as dry product tonnes and total alumina and silica grades.
3. Porto Trombetas (MRN) Mineral Resources are stated as dry in situ tonnes, available alumina grade and total silica grade.
4. Sangarédi Mineral Resources tonnes are reported on a 3% moisture basis and total alumina and silica grades.

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Porto Trombetas operations – Brazil



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Inferred Mineral Resources as at 31 December 2023			**Total Mineral Resources as at 31 December 2023**			Rio Tinto interest	Total Mineral Resources as at 31 December 2022		
Tonnage	Grade		**Tonnage**	**Grade**			Tonnage	Grade	
Mt	% Al_2O_3	% SiO_2	**Mt**	**% Al_2O_3**	**% SiO_2**	%	Mt	% Al_2O_3	% SiO_2
285	51.7	12.1	**788**	**50.4**	**11.9**	100.0	843	50.6	11.8
–	–	–	**43**	**49.9**	**8.8**	100.0	53	49.3	8.5
0.01	46.9	8.1	**9**	**48.1**	**8.9**	100.0	13	48.3	9.0
1,248	51.8	11.4	**1,451**	**51.9**	**11.4**	100.0	1,330	52.0	11.6
1,533	**51.8**	**11.5**	**2,291**	**51.3**	**11.5**		2,240	51.4	11.6
146	49.5	4.0	**571**	**47.9**	**5.0**	22.0	590	47.7	5.0
737	45.8	2.4	**7,021**	**46.4**	**2.3**	23.0	7,014	46.4	2.3
2,416	**49.8**	**8.3**	**9,884**	**47.6**	**4.6**		9,844	47.6	4.6

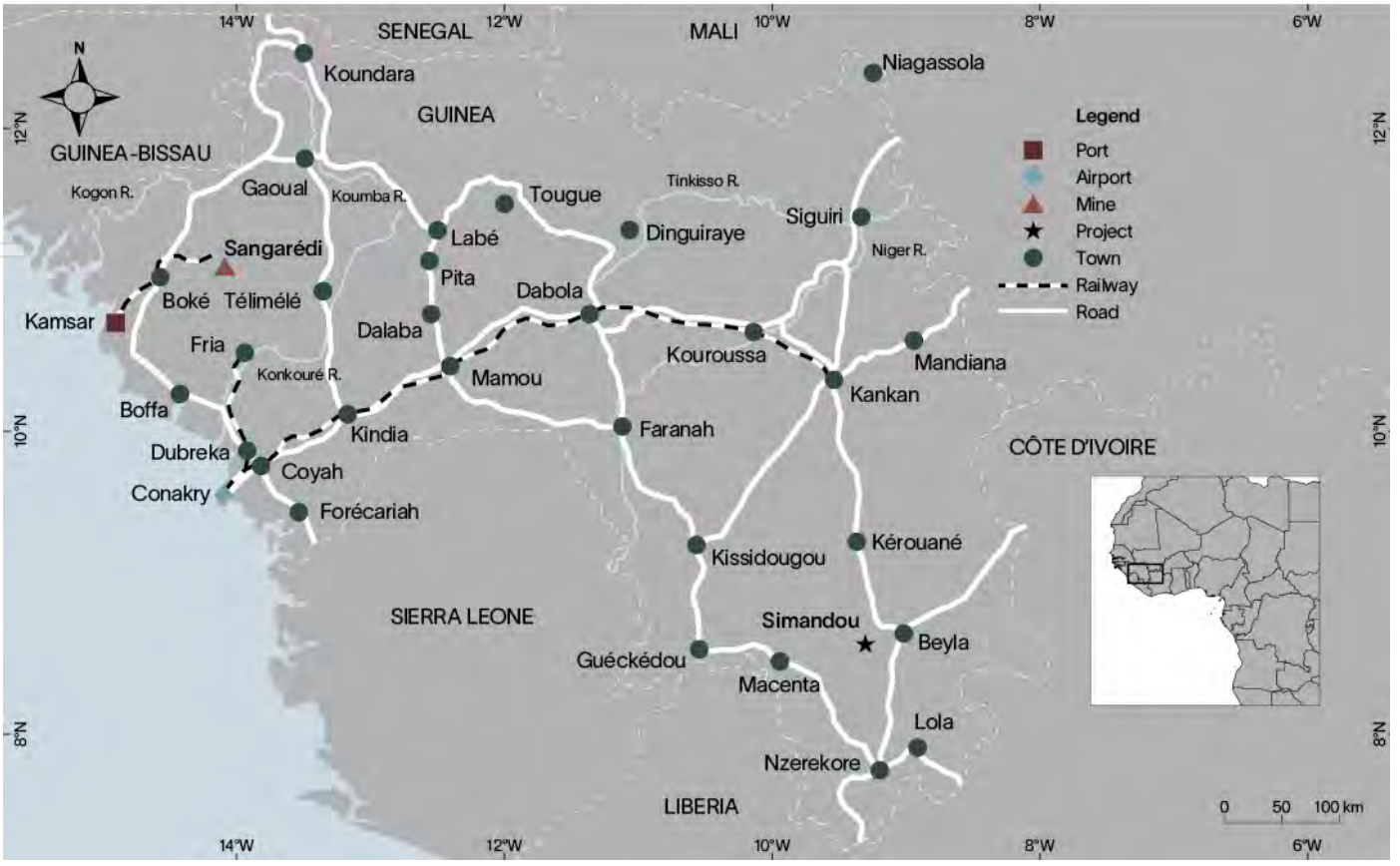
Rio Tinto Aluminium

Amrun, East Weipa and Andoom and Gove Mineral Resources tonnes decreased following the conversion of Mineral Resources to Ore Reserves. North of Weipa Mineral Resources tonnes increased following a large-scale drilling program, remodelling and updated orebody knowledge.

Porto Trombetas (MRN)

Mineral Resources tonnes decreased following the downgrading of bauxite with mass recovery under 50% to non-resources. On 30 November 2023, Rio Tinto completed an acquisition of Companhia Brasileira de Alumínio's 10% equity in the Mineracão Rio do Norte bauxite mine (MRN) in Brazil, raising our stake from 12% to 22%.

Simandou project and Sangarédi operations – Guinea



	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023						Indicated Mineral Resources as at 31 December 2023						**Total Measured and Indicated Mineral Resources as at 31 December 2023**					
		Tonnage	Grade					Tonnage	Grade					**Tonnage**	**Grade**				
Iron ore[2]		Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	**Mt**	**% Fe**	**% SiO_2**	**% Al_2O_3**	**% P**	**% LOI**
Australia																			
– Boolgeeda[3]	O/P	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**	**–**	**–**	**–**
– Brockman[4]	O/P	465	62.4	3.3	1.8	0.13	5.1	821	62.5	3.4	1.8	0.13	4.7	**1,286**	**62.5**	**3.4**	**1.8**	**0.13**	**4.8**
– Brockman Process Ore[5]	O/P	228	57.2	6.2	4.0	0.15	7.0	508	56.7	6.2	4.2	0.15	7.5	**737**	**56.9**	**6.2**	**4.1**	**0.15**	**7.3**
– Channel Iron Deposit[6]	O/P	775	56.0	6.1	2.7	0.05	10.4	2,108	57.8	4.8	2.8	0.07	9.2	**2,882**	**57.3**	**5.2**	**2.8**	**0.07**	**9.5**
– Detrital[7]	O/P	7	61.9	4.1	3.5	0.06	3.2	70	60.9	5.1	3.5	0.06	3.5	**76**	**60.9**	**5.0**	**3.5**	**0.06**	**3.5**
– Marra Mamba[8]	O/P	233	62.4	2.8	1.5	0.07	6.0	717	62.8	2.5	1.4	0.06	5.9	**950**	**62.7**	**2.6**	**1.4**	**0.06**	**5.9**
Total (Australia)		**1,707**	**58.8**	**4.9**	**2.5**	**0.09**	**7.8**	**4,224**	**59.5**	**4.3**	**2.6**	**0.09**	**7.4**	5,931	59.3	4.5	2.5	0.09	7.6
Iron Ore Company of Canada (Canada)[9,10]	O/P	171	40.8	35.8	0.2	0.02	–	720	38.5	37.1	0.2	0.03	–	**891**	**39.0**	**36.8**	**0.2**	**0.03**	**–**
Simandou (Guinea)	O/P	147	67.1	1.9	1.1	0.04	1.0	440	66.2	1.8	1.5	0.05	1.8	**587**	**66.5**	**1.8**	**1.4**	**0.05**	**1.6**
Total iron ore		**2,026**	**57.9**	**7.3**	**2.2**	**0.08**	**6.7**	**5,383**	**57.2**	**8.5**	**2.2**	**0.08**	**6.0**	7,409	57.4	8.2	2.2	0.08	6.2

1. Likely mining method: O/P = open pit/surface.
2. Iron ore Mineral Resources are stated on a dry in situ weight basis.
3. Boolgeeda Mineral Resources are 100% Rio Tinto-owned.
4. Brockman Mineral Resources are 74.6% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture, the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
5. Brockman Process Ore Mineral Resources are 66.9% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture, the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
6. Channel Iron Deposit Mineral Resources are 68.6% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Robe River joint venture.
7. Detrital Mineral Resources are 72.2% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
8. Marra Mamba Mineral Resources are 61.4% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
9. Iron Ore Company of Canada (IOC) Mineral Resources are stated as in situ material on a dry basis.
10. IOC Mineral Resources have the potential to produce marketable product (57% pellets and 43% concentrate for sale at a natural moisture content of 2%) comprising 73 million tonnes at 65% iron 2.7% silica (Measured), 301 million tonnes at 65% iron 2.7% silica (Indicated) and 308 million tonnes at 65% iron 2.7% silica (Inferred) using process recovery factors derived from current IOC concentrating and pellet operations. LOI is not determined for resource drilling samples, so no estimate of % LOI is available for Mineral Resources.

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Inferred Mineral Resources as at 31 December 2023						**Total Mineral Resources as at 31 December 2023**						Rio Tinto interest	Total Mineral Resources as at 31 December 2022					
Tonnage	Grade					**Tonnage**	**Grade**						Tonnage	Grade				
Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	**Mt**	**% Fe**	**% SiO_2**	**% Al_2O_3**	**% P**	**% LOI**	%	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
532	57.9	4.8	3.9	0.17	7.6	**532**	**57.9**	**4.8**	**3.9**	**0.17**	**7.6**	100.0	532	57.9	4.8	3.9	0.17	7.6
6,061	62.5	3.1	1.8	0.13	5.3	**7,346**	**62.5**	**3.2**	**1.8**	**0.13**	**5.2**	74.6	7,401	62.4	3.2	1.8	0.13	5.2
2,608	56.8	5.9	4.1	0.16	7.9	**3,345**	**56.8**	**5.9**	**4.1**	**0.16**	**7.7**	66.9	2,979	56.9	5.9	4.1	0.17	7.6
4,866	56.1	6.1	3.2	0.08	9.8	**7,749**	**56.5**	**5.7**	**3.0**	**0.07**	**9.7**	68.6	7,125	56.7	5.7	2.9	0.08	9.6
1,579	60.5	4.2	3.9	0.06	4.3	**1,655**	**60.6**	**4.3**	**3.8**	**0.06**	**4.3**	72.2	1,602	60.6	4.3	3.8	0.06	4.3
4,256	61.6	3.0	1.7	0.07	6.4	**5,206**	**61.8**	**2.9**	**1.7**	**0.06**	**6.3**	61.4	5,182	61.8	3.0	1.7	0.06	6.4
19,901	**59.7**	**4.3**	**2.7**	**0.10**	**6.9**	**25,833**	**59.6**	**4.3**	**2.6**	**0.10**	**7.1**		24,820	59.8	4.3	2.6	0.10	7.0
751	38.2	37.8	0.2	0.03	–	**1,641**	**38.6**	**37.3**	**0.2**	**0.03**	**–**	58.7	1,666	38.7	37.4	0.2	0.03	–
756	65.8	1.4	1.4	0.07	2.8	**1,343**	**66.1**	**1.6**	**1.4**	**0.06**	**2.3**	45.1	2,830	65.8	1.2	1.5	0.08	3.0
21,408	**59.2**	**5.4**	**2.5**	**0.10**	**6.6**	**28,817**	**58.7**	**6.1**	**2.4**	**0.10**	**6.5**		29,315	59.1	5.9	2.3	0.10	6.2

Iron Ore Australia

Mineral Resources tonnes have increased for Channel Iron Deposit and Brockman Process Ore on the basis of additional drilling and updated resource models.

Simandou

Simandou Mineral Resources tonnes decreased due to conversion to Ore Reserves following completion of the feasibility study for Ouéléba. A JORC Table 1 in support of this change was released to the market on 6 December 2023 and can be viewed at riotinto.com/resourcesandreserves.

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	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023					Indicated Mineral Resources as at 31 December 2023					**Total Measured and Indicated Mineral Resources as at 31 December 2023**				
		Tonnage	Grade				Tonnage	Grade				**Tonnage**	**Grade**			
Copper[2]		Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo	**Mt**	**% Cu**	**g/t Au**	**g/t Ag**	**% Mo**
Winu (Australia)	O/P	–	–	–	–	–	222	0.45	0.35	2.73	–	222	0.45	0.35	2.73	–
Bingham Canyon (US)																
– Bingham Open Pit[3]	O/P	38	0.47	0.15	2.47	0.020	22	0.39	0.16	2.66	0.016	59	0.44	0.15	2.54	0.018
– Underground Skarns	U/G	0.2	2.52	1.27	10.56	0.056	12	2.75	1.17	60.67	0.010	12	2.75	1.17	60.03	0.011
Resolution (US)	U/G	–	–	–	–	–	724	1.89	–	3.70	0.042	724	1.89	–	3.70	0.042
Total (US)		**38**	**0.48**	**0.16**	**2.50**	**0.020**	**758**	**1.86**	**0.02**	**4.57**	**0.041**	**796**	**1.79**	**0.03**	**4.47**	**0.040**
Escondida (Chile)																
– Chimborazo – sulphide	O/P	–	–	–	–	–	137	0.50	–	–	–	137	0.50	–	–	–
– Escondida – mixed	O/P	13	0.49	–	–	–	14	0.43	–	–	–	27	0.46	–	–	–
– Escondida – oxide	O/P	13	0.55	–	–	–	4	0.57	–	–	–	17	0.55	–	–	–
– Escondida – sulphide	O/P	652	0.60	–	–	–	1,628	0.48	–	–	–	2,280	0.51	–	–	–
– Pampa Escondida – sulphide	O/P	294	0.53	0.07	–	–	1,150	0.55	0.10	–	–	1,444	0.55	0.09	–	–
– Pinta Verde – oxide	O/P	109	0.60	–	–	–	64	0.53	–	–	–	173	0.57	–	–	–
– Pinta Verde – sulphide	O/P	–	–	–	–	–	23	0.50	–	–	–	23	0.50	–	–	–
Total (Chile)		**1,081**	**0.58**	**0.02**	**–**	**–**	**3,020**	**0.51**	**0.04**	**–**	**–**	**4,101**	**0.53**	**0.03**	**–**	**–**
La Granja (Peru)	O/P	–	–	–	–	–	130	0.85	–	–	–	130	0.85	–	–	–
Oyu Tolgoi (Mongolia)																
– Heruga ETG	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Heruga OT	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Hugo Dummett North[4]	U/G	57	1.90	0.50	4.30	–	381	1.39	0.35	3.24	–	438	1.46	0.37	3.38	–
– Hugo Dummett North Extension	U/G	–	–	–	–	–	85	1.62	0.55	4.21	–	85	1.62	0.55	4.21	–
– Hugo Dummett South	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Oyut Open Pit	O/P	16	0.41	0.38	1.10	–	92	0.33	0.30	1.13	–	109	0.34	0.31	1.12	–
– Oyut Underground	U/G	10	0.48	0.91	1.31	–	50	0.38	0.61	1.18	–	60	0.40	0.66	1.20	–
Total (Mongolia)		**83**	**1.44**	**0.53**	**3.33**	**–**	**608**	**1.18**	**0.39**	**2.89**	**–**	**691**	**1.21**	**0.41**	**2.94**	**–**
Total copper		**1,202**	**0.64**	**0.06**	**0.31**	**0.001**	**4,738**	**0.82**	**0.09**	**1.23**	**0.007**	**5,940**	**0.78**	**0.09**	**1.04**	**0.005**

1. Likely mining method: O/P = open pit/surface, U/G = underground.
2. Copper Mineral Resources are stated on a dry in situ weight basis.
3. Bingham Canyon Open Pit Mineral Resources molybdenum grades interpolated from exploration drilling assays have been factored based on a long reconciliation history to blast hole and mill samples.
4. The Hugo Dummett North Mineral Resources include approximately 1.3 million tonnes of stockpiled material at a grade of 0.35% copper, 0.11 g/t gold and 0.85 g/t silver.

