

Rio Tinto announces full-year ordinary dividend of \$6.2 billion (382 US cents per share), including record final ordinary dividend of \$3.7 billion (231 US cents per share), resulting in total cash returns of \$7.2 billion (443 US cents per share)

26 February 2020

Rio Tinto Chief Executive J-S Jacques said "We have again delivered strong financial results with underlying EBITDA of \$21.2 billion, underlying EBITDA margin of 47% and return on capital employed of 24%. This performance allows us to return a record final ordinary dividend of \$3.7 billion, resulting in a full-year ordinary dividend of \$6.2 billion and total cash returns of \$7.2 billion.

"In line with our disciplined approach to capital allocation, we invested \$2.6 billion in development projects, including high-return iron ore and copper. Longer term, our \$624 million exploration and evaluation expenditure in 2019 adds to our pipeline of attractive options.

"Our world-class portfolio and strong balance sheet serve us well in all market conditions, and are particularly valuable in the current volatile environment. We are closely monitoring the impact of the Covid-19 virus and are prepared for some short-term impacts, such as supply-chain issues. Our products are currently reaching our customers.

"Our resilience and value over volume strategy mean we can invest in our business and deliver superior returns to shareholders in the short, medium and long term."

At year end	2019	2018	Change
Net cash generated from operating activities (US\$ millions)	14,912	11,821	26 %
Capital expenditure ¹ (US\$ millions)	5,488	5,430	1 %
Free cash flow ² (US\$ millions)	9,158	6,977	31 %
Underlying EBITDA ³ (US\$ millions)	21,197	18,136	17 %
Underlying earnings ³ (US\$ millions)	10,373	8,808	18 %
Net earnings (US\$ millions)	8,010	13,638	(41)%
Underlying earnings ³ per share (US cents)	636.3	512.3	24 %
Ordinary dividend per share (US cents)	382.0	307.0	24 %
Total dividend per share (US cents)	443.0	550.0	(19)%
Net (debt)/cash ⁴ (US\$ millions)	(3,651)	255	
Return on capital employed (ROCE) ⁶	24%	19%	

Our financial results are prepared in accordance with International Financial Reporting Standards (IFRS). Footnotes are set out on page 5.

- Strong safety performance in 2019, with no fatalities and a slightly improved all injury frequency rate, coming from a strong base. Continued improvement in prevention of catastrophic events through a step-change in process safety management.
- \$14.9 billion operating cash flow was 26% higher than 2018 and \$9.2 billion free cash flow² was 31% higher than 2018. Both are presented after \$0.9 billion tax paid in 2019 relating to the 2018 coking coal disposals.
- \$5.5 billion capital expenditure¹ was consistent with 2018. In late 2019, we announced the approval of two further investments, at Greater Tom Price (iron ore, \$0.8 billion) and Kennecott (copper, \$1.5 billion).
- \$21.2 billion underlying EBITDA³ was 17% above 2018, primarily driven by higher iron ore prices, with an underlying EBITDA margin⁷ of 47%.
- \$10.4 billion underlying earnings were 18% above 2018. Taking exclusions into account, net earnings of \$8.0 billion were 41% lower than 2018, mainly reflecting \$1.7 billion⁸ of impairments in 2019, primarily the Oyu Tolgoi underground project, consistent with our 2019 interim results, and the Yarwun alumina refinery. This compared with \$4.0 billion of gains on disposals in 2018.
- Strong balance sheet with net debt⁴ of \$3.7 billion, a rise of \$3.9 billion, mainly reflected \$11.9 billion of cash returns to shareholders in 2019 through dividends and share buy-backs, and a \$1.2 billion non-cash increase from the implementation of IFRS 16 "Leases", partly offset by free cash flow of \$9.2 billion.
- \$7.2 billion full-year dividend, equivalent to 443 US cents per share and 70% of underlying earnings, includes \$3.7 billion record final ordinary dividend (231 US cents per share) declared today.

Stronger revenues and underlying EBITDA

- \$43.2 billion consolidated sales revenue (\$45.4 billion including our share of equity accounted units) was 7% higher than 2018, primarily driven by higher iron ore prices. This was partially offset by lower copper and aluminium prices and the absence of revenues from assets divested in 2018.
- \$21.2 billion underlying EBITDA³ was 17% higher than 2018, reflecting the higher iron ore price and the recovery from the operational challenges earlier in the year. This more than compensated for higher unit costs and the absence of underlying EBITDA from assets divested in 2018.
- 30% effective tax rate on underlying earnings³ - one percentage point higher than in 2018, primarily reflecting increased profits in Australia.
- \$8.0 billion net earnings - 41% lower than 2018, mainly reflecting the impairments of Oyu Tolgoi and Yarwun alumina refinery in 2019, which compared with gains on disposals in 2018. See table on page 8.

\$7.2 billion of dividends declared for 2019

Ordinary dividend	US\$ billion	US cents per share
Interim ordinary dividend paid in September 2019	2.5	151
Final ordinary dividend to be paid in April 2020	3.7	231
Full-year ordinary dividend	6.2	382
Additional returns		
Special dividend paid in September 2019	1.0	61
Combined total is 70% of 2019 underlying earnings	7.2	443

Strong cash flow from operations drives free cash flow

	2019 US\$m	2018 US\$m
Net cash generated from operating activities	14,912	11,821
Capital expenditure ¹	(5,488)	(5,430)
Sales of property, plant and equipment	49	586
Lease principal payments	(315)	—
Free cash flow²	9,158	6,977
Disposals*	(80)	7,733
Dividends paid to equity shareholders	(10,334)	(5,356)
Share buy-backs	(1,552)	(5,386)
Non-cash impact from implementation of IFRS 16 "Leases" from 1 January 2019	(1,248)	—
Other	150	132
(Increase)/decrease in net debt⁴	(3,906)	4,100

* Net disposal proceeds include a cash outflow representing Rössing's cash balance at the date of the sale. See page 9.

See page 5 for other footnotes.

- \$14.9 billion in cash generated from operating activities, after \$0.9 billion tax paid relating to the 2018 coking coal disposals. This was 26% higher than 2018 and was driven primarily by higher underlying EBITDA from higher iron ore prices and the ongoing management of working capital.
- \$5.5 billion capital expenditure¹ comprised of \$2.6 billion of development capital, of which \$1.2 billion is replacement capital, and \$2.9 billion of sustaining capital.
- \$10.3 billion of dividends paid in 2019 comprised of the 2018 final and special dividends paid in April 2019 (\$6.8 billion) and the 2019 interim and special dividends paid in September 2019 (\$3.5 billion).
- \$1.6 billion paid for 28.4 million share repurchases under the Rio Tinto plc on-market share buy-backs announced in 2018, with the remaining \$0.2 billion purchases to be completed no later than 28 February 2020.
- The implementation of IFRS 16 "Leases" on 1 January 2019 increased net debt by \$1.2 billion (non-cash movement).
- As a result of the above, and \$0.2 billion of other movements, net debt⁴ increased by \$3.9 billion since the end of 2018 to \$3.7 billion.

Continued investment in growth projects and development

- Greenfield success with further encouraging drill results released in August 2019 at the Winu project in Western Australia. Extensive drilling and geophysical testing programme completed: geotechnical, hydrology, mining, processing and basic engineering studies are well advanced. Targeting first production in 2023, subject to regulatory approvals and consents.
- \$624 million spent on exploration and evaluation. This 28% rise was mostly driven by higher greenfield expenditure to underpin future growth projects, as well as increased activity at the Resolution copper project in Arizona, for which we committed \$302 million (\$166 million our 55% share) in future expenditure.
- \$2.6 billion Koodaideri replacement iron ore mine progressed, with key construction activities on schedule. Koodaideri will have a 43 Mt annual capacity underpinning production of our Pilbara Blend™, with first tonnes in late 2021.
- \$1.5 billion investment at Kennecott approved in late 2019. Phase 2 of the south wall pushback is expected to extend copper operations to 2032.
- At the Oyu Tolgoi underground copper/gold mine in Mongolia, we completed the primary production shaft in October 2019, a key milestone. Work continued on the mine design and, overall, we remain within the cost and schedule ranges announced in July 2019. We continue to expect to complete the mine design in the first half of 2020 and the definitive estimate⁹ of cost and schedule in the second half of 2020.
- \$463 million investment in the Zulti South project at Richards Bay Minerals (RBM) in South Africa approved in 2019 to sustain current capacity and extend mine life. Construction is on hold after a number of security incidents - we will assess a restart after normalisation of operations at RBM.

Climate change strategy update

We have a key role to play in enabling the transition to a low-carbon economy. We do this through our well-positioned portfolio of high-quality iron ore, copper and aluminium. We do not mine coal or extract oil and gas and 76% of our electricity consumption at our managed operations is supplied by renewable energy.

In 2015, we supported the outcomes of the Paris Agreement. Since 2008, we have reduced our absolute greenhouse gas emissions from our managed operations by 46% (or 18% when excluding divestments).

Our ambition is for net zero emissions from our operations by 2050. We have set new targets for scope 1 & 2 emissions for our managed and non-managed operations (on an equity share basis):

- A 30% reduction in emissions intensity by 2030 from 2018 levels
- A 15% reduction in absolute emissions by 2030 from 2018 levels

Our growth, overall, between now and 2030 will be carbon neutral. This is underpinned by approximately \$1 billion of climate-related spend over the next five years.

Guidance

- We are currently evaluating the impact of the Covid-19 virus, which could create significant uncertainty for our business in the near term. Subject to our ongoing evaluation, guidance below is unchanged from prior disclosures, with Pilbara iron ore shipments guidance updated on 17 February 2020. All our operations are looking at opportunities to adjust to the impact of the Covid-19 virus on market conditions.
- Capital expenditure¹ expected to be around \$7.0 billion in 2020, following the deferral of \$0.5 billion from 2019, and around \$6.5 billion in each of 2021 and 2022. Each year includes sustaining capex of around \$2.5 billion per year, of which \$1.0-1.5 billion is for our Pilbara iron ore business.
- Effective tax rate on underlying earnings of approximately 30% in 2020.

2020 production guidance (Rio Tinto share, unless otherwise stated)

Pilbara iron ore (shipments, 100% basis)	324 to 334 Mt
Bauxite	55 to 58 Mt
Alumina	7.8 to 8.2 Mt
Aluminium	3.1 to 3.3 Mt
Mined copper	530 to 570 kt
Refined copper	205 to 235 kt
Diamonds	12 to 14 M carats
Titanium dioxide slag	1.2 to 1.4 Mt
Iron Ore Company of Canada pellets and concentrate	10.5 to 12.0 Mt
Boric oxide equivalent	~0.5 Mt

2020 unit cost guidance

Pilbara iron ore unit cash costs per wet metric tonne, free on board (FOB) basis	\$14-15/t*
Copper C1 unit costs (average for Kennecott, Oyu Tolgoi and Escondida)	120-135 US cents/lb

* Assumes a 0.67 Australian dollar exchange rate

- 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 guidance was revised on 17 February following the impact of Tropical Cyclone Damien, which caused infrastructure damage across our entire Pilbara network.
- Bauxite production guidance is subject to weather and market conditions.
- Aluminium guidance reflects a continued focus on capacity creep, offset by earlier than planned pot relining at Kitimat. It is dependent on the resolution of a blockade by First Nations protesters of Canadian National Rail operations in Ontario and British Columbia.
- 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 the first quarter of 2021.
- 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.
- Iron ore unit cost guidance reflects increased volume efficiency compared with 2019. This is expected to be offset by longer haul distances and increased maintenance activity.
- Copper C1 unit costs in 2020 are affected by lower copper grades and lower by-product revenues.

Total cash returns to shareholders declared

	2019 US\$ billion	2018 US\$ billion
Ordinary dividend		
Interim	2.5	2.2
Final	3.7	2.9
Full-year dividend	6.2	5.1
Additional returns		
Share buy-back announced in August 2018, completed by 27 February 2019	n/a	1.0
Special dividend announced in August 2019, paid in September 2019	1.0	n/a
Total cash returns from operations	7.2	6.1
Combined total as % of underlying earnings	70%	72%
Supplementary returns of post-tax divestment proceeds in 2018		
Off-market buy-back in Rio Tinto Limited, completed in November 2018	n/a	2.1
On-market buy-back in Rio Tinto plc from 28 February 2019 to 28 February 2020	n/a	1.1
Special dividend of 243 US cents per share paid in April 2019	n/a	3.9
Total supplementary returns	n/a	7.1
Total cash returns to shareholders declared for each year	7.2	13.2

Total dividends paid in 2019 in respect of 2018 differ from the 2018 declaration of \$13.5 billion due to the impact of exchange rates and the share buy-back.

Total cash returns paid to shareholders

	2019 US\$ billion	2018 US\$ billion
Previous year's final ordinary dividend paid in April of each year	2.9	3.2
Special dividend announced in February 2019, paid in April 2019	3.9	n/a
Interim ordinary dividend paid in September of each year	2.5	2.1
Special dividend announced in August 2019, paid in September 2019	1.0	n/a
Share buy-backs	1.6	5.4
Total cash returns paid to shareholders	11.9	10.7

1 Capital expenditure is presented gross, before taking into account any cash received from disposals of property, plant and equipment (PP&E) and excludes capital expenditure for equity accounted units.

The following financial performance indicators - which are non-GAAP measures - are those management uses internally to assess performance. We therefore consider them relevant to readers of this document and present them here to give more clarity around the underlying business performance of our operations.

- Free cash flow is defined as net cash generated from operating activities less purchase of PP&E, plus sales of PP&E less lease principal payments, following the adoption of IFRS 16 "Leases" in 2019.
- Net and underlying earnings relate to profit attributable to the owners of Rio Tinto. Underlying EBITDA and earnings are defined on page 15. Underlying earnings is reconciled to net earnings on page 10.
- Net debt / cash is defined and reconciled to the balance sheet on page 46.
- Net gearing ratio is defined as net debt divided by the sum of net debt and total equity at the end of each period.
- Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets before net debt).
- Underlying EBITDA margin is defined as the Group's underlying EBITDA divided by Product Group total revenues per the financial information by business unit on page 13. Product Group total revenues is defined as consolidated sales revenue plus share of equity accounted unit sales and intra-subsiidiary/equity accounted unit sales.

