

## Rio Tinto releases fourth quarter production results

17 January 2020

Rio Tinto chief executive J-S Jacques said “We finished the year with good momentum, particularly in our Pilbara iron ore operations and in bauxite, despite having experienced some operational challenges in 2019. We are increasing our investment, with \$2.25 billion of high-return projects in iron ore and copper approved in the fourth quarter. We also boosted our exploration and evaluation expenditure to \$624 million in 2019, further strengthening our pipeline of opportunities.

“We have the platform and performance to maintain our delivery of superior returns to shareholders over the short, medium and long-term, driven by our strong value over volume approach and ongoing disciplined allocation of capital.”

		Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
Pilbara iron ore shipments (100% basis)	Mt	86.8	-1%	+1%	327.4	-3%
Pilbara iron ore production (100% basis)	Mt	83.6	-3%	-4%	326.7	-3%
Bauxite	Mt	15.1	+28%	+10%	55.1	+9%
Aluminium	kt	783	-4%	-1%	3,171	-2%
Mined copper	kt	138.7	-9%	-12%	577.4	-5%
Titanium dioxide slag	kt	286	-3%	-11%	1,206	+8%
IOC iron ore pellets and concentrate	Mt	2.6	-10%	-13%	10.5	+18%

### Operational update

- Pilbara iron ore shipments of 327 million tonnes (100% basis) were 3% lower than 2018, primarily impacted by weather and operational challenges in the first half of 2019 and our active decision to protect the quality of the Pilbara Blend. In addition to direct sales from Australia, we commenced trials of portside trading in October 2019.
- On 27 November 2019, we announced a \$749 million investment in the Greater Tom Price operations (Western Turner Syncline Phase 2) in the Pilbara region of Western Australia, to sustain production capacity.
- Bauxite production of 55 million tonnes was 9% higher than 2018, underpinned by the successful ramp-up of the Amrun mine in Queensland, Australia. Third party shipments of 40 million tonnes were 21% higher than 2018.
- Aluminium production of 3.2 million tonnes was 2% lower than 2018, primarily reflecting a preventive safety shutdown of one of the three pot-lines at ISAL in Iceland and earlier than planned pot relining at Kitimat in British Columbia, Canada in the second half.
- On 23 October 2019, we announced a strategic review of our interest in the Tiwai Point aluminium smelter in New Zealand, to be completed in the first quarter of 2020.
- On 3 December 2019, we announced the approval of a \$1.5 billion investment at Kennecott in the US, phase two of the south wall pushback project, extending operations to 2032.
- Mined copper production of 577 thousand tonnes was 5% lower than 2018, reflecting lower copper grades, partially offset by higher throughput. Lower copper grades at Kennecott impacted the fourth quarter in particular: this is expected to persist until we access higher grades from the end of 2020, resulting from phase one of the south wall pushback project.
- Following the signing of renewable power agreements in Chile, Escondida has raised a provision related to the cancellation of existing coal contracts. We have recognised a charge of approximately \$200 million against 2019 underlying EBITDA.

- At the Oyu Tolgoi underground project in Mongolia, we completed the primary production shaft (shaft 2) in October. Work continued on the mine design and, overall, we remain within the cost and schedule ranges as announced in July 2019. We continue to expect to complete the mine design in the first half of 2020 and the Definitive Estimate of cost and schedule in the second half of 2020.
- Titanium dioxide slag production of 1.2 million tonnes was 8% higher than 2018, reflecting continued operational improvement and the restart of furnaces in line with market conditions. Fourth quarter production was impacted by the curtailment of operations at Richards Bay Minerals (RBM) in South Africa, following an escalation in violence in the surrounding communities. A phased restart commenced at the end of December.
- Production of pellets and concentrate at the Iron Ore Company of Canada (IOC) was 18% higher than 2018, when strike action occurred. Fourth quarter production was 10% lower than the same quarter of 2018 due to unplanned equipment-related downtime.
- On 18 November 2019, we announced that we would support Energy Resources of Australia Limited's (ERA) plans for a renounceable entitlement offer to raise \$324 million for the rehabilitation of the Ranger Project Area in Australia's Northern Territory.
- Exploration and evaluation spend in 2019 was \$624 million, 28% higher than 2018, primarily reflecting increased activity at Resolution Copper in the US and on the Winu and Falcon advanced projects in Australia and Canada. We achieved a major permitting milestone at Resolution with the release of an independently prepared Draft Environmental Impact Statement in August 2019.
- In 2019, we repurchased approximately \$1.6 billion of Rio Tinto plc shares (28.4 million) on-market.

<b>Average realised prices</b>			
		<b>2019</b>	<b>vs 2018</b>
Pilbara iron ore	\$/wmt, FOB	<b>79.0</b>	+37%
Aluminium	\$/t (including VAP, mid-west premium)	<b>2,132</b>	-14%
Copper	US cents per lb	<b>274.5</b>	-7%

<b>2020 production guidance (Rio Tinto share, unless otherwise stated)</b>		
	<b>2019 actual</b>	<b>2020 guidance</b>
Pilbara iron ore (shipments, 100% basis)	327.4 Mt	330 to 343 Mt
Bauxite	55.1Mt	55 to 58 Mt
Alumina	7.7 Mt	7.8 to 8.2 Mt
Aluminium	3.2 Mt	3.1 to 3.3 Mt
Mined copper	577 kt	530 to 570 kt
Refined copper	260 kt	205 to 235 kt
Diamonds	17 M carats	12 to 14 M carats
Titanium dioxide slag	1.2 Mt	1.2 to 1.4 Mt
IOC pellets and concentrate	10.5 Mt	10.5 to 12.0 Mt
Boric oxide equivalent	0.5 Mt	~0.5 Mt

- Our guidance is framed by expectations of general stability in global GDP growth in 2020, tempered by negative risks, including geopolitical tensions and oil price volatility. In this environment, we will continue to monitor and adjust production levels and product mix to meet customer requirements in 2020, in line with our value over volume strategy.
- Iron ore shipments and bauxite production guidance are subject to weather and market conditions.
- Aluminium guidance reflects a continued focus on capacity creep, offset by earlier than planned pot relining at Kitimat.
- Mined copper guidance reflects lower grades at Kennecott as mining transitions from the east to south wall. We expect to access higher, more consistent grade ore from late 2020.
- Diamonds guidance reflects the expected closure of Argyle in the fourth quarter of 2020 and lower grades at Diavik.
- Titanium dioxide slag guidance assumes return to normal operations at RBM in early 2020.