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Inferred Mineral Resources as at 31 December 2023					**Total Mineral Resources as at 31 December 2023**					Rio Tinto interest	Total Mineral Resources as at 31 December 2022				
Tonnage	Grade				**Tonnage**	**Grade**					Tonnage	Grade			
Mt	% Cu	g/t Au	g/t Ag	% Mo	**Mt**	**% Cu**	**g/t Au**	**g/t Ag**	**% Mo**	%	Mt	% Cu	g/t Au	g/t Ag	% Mo
499	0.38	0.33	1.98	–	**721**	**0.40**	**0.34**	**2.21**	**–**	100.0	721	0.40	0.34	2.21	–
12	0.26	0.20	2.56	0.005	**72**	**0.41**	**0.16**	**2.55**	**0.016**	100.0	93	0.43	0.15	2.24	0.016
14	2.51	0.91	15.41	0.008	**26**	**2.62**	**1.03**	**36.18**	**0.009**	100.0	27	2.70	1.15	35.50	0.009
1,134	1.28	–	2.74	0.031	**1,859**	**1.52**	**–**	**3.12**	**0.035**	55.0	1,859	1.52	–	3.10	0.035
1,161	**1.28**	**0.01**	**2.89**	**0.030**	1,956	1.49	0.02	3.53	0.034		1,978	1.48	0.02	3.52	0.034
81	0.60	–	–	–	**218**	**0.54**	**–**	**–**	**–**	30.0	220	0.53	–	–	–
22	0.47	–	–	–	**49**	**0.46**	**–**	**–**	**–**	30.0	44	0.47	–	–	–
5	0.65	–	–	–	**22**	**0.58**	**–**	**–**	**–**	30.0	20	0.57	–	–	–
9,984	0.53	–	–	–	**12,264**	**0.53**	**–**	**–**	**–**	30.0	11,895	0.52	–	–	–
5,420	0.44	0.05	–	–	**6,864**	**0.46**	**0.06**	**–**	**–**	30.0	6,894	0.46	0.05	–	–
15	0.54	–	–	–	**188**	**0.57**	**–**	**–**	**–**	30.0	188	0.57	–	–	–
37	0.45	–	–	–	**60**	**0.47**	**–**	**–**	**–**	30.0	60	0.47	–	–	–
15,564	**0.50**	**0.02**	**–**	**–**	19,665	0.50	0.02	–	–		19,321	0.50	0.02	–	–
4,190	0.50	–	–	–	**4,320**	**0.51**	**–**	**–**	**–**	45.0	4,320	0.51	–	–	–
1,502	0.41	0.40	1.44	0.012	**1,502**	**0.41**	**0.40**	**1.44**	**0.012**	56.1	1,502	0.41	0.40	1.44	0.012
107	0.42	0.30	1.58	0.011	**107**	**0.42**	**0.30**	**1.58**	**0.011**	66.0	107	0.42	0.30	1.58	0.011
718	0.83	0.29	2.47	–	**1,156**	**1.07**	**0.32**	**2.82**	**–**	66.0	1,156	1.07	0.32	2.82	–
160	1.05	0.37	2.85	–	**245**	**1.25**	**0.43**	**3.32**	**–**	56.1	245	1.25	0.43	3.32	–
731	0.83	0.07	1.87	–	**731**	**0.83**	**0.07**	**1.87**	**–**	66.0	731	0.83	0.07	1.87	–
319	0.29	0.19	1.01	–	**428**	**0.30**	**0.22**	**1.04**	**–**	66.0	435	0.30	0.22	1.04	–
144	0.41	0.42	1.25	–	**204**	**0.40**	**0.49**	**1.23**	**–**	66.0	204	0.40	0.49	1.23	–
3,681	**0.59**	**0.29**	**1.75**	**0.005**	4,372	0.69	0.31	1.93	0.004		4,380	0.69	0.31	1.93	0.004
25,095	**0.55**	**0.06**	**0.43**	**0.002**	31,035	0.59	0.07	0.55	0.003		30,720	0.59	0.06	0.55	0.003

Bingham Canyon

Open Pit Mineral Resources tonnes decreased following conversion of Mineral Resources to Ore Reserves, exclusion of uneconomic material, mining depletion and model updates. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

Underground Skarns Mineral Resources represent the combined Mineral Resources from the various underground deposits at Bingham Canyon.

La Granja

As reported to the market on 28 August 2023, Rio Tinto and First Quantum Minerals (First Quantum) completed a transaction to form a joint venture that will work to unlock the development of the La Granja project in Peru, with First Quantum acquiring a 55% stake in the project. The Rio Tinto interest percentage (45%) reflects this change.

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	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023			Indicated Mineral Resources as at 31 December 2023			**Total Measured and Indicated Mineral Resources as at 31 December 2023**		
		Tonnage	Grade		Tonnage	Grade		**Tonnage**	**Grade**	
Titanium dioxide feedstock[2]		Mt	% Ti Minerals	% Zircon	Mt	% Ti Minerals	% Zircon	**Mt**	**% Ti Minerals**	**% Zircon**
QIT Madagascar Minerals (QMM) (Madagascar)	O/P	445	4.3	0.2	398	4.0	0.2	843	4.2	0.2
Richards Bay Minerals (RBM) (South Africa)	O/P	–	–	–	10	12.0	8.1	10	12.0	8.1
Rio Tinto Iron and Titanium (RTIT) Quebec Operations (Canada)	O/P	–	–	–	11	84.9	–	11	84.9	–
Total titanium dioxide feedstock		**445**	**4.3**	**0.2**	**420**	**6.3**	**8.3**	**865**	**5.3**	**4.1**

1. Likely mining method: O/P = open pit/surface.
2. Titanium dioxide feedstock Mineral Resources are reported as dry in situ tonnes.

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La Granja project – Peru



	Inferred Mineral Resources as at 31 December 2023			**Total Mineral Resources as at 31 December 2023**			Rio Tinto interest	Total Mineral Resources as at 31 December 2022		
	Tonnage	Grade		**Tonnage**	**Grade**			Tonnage	Grade	
	Mt	% Ti Minerals	% Zircon	**Mt**	**% Ti Minerals**	**% Zircon**	%	Mt	% Ti Minerals	% Zircon
	596	3.9	0.2	**1,439**	**4.1**	**0.2**	80.0	1,439	4.1	0.2
	–	–	–	**10**	**12.0**	**8.1**	74.0	8	9.2	8.2
	16	79.2	–	**27**	**81.6**	**–**	100.0	27	81.6	–
	612	**5.8**	**0.2**	**1,476**	**5.5**	**2.5**		1,474	5.5	2.5

Richard Bay Minerals (RBM)

Mineral Resources tonnes increased due to the addition of stockpiled material..

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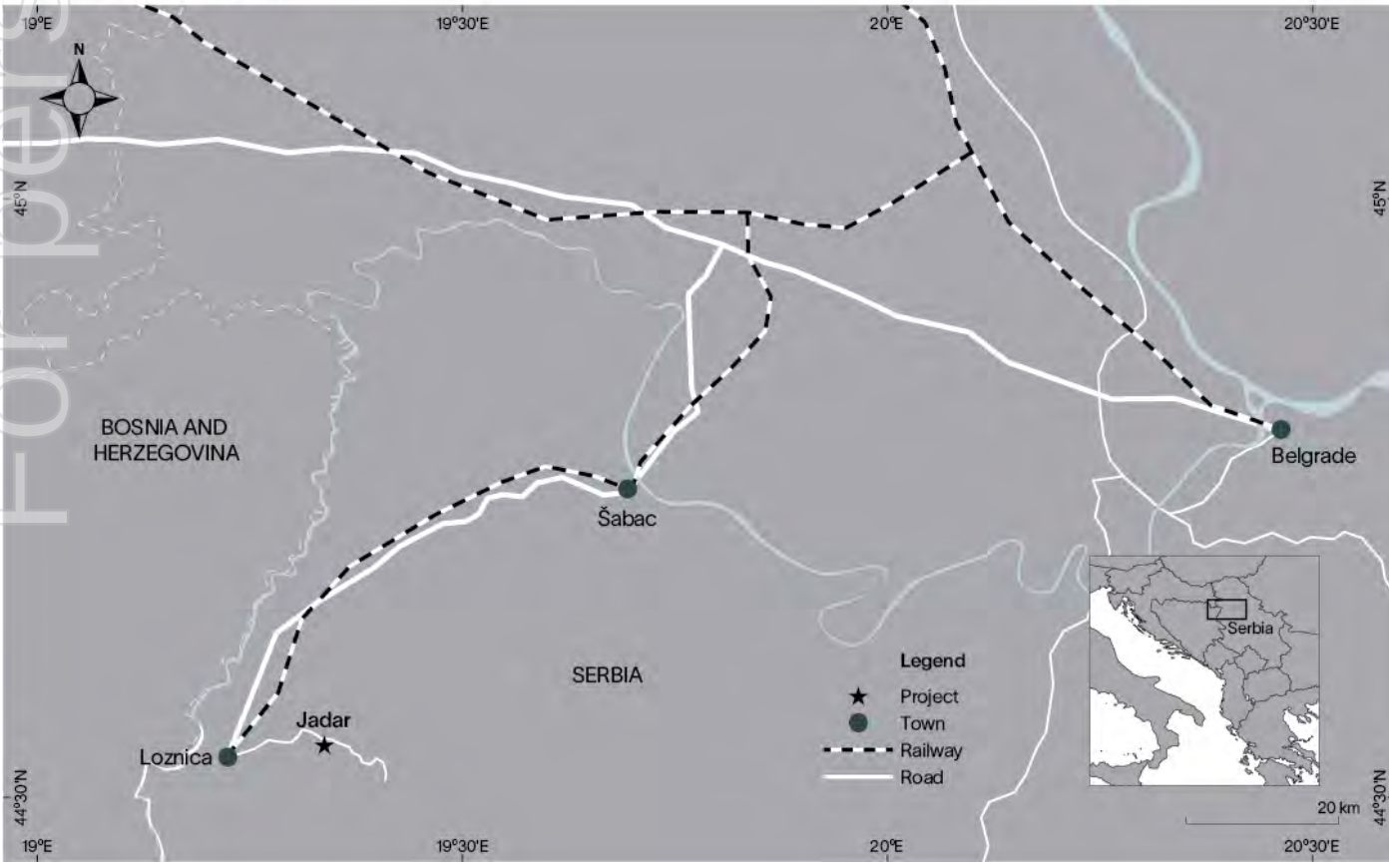
	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023		Indicated Mineral Resources as at 31 December 2023		**Total Measured and Indicated Mineral Resources as at 31 December 2023**	
		Tonnage		Tonnage		**Tonnage**	
Borates[2]		Mt		Mt		**Mt**	
Jadar (Serbia)[3]	U/G	–		14		**14**	

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023		Indicated Mineral Resources as at 31 December 2023		**Total Measured and Indicated Mineral Resources as at 31 December 2023**	
		Tonnage	Grade	Tonnage	Grade	**Tonnage**	**Grade**
Diamonds[4]		Mt	Carats per tonne	Mt	Carats per tonne	**Mt**	**Carats per tonne**
Diavik (Canada)	U/G	1.5	2.4	1.2	2.7	**2.7**	**2.5**

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2023		Indicated Mineral Resources as at 31 December 2023		**Total Measured and Indicated Mineral Resources as at 31 December 2023**	
		Tonnage	Grade	Tonnage	Grade	**Tonnage**	**Grade**
Lithium[4]		Mt	% Li_2O	Mt	% Li_2O	**Mt**	**% Li_2O**
Jadar (Serbia)	U/G	–	–	85	1.76	**85**	**1.76**

1. Likely mining method: U/G = underground.
2. Borates Mineral Resources are reported as dry in situ B_2O_3 tonnes, rather than marketable product as in Ore Reserves.
3. Jadar equivalent dry in situ Mineral Resource is 85 million tonnes at 16.1% B_2O_3 (Indicated) and 58 million tonnes at 12.0% B_2O_3 (Inferred).
4. Diamond and lithium Mineral Resources are stated as dry in situ tonnes.

Jadar project – Serbia



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Inferred Mineral Resources as at 31 December 2023	**Total Mineral Resources as at 31 December 2023**	Rio Tinto interest	Total Mineral Resources as at 31 December 2022
Tonnage	**Tonnage**		Tonnage
Mt	**Mt**	%	Mt
7	**21**	100.0	21

Inferred Mineral Resources as at 31 December 2023		**Total Mineral Resources as at 31 December 2023**		Rio Tinto interest	Total Mineral Resources as at 31 December 2022	
Tonnage	Grade	**Tonnage**	**Grade**		Tonnage	Grade
Mt	Carats per tonne	**Mt**	**Carats per tonne**	%	Mt	Carats per tonne
0.3	2.1	**3.0**	**2.5**	100.0	1.3	2.3

Inferred Mineral Resources as at 31 December 2023		**Total Mineral Resources as at 31 December 2023**		Rio Tinto interest	Total Mineral Resources as at 31 December 2022	
Tonnage	Grade	**Tonnage**	**Grade**		Tonnage	Grade
Mt	% Li_2O	**Mt**	**% Li_2O**	%	Mt	% Li_2O
58	1.87	**144**	**1.80**	100.0	144	1.80

Diavik

Mineral Resources tonnes increased based on a review of the material remaining at the end of mine life in combination with unplanned tonnes in the crown and sill pillars.

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Mineral Resources and Ore Reserves governance and internal controls

Rio Tinto has well-established governance processes and internal controls to support the generation and publication of Mineral Resources and Ore Reserves, including a series of business unit and product group structures and processes independent of operational reporting.

Audit & Risk Committee

The Audit & Risk Committee's remit includes the governance of Mineral Resources and Ore Reserves. This includes an annual review of Mineral Resources and Ore Reserves at a Group level, as well as a review of findings and progress from the Group Internal Audit program.

Ore Reserves Steering Committee

The Ore Reserves Steering Committee (ORSC), chaired by the Chief Technical Officer, Development & Technology, meets at least quarterly. The ORSC comprises senior representatives across our technical, financial, governance and business groups, and oversees the appointment of Competent Persons nominated by the business units; reviews Exploration Results, Mineral Resources or Ore Reserves data prior to public reporting; and oversees the development of the Group Mineral Resources and Ore Reserves standards and guidance.

Orebody Knowledge Centre of Excellence

The Orebody Knowledge Centre of Excellence contains a dedicated Orebody Knowledge Technical Assurance team. Orebody Knowledge Technical Assurance, in conjunction with the ORSC, is the guardian and author of Group Mineral Resources and Ore Reserves standards and guidance, and is responsible for the governance and compilation of Group Mineral Resources, Ore Reserves and reconciliation reporting. The Technical Assurance team also advises on disclosure obligations, monitors the external reporting environment and facilitates internal audits.

Internal Auditing

Mineral Resources and Ore Reserves internal audits are conducted by independent external consulting personnel in a programme managed by Orebody Knowledge Technical Assurance. Material findings are reported outside of the product group reporting line to the ORSC, and all reports and action plans are reviewed by the ORSC for alignment to internal and external reporting standards.

During 2023, two internal Mineral Resources and Ore Reserves audits were completed.

Geoscientific information management and assurance

We employ industry-standard drilling, sampling, assaying and quality assurance/quality control (QA/QC) practices supported by formally documented procedures.

Diamond core and reverse circulation are our primary drilling methods. We use other methods such as sonic and air core if appropriate for the style of deposit. Drill hole locations are typically confirmed by high-precision differential Global Positioning System (GPS) and down-hole trace positioning is primarily achieved by gyroscopic survey.

Drill sample recovery is typically recorded, and all geological data is collected by qualified geoscientific professionals. Geological logging consistency is secured via formal logging procedures and training, reference materials, application of geological code libraries and digital logging directly to the geological database.

On-site or commercial laboratories provide appropriate analytical (assaying) techniques, according to the commodity and style of deposit. Reliability of assay data is maintained via QA/QC procedures, which monitor assay accuracy and precision through the analysis of blanks, sample duplicates and matrix-matched certified reference materials.

Our geoscientific information management standard is the industry-leading acQuire system and we employ strict QA/QC criteria to ensure only high-quality assay data is uploaded to a project's database.

Mineral Resources and Ore Reserves risk management

Risks to our Mineral Resources and Ore Reserves estimates are managed through comprehensive risk assessments undertaken in support of the annual reporting cycle. Risks are identified and managed by verifying controls, determining and undertaking suitable actions to remove or reduce the risk, conducting reviews, and maintaining compliance with standards and procedures. Risks are managed through a commercial risk management solution.

At the end of each reporting cycle, we analyse the Mineral Resources and Ore Reserves risks across all business units to ensure both consistency of reporting and determine any Group-wide risks to the various processes.

