

Rio Tinto confirms development capital and timeline for Oyu Tolgoi underground

16 December 2020

Rio Tinto today unveiled a pathway for the ongoing development of the underground project at Oyu Tolgoi in Mongolia, one of the largest known copper and gold deposits in the world. The definitive estimate details how Oyu Tolgoi underground will achieve sustainable production for Panel 0 by October 2022 for development capital of \$6.75 billion.

Rio Tinto and its partners, the Government of Mongolia and Turquoise Hill Resources (TRQ), need to continue to work together to finalise three other milestones – the outstanding government approvals, funding and a power solution – in order to ensure that the project can commence caving operations in 2021. This will unlock the most valuable part of Oyu Tolgoi, delivering significant benefits for the shareholders of Oyu Tolgoi and the people of Mongolia.

At peak production, Oyu Tolgoi is expected to operate in the first quartile of the copper cash cost curve¹ and by 2030 is expected to be the fourth largest copper mine in the world.

Oyu Tolgoi is expected to produce 480,000 tonnes² of copper per year on average from 2028 to 2036 from the open pit and underground, compared with 146,300 tonnes³ in 2019 from the open pit. The underground Ore Reserve has an average copper grade of 1.52 per cent, which is more than three times higher than the open pit Ore Reserve, and contains 0.31 grammes per tonne of gold.⁴ The size and quality of this Tier 1 asset provides additional expansion options, which could see production sustained for many decades.

Arnaud Soirat, Chief Executive of Copper & Diamonds said, “We now have a pathway to bring the underground project into production, which will unlock the most valuable part of Oyu Tolgoi. We will continue to work together with the Government of Mongolia and TRQ to progress the project, including finalising all necessary approvals and agreeing a solution on power and funding.”

Definitive estimate for Panel 0 complete

Rio Tinto has completed the definitive estimate work for Panel 0 of the Oyu Tolgoi Underground Project, confirming a revised budget of \$6.75 billion with sustainable production expected to commence in October 2022⁵, in line with previously announced ranges. These estimates now include the known and forecast impacts of COVID-19.⁶

Panel 1 and Panel 2 (which are required to support the ramp-up to 95,000 tonnes of ore per day) are currently subject to further studies, with initial recommendations expected by mid-2021. These studies will also consider options and associated costs to recover the copper contained within the pillars added to the mine design of Panel 0.

Government approvals

On 3 July 2020, we [announced](#) the completion of an updated feasibility study (OTFS20) prepared in accordance with Mongolian regulations and standards. Registration of supporting documents required before formal

¹ WoodMackenzie copper equivalent cash cost curve (Q3 2020)

² This production target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines is underpinned 22 per cent by Proved Ore Reserves and 78 per cent by Probable Ore Reserves for the years 2028-2036, which have been scheduled from current mine designs by Competent Persons in accordance with the requirements of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves, 2012 Edition (the JORC code).

³ Rio Tinto Fourth Quarter Operations Review, published 17 January 2020

⁴ The Ore Reserves for Hugo Dummett North and Hugo Dummett North Extension are reflected in Table A below.

⁵ This estimate is at a better than feasibility study level of accuracy.

⁶ The definitive estimate assumes restrictions in 2021 that are no more stringent than those experienced in September 2020. 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.

acceptance of the OTFS20 has been delayed. In accordance with the 2009 Investment Agreement and Mongolian regulation, the Government of Mongolia is required to approve the OTFS20.

The definitive estimate, the mine design and the budget uplift for the underground project need to be approved by the board of Oyu Tolgoi LLC, which is jointly owned by Erdenes Oyu Tolgoi LLC on behalf of the Government of Mongolia (34 per cent) and TRQ (66 per cent), of which Rio Tinto owns 50.8 per cent.

Power

The Government of Mongolia agreed to prioritise building of a government funded power plant as part of their desire to provide domestically-sourced power to the Oyu Tolgoi mine, in the [June 2020 amendment](#) to the Power Source Framework Agreement (PSFA).