*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. To allow production numbers to be compared on a like-for-like basis, production from asset divestments completed in 2018 is excluded from Rio Tinto share of production data.*

## IRON ORE

Million tonnes	Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
<b>Rio Tinto share of production</b>					
Pilbara Blend and SP10 Lump <sup>1</sup>	19.9	-8%	-5%	80.8	-5%
Pilbara Blend and SP10 Fines <sup>1</sup>	30.3	-4%	-4%	119.3	-3%
Robe Valley Lump	1.6	+12%	-5%	5.1	-14%
Robe Valley Fines	2.8	+7%	-9%	9.2	-16%
Yandicoogina Fines (HIY)	14.2	-4%	-3%	56.3	-2%
<b>Total Pilbara production</b>	<b>68.8</b>	<b>-5%</b>	<b>-5%</b>	<b>270.7</b>	<b>-4%</b>
<b>Total Pilbara production (100% basis)</b>	<b>83.6</b>	<b>-3%</b>	<b>-4%</b>	<b>326.7</b>	<b>-3%</b>

Million tonnes	Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
<b>Rio Tinto share of shipments</b>					
Pilbara Blend Lump	16.2	-12%	+1%	65.9	-11%
Pilbara Blend Fines	31.2	-6%	+4%	120.2	-7%
Robe Valley Lump	1.2	+2%	-3%	4.0	-17%
Robe Valley Fines	3.3	+9%	-3%	10.5	-13%
Yandicoogina Fines (HIY)	15.3	+3%	+7%	57.1	-1%
SP10 Lump <sup>1</sup>	2.1	n/a	-23%	5.4	n/a
SP10 Fines <sup>1</sup>	2.1	+12%	-49%	9.4	+180%
<b>Total Pilbara shipments</b>	<b>71.3</b>	<b>-2%</b>	<b>-1%</b>	<b>272.5</b>	<b>-3%</b>
<b>Total Pilbara shipments (100% basis)</b>	<b>86.8</b>	<b>-1%</b>	<b>+1%</b>	<b>327.4</b>	<b>-3%</b>
<b>Total Pilbara sales (Rio Tinto share)<sup>2</sup></b>	<b>70.0</b>	<b>-4%</b>	<b>-2%</b>	<b>271.1</b>	<b>-3%</b>
<b>Total Pilbara sales (100% basis)<sup>2</sup></b>	<b>85.5</b>	<b>-2%</b>	<b>-0%</b>	<b>326.0</b>	<b>-4%</b>
<b>Total Pilbara sales (consolidated basis)<sup>2, 3</sup></b>	<b>72.2</b>	<b>-3%</b>	<b>-2%</b>	<b>278.6</b>	<b>-3%</b>

<sup>1</sup> SP10 includes some lower grade products.

<sup>2</sup> Differences between shipments and sales reflect tonnes held for portside trading and material purchased from IOC and sold.

<sup>3</sup> 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 326.7 million tonnes (Rio Tinto share 270.7 million tonnes) in 2019, 3% lower than 2018. Fourth quarter production of 83.6 million tonnes (Rio Tinto share 68.8 million tonnes) was 3% lower than the same quarter of 2018 and 4% lower than the previous quarter due to normal maintenance cycles and mine sequencing. Overall material moved in 2019 was the highest on record. Our increased focus on waste material movement and pit development will continue in 2020 to improve mine performance and pit sequencing.

2019 shipments of 327.4 million tonnes (Rio Tinto share 272.5 million tonnes) were 3% lower than 2018. In the first half of 2019, shipments were impacted by significant weather disruptions, a fire at the Cape Lambert A port facility and operational challenges. Fourth quarter shipments of 86.8 million tonnes (Rio Tinto share 71.3 million tonnes) were 1% below the same quarter of 2018.

Performance in the second half of 2019 was strong, with both production and shipments exceeding the same period in 2018 despite the extended rail maintenance shut limiting rail capacity for 12 days. In October 2019 we commenced trials of portside trading. The operation maintains some inventory at Chinese ports and can also handle material from third parties and from IOC. Reported Pilbara sales in the table above therefore reflect the timing differences that may occur between shipments from the Pilbara and sales to external customers.

We price the majority of our iron ore sales (76%) by reference to the average index price for the month of shipment. In 2019, we priced approximately 16% of sales by reference to the prior quarter's average index

lagged by one month, with the remainder sold either on current quarter average, current month average or on the spot market.

In 2019, approximately 22% of sales were made on a cost and freight (CFR) basis, 46% were made on a cost, freight and insurance (CIF) basis and 32% were made on a free on board (FOB) basis.

In 2019, we achieved an average iron ore price of \$79.0 per wet metric tonne on an FOB basis (equivalent to \$85.9 per dry metric tonne, based on an average moisture rate of 8%). In 2018, average pricing was \$57.8 per wet metric tonne (equivalent to \$62.8 per dry metric tonne).

### ***Pilbara projects***

The Koodaideri iron ore mine is continuing to progress, with key construction activities on schedule. We commenced work on the major structural foundations in the fourth quarter and expect first ore in late 2021, consistent with previous guidance.

First ore from the Robe River Joint Venture sustaining production projects (West Angelas C&D and Mesa B, C and H at Robe Valley) is expected in 2021, consistent with previous guidance. All major environmental approvals have been received with the exception of the Mesa H approval. Procurement and construction activities are progressing, with concrete pouring commencing at West Angelas and Robe Valley civil contractors mobilising to site.

On 27 November 2019, we announced the approval of a \$749 million (A\$1 billion) investment in the Greater Tom Price operations to help sustain production capacity. This investment in the Western Turner Syncline Phase 2 mine will facilitate mining of existing and new deposits and includes construction of a new crusher as well as a 13-kilometre conveyor. Pending final government approvals, construction will start in the first quarter of 2020 with first ore from the crusher expected in 2021.

## ALUMINIUM

### Rio Tinto share of production ('000 tonnes)

	Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
Bauxite	15,137	+28%	+10%	55,105	+9%
Bauxite third party shipments	10,968	+48%	+6%	39,648	+21%
Alumina	2,032	+1%	+11%	7,744	-3%
Aluminium	783	-4%	-1%	3,171	-2%

#### **Bauxite**

Bauxite production of 55.1 million tonnes was 9% higher than 2018. In Australia, production at the Pacific managed mines was 11% above prior year underpinned by the successful ramp-up of Amrun, which achieved its design capacity rates in the fourth quarter of 2019, replacing the depleting Weipa mines. Production at the non-managed JVs (CBG in Guinea and MRN in Brazil) was 1% higher than 2018, but was constrained by a slower than planned ramp-up of the expansion project at CBG.

Fourth quarter bauxite production was 28% higher than the same period of 2018. Production at the Pacific managed mines was 34% higher than the same period last year, partly offset by lower production at non-managed JVs (CBG and MRN).

Third party bauxite shipments were 39.6 million tonnes in 2019, which was 21% higher than 2018 reflecting increased volumes from Amrun. Fourth quarter shipments were 48% higher than the same period in 2018.

#### **Alumina**

Alumina production of 7.7 million tonnes was 3% lower than 2018, primarily due to major maintenance activities at the Pacific refineries including a planned five-year maintenance shutdown to service the cogeneration plant at Yarwun.

Fourth quarter alumina production was 1% higher than the same period of 2018. Our share of production from the Pacific refineries was 17% higher than the third quarter, ramping up after completion of major maintenance activities. Yarwun achieved a production record for the fourth quarter.

#### **Aluminium**

Aluminium production of 3.2 million tonnes in 2019 was 2% lower than 2018, primarily due to lower volumes from ISAL from a pot-line outage in the third quarter and at Kitimat, due to earlier than planned pot-lining replacement. Excluding the non-managed Becancour operation where a lock-out constrained operations, the Quebec and Pacific smelters performed well, with aluminium production for 2019 1% higher than 2018, reflecting continued productivity improvement. The restart of Becancour is progressing well, with full ramp-up expected by mid-2020.