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Competent Persons

	Association[a]	Employer	Accountability	Deposits
Bauxite				
A McIntyre	AusIMM	Rio Tinto	Resources	Gove, East Weipa and Andoom, North of Weipa, Amrun
W Saba	AusIMM		Reserves	Gove, East Weipa and Andoom, Amrun
M Alpha DIALLO	EFG	Compagnie des Bauxites de Guinée	Resources	Sangaredi
M Keersemaker	AusIMM	External consultant to Compagnie des Bauxites de Guinée	Reserves	
R Aglinskas	AusIMM	External consultants to Mineração Rio do Norte	Resources	Trombetas
L H Costa	AusIMM		Reserves	
Borates				
B Griffiths	SME	Rio Tinto	Reserves	Boron
Copper				
H Martin	AusIMM	Rio Tinto	Resources	Resolution[b][c]
J Marshall	AusIMM		Resources	
A Schwarz	AusIMM		Resources	
O Togtokhbayar	AusIMM	Rio Tinto	Resources	Oyu Tolgoi[b] [c] [d]
B Ndlovu	AusIMM		Reserves	
N Robinson	AusIMM		Reserves	
R Hayes	AusIMM	Rio Tinto	Resources	Bingham Canyon[b] [c] [d]
A Chiquini	AusIMM		Resources	
P Rodriguez	AusIMM		Resources	
C McArthur	AusIMM		Reserves	
B Pett	AusIMM		Reserves	
R Maureira	AusIMM	Minera Escondida Ltda.	Resources	Escondida, Escondida – Chimborazo – sulphide, Pampa Escondida – sulphide[d], Pinta Verde
P Castillo	AusIMM		Reserves	Escondida
J Marshall	AusIMM	Rio Tinto	Resources	La Granja
J Pocoe	AusIMM	Rio Tinto	Resources	Winu[b] [d]
Diamonds				
K Pollock	NAPEG	Rio Tinto	Resources & Reserves	Diavik
C Auld	NAPEG		Reserves	
Iron ore				
M Styles	AusIMM	Rio Tinto	Resources	Simandou
M Apfel	AusIMM		Reserves	
M McDonald	PEGNL	Rio Tinto	Resources	Iron Ore Company of Canada
B Power	PEGNL		Resources	
R Way	PEGNL		Resources	
R Williams	PEGNL		Reserves	
S Roche	AusIMM		Reserves	
N Brajkovich	AusIMM	Rio Tinto	Resources	Rio Tinto Iron Ore – Boolgeeda, Brockman, Brockman Process Ore, Channel Iron Deposit, Detrital, Marra Mamba
M Judge	AusIMM		Resources	
E Barron	AusIMM		Resources	
AA Latscha	AusIMM		Resources	
P Savory	AusIMM		Resources	
P Barnes	AusIMM		Reserves	Rio Tinto Iron Ore – Brockman Ore, Marra Mamba Ore, Pisolite (Channel Iron) Ore
R Bleakley	AusIMM		Reserves	
B Satria Yudha	AusIMM		Reserves	
L Vilela Couto	AusIMM		Reserves	
Lithium				
I Misailovic	EFG	Rio Tinto	Resources	Jadar[e]
D Tanaskovic	EFG		Resources	
Titanium dioxide feedstock				
J Dumouchel	OGQ	Rio Tinto	Resources	Rio Tinto Iron and Titanium Quebec Operations (RTIT Quebec Operations)
D Gallant	OIQ		Reserves	
A Cawthorn-Blazeby	SACNASP	Rio Tinto	Resources	Richards Bay Minerals (RBM)[f]
S Mnunu	SACNASP		Reserves	
A Louw	AusIMM	Rio Tinto	Resources	QIT Madagascar Minerals (QMM)[f]
H Rakotonindrainy	IOM3		Reserves	

(a) AusIMM: Australasian Institute of Mining and Metallurgy
EFG: European Federation of Geologists
IOM3: Institute of Materials, Minerals and Mining
NAPEG: Association of Professional Engineers; Geologists and Geophysicists of the Northwest Territories
OGQ: L'Ordre des Géologues du Québec
OIQ: L'Ordre des Ingénieurs du Québec
PEGNL: Professional Engineers and Geoscientists Newfoundland and Labrador
SACNASP: South African Council for Natural Scientific Professions SAIMM: Southern African Institute of Mining and Metallurgy
SME: Society of Mining, Metallurgy and Exploration

(b) Includes silver
(c) Includes molybdenum
(d) Includes gold
(e) Includes borates
(f) Includes zircon

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Mines and production facilities

Group mines as at 31 December 2023

Iron Ore

Production properties

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Property
Australian Pilbara Operations

Mine
Hamersley Iron:
- Brockman 2
- Brockman 4
- Channar
- Gudai-Darri
- Marandoo
- Mount Tom Price
- Nammuldi
- Paraburdoo
- Silvergrass
- Western Turner Syncline
- Yandicoogina

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure

Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising in excess of 1,890km of rail, multiple rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for fly-in fly-out (FIFO) sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit-for-purpose.

Title/lease/acreage

Agreements for life of mine with Government of Western Australia, save for the Yandicoogina mining lease, which expires in 2039 with an option to extend for 21 years.

Mount Tom Price, Marandoo, Brockman 2, Brockman 4, Nammuldi and Western Turner Syncline Mineral and Mining Leases held under *Iron Ore (Hamersley Range) Agreement Act 1963*.

Area of ML4SA approximately 79,329 hectares (ha).

Area of M272SA approximately 14,136ha.

Gudai-Darri Mineral Lease held under *Iron Ore (Mount Bruce) Agreement Act 1972*.

Area of ML252SA 47,406ha.

Paraburdoo and Eastern Range Mineral Lease held under *Iron Ore (Hamersley Range) Agreement Act 1968*.

Area of ML246SA approximately 12,950ha.

Channar Mining Lease held under *Iron Ore (Channar Joint Venture) Agreement Act 1987*. Mining lease expires in 2028 with an option to extend by up to five years.

Area of M265SA approximately 5,965ha.

Yandicoogina Mining Lease held under *Iron Ore (Yandicoogina) Agreement Act 1996*.

Area of M274SA approximately 30,550ha.

Key permit conditions

State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History

Mount Tom Price began operations in 1966, followed by Paraburdoo in 1974. During the 1990s, Channar (1990), Brockman 2 (1992), Marandoo (1994) and Yandicoogina (1998) achieved first ore. Nammuldi achieved first ore in 2006 followed by Brockman 4 (2010), Western Turner Syncline (2011) and Silvergrass (2017). The latest addition to the network of Hamersley Iron mines, Gudai-Darri, had first ore railed in December 2021, and commissioned its primary crusher in the second quarter of 2022.

Property description/type of mine

All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps and stockpiles or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation

Brockman 2, Brockman 4, Channar, Gudai-Darri, Tom Price, Paraburdoo and Western Turner Syncline: mineralisation is haematite/goethite mineralisation hosted within the banded iron formations of the Brockman Formation. Detrital deposits also occur at these sites. At Tom Price and Western Turner Syncline, some goethite/haematite mineralisation hosted within the Marra Mamba Formation also occurs.

Marandoo, Nammuldi and Silvergrass: mineralisation occurs as goethite/haematite within the banded iron formations of the Marra Mamba Formation. Some detrital mineralisation also occurs.

Yandicoogina: goethite mineralisation occurs as pisolite ores within the paleo-channel of a channel iron formation.

Processing plants and other available facilities

At Brockman 2, Brockman 4, the Nammuldi dry plant and Gudai-Darri, dry crushing and screening is used to produce lump and fines iron ore products. Ore from the Silvergrass and Nammuldi mines is blended and processed through a wet scrubbing and screening plant, ahead of desliming of the fines product using hydrocyclones. At Marandoo, wet scrubbing and screening is used to produce lump and fines iron ore products, prior to desliming of fines products using hydrocyclones. Ore from the Channar and Paraburdoo mines is crushed and then processed through a central tertiary crushing and dry screening plant to produce a dry lump product, with further wet processing of the fines using hydrocyclones to remove slimes. Ore from the Tom Price and Western Turner Syncline mines is directed to either the high-grade plant for dry crushing and screening to dry lump and fines products, or to the low grade plant for beneficiation. Heavy media separation is used to beneficiate low-grade lump, and a combination of heavy media hydrocyclones and spirals is used to beneficiate the low-grade fines. At Yandicoogina, ore is crushed to fines product only through a combination of dry crushing and screening, or crushing and wet processing of ore using classification to remove finer particles.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source

Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

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Property
Australian Pilbara Operations

Mine
Bao-HI Joint Venture:

- Eastern Range and Western Range mines

Ownership
54% Rio Tinto.

Rio Tinto owns 54% of the Bao-Hi joint venture with the remaining 46% held by China Baowu Group.

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising in excess of 1,890km of rail, multiple rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit-for-purpose.

Title/lease/acreage
Paraburdoo and Eastern Range and Western Range Mineral Lease held under *Iron Ore (Hamersley Range) Agreement Act 1968*.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
The Bao-HI joint venture was established in 2002 and has delivered sales of more than 200 million tonnes of iron ore to China. First ore from Eastern Range was delivered in 2004.

In 2022, the Bao-HI joint venture was extended with a commitment to deliver 275 million tonnes of sales of iron ore to China. First ore from Western Range is planned for 2024 utilising existing infrastructure, with a new crusher at Western Range mine planned to be operational in 2025.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Mineralisation at Eastern Range and Western Range occurs as haematite/goethite mineralisation hosted within the banded iron formations of the Brockman Formation.

Processing plants and other available facilities
Ore from the Eastern Range mine is crushed and then processed through the central Paraburdoo tertiary crushing and dry screening plant to produce a dry lump product, with further wet processing of the fines product using hydrocyclones to remove slimes.

The same process flow is planned for ore from Western Range.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Australian Pilbara Operations

Mine
Hope Downs 1

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising in excess of 1,890km of rail, multiple rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit-for-purpose.

Title/lease/acreage
Mining lease expires in 2027 with two options to extend of 21 years each.

Mining lease held under *Iron Ore (Hope Downs) Agreement Act 1992*.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
Joint venture between Rio Tinto and Hancock Prospecting. Construction of Stage 1 to 22Mtpa commenced 2006 and first production occurred 2007. Stage 2 to 30Mtpa completed 2009.

Group mines as at 31 December 2023

Iron Ore continued

Property
Australian Pilbara Operations

Mine
Hope Downs 1

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Mineralisation at Hope Downs 1 occurs as goethite/haematite within the banded iron formations of the Marra Mamba and Brockman Formation. Some detrital mineralisation also occurs.

Processing plants and other available facilities
Ore from Hope Downs 1 is processed through the Hope Downs 1 processing plant, which utilises dry crushing and screening to produce lump and fines iron ore products.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Australian Pilbara Operations

Mine
Hope Downs 4

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising in excess of 1,890km of rail, multiple rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit-for-purpose.

Title/lease/acreage
Mining lease expires in 2027 with two options to extend of 21 years each.

Mining lease held under *Iron Ore (Hope Downs) Agreement Act 1992*.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/ investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
Joint venture between Rio Tinto and Hancock Prospecting. Construction of wet plant processing to 15Mtpa commenced 2011 and first production occurred 2013.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development activities across the property.

Type of mineralisation
Mineralisation at Hope Downs 4 occurs as haematite/goethite mineralisation hosted within the banded iron formations of the Brockman Formation.

Processing plants and other available facilities
Ore from Hope Downs 4 is processed through the Hope Downs 4 processing plant. Wet scrubbing and screening are used to separate lump and fines products, prior to desliming of fines product using hydrocyclones.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

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Property
Australian Pilbara Operations

Mine
Robe River Iron Associates:

Robe Valley mines:

- Mesa A
- Mesa J
- West Angelas

Ownership
53% Rio Tinto

Robe River is a joint venture between Rio Tinto (53%), Mitsui Iron Ore Development (33%), and Nippon Steel Corporation (14%)

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising in excess of 1,890km of rail, multiple rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programmes to ensure these remain fit-for-purpose.

Title/lease/acreage
Agreements for life of mine with Government of Western Australia.

Mineral lease held under *Iron Ore (Robe River) Agreement Act 1964*.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
The first shipment from Robe Valley was in 1972. Interest acquired in 2000 through North Limited acquisition. First ore was shipped from West Angelas in 2002.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Robe Valley deposits: goethite mineralisation occurs as pisolite ores within the paleo-channel of a channel iron formation.

West Angelas deposit: mineralisation occurs as goethite/haematite within the banded iron formations of the Marra Mamba Formation. Some detrital mineralisation also occurs.

Processing plants and other available facilities
Ore from the Robe Valley mines of Mesa A and Mesa J is processed through either dry crushing and screening plants or through wet processing plants using scrubbing and screening to remove finer particles. Crushed and deslimed ore from the Robe Valley mines is railed to Cape Lambert, where further dry crushing and screening through a dedicated processing plant produces lump and fines iron ore products.

At West Angelas mine, dry crushing and screening is used to produce lump and fines iron ore products.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Dampier Salt Port Hedland, Dampier and Lake Macleod

Mine
–

Ownership
68.4% Rio Tinto

Dampier Salt is a joint venture between Rio Tinto (68%), Marubeni Corporation (22%) and Sojitz (10%)

Operator
Rio Tinto (Dampier Salt Limited)

Location
Gascoyne and Pilbara regions, Western Australia

Access and infrastructure
Road and port.

Title/lease/acreage
Mining and mineral leases expiring in 2034 at Dampier, 2029 at Port Hedland and 2031 at Lake MacLeod.

Mineral leases are held under *Dampier Solar Salt Industry Agreement Act 1967*, *Leslie Solar Salt Industry Agreement Act 1966* and *Evaporites (Lake MacLeod) Agreement Act 1967* respectively.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

History
Construction of the Dampier field started in 1969; first shipment in 1972. Lake MacLeod was acquired in 1978 as an operating field. Port Hedland was acquired in 2001 as an operating field.

In January 2024, Dampier Salt entered into a sales agreement for Lake MacLeod with privately owned salt company Leichhardt Industrials Group. Completion of the sale is conditional on certain commercial and regulatory conditions being satisfied, and this is expected to occur by the end of the year.

Property description/type of mine
Solar evaporation of seawater at Dampier and Port Hedland; underground brine at Lake MacLeod; extraction of gypsum at Lake MacLeod.

Type of mineralisation
Salt is grown every year through solar evaporation in permanent crystallising pans.

Gypsum is present in the top layer covering most of Lake Macleod.

Processing plants and other available facilities
Salt is processed through a washing plant, consisting of screening washbelts at Lake MacLeod, Screwbowl classifiers and static screens at Port Hedland and sizing screens, counter-current classifiers with dewatering screens and centrifuges at Dampier. Dampier produces shipping-ready product for immediate shiploading. Washed salt at Lake MacLeod and Port Hedland is dewatered on stockpiles.

Lake Macleod also mines and processes gypsum in leaching heaps.

Power source
Long-term contracts with Hamersley Iron and Horizon Power and on-site generation.

Group mines as at 31 December 2023

Copper

Production properties

Property
Escondida

Ownership
30% Rio Tinto – 57.5% BHP, 10% JECO Corporation consortium comprising Mitsubishi, JX Nippon Mining and Metals (10%), 2.5% JECO 2 Ltd

Operator
BHP

Location
Atacama Desert, Chile

Access and infrastructure
Road and rail, including a pipeline and road to the deep sea port at Coloso:

- One concentrate pipeline from mine site to port facility at Coloso
- Two desalinisation plants at Coloso port along with water treatment plant for concentrate filtrate,
- Two water pipelines and four pump stations for freshwater supply to site,
- Roadway to site, rail line for supplies and cathode transport, power transport facilities to tie site to power grid,
- Site offices, housing, and cafeteria facilities to support employees and contractors on site,
- Warehouse buildings and laydown facilities to support operations and projects on site.

Title/lease/acreage
Rights conferred by Government under Chilean Mining Code. Eighteen mineral rights leases with a total of 58,934ha.

Key permit conditions
Annual tenement payments (due March each year). The current business operates under the rights conferred by the Government under Chilean Mining Code and includes key underlying documents such as the Environmental Impact Assessment Permit as well as the Closure Plan Permit.

History
Production started in 1990 and since then capacity has been expanded numerous times. In 1998 first cathode was produced from the oxide leach plant, and during 2006 the sulphide leach plant was inaugurated, a year after the start of Escondida Norte pit production. In 2016, the third concentrator plant was commissioned.

Property description/type of mine
Two active surface open pit mines in production, Escondida and Escondida Norte with ore being processed via three processing options, Oxide leach, Sulfide RoM leach, or conventional flotation concentrators.

Type of mineralisation
Consists of a series of porphyry deposits containing copper, minor gold, silver, and molybdenum.

Processing plants and other available facilities
Los Colorados, Laguna Seca Line 1, and Laguna Seca Line 2 Concentrators. Oxide leach facility (OLAP), SL RoM leach facility and SX/EW facility.

Power source
Supplied from grid under various contracts with local generating companies.

Property
Rio Tinto Kennecott

Ownership
100% Rio Tinto

Operator
Rio Tinto (Kennecott Utah Copper LLC)

Location
Near Salt Lake City, Utah, US

Access and infrastructure
Pipeline, road and rail.

Title/lease/acreage
Wholly owned – approximately 95,000 acres in total.

Key permit conditions
Permit conditions are established by Utah and US Government agencies and comprise:

- environmental compliance and reporting
- closure and reclamation requirements

History
Interest acquired in 1989. In 2012, the pushback of the south wall commenced, extending the mine life from 2018 to 2032.

Approval for underground mining at Lower Commercial Skarn was obtained in 2022.

Property description/type of mine
Open pit and underground (beginning in 2023).

Type of mineralisation
Porphyry and associated skarn deposits containing copper, gold, silver, molybdenum and tellurium.

Processing plants and other available facilities
Copperton concentrator, Garfield smelter, refinery, and precious metals plant, assay lab and tailings storage facilities.

Power source
Supply contract with Rocky Mountain Power.

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Property
Oyu Tolgoi

Ownership
Rio Tinto owns a 66% interest in Oyu Tolgoi LLC; the remaining 34% interest is held by the Government of Mongolia through Erdenes Oyu Tolgoi LLC

Rio Tinto is responsible for the day-to-day operational management and development of the project

Operator
Rio Tinto

Location
Khanbogd soum, Umnugovi province, Mongolia

Access and infrastructure
Air and road.