8 See page 42 for a pre-tax analysis of impairment charge.

9 Refer to the 16 July 2019 market release "Update on Oyu Tolgoi underground project".

Underlying EBITDA and underlying earnings by product group

	2019	2018		
	US\$m	US\$m	Change	Change %
Underlying EBITDA				
Iron Ore	16,098	11,378	4,720	41 %
Aluminium	2,285	3,095	(810)	(26)%
Copper & Diamonds	2,073	2,776	(703)	(25)%
Energy & Minerals	1,762	2,140	(378)	(18)%
Other operations	(77)	(70)	(7)	10 %
Reportable segment total	22,141	19,319	2,822	15 %
Inter-segment transactions	(9)	—	(9)	-
Product group total	22,132	19,319	2,813	15 %
Central pension costs, share-based payments and insurance	59	(128)	187	(146)%
Restructuring, project and one-off costs	(183)	(272)	89	(33)%
Other central costs	(496)	(552)	56	(10)%
Exploration and evaluation	(315)	(231)	(84)	36 %
Total	21,197	18,136	3,061	17 %
Underlying earnings				
Iron Ore	9,638	6,531	3,107	48 %
Aluminium	599	1,347	(748)	(56)%
Copper & Diamonds	554	1,054	(500)	(47)%
Energy & Minerals	611	995	(384)	(39)%
Other operations	(89)	(102)	13	(13)%
Reportable segment total	11,313	9,825	1,488	15 %
Inter-segment transactions	(3)	—	(3)	-
Product group total	11,310	9,825	1,485	15 %
Central pension costs, share-based payments and insurance	60	(90)	150	(167)%
Restructuring, project and one-off costs	(94)	(190)	96	(51)%
Other central costs	(550)	(410)	(140)	34 %
Exploration and evaluation	(231)	(193)	(38)	20 %
Net interest	(122)	(134)	12	(9)%
Total	10,373	8,808	1,565	18 %

Underlying EBITDA is a key financial indicator which management uses internally to assess performance. It excludes the same items that are excluded in arriving at underlying earnings. See page 13 for more detail and a reconciliation to profit on ordinary activities before finance items and tax.

Commentary on financial results

To give additional insight into the performance of our business, we report underlying EBITDA and underlying earnings. The principal factors explaining the movements in underlying EBITDA are set out in this table.

	US\$m
2018 underlying EBITDA	18,136
Prices	4,382
Exchange rates	529
Volumes and mix	(20)
General inflation	(303)
Energy	75
Operating cash cost movements	(523)
Higher exploration and evaluation spend	(136)
One-off items	(16)
Absence of underlying EBITDA from assets divested in 2018, including coking coal	(1,246)
Non-cash costs/other	319
2019 underlying EBITDA	21,197

Significant momentum from higher iron ore prices

Commodity price movements in 2019 increased underlying EBITDA by \$4,382 million compared with 2018. This was primarily driven by the strength in the iron ore price and was partly offset by lower prices for copper and aluminium. We have included a table of prices and exchange rates on page 50.

The Platts index for 62% iron fines was 39% higher on average compared with 2018 on a free on board (FOB) basis, driven by supply disruptions in the seaborne market and strong demand following record Chinese steel output.

Average London Metal Exchange (LME) prices for copper and aluminium were 8% and 15% lower, respectively, compared with 2018, as global manufacturing activity slowed. The gold price was 10% higher.

The 10% tariff on US imports of aluminium from Canada, in place from 1 June 2018, was removed on 19 May 2019, following agreement between the US and Canadian governments. The midwest premium for aluminium in the US averaged \$320 per tonne - 24% lower than in 2018.

Underlying EBITDA benefits from weaker A\$

Compared with 2018, on average the US dollar strengthened by 7% against the Australian dollar, by 3% against the Canadian dollar and by 9% against the South African rand. Currency movements increased underlying EBITDA by \$529 million relative to 2018.

Volumes flat overall

Underlying EBITDA decreased by \$20 million compared with 2018 from movements in sales volumes and changes in product mix. A 3% decline in iron ore shipments from the Pilbara, where we experienced weather disruptions and operational challenges at some of our mines in the first half of 2019, were mostly offset by increased bauxite shipments, improved aluminium product mix and higher by-product volumes (gold and molybdenum) from Kennecott and Oyu Tolgoi.

Energy prices marginally lower

Average movements in energy prices compared with 2018 improved underlying EBITDA by \$75 million, mainly due to lower diesel prices.

Continued cost pressures

Our cash operating costs rose by \$523 million compared with 2018 (on a unit cost basis), primarily reflecting an increase in iron ore unit costs, driven by the first half challenges. There was some respite on cost inflation for certain raw materials for Aluminium, in particular caustic soda and petroleum coke. However, this was partly offset by inflationary pressures on other costs.

Advancing our options through increased exploration spend

We spent \$136 million, or 28%, more on exploration and evaluation compared with last year. This went to our highest value projects, particularly on evaluating the Resolution copper project in Arizona, advancing our Winu copper/gold deposit in Australia and progressing our Falcon diamond project in Canada.

One-off items

One-off items aggregated to be \$16 million less than in 2018. 2019 underlying EBITDA includes the impact of a \$199 million charge at Escondida to reflect the cancellation of existing coal power contracts, a \$68 million impact from the curtailment of operations at Richards Bay Minerals (RBM) and \$68 million for operational challenges faced at our ISAL and Kitimat aluminium smelters.

In 2018 we suspended operations for two months at Iron Ore Company of Canada before reaching a new labour agreement (\$236 million impact). We also suspended production at Rio Tinto Iron & Titanium, following a fatality at our Sorel-Tracy plant and labour disruptions at RBM (\$132 million impact).

\$1.2 billion lower underlying EBITDA following divestments in 2018, primarily coal

The significant divestments in 2018 generated \$1,246 million of underlying EBITDA in 2018, primarily the coking coal business and the Grasberg copper mine. Movements in our non-cash costs and other items lowered underlying EBITDA by \$319 million compared with 2018. Following implementation of IFRS 16 "Leases" on 1 January 2019, a large proportion of our lease expense comprises charges for depreciation and interest and is not included in cash operating costs. In 2019, there was a consequent benefit to underlying EBITDA of approximately \$320 million from this change in treatment.

Net earnings

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

	US\$m
2018 net earnings	13,638
Total changes in underlying EBITDA	3,061
Increase in depreciation and amortisation (pre-tax) in underlying earnings	(366)
Decrease in interest and finance items (pre-tax) in underlying earnings	32
Increase in tax on underlying earnings	(1,011)
Increase in underlying earnings attributable to outside interests	(151)
Total changes in underlying earnings	1,565
Changes in exclusions from underlying earnings:	
Movement in net impairment charges	(1,554)
Movement in gains on consolidation and gains on disposals	(4,287)
Movement in exchange differences and gains/losses on derivatives	(904)
Other	(448)
2019 net earnings	8,010

Depreciation and amortisation, net interest and tax

Our depreciation and amortisation charge was \$0.4 billion higher than 2018. This was primarily due to the inclusion of depreciation on leases brought on to the balance sheet on adoption of IFRS 16 and completion of the Amrun bauxite mine. The increase was partly offset by the impact of the weaker Australian and Canadian dollars against the US dollar, along with assets divested in 2018.

Interest and finance items (pre-tax) were broadly in line with 2018. This was mainly due to the bond tender we completed in 2018, which reduced our gross debt by \$1.9 billion equivalent and incurred \$0.1 billion in early redemption costs in 2018. In 2019, there was also a lower level of average net debt and an increase in capitalised interest. This was offset by the inclusion of interest expense on leases following adoption of IFRS 16 "Leases" in 2019.

The 2019 effective corporate income tax rate on underlying earnings, excluding equity accounted units, was 30%, compared with 29% in 2018. The effective tax rate on underlying earnings in Australia was 31% in 2019

compared with 30% in 2018. We anticipate an effective tax rate on underlying earnings of approximately 30% in 2020.

Items excluded from underlying earnings

Net impairment charges increased by \$1.6 billion compared with 2018, primarily related to the Oyu Tolgoi underground project in Mongolia and the Yarwun alumina refinery in Queensland, Australia.

On 16 July 2019, we announced that completion of the definitive estimate for the Oyu Tolgoi underground project would be delayed until the second half of 2020. We also indicated that first sustainable production could be delayed by 16 to 30 months compared with the original feasibility study guidance in 2016 and that development capital spend may increase by \$1.2 billion to \$1.9 billion over the \$5.3 billion previously disclosed. These matters were identified as an impairment trigger, so we carried out an assessment of the recoverable amount of the project as at 30 June 2019. This resulted in an impairment charge of \$0.8 billion, after tax and non-controlling interests, which was included in our 2019 interim results. On page 42 there is a detailed explanation of the impairment process.

In 2019, we recognised a \$0.8 billion impairment charge (after tax) related to the Yarwun alumina refinery. In prior years, for accounting purposes, the value of Yarwun was considered in aggregate with Queensland Alumina and the Weipa bauxite mine. The ramp-up of the Amrun expansion at Weipa resulted in increased bauxite exports to the extent that Weipa is now considered to generate cash inflows largely independent from the downstream alumina operations.

In 2018, we recognised \$0.1 billion of after tax charges, mainly relating to the carrying value of the ISAL aluminium smelter in Iceland following its reclassification to assets held for sale. In 2019, we recognised a further \$0.1 billion post-tax charge as these assets were reclassified back out of assets held for sale.

Gains on disposals were \$4.3 billion lower than 2018. In 2019, we recognised a \$0.3 billion loss (after tax) from the sale of Rössing Uranium, including a non-cash adjustment for historical foreign exchange losses. In 2018, we realised net gains of \$4.0 billion (after tax), primarily from the sale of our Hail Creek and Kestrel coking coal businesses in Australia, the sale of our interest in the Grasberg copper mine in Indonesia and the formation of the ELYSIS joint venture in Canada. We created this joint venture in May 2018 with Alcoa, supported by Apple and the governments of Canada and Quebec, to develop a carbon-free aluminium smelting process and recognised a gain of \$0.1 billion (post-tax) on forming the joint venture.

Exchange differences and gains/losses on derivatives were \$0.9 billion lower than 2018. In 2019, these gave rise to a \$0.2 billion after tax loss. This compared with gains of \$0.7 billion in 2018 - mainly on US dollar debt in non-US dollar functional currency Group companies, intragroup balances and on the revaluation of certain derivatives which do not qualify for hedge accounting. These exchange gains are largely offset by currency translation losses recognised in equity. The quantum of US dollar debt is largely unaffected and we will repay it from US dollar sales receipts.

There were \$0.4 billion in other changes in items excluded from underlying earnings. In 2019, we recognised a \$0.2 billion loss (after tax) related to provisions for obligations in respect of legacy operations. In 2018, we recognised a \$0.6 billion gain on sale of surplus land at Kitimat and a \$0.3 billion increase in the closure provision at the Argyle diamond mine.

Profit

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2019 was \$8.0 billion (2018: \$13.6 billion). We recorded a profit after tax in 2019 of \$7.0 billion (2018: \$13.9 billion) of which a loss of \$1.0 billion (2018 profit: \$0.3 billion) was attributable to non-controlling interests.

Net earnings, underlying earnings and underlying EBITDA

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

	2019	2018
	US\$m	US\$m
Underlying earnings	10,373	8,808
Items excluded from underlying earnings		
Impairment charges	(1,658)	(104)
Net (losses)/gains on consolidation and disposal of interests in businesses	(291)	3,996
Foreign exchange and derivative (losses)/gains on net debt and intragroup balances and derivatives not qualifying for hedge accounting	(200)	704
Losses from increases to closure estimates (non-operating and fully impaired sites)	—	(335)
Gain relating to surplus land at Kitimat	—	569
Other exclusions	(214)	—
Net earnings	8,010	13,638

The explanation of excluded items is on page 10. On pages 51 to 52 there is a detailed reconciliation from underlying earnings to net earnings, including pre-tax amounts and additional explanatory notes. The differences between underlying EBITDA, EBITDA and net earnings are set out in this table.

	2019	2018
	US\$m	US\$m
Underlying EBITDA	21,197	18,136
Net (losses)/gains on consolidation and disposal of interests in businesses	(291)	4,622
(Losses)/gains on embedded commodity derivatives not qualifying for hedge accounting (including exchange)	(260)	279
Gain on sale of wharf and land in Kitimat, Canada	—	602
Change in closure estimate	—	(376)
Change in other exclusions	(171)	—
EBITDA	20,475	23,263
Depreciation and amortisation in subsidiaries excluding capitalised depreciation	(4,272)	(3,909)
Impairment charges	(3,487)	(132)
Depreciation and amortisation in equity accounted units	(653)	(650)
Finance items in subsidiaries	(648)	(33)
Taxation in subsidiaries	(4,147)	(4,242)
Taxation and finance items in equity accounted units	(296)	(372)
Less: loss/(profit) attributable to non-controlling interests	1,038	(287)
Net earnings	8,010	13,638

Balance sheet

Our net debt of \$3.7 billion increased by \$3.9 billion in 2019, reflecting final, interim and special dividend payments of \$10.3 billion and \$1.6 billion of share buy-backs, partly offset by our strong free cash flow. It also reflects a non-cash increase of \$1.2 billion following the implementation of IFRS 16 "Leases" from 1 January 2019. The introduction of IFRS 16 also resulted in a benefit to underlying EBITDA of approximately \$320 million as a large proportion of lease payments are no longer charged to cash operating costs. There was no significant impact on net earnings, after the increase in depreciation and interest on leases.

Our net gearing ratio (net debt to total capital) increased to 7% at 31 December 2019 (31 December 2018: negative 1%).

Our total financing liabilities at 31 December 2019 (see page 46) were \$14.3 billion (31 December 2018: \$13.0 billion) and the weighted average maturity was around 10 years. At 31 December 2019, approximately 76% of these liabilities were at floating interest rates (84% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year was \$1.8 billion, which matures in 2025.

We had \$10.6 billion in cash and cash equivalents plus other short-term cash investments at 31 December 2019 (31 December 2018: \$13.3 billion).

Our shareholder returns policy

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

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

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

We determine dividends in US dollars. We declare and pay Rio Tinto plc dividends in pounds sterling and Rio Tinto Limited dividends in Australian dollars. The 2019 final dividend were converted at exchange rates applicable on 25 February 2020 (the latest practicable date before the dividend was declared). ADR holders receive dividends at the declared rate in US dollars.

Ordinary dividend per share declared	2019 dividends	2018 dividends
Rio Tinto Group		
Interim (US cents)	151.00	127.00
Final (US cents)	231.00	180.00
Full-year (US cents)	382.00	307.00
Rio Tinto plc		
Interim (UK pence)	123.32	96.82
Final (UK pence)	177.47	135.96
Full-year (UK pence)	300.79	232.78
Rio Tinto Limited		
Interim (Australian cents)	219.08	170.84
Final (Australian cents)	349.74	250.89
Full-year (Australian cents)	568.82	421.73
Special dividend per share declared	2019 dividends	2018 dividends
Rio Tinto Group		
Declared with 2019 interim results (US cents)	61.00	-
Declared with 2018 full year results - from divestment income (US cents)		243.00
Rio Tinto plc		
Declared with 2019 interim results (UK pence)	49.82	-
Declared with 2018 full year results - from divestment income (UK pence)		183.55
Rio Tinto Limited		
Declared with 2019 interim results (Australian cents)	88.50	-
Declared with 2018 full year results - from divestment income (Australian cents)		338.70

The 2019 final dividend to be paid to our Rio Tinto Limited shareholders will be fully franked. The board expects Rio Tinto Limited to be in a position to pay fully franked dividends for the foreseeable future.