Fourth quarter aluminium production of 0.8 million tonnes was 4% lower than the same period of 2018. Production at the Quebec and Pacific smelters for the fourth quarter was 1% higher than the same period last year. Following the preventive pot-line shutdown, the ISAL smelter was ramped back up and maintained at about 85% of capacity, optimised for value over volume. Production at the Kitimat smelter continues to be impacted by earlier than planned pot-lining replacement, with actions underway to minimise production impacts. The estimated impact on 2020 production is reflected in our guidance.

The aluminium industry continues to face challenging conditions in global markets and policy uncertainty, reflected in low industry profitability. We continue to actively work on enhancing the competitiveness of our smelters, including discussions with stakeholders on energy pricing, to ensure the sustainability and global competitiveness of our Pacific smelters.

On 23 October 2019, we announced a strategic review of our interest in the Tiwai Point aluminium smelter in New Zealand, to determine the operation's ongoing viability and competitive position. The strategic review will consider all options, including curtailment and closure and is expected to be complete in the first quarter of 2020.

Average realised aluminium prices were \$2,132 per tonne (2018: \$2,470 per tonne). This includes premiums for value-added products (VAP), which represented 51% of primary metal sold (2018: 54%, excluding the divested Dunkerque smelter) and generated attractive product premiums averaging \$234 per tonne of VAP sold (2018: \$227 per tonne) on top of the physical market premiums. The mid-west premium decreased from \$419 per tonne in 2018 to \$320 per tonne in 2019. A 10% tariff on Canadian aluminium imports into the United States under Section 232 was paid until the tariff was removed on 19 May 2019.

***Kemano***

At the Kemano hydropower facility at Kitimat, British Columbia, tunnel boring continues to progress with 2,731 metres excavated at the end of 2019. Tunnel boring machine productivity has been lower than expected with completion now expected in 2021 (previously late 2020).

## COPPER & DIAMONDS

### Rio Tinto share of production ('000 tonnes)

	Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
<b>Mined copper</b>					
Rio Tinto Kennecott	35.4	-39%	-39%	186.8	-8%
Escondida	92.3	+16%	+2%	341.6	-3%
Oyu Tolgoi	11.0	-21%	+16%	49.1	-8%
<b>Refined copper</b>					
Rio Tinto Kennecott	51.4	-20%	+27%	184.6	-5%
Escondida	20.5	-5%	+22%	75.0	-6%
<b>Diamonds ('000 carats)</b>					
Argyle	3,363	+5%	-5%	12,999	-8%
Diavik	840	-22%	-15%	4,031	-8%

#### ***Rio Tinto Kennecott***

Mined copper production was 8% lower than 2018, primarily due to increased grade variability, with grades on average 11% lower. This grade impact was partially offset by a 4% year on year improvement in ore processed. Copper grades of 0.35% achieved in the final quarter of 2019 compare to 0.59% in the same quarter of 2018. Grades will continue to be lower through 2020 before increasing from the first quarter of 2021, with the transition from east wall to south wall mining.

Refined copper production was 5% lower than 2018, reflecting reduced copper concentrate availability, a planned smelter shutdown in July and additional unplanned maintenance impacting furnace online time.

We continue to toll and purchase third party concentrate to optimise smelter utilisation, with 92 thousand tonnes of concentrate received for processing in 2019, compared with 100 thousand tonnes in 2018. Purchased and tolled copper concentrate are excluded from reported production figures.

A 45-day maintenance shut is planned at the smelter during the second quarter of 2020. This is a standard rebuild, which is undertaken approximately every three years.

Molybdenum production more than doubled in 2019 (from 5.8kt to 11.2kt), as a result of both higher grades and plant capacity and productivity improvements.

On 3 December 2019, we announced the approval of a \$1.5 billion investment at Rio Tinto Kennecott, extending operations to 2032. The investment will further extend strip waste rock mining and support additional infrastructure development in the second phase of the south wall pushback project, to allow mining to continue into a new area of the ore body between 2026 and 2032.

#### ***Escondida***

Copper production at Escondida was 3% lower than 2018, mainly due to grade declines, which were 8% lower than last year, partly offset by higher throughput. Fourth quarter production was 16% higher than the same quarter of 2018 due to higher throughput, offsetting production losses from stoppages associated with the social unrest in Chile.

Following the signing of renewable power agreements, Escondida has raised a provision related to the cancellation of existing coal contracts. We have recognised a charge of approximately \$200 million against 2019 underlying EBITDA.

#### ***Oyu Tolgoi***

As anticipated, mined copper production from the open pit was 8% lower than 2018 as mining activity moved to lower grade areas. Grades were 11% lower for the year and especially reflected in the 21% decline in fourth quarter production, partly offset by productivity improvements.



### **Oyu Tolgoi Underground Project**

During the fourth quarter, we took the decision to remove two of the three mid-access drives. We will retain one mid-access drive on the apex level of the mine design of Panel 0. The removal of these mid-access drives has an unfavourable impact on schedule, however, overall, the underground project remains within the range announced in July 2019 of a 16 to 30 month<sup>1</sup> delay in schedule and an increase of \$1.2 to \$1.9 billion<sup>1</sup> in development capital costs.

We continue the detailed work on mine design, which we still expect to complete in the first half of the year, with a Definitive Estimate in the second half of 2020, as previously disclosed. This will include the estimate of development capital costs and schedule for the underground project based on the updated design of Panel 0.

Decisions on other key underground design elements such as the location of the ore handling system and options for panel sequencing will be taken in the first half of 2020. These will take into consideration the consequential impacts on cost, schedule and other key variables such as Ore Reserves, project ramp-up profile and peak production, together with improvements in productivity.

These productivity improvements resulted in increased underground lateral development during the fourth quarter, to an average monthly rate of 1,607 equivalent metres (eqm) compared to 1,214 eqm in the third quarter.

Completion of shaft 2, a key milestone, occurred in October 2019. Construction is progressing on shafts 3 and 4 to enable commencement of main sinking operations for both shafts during the first half of 2020.

### **Resolution Copper**

Deepening of the existing shaft 9 continues, as well as work on the underground characterisation study to increase ore body knowledge.

Permitting and studies are progressing well, following the release of the independently prepared Draft Environmental Impact Statement for the project in August 2019. A plan is in place with the US Forest Service to address comments received on the study to maintain schedule on the Final Environmental Impact Study in 2020.

In April 2019, we approved \$302 million (\$166 million our share) of additional expenditure for Resolution, to fund additional drilling, ore-body studies, infrastructure improvements and permitting activities, as we progress the project to the final stage of the permitting phase.

### **Provisional pricing**

At 31 December 2019, the Group had an estimated 220 million pounds of copper sales that were provisionally priced at 271 cents per pound. The final price of these sales will be determined during the first half of 2020. This compares with 240 million pounds of open shipments at 31 December 2018, provisionally priced at 277 cents per pound.

### **Diamonds**

At Argyle, carat production was 8% lower than 2018 due to lower recovered grade, partially offset by stronger mining and processing rates.

At Diavik, carats recovered in 2019 were 8% lower than 2018 due to lower ore availability and grade from the underground operations, partly offset by higher tonnes and grade from the A21 open pit.

