

Rio Tinto releases third quarter production results

15 October 2021

Rio Tinto Chief Executive Jakob Stausholm, said: "The third quarter has demonstrated the resilience of our people in dealing with ongoing COVID-19 challenges. It has been another difficult quarter operationally and despite improving versus the prior quarter, we recognise the opportunity to raise our performance. We have consequently modestly adjusted our guidance.

"We are progressing against our four pillars and striving to make Rio Tinto even stronger, notably to become the best operator. This will ensure we continue to deliver attractive returns to shareholders, invest in sustaining and growing our portfolio, and make a broader contribution to society, particularly in relation to the drive to net-zero carbon emissions."

Production*		Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Pilbara iron ore shipments (100% basis)	Mt	83.4	+2%	+9%	237.5	-2%
Pilbara iron ore production (100% basis)	Mt	83.3	-4%	+10%	235.6	-5%
Bauxite	Mt	14.0	-3%	+2%	41.2	-4%
Aluminium	kt	774	-3%	-5%	2,393	+1%
Mined copper	kt	125.2	-3%	+8%	361.2	-9%
Titanium dioxide slag	kt	209	-29%	-30%	787	-7%
IOC iron ore pellets and concentrate	Mt	2.2	-8%	-20%	7.2	-6%

*Rio Tinto share unless otherwise stated

Q3 operational highlights and other key announcements

- We continue to prioritise the safety of our people and communities as we learn to live with COVID-19. Our all injury frequency rate (AIFR) of 0.37 has seen an increase versus the third quarter of 2020 (0.35), but an improvement against the prior quarter (0.39).
- We now expect Pilbara shipments to be 320 to 325 million tonnes (previously at the low end of 325 to 340 million tonnes) following modest delays to completion of the new greenfield mine at Gudai-Darri and the Robe Valley brownfield mine replacement project due to the tight labour market in Western Australia. Iron Ore Company of Canada (IOC) pellets and concentrate full year guidance has been reduced to 9.5 to 10.5 million tonnes (previously 10.5 to 12.0 million tonnes). Refined copper guidance has been reduced to 190 to 210 thousand tonnes (previously 210 to 250 thousand tonnes) due to an incident at the Kennecott smelter in September. We made small adjustments to bauxite and mined copper, and reintroduced guidance for titanium dioxide following resumption of operations at Richards Bay Minerals (RBM) in South Africa.
- Pilbara shipments in the third quarter were 83.4 million tonnes (100% basis), 9% higher than the prior quarter and 2% higher than the third quarter of 2020. Pilbara iron ore production of 83.3 million tonnes (100% basis) was 4% lower than the third quarter of 2020 due to heritage management, brownfield mine replacement tie-ins and project completion delays. This also resulted in an increase of SP10 production in the third quarter that will continue into the fourth quarter.
- Bauxite production of 14.0 million tonnes was 3% lower than the third quarter of 2020 due to equipment reliability issues and overruns on planned shutdowns at our Pacific operations.
- Aluminium production of 0.8 million tonnes was 3% lower than the third quarter of 2020, due to strike action at the Kitimat smelter. On 2 October, we reached a new Collective Labour Agreement for our British Columbia operations, which includes the Kitimat smelter and the Kemano hydropower facility. The smelter will steadily ramp up following a period of reduced production due to industrial activity.
- Mined copper production of 125.2 thousand tonnes was 3% lower than the third quarter of 2020 due to lower recoveries and throughput at Escondida as a result of the prolonged impact of COVID-19, partly offset by higher recovery and grade at Kennecott in Utah and improved performance and increased mill feed at Oyu Tolgoi.

- On 22 July, we [announced](#) the approval of a \$108 million investment to investigate the feasibility of an underground mine below the existing open pit at Kennecott. Infrastructure from previous underground projects will be extended to access the North Rim Skarn orebody, allowing for the development of crosscuts and further drilling of the resource. Potential underground mining would occur concurrently with open pit operations and result in increased copper output.
- Titanium dioxide slag production of 209 thousand tonnes was 29% lower than the third quarter of 2020. On 24 August, RBM in South Africa resumed operations following stabilisation of the security situation, supported by the national and provincial government, as well as substantive engagement with host communities and their traditional authorities.
- Production of pellets and concentrate at IOC was 8% lower than the third quarter of 2020 due to labour and equipment availability issues impacting product feed. The annual planned concentrator shutdown was completed in September.
- At the Oyu Tolgoi underground project in Mongolia, as a result of COVID-19 impacts and outstanding non-technical undercut criteria, first sustainable production will be no earlier than January 2023 (previously October 2022), subject to the timing of commencement of the undercut. The full impact on the cost of the integrated project is subject to further analysis once we have clarity on the timeline around the completion of the undercut criteria and ongoing COVID-19 restrictions.
- On 27 July, we [committed](#) funding of \$2.4 billion to the Jadar lithium-borates project in Serbia, subject to receiving all relevant approvals, permits and licences and ongoing engagement with local communities, the Government of Serbia and civil society.
- On 16 September, we made a [statement](#) regarding the Australian Taxation Office (ATO) issuing Rio Tinto Limited with penalty assessments in respect of the amended assessments issued on 2 March 2021 related to the denial of interest deductions on an isolated borrowing used to pay an intragroup dividend in 2015. We are confident of our position and have disputed the primary tax and penalty assessments. In accordance with the usual practice, we have paid 50% of the primary tax up-front as part of the objections process.
- In the third quarter, we entered into three partnerships to progress our work to decarbonise our value chain. These include one with Komatsu to fast-track the development and implementation of zero-emission mining haulage solutions, one with Sumitomo Corporation to study the construction of a hydrogen pilot plant at our Yarwun alumina refinery in Gladstone, Queensland, and one with Caterpillar for the development of zero-emissions autonomous haul trucks for use at one of our Western Australian mining operations.

2021 production guidance

Rio Tinto share, unless otherwise stated	2020 Actuals	2021 Sept. YTD	2021 previous	2021 current
Pilbara iron ore (shipments, 100% basis) (Mt)	331	237	325 to 340 ¹	320 to 325 ²
Bauxite (Mt)	56	41	56 to 59 ¹	54 to 55 ³
Alumina (Mt)	8.0	6.0	7.8 to 8.2	Unchanged
Aluminium (Mt)	3.2	2.4	3.1 to 3.3	Unchanged
Mined copper (kt)	528	361	500 to 550 ¹	~500 ⁴
Refined copper (kt)	155	162	210 to 250	190 to 210 ⁵
Diamonds (M carats) ⁶	3.7	2.7	3.0 to 3.8	Unchanged
Titanium dioxide slag (Mt)	1.1	0.8	N/A	~1.0 ⁷
IOC ⁸ iron ore pellets and concentrate (Mt)	10.4	7.2	10.5 to 12.0	9.5 to 10.5
Boric oxide equivalent (Mt)	0.5	0.4	~0.5	Unchanged

¹At the low end of the range.

²Pilbara shipments guidance remains subject to COVID-19 disruptions including risks around mandatory vaccination for the resources industry in Western Australia as of 1 December, and risks around commissioning of new mines and management of cultural heritage.

³Reduction reflects equipment reliability issues and operational instability at the Pacific mines. The focus in the fourth quarter is on the recovery of plant equipment availability and asset health to support 2022 performance.

⁴Remains subject to COVID-19 disruptions and risks around mine plan sequencing following geotechnical issues at Kennecott.

⁵Reduction reflects a Kennecott smelter incident in September resulting in force majeure on customer contracts.

⁶Diamonds 2021 guidance and actuals are for Diavik only for comparability, following Argyle closure in 2020. Unadjusted Diamonds production for 2020 was 14.7 million carats, including both Diavik and Argyle operations.