On 16 April 2020, we will pay the 2019 final dividend to holders of ordinary shares and holders of ADRs on the register at the close of business on 6 March 2020 (record date). The ex-dividend date is 5 March 2020.

Rio Tinto plc shareholders may choose to receive their dividend in Australian dollars, and Rio Tinto Limited shareholders may choose to receive theirs in pounds sterling. Currency conversions will be based on the pound sterling and Australian dollar exchange rates five business days before the dividend payment date. Rio Tinto plc and Rio Tinto Limited shareholders must register their currency elections by 24 March 2020.

We will operate our Dividend Reinvestment Plans for the 2019 final dividend - see our website (riotinto.com) for details. Rio Tinto plc and Rio Tinto Limited shareholders' election notice for the Dividend Reinvestment Plans must be received by 24 March 2020. Purchases under the Dividend Reinvestment Plan are made on or as soon as practicable after the dividend payment date and at prevailing market prices. There is no discount available.

Rio Tinto financial information by business unit

		Gross revenue ^(a) for the year ended 31 December		EBITDA ^(b) for the year ended 31 December		Net earnings ^(c) for the year ended 31 December	
	Rio Tinto interest %	2019 US\$m	2018 US\$m	2019 US\$m	2018 US\$m	2019 US\$m	2018 US\$m
Iron Ore							
Pilbara	(d)	23,681	18,359	15,936	11,267	9,619	6,460
Dampier Salt	68.4	271	246	75	56	27	18
Evaluation projects/other		123	126	87	55	(8)	53
Total Iron Ore		24,075	18,731	16,098	11,378	9,638	6,531
Aluminium							
	(e)						
Bauxite		2,459	2,324	969	790	441	412
Alumina		2,657	3,340	628	1,137	301	634
Intrasegment		(825)	(861)	(10)	(7)	(7)	(5)
Bauxite & Alumina		4,291	4,803	1,587	1,920	735	1,041
Primary Metal		4,940	6,468	755	1,418	40	595
Pacific Aluminium		2,204	2,541	(22)	148	(137)	—
Inter-segment and other		(2,256)	(3,226)	36	(88)	26	(67)
Integrated operations		9,179	10,586	2,356	3,398	664	1,569
Other product group items		1,065	1,479	(202)	(440)	(161)	(344)
Product group operations		10,244	12,065	2,154	2,958	503	1,225
Evaluation projects/other		96	126	131	137	96	122
Total Aluminium		10,340	12,191	2,285	3,095	599	1,347
Copper & Diamonds							
Rio Tinto Kennecott	100.0	1,879	1,862	843	785	397	293
Escondida	30.0	2,136	2,274	1,034	1,301	325	506
Grasberg joint venture	(g)	—	457	—	281	—	217
Oyu Tolgoi and Turquoise Hill	(h)	1,166	1,180	357	375	25	69
Diamonds	(i)	619	695	151	301	(21)	118
Product group operations		5,800	6,468	2,385	3,043	726	1,203
Evaluation projects/other		15	—	(312)	(267)	(172)	(149)
Total Copper & Diamonds		5,815	6,468	2,073	2,776	554	1,054
Energy & Minerals							
Rio Tinto Coal Australia	(j)	—	989	—	893	—	591
Iron Ore Company of Canada	58.7	2,189	1,583	1,024	586	332	166
Rio Tinto Iron & Titanium	(k)	1,938	1,782	611	510	254	174
Rio Tinto Borates	100.0	593	622	180	197	96	111
Uranium	(l)	375	415	55	18	25	(4)
Product group operations		5,095	5,391	1,870	2,204	707	1,038
Simandou iron ore project	(m)	—	—	(12)	(15)	(5)	(7)
Evaluation projects/other		55	60	(96)	(49)	(91)	(36)
Total Energy & Minerals		5,150	5,451	1,762	2,140	611	995
Other operations	(n)	18	9	(77)	(70)	(89)	(102)
Inter-segment transactions		(31)	(15)	(9)	—	(3)	—
Product group total		45,367	42,835	22,132	19,319	11,310	9,825
Central pension costs, share-based payments and insurance				59	(128)	60	(90)
Restructuring, project and one-off costs				(183)	(272)	(94)	(190)
Central costs				(496)	(552)	(550)	(410)
Exploration and evaluation				(315)	(231)	(231)	(193)
Net interest						(122)	(134)
Underlying EBITDA/earnings				21,197	18,136	10,373	8,808
Items excluded from underlying EBITDA/earnings		—	—	(722)	5,127	(2,363)	4,830
EBITDA/net earnings				20,475	23,263	8,010	13,638
Reconciliation to Group income statement							
Share of equity accounted unit sales and intra-subsi- dary/equity accounted unit sales		(2,202)	(2,313)				
Depreciation and amortisation in subsidiaries excluding capitalised depreciation				(4,272)	(3,909)		
Impairment charges				(3,487)	(132)		
Depreciation and amortisation in equity accounted units				(653)	(650)		
Taxation and finance items in equity accounted units				(296)	(372)		
Consolidated sales revenue/profit on ordinary activities before finance items and taxation		43,165	40,522	11,767	18,200		

Rio Tinto financial information by business unit (continued)

		Capital expenditure ^(a) for the year ended 31 December		Depreciation and amortisation for the year ended 31 December		Operating assets ^(p) as at 31 December		Employees for the year ended 31 December	
	Rio Tinto interest %	2019 US\$m	2018 US\$m	2019 US\$m	2018 US\$m	2019 US\$m	2018 US\$m	2019	2018
Iron Ore									
Pilbara	(d)	1,720	1,288	1,704	1,682	13,865	14,486	10,634	10,422
Dampier Salt	68.4	21	14	19	20	152	165	347	239
Evaluation projects/other		—	—	—	—	2	2	—	—
Total Iron Ore		1,741	1,302	1,723	1,702	14,019	14,653	10,981	10,661
Aluminium									
	(e)								
Bauxite		387	953	286	165	2,597	2,494	2,940	2,676
Alumina		282	218	187	194	2,009	2,721	2,269	2,009
Intrasegment		—	—	—	—	(27)	(20)	—	—
Bauxite & alumina		669	1,171	473	359	4,579	5,195	5,209	4,685
Primary Metal		658	595	682	615	9,674	9,306	6,357	6,497
Pacific Aluminium		129	115	154	149	970	1,156	2,356	2,278
Inter-segment and other		—	—	—	(1)	807	789	127	180
Integrated operations		1,456	1,881	1,309	1,122	16,030	16,446	14,049	13,640
Other product group items	(f)	—	(508)	—	—	—	—	—	—
Product group operations		1,456	1,373	1,309	1,122	16,030	16,446	14,049	13,640
Evaluation projects/other		—	—	3	—	—	—	—	—
Total Aluminium		1,456	1,373	1,312	1,122	16,030	16,446	14,049	13,640
Copper & Diamonds									
Rio Tinto Kennecott	100.0	444	318	457	427	2,012	1,864	2,066	1,993
Escondida	30.0	315	302	508	518	2,871	3,057	1,068	1,087
Grasberg joint venture	(g)	—	171	—	30	—	—	—	1,615
Oyu Tolgoi and Turquoise Hill	(h)	1,289	1,284	208	219	6,780	6,072	3,152	2,863
Diamonds	(i)	38	64	144	118	195	267	940	967
Product group operations		2,086	2,139	1,317	1,312	11,858	11,260	7,226	8,525
Evaluation projects/other		1	11	3	5	152	129	150	146
Total Copper & Diamonds		2,087	2,150	1,320	1,317	12,010	11,389	7,376	8,671
Energy & Minerals									
Rio Tinto Coal Australia	(j)	—	32	—	34	—	(837)	—	1,005
Iron Ore Company of Canada	58.7	255	189	172	154	803	975	2,617	2,397
Rio Tinto Iron & Titanium	(k)	249	169	193	201	3,507	3,390	4,115	4,058
Rio Tinto Borates	100.0	43	44	60	62	525	518	924	980
Uranium	(l)	5	8	3	4	(363)	(406)	857	1,324
Product group operations		552	442	428	455	4,472	3,640	8,513	9,764
Simandou iron ore project	(m)	(1)	—	—	—	20	15	74	70
Evaluation projects/other		—	—	—	—	37	41	53	33
Total Energy & Minerals		551	442	428	455	4,529	3,696	8,640	9,867
Other operations	(n)	(4)	12	177	26	(83)	(442)	159	187
Product group total		5,831	5,279	4,960	4,622	46,505	45,742	41,205	43,026
Inter-segment transactions						127	129		
Net assets of disposal groups held for sale	(q)					—	440		
Other items		64	65	77	43	(2,449)	(2,880)	4,802	4,432
Less: equity accounted units		(456)	(500)	(653)	(650)	—	—	—	—
Total		5,439	4,844	4,384	4,015	44,183	43,431	46,007	47,458
Add back: Proceeds from disposal of property, plant and equipment		49	586						
Total capital expenditure per cash flow statement		5,488	5,430						
Less: Net (debt)/cash						(3,651)	255		
Less: EAU funded balances excluded from net debt						—	—		
Equity attributable to owners of Rio Tinto						40,532	43,686		

Notes to financial information by business unit

Business units are classified according to the Group's management structure. We have adjusted certain comparative amounts to represent changes in management responsibility. Effective from the first half of 2019, Dampier Salt has moved from the Energy & Minerals Product Group to the Iron Ore Product Group.

- (a) Gross sales revenue includes the sales revenue of equity accounted units on a proportionately consolidated basis (after adjusting for sales to subsidiaries) in addition to consolidated sales. Consolidated sales revenue includes subsidiary sales to equity accounted units which are not included in gross sales revenue.
- (b) EBITDA of subsidiaries and the Group's share of EBITDA relating to equity accounted units represents profit before: tax, net finance items, depreciation and amortisation charged to the income statement in the period. Underlying EBITDA excludes the EBITDA impact of the same items that are excluded from underlying earnings.
- (c) Represents profit after tax for the period attributable to the owners of the Rio Tinto Group. Business unit earnings are stated before finance items but after the amortisation of discount related to provisions. Earnings attributed to business units do not include amounts that are excluded in arriving at underlying earnings.
- (d) Pilbara represents the Group's 100% holding in Hamersley, 50% holding in Hope Downs Joint Venture and 65% holding in Robe River Iron Associates. The Group's net beneficial interest in Robe River Iron Associates is 53%, as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary.
- (e) Presented on an integrated operations basis, splitting activities between Bauxite & Alumina, Primary Metal, Pacific Aluminium and other integrated operations (which reflect the results of the integrated production of aluminium) and other product group items which relate to other commercial activities.
- (f) In 2018, Aluminium capital expenditure was reported net of US\$508 million proceeds received from the sale of surplus land at Kitimat. These proceeds were not included in Aluminium's free cash flow and the associated gain was excluded from business unit earnings and EBITDA.
- (g) Through a joint venture agreement with Freeport-McMoRan Inc. (Freeport), we were entitled to 40% of material mined above an agreed threshold as a consequence of expansions and developments of the Grasberg facilities since 1998 (until 21 December 2018). On 21 December 2018, we sold our entire interest in the Grasberg mine to PT Indonesia Asahan Aluminium (Persero) (Inalum).
- (h) Our interest in Oyu Tolgoi is held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset is its 66% investment in Oyu Tolgoi LLC, which owns the Oyu Tolgoi copper-gold mine.
- (i) Includes our interests in Argyle (100%) and Diavik (60%).
- (j) Includes our 82% interest in the Hail Creek coal mine (until 1 August 2018), our 80% interest in the Kestrel underground coal mine (until 1 August 2018) and interests in the Winchester South (until 1 June 2018) and Valeria development projects (until 1 August 2018).

On 1 June 2018, we sold our entire 75% interest in the Winchester South coal development project in Queensland, Australia, to Whitehaven Coal Limited for US\$200 million.

On 1 August 2018, we sold our entire 82% interest in the Hail Creek coal mine and 71.2% interest in the Valeria coal development project in Queensland, Australia, to Glencore for US\$1.7 billion.

On 1 August 2018, we sold our entire 80% interest in the Kestrel underground coal mine in Queensland, Australia, to a consortium comprising private equity manager EMR Capital (EMR) and PT Adaro Energy Tbk (Adaro), an Indonesian listed coal company, for US\$2.3 billion.

Rio Tinto Coal Australia's operating assets of US\$(837) million at 31 December 2018 included provisions for onerous contracts in relation to rail infrastructure capacity and capital gains tax payable on the divestments announced in the year, partly offset by financial assets and receivables relating to contingent royalties and disposal proceeds. Following a change in management responsibility, At 31 December 2019, these amounts are now reported within Other operations, with no restatement of comparative amounts.

- (k) Includes our interests in Rio Tinto Fer et Titane (100%), QIT Madagascar Minerals (QMM, 80%) and Richards Bay Minerals (attributable interest of 74%).
- (l) Includes our interests in Energy Resources of Australia (68.4%) and, until 16 July 2019, Rössing Uranium Limited (Rössing) (68.6%). On 16 July 2019, we sold our entire 68.6% interest in Rössing to China National Uranium Corporation Limited (CNUC).
- (m) Simfer Jersey Limited, in which the Group has a 53% interest, has an 85% interest in Simfer S.A., the company that manages the Simandou project in Guinea. The Group therefore has a 45.05% indirect interest in Simfer S.A.. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.
- (n) Other operations include our 100% interest in the Gove alumina refinery, Rio Tinto Marine and, with effect from the first half of 2019, the remaining operating assets of Rio Tinto Coal Australia. As at 31 December 2019, these include provisions for onerous contracts in relation to rail infrastructure capacity, partly offset by deferred tax assets and financial assets and receivables relating to contingent royalties and disposal proceeds. Refer to note (j).
- (o) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.
- (p) Operating assets of subsidiaries is comprised of net assets excluding post-retirement assets and liabilities, net of tax, and before deducting net debt. Operating assets are stated after the deduction of non- controlling interests – these are calculated by reference to the net assets of the relevant companies (ie inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).
- (q) Assets and liabilities held for sale at 31 December 2018 included our interest in Rössing Uranium Limited, the ISAL smelter, the Aluchemie anode plant, and the Alufluor aluminium fluoride plant.

Review of operations

Iron Ore

2019 year end results	2019	2018	Change
Pilbara production (million tonnes - 100%)	326.7	337.8	(3)%
Pilbara shipments (million tonnes - 100%)	327.4	338.2	(3)%
Salt production (million tonnes - Rio Tinto share) ¹	5.4	6.2	(12)%
Gross sales revenue (US\$ millions)	24,075	18,731	29 %
Underlying EBITDA (US\$ millions)	16,098	11,378	41 %
Pilbara underlying FOB EBITDA margin ²	72%	68%	
Underlying earnings (US\$ millions)	9,638	6,531	48 %
Net cash generated from operating activities (US\$ millions)	11,420	8,349	37 %
Capital expenditure (US\$ millions) ³	(1,741)	(1,302)	34 %
Free cash flow (US\$ millions)	9,601	7,045	36 %
Return on capital employed ⁴	67%	42%	

¹ To reflect a change in management responsibility, Dampier Salt is now reported within Iron Ore and we have restated prior year numbers accordingly. Iron Ore Company of Canada and the Simandou iron ore project in Guinea continue to be reported within Energy & Minerals.