<sup>1</sup> As described above, the level of accuracy of these estimates is preliminary in nature and subject to a range of variables, in line with previous guidance. The confidence level of these estimates is at a level associated with a Conceptual or Order of Magnitude Study, and further work is required between now and the second half of 2020 to refine the mine design options and study them to a level of confidence and accuracy associated with Feasibility Study quality estimates.

## ENERGY & MINERALS

### Rio Tinto share of production

	Q4 2019	vs Q4 2018	vs Q3 2019	2019	vs 2018
<b>Iron ore pellets and concentrate (million tonnes)</b>					
IOC	2.6	-10%	-13%	10.5	+18%
<b>Minerals ('000 tonnes)</b>					
Borates – B <sub>2</sub> O <sub>3</sub> content	128	+8%	-7%	520	+2%
Titanium dioxide slag	286	-3%	-11%	1,206	+8%
<b>Uranium ('000 lbs)</b>					
Energy Resources of Australia	642	-31%	+10%	2,640	-12%
Rössing	-	-	-	2,114	-

#### **Iron Ore Company of Canada (IOC)**

Iron ore pellets and concentrate production available for sale at IOC was 18% higher than 2018 when operations were impacted by a two-month strike. It was 10% lower than the fourth quarter of 2018, attributable to unplanned equipment-related downtime.

#### **Borates**

Borates production was in line with 2018 and aligned with market conditions. We will base any decision to increase refinery utilisation rates to match market demand.

#### **Iron and Titanium**

Titanium dioxide feedstock production was 8% higher than 2018, reflecting improved operational performance and the restart of furnaces.

Fourth quarter production was impacted by the curtailment of operations at Richards Bay Minerals (RBM) in South Africa. Operations were impacted in mid-November, following an escalation in violence in the communities surrounding the operations, and a full curtailment commenced at the beginning of December. A phased restart commenced at the end of December. While RBM continues to monitor the security situation closely, a return to full operations and resumption of normalised production is expected in early 2020.

All nine furnaces at Rio Tinto Fer et Titane (RTFT) are currently in operation, with three of four furnaces in operation at RBM. This compares with six out of nine furnaces in operation at RTFT and three out of four at RBM in the fourth quarter of 2018. We will base our decision to re-start the remaining idled furnace to match market demand.

#### **Zulti South project**

Construction of the \$463 million Zulti South project at RBM remains on hold post a suspension of operations following a number of security incidents that impacted operations. We will review the restart of the Zulti South project after normalisation of operations at RBM.

#### **Uranium**

Energy Resources of Australia (ERA) continues to process existing stockpiles. Production was 12% lower than 2018, reflecting lower grades.

On 18 November 2019, we announced that we would support ERA's plans for a renounceable entitlement offer to raise \$324 million for the rehabilitation of the Ranger Project Area in Australia's Northern Territory.

As announced by the Takeovers Panel on 12 December 2019, we have applied to the Takeovers Panel for a review of its decision of 11 December 2019, relating to ERA's renounceable entitlement offer. We remain committed to fully subscribe for our entitlement and to underwrite the entitlement offer in the

absence of any other commercially viable solution being available to ERA for the rehabilitation of the Ranger Project Area.

Production from Rössing Uranium is reported up to the date of completion of divestment on 16 July 2019.

## EXPLORATION AND EVALUATION

Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in 2019 was \$624 million, compared with \$488 million in 2018, with increased spend at Resolution Copper in the US and on the Winu and Falcon Order of Magnitude studies in Australia and Canada. Approximately 52% of this expenditure was incurred by central exploration, 33% by Copper & Diamonds, 9% by Energy & Minerals and the remainder by Iron Ore and Aluminium.

There were no significant divestments of central exploration properties in 2019.

### Exploration highlights

We have a strong portfolio of projects with activity in 17 countries across some seven commodities. The bulk of the exploration expenditure in this quarter was focused on copper in Australia, Brazil, Canada, Chile, Colombia, Kazakhstan, Mongolia, Peru, Serbia, United States, Zambia and diamonds projects in Canada. Mine-lease exploration continued at a number of our managed businesses including Pilbara Iron in Australia, Oyu Tolgoi in Mongolia, Diavik in Canada, and Resolution and Boron in the US. A summary of activity for the quarter is as follows:

Commodities	Studies Stage	Advanced projects	Greenfield/Brownfield programmes
Bauxite	Cape York, Australia	Amargosa, Brazil*; Sanxai, Laos*	Cape York, Australia
Base Metals	Copper/molybdenum: Resolution, US; Winu, Australia	La Granja, Peru Nickel: Tamarack, US (third party operated)	Copper Greenfield: Australia, Brazil, Canada, Chile, China, Colombia, Kazakhstan, Mongolia, Peru, Serbia, US, Zambia Copper Brownfield: Resolution, US; Bingham, US; Oyu Tolgoi, Mongolia Nickel Greenfield: Canada, Uganda, Finland
Diamonds	Falcon, Canada		Greenfield: Canada Brownfield: Diavik, Canada
Minerals	Lithium borates: Jadar, Serbia Heavy mineral sands: Mutamba, Mozambique (third party operated)		Heavy mineral sands: Tanzania Industrial Minerals: Serbia Industrial minerals brownfield: Boron
Iron Ore	Pilbara, Australia	Pilbara, Australia	Brownfield: Pilbara, Australia

\* Limited activity during the quarter

## **Forward-looking statements**

This announcement may include "forward-looking statements" within the meaning of the US 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 production forecast or guidance, financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto's products and reserve and resource positions), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "should", "will", "target", "set to", "assumes" 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 production, performance or results of Rio Tinto to be materially different from any future production, performance or results expressed or implied by such forward-looking statements. Such forward-looking statements could be influenced by such risk factors as 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. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements. 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 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 Rio Tinto's Group Company Secretary.

LEI: 213800YOE050Q72G2R82

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			Full Year		% Change		
2018 Q4	2019 Q3	2019 Q4	2018	2019	Q4 19 vs Q4 18	Q4 19 vs Q3 19	2019 vs 2018

### Principal Commodities

Alumina	('000 t)	2,020	1,826	<b>2,032</b>	7,980	<b>7,744</b>	1%	11%	-3%
Aluminium	('000 t)	817	789	<b>783</b>	3,231	<b>3,171</b>	-4%	-1%	-2%
Bauxite	('000 t)	11,790	13,796	<b>15,137</b>	50,421	<b>55,105</b>	28%	10%	9%
Borates	('000 t)	118	138	<b>128</b>	512	<b>520</b>	8%	-7%	2%
Copper - mined	('000 t)	<i>151.9</i>	<i>157.9</i>	<b>138.7</b>	607.6	<b>577.4</b>	-9%	-12%	-5%
Copper - refined	('000 t)	86.1	57.1	<b>71.9</b>	274.8	<b>259.6</b>	-17%	26%	-6%
Diamonds	('000 cts)	4,290	4,551	<b>4,203</b>	18,427	<b>17,030</b>	-2%	-8%	-8%
Iron Ore	('000 t)	75,018	75,117	<b>71,352</b>	290,800	<b>281,192</b>	-5%	-5%	-3%
Titanium dioxide slag	('000 t)	294	321	<b>286</b>	1,116	<b>1,206</b>	-3%	-11%	8%
Uranium	('000 lbs)	1,904	755	<b>642</b>	6,764	<b>4,754</b>	-66%	-15%	-30%