⁷Full year titanium dioxide slag production guidance has been reinstated following stabilisation of the security situation at Richards Bay Minerals in South Africa and resumption of operations.

⁸Iron Ore Company of Canada.

- We will continue to monitor government-imposed restrictions related to COVID-19, and any other potential COVID-19 related disruptions. Restrictions on movement and availability of people can impact our ability to execute planned maintenance and deliver or accelerate projects.
- Iron ore shipments and bauxite production guidance remain subject to weather and market conditions. We now expect Pilbara shipments to be 320 to 325 million tonnes following modest delays to completion of the new greenfield mine at Gudai-Darri and the Robe Valley brownfield mine replacement project. First ore from Gudai-Darri is now expected in the first quarter of 2022. The Robe Valley brownfield mine replacement project remains on track for completion in 2021 although is later than planned. The tight labour market in Western Australia continues to limit our access to labour and we have also experienced delays due to a tight global supply chain.
- The full impact on our Pilbara iron ore operations, mine developments and heritage approach from the reform of the Aboriginal Heritage Act 1972 (WA) remains unknown. We continue to engage with Traditional Owners regarding current and proposed plans for mining activities and work through development scenarios, adjusting mine plans where required. Given the quality of our resource, we retain a range of development options in the Pilbara, subject to heritage and environmental approvals.

2021 unit cost guidance

- Pilbara iron ore 2021 unit cost guidance is unchanged at \$18.0-\$18.5 per tonne. Operating cost guidance is based on A\$:US\$ exchange rate of 0.75 (previously 0.77). It remains subject to price escalation of key input costs in particular freight and demurrage, diesel, labour and contractor rates and additional COVID-19 costs to support workforce vaccinations.
- Copper C1 unit cost guidance for 2021 has increased to 75-80 US cents/lb (previously 60-75 US cents/lb) as a result of reduced refined copper production at Kennecott.

All figures in this report are unaudited. All currency figures in this report are US dollars, and comments refer to Rio Tinto's share of production, unless otherwise stated.

Investments, growth and development projects

- We continue to proactively manage COVID-19 and prioritise work across critical projects, as challenges associated with interstate and international border access continue, impacting the availability and movement of people, most notably in Australia and Mongolia. Plans to mitigate labour shortages are in place.
- Exploration and evaluation operating expense in the first nine months of 2021 was \$516 million, \$66 million (15%) higher than the first nine months of 2020, with continued progress in Australia, and ramp up of activities in Europe and North America, with some delays in South America due to COVID-19 restrictions.

Pilbara mine projects

- Mining and operational readiness activities including recruitment are ongoing at the Gudai-Darri mine and construction of the rail spur is well advanced. Due to COVID-19 restrictions including ongoing labour shortages from interstate border closures in Australia, first ore in the crusher is now expected in the first quarter of 2022. Modest mobile crushing and screening facilities are being installed to supplement production output and partially mitigate delays.
- Brownfield mine replacement projects at West Angelas C and D have been commissioned and first ore at Western Turner Syncline Phase 2 is still expected in 2021. First ore at Robe Valley was achieved in August, following tie-in shutdowns during the second quarter. Commissioning challenges have impacted the project, however it remains on track for completion in 2021, although later than planned. The autonomous mining truck fleet at Western Turner Syncline 2 has been commissioned.

Oyu Tolgoi underground project¹

Technical progress

- Project progress continues to be significantly affected by COVID-19 constraints in Mongolia. Site accommodation and manning levels improved in the quarter but were between 25% and 50% of planned requirements in order to comply with COVID-19 restrictions. The impact on project costs of the additional restrictions related to COVID-19 to the end of September 2021 is estimated to be \$140 million. Despite these restrictions, construction on the Material Handling System 1 has been progressing well and is largely complete with commissioning anticipated in January 2022.
- A significant milestone was achieved in August with the 'breakthrough' of the conveyor decline. The service decline breakthrough is anticipated in October 2021. The underground development work including truck chute construction is progressing.
- Shaft 4 sinking readiness activities have been completed. Shaft 3 readiness works have commenced with the required works underway to ensure construction can resume as soon as personnel can be remobilised and additional investment is approved by the Oyu Tolgoi Board. The delays in shaft sinking due to COVID-19 restrictions and inability to mobilise subject matter experts on site are likely to result in delays of approximately nine months to commissioning of shafts 3 and 4 based on the known impacts to date.
- Contractual commitments to future works such as Material Handling System 2 and concentrator upgrades continue to be delayed pending approval by the Oyu Tolgoi Board of the increased investment required to complete the project.

Other updates

- All key stakeholders have stated that they remain committed to moving the project forward and reaching a long-term solution to the issues under discussion. In September, registration of the updated Resources and Reserves was recommended by the Mongolian Minerals Council and formal registration is expected in the coming weeks. The updated Feasibility Study (OTFS20) is still required to be accepted by the relevant governmental agencies of Mongolia before the undercut can commence.
- As a result of COVID-19 impacts and outstanding non-technical undercut criteria, first sustainable production will be no earlier than January 2023 (previously October 2022), subject to the timing of commencement of the undercut. The full impact on the cost of the integrated project is subject to further analysis once we have clarity on the timeline around the completion of the undercut criteria and ongoing COVID-19 restrictions.

- Other milestones that need to be met in order to ensure that the project can commence caving operations (undercut) include: approval of the additional investment required to complete the project and the funds required to finance this investment must be approved by the Oyu Tolgoi Board and extension of the current power supply arrangements until an agreed long term stable and reliable power solution can be fully implemented.

Other key projects and exploration and evaluation

- The Zulti South project in South Africa remains on full suspension.
- At the Kemano hydropower tunnel project in British Columbia, Canada, excavation is now complete and the tunnel boring machine has broken through in October, having achieved a total of 7,600 metres. Since the project restarted following COVID-19 restrictions, productivity has improved, operating at 150% of planned daily metres in the last three months. The project is scheduled to complete in the second half of 2022.
- At the Resolution Copper project in Arizona, the US Forest Service has reinitiated government-to-government consultation with Native American tribes. Mine studies and engagement with Native American tribes and local communities continue to progress in parallel.
- At the Winu project in Western Australia, agreement making and engagement with Traditional Owners continues in advance of the submission of the Environmental Protection Authority documentation on the initial scope and mine design. Sanction is targeted for next year subject to COVID-19 constraints, permitting and approvals. Drilling, fieldwork and study activities continue to progress, having achieved the best drilling production month of the year this quarter.
- At the Simandou iron ore project in Guinea, we continue to work through infrastructure studies and product sample analysis. A new drilling programme is due to commence in the fourth quarter of 2021. We are pursuing implementation of the Social and Environmental Impact Assessment (SEIA) and are mobilising key personnel to support us with project activities.
- The feasibility study of the Jadar lithium-borate project in Serbia is progressing. On 27 July, we committed funding of \$2.4 billion, subject to receiving all relevant approvals, permits and licences and ongoing engagement with local communities, the Government of Serbia and civil society.

¹Project baseline reporting has been updated following endorsement of the definitive estimate by Rio Tinto Board and Turquoise Hill Resources (pending Oyu Tolgoi board approval).

The definitive estimate assumed COVID-19 restrictions in 2021 that were no more stringent than those experienced in September 2020 and noted that should COVID-19 constraints continue beyond 2021 or should the COVID-19 situation escalate further in 2021 leading to tougher restrictions, additional costs and schedule impacts will arise. Since the definitive estimate, at the end of 2020, Mongolia implemented additional restrictions in response to community transmission cases, and in March 2021 the first cases of COVID-19 were identified at Oyu Tolgoi resulting in temporary site shutdown, quarantine measures and further travel and movement restrictions. The impact of these additional restrictions, which have continued throughout this period and are beyond those experienced in September 2020, is ongoing. To date, the impact on projects costs of the additional restrictions experienced to the end of September 2021 is estimated to be \$140 million. Additional costs and schedule impacts continue to be incurred and the final impact is still to be determined.