Title/lease/acreage
Three mining licences are 100% held by Oyu Tolgoi LLC: MV-006708 (the Manakht licence: 4,533ha), MV-006709 (the Oyu Tolgoi licence: 8,490ha), and MV-006710 (the Khukh Khad licence: 1,763ha).

Two further licences are held in joint venture with Entrée Gold LLCMV-015226 (the Shivee Tolgoi Licence) and MV-015225 (the Javkhlant Licence).

The licence term under the Minerals Law of Mongolia is 30 years with two 20-year extensions. First renewals are due in 2033 and 2039 for the Oyu Tolgoi and Entrée Gold licences respectively.

Key permit conditions
Investment Agreement dated 6 October 2009, between the Government of Mongolia, Oyu Tolgoi LLC, Turquoise Hill Resources (TRQ), and Rio Tinto in respect of Oyu Tolgoi (Investment Agreement).

Amended and Restated Shareholders Agreement dated 8 June 2011 among Oyu Tolgoi LLC, THR Oyu Tolgoi Ltd. (formerly Ivanhoe Oyu Tolgoi (BVI) Ltd.), Oyu Tolgoi Netherlands B.V. and Erdenes MGL LLC (ARSHA). Erdenes MGL LLC since transferred its shares in Oyu Tolgoi LLC and its rights and obligations under the ARSHA to its subsidiary, Erdenes Oyu Tolgoi LLC.

Power Source Framework Agreement dated 31 December 2018, between the Government of Mongolia and Oyu Tolgoi LLC, including the amendment to the PSFA dated 26 June 2020. Electricity Supply Agreement dated 26 January 2022, between Southern Region Electricity Distribution Network SOSC, National Power Transmission Grid SOSC, National Dispatching Center LLC and Oyu Tolgoi LLC.

In terms of key government permits, Oyu Tolgoi LLC secured a land use permit until 2035 and water use permit until 2039 as well as the mineral rights.

History
Oyu Tolgoi was first discovered in 1996. Construction began in late 2009 after signing of an Investment Agreement with the Government of Mongolia, and first concentrate was produced in 2012. First sales of concentrate were made to Chinese customers in 2013.

The first drawbell of the Hugo North underground mine was fired in 2022. In December 2022, Rio Tinto acquired 100% ownership of TRQ Sustainable production from underground commenced in March 2023.

Property description/type of mine
Ore Reserves have been reported at the Oyut and Hugo North Deposits. The Oyut deposit is currently mined as an open pit using a conventional drill, blast, load, and haul method. The Hugo North deposit is currently being developed as an underground mine.

Type of mineralisation
Consists of a series of porphyry deposits containing copper, gold, silver, and molybdenum.

Processing plants and other available facilities
One copper concentrator with a nominal feed capacity of 100 ktpd currently comprising two SAG mills, four ball mills, rougher and cleaner flotation circuits and up to 1 Mtpa copper concentrate capacity. Other major facilities that support the isolated operations include maintenance workshops, heating plant, sealed airstrip and terminal, and camp facilities with up to 6,000 person capacity to accommodate current operations and the underground construction project. Underground infrastructure in place includes several shafts for ore haulage, personnel haulage and ventilation plus a conveyor decline to surface and associated surface infrastructure.

Power source
Oyu Tolgoi obtains its electricity from the Western Grid of the Inner Mongolia Autonomous Region (IMAR) in the People's Republic of China. This power is delivered through a cross-border 220kV double-circuit transmission line. The electricity is provided by Inner Mongolia Power International Cooperation Co., Ltd (IMPIC), a subsidiary of Inner Mongolia Power (Group) Co., Ltd. This company is responsible for the ownership and operation of IMAR's Western Grid. The current power supply agreement is a collaborative arrangement involving IMPIC and the National Power Transmission Grid SOSC (NPTG) of Mongolia, which holds the necessary import license. Additionally, Oyu Tolgoi maintains an on-site diesel generator that functions as a 24/7 standby emergency power source.

Group mines as at 31 December 2023

Copper continued

Projects

Property
Resolution

Ownership
55% Rio Tinto, 45% BHP

Operator
Rio Tinto

Location
Superior, Arizona, Pinal County, US

Access and infrastructure
Road, rail and water pipeline.

Title/lease/acreage
Unpatented mining claims:

- 2,242 unpatented claims
- 44,840 acres

To hold the unpatented lode/placer mining claims, a 'Notice of Intent to Hold' and a Maintenance Fee is filed annually for each claim with the Bureau of Land Management. These claims are also recorded in the Arizona counties of Pinal and Gila.

Resolution Copper Mining LLC (RCML) have a total of 55 mineral exploration permits: eight permits with a total 4162.89 acres in exploration areas and 47 permits with a total 23,046.63 acres in tailings, tailings corridor, and tailings buffer areas.

RCML have a total of seven special land use permits with a total of 5840.60 acres in stream monitoring, groundwater monitoring, and tailings surface investigation areas.

Fee simple owned property:

12,631 acres.

Key permit conditions
Resolution is in the permitting and study stage of the project. It is currently at the end of a multi-year process to complete its Environmental Impact Statement under the National Environmental Protection Act. Future permits will be required for operations such as air quality permits and aquifer protection permits.

History
The Magma Vein (formerly Silver Queen) was discovered in the 1870s and underground mining continued at the Magma Mine until 1998. In 1996, the Resolution deposit was discovered via an underground drillhole directed south from the Magma Mine workings. Kennecott Exploration (Rio Tinto) entered the project in 2001 and through an exploration "earn-in" agreement became operator in 2004.

Property description/type of mine
Block cave underground mining method.

Type of mineralisation
Porphyry copper and molybdenum deposit.

Processing plants and other available facilities
Water treatment and reverse osmosis plant, historic tailings impoundments from the Magma Mine No. 9 and No. 10 ventilation shafts.

Power source
115kV power lines to East and West Plant sites with supply contract with Salt River Project (SRP).

Property
Winu

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Great Sandy Desert, Western Australia, Australia

Access and infrastructure
Road is the primary means of access. Flights are being trialled on the gravel airstrip.

Title/lease/acreage
Exploration Licence E45/4833 hosts the deposit. Several Miscellaneous Licences cover the road access route, associated roads and the emergency-use airstrip. A Mining Lease Application (M45/1288; 7,500 hectares) has been made and is awaiting formal approval.

Key permit conditions
Annual rental payments for licences are required under the *Western Australian Mining Act 1978*, along with other standard reporting obligations relating to expenditure and works undertaken on the exploration licence.

History
The exploration licence was granted to Rio Tinto in October 2017 and Winu was discovered in December 2017. The first Inferred Mineral Resource was announced in July 2020 and updated to an Indicated and Inferred Mineral Resource in February 2022.

Property description/type of mine
Winu is currently undergoing technical studies and all required stakeholder negotiations and applications to secure the necessary approvals for a potential open pit mining operation.

Type of mineralisation
Copper-gold-silver mineralisation hosted within sulphide breccias and quartz veins. A supergene enrichment profile caps most of the primary mineralisation.

Processing plants and other available facilities
Winu comprises camp facilities for up to 112 people, unimproved access roads and trails, and a gravel airstrip.

Power source
Power is provided by diesel generators.

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Property
La Granja

Ownership
45% Rio Tinto, 55% First Quantum Minerals

Operator
First Quantum Minerals

Location
Cajamarca, Northern Peru

Access and infrastructure
Mountain road access only, six hours from Chiclayo.

Title/lease/acreage
The present La Granja Mining Concession grants its titleholders the right to explore and exploit all existing mineral resources within the 3,900 hectares it covers.

Key permit conditions
The Transfer Agreement (in respect of the acquisition of the La Granja mineral concession dated 31 January 2006, between La Granja Limitada S.A.C. (formerly known as Rio Tinto Minera Peru Limitada S.A.C.) and Activos Mineros S.A.C. requires an annual fee ($5 million per semester split by the Peruvian Government 50:50 between the special federal government fees and the establishment of a social fund). Title is subject to completion and delivery of a feasibility study (FS), and implementation of a mine subject to approval of the FS by the Peruvian Government within the timelines established in the Transfer Agreement.

The Transfer Agreement was extended in April 2023 and is scheduled to expire (delivery of FS) in January 2028.

History
Rio Tinto received the Mining Concession in 2006, after BHP and Cambior had returned the leases to the Peruvian Government. Numerous studies have been completed by Rio Tinto, up to pre-feasibility study. In August 2023, Rio Tinto and First Quantum Minerals announced the completion of a transaction that will work to unlock the development of the La Granja project. Under the terms of the transaction, First Quantum Minerals acquired a 55% interest in the project and became the project operator, assuming all key permit obligations.

Property description/type of mine
La Granja is currently undergoing technical studies and engagement with host communities, local and national governments focused on development of a potential open pit mining operation.

Type of mineralisation
Porphyry copper and associated skarn deposits, with high grade breccias with minor silver, and molybdenum.

Processing plants and other available facilities
La Granja comprises an exploration camp and water treatment infrastructure.

Power source
Currently powered by diesel generators. An upgraded power supply is required for development of the asset.

Group mines as at 31 December 2023

Minerals

Production properties

Property
Rio Tinto Borates – Boron

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Boron, California, US

Access and infrastructure
Road and rail.

Title/lease/acreage
Land holdings include 13,493 acres (owned, including mineral rights) for the mining operation, plant infrastructure and tailings storage facility.

Key permit conditions
Boron operations currently have all State and Federal environmental and operational permits in place to continue the mining and processing operation. Regular updates to permits are ongoing.

History
Deposit discovered in 1906, underground mining operations began in 1925, three underground mining operations were consolidated and the mining method switched to open pit mining in 1956. Assets were acquired by Rio Tinto in 1967.

Property description/type of mine
Open pit.

Type of mineralisation
Sedimentary sequence of tincal and kernite containing interbedded claystone enveloped by facies consisting of ulexite and colemanite bearing claystone, and barren claystone.

Processing plants and other available facilities
Boron operations consists of the open pit mine, an ore crushing and conveying system, two process plants (Primary Process and Boric Acid Plant), shipping facility and tailings storage facilities.

Power source
On-site co-generation units and local power grid.

Property
Rio Tinto Iron and Titanium (RTIT) Quebec Operations – Lac Tio

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Havre-Saint-Pierre, Quebec, Canada

Access and infrastructure
Rail, road and port (St Lawrence River).

Title/lease/acreage
A total of 6,534 hectares of licences including two mining concessions of total 609ha, granted by Province of Quebec in 1949 and 1951 which, subject to certain Mining Act restrictions, confer rights and obligations of an owner.

Key permit conditions
The property is held under Quebec provincial government mining concession permits (Concession minière No 368 and 381). Each is of one year duration renewable as long as the mine is in operation. RTIT Quebec Operations – Lac Tio have also a number of claims (exclusive exploration permits) covering ilmenite occurrences in the region of the mine. These claims are renewable every two years.

History
Production started 1950; interest acquired in 1989.

Property description/type of mine
Open pit.

Type of mineralisation
Magmatic intrusion.

Processing plants and other available facilities
Lac Tio has a crushing facility, dedicated railway, stockpile at the train terminal, ship loader, office buildings at the mine and at the terminal and waste dumps.

Power source
Supplied by Hydro-Québec at regulated tariff.

Property
QIT Madagascar Minerals (QMM)

Ownership
QIT Madagascar Minerals is 80% owned by Rio Tinto and 20% owned by the Government of Madagascar

Operator
Rio Tinto

Location
Fort-Dauphin, Madagascar

Access and infrastructure
Road and port.

Title/lease/acreage
Mining lease covering 56,200ha, granted by central government.

Key permit conditions
The permit has a validity of 30 years as of 12 December 1996. Additional renewal for 10-years each period are granted at QMM's request. An annual fee is payable to government authorities following notification at the beginning of January.

History
Exploration project started in 1986; construction approved 2005. Ilmenite and zirsil production started 2008. QMM intends to extract ilmenite and zirsil from heavy mineral sands over an area of about 6,000 hectares along the coast over the next 40 years.

Property description/type of mine
Mineral sand dredging.

Type of mineralisation
Coastal mineralised sands.

Processing plants and other available facilities
QMM has an operating Dredge, Dry Mine Unit, Heavy Mineral Concentrator, Mineral Separation Plant, Port and bulk loading facilities.

Power source
On-site heavy fuel oil generators; wind and solar project agreements with independent power producer Crossboundary Energy are expected to take the asset to 50% renewable energy by 2024. The 8MW photovoltaic (PV) solar plant and 8.25 MWh lithium-ion battery energy storage system were successfully commissioned in 2023, and the mine received its first renewable electricity supply. Construction of the 16MW wind project began in the third quarter of 2023 and is scheduled for completion by 2025.

Financial statements

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Property
Richards Bay Minerals (RBM)

(Richards Bay Mining (Pty) Limited and Richards Bay Titanium (Pty) Limited)

Ownership
RBM is a joint venture between Rio Tinto (74%) and Blue Horizon – a consortium of investors and our host communities Mbonambi, Sokhulu, Mkhwanazi and Dube (24%). The remaining shares are held in an employee trust (2%).

Operator
Rio Tinto

Location
Richards Bay, KwaZulu-Natal, South Africa

Access and infrastructure
Rail, road and port.

Title/lease/acreage
Mineral rights for Reserve 4 and Reserve 10 issued by South African State and converted to new order mining rights from 9 May 2012. Mining rights run until 8 May 2041 and covers 11,645ha, including the mined Tisand area.

Key permit conditions
RBM operates in three lease areas, Tisand, Zulti North and Zulti South, by means of a notarial deed. Tisand (which contains the stockpiled tails) and Zulti North leases are held by Richards Bay Mining (Pty) Ltd.

RBM is owned by a consortium of local communities and businesses in line with South Africa's Broad-Based Black Economic Empowerment legislation.

History
Production started 1977; initial interest acquired 1989. Fifth mining plant commissioned in 2000. One mining plant decommissioned in 2008. In September 2012, Rio Tinto doubled its holding in RBM to 74% following the acquisition of BHP Billiton's entire interests.

Property description/type of mine
Mineral sand dredging.

Type of mineralisation
Coastal mineralised sands.

Processing plants and other available facilities
RBM manages and operates several dredges, dry mining units, heavy mineral concentrators and a mineral separation plant. RBM also has a smelter with furnaces to produce titania slag, pig iron in addition to rutile and zircon.

Power source
Contract with ESKOM.

Property
Iron Ore Company of Canada (IOC)

Ownership
IOC is a joint venture between Rio Tinto (58.7%), Mitsubishi Corporation (26.2%) and the Labrador Iron Ore Royalty Corporation (15.1%).

Operator
Rio Tinto

Location
Labrador City, Newfoundland and Labrador, Canada

Access and infrastructure
- Railway and port facilities in Sept-Îles, Quebec (owned and operated by IOC).
- Public highway.
- Public airport.

Title/lease/acreage
Mining leases, surface rights and a tailings disposal licence are held by the Labrador Iron Ore Royalty Corporation (LIORC), under the Labrador Mining and Exploration Act. LIORC subleases these rights to IOC. The mining leases cover 10,356ha, the surface rights cover 8,805ha and the tailings licence covers 2,784ha. These sub-leased rights are valid until 2050. IOC also directly holds three small mining leases, but none produce saleable products. In addition to the above rights, IOC also holds a number of mineral licences, either directly or under sub-lease from LIORC.

Key permit conditions
IOC holds numerous permits with the Federal, provincial and local governments, covering all aspects of the operation. Key permit conditions include:

- Maintaining effluent quality within MDMER criteria
- Maintaining air quality criteria specified in the certificate of approval (for dust, NOx, SO_2, CO)
- Prudent resource management
- Progressive rehabilitation
- Monitoring groundwater quality around permitted landfill
- Restricting tailings discharge to the permitted area.

History
Interest acquired in 2000 through acquisition of North Ltd. Current operation began in 1962 and has processed over one billion tonnes of crude ore. Annual capacity 23 Mt of concentrate of which 12–13Mt can be pelletised.

Property description/type of mine
Open pit.

Type of mineralisation
Oxide iron (specular hematite and magnetite).

Processing plants and other available facilities
Concentrator (gravity and magnetic separation circuits), pellet plant, warehouses, workshops, heating plant and ore delivery system (crusher/conveyor and automated train system).

Explosives plant, train loadout facilities, rail line (Labrador City to Sept-Îles), stockyards and shiploaders.

Power source
Supplied by Newfoundland and Labrador Hydro for the Labrador City operations and by Hydro-Québec and the IOC owned SM2 power station for the Sept-Îles operations.

Group mines as at 31 December 2023

Minerals continued

Property
Diavik

Ownership
100% owned by Diavik Diamond Mines (2012) Inc.

Operator
Diavik Diamond Mines (2012) Inc. is a Yellowknife-based Canadian subsidiary of Rio Tinto plc in London, UK

Location
Northwest Territories (NWT), Canada

Access and infrastructure
Airstrip and winter road access.

Title/lease/acreage
Three mineral rights leases with a total acreage of 8,016 (3,244ha). Mining leases are issued by the NWT Government. One lease was renewed in 2017 and two leases were renewed in February 2018. The new leases will expire after 21 years.

Key permit conditions
Our key permit conditions are local employment, procurement and benefit sharing commitments, environmental compliance and reporting, environmental security and closure and rehabilitation planning, and payment of taxes and government royalties.