### Other Metals & Minerals

Gold - mined	('000 oz)	118.4	87.8	<b>75.0</b>	372.1	<b>389.7</b>	-37%	-15%	5%
Gold - refined	('000 oz)	58.6	60.8	<b>63.3</b>	198.0	<b>218.7</b>	8%	4%	10%
Molybdenum	('000 t)	2.2	2.1	<b>4.7</b>	5.8	<b>11.2</b>	110%	119%	95%
Salt	('000 t)	1,496	1,392	<b>1,450</b>	6,153	<b>5,422</b>	-3%	4%	-12%
Silver - mined	('000 oz)	1,586	1,320	<b>1,209</b>	5,656	<b>5,412</b>	-24%	-8%	-4%
Silver - refined	('000 oz)	807	664	<b>839</b>	2,865	<b>2,853</b>	4%	26%	0%

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	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>ALUMINA</b>								
<b>Production ('000 tonnes)</b>								
Jonqui�re (Vaudreuil)	100%	354	373	336	360	345	1,444	1,413
Jonqui�re (Vaudreuil) specialty Alumina plant	100%	29	25	31	28	24	124	109
Queensland Alumina	80%	742	711	668	669	716	2,958	2,763
S�o Luis (Alumar)	10%	92	86	86	99	97	351	368
Yarwun	100%	803	813	757	671	850	3,103	3,091
Rio Tinto total alumina production		2,020	2,008	1,878	1,826	2,032	7,980	7,744
<b>ALUMINIUM</b>								
<b>Production ('000 tonnes)</b>								
Australia - Bell Bay	100%	48	45	47	48	48	189	189
Australia - Boyne Island	59%	74	73	75	75	74	295	296
Australia - Tomago	52%	77	74	76	77	76	305	303
Canada - six wholly owned	100%	408	400	400	399	383	1,616	1,582
Canada - Alouette (Sept-�les)	40%	58	58	60	61	62	234	241
Canada - B�cancour	25%	8	4	4	4	7	34	19
Iceland - ISAL (Reykjavik)	100%	54	52	52	36	43	212	184
New Zealand - Tiwai Point	79%	70	71	69	70	69	270	279
Oman - Sohar	20%	20	19	19	20	20	76	78
Rio Tinto total aluminium production		817	796	803	789	783	3,231	3,171
<b>BAUXITE</b>								
<b>Production ('000 tonnes) (a)</b>								
Gove	100%	3,250	3,004	2,957	2,968	3,273	12,540	12,201
Porto Trombetas	12%	489	285	287	385	371	1,576	1,327
Sangaredi	(b)	1,204	1,558	1,630	1,749	1,227	5,868	6,165
Weipa	100%	6,847	7,917	8,533	8,695	10,267	30,437	35,411
Rio Tinto total bauxite production		11,790	12,763	13,407	13,796	15,137	50,421	55,105

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or dor  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	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>BORATES</b>								
<b>Production ('000 tonnes B<sub>2</sub>O<sub>3</sub> content)</b>								
Rio Tinto Borates - borates	100%	118	115	138	138	128	512	520
<b>COPPER</b>								
<b>Mine production ('000 tonnes) (a)</b>								
Bingham Canyon	100%	58.3	52.5	41.1	57.8	35.4	203.9	186.8
Escondida	30%	79.7	76.0	82.7	90.5	92.3	350.4	341.6
Oyu Tolgoi (b)	34%	13.9	15.4	13.1	9.5	11.0	53.3	49.1
Rio Tinto total mine production		151.9	143.9	136.9	157.9	138.7	607.6	577.4
<b>Refined production ('000 tonnes)</b>								
Escondida	30%	21.6	18.7	19.0	16.8	20.5	80.0	75.0
Rio Tinto Kennecott	100%	64.6	29.6	63.3	40.3	51.4	194.7	184.6
Rio Tinto total refined production		86.1	48.3	82.3	57.1	71.9	274.8	259.6

(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.

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

<b>DIAMONDS</b>								
<b>Production ('000 carats)</b>								
Argyle	100%	3,211	2,786	3,292	3,558	3,363	14,069	12,999
Diavik	60%	1,078	1,010	1,188	994	840	4,358	4,031
Rio Tinto total diamond production		4,290	3,796	4,481	4,551	4,203	18,427	17,030
<b>GOLD</b>								
<b>Mine production ('000 ounces) (a)</b>								
Bingham Canyon	100%	57.1	53.0	65.1	64.6	52.0	196.7	234.7
Escondida	30%	22.1	22.2	22.4	14.6	14.8	79.7	74.0
Oyu Tolgoi (b)	34%	39.1	40.2	24.1	8.6	8.2	95.7	81.1
Rio Tinto total mine production		118.4	115.4	111.6	87.8	75.0	372.1	389.7
<b>Refined production ('000 ounces)</b>								
Rio Tinto Kennecott	100%	58.6	41.7	52.9	60.8	63.3	198.0	218.7

(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	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>IRON ORE</b>								
<b>Production ('000 tonnes) (a)</b>								
Hamersley mines	(b)	56,364	51,218	50,087	55,567	52,521	220,612	209,392
Hamersley - Channar	60%	1,337	931	1,451	947	1,452	4,304	4,782
Hope Downs	50%	5,845	5,957	6,051	6,077	6,047	22,684	24,132
Iron Ore Company of Canada	59%	2,836	2,481	2,532	2,960	2,564	8,952	10,536
Robe River - Pannawonica (Mesas J and A)	53%	4,004	1,870	3,329	4,725	4,360	16,932	14,284
Robe River - West Angelas	53%	4,631	4,125	4,692	4,840	4,409	17,316	18,066
Rio Tinto iron ore production ('000 tonnes)		75,018	66,581	68,141	75,117	71,352	290,800	281,192
Breakdown of Production:								
Pilbara Blend and SP10 Lump (c)		21,674	19,978	19,842	21,015	19,930	84,843	80,766
Pilbara Blend and SP10 Fines (c)		31,652	28,779	28,463	31,713	30,304	122,582	119,260
Robe Valley Lump		1,409	635	1,201	1,650	1,574	5,897	5,060
Robe Valley Fines		2,595	1,235	2,128	3,075	2,786	11,035	9,224
Yandicoogina Fines (HIY)		14,852	13,473	13,975	14,704	14,194	57,491	56,346
Pilbara iron ore production ('000 tonnes)		72,182	64,101	65,610	72,156	68,788	281,848	270,655
IOC Concentrate		1,433	890	1,193	1,400	1,146	3,934	4,629
IOC Pellets		1,403	1,590	1,339	1,560	1,418	5,018	5,908
IOC iron ore production ('000 tonnes)		2,836	2,481	2,532	2,960	2,564	8,952	10,536
Breakdown of Shipments:								
Pilbara Blend Lump (d)		18,439	15,772	18,009	15,948	16,176	73,892	65,906
Pilbara Blend Fines (d)		33,342	26,864	32,165	30,032	31,182	129,177	120,243
Robe Valley Lump		1,219	457	1,037	1,290	1,246	4,881	4,030
Robe Valley Fines		2,996	1,308	2,577	3,349	3,259	12,085	10,493
Yandicoogina Fines (HIY)		14,831	12,294	15,212	14,286	15,260	57,380	57,052
SP10 Lump (c)		0	0	635	2,685	2,072	0	5,391
SP10 Fines (c)		1,863	1,542	1,747	4,057	2,081	3,364	9,427
Pilbara iron ore shipments ('000 tonnes)		72,690	58,236	71,382	71,646	71,277	280,778	272,540
IOC Iron ore shipments ('000 tonnes)		3,073	2,092	2,738	2,654	2,636	8,837	10,120
Rio Tinto iron ore shipments ('000 tonnes)		75,763	60,328	74,119	74,300	73,913	289,614	282,660
Breakdown of Sales:								
Pilbara Blend Lump (d)		18,439	15,772	18,009	15,948	16,176	73,892	65,906
Pilbara Blend Fines (d)		33,342	26,864	32,165	30,032	31,182	129,177	120,243
Robe Valley Lump		1,219	457	1,037	1,290	1,246	4,881	4,030
Robe Valley Fines		2,996	1,308	2,577	3,349	3,259	12,085	10,493
Yandicoogina Fines (HIY)		14,831	12,294	15,212	14,286	15,260	57,380	57,052
SP10 Lump (c)		0	0	635	2,611	1,733	0	4,979
SP10 Fines (c)		1,863	1,542	1,747	3,962	1,185	3,364	8,437
Pilbara iron ore sales ('000 tonnes) (e)		72,690	58,236	71,382	71,478	70,043	280,778	271,139
Pilbara iron ore sales - consolidated basis ('000 tonnes) (e) (f)		74,711	59,541	73,230	73,619	72,166	288,610	278,557
IOC Concentrate		1,558	516	1,315	1,425	1,223	3,887	4,479
IOC Pellets		1,516	1,576	1,423	1,229	1,413	4,950	5,641
IOC Iron ore sales ('000 tonnes)		3,073	2,092	2,738	2,654	2,636	8,837	10,120