Sustainability highlights

We continue to advance our sustainability agenda. On 21 July, we [announced](#) that we had reached an agreement with Bougainville community members, represented by the Human Rights Law Centre, to identify and assess legacy impacts of the former Panguna copper mine in Bougainville. This follows several months of constructive discussions facilitated by the Australian OECD National Contact Point. A joint committee of stakeholders will be formed to oversee a detailed independent assessment of the Panguna mine to identify and better understand actual and potential environmental and human rights impacts of the mine which ceased operating in 1989.

In the first half we [launched the Everyday Respect](#) initiative, to improve how we prevent and respond to sexual harassment, bullying and racism at work with over 10,000 people completing the Everyday Respect survey. By the fourth quarter, we are aiming to complete over 100 listening sessions globally, with over 700 people participating in seven different languages.

We are committed to eliminating sexual harassment from our business and acknowledge that change is needed to eradicate it from the mining sector. On 20 August, we [published](#) our submission to the Community Development and Justice Standing Committee's Inquiry into Sexual Harassment Against Women in the fly-in, fly-out (FIFO) Mining Industry.

Communities & Social Performance (CSP)

On 30 September, we [published](#) our first CSP commitments interim report as part of our efforts to increase transparency in our approach to cultural heritage protection. Over the past months, we have been working hard to rebuild trust and meaningful relationships with the Puutu Kunti Kurrama and Pinikura (PKKP) people and other Traditional Owners. We have also been working on actions to strengthen our cultural heritage approach, processes and performance.

We also present perceptions of our progress in the eyes of some of the Pilbara Traditional Owners of the lands where we operate. Their feedback and perspectives are vital in shaping a process that is respectful, genuine and inclusive. Key highlights from the report are outlined below, with further information available on our [website](#).

Agreement modernisation

Discussions with Pilbara Traditional Owners and their representatives to modernise existing agreements have commenced. Engagement protocols agreeing a scope and framework for these discussions have been signed with four of the Traditional Owner groups. This work will be undertaken at a pace suitable to the Traditional Owners.

Cultural heritage management

Pilbara Iron Ore continues to implement the Integrated Heritage Management Process (IHMP). Known sites of cultural significance have been re-assessed and mine plans adjusted or measures taken to avoid disturbance including an increased buffer zone and blast management plans to reduce vibration risk in some cases. To date, we have reviewed 2,205 heritage sites across different planning horizons. This includes all sites for 2021 and 2022. Lessons and best practice are shared and replicated, as appropriate, across Rio Tinto.

Australian Advisory Group (AAG)

We are establishing an AAG, which will assume an expanded scope beyond our original commitment to establish an Indigenous Advisory Group. The AAG will bring together a broader, eminent group of independent advisers to provide guidance on current and emerging issues, and better manage policies and positions that are important to both Australian communities and our broader business. The aim will be to introduce more diversity and breadth of views, including external perspectives, in decision-making. An expanded AAG will also help shape, influence, challenge, and support Rio Tinto's position on critical issues impacting Australian communities and our business.

Following recent community consultation, work to develop the AAG is progressing with the terms of reference near finalised. The AAG will commence in the first quarter of 2022 and will be comprised of a minimum of 60% Aboriginal or Torres Strait Islander membership, with an Indigenous Australian Chairperson.

Aboriginal Heritage Act 1972 (WA) (AHA)

The Parliamentary Inquiry Interim Report recommended a moratorium on applications for new Section 18s under the AHA, by Rio Tinto and the industry until new legislation is in place, and a review of existing Section 18s. We are not relying on Section 18s under the existing Act but instead, re-consulting in relation to granted Section 18 approvals. We support the reform of the Act and have advocated for legislative change that balances meaningful engagement and protection of heritage values with certainty for all stakeholders.

Climate change and our value chain

We progressed initiatives in the third quarter in line with our commitment to transition to a low-carbon future, decarbonise our business and value chain, and progress our scope 1 and 2 targets, and scope 3 goals.

- On 26 July, we [announced](#) that we had signed a power purchasing agreement for a new renewable energy plant to power the operations of our QMM ilmenite mine in Fort Dauphin, southern Madagascar. The renewable energy plant will consist of an 8MW solar facility and a 12MW wind energy facility to power mining and processing operations. The project will significantly contribute towards our operation in Madagascar achieving its carbon neutral objective by 2023.
- On 2 August, we [announced](#) a partnership with Komatsu to fast-track the development and implementation of zero-emission mining haulage solutions, including haul trucks. We are also one of the first companies to join Komatsu's newly launched Greenhouse Gas Alliance which has an initial target of advancing Komatsu's power agnostic truck concept for a haulage vehicle that can run on a variety of power sources including battery and hydrogen.
- On 24 August, we [announced](#) a partnership with Sumitomo Corporation to study the construction of a hydrogen pilot plant at our Yarwun alumina refinery in Gladstone, Queensland, and to explore the potential use of hydrogen at the refinery. If the project proceeds, the pilot plant would produce hydrogen for Sumitomo's recently announced [Gladstone Hydrogen Ecosystem](#).
- On 19 September, we [announced](#) the approval of a new solar farm and battery storage at Weipa, Queensland, that will more than triple the local electricity network's solar generation capacity. The 4MW solar plant and 4MW/4MWh of battery storage will complement the existing 1.6MW solar farm at Weipa, which was completed in 2015. Work on the battery facilities will start this year, with construction of the whole project expected to be complete by late 2022.
- On 14 September, we [announced](#) a Memorandum of Understanding with Caterpillar for the development of their zero-emissions autonomous haul trucks for use at one of our Western Australian mining operations. It is anticipated that the world's first operational deployment of approximately 35 new Caterpillar 793 zero-emissions autonomous haul trucks will be at Gudai-Darri once development is complete.
- On 14 October, we [announced](#) that we have developed a new low-carbon steel process that aims to replace coking coal with sustainable plant biomass when converting iron ore fines into steel. The patent pending process is in early stages of development and being further assessed. Laboratory-proven process has been developed over the past decade and is now being further tested in a small-scale pilot plant to determine whether it is commercially scalable.

Our markets

The global economy continues to recover, with vaccination rates steadily increasing and global trade flows recovering. While governments continue to provide active support, we remain watchful of the risks that threaten to disrupt some of the progress already achieved. Risks related to commodity supply and demand are heightened due to supply chain bottlenecks as well as material and energy shortages.

- Inflation rates have remained elevated due to prolonged pandemic disruptions interfering with industrial activity. An economic downturn on the back of monetary policy tightening remains a key risk to the outlook.
- China's economic growth is slowing from above-trend levels and becoming more balanced. There are some clear headwinds from recent regulatory tightening and the transition may lead to some near-term volatility.
- In the United States, the economy maintained its solid momentum in spite of a summer surge in COVID-19 cases - a positive sign for other countries as they approach similar rates of vaccination. GDP growth is expected to slow as peak recovery passes, but should be supported by the automotive and infrastructure sectors.
- Europe has also navigated COVID-19 lockdown challenges in the third quarter with relative success. However, the current tightness in energy markets presents significant uncertainty to the winter outlook.
- Iron ore prices retreated from their record levels in the second quarter of 2021, but remained reasonably-supported averaging \$163/dmt CFR during the third quarter. On the supply side, aggregate shipments of the major seaborne suppliers are trending flat year on year and are not expected to regain their 2018 levels for the third consecutive year. Higher-cost operations which were incentivised by elevated prices have started to reassess their viability. In contrast, global crude steel output is up over 10% year to date and remains on track to reach an all-time high of ~2 billion tonnes in 2021. Steel prices in China fell sharply at the end of the second quarter, but have since stabilised boosting mill profitability; ex-China prices remain at or close to record highs.
- Aluminium prices rallied to multi-year highs, driven by extensive power-related smelting cuts in China, and concerns over bauxite supply from Guinea. Physical markets remained very tight on firm demand and logistical supply issues, resulting in regional premia reaching new highs in both the United States and Europe.
- Copper prices retreated from record levels in May 2021, as the downside risks of the COVID-19 delta variant and softening economic activity in China became more pronounced. Prices were sustained above \$4/lb on the back of the weakening dollar and planned United States stimulus package moving through the legislature.
- Demand for battery materials has been well supported by electric vehicle growth with global sales up 151% in the first seven months of 2021. Electric vehicle adoption is being driven by all major automotive markets and benefiting from improved model variety together with the introduction of subsidies in many markets. Lithium carbonate prices have risen to \$15,750/t CIF Asia in September, driven by strong demand and lagging supply.