History
Deposits discovered in 1994-95. Construction approved in 2000. Diamond production started in 2003. Fourth pipe commenced production in 2018. Mine life through early 2026. In November 2021, Rio Tinto became the sole owner of Diavik Diamond Mine. This followed the completion of a transaction for Rio Tinto's acquisition of the 40% share held by Dominion Diamond Mines in Diavik, with the Court of Queen's Bench of Alberta's approval.

Property description/type of mine
Open pit and underground operations (blast-hole stoping and sub-level cave methods).

Type of mineralisation
Diamondiferous kimberlite deposit.

Processing plants and other available facilities
Includes processing plant and accommodation facilities on-site.

Power source
On-site diesel generators; installed capacity 44MW and 9.2MW of wind capacity.

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Minerals

Projects

Property
Rincon

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Rincon Salar, Salta, Argentina

Access and infrastructure
Road and air.

Title/lease/acreage
Two separate mineral leases for a total of 82,905ha, the largest one being the Grupo Minero Proyecto Rincon with 80,032ha. Mining concessions are issued by the Provincial Mining Court and have lifelong exploitation rights.

Key permit conditions
Key permit conditions are environmental compliance and reporting, including independent authorisations for industrial water and brine extraction, spent brine disposal facilities, processing plant and ancillary infrastructure.

History
Rincon Salar was initially explored by Admiralty Resources NL, who acquired mining leases covering approximately 85% of the Salar in 2001. Admiralty demerged the project into a separate Australian Securities Exchange (ASX) listed entity called Rincon Lithium Ltd in October 2007, and sold the company to the private equity group Sentient Equity Partners in December 2008. The project was under evaluation by Sentient until the sale of the property to Rio Tinto in March 2022.

Property description/type of mine
Mining will comprise brine extracted from a production wellfield and fed to a central processing facility for lithium recovery.

Type of mineralisation
Lithium mineralisation occurs as a brine within a sedimentary sequence in a mature salar, composed of halite, volcaniclastic sand and variable amounts of clay/sand. The brine is hosted in two separate aquifers: an upper unconfined fractured halitic aquifer and a lower semi-confined aquifer composed mainly of volcaniclastic sand.

Processing plants and other available facilities
The project includes a wellfield for brine extraction and a chemical plant for the production of lithium carbonate, a spent brine disposal facility, wellfield for the extraction of process water and water pre-treatment equipment, camp and office buildings, warehouses and loading/unloading facilities.

Power source
Connected to the national electric grid with access to power from nearby solar farms. Option for the construction of a solar farm under agreement with a third party on a build/own/operate model under consideration.

Property
Jadar

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Loznica town, Serbia

Access and infrastructure
Road and rail.

Title/lease/acreage
The last extension of the Jadar exploration licence expired on 14 February 2020, with no legal basis for further extension of its term.

During the feasibility study the project has completed the Elaborate on Resources and Reserves (declaration based on Serbian law), obtained the Certificate on Resources and Reserves on 6 January 2021 and has submitted the request for exploitation field licence (with Serbian Feasibility Study being one of the supporting documents to this request).

In January 2022, the Government of Serbia cancelled the Spatial Plan for the Jadar project and required all related permits to be revoked.

Key permit conditions
The project is governed by two main pieces of Serbian legislation: Mining Law is administered by the Ministry of Mining and Energy (MME) and Planning and Construction Law is administered by the Ministry of Construction, Transportation and Infrastructure (MCTI).

The permitting process base case foresees the following:

- Mine, beneficiation plant and mine surface facilities are subject to the permitting procedure of MME
- Processing plant, industrial waste landfill and infrastructure (rail, roads, power and water pipelines) are subject to the unified permitting procedure under MCTI.

History
The Jadar deposit was discovered in 2004 by Rio Tinto Exploration geologists during a regional exploration program for borates in the Balkans. The deposit is in its majority composed of a mineral new to science named Jadarite with high concentrations of lithium and boron. Resource definition and processing workflow development and testing were conducted for over a decade. The pre-feasibility study (PFS) completed in July 2020 has shown that the Jadar project has the potential to produce both battery grade lithium carbonate and boric acid. In January 2022, the Government of Serbia cancelled the Spatial Plan for the Jadar project and required all related permits to be revoked.

Property description/type of mine
Underground mine.

Type of mineralisation
Jadarite mineralisation is present in three broad zones containing stratiform lenses of variable thickness. These units are hosted in a much thicker gently dipping sequence mainly composed of fine-grained sediments affected by syn and post depositional faulting.

Processing plants and other available facilities
The planned site layout includes a concentrator to beneficiate the primary ore, a chemical plant to produce boric acid and lithium carbonate, paste plant, water and waste treatment plants, surface waste storage (dry stack), railroad spur and warehouses for product storage and loading/unloading, and office buildings.

Power source
Connected to the national electric grid. Electricity planned to be sourced from nearby hydroelectrical power plant.

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Group mines as at 31 December 2023

Aluminium

Production properties

Property
CBG Sangaredi

Ownership
Rio Tinto Group 22.95%, Guinean Government 49%, Alcoa 22.95%, Dadco Investments Limited 5.1%

Operator
La Compagnie des Bauxites de Guinée (CBG)

Location
Sangaredi, Guinea

Access and infrastructure
Road, air and port.

Sangaredi-Kamsar railway (leasing rail infrastructure from ANAIM, wholly-owned by Government of Guinea).

Title/lease/acreage
Mining concession expires in 2040.

Leases comprise 2,939 km^2.

Key permit conditions
The obligations of CBG relative to health and safety of workers and to the environment and to the rehabilitation of mined out areas are subject to the Mining Code (2011) and Environmental Code of the Republic of Guinea.

History
CBG is a joint venture created in 1963 and is registered in US (Delaware). Bauxite mining commenced in 1973. Shareholders are 51% Halco and 49% Government of Guinea. Rio Tinto holds a 45% interest in Halco. Expansion of the CBG bauxite mine, processing plant, port facility and associated infrastructure is currently near completion with ramp up to 18.5 Mtpa underway. In 2015, CBG entered into an agreement to share the rail infrastructure in Multi-User Operation Agreement (MUOA) with other bauxite companies, GAC (EGA) and COBAD (RUSAL).

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
The Sangaredi site is an open cut mine including the following operations: stripping, drilling, blasting, loading, hauling. Then, the bauxite is transported by railway cars approximately 135 km away from Sangaredi to Kamsar. In Kamsar, the installations include the following assets: locomotive repair shop, railway cars unloader, primary crusher, secondary crusher, scrubbers, conveyors, stacker, reclaimer, bauxite dryers, dry bauxite storage, bauxite sampling tower, power house, wharf, ship loader, etc.

The crushing plant is used only to reduce oversize material – no screening required.

Four bauxite dryers are installed in order to reduce the moisture content of the bauxite before shipping.

Power source
On-site generation (fuel oil).

Property
Gove

Ownership
100% Rio Tinto

Operator
Rio Tinto through Rio Tinto Alumina Gove P/L

Location
Gove, Northern Territory, Australia

Access and infrastructure
Road, air and port.

Title/lease/acreage
All leases were renewed in 2011 for a further period of 42 years. The residue disposal area is leased from the Arnhem Land Aboriginal Land Trust. The Northern Territory Government is the lessor of the balance of the leases; however, on expiry of the 42-year renewed term, the land subject to the balances of the leases will all vest to the Arnhem Land Aboriginal Land Trust.

Leases comprise 233.5 km^2.

Key permit conditions
Key permit conditions are prescribed by the Northern Territory Government in the form of a Mine Management Plan (MMP). The current MMP runs for a period of 12 years, until 2031, and authorises all activities at the operation. Lease payments are prescribed by the terms of the relevant leases.

History
Bauxite mining commenced in 1970, feeding both the Gove refinery and export market, capped at 2 million tonnes per annum. Bauxite export ceased in 2006 with feed intended for the expanded Gove refinery. Bauxite exports recommenced in 2008 and will increase in the coming years following the curtailment of the refinery production in 2014 and a permanent shut decision made by the Board of Rio Tinto in October 2017. Current annual production capacity is 12.5 Mt on a dry basis.

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
Crushing plant only to reduce oversize material – no screening required.

Power source
On-site diesel fired power station.

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Property
MRN Porto Trombetas

Ownership
MRN's shareholders are: Rio Tinto (22%), Glencore (45%) and South32 (33%)

Operator
Mineração Rio do Norte (MRN) is a non-managed JV. All decisions are approved by shareholders BoD

Location
Porto Trombetas, Para, Brazil

Access and infrastructure
Air and port.

Title/lease/acreage
Mining concession granted by Brazilian Mining Agency (ANM), following the Brazilian mining code with no expiration date.

The current 44 MRN mining leases cover 22 major plateaus, which spread across 143,000ha and all of them have the status of a mining concession.

Key permit conditions
With the exception of concessions from Amazonas State, the MRN mining leases are within the Saracá-Taquera National Forest, a preservation environmental area. However, the right of mining is preserved initially by the Federal law which created the National Forest (that is subsequent to mining concessions), as well by the management plan, which acknowledges a formal mining zone within the confines of the National Forest.

Environmental licensing is granted by Brazilian Environmental Agency (IBAMA) for East Zone. MRN is working with IBAMA on permitting to extend the life of the mine from East Zone to West Zone.

History
Mineral extraction commenced in 1979. Initial production capacity was 3.4 Mtpa. From 2003, production capacity went up to 16 Mtpa on a dry basis. and in 2008, up to 18 Mtpa.

Due to market and tailings facilities restrictions, the planned production is 12 Mtpa on dry basis (up to 2027) and from 2027 to 2040 is 12.5 Mtpa on a dry basis. The deposit has two mine planning sequences: East Zone (1979-2027) and West Zone Phase 1 (2027-2040).

On 30 November 2023 Rio Tinto completed an acquisition of Companhia Brasileira de Alumínio's 10% equity in the MRN bauxite mine in Brazil, raising the Rio Tinto stake from 12% to 22%.

Property description/type of mine
Open cut.

Type of mineralisation
Consists of a series of bauxite tabular deposits.

Processing plants and other available facilities
The beneficiation process is formed by a primary crusher, conveyors, scrubbers, secondary crushers, screenings, hydrocyclones and vacuum filters. The superfines tailings are pumped to a tailings storage facility.

Power source
On-site generation fuel (oil + diesel).

Property
Weipa/Ely

Ownership
100% Rio Tinto

Operator
Rio Tinto through Rio Tinto Alumina Weipa P/L

Location
Weipa, Queensland, Australia

Access and infrastructure
Road, air and port.

Title/lease/acreage
The Queensland Government Comalco (ML7024) lease expires in 2042 with an option of a 21-year extension, then two years' notice of termination; the Queensland Government Alcan lease (ML7031) expires in 2048 with a 21-year right of renewal with a two-year notice period.

Leases comprise 2,716.9 km^2 (ML7024 = 1340.8 km^2; ML7031 = 1376.1 km^2).

This property with the associated 2 leases, includes the deposits known as Andoom, East Weipa, Amrun, Norman Creek and North of Weipa.

Key permit conditions
The respective leases are subject to the Comalco Agreement Act (Comalco Agreement) and Alcan Agreement Act (Alcan Agreement); the relevant State Agreements for the Weipa operations. Key permit conditions are prescribed by the Queensland Government in the relevant Environmental Authority applicable to each lease (ML7024 and ML7031, respectively). Lease payments are subject to the terms of the leases and the respective State Agreements.

History
Bauxite mining commenced in 1961 at Weipa. Major upgrade completed in 1998. Rio Tinto interest increased from 72.4% to 100% in 2000. In 1997, Ely Bauxite Mining Project Agreement signed with local Aboriginal land owners. Bauxite Mining and Exchange Agreement signed in 1998 with Comalco to allow for extraction of ore at Ely. The Western Cape Communities Co-Existence Agreement, an ILUA, was signed in 2001. Following the ramp up to full production of Amrun the current annual production of the Weipa mine is 35.5 Mt.

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
Andoom, East Weipa and Amrun – wet crushing and screening plants to remove ultra fine proportion.

Power source
On-site generation (diesel) supplemented by a solar generation facility.

Other Operations

Project

Property
Simandou, Blocks 3 & 4

Ownership
85% Simfer Jersey; 15% Republic of Guinea

Simfer Jersey is a joint venture between Rio Tinto (53%) and CIOH (47%), a Chinalco-led joint venture with Baowu, CCC Group and CRC Group.

Operator
Rio Tinto (mine)

Location
The Simandou South Mining Concession is located ~550km east-southeast of Conakry in the Republic of Guinea

Access and infrastructure
The site has road access and is readily accessible for power, water, and additional infrastructure requirements. Camp facilities are in place with a current workforce involved in further geological sampling and early construction works for the project. Planned expansion of the camp facilities including a dedicated airstrip are planned for the project construction phase.

Iron ore extracted from the Simfer mine concession (and Simandou Blocks 1 & 2 which are owned by Winning Consortium Simandou [WCS]) will be exported through a rail and port infrastructure to be co-developed by the State, Simfer Jersey and WCS. It includes a purpose-built port facility to be constructed at Morebaya estuary (south of Conakry) to be accessed by a 536km main rail line with rail spurs connecting our Concession (68km) and WCS's (16km) respectively. The main rail line will have an initial capacity of up to 120 Mtpa. The ultimate owner and operator of the infrastructure will be the Compagnie du Transguinéen (CTG) (The TransGuinean Company), an incorporated joint venture between Simfer Jersey (42.5%), WCS (42.5%) and the State (15%).

Title/lease/acreage
Simandou South Mining Concession was granted by Presidential Decree on 22 April 2011 under the conditions of the Amended and Consolidated Basic Convention (ACBC), which was ratified by the Guinean National Assembly on 26 May 2014. The Concession duration is 25 years, renewed automatically for a further period of 25 years followed by further ten year periods in accordance with the Guinean Mining Code and the ACBC. The Concession covers an area of 369km^2.

Simfer also holds a BOT Convention to enable development of the rail and port infrastructure. Simfer has signed agreements with the State and WCS, the owner of Simandou Blocks 1 & 2 deposits, to enable co-development of the rail and port infrastructure for the Simandou iron ore projects. The Co-Development Convention, which, along with bipartite amendments for each of the Simfer and WCS Mine Conventions, adapts the existing investment frameworks of Simfer and WCS. These conventions require ratification and are subject to a number of conditions, including regulatory approvals.

Key permit conditions
In addition to the Concession, the ACBC, as amended by the mine bipartite agreement, establishes the legal regime for the mine project and sets out Simfer's key legal rights and protections. The Simandou mine SEIA was approved in 2012 and has since been maintained in accordance with applicable law. An updated SEIA for the mine and rail spur was submitted for regulatory review in July 2023 and an update to the SEIA for the port was submitted in November 2023.

History
Simfer submitted a bankable feasibility study to the State in 2016, with further feasibility studies for mine and infrastructure to reflect the infrastructure co-development arrangements completed in 2022, 2023 and 2024, and which are currently pending approval by the State as part of the infrastructure co-development arrangements.

Property description/type of mine
Open pit.

Type of mineralisation
Supergene-enriched itabirite hosted iron ore deposits. The deposits are part of a supracrustal belt with the banded iron formation proto-ore likely deposited in a shallow marine setting within a forearc basin. The age of deposition is considered to be between 2.7Ga and 2.2Ga.

Processing plants and other available facilities
Current plans are for the run-of-mine ore to be coarsely crushed at the Ouéléba mine site at a maximum rate of 60 Mtpa phase 1 capacity to P100 of ~100 mm through two identical primary and secondary crushing stations in a staged arrangement. The coarsely crushed ore will then be conveyed to the mine stockyard. The ore will be reclaimed from the stockpiles and conveyed to the train load-out facility for loading into trains which transport materials to the port facility where it will be likely shipped by bulk carrier to several ports including in China. Other major facilities that will support the operations include power generation, explosives facilities, fuel and lubricants facilities, administration buildings, workshops and a permanent village.

Power source
Current designs contemplate that power for the mine site and other areas will be supplied by a hybrid power plant consisting of diesel generators and solar generation powered fuel station. Further, there is a plan to connect the facility to the power grid local operator Électricité de Guinée. This will require an approximately 20km connection line to the main grid once it is available and would substantially reduce energy costs and fuel consumption.