² The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara revenues, excluding freight revenue.

³ Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets.

⁴ Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets before net debt).

Financial performance

In 2019, we benefited from robust demand for our high-quality products driven by strong demand from China and constrained seaborne supply. Iron ore shipments were down 3% on 2018, but recovered strongly in the second half of 2019 after disruptions earlier in the year, which included weather events, a screen house fire at one of our ports and operational challenges.

Underlying EBITDA of \$16.1 billion was 41% higher than 2018, reflecting higher prices which were partially offset by higher unit costs. The Platts index for 62% iron fines on an FOB basis was 39% higher, on average, compared with 2018. This increased underlying EBITDA by \$5.4 billion relative to 2018.

2019 Pilbara unit cash costs were \$14.4 per tonne (2018: \$13.3 per tonne). The fire and weather-related events in the first half of the year reduced shipments by 14 million tonnes (100% basis), increasing unit costs by around \$0.5 per tonne. We incurred approximately \$50 million in additional costs in 2019 (\$0.2 per tonne) to address the mine operational challenges. Higher salaries, rising fuel prices and cyclical maintenance in 2019 compared with 2018 were mostly offset by a weaker Australian dollar.

We expect Pilbara unit cash costs to be \$14-15 per tonne in 2020 (assumes a 0.67 Australian dollar exchange rate). Increased volume efficiency compared with 2019 is expected to be offset by longer haul distances and increased maintenance activity. Koodaideri is on track for first ore in late 2021. Once fully ramped up it will provide new volumes at a lower cost.

We have continued investing in productivity and automation, and 50% of our truck fleet in the Pilbara is now fully autonomous. We have a pathway that will see a large majority of the fleet being automated by the end of 2022. AutoHaul™, the world's first automated heavy-haul, long-distance rail network, was fully operational in 2019.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 72%, compared with 68% in 2018.

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. We made approximately 68% of sales including freight and 32% on an FOB basis.

We achieved an average iron ore price of \$79.0 per wet metric tonne on an FOB basis (2018: \$57.8 per wet metric tonne). This equates to \$85.9 per dry metric tonne (2018: \$62.8 per dry metric tonne).

The gross sales revenue for our Pilbara operations included freight revenue of \$1.7 billion (2018: \$1.7 billion).

Net cash generated from operating activities of \$11.4 billion was 37% higher than 2018, driven by the same trends as underlying EBITDA.

The \$9.6 billion of free cash flow was 36% higher than 2018, reflecting the strong realised pricing partly offset by royalties, taxes and higher capital spend. This included sustaining capital as well as the construction of Koodaideri.

Review of operations

Our Pilbara mines in Western Australia produced 327 million tonnes (our share is 271 million tonnes) in 2019 - 3% lower than 2018. 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.

In the first half of 2019, shipments were affected by weather events, a screen house fire at one of our ports and mine operational challenges. Our second half performance was strong, with both production and shipments exceeding the same period in 2018, despite a planned, extended rail maintenance shutdown which limited rail capacity for 12 days. In October 2019 we commenced trials of portside trading. We maintain some inventory at Chinese ports and can also handle material from third parties and from Iron Ore Company of Canada.

New projects and growth options

We are progressing our \$2.6 billion Koodaideri iron ore mine, with key construction activities on schedule. This new production hub will be our most technologically advanced, incorporating a processing plant and infrastructure including an airport, camp and a 166-kilometre rail line connecting the mine to our existing network. We continue to expect first ore in late 2021. Once fully commissioned, the initial mine development will have an annual capacity of 43 million tonnes. This will increase the lump to fines ratio of the entire portfolio from an average of 35% to 38% and will increase the annual capacity of our Pilbara system to 360 million tonnes.

We have multiple project scopes under study for Koodaideri Phase 2, following board approval for a \$44 million pre-feasibility study. Ultimately, the capacity of the Koodaideri hub could be up to 70 million tonnes per year, depending on market conditions.

We are also investing \$1.55 billion with our joint venture partners, Mitsui and Nippon Steel, (our 53% share is \$820 million) at the Robe Valley and West Angelas operations. We have received all major environmental approvals, with the exception of Mesa H, and procurement and construction activities are progressing well. We anticipate first ore from these projects in 2021.

In late 2019, the board approved the \$749 million investment in the Western Turner Syncline Phase 2 mine, part of the Greater Tom Price operations. This will facilitate mining of new deposits and includes construction of a new crusher and a 13-kilometre conveyor. Pending final government approvals, construction will start in the first half of 2020 with first ore expected in 2021.

Markets

Despite overall weakness in global macro conditions, demand for the high-quality, higher grade iron ores we produce remained strong in 2019. This was mainly driven by a combination of seaborne supply disruptions and record Chinese steel output.

Global steel production increased by around 1.3% in 2019. This was supported by resilient Chinese production of around 970 million tonnes, which more than offset lower steel output outside of China.

2019 seaborne iron ore supply decreased by 30 million tonnes compared with 2018, with the cumulative impact of lower shipments from Vale and significant first quarter weather-related disruptions affecting Pilbara suppliers. China's domestic supply growth helped meet the supply shortfall in 2019, after overcoming improved environmental and safety standards and financing availability.

Aluminium

2019 year end results	2019	2018	Change
Bauxite production (000 tonnes - Rio Tinto share)	55,105	50,421	9 %
Alumina production (000 tonnes - Rio Tinto share)	7,744	7,980	(3)%
Aluminium production (000 tonnes - Rio Tinto share) ¹	3,171	3,231	(2)%
Gross sales revenue (US\$ millions)	10,340	12,191	(15)%
Underlying EBITDA (US\$ millions)	2,285	3,095	(26)%
Underlying EBITDA margin (integrated operations)	26%	32%	
Underlying earnings (US\$ millions)	599	1,347	(56)%
Net cash generated from operating activities (US\$ millions)	2,183	2,331	(6)%
Capital expenditure - excluding EAUs ² (US\$ millions)	(1,316)	(1,683)	(22)%
Free cash flow (US\$ millions)	821	638	29 %
Return on capital employed ³	4%	8%	

1 To allow production numbers to be compared on a like-for-like basis, we have excluded production from asset divestments completed in 2018 from our share of prior year production data. The financial data above includes the results of divested assets up to the date of sale.

2 Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).

3 Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets before net debt).

Financial performance

In 2019, our aluminium business benefited from a 21% increase in third-party bauxite sales, productivity improvements and lower raw material costs, but was affected by significant price declines, particularly for alumina and aluminium metal. Despite the challenging market environment, we maintained our position as the leading business in the sector, with an underlying EBITDA margin of 26% from integrated operations.

Underlying EBITDA of \$2.3 billion declined by 26% compared with 2018, primarily driven by the weaker pricing environment. This reduced underlying EBITDA by \$1.3 billion, including the impact of alumina legacy contracts, and was partly offset by \$0.5 billion of improvements. Operating costs improved by \$0.3 billion through productivity gains, including raw material efficiencies at the refineries and lower input prices, primarily for caustic soda and petroleum coke. We also benefited from \$0.2 billion of gains from increased bauxite volumes and grade optimisation, supported by the successful ramp-up of our new Amrun mine in Queensland following its completion in late 2018.

We achieved an average realised aluminium price of \$2,132 per tonne (2018: \$2,470 per tonne). This comprised the LME price, a market premium and a value-added product (VAP) premium. The cash LME price averaged \$1,791 per tonne, 15% lower than 2018. In our key US market, the midwest premium dropped 24% to \$320 per tonne on average in 2019. VAP represented 51% of the primary metal we sold (2018: 54%, excluding the Dunkerque smelter which we sold in 2018) and generated attractive product premiums averaging \$234 per tonne of VAP sold (2018: \$227 per tonne). We paid a 10% tariff on our Canadian aluminium exports to the US under Section 232 until the tariff was removed on 19 May 2019.

Although we are broadly balanced in alumina, approximately 2.2 million tonnes of our legacy alumina sales contracts are exposed to a fixed linkage to the LME price. These contracts date back to 2005 or earlier, and the majority expire between 2023 and 2030. In 2019, the opportunity loss reduced to \$0.2 billion, compared with \$0.5 billion in 2018 when there was significant escalation in the alumina index caused by industry supply disruptions.

Despite the significantly weaker market environment, we generated \$2.2 billion in net cash from operating activities with free cash flow increasing by 29% to \$0.8 billion. This was underpinned by productivity improvements, lower costs, favourable movements in working capital and lower capital expenditure, following completion of the Amrun project.

Review of operations

Bauxite production was 9% higher than 2018 at 55 million tonnes. In Australia, production at the Pacific managed mines was up by 11% on 2018, underpinned by the successful ramp-up of Amrun. Production at the non-managed joint ventures (CBG in Guinea and MRN in Brazil) was 1% higher than 2018, but was constrained by the ramp-up of the expansion project at CBG being slower than planned.

Our production performance enabled us to increase shipments of bauxite to third parties by 21% to 40 million tonnes. Over the past five years, we have increased our third-party bauxite sales by 16 million tonnes (70%), maintaining our position as a leading global supplier in the seaborne bauxite trade.

In 2019, gross revenue for bauxite increased 6% to \$2.5 billion - this includes freight revenue of \$464 million (2018: \$371 million).

At 7.7 million tonnes, our alumina production 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.

At 3.2 million tonnes, our aluminium production was 2% lower than 2018, primarily due to lower volumes at ISAL from a safety-related preventive 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 up 1% on 2018, reflecting continued productivity improvements. The restart of Becancour is underway, with full ramp-up expected by mid-2020.

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 discussing energy pricing with stakeholders, to ensure the sustainability and global competitiveness of our smelters in Australasia and in Iceland. We announced strategic reviews of our interests in the Tiwai Point smelter in New Zealand in October 2019, and in the ISAL smelter in Iceland in February 2020. The strategic reviews will determine the ongoing viability and competitive position of these operations and will consider all options, including curtailment and closure.

New projects and growth options

The \$1.9 billion Amrun bauxite mine on the Cape York Peninsula in north Queensland achieved its design capacity rate of 22.8 million tonnes a year in the fourth quarter of 2019, supporting higher third party sales and replacing the depleting Weipa mines.

In 2019, production from the Sangaredi bauxite mine in Guinea was constrained by a slower than planned ramp-up of the \$0.7 billion expansion project (our share is \$0.3 billion). When this ramp-up is complete, the annual capacity of Compagnie des Bauxites de Guinée (CBG) will increase from 14.5 to 18.5 million tonnes (100% basis, our share of production is 45%).

At the \$0.5 billion Kemano project in Kitimat, British Columbia, where we are constructing a second tunnel to de-risk our 100% owned hydropower facility, we had excavated 2.7 kilometres of the tunnel by the end of 2019. Progress has been slower than expected and completion is now expected in 2021 (previously late 2020).

ELYSIS, our joint venture with Alcoa, supported by Apple and the governments of Canada and Quebec, is developing a breakthrough technology that eliminates all direct greenhouse gases from the traditional aluminium smelting process. In 2019, ELYSIS started construction of its new Research and Development Centre, which will be located at Rio Tinto's Complexe Jonquière in the Saguenay, Quebec. We expect it to be fully operational in the second half of 2020. ELYSIS also announced that Apple had purchased the first commercial batch of aluminium produced using our carbon-free smelting process.

Markets

The market for primary aluminium contracted by approximately 1% in 2019, due to lower automotive production and lower machinery and durables output, driven by soft demand from construction. Chinese output growth continued to weaken in 2019, with capacity reductions of around 3.6 million tonnes due to lower prices and

disruptions. In addition, there were 0.5 million tonnes of environmental winter curtailments. China permanently curtailed around 2 million tonnes of capacity in 2019. We expect aluminium demand to improve in 2020, as the transport sector recovers, but political and recessionary risks remain.

Alumina prices declined in 2019 on the back of increased supply, weaker demand and lower caustic soda prices.

China continued to drive strong growth in seaborne bauxite demand in 2019, primarily as a result of the depletion of domestic, inland bauxite reserves and declining quality. To date, this demand has primarily been met by exports from Australia, Guinea and Indonesia.

Copper & Diamonds

2019 year end results	2019	2018	Change
Mined copper production (000 tonnes - Rio Tinto share) ¹	577.4	607.6	(5)%
Refined copper production (000 tonnes - Rio Tinto share)	259.6	274.8	(6)%
Diamonds production (000 carats - Rio Tinto share)	17,030	18,427	(8)%
Gross sales revenue (US\$ millions)	5,815	6,468	(10)%
Underlying EBITDA (US\$ millions)	2,073	2,776	(25)%
Underlying EBITDA margin (product group operations)	41%	47%	
Underlying earnings (US\$ millions)	554	1,054	(47)%
Net cash generated from operating activities (US\$ millions) ²	1,505	2,114	(29)%
Capital expenditure - excluding EAUs ³ (US\$ millions)	(1,772)	(1,848)	(4)%
Free cash flow (US\$ millions)	(284)	266	(207)%
Return on capital employed ⁴	5%	9%	

1 To allow production numbers to be compared on a like-for-like basis, we have excluded production from asset divestments completed in 2018 from our share of prior year production data. The financial data above, however, includes the results of divested assets up to the date of sale.

2 Net cash generated from operating activities excludes the operating cash flows of equity accounted units (Escondida) but includes dividends from the equity accounted units

3 Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).

4 Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets before net debt).

Financial performance

In 2019, our operational performance was affected by lower grades at all operations, partly offset by higher throughput and productivity improvements.

Our average realised copper price decreased by 7% to 275 US cents per pound, which compared with an 8% decline in the LME price to 273 US cents per pound.

At \$2.1 billion, underlying EBITDA was \$0.7 billion (25%) lower than 2018. This was the result of \$0.2 billion in unfavourable pricing impacts, a \$0.2 billion non-cash charge at Escondida in 2019 relating to the cancellation of existing coal power contracts to be replaced with lower cost renewable power, \$0.1 billion from lower volumes at Escondida, and the divestment of Grasberg, which contributed \$0.3 billion to underlying EBITDA in 2018. Our operating assets delivered on their productivity and improvement programmes, partially offsetting the above impacts, resulting in lower overall production costs compared with 2018. Our copper unit costs, at 93 cents per pound in 2019, were 15% lower than in 2018, with higher by-product credits and cost reduction programmes offsetting the impact of lower copper grades.

We generated \$1.5 billion in cash from our operating activities in 2019, 29% lower than 2018, driven by the 25% reduction in underlying EBITDA described above, as well as \$0.1 billion lower dividends from our 30% equity holding in Escondida. Free cash flow of \$(0.3) billion reflected the lower operating cash flow and a sustained level of capital investment (\$1.8 billion), mainly relating to activities at the Oyu Tolgoi underground project.