COVID-19

Our number one priority remains the safety, health and well-being of our employees, contractors, their families and the communities where we operate. Since COVID-19 started, we have implemented a range of preventive measures to keep our people safe, in accordance with government guidance.

- In Mongolia, the situation continues to be challenging with high case rates in Ulaanbaatar. We continue to work closely with the Government of Mongolia and health authorities, and apply the strictest measures, including quarantine and testing for all employees before access to site. The vaccination programme is progressing well and has enabled us to gradually increase our operations and project workforce.
- With outbreaks across Australia, we are closely monitoring State border closures and applying site access controls and travel management protocols. We have partnered with the Western Australian Government to launch a COVID-19 vaccination campaign targeting communities in the Pilbara and the FIFO workforce. Vaccination hubs have been established in the Pilbara and at Perth Airport to make vaccinations more accessible.

- In Canada, three of our sites (Saguenay - Lac-St-Jean, Sorel-Tracey and Sept-Iles), joined the Government of Quebec's network of vaccination hubs. While following the same public health standards, these centres have been modelled on the needs of the region in which it is located.

Full details of initiatives taken to date can be found on our [website](#).

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IRON ORE

Rio Tinto share of production (Million tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Pilbara Blend and SP10 Lump ¹	19.7	+8%	+8%	56.1	+1%
Pilbara Blend and SP10 Fines ¹	30.8	-8%	+7%	87.9	-5%
Robe Valley Lump	1.4	+2%	+17%	4.0	-6%
Robe Valley Fines	2.3	-7%	+23%	6.4	-19%
Yandicoogina Fines (HIY)	15.6	0%	+17%	42.5	-5%
Total Pilbara production	69.9	-2%	+10%	196.8	-4%
Total Pilbara production (100% basis)	83.3	-4%	+10%	235.6	-5%

Rio Tinto share of shipments (Million tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Pilbara Blend Lump	13.0	-16%	+1%	38.7	-17%
Pilbara Blend Fines	28.9	-9%	+4%	85.3	-7%
Robe Valley Lump	1.0	-14%	+3%	2.9	-13%
Robe Valley Fines	2.6	-6%	+17%	7.2	-15%
Yandicoogina Fines (HIY)	14.9	+5%	+9%	42.8	0%
SP10 Lump ¹	4.8	+487%	+29%	11.2	+295%
SP10 Fines ¹	4.1	+173%	+44%	9.8	+135%
Total Pilbara shipments ²	69.2	+2%	+8%	197.8	-1%
Total Pilbara shipments (100% basis) ²	83.4	+2%	+9%	237.5	-2%
Total Pilbara Shipments (consolidated basis) ^{2, 3}	71.1	+2%	+8%	203.2	-1%

1 SP10 includes other lower grade products.

2 Shipments includes material shipped from the Pilbara to our portside trading facility in China which may not be sold onwards by the group in the same period.

3 While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

Pilbara operations

Pilbara operations produced 83.3 million tonnes (Rio Tinto share 69.9 million tonnes) in the third quarter of 2021, 4% lower than the third quarter of 2020 due to heritage management and brownfield mine replacement tie-ins and project completion delays. Production was 10% higher than the prior quarter due to better weather conditions and improved mine and plant performance.

Third quarter shipments of 83.4 million tonnes (Rio Tinto share 69.2 million tonnes) were 2% higher than the third quarter of 2020 despite product feed constraints.

We now expect Pilbara shipments to be 320 to 325 million tonnes following modest delays to completion of the new greenfield mine at Gudai-Darri and the Robe Valley brownfield mine replacement project due to the tight labour market in Western Australia. We have also experienced delays due to a tight global supply chain, including more emerging challenges around equipment parts availability.

Shipments in the fourth quarter are expected to include an increased volume of SP10 products and higher China portside inventories, subject to market conditions.

Approximately 11% of sales in the first nine months were priced by reference to the prior quarter's average index lagged by one month. The remainder was sold either on current quarter average, current month average or on the spot market. Approximately 27% of sales in the third quarter were made on a free on board (FOB) basis, with the remainder sold including freight.

China Portside Trading

We continue to increase our iron ore portside sales in China, with 3.6 million tonnes of sales in the third quarter of 2021 (8.9 million tonnes for the first nine months). In the third quarter, we completed the first sale from the bonded warehouse in China to a steel mill in Korea. We expect increased inventory levels at the port due to higher volume of SP10 and lack of availability of high grade blending stocks. Our portside operation handles product from our operations in the Pilbara and in Canada as well as third party product, and provides blending and screening capabilities. Approximately 86% of portside sales in the third quarter of 2021 were either blended or screened in Chinese ports.

Shipments include SP10 material shipped from the Pilbara to our portside facility that may not be sold onwards by the group in the same period.

ALUMINIUM

Rio Tinto share of production ('000 tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Bauxite	13,967	-3%	+2%	41,231	-4%
Bauxite third party shipments	10,091	0%	+6%	28,608	-5%
Alumina	1,937	-1%	-4%	5,983	0%
Aluminium	774	-3%	-5%	2,393	+1%

Bauxite

Third quarter bauxite production of 14.0 million tonnes was 3% lower than the third quarter of 2020. The Pacific mines were 2% lower due to equipment reliability issues at both mines, as well as lower production at the Amrun, Queensland plant due to a shutdown overrun and constrained operating rates at the primary crusher.

Production was 2% higher than the second quarter. Pacific mines increased production by 3% with improved availability and utilisation in the processing plants, however this was still short of the level needed to enable catch-up of volumes lost in the first half of the year following severe wet weather.

We shipped 10.1 million tonnes of bauxite to third parties in the third quarter, equivalent to the same period of 2020 and 6% higher than the second quarter.

Full year guidance has been reduced to 54 to 55 million tonnes (previously at the low end of 56 to 59 million tonnes). The focus in the fourth quarter is on the recovery of plant equipment availability and asset health to support 2022 performance.

Alumina

Alumina production in the third quarter of 1.9 million tonnes was 1% lower than the corresponding period of 2020, reflecting stable operations at the Pacific refineries.

Aluminium

Third quarter aluminium production of 0.8 million tonnes was 3% lower than the same period of 2020, with impacts from the strike action at our Kitimat smelter in British Columbia.

On 2 October, we reached a new Collective Labour Agreement for our British Columbia operations, which includes the Kitimat smelter and the Kemano hydropower facility. The smelter will steadily ramp up following a period of reduced activity due to industrial action.