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Group smelters, refineries and remelting & casting facilities (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery/facility	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Aluminium				
Alma	Alma, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium rod, t-foundry, molten metal, high purity, remelt	473,000 tonnes per year aluminium
Alouette (40%)	Sept-Îles, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	627,000 tonnes per year aluminium
Arvida	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium billet, molten metal, remelt	174,000 tonnes per year aluminium
Arvida AP60	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	60,000 tonnes per year aluminium
Bécancour (25.1%)	Bécancour, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, billet, t-foundry, remelt, molten metal	460,000 tonnes per year aluminium
Bell Bay	Bell Bay, Northern Tasmania, Australia	100% freehold	Aluminium smelter producing aluminium slab, molten metal, small form and t-foundry, remelt	195,000 tonnes per year aluminium
Boyne Smelters (59.4%)	Boyne Island, Queensland, Australia	100% freehold	Aluminium smelter producing aluminium billet, EC grade, small form and t-foundry, remelt	584,000 tonnes per year aluminium
ELYSIS (48.24%)	Saguenay, Quebec, Canada	100% freehold	Aluminium zero-carbon smelting pilot cell producing aluminium high purity	275 tonnes per year aluminium
Grande-Baie	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, molten metal, high purity, remelt	235,000 tonnes per year aluminium
ISAL	Reykjavik, Iceland	100% freehold	Aluminium smelter producing aluminium remelt, billet	212,000 tonnes per year aluminium
Jonquière (Vaudreuil)	Jonquière, Quebec, Canada	100% freehold	Smelter grade alumina	1,560,000 tonnes per year alumina
Kitimat	Kitimat, British Columbia, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, high purity	432,000 tonnes per year aluminium
Laterrière	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, molten metal	255,000 tonnes per year aluminium
Queensland Alumina (80%)	Gladstone, Queensland, Australia	73.3% freehold; 26.7% leasehold (of which more than 80% expires in 2026 and after)	Refinery producing alumina	3,950,000 tonnes per year alumina
São Luis (Alumar) (10%)	São Luis, Maranhão, Brazil	100% freehold	Refinery producing alumina	3,830,000 tonnes per year alumina
Sohar (20%)	Sohar, Oman	100% leasehold (expiring 2039)	Aluminium smelter producing aluminium, high purity, remelt	395,000 tonnes per year aluminium
Tiwai Point (New Zealand Aluminium Smelters) (79.4%)	Invercargill, Southland, New Zealand	19.6% freehold; 80.4% leasehold (expiring in 2029 and use of certain Crown land)	Aluminium smelter producing aluminium billet, slab, small form foundry, high purity, remelt	373,000 tonnes per year aluminium
Tomago (51.6%)	Tomago, New South Wales, Australia	100% freehold	Aluminium smelter producing aluminium billet, slab, remelt	590,000 tonnes per year aluminium
Yarwun	Gladstone, Queensland, Australia	97% freehold; 3% leasehold (expiring 2101 and after)	Refinery producing alumina	3,250,000 tonnes per year alumina
Matalco Bluffton Manufacturing (50%)	Bluffton, Indiana, US	100% freehold	Remelt and manufacture of aluminium billet and slab	104,000 tonnes per year
Matalco Brampton Manufacturing (50%)	Brampton, Ontario, Canada	100% freehold	Remelt and manufacture of aluminium billet	113,000 tonnes per year
Matalco Canton Manufacturing (50%)	Canton, Ohio, US	100% freehold	Remelt and manufacture of aluminium billet	59,000 tonnes per year
Matalco Franklin Manufacturing (50%)	Franklin, Kentucky, US	100% freehold	Remelt and manufacture of aluminium slab	177,000 tonnes per year
Matalco Lordstown Manufacturing (50%)	Lordstown, Ohio, US	100% freehold	Remelt and manufacture of aluminium billet	159,000 tonnes per year
Matalco Shelbyville Manufacturing (50%)	Shelbyville, Kentucky, US	100% freehold	Remelt and manufacture of aluminium billet	154,000 tonnes per year
Matalco Wisconsin Rapids Manufacturing (50%)	Wisconsin Rapids, Wisconsin, US	100% freehold	Remelt and manufacture of aluminium billet and slab	104,000 tonnes per year

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Group smelters and refineries and remelting & casting facilities (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery/facility	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Copper				
Rio Tinto Kennecott	Magna, Salt Lake City, Utah, US	100% freehold	Flash smelting furnace/Flash convertor furnace copper refinery and precious metals plant	335,000 tonnes per year refined copper
Minerals				
Boron	Boron, California, US	100% freehold	Borates refinery	576,000 tonnes per year boric oxide
IOC Pellet plant (58.7%)	Labrador City, Newfoundland and Labrador, Canada	100% freehold (asset), 100% freehold (land) under sublease from Labrador Iron Ore Royalty Corporation for life of mine.	Pellet induration furnaces producing multiple iron ore pellet types	13.5 million tonnes per year pellet
Richards Bay Minerals (74%)	Richards Bay, South Africa	100% freehold	Ilmenite smelter	1,050,000 tonnes per year titanium dioxide slag, 565,000 tonnes per year iron
Rio Tinto Iron and Titanium Quebec Operations - Sorel-Tracy Plant	Sorel-Tracy, Quebec, Canada	100% freehold	Ilmenite smelter	1,300,000 tonnes per year titanium dioxide slag, 1,000,000 tonnes per year iron

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Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Iron Ore				
Cape Lambert power station (67%)	Cape Lambert, Western Australia, Australia	Lease	Two LM6000PF dual-fuel turbines	80MW
Paraburdoo power station	Paraburdoo, Western Australia, Australia	Lease	Three LM6000PC gas-fired turbines	120MW
West Angelas power station (67%)	West Angelas, Western Australia, Australia	Miscellaneous licence	Two LM6000PF dual-fuel turbines	80MW
Yurralyi Maya power station (84.2%)	Dampier, Western Australia, Australia	Miscellaneous licence	Four LM6000PD gas-fired turbines One LM6000PF gas-fired turbine	200MW
Gudai-Darri Solar Farm	Gudai-Darri, Western Australia, Australia	Miscellaneous licence	Solar PV single-axis tracking	up to 34 MW
Aluminium				
Amrun power station	Amrun, Australia	100% leasehold	Diesel generation	24MW
Gladstone power station (42%)	Gladstone, Queensland, Australia	100% freehold	Thermal power station	1,680MW
Gove power station	Nhulunbuy, Northern Territory, Australia	100% leasehold	Diesel generation	24MW
Kemano power station	Kemano, British Columbia, Canada	100% freehold	Hydroelectric power	1,014MW installed capacity
Quebec power stations	Saguenay, Quebec, Canada (Chute-à-Caron, Chute-à-la-Savane, Chute-des-Passes, Chute-du-Diable, Isle-Maligne, Shipshaw)	100% freehold (certain facilities leased from Quebec Government until 2058 pursuant to Peribonka Lease)	Hydroelectric power	3,147MW installed capacity
Weipa power stations and solar generation facility	Lorim Point, Andoom, and Weipa, Australia	100% leasehold	Diesel generation supplemented by solar generation facility	38MW
Yarwun alumina refinery co-generation plant	Gladstone, Queensland, Australia	100% freehold	Gas turbine and heat recovery steam generator	160MW

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Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Copper				
Rio Tinto Kennecott power stations	Salt Lake City, Utah, United States	100% freehold	Thermal power station	75MW
			Steam turbine running off waste heat boilers at the copper smelter	31.8MW
			Combined heat and power plant supplying steam to the copper refinery	6.2MW
Minerals				
Boron co-generation plant	Boron, California, United States	100% freehold	Co-generation uses natural gas to generate steam and electricity, used to run Boron's refining operations	48MW
Energy Resources of Australia (86.3%)	Ranger Mine, Jabiru, Northern Territory, Australia	Lease	Five diesel generator sets rated at 5.17MW; one diesel generator set rated at 2MW; four additional diesel generator sets rated at 2MW	35.8MW
IOC power station (58.7%)	Sept-Îles, Quebec, Canada	Statutory grant	Hydroelectric power	22MW
QMM power plant	Fort Dauphin, Madagascar	100% freehold	Diesel generation supplemented by solar generation facility	32MW

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CONCLUSION

a) Sustainability Information Subject to Assurance – Limited assurance

Based on the evidence we obtained from the procedures performed, we are not aware of any material misstatements in the Sustainability Information Subject to Assurance presented in the Sustainability sections of the Rio Tinto Annual Report 2023, the Rio Tinto Strategic Report 2023 and the Rio Tinto Sustainability Fact Book 2023 for the year ended 31 December 2023, which has been prepared by Rio Tinto plc and Rio Tinto Limited (together Rio Tinto) in accordance with the Reporting Criteria.

b) GHG Emissions – Reasonable assurance

In our opinion, in all material respects, Rio Tinto's total Scope 1 and 2 Greenhouse Gas (GHG) emissions (equity basis) of 31.1 MtCO2-e (Location-Based) and 32.6 MtCO2e (Market-Based) (Scope 1 and 2 GHG Emissions) presented in the Sustainability sections of the Rio Tinto Annual Report 2023, the Rio Tinto Strategic Report 2023 and the Rio Tinto Sustainability Fact Book 2023 for the year ended 31 December 2023, has been prepared by Rio Tinto in accordance with the Reporting Criteria.

Sustainability Information Subject to Assurance and GHG Emissions

The Sustainability Information Subject to Assurance is summarised below:

- Rio Tinto's assertion that it has incorporated the requirements of the ICMM 10 principles and the mandatory requirements set out in the ICMM Position Statements into its own policies, strategies and standards.
- Rio Tinto's assertions regarding the approach it has adopted to identify and prioritise its material Sustainability risks and opportunities included within the Sustainability section of the Annual Report 2023, the Strategic Report 2023 and the Fact Book 2023.
- Rio Tinto's assertions regarding the existence and status of implementation of systems and approaches used to manage the following selected sustainability risk areas:
  - GHG Emissions
  - Water
  - Communities
  - Culture Heritage
  - Health, Safety and Wellbeing
  - Transparent and Responsible Business
- The following Rio Tinto performance data related to the selected sustainable development risk areas:
  - Total Scope 1 and Scope 2 (Location-Based) GHG Emissions (equity basis)
  - Total Scope 1 and Scope 2 (Market-Based) GHG Emissions (equity basis)
  - Scope 1 & 2 (Location- Based) GHG emissions intensity (equity basis)
  - Total Energy (100% managed basis)
  - Total Scope 3 GHG Emissions (equity basis)
  - Tier 1 Water Targets performance data and assertions
  - Community Contributions
  - Cultural Heritage Disclosures
  - Occupational Illnesses
  - Number of fatalities
  - All injury frequency rate (AIFR)
  - Lost time injury frequency rate (LTIFR)
  - Number of lost time injuries (LTIs)
  - Business Integrity
  - Number of cases reported to the Business Conduct Office
  - ICMM PE self-assessments

Our assurance does not extend to information in respect of earlier periods or to any other information included in the Sustainability sections of the Rio Tinto Annual Report 2023, the Rio Tinto Strategic Report 2023 and the Rio Tinto Sustainability Fact Book 2023 for the year ended 31 December 2023.

Reporting Criteria

The Reporting Criteria used for the reporting of the Sustainability Information Subject to Assurance are the ICMM Sustainable Development Framework: ICMM Principles (Revised 2015) and the definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports.

For the GHG Emissions, the Reporting Criteria is the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)'s *GHG Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) (2015)*, GHG Protocol: *Scope 2 Guidance,* GHG Protocol: *Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2013)* and *Technical Guidance for Calculating Scope 3 Emissions (version 1.0)* and the Basis of Preparation as described and presented within the Scope 1, 2 and 3 Calculation Methodology (2022 Report and 2023 Addendum).

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Basis for Conclusion

We conducted our work in accordance with International Standard on Assurance Engagements ISAE 3000 and in respect of greenhouse gas emissions, International Standard on Assurance Engagements ISAE 3410 (the Standards). In accordance with the Standards we have:

- used our professional judgement to plan and perform the engagement to obtain limited assurance that we are not aware of any material misstatements in the Sustainability Information Subject to Assurance, whether due to fraud or error;
- used our professional judgement to assess the risk of material misstatement and plan and perform the engagement to obtain reasonable assurance that the GHG Emissions is free from material misstatement, whether due to fraud or error;
- considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on their effectiveness; and
- ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

Summary of Procedures Performed

In gathering evidence for our conclusions, our assurance procedures comprised:

- enquiries with relevant Rio Tinto personnel to understand and evaluate the design and implementation of the key systems, processes and internal controls to capture, collate, calculate and report the Sustainability Information Subject to Assurance and GHG Emissions;
- assessment of the suitability and application of the Reporting Criteria in respect of the Sustainability Information Subject to Assurance and GHG Emissions;
- analytical procedures over the Sustainability Information Subject to Assurance and GHG Emissions;
- risk analysis to validate the completeness of Rio Tinto's materiality assessment;
- substantively tested performance data within the Sustainability Information Subject to Assurance, on a sample basis at corporate and operational level, which included testing a selection of six managed operations and projects being Robe Valley, QAL, Rail Maintenance, ERA Closure, ISAL, and Kennecott;
- substantively tested the GHG Emissions, on a sample basis at corporate and operational level, which included testing a selection of 15 operations being Tom Price, Pilbara Rail Operations, Richards Bay Minerals, Tomago, Oyu Tolgoi, RTM Boron Operations, Kennecott, Queensland Alumina Limited, Gladstone Power Station, RTA Yarwun, Boyne Smelters, Bell Bay Aluminium, RTA Weipa, RTA Alma and RTA Arvida, and how this information is reported and captured at corporate level;
- interviews and walkthroughs with site personnel at each of the 15 operations listed above to assess the key systems, processes and internal controls to capture, collate, calculate and report GHG Emissions at an operational level, and how this information is reported and captured at corporate level;
- testing the mathematical accuracy of a sample of calculations underlying the GHG Emissions;
- assessing the appropriateness of a sample of emissions factors applied in calculating the GHG Emissions;
- evaluating the design and effectiveness of controls implemented by the Rio Tinto Health, Safety and Environment (HSE) Services reporting function over the Sustainability Information Subject to Assurance and GHG Emissions;
- assessing Rio Tinto's incorporation of the requirements of the ICMM 10 Principles for sustainable development, and the mandatory requirements set out in the ICMM Position Statements, into its own policies, strategies and standards; and
- reviewing the Rio Tinto Annual Report 2023, the Rio Tinto Strategic Report 2023 and the Rio Tinto Sustainability Fact Book 2023 in their entirety to ensure they are consistent with our overall knowledge of Rio Tinto.

How the Standard Defines Limited Assurance, Reasonable Assurance and Material Misstatement

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Reasonable assurance is a high level of assurance, but is not a guarantee that it will always detect a material misstatement when it exists.

Misstatements, including omissions, are considered material if, individually or in the aggregate, they could reasonably be expected to influence relevant decisions of the Directors of Rio Tinto.

Use of this Assurance Report

This report has been prepared for the Directors of Rio Tinto for the purpose of providing assurance conclusions on the Sustainability Information Subject to Assurance and GHG Emissions and may not be suitable for another purpose. We disclaim any assumption of responsibility for any reliance on this report, to any person other than the Directors of Rio Tinto, or for any other purpose than that for which it was prepared.

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Management's responsibility

Management are responsible for:

- determining that the Reporting Criteria is appropriate to meet their needs;
- preparing and presenting the Sustainability Information Subject to Assurance and GHG Emissions in accordance with the Reporting Criteria;
- establishing internal controls that enable the preparation and presentation of the Sustainability Information Subject to Assurance and GHG Emissions that is free from material misstatement, whether due to fraud or error;
- ensuring the basis of preparation in accordance with which the Sustainability Information Subject to Assurance and GHG Emissions has been determined and compiled is clearly and unambiguously set out in the Rio Tinto Annual Report 2023, the Rio Tinto Strategic Report 2023 and the Rio Tinto Sustainability Fact Book 2023;
- telling us of any known and/or contentious issues relating to the Sustainability Information Subject to Assurance and GHG Emissions; and
- Maintaining integrity of the website.

Our Responsibility

Our responsibility is to perform a limited assurance engagement in relation to the Sustainability Information Subject to Assurance and a reasonable assurance engagement in respect of the GHG Emissions for the year ended 31 December 2023, and to issue an assurance report that includes our conclusions.

Our Independence and Quality Management

We have complied with our independence and other relevant ethical requirements of the *Code of Ethics for Professional Accountants (including Independence Standards)* issued by the Australian Professional and Ethical Standards Board, and complied with the applicable requirements of Australian Standard on Quality Management 1 to design, implement and operate a system of quality management.

KPMG

KPMG

21 February 2024

Adrian V. King

Adrian King

Partner
Melbourne, Australia

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Shareholder information

Organisational structure

The Rio Tinto Group consists of Rio Tinto plc (registered in England and Wales as company number 719885 under the UK *Companies Act 2006* and listed on the London Stock Exchange), and Rio Tinto Limited (registered in Australia as ABN 96 004 458 404 under the Australian *Corporations Act 2001* and listed on the Australian Securities Exchange).

Rio Tinto is headquartered in London with a corporate office in Melbourne.

Rio Tinto plc has a sponsored American Depositary Receipts (ADR) facility, with underlying shares registered with the US Securities and Exchange Commission (SEC) and listed on the New York Stock Exchange.

The London Stock Exchange ticker for Rio Tinto plc is RIO.L, the Australian Securities Exchange ticker for Rio Tinto Limited is RIO.AX and the New York Stock Exchange ticker for the ADR is RIO.N.

Nomenclature and financial data

Rio Tinto plc and Rio Tinto Limited operate together and are referred to in this report as Rio Tinto, the Rio Tinto Group or the Group. These expressions are used for convenience, since both companies, and other companies in which they directly or indirectly own investments, are separate and distinct legal entities. Likewise, the words "we", "us", "our" and "ourselves" are used in some places to refer to the companies of the Rio Tinto Group in general. These expressions are also used where no useful purpose is served by identifying any particular company or companies. We usually omit "Limited", "plc", "Pty", "Inc.", "Limitada", "L.L.C.", "A.S." or "SA" from Group company names, except to distinguish between Rio Tinto plc and Rio Tinto Limited. Financial data in US dollars ($) is derived from, and should be read in conjunction with, the 2023 financial statements. In general, where we have provided financial data in other currencies, it has been translated from the consolidated financial statements, and is provided solely for convenience. Exceptions arise where data has been extracted directly from source records.