*(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, 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) SP10 includes some lower grade products. SP10 fines sales also include IOC product that is further blended and sold at port in China.*

*(d) Restatement due to separately reporting SP10 lump and SP10 fines products that include other lower grade products.*

*(e) Differences between shipments and sales reflect tonnes held for portside trading and material purchased from IOC and sold.*

*(f) 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.*

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## Rio Tinto share of production

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>MOLYBDENUM</b>								
<b>Mine production ('000 tonnes) (a)</b>								
Bingham Canyon	100%	2.2	1.9	2.6	2.1	4.7	5.8	11.2

(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>SALT</b>								
<b>Production ('000 tonnes)</b>								
Dampier Salt	68%	1,496	1,310	1,269	1,392	1,450	6,153	5,422

<b>SILVER</b>								
<b>Mine production ('000 ounces) (a)</b>								
Bingham Canyon	100%	736	741	700	768	605	2,520	2,815
Escondida	30%	771	657	622	488	539	2,830	2,306
Oyu Tolgoi (b)	34%	80	83	80	64	64	306	290
Rio Tinto total mine production		1,586	1,481	1,403	1,320	1,209	5,656	5,412
<b>Refined production ('000 ounces)</b>								
Rio Tinto Kennecott	100%	807	617	734	664	839	2,865	2,853

(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.

<b>TITANIUM DIOXIDE SLAG</b>								
<b>Production ('000 tonnes)</b>								
Rio Tinto Iron & Titanium (a)	100%	294	296	303	321	286	1,116	1,206

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

<b>URANIUM</b>								
<b>Production ('000 lbs U<sub>3</sub>O<sub>8</sub>) (a)</b>								
Energy Resources of Australia	68%	924	793	620	585	642	3,014	2,640
Rössing (b)	0%	979	802	1,142	170	-	3,750	2,114
Rio Tinto total uranium production		1,904	1,595	1,762	755	642	6,764	4,754

(a) ERA and Rössing production reported are drummed U<sub>3</sub>O<sub>8</sub>.

(b) On 16 July 2019, Rio Tinto completed the sale of its entire 68.62% interest in the Rössing mine in Namibia to China National Uranium Corporation Limited. Production is reported up to the date of completion.

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.

The Rio Tinto percentage shown above is at 31 December 2019.

Rio Tinto's interest in the Kestrel, Hail Creek, Dunkerque and Grasberg operations were sold in 2018. No data for these operations are included in the Share of production table.

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>ALUMINA</b>								
<b>Smelter Grade Alumina - Aluminium Group</b>								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80.0%	927	888	834	836	895	3,697	3,454
Yarwun refinery - Queensland	100.0%	803	813	757	671	850	3,103	3,091
<i>Brazil</i>								
São Luis (Alumar) refinery	10.0%	918	859	864	989	966	3,509	3,679
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100.0%	354	373	336	360	345	1,444	1,413
<i>(a) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.</i>								
<b>Specialty Alumina - Aluminium Group</b>								
Specialty alumina production ('000 tonnes)								
<i>Canada</i>								
Jonquière (Vaudreuil) plant – Quebec	100.0%	29	25	31	28	24	124	109

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>ALUMINIUM</b>								
<b>Primary Aluminium</b>								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100.0%	48	45	47	48	48	189	189
Boyne Island smelter - Queensland	59.4%	125	122	126	125	125	497	499
Tomago smelter - New South Wales	51.6%	149	144	147	149	148	592	588
<i>Canada</i>								
Alma smelter - Quebec	100.0%	118	115	118	119	119	465	472
Alouette (Sept-Îles) smelter - Quebec	40.0%	146	144	150	153	155	584	602
Arvida smelter - Quebec	100.0%	44	43	44	45	44	173	175
Arvida AP60 smelter - Quebec	100.0%	13	14	15	15	15	52	60
Bécancour smelter - Quebec	25.1%	30	17	16	16	28	136	77
Grande-Baie smelter - Quebec	100.0%	59	58	58	59	59	233	233
Kitimat smelter - British Columbia	100.0%	109	106	102	96	81	436	385
Laterrière smelter - Quebec	100.0%	65	64	64	65	65	257	257
<i>France</i>								
Dunkerque smelter (a)	0.0%	57	-	-	-	-	227	-
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100.0%	54	52	52	36	43	212	184
<i>New Zealand</i>								
Tiwai Point smelter	79.4%	88	89	87	88	87	341	351
<i>Oman</i>								
Sohar smelter	20.0%	99	97	97	98	98	380	391

(a) On 14 December 2018, Rio Tinto completed the sale of its 100% interest in the Dunkerque smelter. Production is reported up to the date of completion.

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>BAUXITE</b>								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100.0%	3,250	3,004	2,957	2,968	3,273	12,540	12,201
Weipa mine - Queensland	100.0%	6,847	7,917	8,533	8,695	10,267	30,437	35,411
<i>Brazil</i>								
Porto Trombetas (MRN) mine	12.0%	4,073	2,372	2,393	3,205	3,090	13,134	11,060
<i>Guinea</i>								
Sangaredi mine (a)	23.0%	2,675	3,463	3,623	3,887	2,727	13,039	13,701
<b>Rio Tinto share of bauxite shipments</b>								
Share of total bauxite shipments ('000 tonnes)		11,622	12,725	13,122	13,912	14,849	49,536	54,607
Share of third party bauxite shipments ('000 tonnes)		7,387	8,842	9,477	10,361	10,968	32,813	39,648

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

## BORATES

<b>Rio Tinto Borates - borates</b>	100.0%							
<i>US</i>								
Borates ('000 tonnes) (a)		118	115	138	138	128	512	520

(a) Production is expressed as B<sub>2</sub>O<sub>3</sub> content.