COPPER

Rio Tinto share of production ('000 tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Mined copper					
Kennecott	42.8	+23%	+27%	109.7	+3%
Escondida	68.4	-17%	-2%	209.9	-17%
Oyu Tolgoi	14.1	+16%	+14%	41.6	+15%
Refined copper					
Kennecott	35.7	+243%	-3%	117.8	+168%
Escondida	14.7	+2%	-4%	44.0	-20%

Kennecott

Mined copper production was 23% higher than the same quarter of 2020, as a result of higher recovery and grade, partly offset by lower mining rates following the slope failure in May.

While we will continue the transition to higher grade material, grades are increasing at a slower pace than expected, as a result of the slope failure in May 2021.

On 21 September, there was an incident at the smelter resulting in declaration of force majeure on customer contracts. The immediate impact is on acid customers due to low levels of inventory. Copper cathode customers continue to be supplied, via processing of matte and anodes inventory. Repair work is underway and we are focused on the safe restart of operations.

Refined copper production was 243% higher than the same quarter of 2020 as a result of improved performance at the beginning of the quarter, and smelter downtime in the same period of 2020 following planned major maintenance.

Escondida

Mined copper production was 17% lower than the same quarter of 2020, mainly due to a 15% decline in concentrator feed grade, 4% lower concentrator throughput and 17% lower recoverable copper in ore stacked for leaching due to COVID-19 restrictions which has continued to impact workforce availability. Negotiations were successfully completed for a new collective agreement with the Union No1 of Operators and Maintainers, effective for 36 months from August 2021.

Oyu Tolgoi

Mined copper production from the open pit was 16% higher than the same quarter of 2020 as the operations begin to catch up on the significant impacts of the first half, with improved performance and increased mill feed following geotechnical issues in the first half, partly offset by lower manning levels due to COVID-19.

Safety is our first priority and strict measures are in place to protect our people. In the third quarter, stringent Chinese border restrictions continued due to increased cases of COVID-19 in Mongolia. The force majeure declared on shipments from 30 March remains in place, as we continue to work closely with the Mongolian and Chinese authorities and our customers to manage the risk of supply chain disruptions. Cross-border concentrate shipments into China have resumed with some measures in place to transport greater volumes in a safe and efficient manner, however uncertainty continues to exist with the rate of COVID-19 cases in Mongolia.

MINERALS

Rio Tinto share of production (million tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Iron ore pellets and concentrate					
IOC	2.2	-8%	-20%	7.2	-6%

Rio Tinto share of production ('000 tonnes)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Minerals					
Borates - B ₂ O ₃ content	123	0%	-2%	371	-3%
Titanium dioxide slag	209	-29%	-30%	787	-7%

Rio Tinto share of production ('000 carats)	Q3 2021	vs Q3 2020	vs Q2 2021	9 MTHS 2021	vs 9 MTHS 2020
Diavik	834	-17%	-2%	2,692	-5%

Iron Ore Company of Canada (IOC)

Iron ore pellets and concentrate production was 8% lower than the third quarter of 2020 due to labour and equipment availability issues impacting product feed. The annual planned concentrator shutdown was completed in September.

Borates

Borates production in the third quarter was in line with the same period of 2020 with improved refinery operating rates following the successful implementation of productivity initiatives supporting system stability. We expect logistical challenges to continue with congestion at the Los Angeles port and shipping rates at historical highs.

Iron and Titanium

Titanium dioxide production was 29% lower than third quarter of 2020. The lower production was as a result of community disruptions and the subsequent force majeure declaration at Richards Bay Minerals (RBM) in South Africa coupled with unplanned maintenance and equipment reliability at Rio Tinto Fer-et Titane (RTFT), Canada. On 24 August, RBM resumed operations following stabilisation of the security situation, supported by the national and provincial government, as well as substantive engagement with host communities and their traditional authorities.

Diamonds

At Diavik, carats recovered in the third quarter were 17% lower than the third quarter of 2020, due to lower grades and lower processed ore.

EXPLORATION AND EVALUATION

Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in the first nine months of 2021 was \$516 million, compared with \$450 million in the first nine months of 2020. Approximately 41% of this expenditure was incurred by central exploration, 35% by Copper, 17% by Minerals and 7% by Iron Ore.

There were no significant divestments of central exploration properties in the third quarter of 2021.

Exploration highlights

Rio Tinto has a strong portfolio of projects with activity in 16 countries across seven commodities in early exploration and studies stages. All projects have followed government COVID-19 requirements and guidelines while focusing on protecting well-being and health of local communities. The bulk of the exploration expenditure in the third quarter focused on copper in Australia, Canada, United States, Kazakhstan and Zambia, and diamonds projects in Canada. Mine-lease exploration continued at Rio Tinto managed businesses including Pilbara Iron in Australia and Diavik in Canada. The Falcon diamonds project in Saskatchewan, Canada is currently on care and maintenance.

A summary of activity for the quarter is as follows:

Commodities	Studies Stage	Advanced projects	Greenfield/ Brownfield programmes
Bauxite		Amargosa, Brazil*; Sanxai, Laos*	Melville Island, Australia Cape York, Australia
			Copper Greenfield: Australia, Chile, China, Kazakhstan, Nicaragua, Peru, Serbia, US, Zambia, Brazil, Canada, Colombia, Finland, Namibia
		Copper: La Granja, Peru, Pribrezhniy, Kazakhstan	Nickel Greenfield: Canada, Finland
Base Metals	Copper/molybdenum: Resolution, US	Nickel: Tamarack, US (3rd party operated) Calibre-Magnum, Australia	
Diamonds	Falcon, Canada*		Diamonds Greenfield: Canada Diamonds Brownfield: Diavik
	Lithium borates: Jadar, Serbia Potash: KL262, Canada Heavy mineral sands: Mutamba, Mozambique (3rd party operated)		
Minerals			
Iron Ore	Pilbara, Australia Simandou, Guinea	Pilbara, Australia	Greenfield and Brownfield: Pilbara, Australia

*Limited activity during the quarter

FORWARD-LOOKING STATEMENT

This announcement includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts included in this announcement, including, without limitation, those regarding Rio Tinto's financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto's products, production forecasts and reserve and resource positions and any statements related to the ongoing impact of the COVID-19 pandemic), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "would", "should", "could", "will", "target", "set to", "seek", "risk" or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto's present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto's actual results, performance or achievements to differ materially from those in the forward-looking statements are levels of actual production during any period, levels of demand and market prices, the ability to produce and transport products profitably, the impact of foreign currency exchange rates on market prices and operating costs, operational problems, political uncertainty and economic conditions in relevant areas of the world, the actions of competitors, activities by governmental authorities such as changes in taxation or regulation, the risks and uncertainties associated with the ongoing impacts of COVID-19 or other pandemic and such other risk factors identified in Rio Tinto's most recent Annual report and accounts in Australia and the United Kingdom and the most recent Annual report on Form 20-F filed with the United States Securities and Exchange Commission (the "SEC") or Form 6-Ks furnished to, or filed with, the SEC. The above list is not exhaustive. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption caused by the outbreak of COVID-19. These forward-looking statements speak only as of the date of this announcement. Rio Tinto expressly disclaims any obligation or undertaking (except as required by applicable law, the UK Listing Rules, the Disclosure Guidance and Transparency Rules of the Financial Conduct Authority and the Listing Rules of the Australian Securities Exchange) to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in Rio Tinto's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Nothing in this announcement should be interpreted to mean that future earnings per share of Rio Tinto plc or Rio Tinto Limited will necessarily match or exceed its historical published earnings per share.

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This announcement is authorised for release to the market by Steve Allen, Rio Tinto's Group Company Secretary.