The Government has committed to provide stable, reliable, and uninterrupted power to Oyu Tolgoi from a domestic power plant, which will be owned and funded by the Mongolian Government. Until this domestic power solution is in place, existing power supply arrangements will be extended by the Government, on terms that are acceptable to Oyu Tolgoi, to ensure that the mine has a continuous and competitive power supply. The parties have agreed that key milestones include 1 March 2021 for an extension of existing power supply arrangements and 31 March 2021 for the signing of a power purchase agreement with the state-owned power plant.

Funding

In [September 2020](#), Rio Tinto and TRQ entered into a memorandum of understanding (MOU) to progress the financing for completion of the Oyu Tolgoi underground project. Subsequent to signing the MOU, TRQ commenced arbitration proceedings seeking a declaration to clarify the provisions of certain agreements with Rio Tinto entities. Against this backdrop, progress has been limited although Rio Tinto remains committed to implementation of the funding plan agreed in the MOU.

Rio Tinto has, through TRQ, made significant equity contributions to fund Oyu Tolgoi to date and is providing completion support undertaking in respect of the \$4.4 billion project finance facility. Rio Tinto remains of the view that all shareholders should contribute proportionately and share equitably in the benefit.

Economic and social contribution

More than \$11 billion has been invested in Oyu Tolgoi to date, including the open-pit mine, concentrator and associated infrastructure. Of this, \$4 billion has been spent on the underground project, with more than \$3 billion awarded to Mongolian companies and suppliers.

Oyu Tolgoi has a workforce of over 12,000, of which 95 per cent is Mongolian. It has paid more than \$2.8 billion in taxes, fees and other payments to the Government of Mongolia since 2010. Oyu Tolgoi has consistently been one of the top three taxpayers in Mongolia.

The Oyu Tolgoi Development Support fund invests over \$5 million per year into projects that support economic and social development in South Gobi communities.

The “Made in Mongolia” initiative has focused on the development of local supply chains with over 486 Mongolian companies supplying goods and services to support the operation of the open pit and development of the underground mine.

Oyu Tolgoi is amongst the safest operations and is also one of the most water-efficient mines in the world, with average water use of 0.35 cubic metres of water per tonne (m³/t) of ore processed in 2019 (global average 1.22m³/t). The water used by Oyu Tolgoi comes from a deep and saline aquifer and has no impact on drinkable water in the region. In 2019, water used by Oyu Tolgoi was continuously recycled at an average rate of 87.5 per cent.

Ore Reserves and Mineral Resources

The completion of the definitive estimate has resulted in some non-material changes to the Ore Reserves and Mineral Resources that were reported in a release to the Australian Securities Exchange on 3 July 2020 which is available at www.riotinto.com/invest/financial-news-performance/resources-and-reserves. The change in Ore Reserves is based on the finalisation of the design in the definitive estimate and is presented in Table A. Updates to the Mineral Resources are shown in Table B.

Ore Reserves are presented in this release on a 100 per cent basis. Rio Tinto's ownership share is 33.5% of Hugo Dummett North and 29.5% of Hugo Dummett North Extension. Mineral Resources are reported exclusive of Ore Reserves and on the same ownership basis.

Table A: Changes to the Hugo Dummett North and Hugo Dummett North Extension Ore Reserves estimates between 1 July 2020 and 14 December 2020

Hugo Dummett North										
	Probable Ore Reserves				Average Mill Recovery			Recoverable Metal		
	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Cu (%)	Au (%)	Ag (%)	Cu (Mt)	Au (M oz)	Ag (M oz)
Reserves at 1 Jul 2020	400	1.51	0.29	3.11	93	79	80	5.6	2.99	32
Material added	12	1.72	0.23	3.72	93	81	85	0.18	0.07	1.17
Reserves at 14 Dec 2020	412	1.52	0.29	3.13	93	79	80	5.78	3.06	33.17
Hugo Dummett North Extension										
	Probable Ore Reserves				Average Mill Recovery			Recoverable Metal		
	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Cu (%)	Au (%)	Ag (%)	Cu (Mt)	Au (M oz)	Ag (M oz)
Reserves at 1 Jul 2020	40	1.54	0.53	3.63	92	81	83	0.57	0.55	3.84
Material removed	-2	1.12	0.33	2.41	92	81	82	-0.02	-0.01	-0.1
Reserves at 14 Dec 2020	38	1.56	0.54	3.68	92	81	83	0.55	0.54	3.73