Review of operations

Mined copper production was 5% lower than 2018, primarily attributable to lower copper grades at all three operations, partly offset by higher throughput and productivity improvements. Refined copper production, at 6% lower, largely reflected the reduced copper concentrate availability at Escondida and our Kennecott smelter.

Kennecott

Mined copper production was 8% lower than 2018, mostly due to increased grade variability, with grades on average 11% lower. This grade impact was partially offset by a 4% improvement in ore processed since 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. This reflected the reduced availability of copper concentrate, a planned smelter shutdown and additional unplanned maintenance impacting furnace online time.

Escondida

Copper production at Escondida was 3% lower than 2018. This was mainly due to grade declines, which were 8% lower than last year, partly offset by higher throughput.

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 \$0.2 billion against 2019 underlying EBITDA, reflecting our 30% share.

In addition to the renewable power agreements, the Escondida water supply expansion project was successfully completed in December 2019 and the water requirements of the operation are now fulfilled entirely by desalinated water production.

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 were partly offset by productivity improvements.

Diamonds

Diamond production was 8% lower than 2018. At Argyle, carat production was down by 8% due to a lower recovered grade - this was partially offset by record underground mining and processing rates. At Diavik, carats recovered were down by 8% due to lower ore availability and grade from the underground operations - this was partly offset by higher tonnes and grade from the A21 open pit.

Oyu Tolgoi underground project

During the fourth quarter of 2019, we took the decision to remove two of the three mid-access drives at Oyu Tolgoi. 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; overall, the underground project remains within the range announced in July 2019 of a 16 to 30 month delay in schedule and an increase of \$1.2 to \$1.9 billion¹ in development capital costs.

We continue the detailed work on mine design, which we still expect to complete in the first half of 2020, 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.

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

Under the Power Source Framework Agreement signed in 2018, Oyu Tolgoi continues to work with the government of Mongolia to secure a long term power solution for the project. Different power sourcing options are currently under evaluation and discussion with the government of Mongolia to identify the lowest cost and reliable option for Oyu Tolgoi. In February 2020, Oyu Tolgoi submitted a feasibility study to the government of Mongolia for the Tavan Tolgoi Power Plant. This envisages a 300 MW coal power plant with a project cost estimate of around \$924 million. We are also progressing alternative options to source domestic power, including a renewable power component.

Other new projects and growth options

At Kennecott, we continue to progress stripping activities on the \$0.9 billion phase 1 south wall pushback project. Grades are expected to increase in 2021 with the transition from east wall to south wall mining.

In late 2019, we announced the approval of a \$1.5 billion investment in 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, allowing mining to continue into a new area of the ore body between 2026 and 2032 and generate attractive returns.

At our Resolution Copper project in Arizona, 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 (EIS) 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 EIS in 2020. The Land Exchange title transfer will be completed within 60 days of final EIS publication.

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

Markets

The decline in the copper price in 2019 was largely driven by changing macroeconomic growth expectations and volatility in equity markets. However, longer term demand is expected to remain robust as a result of urbanisation, industrialisation and electrification in China and emerging economies.

Mined supply contracted 1% in 2019 amid enhanced supply-side risks. Disruptions in Latin America and Africa's copper belt accounted for over 75% of global disruptions in 2019 as these regions faced environmental, social and governance challenges and regulatory disruptions, respectively. These, and other challenges, are expected to persist in the coming years.

¹ As described above, and as disclosed in a Notice to the ASX/LSE on 16 July 2019, and our 2019 interim financial results, the level of accuracy of these estimates is preliminary in nature and subject to a range of variables. These estimates are at a confidence level associated with a Conceptual or Order of Magnitude Study; more work is needed 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

2019 year end results	2019	2018	Change
Iron ore pellets and concentrates production ¹ (million tonnes - Rio Tinto share)	10.5	9.0	18 %
Titanium dioxide slag production (000 tonnes - Rio Tinto share)	1,206	1,116	8 %
Borates production (000 tonnes - Rio Tinto share)	520	512	2 %
Uranium production (000 lbs - Rio Tinto share)	4,754	6,764	(30)%
Gross sales revenue (US\$ millions)	5,150	5,451	(6)%
Underlying EBITDA (US\$ millions)	1,762	2,140	(18)%
Underlying EBITDA margin (product group operations)	37%	41%	
Underlying earnings (US\$ millions)	611	995	(39)%
Net cash generated from operating activities (US\$ millions)	1,387	1,245	11 %
Capital expenditure (US\$ millions) ²	(551)	(442)	25 %
Free cash flow (US\$ millions)	817	796	3 %
Return on capital employed ³	15%	20%	

¹ To reflect a change in management responsibility, Dampier Salt is now reported within Iron Ore and we have restated prior year numbers accordingly. Iron Ore Company of Canada and the Simandou iron ore project in Guinea continue to be reported within Energy & Minerals.

² Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets.

³ Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets before net debt).

Financial performance

A recovery in volumes at both Rio Tinto Iron & Titanium and Iron Ore Company of Canada (IOC) following the disruptions in 2018, along with higher prices for iron ore pellets and concentrate and titanium dioxide feedstocks, contributed to our strong financial performance in 2019.

Underlying EBITDA of \$1.8 billion was 18% lower than 2018, but was 41% higher excluding the coal assets we divested in 2018. Volumes were boosted by an improved operational performance at our titanium dioxide operations, and the return to normal operations at IOC following a two-month strike in 2018. The higher price environment, in particular for iron ore pellets and concentrate and titanium dioxide feedstocks, added \$0.3 billion to underlying EBITDA compared with 2018.

We generated net cash of \$1.4 billion from our operating activities and \$0.8 billion of free cash flow, reflecting the higher volumes and stronger pricing environment. These were 11% and 3% higher than 2018, respectively, despite there being no contribution from the coking coal assets which we divested in 2018.

Review of operations

Energy

Uranium production was 30% lower than 2018. While Energy Resources of Australia (ERA) continued to process existing stockpiles, production was 12% lower than 2018, reflecting lower grades. We have reported production from Rössing Uranium up to the date of completion of divestment to China National Uranium Corporation Limited on 16 July 2019.

In late 2019, we announced our support for 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.

Iron Ore Company of Canada (IOC)

Iron ore pellets and concentrate production at IOC was 18% higher than 2018, when operations were impacted by a two-month strike.

Minerals

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

Production at the end of 2019 was affected by the curtailment of operations at Richards Bay Minerals (RBM) in South Africa. Operations were slowed in mid-November, following an escalation in violence in the communities surrounding the operations, and curtailed at the beginning of December. A phased restart began at the end of December.

All nine furnaces at Rio Tinto Fer et Titane (RTFT) are in operation, with three of four furnaces in operation at RBM. We will decide to idle furnaces or re-start the remaining idled furnace to match market demand.

Borates production was in line with 2018 and aligned with market conditions.

New projects and growth options

The \$463 million Zulti South construction project at RBM is on hold after a number of security incidents - we will assess a restart after normalisation of operations.

We are continuing our pre-feasibility study at the Jadar lithium-borate project in Serbia - this will establish the economic business case for the project and include environmental and socioeconomic impact assessments.

We continue to work with our joint-venture partners, Chinalco and the government of Guinea, to explore ways to optimise, develop and fund the world-class Simandou iron ore deposit and the trans-Guinean infrastructure needed to support the mine. We own 45.05%, Chinalco owns 39.95% and the government of Guinea owns a 15% stake in this project.

Markets

Feedstock demand remained strong in 2019 due to higher levels of customer offtake that supported price growth. Overall, feedstock supply grew moderately, although the extent of this growth varied by grade with the result that the high-grade feedstock market was relatively constrained. However, underlying demand in chemicals and construction markets weakened in 2019 and this remains a concern going into 2020. Over the medium to long term, a structural deficit in high-grade feedstock will persist.

Borates demand grew minimally in 2019. Stronger growth in China was offset by declines elsewhere, particularly in agriculture. While we grew volumes in line with key customers, overall supply fell, balancing the market. Tariffs on the import of borates into China were prevalent in 2019. In 2020, we have witnessed a partial unwinding of these tariffs. Our outlook for the rest of the year is low single digit demand growth and the potential re-entry of competing supply.

Other items (pre-tax)

	2019	2018
Central pension costs, share-based payments and insurance (US\$ millions)	59	(128)
Restructuring, project and one-off costs (US\$ millions)	(183)	(272)
Central costs (US\$ millions)	(496)	(552)
	(620)	(952)

Central pension costs, share-based payments and insurance were a credit compared with a charge in 2018 due to higher captive insurance premiums held centrally and lower settlement claims in 2019.

Restructuring, project and one-off central costs were 33% lower than 2018, on a pre-tax basis, mainly due to the implementation of a new operating model in 2018 with the project concluding in 2019.

Other central costs of \$496 million (pre-tax) were 10% lower than 2018 primarily due to lower central cash costs following the implementation of IFRS 16 "Leases" in 2019.

Central exploration and evaluation

	2019	2018
Central exploration expense (US\$ millions - pre-tax)	(315)	(231)

We have an extensive global exploration programme. In 2019, we explored in 17 countries. Expenditure on exploration and evaluation in the year was \$624 million, of which \$315 million relates to our greenfield programmes, mostly copper, and \$309 million to our product groups. The majority of our projects this year are in the early stages of drilling.

We have had some early success in copper exploration in the Pilbara, Western Australia at our Winu project, where we have an extensive drilling and geophysical testing programme. We drilled 124 kilometres in 2019 compared with 16 kilometres in 2018. Initial environmental and sub fauna baseline studies are complete. Other studies are well advanced including geotechnical, hydrology, mining, processing and basic engineering design. We are targeting first production in 2023, subject to regulatory approvals and consents.

Price and exchange rate sensitivities

The following sensitivities give the estimated effect on underlying EBITDA, assuming that each price or exchange rate moved in isolation. The relationship between currencies and commodity prices is a complex one; movements in exchange rates can affect movements in commodity prices and vice versa. The exchange rate sensitivities quoted here include the effect on operating costs of movements in exchange rates, but do not include the effect of the revaluation of foreign currency working capital. Please use them with care.

	Average published price/exchange rate for 2019	US\$ million impact on full year 2019 underlying EBITDA of a 10% change in prices/exchange rates
Aluminium	\$1,791/t	482
Copper	273 US\$/lb	350
Gold	\$1,393/oz	54
Iron ore realised price (62% Fe FOB)	\$85.9/dmt	2,061
Australian dollar against the US dollar	0.70	529
Canadian dollar against the US dollar	0.75	199
Oil (Brent)	\$64/bbl	72

The impact of a \$100 per tonne change in each of the input costs below is expected to have the following impact on our Canadian¹ aluminium smelting unit cash cost² of \$1,318 per tonne in 2019:

	US\$/t
Alumina (FOB)	191
Green petroleum coke (FOB)	34
Calcined petroleum coke (FOB)	30
Coal tar pitch (FOB)	7

¹ Canadian smelters include all fully-owned smelters in Canada (Alma, AP60, Arvida, Grande-Baie, Kitimat and Laterrière), as well as our share of the Becancour and Alouette smelters.

² The smelting unit cash cost refers to all costs which have been incurred before casting, excluding depreciation but including corporate allocations and with alumina at market price, to produce one metric tonne of primary aluminium.

Capital projects

We have a programme of high-quality projects across a broad range of commodities

Projects (Rio Tinto 100% owned unless otherwise stated)	Total approved capital cost (100% unless otherwise stated)	Approved capital remaining to be spent from 1 January 2020	Status/Milestones
Completed in 2019			
Investment in the Compagnie des Bauxites de Guinée (CBG) bauxite mine in Guinea, West Africa, to expand capacity	\$0.3bn (RT share)		- Approved in 2016. We produced first ore in the fourth quarter of 2018. When the ramp-up is complete the project will increase annual capacity from 14.5 to 18.5 million tonnes.
Ongoing and approved			
Iron ore			
Investment in West Angelas and the Robe Valley in the Pilbara region of Western Australia to sustain production capacity	\$0.8bn (RT share)	\$0.6bn (RT share)	Approved in October 2018, the investments will enable us to sustain production of our Pilbara Blend™ and Robe Valley products. All major environmental approvals have been received with the exception of the Mesa H approval. All other procurement and construction activities are progressing to plan. First ore is expected in 2021.
Investment in Koodaideri, a new production hub in the Pilbara region of Western Australia, to sustain existing production in our iron ore system	\$2.6bn	\$2.1bn	Approved in November 2018, the investment incorporates a processing plant and infrastructure including a 166-kilometre rail line connecting the mine to our existing network. Key construction activities are on schedule and we expect first production in late 2021. Once complete, the mine will have an annual capacity of 43 million tonnes.
Investment in the Greater Tom Price operations to help sustain production capacity	\$0.8bn	\$0.8bn	Approved in November 2019, the investment in the Western Turner Syncline phase 2 mine will facilitate mining of existing and new deposits. It includes construction of a new crusher and a 13-kilometre conveyor. Pending final government approvals, construction will start in the first half of 2020 with first ore from the crusher expected in 2021.
Aluminium			
Investment in a second tunnel at the 1000MW Kemano hydropower facility at Kitimat, British Columbia, Canada	\$0.5bn	\$0.1bn	Approved in 2017. Project completion is now set for 2021 (previously late 2020). Cost forecasts remain on budget. The project will ensure the long-term reliability of the power supply to the modernised Kitimat smelter and de-risks the hydropower facility.
Copper & Diamonds			
Investment to extend mine life at Rio Tinto Kennecott, US from 2019 to 2026	\$0.9bn	\$0.3bn	Funding for the continuation of open pit mining via the push back of the south wall: the project largely consists of simple mine stripping activities and is expected to be complete in 2021.
Further investment to extend mine life at Rio Tinto Kennecott, US by a further six years to 2032	\$1.5bn	\$1.5bn	Approved in December 2019, the investment will further extend strip waste rock mining and support additional infrastructure development in the second phase of the south wall pushback project. This will allow mining to continue into a new area of the orebody between 2026 and 2032.