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Classification: 3.1 Additional regulated information required to be disclosed under the laws of a Member State

Rio Tinto production summary

Rio Tinto share of production

		Quarter			9 Months		% change		
		2020 Q3	2021 Q2	2021 Q3	2020 9 MTHS	2021 9 MTHS	Q3 21 vs Q3 20	Q3 21 vs Q2 21	9 MTHS 21 vs 9 MTHS 20
Principal commodities									
Alumina	('000 t)	1,954	2,012	1,937	5,954	5,983	-1%	-4%	0%
Aluminium	('000 t)	797	816	774	2,365	2,393	-3%	-5%	+1%
Bauxite	('000 t)	14,459	13,699	13,967	42,832	41,231	-3%	+2%	-4%
Borates	('000 t)	123	126	123	381	371	0%	-2%	-3%
Copper - mined	('000 t)	129.6	115.5	125.2	395.4	361.2	-3%	+8%	-9%
Copper - refined	('000 t)	24.8	52.3	50.5	98.9	161.9	+103%	-3%	+64%
Diamonds	('000 cts)	1,001	851	834	2,821	2,692	-17%	-2%	-5%
Iron Ore	('000 t)	73,707	66,241	72,074	212,183	203,995	-2%	+9%	-4%
Titanium dioxide slag	('000 t)	293	298	209	848	787	-29%	-30%	-7%
Other Metals & Minerals									
Gold - mined	('000 oz)	68.7	80.1	94.5	193.9	271.0	+37%	+18%	+40%
Gold - refined	('000 oz)	3.7	43.6	44.5	78.6	144.9	1118%	+2%	84%
Molybdenum	('000 t)	5.1	1.1	0.4	14.1	6.6	-91%	-60%	-53%
Uranium	('000 lbs)	735	—	—	2,128	65	-100%	0%	-97%
Salt	('000 t)	1,279	1,458	1,508	3,748	4,377	+18%	+3%	+17%
Silver - mined	('000 oz)	1,133	925	1,110	3,237	3,039	-2%	+20%	-6%
Silver - refined	('000 oz)	70	609	733	914	2,155	+949%	+20%	+136%

Throughout this report, figures in italics indicate adjustments made since the figure was previously quoted on the equivalent page or reported for the first time. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

Rio Tinto share of production

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
ALUMINA								
Production ('000 tonnes)								
Jonquière (Vaudreuil)	100 %	347	364	352	349	325	1,060	1,026
Jonquière (Vaudreuil) specialty Alumina plant	100 %	22	24	22	28	29	70	79
Queensland Alumina	80 %	763	774	743	756	738	2,186	2,237
São Luis (Alumar)	10 %	98	99	95	97	75	286	267
Yarwun	100 %	725	823	822	782	770	2,351	2,374
Rio Tinto total alumina production		1,954	2,085	2,034	2,012	1,937	5,954	5,983
ALUMINIUM								
Production ('000 tonnes)								
Australia - Bell Bay	100 %	48	48	46	47	48	144	141
Australia - Boyne Island	59 %	76	77	74	75	75	226	224
Australia - Tomago	52 %	77	77	75	75	77	228	228
Canada - six wholly owned	100 %	375	387	385	391	343	1,119	1,119
Canada - Alouette (Sept-Îles)	40 %	63	63	62	63	64	186	188
Canada - Bécancour	25 %	26	29	28	29	29	70	86
Iceland - ISAL (Reykjavik)	100 %	46	48	49	51	52	135	151
New Zealand - Tiwai Point	79 %	66	67	65	65	67	198	197
Oman - Sohar	20 %	20	20	20	20	20	59	59
Rio Tinto total aluminium production		797	815	803	816	774	2,365	2,393
BAUXITE								
Production ('000 tonnes) (a)								
Gove	100 %	3,147	3,090	2,879	3,030	3,067	9,209	8,976
Porto Trombetas	12 %	396	392	254	364	332	1,003	950
Sangaredi	(b)	1,920	1,887	1,887	1,755	1,763	5,541	5,405
Weipa	100 %	8,997	7,929	8,545	8,550	8,805	27,079	25,900
Rio Tinto total bauxite production		14,459	13,299	13,566	13,699	13,967	42,832	41,231

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

Rio Tinto share of production

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
BORATES								
Production ('000 tonnes B₂O₃ content)								
Rio Tinto Borates - borates	100 %	123	100	122	126	123	381	371
COPPER								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	34.7	33.8	33.2	33.7	42.8	106.2	109.7
Escondida	30 %	82.8	84.8	72.1	69.5	68.4	253.0	209.9
Oyu Tolgoi (b)	34 %	12.2	14.0	15.2	12.3	14.1	36.2	41.6
Rio Tinto total mine production		129.6	132.5	120.5	115.5	125.2	395.4	361.2
Refined production ('000 tonnes)								
Escondida	30 %	14.4	15.2	14.0	15.3	14.7	54.9	44.0
Rio Tinto Kennecott (c)	100 %	10.4	40.9	45.2	36.9	35.7	44.0	117.8
Rio Tinto total refined production		24.8	56.1	59.2	52.3	50.5	98.9	161.9

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

(c) We continue to process third party concentrate to optimise smelter utilisation, including 29.4 thousand tonnes of cathode produced from purchased concentrate in year-to-date 2021. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

DIAMONDS

Production ('000 carats)

Diavik	60 %	1,001	910	1,007	851	834	2,821	2,692
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GOLD

Mine production ('000 ounces) (a)

Bingham Canyon	100 %	43.7	45.3	36.2	30.5	38.1	125.8	104.8
Escondida	30 %	12.7	14.3	11.4	11.7	12.6	36.5	35.6
Oyu Tolgoi (b)	34 %	12.3	29.4	48.8	37.9	43.8	31.5	130.6
Rio Tinto total mine production		68.7	89.1	96.4	80.1	94.5	193.9	271.0

Refined production ('000 ounces)

Rio Tinto Kennecott	100 %	3.7	38.9	56.8	43.6	44.5	78.6	144.9
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(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

Rio Tinto share of production

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
IRON ORE								
Production ('000 tonnes) (a)								
Hamersley mines	(b)	54,852	53,316	47,063	47,621	53,041	157,366	147,725
Hamersley - Channar (c)	100 %	1,710	1,935	2,250	2,712	2,593	4,204	7,555
Hope Downs	50 %	6,625	6,571	5,616	5,960	6,500	17,951	18,076
Iron Ore Company of Canada	59 %	2,340	2,740	2,345	2,721	2,163	7,663	7,229
Robe River - Pannawonica (Mesas J and A)	53 %	3,882	3,988	3,506	3,090	3,721	12,068	10,317
Robe River - West Angelas	53 %	4,298	5,199	4,900	4,137	4,056	12,932	13,093
Rio Tinto iron ore production ('000 tonnes)		73,707	73,749	65,681	66,241	72,074	212,183	203,995
Breakdown of Production:								
Pilbara Blend and SP10 Lump (d)		18,253	21,666	18,050	18,265	19,742	55,727	56,057
Pilbara Blend and SP10 Fines (d)		33,570	31,122	28,245	28,796	30,825	92,170	87,866
Robe Valley Lump		1,399	1,364	1,307	1,219	1,423	4,197	3,950
Robe Valley Fines		2,483	2,624	2,199	1,871	2,297	7,871	6,367
Yandicoogina Fines (HIY)		15,662	14,233	13,534	13,369	15,623	44,556	42,526
Pilbara iron ore production ('000 tonnes)		71,366	71,009	63,336	63,520	69,910	204,521	196,766
IOC Concentrate		1,038	1,297	871	1,154	829	3,484	2,854
IOC Pellets		1,302	1,443	1,474	1,567	1,335	4,179	4,375
IOC iron ore production ('000 tonnes)		2,340	2,740	2,345	2,721	2,163	7,663	7,229
Breakdown of Shipments:								
Pilbara Blend Lump		15,514	16,280	12,842	12,830	13,018	46,599	38,690
Pilbara Blend Fines		31,710	35,140	28,565	27,795	28,901	91,438	85,261
Robe Valley Lump		1,112	1,246	1,025	934	962	3,362	2,921
Robe Valley Fines		2,724	3,062	2,402	2,190	2,567	8,411	7,158
Yandicoogina Fines (HIY)		14,203	15,055	14,222	13,640	14,906	42,694	42,768
SP10 Lump (d)		822	1,037	2,664	3,748	4,826	2,842	11,237
SP10 Fines (d)		1,488	1,771	2,923	2,817	4,063	4,180	9,803
Pilbara iron ore shipments ('000 tonnes) (e)		67,574	73,590	64,642	63,953	69,242	199,525	197,837
Pilbara iron ore shipments - consolidated basis ('000 tonnes) (e) (g)		69,496	75,630	66,431	65,627	71,131	205,201	203,189
IOC Concentrate		1,355	1,157	1,019	1,048	1,054	3,771	3,122
IOC Pellets		1,378	1,539	1,477	1,303	1,374	4,468	4,154
IOC Iron ore shipments ('000 tonnes) (e)		2,733	2,696	2,496	2,352	2,428	8,239	7,276
Rio Tinto iron ore shipments ('000 tonnes) (e)		70,307	76,286	67,137	66,305	71,671	207,764	205,113
Rio Tinto iron ore sales ('000 tonnes) (f)		69,993	75,765	65,415	67,032	70,718	207,234	203,165