Table B: Changes to the Hugo Dummett North and Hugo Dummett North Extension Mineral Resource estimates between 1 July 2020 and 14 December 2020

Hugo Dummett North																
	Measured Mineral Resources				Indicated Mineral Resources				Inferred Mineral Resources				Total Mineral Resources			
	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)
Resources at 1 July 2020	58	1.86	0.48	4.21	401	1.34	0.34	3.14	765	0.80	0.28	2.40	1,224	1.03	0.31	2.73
Material removed	-0.25	2.58	0.11	7.05	-3.99	1.27	0.36	3.87	-0.11	0.33	0.08	0.37	-4.35	1.32	0.34	3.96
Resources at 14 Dec 2020	58	1.86	0.49	4.20	398	1.34	0.34	3.14	765	0.80	0.28	2.40	1,220	1.03	0.31	2.73
Hugo Dummett North Extension																
	Measured Mineral Resources				Indicated Mineral Resources				Inferred Mineral Resources				Total Mineral Resources			
	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Tonnes (Mt)	Cu (%)	Au (g/t)	Ag (g/t)
Resources at 1 July 2020					87	1.59	0.54	4.11	167	1.02	0.36	2.78	254	1.21	0.42	3.24
Material removed					-0.62	1.26	0.24	2.89					-0.62	1.26	0.24	2.89
Resources at 14 Dec 2020					87	1.59	0.54	4.12	167	1.02	0.36	2.78	253	1.21	0.42	3.24

TABLE OF KEY METRICS	
Ore Reserve tonnes and grade (UG) ⁷	450Mt ore and 1.52% Cu grade
Ore Reserve tonnes and grade (OP) ⁸	832Mt ore and 0.44% Cu grade
First sustainable production (year)	2022
Peak production average from 2028-2036 (copper and gold) ⁹	480kt Cu and 340koz Au per year
Total capex	\$6.75b (nominal)

Competent Persons Statement

The information in this release that relates to Ore Reserves is based on information compiled by Ferrin Prince and Mark Bixley, Competent Persons, who are a Member and Fellow respectively of The Australasian Institute of Mining and Metallurgy. Ferrin Prince and Mark Bixley are full-time employees of Rio Tinto. Ferrin Prince and Mark Bixley have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Each of Ferrin Prince and Mark Bixley consents to the inclusion in the release of the matters based on the information that each of them has prepared in the form and context in which it appears.

The information in this release that relates to Mineral Resources is based on information compiled by Oyunjargal Dendev, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Oyunjargal Dendev is a full-time employee of Oyu Tolgoi LLC. Oyunjargal Dendev has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Oyunjargal Dendev consents to the inclusion in the release of the matters based on the information that he has prepared in the form and context in which it appears.

Note to editors

Oyu Tolgoi is jointly owned by the Government of Mongolia (34 per cent) and Turquoise Hill Resources (66 per cent, of which Rio Tinto owns a controlling interest of 50.8 per cent). Rio Tinto has been the manager of the Oyu Tolgoi project since 2010.

The open-pit mine was completed in less than 24 months and production started in 2013. Since then, more than 240 million tonnes of ore have been milled, with over one million tonnes of copper in concentrate sold.

⁷ See Table A.

⁸ Oyu Tolgoi Ore Reserves include Proved and Probable Ore Reserves for the Oyut Open Pit, Oyut stockpiles, Hugo Dummett North and Hugo Dummett North Extension. The Ore Reserves for the Oyut Open Pit and the Oyut stockpiles were reported in Rio Tinto's 2019 Annual Report released to the ASX on 28 February 2020 which is available at <https://www.riotinto.com/invest/reports/annual-report>. The Competent Persons responsible for reporting the Oyut Reserves was M Bixley (AusIMM). Rio Tinto is not aware of any new information or data that materially affects these Ore Reserve estimates and confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The form and context in which the Competent Persons' findings are presented have not been materially modified from the 2019 Annual Report.

⁹ This production target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines is underpinned 22 per cent by Proved Ore Reserves and 78 per cent by Probable Ore Reserves for the years 2028-2036, which have been scheduled from current mine designs by Competent Persons in accordance with the requirements of the JORC code.

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