Development of the Oyu Tolgoi underground mine in Mongolia (Rio Tinto 34%)	\$5.3bn*	\$2.0bn*	The project was approved in May 2016. A number of mine design options are under consideration, which have different cost and schedule implications. These options have been defined to a level of accuracy associated with a Conceptual Study or Order of Magnitude Study. First sustainable production could be achieved between May 2022 and June 2023 (includes up to eight months contingency). Preliminary estimates for development capital are \$6.5 billion to \$7.2 billion. <i>*Subject to the outcomes of the definitive estimate</i>
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Energy & Minerals

Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%), to sustain current capacity and extend mine life.	\$0.5bn	\$0.4bn	Approved in April 2019, the investment will underpin RBM's supply of zircon and ilmenite over the life of the mine. Construction is on hold after a number of security incidents - we will assess a restart after normalisation of operations at RBM.
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Group income statement

Years ended 31 December

	2019 US\$m	2018 US\$m
Consolidated operations		
Consolidated sales revenue	43,165	40,522
Net operating costs (excluding items shown separately)	(27,307)	(27,115)
Impairment charges ^(a)	(3,487)	(132)
Net (losses)/gains on consolidation and disposal of interests in businesses ^(b)	(291)	4,622
Exploration and evaluation costs	(624)	(488)
Profit relating to interests in undeveloped projects	10	278
Operating profit	11,466	17,687
Share of profit after tax of equity accounted units	301	513
Profit before finance items and taxation	11,767	18,200
Finance items		
Net exchange gains on net external and intragroup debt balances	58	704
Net losses on derivatives not qualifying for hedge accounting	(68)	(57)
Finance income	300	249
Finance costs ^(c)	(554)	(552)
Amortisation of discount	(384)	(377)
	(648)	(33)
Profit before taxation	11,119	18,167
Taxation^(d)	(4,147)	(4,242)
Profit after tax for the year	6,972	13,925
– attributable to owners of Rio Tinto (net earnings)	8,010	13,638
– attributable to non-controlling interests	(1,038)	287
Basic earnings per share^(e)	491.4c	793.2c
Diluted earnings per share^(e)	487.8c	787.6c

(a) Refer to Impairment charges note on page 42.

(b) Refer to Acquisitions and disposals note on page 44.

(c) Finance costs in the income statement are net of amounts capitalised of US\$321 million (2018: US\$296 million).

(d) Refer to Taxation note on page 45.

(e) For the purpose of calculating basic earnings per share, the weighted average number of Rio Tinto plc and Rio Tinto Limited shares outstanding during the year was 1,630.1 million (2018: 1,719.3 million). The weighted average number of shares is calculated as the average number of Rio Tinto plc shares outstanding not held as treasury shares of 1,259.4 million (2018: 1,312.7 million) plus the average number of Rio Tinto Limited shares outstanding of 370.7 million (2018: 406.6 million) over the relevant period. No Rio Tinto Limited ordinary shares were held by Rio Tinto plc in any of the periods presented. The profit and loss figures used in the calculation of basic and diluted earnings per share are based on the profits and losses for the year attributable to owners of Rio Tinto.

For the purposes of calculating diluted earnings per share, the effect of dilutive securities of 12.0 million shares in 2019 (2018: 12.4 million) is added to the weighted average number of shares described above. The effect is calculated under the treasury stock method.

Status of financial information

The full year financial information contained in this announcement, which does not constitute statutory accounts as defined in Section 434 of the United Kingdom Companies Act 2006 nor a financial report as defined in Section 295(1) of the Australian Corporations Act 2001, has been derived from the statutory accounts for the year ended 31 December 2019. These statutory accounts have been audited, were approved by the Board on 26 February 2020, and will be filed with the Registrar of Companies and released to the Australian Securities Exchange in due course. Statutory accounts for the year ended 31 December 2018 have been filed with the Registrar of Companies and released to the Australian Securities Exchange.

Unless stated otherwise, financial information for the years ended 31 December 2019 and 31 December 2018 has been extracted from the full financial statements for that year prepared under the historical cost convention, as modified by the revaluation of certain derivative contracts and financial assets, the impact of fair value hedge accounting on the hedged items and the accounting for post-retirement assets and obligations.

The Auditors' reports on the full financial statements for the years ended 31 December 2019 and 31 December 2018 were both unqualified and, in relation to Rio Tinto plc, did not contain a statement under section 498 (2) (regarding adequacy of accounting records and returns), or under section 498 (3) (regarding provision of necessary information and explanations) of the United Kingdom Companies Act 2006, and in relation to Rio Tinto Limited, contained a statement that the financial report is in accordance with the Corporations Act 2001 as amended by the ASIC Order dated 14 December 2015.

Group statement of comprehensive income

Years ended 31 December

	2019 US\$m	2018 US\$m
Profit after tax for the year	6,972	13,925
Other comprehensive income/(loss)		
Items that will not be reclassified to profit or loss:		
Actuarial (losses)/gains on post-retirement benefit plans	(262)	907
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)	(5)	(13)
Tax relating to these components of other comprehensive income	83	(271)
Share of other comprehensive losses of equity accounted units, net of tax	(6)	(1)
	(190)	622
Items that have been/may be subsequently reclassified to profit or loss:		
Currency translation adjustment ^(a)	343	(3,830)
Currency translation on companies disposed of, transferred to the income statement	215	14
Fair value movements:		
– Cash flow hedge gains	12	156
– Cash flow hedge (gains)/losses transferred to the income statement	(41)	40
Net change in costs of hedging ^(b)	3	(39)
Tax relating to these components of other comprehensive income	(6)	(54)
Share of other comprehensive income/(loss) of equity accounted units, net of tax	10	(48)
Other comprehensive income/(loss) for the year, net of tax	346	(3,139)
Total comprehensive income for the year	7,318	10,786
– attributable to owners of Rio Tinto	8,351	10,663
– attributable to non-controlling interests	(1,033)	123

(a) Excludes a currency translation charge of US\$29 million (2018: charge of US\$382 million) arising on Rio Tinto Limited's share capital for the year ended 31 December 2019, which is recognised in the Group statement of changes in equity. Refer to Group statement of changes in equity on page 39.

(b) As part of the 2018 bond buy-back programme, cross currency interest rate swaps hedging the bonds repurchased were closed out. This resulted in the reclassification of US\$3 million from the cost of hedging reserve to finance costs in the income statement in 2018. There was no bond buy-back programme in 2019.

Group cash flow statement

Years ended 31 December

	2019 US\$m	2018 US\$m
Cash flows from consolidated operations^(a)	19,705	15,655
Dividends from equity accounted units	669	800
Cash flows from operations	20,374	16,455
Net interest paid ^{(b)(f)}	(537)	(612)
Dividends paid to holders of non-controlling interests in subsidiaries	(376)	(420)
Tax paid	(4,549)	(3,602)
Net cash generated from operating activities	14,912	11,821
Cash flows from investing activities		
Purchases of property, plant and equipment and intangible assets ^(c)	(5,488)	(5,430)
Disposals of subsidiaries, joint ventures, unincorporated joint operations, and associates ^(d)	(80)	7,733
Purchases of financial assets ^(e)	(43)	(1,572)
Sales of financial assets	83	19
Sales of property, plant and equipment and intangible assets	49	586
Net funding of equity accounted units	(33)	(9)
Acquisitions of subsidiaries, joint ventures and associates	—	(5)
Other investing cash flows	11	(1)
Net cash (used)/generated in investing activities	(5,501)	1,321
Cash flows before financing activities	9,411	13,142
Cash flows from financing activities		
Equity dividends paid to owners of Rio Tinto	(10,334)	(5,356)
Proceeds from additional borrowings	80	54
Repayment of borrowings ^(b)	(203)	(2,300)
Lease principal payments ^(f)	(315)	—
Proceeds from issue of equity to non-controlling interests	101	85
Own shares purchased from owners of Rio Tinto	(1,552)	(5,386)
Other financing cash flows	4	(48)
Net cash flows used in financing activities	(12,219)	(12,951)
Effects of exchange rates on cash and cash equivalents	(54)	151
Net (decrease)/increase in cash and cash equivalents	(2,862)	342
Opening cash and cash equivalents less overdrafts	10,889	10,547
Closing cash and cash equivalents less overdrafts ^(g)	8,027	10,889
(a) Cash flows from consolidated operations		
Profit after tax for the year	6,972	13,925
Adjustments for:		
– Taxation	4,147	4,242
– Finance items	648	33
– Share of profit after tax of equity accounted units	(301)	(513)
– Net losses/(gains) on consolidation and disposal of interests in businesses	291	(4,622)
– Impairment charges	3,487	132
– Depreciation and amortisation	4,384	4,015
– Provisions (including exchange differences on provisions)	753	1,011
Utilisation of provisions	(539)	(620)
Utilisation of provision for post-retirement benefits	(205)	(219)
Change in inventories	28	(587)
Change in trade and other receivables	163	(421)
Change in trade and other payables	(191)	476
Other items ^(h)	68	(1,197)
	19,705	15,655

Group cash flow statement (continued)

- (b) In 2018 we completed a bond buy back programme of US\$1.9 billion (nominal value). Net interest paid included the payment of the premiums and the accelerated interest associated with the bond redemptions (US\$80 million). There was no bond buy-back programme in 2019.
- (c) Capital expenditure includes US\$394 million (2018: US\$330 million) capitalised in accordance with IFRIC 20 "Stripping costs in the production phase of a surface mine"; a significant proportion of stripping costs capitalised relate to the Group's Copper operations.
- (d) Refer to Acquisitions and disposals note on page 44.
- (e) In 2019, we invested a further US\$28 million in a separately managed portfolio of fixed income instruments (2018:US\$1.6 billion). Purchases and sales of these securities are reported on a net cash flow basis within "Purchases of financial assets".
- (f) The impact of the transition to new accounting standard; IFRS 16 "Leases" on 1 January 2019 was previously provided in our 2019 interim results announcement published on 1 August 2019. Further detailed information on the implementation of IFRS 16 "Leases" will be included in the Group's 2019 financial statements.
- (g) Closing cash and cash equivalents less overdrafts at 31 December 2018 differ from cash and cash equivalents on the balance sheet as they include overdrafts of US\$1 million; there were no overdrafts at 31 December 2019. In 2018 the cash flow statement also included US\$117 million of cash included in assets held for sale at 31 December 2018.
- (h) In 2019, other items includes the settlement of currency forward contracts relating to tax and dividend payments offset by other non-cash items. In 2018 other items included adjustments to add back mark-to-market gains of US\$288 million relating to derivative contracts transacted for operational purposes and not designated in a hedge relationship, a gain of US\$549 million on the sale of surplus land at Kitimat and a gain of US\$167 million on the revaluation of a financial asset arising from the disposal of the Mount Pleasant coal project in 2016.

Group balance sheet

At 31 December

	2019 US\$m	2018 US\$m
Non-current assets		
Goodwill	922	912
Intangible assets	2,637	2,779
Property, plant and equipment	57,372	56,361
Investments in equity accounted units	3,971	4,299
Inventories	139	152
Deferred tax assets	3,102	3,137
Trade and other receivables	1,716	1,585
Tax recoverable	5	8
Other financial assets	635	814
	70,499	70,047
Current assets		
Inventories	3,463	3,447
Trade and other receivables	3,027	3,179
Tax recoverable	116	77
Other financial assets	2,670	2,692
Cash and cash equivalents	8,027	10,773
	17,303	20,168
Assets of disposal groups held for sale ^(a)	—	734
Total assets	87,802	90,949
Current liabilities		
Borrowings and other financial liabilities	(1,372)	(1,073)
Trade and other payables	(6,480)	(6,600)
Tax payable	(1,874)	(1,842)
Provisions including post-retirement benefits	(1,399)	(1,056)
	(11,125)	(10,571)
Non-current liabilities		
Borrowings and other financial liabilities	(13,341)	(12,847)
Trade and other payables	(794)	(841)
Tax payable	(376)	(348)
Deferred tax liabilities	(3,220)	(3,673)
Provisions including post-retirement benefits	(13,704)	(12,552)
	(31,435)	(30,261)
Liabilities of disposal groups held for sale ^(a)	—	(294)
Total liabilities	(42,560)	(41,126)
Net assets	45,242	49,823
Capital and reserves		
Share capital ^(b)		
– Rio Tinto plc	207	211
– Rio Tinto Limited	3,448	3,477
Share premium account	4,313	4,312
Other reserves	9,177	8,661
Retained earnings	23,387	27,025
Equity attributable to owners of Rio Tinto	40,532	43,686
Attributable to non-controlling interests	4,710	6,137
Total equity	45,242	49,823

Group balance sheet continued

- (a) At 31 December 2018, assets and liabilities held for sale included Rio Tinto's interest in the Rössing Uranium mine (US\$106 million) and the ISAL Smelter, the Aluchemie anode plant and the Alufluor aluminium fluoride plant ("the ISAL assets") (US\$334 million).
- (b) At 31 December 2019, Rio Tinto plc had 1,249.9 million ordinary shares in issue and held by the public, and Rio Tinto Limited had 371.2 million shares in issue and held by the public. No shares in Rio Tinto Limited were held by Rio Tinto plc at 31 December 2019 (31 December 2018: nil). As required to be disclosed under the ASX Listing Rules, the net tangible assets per share amounted to US\$22.81 (31 December 2018: US\$24.25).

Group statement of changes in equity

	Attributable to owners of Rio Tinto					Non-controlling interests US\$m	Total equity US\$m
	Share capital US\$m	Share premium account US\$m	Other reserves US\$m	Retained earnings US\$m	Total US\$m		
Year ended 31 December 2019							
Opening balance	3,688	4,312	8,661	27,025	43,686	6,137	49,823
Adjustment for transition to new accounting pronouncements ^(a)	—	—	—	(113)	(113)	(2)	(115)
Restated opening balance	3,688	4,312	8,661	26,912	43,573	6,135	49,708
Total comprehensive income for the year ^(b)	—	—	519	7,832	8,351	(1,033)	7,318
Currency translation arising on Rio Tinto Limited's share capital	(29)	—	—	—	(29)	—	(29)
Dividends ^(c)	—	—	—	(10,334)	(10,334)	(376)	(10,710)
Share buy-back ^(d)	(4)	—	4	(1,135)	(1,135)	—	(1,135)
Companies no longer consolidated	—	—	—	—	—	(32)	(32)
Own shares purchased from Rio Tinto shareholders to satisfy share options ^(e)	—	—	(63)	(43)	(106)	—	(106)
Change in equity interest held by Rio Tinto	—	—	—	85	85	(85)	—
Treasury shares reissued and other movements	—	1	—	—	1	—	1
Equity issued to holders of non-controlling interests	—	—	—	—	—	101	101
Employee share options and other IFRS 2 charges to the income statement	—	—	56	70	126	—	126
Closing balance	3,655	4,313	9,177	23,387	40,532	4,710	45,242

	Attributable to owners of Rio Tinto					Non-controlling interests US\$m	Total equity US\$m
	Share capital US\$m	Share premium account US\$m	Other reserves US\$m	Retained earnings US\$m	Total US\$m		
Year ended 31 December 2018							
Opening balance	4,360	4,306	12,284	23,761	44,711	6,404	51,115
Adjustment for transition to new accounting pronouncements ^(a)	—	—	10	(179)	(169)	—	(169)
Restated opening balance	4,360	4,306	12,294	23,582	44,542	6,404	50,946
Total comprehensive income for the year ^(b)	—	—	(3,600)	14,263	10,663	123	10,786
Currency translation arising on Rio Tinto Limited's share capital	(382)	—	—	—	(382)	—	(382)
Dividends ^(c)	—	—	—	(5,356)	(5,356)	(415)	(5,771)
Share buy-back ^(d)	(290)	—	9	(5,423)	(5,704)	—	(5,704)
Own shares purchased from Rio Tinto shareholders to satisfy share options ^(e)	—	—	(114)	(140)	(254)	—	(254)
Change in equity interest held by Rio Tinto	—	—	—	60	60	(60)	—
Treasury shares reissued and other movements	—	6	—	—	6	—	6
Equity issued to holders of non-controlling interests	—	—	—	—	—	85	85
Employee share options and other IFRS 2 charges to the income statement	—	—	50	61	111	—	111
Transfers and other movements	—	—	22	(22)	—	—	—
Closing balance	3,688	4,312	8,661	27,025	43,686	6,137	49,823

Group statement of changes in equity (continued)

- (a) The impact of the transition to new accounting pronouncements; IFRS 16 "Leases" and IFRIC 23 "Uncertainty over income tax treatments" on 1 January 2019. Further information on this impact was previously provided in our 2019 interim results announcement published on 1 August 2019.