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass and the Eastern Range mines. Whilst Rio Tinto owns 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.

(c) Rio Tinto's 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. Production is reported at 100% from this date onward. Historic data is unchanged.

(d) SP10 include other lower grade products.

(e) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(f) Represents the difference between amounts shipped to portside trading and onward sales from portside trading, and third party volumes sold.

(g) While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

Rio Tinto share of production

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
MOLYBDENUM								
Mine production ('000 tonnes) (a)								
Bingham Canyon	100 %	5.1	6.4	5.0	1.1	0.4	14.1	6.6

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

SALT								
Production ('000 tonnes)								
Dampier Salt	68 %	1,279	1,113	1,411	1,458	1,508	3,748	4,377

SILVER								
Mine production ('000 ounces) (a)								
Bingham Canyon	100 %	586	555	524	476	639	1,650	1,639
Escondida	30 %	474	488	395	370	387	1,371	1,153
Oyu Tolgoi (b)	34 %	73	77	85	79	84	216	248
Rio Tinto total mine production		1,133	1,120	1,005	925	1,110	3,237	3,039
Refined production ('000 ounces)								
Rio Tinto Kennecott	100 %	70	449	812	609	733	914	2,155

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

TITANIUM DIOXIDE SLAG								
Production ('000 tonnes)								
Rio Tinto Iron & Titanium (a)	100 %	293	272	279	298	209	848	787

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals (RBM).

URANIUM								
Production ('000 lbs U₃O₈) (a)								
Energy Resources of Australia	86 %	735	742	65	—	—	2,128	65

(a) ERA production data are drummed U₃O₈. ERA ceased processing operations on 8 January 2021, as required by the Ranger Authority.

Rio Tinto's Argyle operations were closed in 2020. No data for these operations are included in the Share of production table.

Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

Rio Tinto percentage interest shown above is at 30 September 2021.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
ALUMINA								
Smelter Grade Alumina - Aluminium Group								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80 %	953	968	929	945	922	2,733	2,796
Yarwun refinery - Queensland	100 %	725	823	822	782	770	2,351	2,374
<i>Brazil</i>								
São Luis (Alumar) refinery	10 %	976	990	953	968	748	2,858	2,668
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100 %	347	364	352	349	325	1,060	1,026
<i>(a) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.</i>								
Speciality Alumina - Aluminium Group								
Speciality alumina production ('000 tonnes)								
<i>Canada</i>								
Jonquière (Vaudreuil) plant – Quebec	100 %	22	24	22	28	29	70	79

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
ALUMINIUM								
Primary Aluminium								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100 %	48	48	46	47	48	144	141
Boyne Island smelter - Queensland	59 %	128	129	124	127	125	380	376
Tomago smelter - New South Wales	52 %	150	149	145	146	150	442	441
<i>Canada</i>								
Alma smelter - Quebec	100 %	118	119	117	117	119	354	352
Alouette (Sept-Îles) smelter - Quebec	40 %	156	158	155	157	159	464	471
Arvida smelter - Quebec	100 %	41	41	40	42	42	128	125
Arvida AP60 smelter - Quebec	100 %	15	15	15	15	15	44	45
Bécancour smelter - Quebec	25 %	104	115	112	117	115	278	344
Grande-Baie smelter - Quebec	100 %	55	57	56	57	58	168	171
Kitimat smelter - British Columbia	100 %	84	91	95	97	46	238	238
Laterrière smelter - Quebec	100 %	62	63	62	63	63	187	188
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100 %	46	48	49	51	52	135	151
<i>New Zealand</i>								
Tiwai Point smelter	79 %	84	84	82	82	84	249	248
<i>Oman</i>								
Sohar smelter	20 %	100	100	98	99	100	297	296

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
BAUXITE								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100 %	3,147	3,090	2,879	3,030	3,067	9,209	8,976
Weipa mine - Queensland	100 %	8,997	7,929	8,545	8,550	8,805	27,079	25,900
<i>Brazil</i>								
Porto Trombetas (MRN) mine	12 %	3,296	3,268	2,117	3,033	2,764	8,361	7,914
<i>Guinea</i>								
Sangaredi mine (a)	23 %	4,267	4,193	4,194	3,899	3,919	12,313	12,011

Rio Tinto share of bauxite shipments								
Share of total bauxite shipments ('000 tonnes)		14,117	12,993	13,444	13,602	14,201	42,352	41,247
Share of third party bauxite shipments ('000 tonnes)		10,064	9,104	9,024	9,493	10,091	30,254	28,608

(a) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
BORATES								
Rio Tinto Borates - borates	100 %							
<i>US</i>								
Borates ('000 tonnes) (a)		123	100	122	126	123	381	371

(a) Production is expressed as B₂O₃ content.

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
COPPER & GOLD								
Escondida	30 %							
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)		34,733	36,303	32,654	31,903	33,528	102,928	98,085
Average copper grade (%)		0.85	0.83	0.78	0.78	0.73	0.83	0.76
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		243.9	246.1	207.8	202.8	201.2	710.7	611.8
Contained gold ('000 ounces)		42.3	47.8	38.0	38.9	42.0	121.7	118.8
Contained silver ('000 ounces)		1,580	1,627	1,318	1,234	1,291	4,569	3,843
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		32.1	36.5	32.5	28.7	26.7	132.6	87.9
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		47.9	50.8	46.6	51.1	49.0	183.1	146.8

(a) The calculation of copper in material mined for leaching is based on ore stacked at the leach pad.