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>COPPER &amp; GOLD</b>								
<b>Escondida</b>	30.0%							
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)		30,507	32,027	32,519	33,956	<b>33,659</b>	124,956	<b>132,161</b>
Average copper grade (%)		0.87	0.82	0.86	0.86	<b>0.87</b>	0.93	<b>0.85</b>
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		219.9	216.9	230.9	245.0	<b>246.1</b>	968.0	<b>938.9</b>
Contained gold ('000 ounces)		74	74	75	49	<b>49</b>	266	<b>247</b>
Contained silver ('000 ounces)		2,570	2,189	2,074	1,626	<b>1,798</b>	9,433	<b>7,687</b>
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		45.7	36.5	44.7	56.8	<b>61.7</b>	199.9	<b>199.7</b>
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		71.9	62.4	63.5	55.9	<b>68.4</b>	266.8	<b>250.2</b>
<i>(a) The calculation of copper in material mined for leaching is based on ore stacked at the leach pad.</i>								
<b>Freeport-McMoRan</b>								
<b>Grasberg mine (a)</b>	0.0% (b)							
<i>Papua, Indonesia</i>								
Ore treated ('000 tonnes)		14,049	-	-	-	-	64,310	-
Average mill head grades:								
Copper (%)		0.73	-	-	-	-	0.99	-
Gold (g/t)		1.08	-	-	-	-	1.59	-
Silver (g/t)		2.09	-	-	-	-	4.17	-
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		85.4	-	-	-	-	569.7	-
Gold in concentrates ('000 ounces)		402	-	-	-	-	2,779	-
Silver in concentrates ('000 ounces)		545	-	-	-	-	5,045	-
Sales of payable metals in concentrates: (c)								
Copper in concentrates ('000 tonnes)		82.7	-	-	-	-	556.0	-
Gold in concentrates ('000 ounces)		399	-	-	-	-	2,719	-
Silver in concentrates ('000 ounces)		426	-	-	-	-	3,928	-

(a) Through a joint venture agreement with Freeport-McMoRan (FCX), Rio Tinto is entitled to 40% of additional material mined as a consequence of expansions and developments of the Grasberg facilities since 1998. The Q4 2018 results show the forecast from FCX's most recent five-year plan. On 21 December 2018, Rio Tinto completed the sale of its entire interest in the Grasberg mine in Indonesia to PT Indonesia Asahan Aluminium (Persero) (Inalum). Production is reported up to the date of completion.

(b) Rio Tinto share of Grasberg production is 40% of the expansion.

(c) Net of smelter deduction

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**



## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>COPPER &amp; GOLD (continued)</b>								
<b>Rio Tinto Kennecott</b>								
<b>Bingham Canyon mine</b>	100.0%							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		10,853	10,685	10,123	10,084	<b>11,141</b>	40,260	<b>42,033</b>
Average ore grade:								
Copper (%)		0.59	0.55	0.46	0.64	<b>0.36</b>	0.56	<b>0.50</b>
Gold (g/t)		0.26	0.25	0.33	0.30	<b>0.23</b>	0.25	<b>0.28</b>
Silver (g/t)		2.76	2.76	2.84	2.74	<b>2.09</b>	2.60	<b>2.60</b>
Molybdenum (%)		0.032	0.032	0.039	0.039	<b>0.061</b>	0.028	<b>0.043</b>
Copper concentrates produced ('000 tonnes)		222	207	161	207	<b>156</b>	820	<b>731</b>
Average concentrate grade (% Cu)		26.0	25.3	25.5	27.8	<b>22.6</b>	24.8	<b>25.5</b>
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		58.3	52.5	41.1	57.8	<b>35.4</b>	203.9	<b>186.8</b>
Gold ('000 ounces)		57	53	65	65	<b>52</b>	197	<b>235</b>
Silver ('000 ounces)		736	741	700	768	<b>605</b>	2,520	<b>2,815</b>
Molybdenum concentrates produced ('000 tonnes):		4.5	3.8	5.0	4.3	<b>9.4</b>	11.6	<b>22.4</b>
Molybdenum in concentrates ('000 tonnes)		2.2	1.9	2.6	2.1	<b>4.7</b>	5.8	<b>11.2</b>
<b>Kennecott smelter &amp; refinery</b>								
	100.0%							
Copper concentrates smelted ('000 tonnes)		262	204	207	160	<b>216</b>	932	<b>787</b>
Copper anodes produced ('000 tonnes) (b)		62.4	33.3	60.3	39.3	<b>53.7</b>	207.3	<b>186.6</b>
Production of refined metal:								
Copper ('000 tonnes)		64.6	29.6	63.3	40.3	<b>51.4</b>	194.7	<b>184.6</b>
Gold ('000 ounces) (c)		58.6	41.7	52.9	60.8	<b>63.3</b>	198.0	<b>218.7</b>
Silver ('000 ounces) (c)		807	617	734	664	<b>839</b>	2,865	<b>2,853</b>

(a) Includes a small amount of copper in precipitates.

(b) New metal excluding recycled material.

(c) Includes gold and silver in intermediate products.

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>COPPER &amp; GOLD (continued)</b>								
<b>Turquoise Hill Resources</b>								
<b>Oyu Tolgoi mine (a)</b>	33.5%							
<i>Mongolia</i>								
Ore Treated ('000 tonnes)		9,361	9,255	10,394	10,040	11,088	38,738	40,777
Average mill head grades:								
Copper (%)		0.55	0.57	0.46	0.37	0.42	0.51	0.45
Gold (g/t)		0.56	0.58	0.31	0.14	0.15	0.36	0.29
Silver (g/t)		1.22	1.25	1.20	1.03	1.06	1.22	1.13
Copper concentrates produced ('000 tonnes)		189.0	210.1	180.6	131.3	152.6	724.9	674.6
Average concentrate grade (% Cu)		21.9	21.8	21.7	21.7	21.6	21.9	21.7
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		41.5	45.8	39.2	28.4	32.9	159.1	146.3
Gold in concentrates ('000 ounces)		116.7	120.1	71.8	25.6	24.3	285.4	241.8
Silver in concentrates ('000 ounces)		238	247	239	191	190	914	867
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		40.2	38.5	46.6	32.5	32.3	156.7	149.9
Gold in concentrates ('000 ounces)		111	98	116	35	25	248	274
Silver in concentrates ('000 ounces)		216	200	245	207	244	873	896
<i>(a) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources.</i>								
<b>DIAMONDS</b>								
<b>Argyle Diamonds</b>	100.0%							
<i>Western Australia</i>								
AK1 ore processed ('000 tonnes)		1,292	1,248	1,427	1,716	1,977	5,444	6,367
AK1 diamonds produced ('000 carats)		3,211	2,786	3,292	3,558	3,363	14,069	12,999
<b>Diavik Diamonds</b>	60.0%							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		651	620	671	628	516	2,530	2,435
Diamonds recovered ('000 carats)		1,797	1,683	1,980	1,656	1,400	7,264	6,719

*Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.*

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>IRON ORE</b>								
<b>Rio Tinto Iron Ore</b>								
<i>Western Australia</i>								
<b>Pilbara Operations</b>								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	56,364	51,218	50,087	55,567	<b>52,521</b>	220,612	<b>209,392</b>
Hamersley - Channar	60.0%	2,228	1,552	2,419	1,579	<b>2,420</b>	7,173	<b>7,970</b>
Hope Downs	50.0%	11,691	11,913	12,101	12,155	<b>12,095</b>	45,368	<b>48,264</b>
Robe River - Pannawonica (Mesas J and A)	53.0%	7,555	3,529	6,282	8,914	<b>8,225</b>	31,947	<b>26,951</b>
Robe River - West Angelas	53.0%	8,738	7,783	8,853	9,133	<b>8,318</b>	32,672	<b>34,086</b>
Total production ('000 tonnes)		86,576	75,995	79,741	87,347	<b>83,579</b>	337,772	<b>326,663</b>
Breakdown of total production:								
Pilbara Blend and SP10 Lump (b)		26,084	24,068	24,291	25,434	<b>24,326</b>	101,629	<b>98,119</b>
Pilbara Blend and SP10 Fines (b)		38,085	34,924	35,194	38,296	<b>36,833</b>	146,705	<b>145,247</b>
Robe Valley Lump		2,659	1,198	2,266	3,113	<b>2,969</b>	11,126	<b>9,547</b>
Robe Valley Fines		4,896	2,331	4,015	5,802	<b>5,256</b>	20,821	<b>17,404</b>
Yandicoogina Fines (HIY)		14,852	13,473	13,975	14,704	<b>14,194</b>	57,491	<b>56,346</b>
Breakdown of total shipments:								
Pilbara Blend Lump (c)		22,161	18,968	21,653	19,329	<b>19,680</b>	88,215	<b>79,630</b>
Pilbara Blend Fines (c)		40,633	33,016	39,358	36,947	<b>39,186</b>	157,191	<b>148,508</b>
Robe Valley Lump		2,301	863	1,957	2,433	<b>2,350</b>	9,209	<b>7,603</b>
Robe Valley Fines		5,652	2,468	4,862	6,318	<b>6,149</b>	22,801	<b>19,797</b>
Yandicoogina Fines (HIY)		14,831	12,294	15,212	14,286	<b>15,260</b>	57,380	<b>57,052</b>
SP10 Lump (b)		0	0	635	2,685	<b>2,072</b>	0	<b>5,391</b>
SP10 Fines (b)		1,863	1,542	1,747	4,057	<b>2,081</b>	3,364	<b>9,427</b>
Total shipments ('000 tonnes) (d)		87,442	69,150	85,423	86,055	<b>86,779</b>	338,160	<b>327,408</b>
Breakdown of total sales:								
Pilbara Blend Lump (c)		22,161	18,968	21,653	19,329	<b>19,680</b>	88,215	<b>79,630</b>
Pilbara Blend Fines (c)		40,633	33,016	39,358	36,947	<b>39,186</b>	157,191	<b>148,508</b>
Robe Valley Lump		2,301	863	1,957	2,433	<b>2,350</b>	9,209	<b>7,603</b>
Robe Valley Fines		5,652	2,468	4,862	6,318	<b>6,149</b>	22,801	<b>19,797</b>
Yandicoogina Fines (HIY)		14,831	12,294	15,212	14,286	<b>15,260</b>	57,380	<b>57,052</b>
SP10 Lump (b)		0	0	635	2,611	<b>1,733</b>	0	<b>4,979</b>
SP10 Fines (b)		1,863	1,542	1,747	3,962	<b>1,185</b>	3,364	<b>8,437</b>
Total sales ('000 tonnes)		87,442	69,150	85,423	85,888	<b>85,545</b>	338,160	<b>326,006</b>

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, 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) SP10 includes some lower grade products. SP10 fines sales also include IOC product that is further blended and sold at port in China.

(c) Restatement due to separately reporting SP10 lump and SP10 fines products that include other lower grade products.

(d) Shipments represent iron ore exported from Western Australian ports: a portion of this material is shipped for portside trading to be further blended and subsequently sold.

**Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.**

## Rio Tinto operational data

	Rio Tinto interest	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Full Year 2018	Full Year 2019
<b>IRON ORE (continued)</b>								
<b>Iron Ore Company of Canada</b>	58.7%							
<i>Newfoundland &amp; Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		2,441	1,516	2,031	2,384	1,951	6,700	7,883
Pellets ('000 tonnes)		2,389	2,709	2,280	2,657	2,415	8,545	10,061
IOC Total production ('000 tonnes)		4,830	4,225	4,311	5,041	4,366	15,245	17,943
Shipments:								
Concentrates ('000 tonnes)		2,653	878	2,239	2,427	2,083	6,619	7,628
Pellets ('000 tonnes)		2,581	2,684	2,424	2,093	2,406	8,430	9,607
IOC Total Shipments ('000 tonnes)		5,234	3,562	4,663	4,520	4,490	15,049	17,235
IOC Total Sales ('000 tonnes)		5,234	3,562	4,663	4,520	4,490	15,049	17,235
<b>Global Iron Ore Totals</b>								
Iron Ore Production ('000 tonnes)		91,406	80,219	84,052	92,389	87,945	353,017	344,606
Iron Ore Shipments ('000 tonnes)		92,676	72,712	90,085	90,576	91,269	353,209	344,642

<b>SALT</b>								
<b>Dampier Salt</b>	68.4%							
<i>Western Australia</i>								
Salt production ('000 tonnes)		2,188	1,917	1,856	2,036	2,121	9,001	7,931

<b>TITANIUM DIOXIDE SLAG</b>								
<b>Rio Tinto Iron &amp; Titanium</b>	100.0%							
<i>Canada and South Africa</i>								
<i>(Rio Tinto share) (a)</i>								
Titanium dioxide slag ('000 tonnes)		294	296	303	321	286	1,116	1,206

(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.

<b>URANIUM</b>								
<b>Energy Resources of Australia Ltd</b>								
<b>Ranger mine (a)</b>	68.4%							
<i>Northern Territory, Australia</i>								
U <sub>3</sub> O <sub>8</sub> Production ('000 lbs)		1,351	1,160	906	855	939	4,407	3,860
<i>(a) ERA production data are drummed U<sub>3</sub>O<sub>8</sub>.</i>								
<b>Rössing Uranium Ltd (a) (b)</b>	0.0%							
<i>Namibia</i>								
U <sub>3</sub> O <sub>8</sub> Production ('000 lbs)		1,427	1,168	1,665	247	-	5,465	3,080

(a) Rössing production data are drummed U<sub>3</sub>O<sub>8</sub>.

(b) On 16 July 2019, Rio Tinto completed the sale of its entire 68.62% interest in the Rössing mine in Namibia to China National Uranium Corporation Limited. Production is reported up to the date of completion.

Rio Tinto percentage interest shown above is at 31 December 2019. The data represent full production and sales on a 100% basis unless otherwise stated.