The impact of transition to new accounting pronouncements; IFRS 9 "Financial Instruments" and IFRS 15 "Revenue from contracts with customers" on 1 January 2018 was discussed in note 45 of the 2018 Annual Report.

- (b) Refer to Group statement of comprehensive income for further details. Adjustments to other reserves include currency translation attributable to owners of Rio Tinto, other than that arising on Rio Tinto Limited's share capital.
- (c) The dividends paid in 2019 are based on the following US cents per share amounts: 2018 final – 180.0 cents, special dividend per share of 243.0 cents, 2019 interim – 151.0 cents and 2019 interim special dividend - 61.0 cents (2018 dividends paid: 2017 final – 180.0 cents, 2018 interim – 127.0 cents). Dividends per share: proposed in the announcement of the results for 2019 are ordinary dividend per share of 231.0 cents (2018: 180.0 cents).
- (d) In 2019, the total amount of US\$1,135 million (2018: US\$5,704 million) includes own shares purchased from the owners of Rio Tinto as per the cash flow statement of US\$1,552 million (2018: US\$5,386 million) and a financial liability recognised in respect of an irrevocable contract in place as at the reporting date to cover the share buy-back programme, less amounts paid during the year in respect of a similar irrevocable contract in place at the beginning of the year.
- (e) Net of contributions received from employees for share options.

Reconciliation with Australian Accounting Standards

The Group's financial statements have been prepared in accordance with IFRS, as defined in the accounting policies note within this report, which differs in certain respects from the version of International Financial Reporting Standards that is applicable in Australia, referred to as Australian Accounting Standards (AAS).

Prior to 1 January 2004, the Group's financial statements were prepared in accordance with UK GAAP. Under IFRS, as defined in note 1, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US\$379 million at 31 December 2019 (2018: US\$379 million).

Save for the exception described above, the Group's financial statements drawn up in accordance with IFRS are consistent with the requirements of AAS.

Geographical analysis (by destination)

Years ended 31 December

	2019	Adjusted ^(b)	2019	Adjusted ^(b)
	%	2018	US\$m	2018
		%		US\$m
Consolidated sales revenue by destination ^(a)				
China	51.3	44.6	22,135	18,061
Asia (excluding China and Japan)	10.6	11.5	4,558	4,665
United States of America	14.2	15.6	6,125	6,337
Japan	8.9	9.6	3,855	3,873
Europe (excluding UK)	6.0	9.3	2,610	3,788
Canada	3.3	3.3	1,478	1,330
Australia	1.7	1.8	737	720
UK	0.6	0.7	248	264
Other countries	3.4	3.6	1,419	1,484
Consolidated sales revenue	100	100	43,165	40,522

- (a) Consolidated sales revenue by geographical destination is based on the ultimate country of destination of the product, if known. If the eventual destination of the product sold through traders is not known then revenue is allocated to the location of the product at the time when control is transferred. Rio Tinto is domiciled in both the UK and Australia.
- (b) The 2018 comparatives have been amended to correct the allocation of sales revenue by destination. This resulted in an increase in sales to the United States of America (US\$59 million) and to Europe (excluding UK) (US\$82 million) with a corresponding decrease in sales to the UK (US\$122 million), Canada (US\$10 million) and Other countries (US\$9 million).

Impairment charges

	Pre-tax amount 2019 US\$m	Taxation 2019 US\$m	Non- controlling Interests 2019 US\$m	Net amount 2019 US\$m	Pre-tax amount 2018 US\$m
Copper & Diamonds – Oyu Tolgoi	(2,240)	(39)	1,506	(773)	—
Aluminium – Yarwun alumina refinery	(1,138)	339	—	(799)	—
Aluminium – ISAL Smelter	(109)	23	—	(86)	(123)
Energy & Minerals – Rössing	—	—	—	—	(9)
Total impairment charge	(3,487)	323	1,506	(1,658)	(132)

Copper & Diamonds – Oyu Tolgoi, Mongolia

On 16 July 2019 we announced that the first sustainable production from the Oyu Tolgoi underground project could be delayed by 16 to 30 months compared with the original feasibility study guidance in 2016. We also announced that development capital spend for the project may increase by between US\$1.2 billion and US\$1.9 billion in excess of the US\$5.3 billion previously disclosed.

We identified these matters as an impairment trigger and prepared an assessment of the recoverable amount for the cash-generating unit (CGU) at 30 June 2019 using a fair value less cost of disposal (FVLCD) model, as prescribed by IAS 36 “Impairment of assets”.

In arriving at a recoverable amount, as at 30 June 2019, we estimated post-tax cash flows expressed in real terms over the current life of mine plus anticipated future expansions, utilising mineral resources. The mineral resources incorporate almost two billion tonnes of ore, which contributes approximately 20% to the total recoverable amount. We discounted the cash flows using a post-tax discount rate of 8.3% expressed in real terms. Due to the inputs used, the recoverable amount of the Oyu Tolgoi CGU was classified as level 3 under the fair value hierarchy.

At 30 June 2019 we determined the recoverable amount to be US\$8.3 billion on a post-tax basis which resulted in a pre-tax impairment charge of US\$2.2 billion (100% basis). This was allocated to mining properties and the underground development assets under construction. The net adjustment to tax represented an increase to deferred tax assets of US\$320 million for the temporary difference corresponding to the impairment and a decrease in deferred tax assets of US\$359 million for tax losses that are now expected to expire without utilisation.

The post-tax impairment charge of US\$2.3 billion was allocated 66% to non-controlling interests with the remaining 34% to Rio Tinto shareholders (US\$0.8 billion) in proportion to the equity ownership interest in the project.

We calculated the recoverable amount taking into account a number of mine design options. As studies progress, this will lead to the selection of a preferred development option with detailed cost scheduling and production assumptions, which may lead to a change in recoverable amount. The recoverable amount also includes high-level risk adjustments to net cash flows to reflect the inherent uncertainty of assumptions for development capital, schedule and mineral resources.

Together with development capital, scheduling and production assumptions, other critical assumptions in the determination of recoverable amount include discount rate and commodity prices. To illustrate the sensitivity of the recoverable amount to movements in these assumptions, an increase to the post-tax real terms discount rate of one percentage point with all other inputs remaining constant would reduce the recoverable amount by US\$1.5 billion. A decrease in forecast copper prices by 10% throughout the life of the mine would reduce the recoverable amount by US\$2.2 billion while an increase of 10% would increase the recoverable amount by US\$2.1 billion. We have continued to monitor developments in the project through the second half of the year. No further adjustment has been recorded to the impairment charge recognised at 30 June.

Impairment charges (continued)

Aluminium – Yarwun alumina refinery, Australia

In previous years, the Yarwun alumina refinery has been part of a single cash-generating unit (CGU) with Queensland Alumina and the Weipa bauxite mine due to the integrated nature of these operations in Queensland, Australia. During 2019, the ramp-up of the Amrun expansion at Weipa resulted in increased bauxite export levels to the extent that Weipa is now considered to generate cash inflows largely independent from the downstream alumina operations. This change in circumstance has resulted in the previous CGU being split in 2019 into three CGUs: Weipa bauxite mine, Yarwun alumina refinery and Queensland Alumina.

In 2019, our annual impairment assessment of the Yarwun CGU resulted in a pre-tax impairment charge of US\$1,138 million to property, plant and equipment as a result of this CGU being assessed on a stand-alone basis and a 30 per cent year-on-year reduction in the spot price of alumina.

The recoverable amount of US\$911 million for the Yarwun CGU was determined by reference to a fair value less cost of disposal (FVLCD) model in line with the accounting policy set out in note 1(i). The recoverable amount of the Yarwun CGU is classified as level 3 under the fair value hierarchy. In arriving at FVLCD, post-tax cash flows expressed in real terms have been estimated over the expected useful economic life of the refinery and discounted using a post-tax discount rate of 6.6% expressed in real terms.

The individual assumptions subject to the most estimation uncertainty for the FVLCD calculation are the alumina price and the discount rate. To illustrate these sensitivities, a 5% reduction in the alumina price, equivalent to a US\$17 per tonne decrease in the long run, would have reduced the recoverable amount by approximately US\$505 million with all other inputs remaining constant. A one percentage point increase in the post-tax real-terms discount rate would have resulted in a lower recoverable amount by approximately US\$160 million.

Aluminium – ISAL Smelter, Iceland

In 2018, we reached agreement with Hydro to sell the ISAL Smelter in Iceland, our 53.3% interest in the Aluchemie anode plant in the Netherlands and our 50% share in the Aluminium fluoride plant in Sweden (ISAL). The anticipated headline sales price of US\$345 million was lower than the carrying value of these assets, leading us to recognise an impairment charge of US\$123 million. This was based on a fair value less cost of disposal (FVLCD) model, against property, plant and equipment and acquired software. Subsequently, Hydro withdrew its offer.

At 30 June 2019, these assets no longer met the accounting criteria to be classified as assets held for sale. Accordingly these non-current assets were tested for impairment. We calculated the recoverable amount for the cash-generating units based on the IAS 36 value-in-use methodology by reference to the net present value of post-tax cash flows expressed in real terms and discounted at 6.9%. These were US\$302 million for the cash-generating unit comprising ISAL and Aluchemie and US\$46 million for Alufluor. This resulted in a pre-tax impairment charge of US\$109 million allocated to property, plant and equipment and intangibles in the ISAL and Aluchemie cash-generating unit. At 31 December 2019, there were no further indicators of impairment or impairment reversals.

Energy & Minerals – Rössing, Namibia

In 2018, we agreed to sell our share of Rössing Uranium to China National Uranium Corporation Limited. Based on the expected disposal proceeds, we recognised a pre-tax impairment charge of US\$9 million on transfer to assets held for sale to write off the property, plant and equipment purchased during 2018. We completed the sale on 16 July 2019 - refer to acquisitions and disposals on page 44.

Acquisitions and disposals

Acquisitions

We have made no material acquisitions over the last two years.

In 2018, we created a joint venture, ELYSIS, with Alcoa and other partners to develop a carbon-free aluminium smelting process. We treated this as an acquisition and accounted for our interest in ELYSIS using the equity method. We invested cash of US\$5 million and contributed patents and licensed intellectual property (IP) to the venture. The patents and IP had no carrying value; however, on formation of the arrangement, they were recorded at fair value to reflect the contributions of the other parties in the joint venture. This value was US\$171 million (US\$141 million after tax).

2019 Disposals

On 16 July 2019 we disposed of our entire 68.62% interest in Rössing Uranium to China National Uranium Corporation Limited for gross cash proceeds of US\$6.5 million. After adjusting for cash held on Rössing's balance sheet at the date of disposal and included in the sale, we reported a net cash outflow of US\$118 million and recognised a loss on disposal of US\$289 million. This includes cumulative currency translation losses of US\$212 million recycled from the currency translation reserve on sale of the business.

2018 disposals

On 1 June 2018 we disposed of our entire 75% interest in the Winchester South coal development project in Queensland, Australia to Whitehaven Coal Limited for US\$200 million. This comprised US\$150 million cash which was received during 2018 and an unconditional cash payment of US\$50 million which was subsequently received in June 2019. Both receipts were recognised within "net cash generated from operating activities" within the cash flow statement. We recognised a gain on disposal of US\$195 million within "profit relating to interests in undeveloped projects" in the income statement.

On 1 August 2018 we completed the sale of our entire interest in the Hail Creek coal mine (82.0%) and the Valeria coal development project (71.2%) in Queensland, Australia to Glencore for a total consideration of US\$1.7 billion.

We received net proceeds of US\$1,545 million after completion adjustments in respect of the Hail Creek component of this transaction, resulting in a pre-tax gain of US\$1,141 million. During 2019 we received a further US\$26 million relating to working capital adjustments in respect of this sale. We also received cash proceeds in 2018 of US\$170 million in respect of Valeria. Of this amount, US\$87 million, relating to the sale of land and investments in associates, was included in investing cash flow, resulting in a pre-tax gain of US\$18 million. The remaining US\$83 million proceeds were recognised in operating cash flow, resulting in a pre-tax gain of US\$83 million in "profit relating to interests in undeveloped projects".

Also on 1 August 2018, we completed the sale of our entire interest in the Kestrel underground coal mine (80.0%) for US\$2.25 billion to a consortium comprising EMR Capital (EMR) and PT Adaro Energy Tbk (Adaro). We received net cash proceeds of US\$2,270 million, resulting in a pre-tax gain of US\$1,010 million.

On 14 December 2018 we completed the sale of the Dunkerque aluminium smelter in northern France to Liberty House for US\$500 million, subject to final adjustments. In 2018 we received net cash proceeds of US\$385 million. We recognised a pre-tax gain on disposal of US\$128 million.

On 21 December 2018 we sold our interest in the Grasberg mine for US\$3.5 billion as part of a series of transactions involving Inalum (PT Indonesia Asahan Aluminium (Persero)) and Freeport McMoRan Inc. Of the US\$3.5 billion received, US\$107 million related to our attributable share of copper and gold revenues for 2018, net of our capital contribution for the year. The remaining net proceeds of US\$3,392 million were included in investing cash flows and gave rise to a gain on disposal of US\$2,146 million.

Prima facie tax reconciliations

Years ended 31 December

	2019 US\$m	2018 US\$m
Profit before taxation	11,119	18,167
Deduct: share of profit after tax of equity accounted units	(301)	(513)
Parent companies' and subsidiaries' profit before tax	10,818	17,654
Prima facie tax payable at UK rate of 19% (2018:19%)	2,055	3,354
Higher rate of taxation on Australian underlying earnings	1,495	1,106
Impact of items excluded in arriving at underlying earnings ^(a) :		
– Impairment charges ^(b)	340	—
– Net gains and losses on consolidation and disposal of interests in businesses	55	(251)
– Exchange and gains/losses on derivatives	(22)	32
– Losses from increases to closure estimates (non-operating and fully impaired sites)	—	30
– Gain relating to surplus land at Kitimat	—	(81)
– Other exclusions	38	—
Impact of changes in tax rates and laws	1	47
Other tax rates applicable outside the UK and Australia on underlying earnings	(110)	(47)
Resource depletion and other depreciation allowances	(57)	(46)
Write-down of previously recognised deferred tax assets	42	13
Other items ^(c)	310	85
Total taxation charge^(d)	4,147	4,242

(a) The impact for each item includes the effect of tax rates applicable outside the UK.