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
COPPER & GOLD (continued)								
Rio Tinto Kennecott								
Bingham Canyon mine	100 %							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		12,860	11,418	10,054	7,918	9,995	33,258	27,967
Average ore grade:								
Copper (%)		0.32	0.34	0.38	0.48	0.47	0.36	0.44
Gold (g/t)		0.21	0.22	0.21	0.21	0.22	0.22	0.21
Silver (g/t)		2.00	2.07	2.30	2.64	2.80	2.09	2.58
Molybdenum (%)		0.053	0.068	0.058	0.021	0.017	0.055	0.033
Copper concentrates produced ('000 tonnes)		140	138	140	141	180	423	461
Average concentrate grade (% Cu)		24.7	24.2	23.7	23.9	23.7	25.0	23.8
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		34.7	33.8	33.2	33.7	42.8	106.2	109.7
Gold ('000 ounces)		43.7	45.3	36.2	30.5	38.1	125.8	104.8
Silver ('000 ounces)		586	555	524	476	639	1,650	1,639
Molybdenum concentrates produced ('000 tonnes):		10.3	12.2	9.4	2.2	1.0	28.5	12.6
Molybdenum in concentrates ('000 tonnes)		5.1	6.4	5.0	1.1	0.4	14.1	6.6
Kennecott smelter & refinery								
	100 %							
Copper concentrates smelted ('000 tonnes)		1	234	240	103	165	214	509
Copper anodes produced ('000 tonnes) (b)		20.2	44.8	50.5	23.5	35.7	42.0	109.6
Production of refined metal:								
Copper ('000 tonnes) (c)		10.4	40.9	45.2	36.9	35.7	44.0	117.8
Gold ('000 ounces) (d)		3.7	38.9	56.8	43.6	44.5	78.6	144.9
Silver ('000 ounces) (d)		70	449	812	609	733	914	2,155

(a) Includes a small amount of copper in precipitates. (b) New metal excluding recycled material. (c) We continue to process third party concentrate to optimise smelter utilisation, including 29.4 thousand tonnes of cathode produced from purchased concentrate in year-to-date 2021. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues. (d) Includes gold and silver in intermediate products.

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
COPPER & GOLD (continued)								
Turquoise Hill Resources								
Oyu Tolgoi mine (a)	34 %							
<i>Mongolia</i>								
Ore Treated ('000 tonnes)		10,072	9,594	9,813	9,401	9,336	30,606	28,550
Average mill head grades:								
Copper (%)		0.45	0.50	0.56	0.47	0.53	0.45	0.52
Gold (g/t)		0.21	0.41	0.68	0.50	0.63	0.18	0.60
Silver (g/t)		1.22	1.16	1.29	1.19	1.29	1.19	1.26
Copper concentrates produced ('000 tonnes)		168.5	190.2	201.9	173.2	191.9	502.9	567.0
Average concentrate grade (% Cu)		21.5	21.9	22.5	21.2	21.9	21.5	21.9
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		36.3	41.6	45.4	36.7	41.9	108.0	124.1
Gold in concentrates ('000 ounces)		36.7	87.8	145.7	113.1	130.8	94.0	389.5
Silver in concentrates ('000 ounces)		219	231	255	235	249	645	739
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		34.4	37.9	39.0	19.6	46.4	99.9	105.0
Gold in concentrates ('000 ounces)		33.6	65.8	110.9	72.6	149.1	84.1	332.5
Silver in concentrates ('000 ounces)		201	194	207	106	278	566	591

(a) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources.

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
DIAMONDS								
Argyle Diamonds (a)	100 %							
<i>Western Australia</i>								
AK1 ore processed ('000 tonnes)		1,802	1,078	—	—	—	4,695	—
AK1 diamonds produced ('000 carats)		3,203	1,893	—	—	—	9,052	—
Diavik Diamonds	60 %							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		679	643	632	669	643	1,876	1,944
Diamonds recovered ('000 carats)		1,668	1,517	1,678	1,418	1,390	4,701	4,487

(a) Rio Tinto's Argyle operations were closed in 2020.

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
IRON ORE								
Rio Tinto Iron Ore								
<i>Western Australia</i>								
Pilbara Operations								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	54,852	53,316	47,063	47,621	53,041	157,366	147,725
Hamersley - Channar (b)	100 %	2,849	2,169	2,250	2,712	2,593	7,006	7,555
Hope Downs	50 %	13,250	13,142	11,232	11,920	13,000	35,903	36,151
Robe River - Pannawonica (Mesas J and A)	53 %	7,324	7,525	6,616	5,830	7,021	22,770	19,467
Robe River - West Angelas	53 %	8,110	9,809	9,246	7,806	7,652	24,399	24,704
Total production ('000 tonnes)		86,385	85,961	76,406	75,889	83,306	247,444	235,602
Breakdown of total production:								
Pilbara Blend and SP10 Lump (c)		22,674	25,888	21,901	21,946	23,617	68,487	67,464
Pilbara Blend and SP10 Fines (c)		40,725	38,316	34,356	34,743	37,046	111,631	106,145
Robe Valley Lump		2,639	2,574	2,467	2,300	2,686	7,918	7,453
Robe Valley Fines		4,685	4,951	4,149	3,530	4,335	14,852	12,014
Yandicoogina Fines (HIY)		15,662	14,233	13,534	13,369	15,623	44,556	42,526
Breakdown of total shipments:								
Pilbara Blend Lump		19,118	20,155	15,740	15,631	16,710	56,962	48,081
Pilbara Blend Fines		39,230	42,727	35,777	34,607	36,199	112,806	106,583
Robe Valley Lump		2,098	2,351	1,934	1,762	1,814	6,343	5,511
Robe Valley Fines		5,140	5,778	4,532	4,131	4,843	15,870	13,506
Yandicoogina Fines (HIY)		14,203	15,055	14,222	13,640	14,906	42,694	42,768
SP10 Lump (c)		822	1,037	2,664	3,748	4,826	2,842	11,237
SP10 Fines (c)		1,488	1,771	2,923	2,817	4,063	4,180	9,803
Total shipments ('000 tonnes) (d)		82,099	88,873	77,791	76,336	83,360	241,697	237,488
	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
Iron Ore Company of Canada 59 %								
<i>Newfoundland & Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		1,768	2,208	1,484	1,965	1,411	5,933	4,860
Pellets ('000 tonnes)		2,217	2,457	2,510	2,669	2,273	7,116	7,451
IOC Total production ('000 tonnes)		3,985	4,666	3,993	4,634	3,684	13,049	12,311
Shipments:								
Concentrates ('000 tonnes)		2,307	1,970	1,735	1,785	1,795	6,422	5,316
Pellets ('000 tonnes)		2,347	2,620	2,515	2,220	2,340	7,608	7,074
IOC Total Shipments ('000 tonnes) (d)		4,654	4,591	4,250	4,005	4,136	14,030	12,390
Global Iron Ore Totals								
Iron Ore Production ('000 tonnes)		90,370	90,627	80,400	80,523	86,990	260,493	247,913
Iron Ore Shipments ('000 tonnes)		86,753	93,464	82,041	80,341	87,496	255,727	249,878
Iron Ore Sales ('000 tonnes) (e)		86,398	92,942	80,319	81,068	86,543	255,156	247,931

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass and the Eastern Range mines. Whilst Rio Tinto owns 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.

(b) Rio Tinto's 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. Historic data is unchanged.

(c) SP10 include other lower grade products.

(d) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(e) Include Pilbara and IOC sales adjusted for portside trading movements and third party volumes sold.

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.

Rio Tinto operational data

	Rio Tinto interest	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	9 MTHS 2020	9 MTHS 2021
SALT								
Dampier Salt	68 %							
<i>Western Australia</i>								
Salt production ('000 tonnes)		1,871	1,628	2,064	2,132	2,206	5,483	6,402
TITANIUM DIOXIDE SLAG								
Rio Tinto Iron & Titanium	100 %							
<i>Canada and South Africa</i>								
(Rio Tinto share) (a)								
Titanium dioxide slag ('000 tonnes)		293	272	279	298	209	848	787

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals' production. Ilmenite mined in Madagascar is being processed in Canada.

URANIUM

Energy Resources of Australia Ltd

Ranger mine (a)	86 %							
<i>Northern Territory, Australia</i>								
U ₃ O ₈ Production ('000 lbs)		851	860	75	—	—	2,611	75

(a) ERA production data are drummed U₃O₈.
ERA ceased processing operations on 8 January 2021, as required by the Ranger Authority.

Rio Tinto percentage interest shown above is at 30 September 2021. The data represent full production and sales on a 100% basis unless otherwise stated.