History

Rio Tinto plc was incorporated on 30 March 1962, then called The Rio Tinto-Zinc Corporation Limited (RTZ), and was formed by the merger of The Rio Tinto Company Limited and The Consolidated Zinc Corporation Limited. The Rio Tinto Company was incorporated in 1873 to reopen ancient copper workings in Spain. The Consolidated Zinc Corporation Limited began operations in the early twentieth century as part of the Australian mining industry. Based at Broken Hill in New South Wales, it began mining silver, lead and zinc deposits and later expanded into lead and zinc smelting.

Rio Tinto Limited was incorporated on 17 December 1959, then called The Rio Tinto Mining Company of Australia Pty Limited. In 1962 the Australian interests of The Consolidated Zinc Corporation Limited and The Rio Tinto Company Limited were merged to form Conzinc Riotinto of Australia Limited, a limited liability company under the laws of the State of Victoria, Australia. In 1980, Conzinc Riotinto of Australia Limited changed its name to CRA Limited.

Between 1962 and 1995, both RTZ and CRA discovered important mineral deposits, developed major mining projects and grew through acquisition.

RTZ and CRA began operating in 1995 through a dual-listed companies structure. In 1997, RTZ became Rio Tinto plc and CRA became Rio Tinto Limited.

Dual-listed companies structure

In 1995, Rio Tinto shareholders approved the terms of the dual-listed companies' merger (the DLC structure). The aim was to put shareholders of both companies in substantially the same position they would be in if they held shares in a single entity owning all assets of both companies.

Following the approval of the DLC structure, both companies entered into a DLC Merger Sharing Agreement (the Sharing Agreement). As part of this, both companies agreed to be managed in a unified way, to share the same Board of Directors, and to put in place arrangements to provide shareholders of both companies with a common economic interest in the DLC structure.

To achieve this third objective, the Sharing Agreement fixed the ratio of dividend, voting and capital distribution rights attached to each Rio Tinto plc share and each Rio Tinto Limited share at an Equalisation Ratio of 1:1. This has remained unchanged ever since, although the Sharing Agreement makes clear this can be revised in special circumstances. For example where certain modifications are made to the share capital of one company (such as rights issues, bonus issues, share splits and share consolidations) but not to the other.

Outside the circumstances specified in the Sharing Agreement, the Equalisation Ratio can only be altered with the approval of shareholders under the class rights action approval procedure, described in the voting arrangements section below. Any adjustments must be confirmed by the Group's external auditors.

Consistent with the DLC structure, the directors of both companies aim to act in the best interests of Rio Tinto as a whole. The class rights action approval procedure exists to deal with instances where there may be a conflict of interest between the shareholders of the two companies.

To ensure that the Boards of both companies are identical, resolutions to appoint or remove Directors must be put to shareholders of both companies as Joint Decisions, described in the voting arrangements section below. The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited make clear that a person can only be a Director of one company if he or she is also a Director of the other. This means that if a person were removed as a Director of Rio Tinto plc, he or she would also cease to be a Director of Rio Tinto Limited.

One consequence of the DLC merger is that Rio Tinto is subject to a wide range of laws, rules and regulatory reviews across multiple jurisdictions. Where these rules differ, Rio Tinto will comply with the requirements in each jurisdiction at a minimum.

Dividend arrangements

The Sharing Agreement ensures that dividends paid on Rio Tinto plc and Rio Tinto Limited shares are equalised on a net cash basis without taking into account any associated tax credits. Dividends are determined in US dollars (with the exception of ADR holders, paid in sterling and Australian dollars) and both companies are required to announce and pay dividends and other distributions, or as close to, at the same time as possible.

The payment of dividends between companies and their subsidiaries, including the payment of dividends on the DLC dividend shares, provides the Group with flexibility to manage internal funds and distributable reserves to enable the payment of equalised dividend or equalised capital distributions.

If the payment of an equalised dividend would contravene the law applicable to one of the companies, they can depart from the Equalisation Ratio. In that situation, the relevant company must put aside reserves for payment on the relevant shares at a later date.

Rio Tinto shareholders have no direct rights to enforce the dividend equalisation provisions of the Sharing Agreement.

Voting arrangements

In principle, the Sharing Agreement enables the shareholders of Rio Tinto plc and Rio Tinto Limited to vote as a joint electorate on any matters that affect them in similar ways. These are referred to as Joint Decisions, and include the creation of new classes of share capital, the appointment or removal of directors and auditors, and the receiving of annual financial statements. All shareholder resolutions that include Joint Decisions are voted on a poll.

The Sharing Agreement also protects shareholders of both companies by requiring joint approval for decisions that do not affect the shareholders of both companies equally.

These are known as class rights actions, and are voted on a poll. For example, fundamental elements of the DLC structure cannot be changed unless approved separately by the shareholders of both companies.

Exceptions to these principles can arise in situations such as where legislation requires the separate approval of a decision by the appropriate majority of shareholders in one company, and where approval of the matter by shareholders of the other company is not required.

Where a matter has been expressly categorised as either a Joint Decision or a class rights action, the Directors cannot change that categorisation. If a matter falls within both categories, it is treated as a class rights action. In addition, if an issue is not expressly listed in either category, Directors can decide how it should be put to shareholders for approval.

To support joint voting arrangements, both companies have entered into shareholder voting agreements, where a Special Voting Share is issued to a special purpose company (SVC) and held in trust for shareholders by a common trustee. Rio Tinto plc (RTP) has issued its Special Voting Share (RTP Special Voting Share) to Rio Tinto Limited (RTL) Shareholder SVC, while Rio Tinto Limited has issued its Special Voting Share (RTL Special Voting Share) to RTP Shareholder SVC. The total number of votes cast on Joint Decisions by the shareholders of one company are decided at a parallel meeting of the other company. The exact role of these SVCs is described below.

In exceptional circumstances, certain shareholders can be excluded from voting at their respective company's general meetings. For example, they may have acquired shares in the other company in excess of a given threshold without making an offer for all the shares in the other company. In this situation, votes cast by these excluded shareholders are disregarded.

Following the companies' general meetings, the overall results of the voting are announced to relevant stock exchanges and the media, and published at riotinto.com

At a Rio Tinto plc shareholders meeting during which a Joint Decision is considered, each Rio Tinto plc share carries one vote. The holder of the Special Voting Share has one vote for each vote cast by the public shareholders of Rio Tinto Limited in their parallel meeting. The holder of the Special Voting Share must vote in accordance with the votes cast by public shareholders for and against the equivalent resolution at the parallel Rio Tinto Limited shareholders' meeting. The holders of Rio Tinto Limited ordinary shares do not hold voting shares in Rio Tinto plc by virtue of their holding in Rio Tinto Limited, and cannot enforce the voting arrangements relating to the Special Voting Share.

Similarly, at a Rio Tinto Limited shareholders meeting during which a Joint Decision is considered, each Rio Tinto Limited share carries one vote and the holder of its Special Voting Share will have one vote for each vote cast by the public shareholders of Rio Tinto plc in their parallel meeting. The holder of the Special Voting Share must vote in accordance with the votes cast for and against the equivalent resolution at the parallel Rio Tinto plc shareholders meeting. The holders of Rio Tinto plc ordinary shares do not hold any voting shares in Rio Tinto Limited by virtue of their holding in Rio Tinto plc, and cannot enforce the voting arrangements relating to the Special Voting Share.

Capital distribution arrangements

If either company goes into liquidation, the Sharing Agreement ensures a valuation is made of the surplus assets of both companies. If the surplus assets available for distribution by one company on each of the shares held by its shareholders exceed the surplus assets available for distribution by the other company on each of the shares held by its shareholders, then an equalising payment must be made – to the extent permitted by applicable law – such that the amount available for distribution on each share held by shareholders of both companies reflects the Equalisation Ratio.

The aim is to ensure the shareholders of both companies have equivalent entitlements to the assets of the combined Group on a per share basis, taking account of the Equalisation Ratio.

The Sharing Agreement does not grant any enforceable rights to the shareholders of either company upon liquidation of either company.

Limitations on ownership of shares and merger obligations

The laws and regulations of the UK and Australia impose restrictions and obligations on persons who control interests in publicly listed companies in excess of defined thresholds. These can include an obligation to make a public offer for all outstanding issued shares of the relevant company. The threshold applicable to Rio Tinto plc under UK law and regulations is 30% and to Rio Tinto Limited under Australian law and regulations is 20% on both a standalone and a Joint Decision basis.

As part of the DLC merger, the Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited were amended with the aim of extending these laws and regulations to the combined enterprise. This amendment also ensures that a person cannot exercise control over one company without having made offers to the public shareholders of both companies.

This guarantees the equal treatment of both sets of shareholders, and that the two companies are considered as a single economic entity. The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited impose restrictions on any person who controls, directly or indirectly, 20% or more of the votes on a Joint Decision. If, however, such a person has an interest in either Rio Tinto Limited or Rio Tinto plc only, then the restrictions only apply if they control, directly or indirectly, 30% or more of the votes at that company's general meetings.

If one of these thresholds is exceeded, the person cannot attend or vote at general meetings of the relevant company, cannot receive dividends or other distributions from the relevant company, and may be divested of their interest by the Directors of the relevant company (subject to certain limited exceptions and notification by the relevant company). These restrictions continue to apply until that person has either made a public offer for all the publicly held shares of the other company, has reduced their controlling interest below the thresholds specified, or has acquired through a permitted means at least 50% of the publicly held shares of each company.

This arrangement ensures that offers for the publicly held shares of both companies would be required to avoid the restrictions set out above, even if the interests which breach the thresholds are held in just one of the companies. The Directors do not have the discretion to exempt a person from the operation of these rules.

Under the Sharing Agreement, the companies agree to cooperate to enforce the above restrictions contained in their Articles of Association and Constitution.

Guarantees

In 1995, each company entered into a deed poll guarantee in favour of creditors of the other company. In addition, each company guaranteed the contractual obligations of the other and the obligations of other persons guaranteed by the other company, subject to certain limited exceptions.

Beneficiaries under deed poll guarantees can make demands on the relevant guarantor without first having recourse to the company or persons whose obligations are being guaranteed. The obligations of the guarantor under each deed poll guarantee expire upon termination of the Sharing Agreement and under other limited circumstances, but only in respect of obligations arising after such termination and, in the case of other limited circumstances, the publication and expiry of due notice.

Markets

Rio Tinto plc

The principal market for Rio Tinto plc shares is the London Stock Exchange, with shares trading through the Stock Exchange Electronic Trading Service (SETS) system.

Rio Tinto plc American Depositary Receipts (ADRs) are listed on the New York Stock Exchange.

Further details relating to Rio Tinto plc ADRs are available in Rio Tinto's annual reports on Form 20-F.

Rio Tinto Limited

Rio Tinto Limited shares are listed on the Australian Securities Exchange (ASX).

The ASX is the principal trading market for Rio Tinto Limited shares. The ASX is a national stock exchange with an automated trading system.

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Share ownership

Substantial shareholders in Rio Tinto plc

The following table shows holdings of 3% or more of voting rights in Rio Tinto plc's ordinary shares as per the most recent notification of each respective holder to Rio Tinto plc under the UK Disclosure and Transparency Rule 5. The percentage of voting rights detailed below was calculated as at the date of the relevant disclosures. The following table shows shareholders who have provided this notice or an equivalent as of 7 February 2024.

Rio Tinto plc	Date of notice	Number of shares	Percentage of capital
BlackRock, Inc.[1]	4 Dec 2009	127,744,871	8.38
Shining Prospect Pte. Ltd	7 Dec 2018	182,550,329	14.02
The Capital Group Companies, Inc.	6 Jul 2022	51,648,733	4.13

1. On 25 January 2024, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 112,980,265 ordinary shares in Rio Tinto plc as of 31 December 2023, representing 9.0% of that class of shares.

Substantial shareholders in Rio Tinto Limited

Under the Australian *Corporations Act 2001,* any person with 5% or more voting power in Rio Tinto Limited is required to provide the company with notice. The following table shows shareholders who have provided this notice or an equivalent as of 7 February 2024:

Rio Tinto Limited	Date of notice	Number of shares	Percentage of capital[2]
State Street Corporation	30 May 2023	23,628,115	6.37
BlackRock, Inc.[3, 4]	5 Dec 2022	26,031,175	7.01
The Vanguard Group, Inc.	11 Apr 2022	18,564,679	5.00
Shining Prospect Pte. Ltd	9 Feb 2018	see footnote[5]	see footnote[5]

2. The percentage of voting rights detailed was as disclosed in the notice received by the company, calculated at the time of the relevant disclosure.
3. In its substantial holding notice filed on 5 December 2022, BlackRock, Inc. and its associates disclosed a holding of 115,764,125 shares in Rio Tinto plc and 26,031,175 shares in Rio Tinto Limited, which gave BlackRock, Inc. and its associates voting power of 8.74% in the Rio Tinto Group on a Joint Decision matter. Accordingly, in addition to being substantial shareholders of Rio Tinto Limited by virtue of interests held in Rio Tinto Limited's shares, through the operation of the Australian *Corporations Act 2001* as modified to apply to the DLC structure, these entities disclosed voting power of 8.74% in Rio Tinto Limited. Based on this notification, as at 5 December 2022, BlackRock, Inc. directly held a 7.01% interest in Rio Tinto Limited.
4. On 2 February 2024, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 24,991,523 ordinary shares in Rio Tinto Limited as of 31 December 2023, representing 6.7% of that class of shares.
5. In its substantial holding notice filed on 9 February 2018, Shining Prospect Pte. Ltd disclosed that its holding of 182,550,329 Rio Tinto plc shares gave Shining Prospect Pte. Ltd and its associates voting power of 10.32% in the Rio Tinto Group on a Joint Decision matter. Accordingly, through the operation of the Australian *Corporations Act 2001* as modified to apply to the DLC structure, these disclosed voting power of 10.32% in Rio Tinto Limited.

As far as is known, Rio Tinto plc and Rio Tinto Limited are not directly or indirectly owned or controlled by another corporation or by any government or natural person. Rio Tinto is not aware of any arrangement that may result in a change in control of Rio Tinto plc or Rio Tinto Limited. No shareholder possesses voting rights that differ from those attaching to Rio Tinto plc's and Rio Tinto Limited's securities.

As of 7 February 2024, the total amount of the Group's voting securities owned by the Directors and Executives in Rio Tinto plc was 305,203 ordinary shares of 10p each or ADRs. There were 24,351 holders of record of Rio Tinto plc's shares. Of these holders, 394 had registered addresses in the US and held a total of 113,706 Rio Tinto plc shares, representing 0.02% of the total number of Rio Tinto plc shares issued and outstanding as at such date. In addition, 190,636,973 Rio Tinto plc shares were registered in the name of a custodian account in London which represented 15.2% of Rio Tinto plc shares issued and outstanding. These shares were represented by 190,636,973 Rio Tinto plc ADRs held of record by 417 ADR holders. In addition, certain accounts of record with registered addresses other than in the US hold shares, in whole or in part, beneficially for US persons.

As of 7 February 2024, the total amount of the Group's voting securities owned by Directors and Executives in Rio Tinto Limited was 93,403 shares, in aggregate representing less than 1% of the Group's total number of ordinary shares in issue. There were 175,879 holders of record of Rio Tinto Limited shares. Of these holders, 245 had registered addresses in the US, representing approximately 0.04% of the total number of Rio Tinto Limited shares issued and outstanding as of such date. In addition, nominee accounts of record with registered addresses other than in the US may hold Rio Tinto Limited shares, in whole or in part, beneficially for US persons.

Unquoted equity securities in Rio Tinto Limited

As at 7 February 2024, there were Rio Tinto Limited unquoted equity securities on issue, comprising 55,628 unvested Bonus Deferral Awards held by 32 holders; 1,176,563 unvested Management Share Awards held by 1,095 holders; and 1,000,810 unvested Performance Share Awards held by 99 holders, all of which were granted under the Rio Tinto Limited Equity Incentive Plan, and 1,386,501 unvested matching share rights were granted under the Rio Tinto Limited Global Employee Share Plan held by 16,626 holders. This information is provided in compliance with ASX Listing Rule 4.10.16.

Analysis of ordinary shareholders

	Rio Tinto plc				Rio Tinto Limited			
As at 7 February 2024	**No. of accounts**	**%**	**Shares**	**%**	**No. of accounts**	**%**	**Shares**	**%**
1 to 1,000 shares	18,075	74.48	5,689,892	0.48	151,767	86.29	38,369,451	10.34
1,001 to 5,000 shares	4,459	18.10	9,060,384	0.76	21,644	12.31	42,936,178	11.57
5,001 to 10,000 shares	512	2.10	3,613,306	0.30	1,723	0.98	11,854,363	3.19
10,001 to 25,000 shares	368	1.43	5,973,286	0.48	587	0.33	8,626,863	2.32
25,001 to 125,000 shares	442	1.98	26,567,395	2.48	118	0.07	5,419,916	1.46
125,001 to 250,000 shares	149	0.56	26,501,660	2.06	7	0.00	1,353,164	0.36
250,001 to 1,250,000 shares	231	0.90	125,718749	10.22	20	0.01	8,455,431	2.28
1,250,001 to 2,500,000 shares	50	0.19	87,970,403	6.87	5	0.00	8,524,474	2.30
2,500,001 shares and over	65	0.26	964,808,512[1]	76.35	8	0.00	245,666,374	66.18
			1,255,903,587[2]	100.00			371,216,214[3]	100.00
Number of holdings less than marketable parcel of A$500					2,064			

1. This includes 190,636,973 shares held in the name of a nominee on the share register. The shares are listed on the New York Stock Exchange (NYSE) in the form of American Depositary Receipts (ADRs).
2. The total issued share capital is made up of 1,255,930,587 publicly held shares and 4,485,902 shares held in Treasury.
3. Publicly held shares in Rio Tinto Limited.