(b) The tax impact of impairment includes the write down of deferred tax assets in respect of prior year tax losses in Mongolia and recognition of deferred tax on impaired assets. Refer to the Impairment charges note on page 42.

(c) Other items include non-deductible costs and withholding taxes, and various adjustments to provisions for taxation of current and prior periods, the most significant of which relate to transfer pricing matters, including issues under discussion with the Australian Tax Office.

(d) This tax reconciliation relates to the Group's parent companies, subsidiaries and joint operations. The Group's share of profit of equity accounted units is net of tax charges of US\$190 million (2018: US\$273 million).

Consolidated net (debt)/cash

	Financing liabilities ^(b)			Other assets		
	Borrowings excluding overdrafts ^(a) US\$m	Lease liabilities ^(e) US\$m	Debt-related derivatives (included in Other financial assets/liabiliti es) ^(c) US\$m	Cash and cash equivalents ^(b) US\$m	Other investments ^(d) US\$m	Net (debt)/cash US\$m
Year ended 31 December 2019						
Analysis of changes in consolidated net (debt)/cash						
Opening balance	(12,707)	(44)	(288)	10,772	2,522	255
Adjustment for transition to new accounting standard ^(f)	—	(1,248)	—	—	—	(1,248)
Foreign exchange adjustment	(5)	(9)	3	(54)	—	(65)
Cash movements excluding exchange movements	123	315	—	(2,808)	28	(2,342)
Other non-cash movements	(217)	(323)	138	117	34	(251)
Closing balance	(12,806)	(1,309)	(147)	8,027	2,584	(3,651)

	Financing liabilities ^(b)			Other assets		
	Borrowings excluding overdrafts ^(a) US\$m	Finance leases US\$m	Debt-related derivatives (included in Other financial assets/ liabilities) ^(c) US\$m	Cash and cash equivalents ^(b) US\$m	Other investments ^(d) US\$m	Net (debt)/cash US\$m
Year ended 31 December 2018						
Analysis of changes in consolidated net (debt)/cash						
Opening balance	(15,120)	(53)	(177)	10,547	958	(3,845)
Foreign exchange adjustment	123	3	(64)	151	—	213
Cash movements excluding exchange movements	2,240	6	51	191	1,557	4,045
Other non-cash movements	50	—	(98)	(117)	7	(158)
Closing balance	(12,707)	(44)	(288)	10,772	2,522	255

(a) Borrowings excluding overdrafts and including lease liabilities at 31 December 2019 of US\$14,115 million (2018: US\$12,751 million) differ from total borrowings and other financial liabilities of US\$14,713 million (2018: US\$13,920 million) on the balance sheet as they exclude other current financial liabilities of US\$350 million (31 December 2018: US\$761 million); other non-current financial liabilities of US\$248 million (31 December 2018: US\$407 million) and, at 31 December 2018, overdrafts of US\$1 million.

(b) Closing cash and cash equivalents at 31 December 2018 differ from cash and cash equivalents on the balance sheet as they include overdrafts of US\$1 million which have been classified as a financial liability; there were no overdrafts at 31 December 2019. Other non-cash movements at 31 December 2019 of US\$117 million represents the elimination of cash movements during the year in respect of assets held for sale which are included in the cash flow statement. In 2018, this represents the reclassification of cash and cash equivalents in disposal groups to assets held for sale (US\$117 million).

Consolidated net (debt)/cash (continued)

- (c) Included within "Debt-related derivatives" are interest rate and cross currency interest rate swaps that are in hedge relationships with the Group's debt.
- (d) Other investments comprise US\$2,584 million (2018: US\$2,522 million) of highly liquid financial assets held in managed investment funds classified as held for trading.
- (e) Other movements in lease liabilities include the net impact of additions, modifications and terminations during the year.
- (f) The impact of the transition to new accounting standard; IFRS 16 "Leases" on 1 January 2019 was previously provided in our 2019 interim results announcement published on 1 August 2019.

Events after the balance sheet date

On 12 February 2020, we announced that we will conduct a strategic review of the ISAL smelter in Iceland to determine the operation's ongoing viability and explore options to improve its competitive position. We expect to complete the review in the first half of 2020.

On 20 February 2020, our subsidiary Energy Resources of Australia Ltd (ERA) announced the completion of an entitlement offer, which was underwritten by the Group. As a result of the issue of new shares to the Group, our interest in ERA has increased from 68.39% to 86.33%.

Accounting Policies

The condensed consolidated financial statements included in this report have been prepared on a going concern basis in accordance with the Companies Act 2006 applicable to companies reporting under International Financial Reporting Standards and in accordance with applicable UK law, applicable Australian law as amended by the Australian Securities and Investments Commission Order dated 14 December 2015, Article 4 of the European Union IAS regulation and also with:

- International Financial Reporting Standards as issued by the International Accounting Standards Board (IASB) and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC) both as adopted by the European Union (EU) and which are mandatory for EU reporting as at 31 December 2019; and
- International Financial Reporting Standards as issued by the IASB and interpretations issued from time to time by the IFRS IC which are mandatory as at 31 December 2019.

The above accounting standards and interpretations are collectively referred to as "IFRS" in this report. Whilst the financial information included in this report has been prepared in accordance with IFRS the report does not contain all the information required to comply with IFRS. The Group will publish full financial statements that comply with IFRS on 26 February 2020.

The Group's financial statements have been prepared on the basis of accounting policies consistent with those applied in the financial statements for the year ended 31 December 2018, except for the change in accounting requirements set out below, all of which were effective as at 1 January 2019 without restatement of prior years.

The Group adopted IFRS 16 "Leases", IFRIC 23 "Uncertainty over income tax treatments", "Amendments to IAS 19 - Plan Amendment, Curtailment or Settlement" and a number of other minor amendments to IFRS on 1 January 2019. All of these pronouncements have been endorsed by the EU. Information on the transition impact of these new pronouncements was presented in the Group's condensed consolidated interim financial statements for the period ended 30 June 2019, and will be included in the Group's 2019 Annual Report.

The Group has also early adopted "Amendments to IFRS 9, IAS 39 and IFRS 7 - Interest rate benchmark reform", which was endorsed by the EU in January 2020, for the year ended 31 December 2019. This pronouncement allows temporary relief from applying specific hedge accounting requirements to hedging arrangements directly impacted by reform of the London Interbank Offered Rate (LIBOR) and other benchmark interest rates.

The IASB revised its Conceptual Framework in April 2018. Where specific accounting policies are not covered by IFRS they must be in accordance with the principles in the Framework by 2020.

IFRS 17 provides consistent principles for all aspects of accounting for insurance contracts. The Group is currently evaluating the impact of this pronouncement.

Non-GAAP measures

The Group presents certain non-GAAP financial measures, including underlying earnings, which are reconciled to directly comparable IFRS financial measures on page 51 of this report. These non-GAAP measures are used internally by management to assess the performance of the business and may therefore be useful to investors. They are not a substitute for the IFRS measures and should be considered alongside those measures.

Summary financial data in Australian dollars, sterling and US dollars

2019 A\$m	2018 A\$m	2019 £m	2018 £m		2019 US\$m	2018 US\$m
64,810	57,113	35,443	31,966	Gross sales revenue	45,367	42,835
61,664	54,029	33,723	30,240	Consolidated sales revenue	43,165	40,522
15,884	24,223	8,687	13,557	Profit before tax from continuing operations	11,119	18,167
9,960	18,567	5,447	10,392	Profit for the year from continuing operations	6,972	13,925
11,443	18,184	6,258	10,178	Net earnings attributable to Rio Tinto shareholders	8,010	13,638
30,281	24,181	16,560	13,534	Underlying EBITDA	21,197	18,136
14,819	11,744	8,104	6,573	Underlying earnings ^(a)	10,373	8,808
702.0c	1057.6c	383.9p	592.0p	Basic earnings per ordinary share ^(b)	491.4p	793.2p
909.1c	683.1c	497.1p	382.3p	Basic underlying earnings per ordinary share ^{(a)(b)}	636.3p	512.3p
				Dividends per share to Rio Tinto shareholders ^(c)		
469.97c	399.37c	259.28p	226.25p	- paid – ordinary dividend	331.0c	307.0c
427.20c	—	233.37p	—	- paid – special dividend	304.0c	—
349.74c	250.89c	177.47p	135.96p	- proposed – ordinary dividend	231.0c	180.0c
—	338.70c	—	183.55p	- proposed – special dividend	—	243.0c
13,444	17,523	7,352	9,807	Cash flow before financing activities	9,411	13,142
(5,216)	364	(2,787)	201	Net (debt)/cash	(3,651)	255
57,903	62,409	30,940	34,398	Equity attributable to Rio Tinto shareholders	40,532	43,686

- (a) Underlying earnings exclude impairments, net losses on disposal of business and other charges of US\$2,363 million (2018: net gains on disposal of business and other income of US\$4,830 million), which are analysed on page 51.
- (b) Basic earnings per ordinary share and basic underlying earnings per ordinary share do not recognise the dilution resulting from share options on issue.
- (c) The Australian dollar and sterling amounts are based on the US dollar amounts, retranslated at average or closing rates as appropriate, except for the dividends which are the actual amounts.

Metal prices and exchange rates

		2019	2018	Increase/ (Decrease)
Metal prices - average for the year				
Copper	- US cents/lb	273	297	(8)%
Aluminium	- US\$/tonne	1,791	2,110	(15)%
Gold	- US\$/troy oz	1,393	1,269	10 %

	Full-year average			Year-end		
Exchange rates against the US dollar	2019	2018	Increase/ (Decrease)	2019	2018	Increase/ (Decrease)
Sterling	1.28	1.34	(4)%	1.31	1.27	3 %
Australian dollar	0.70	0.75	(7)%	0.70	0.70	— %
Canadian dollar	0.75	0.77	(3)%	0.77	0.73	5 %
Euro	1.12	1.18	(5)%	1.12	1.14	(2)%
South African rand	0.069	0.076	(9)%	0.071	0.069	3 %

Reconciliation of net earnings to underlying earnings

Underlying earnings are reported by Rio Tinto to provide greater understanding of the underlying business performance of its operations. Underlying earnings and net earnings both represent amounts attributable to owners of Rio Tinto. Exclusions from underlying earnings relating to equity accounted units are stated after tax and included in the column 'Pre-tax'. Items (a) to (i) below are excluded from net earnings in arriving at underlying earnings.

	Pre-tax ^(j) 2019 US\$m	Taxation 2019 US\$m	Non- controlling interests 2019 US\$m	Net amount 2019 US\$m	Net amount 2018 US\$m
Exclusions from underlying earnings					
Impairment charges ^(a)	(3,487)	323	1,506	(1,658)	(104)
Net (losses)/gains on consolidation and disposal of interests in businesses ^(b)	(291)	—	—	(291)	3,996
Exchange and derivative gains/(losses):					
– Exchange gains on net external debt, intragroup balances and derivatives ^(c)	52	(6)	5	51	550
– Losses on currency and interest rate derivatives not qualifying for hedge accounting ^(d)	(72)	15	(2)	(59)	(48)
– (Losses)/gains on embedded commodity derivatives not qualifying for hedge accounting ^(e)	(253)	65	(4)	(192)	202
Losses from increases to closure estimates (non-operating and fully impaired sites) ^(f)	—	—	—	—	(335)
Gain relating to surplus land at Kitimat ^(g)	—	—	—	—	569
Other exclusions ^(h)	(171)	(6)	(37)	(214)	—
Total excluded from underlying earnings	(4,222)	391	1,468	(2,363)	4,830
Net earnings	11,119	(4,147)	1,038	8,010	13,638
Underlying earnings	15,341	(4,538)	(430)	10,373	8,808

(a) Refer to Impairment charges note on pages 42 to 43.

(b) In 2019, the net loss mainly relates to disposal of our entire 68.62% stake in Rössing Uranium on 16 July 2019 for which we recorded a pre-tax loss of US\$289 million (US\$289 million net of tax). In 2018, the net gain related mainly to the sales of the Hail Creek coal mine and the Kestrel underground coal mine, which both completed on 1 August 2018, the sale of the Dunkerque aluminium smelter on 14 December 2018 and the sale of Grasberg on 21 December 2018. The net gain in 2018 also includes a gain on consolidation recognised on the formation on 10 May 2018 of ELYSIS, a new joint venture to develop a carbon-free smelting process.

(c) Exchange gains/(losses) on external net debt and intragroup balances comprise post-tax foreign exchange gains on net debt of US\$60 million and post-tax losses of US\$9 million on intragroup balances, primarily as a result of the Canadian dollar strengthening against the US dollar. From 1 January 2019, all foreign exchange gains and losses relating to net debt are excluded from underlying earnings. In 2018 and previous years, foreign exchange gains and losses on non-US dollar cash held in US dollar functional currency entities was included within underlying earnings. The impact of this change on the reported comparatives is insignificant, and therefore the comparatives have not been restated. In 2018 the net exchange gains comprise post-tax foreign exchange losses of US\$386 million on US dollar denominated net debt, and US\$936 million gains on intragroup balances.

(d) Valuation changes on currency and interest rate derivatives, which are ineligible for hedge accounting, other than those embedded in commercial contracts, and the currency revaluation of embedded US dollar derivatives contained in contracts held by entities whose functional currency is not the US dollar.

(e) Valuation changes on derivatives, embedded in commercial contracts, that are ineligible for hedge accounting, but for which there will be an offsetting change in future Group earnings.

- (f) In 2018, the pre-feasibility study for the Argyle mine closure was completed, resulting in an increase to the closure provision. As the assets at Argyle had previously been fully impaired, this increase was not capitalised and was instead recognised in the income statement. The impairment charge in respect of Argyle recognised in 2017 was based on preliminary findings from the pre-feasibility study and therefore the charge arising from the finalisation of this study was excluded from underlying earnings. Also in 2018, the feasibility study for the closure of the Ranger Project Area at Energy Resources of Australia (ERA) was finalised, resulting in an increase to the closure provision. As the assets of ERA had been fully impaired, this increase was recognised in the income statement. The charge was excluded from underlying earnings.
- (g) In November 2018, Rio Tinto completed the lease and sale of a wharf and land in Kitimat. The resulting gain on disposal of Property, plant and equipment and Other income were both excluded from underlying earnings on the grounds of materiality.
- (h) Other exclusions include provisions for obligations in respect of legacy operations of US\$246 million (loss of US\$233 million after tax), partially offset by the write-back of a net realisable value provision in respect of low value stockpile inventories at Oyu Tolgoi of US\$75 million (gain of US\$19 million after tax). As a result of increased uncertainty over timing of production from the Oyu Tolgoi underground project (refer to Impairment charges note on page 42), we now expect to utilise low value stockpiles sooner than previously expected. This was excluded from underlying earnings, consistent with the related impairment charge recognised in the period.
- (i) Exclusions from underlying earnings relating to equity accounted units are stated after tax and are included in the column "Pre-tax".

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.

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