Twenty largest registered shareholders

The following table lists the 20 largest registered holders of Rio Tinto Limited shares in accordance with the ASX listing rules, together with the number of shares and the percentage of issued capital each holds, as of 7 February 2024.

Rio Tinto Limited	**Number of shares**	**Percentage of issued share capital**
HSBC Custody Nominees (Australia) Limited	118,071,649	31.81
J. P. Morgan Nominees Australia Pty Limited	53,752,889	14.48
Citicorp Nominees Pty Ltd	38,696,031	10.42
BNP Paribas Nominees Pty Ltd (Agency Lending A/C)	11,526,786	3.11
National Nominees Limited	9,266,881	2.50
BNP Paribas Noms Pty Ltd	8,814,302	2.37
Citicorp Nominees Pty Limited (Colonial First State Inv A/C)	3,507,755	0.94
HSBC Custody Nominees (Australia) Limited (NT-Comnwlth Super Corp A/C)	2,607,208	0.70
Argo Investments Limited	2,197,139	0.59
Australian Foundation Investment Company Limited	1,928,853	0.52
BNP Paribas Nominees Pty Ltd (ACF Clearstream)	1,772,094	0.48
Netwealth Investments Limited (WRAP Services A/C)	1,357,603	0.37
BNP Paribas Nominees Pty Ltd Hub24 Custodial Serv Ltd	1,335,622	0.36
Custodial Services Limited	1,202,875	0.32
BNP Paribas Nominees Pty Ltd Barclays	664,305	0.18
Mutual Trust Pty Ltd	590,089	0.16
BNP Paribas Noms (NZ) Ltd	557,963	0.15
CGU Insurance	539,674	0.15
Washington H Soul Pattinson and Company Limited	431,120	0.12
Australian United Investment Co Ltd	400,000	0.11
Diversified United Investment Ltd	400,000	0.11

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Material contracts

Articles of Association, Constitution, and DLC Sharing Agreement

As explained on page 347, under the terms of the DLC structure, shareholders of Rio Tinto plc and of Rio Tinto Limited entered into certain contractual arrangements designed to place the shareholders of both companies in substantially the same position as if they held shares in a single entity that owned all the assets of both companies. As far as is permitted by the UK *Companies Act 2006*, the Australian *Corporations Act 2001* and ASX Listing Rules, this principle is reflected in the Articles of Association of Rio Tinto plc and in the Constitution of Rio Tinto Limited.

The following summaries describe the material rights of shareholders of both Rio Tinto plc and Rio Tinto Limited.

Objects

At the 2009 AGMs, shareholders of Rio Tinto plc and Rio Tinto Limited approved amendments to their Articles of Association and Constitution whereby the object clauses were removed to allow the companies to have the widest possible scope of activities.

Directors' interests

Under Rio Tinto plc's Articles of Association, a Director may not vote in respect of any proposal in which he or she, or any other person connected with him or her, has any interest, other than by virtue of his or her interests in shares or debentures or other securities of, in or through the company, except in certain circumstances, including in respect of resolutions:

- Indemnifying him or her or a third party in respect of obligations incurred by the Director on behalf of, or for the benefit of, the company, or in respect of obligations of the company, for which the Director has assumed responsibility under an indemnity, security or guarantee.
- Relating to an offer of securities in which he or she may be interested as a holder of securities or as an underwriter.
- Concerning another body corporate in which the Director is beneficially interested in less than 1% of the issued shares of any class of shares of such a body corporate.
- Relating to an employee benefit in which the Director will share equally with other employees.
- Relating to liability insurance that the company is empowered to purchase for the benefit of Directors of the company in respect of actions undertaken as Directors (or officers) of the company.
- Concerning the giving of indemnities in favour of Directors or the funding of expenditure by Directors to defend criminal, civil or regulatory proceedings or actions against a Director.

Under Rio Tinto Limited's Constitution, a Director may be present at a meeting of the Board while a matter in which the Director has a material personal interest is being considered and may vote in respect of that matter, except where a Director is constrained by Australian law.

The Directors are empowered to exercise all the powers of the companies to borrow money; to charge any property or business of the companies or all, or any, of their uncalled capital; and to issue debentures or give any other security for a debt, liability or obligation of the companies or of any other person. The Directors shall restrict the borrowings of Rio Tinto plc to the limitation that the aggregate amount of all monies borrowed by the company and its subsidiaries shall not exceed an amount equal to 1.5 times the companies' share capital plus aggregate reserves unless sanctioned by an ordinary resolution of the company.

Directors are not required to hold any shares of either company by way of qualification. The Remuneration Report on pages 113–145 provides information on shareholding policies relating to Executive and Non-Executive Directors. Please refer to the Directors' Report for information on the appointment of Directors.

Rights attaching to shares

Under UK law, dividends on shares may only be paid out of profits available for distribution, as determined in accordance with generally accepted accounting principles and by the relevant law. Shareholders are entitled to receive such dividends as may be declared by the Directors. Directors may also pay interim dividends to shareholders as justified by the financial position of the Group.

Under the Australian *Corporations Act 2001*, dividends on shares may only be paid if the company's assets exceed its liabilities immediately before the dividend is declared, the excess is sufficient for the payment of the dividend, the payment is fair and reasonable to the company's shareholders as a whole, and the payment does not materially prejudice the company's ability to pay its creditors. Any Rio Tinto plc dividend unclaimed after 12 years from the date the dividend was declared, or became due for payment, will be forfeited and returned to the company. Any Rio Tinto Limited dividend unclaimed may be invested or otherwise used by the Board for the benefit of the company until claimed or otherwise disposed of according to Australian law. Rio Tinto Limited is governed by the State of Victoria's unclaimed monies legislation, which requires the company to pay to the state revenue office any unclaimed dividend payments of A$20 or more that on 1 March each year have remained unclaimed for over 12 months.

Voting

Voting at any general meeting of shareholders on a resolution on which the holder of the Special Voting Share is entitled to vote shall be decided by a poll, and any other resolution shall be decided by a show of hands unless a poll has been duly demanded. On a show of hands, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote regardless of the number of shares held. The holder of the Special Voting Share is not entitled to vote in a show of hands. On a poll, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote for every ordinary share for which he or she is the holder. In the case of Joint Decisions, the holder of the Special Voting Share has one vote for each vote cast in respect of the publicly held shares of the other company.

A poll may be demanded by any of the following:

- The Chair of the meeting.
- At least five shareholders entitled to vote on the resolution.
- Any shareholder(s) representing in the aggregate not less than one tenth (Rio Tinto plc) or one 20th (Rio Tinto Limited) of the total voting rights of all shareholders entitled to vote on the resolution.
- Any shareholder(s) holding Rio Tinto plc shares conferring a right to vote at the meeting on which there have been paid-up sums in the aggregate equal to not less than one tenth of the total sum paid up on all the shares conferring that right.
- The holder of the Special Voting Share of either company.

A proxy form gives the proxy the authority to demand a poll, or to join others in demanding one.

The necessary quorum for a Rio Tinto plc general meeting is three members present (in person or by proxy or other duly authorised representative) and entitled to vote. For a Rio Tinto Limited general meeting it is two members present (in person or by proxy or other duly authorised representative).

Matters are transacted at general meetings by the proposing and passing of resolutions as:

- Ordinary resolutions (for example the election of Directors), which require the affirmative vote of a majority of persons voting at a meeting for which there is a quorum.
- Special resolutions (for example amending the Articles of Association of Rio Tinto plc or the Constitution of Rio Tinto Limited), which require the affirmative vote of not less than three-quarters of the persons voting at a meeting at which there is a quorum.

The Sharing Agreement further classifies resolutions as Joint Decisions and class rights actions as explained on page 347.

AGMs must be convened with 21 days' written notice for Rio Tinto plc and with 28 days' notice for Rio Tinto Limited. In accordance with the authority granted by shareholders at the Rio Tinto plc AGM in 2023, other meetings of Rio Tinto plc may be convened with 14 days' written notice for the passing of a special resolution, and with 14 days' notice for any other resolution, depending on the nature of the business to be transacted. All meetings of Rio Tinto Limited require 28 days' notice. In calculating the period of notice, any time taken to deliver the notice and the day of the meeting itself are not included. The notice must specify the nature of the business to be transacted.

Variation of rights

If, at any time, the share capital is divided into different classes of shares, the rights attached to each class may be varied, subject to the provisions of the relevant legislation, the written consent of holders of three-quarters in value of the shares of that class, or upon the adoption of a special resolution passed at a separate meeting of the holders of the shares of that class. At every such meeting, all of the provisions of the Articles of Association and Constitution relating to proceedings at a general meeting apply, except that the quorum for Rio Tinto plc should be two or more persons who hold or represent by proxy not less than one-third in nominal value of the issued shares of the class.

Rights upon a winding-up

Except as the shareholders have agreed or may otherwise agree, upon a winding-up, the balance of assets available for distribution after the payment of all creditors (including certain preferential creditors, whether statutorily preferred creditors or normal creditors), and subject to any special rights attaching to any class of shares, is to be distributed among the holders of ordinary shares according to the amounts paid-up on the shares held by them. This distribution should generally be made in cash.
A liquidator may, however, upon the adoption of a special resolution of the shareholders, divide among the shareholders the whole or any part of the assets in specie or kind.

The Sharing Agreement describes the distribution of assets of each of the companies in the event of a liquidation, as explained on page 348.

Facility agreement

Details of the Group's $7.5 billion multi-currency committed revolving credit facilities are set out in the Our capital and liquidity section to the financial statements on page 204.

Exchange controls and foreign investment

Rio Tinto plc

There are no UK foreign exchange controls or other restrictions on the import or export of capital by, or on the payment of dividends to, non-resident holders of Rio Tinto plc shares, or that materially affect the conduct of Rio Tinto plc's operations. It should be noted, however, that various sanctions, laws, regulations or conventions may restrict the import or export of capital by, or the payment of dividends to, non-resident holders of Rio Tinto plc shares. There are no restrictions under Rio Tinto plc's Articles of Association or under UK law that specifically limit the right of non-resident owners to hold or vote Rio Tinto plc shares. However, certain of the provisions of the *Australian Foreign Acquisitions and Takeovers Act 1975* (the Takeovers Act) described below also apply to the acquisition by non-Australian persons of interests in securities of Rio Tinto plc.

Rio Tinto Limited

Under current Australian legislation, Australia does not impose general exchange or foreign currency controls. Subject to some specific requirements and restrictions, Australian and foreign currency may be freely brought into and sent out of Australia. There are requirements to report cash transfers in or out of Australia of A$10,000 or more. There is a prohibition on (or in some cases the specific prior approval of the Department of Foreign Affairs and Trade or Minister for Foreign Affairs must be obtained for) certain payments or other dealings connected with countries or parties identified with terrorism, or to whom United Nations or autonomous Australian sanctions apply. Sanction, anti-money laundering and counterterrorism laws may restrict or prohibit payments, transactions and dealings or require reporting of certain transactions.

Rio Tinto Limited may be required to deduct withholding tax from foreign remittances of dividends, to the extent that they are unfranked, and from payments of interest.

Acquisitions of interests in shares, and certain other equity instruments in Australian companies by non-Australian ("foreign") persons are subject to review and approval by the Treasurer of the Commonwealth of Australia under the Takeovers Act.

In broad terms, the Takeovers Act applies to acquisitions of interests in securities in an Australian entity by a foreign person where, as a result, a single foreign person (and any associate) would control 20% or more of the voting power or potential voting power in the entity. The potential voting power in an entity is determined having regard to the voting shares in the entity that would be issued if all rights (whether or not presently exercisable) in the entity were exercised.

The Takeovers Act also applies to direct investments by foreign government investors, in certain circumstances regardless of the size of the investment. Persons who are proposing relevant acquisitions or transactions may be required to provide notice to the Treasurer before proceeding with the acquisition or transaction.

The Treasurer has the power to order divestment in cases where relevant acquisitions or transactions have already occurred, including where prior notice to the Treasurer was not required. The Takeovers Act does not affect the rights of owners whose interests are held in compliance with the legislation.

Limitations on voting and shareholding

Except for the provisions of the Takeovers Act, there are no limitations imposed by law, Rio Tinto plc's Articles of Association or Rio Tinto Limited's Constitution, on the rights of non-residents or foreigners to hold the Group's ordinary shares or ADRs, or to vote that would not apply generally to all shareholders.

Directors

Appointment and removal of Directors

The appointment and replacement of Directors is governed by Rio Tinto plc's Articles of Association and Rio Tinto Limited's Constitution, relevant UK and Australian legislation, and the UK Corporate Governance Code. The Board may appoint a Director either to fill a casual vacancy or as an addition to the Board, so long as the total number of Directors does not exceed the limit prescribed in these constitutional documents. An appointed Director must retire and seek election to office at the next AGM of each company. In addition to any powers of removal conferred by the UK *Companies Act 2006* and the Australian *Corporations Act 2001*, the company may by ordinary resolution remove any Director before the expiry of his or her period of office and may, subject to these constitutional documents, by ordinary resolution appoint another person who is willing to act as a Director in their place. In line with the UK *Corporate Governance Code*, all directors are required to stand for re-election at each AGM.

Directors' powers

The Board manages the business of Rio Tinto under the powers set out in these constitutional documents. These powers include the Directors' ability to issue or buy back shares. Shareholders' authority to empower the Directors to purchase its own ordinary shares is sought at the AGM each year. The constitutional documents can only be amended, or replaced, by a special resolution passed in general meeting by at least 75% of the votes cast.

UK listing rules cross-reference table

The following table contains only those sections of UK listing rule 9.8.4 C which are relevant. The remaining sections of listing rule 9.8.4 C are not applicable.

Listing rule	Description of listing rule	Reference in report
9.8.4 (1)	A statement of any interest capitalised by the Group during the year	Note 9 Finance income and finance costs and note 15 Deferred taxation
9.8.4 (12)	Details of any arrangement under which a shareholder has waived or agreed to waive any dividends	See page 148.

Shareholder security

Shareholders tell us that they sometimes receive unsolicited approaches, usually by telephone, inviting them to undertake a transaction in shares they own.

If a shareholder does not know the source of the call, they should check the details against the Financial Conduct Authority (FCA) website below and, if they have specific information, report it to the FCA using the consumer helpline or the online reporting form.

If a shareholder is worried that they are a victim of fraud and is resident in the UK, they should report the facts immediately using the Action Fraud helpline on 0300 123 2040. More information about potential scams and other investment-based fraud can be found at actionfraud.police.uk or fca.org.uk/scamsmart.

Metal prices and exchange rates

Metal prices – average for the year		2023	2022	Increase/ (Decrease)
Copper	– US cents/lb	**386**	398	(3)%
Aluminium	– $/tonne	**2,250**	2,703	(17)%
Gold	– $/troy oz	**1,941**	1,800	8 %
Average exchange rates against the US dollar				
Sterling		**1.24**	1.24	— %
Australian dollar		**0.66**	0.69	(4)%
Canadian dollar		**0.74**	0.77	(4)%
Euro		**1.08**	1.05	3 %
South African rand		**0.054**	0.061	(12)%
Year-end exchange rates against the US dollar				
Sterling		**1.28**	1.21	6 %
Australian dollar		**0.69**	0.68	1 %
Canadian dollar		**0.76**	0.74	3 %
Euro		**1.11**	1.07	4 %
South African rand		**0.054**	0.059	(9)%

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Financial calendar

2024		
15	January	Fourth quarter 2023 operations review
29	January	Closing date for receipt of nominations for candidates other than those recommended by the board to be elected as directors at the 2024 annual general meetings
21	February	Announcement of results for 2023
7	March	Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs quoted “ex-dividend” for the 2023 final dividend
8	March	Record date for the 2023 final dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
26	March	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2023 final dividend
4	April	Annual general meeting for Rio Tinto plc, UK
11	April	Dividend currency conversion date
16	April	First quarter 2024 operations review
18	April	Payment date for the 2023 final dividend to holders of ordinary shares and ADRs
2	May	Annual general meeting for Rio Tinto Limited, Australia
15	July	Second quarter operations review 2024
31	July	Announcement of half-year results for 2024
15	August	Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs quoted “ex-dividend” for the 2023 interim dividend[1]
16	August	Record date for the 2024 interim dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
5	September	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2024 interim dividend
19	September	Dividend currency conversion date
26	September	Payment date for the 2024 interim dividend to holders of ordinary shares and ADRs
15	October	Third quarter 2024 operations review

1. Effective 28 May 2024, under the US Security Exchange Commission (SEC) rules, the trade settlement cycle for our ADRs will change from T+2 to T+1. The ex-dividend date and record date will become the same for regular ex-dividend date processing of our ADRs.

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Contact details

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Rio Tinto's agent in the US is Cheree Finan, who may be contacted at
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Shareholders

Please refer queries about shareholdings to the investor centre of the respective registrar.

Rio Tinto plc

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Holders of Rio Tinto American Depositary Receipts (ADRs)
Please contact the ADR administrator if you have any queries about your ADRs.

ADR administrator

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