

26 July 2023

Improved operational performance with 5% volume uplift supports underlying EBITDA of \$11.7 billion and interim dividend of 177 US cents per share

- Net cash generated from operating activities of \$7.0 billion.
- Profit after tax attributable to owners of Rio Tinto (referred to as "net earnings" throughout this release) of \$5.1 billion, after \$0.8 billion of impairments relating to our Australian alumina refineries.
- Underlying EBITDA of \$11.7 billion and underlying earnings of \$5.7 billion, leading to an interim dividend of \$2.9 billion, a 50% payout, in line with our practice.

Six months ended 30 June	2023	2022	Change
Net cash generated from operating activities (US\$ millions)	6,975	10,474	(33)%
Purchases of property, plant and equipment and intangible assets (US\$ millions)	3,001	3,146	(5)%
Free cash flow ¹ (US\$ millions)	3,769	7,146	(47)%
Consolidated sales revenue (US\$ millions)	26,667	29,775	(10)%
Underlying EBITDA ¹ (US\$ millions)	11,728	15,597	(25)%
Profit after tax attributable to owners of Rio Tinto (net earnings) ² (US\$ millions)	5,117	8,943	(43)%
Underlying earnings per share (EPS) ^{1,2} (US cents)	352.9	534.9	(34)%
Ordinary dividend per share (US cents)	177.0	267.0	(34)%
Underlying return on capital employed (ROCE) ¹	20%	34%	
	At 30 June 2023	At 31 December 2022	
Net debt ¹ (US\$ millions)	4,350	4,188	

Rio Tinto Chief Executive Jakob Stausholm said: "We have a clear pathway to building an even stronger Rio Tinto and continue to gain momentum in our strategy to set the business up for long-term success. We are making good progress on pursuing our four objectives as we build further momentum in our Pilbara iron ore business, mindful that we need to raise our game across many of our other operations.

"Our disciplined investment in lifting the health of our assets and focus on culture, mindset and relationships is delivering results, with our Pilbara iron ore business consistently improving its performance with five consecutive quarters of year-on-year growth. We are taking real steps to shape our portfolio for the future, with first sustainable production from Oyu Tolgoi underground, just as we doubled our exposure through the acquisition of Turquoise Hill Resources. Last week we signed an agreement to form the Matalco aluminium joint venture to enter the exciting and fast growing aluminium recycling industry in North America. And the Simandou iron ore project in Guinea is advancing at pace, with final approvals expected later this year.

"Our robust financials, despite softer market conditions, are driven by the quality of our assets and our great people, delivering underlying EBITDA of \$11.7 billion, free cash flow of \$3.8 billion and underlying earnings of \$5.7 billion, after taxes and government royalties of \$4.1 billion. Our balance sheet strength enables us to continue to invest with discipline while also paying an interim ordinary dividend of \$2.9 billion, a 50% payout, in line with our practice.

"We will continue paying attractive dividends and investing in the long-term strength of our business as we sustain and grow our portfolio, while contributing to society's drive to net zero."

¹ This financial performance indicator is a non-IFRS (as defined below) measure which is reconciled to directly comparable IFRS financial measures (non-IFRS measures). It is used internally by management to assess the performance of the business and is therefore considered relevant to readers of this document. It is presented here to give more clarity around the underlying business performance of the Group's operations. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APM) and the detailed reconciliations on pages 71 to 80. Our financial results are prepared in accordance with IFRS — see page 39 for further information. Footnotes are set out in full on page 25.

² Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to page 41 for details.

Progress against our strategy and objectives

Objective	Key achievements in the first half of 2023
Best operator	<p>Our disciplined investment in lifting the health of our assets and focus on shifting our culture and mindset is delivering results:</p> <ul style="list-style-type: none">• we are committed to having a safe work environment, preventing catastrophic events and preventing injuries. Our AIFR in the first half of 2023 remained stable at 0.36. Investigations are under way following significant process safety incidents at Rio Tinto Iron & Titanium and Kennecott. We are heightening our focus on managing these risks and continue to prioritise the safety, health and wellbeing of our workforce, and communities where we operate.• sustained momentum from our Pilbara Iron Ore business with a 7% uplift in production and shipments in the first half: Gudai-Darri reached capacity and we lifted 2023 shipments guidance to the upper half of the 320 to 335 million tonne range• successfully ramping up the Oyu Tolgoi underground copper mine, with 54 drawbells opened from Panel 0, well ahead of plan• stable performance at our aluminium smelters, with Kitimat ramping up to schedule• commenced deployment of the Safe Production System at a further two sites, taking the total to 20 sites. This programme focuses on continuously improving safety, strengthening employee engagement and sustainably lifting operational performance.
Impeccable ESG	<p>In 2023 first half, our Scope 1 and 2 emissions were 15.4Mt CO₂e (15.5Mt in 2022 first half; 30.3Mt in 2022). Our capital expenditure on decarbonisation projects in 2023 first half was \$95 million, lower than we anticipated when we set our targets. Our related operational expenditure increased to approximately \$100 million.</p> <p>Progress during the half on decarbonising our assets included:</p> <ul style="list-style-type: none">• On 3 April, Rio Tinto Iron and Titanium (RTIT) started its BlueSmelting™ demonstration plant at its metallurgical complex in Sorel-Tracy as part of the process to validate the ground-breaking BlueSmelting™ technology, which aims to decarbonise RTIT's Quebec Operations.• On 2 June, our Boron, California operation successfully completed the full transition of its heavy machinery from fossil diesel to renewable diesel, making it the first open pit mine in the world to achieve this milestone.• On 12 June, we signed a Memorandum of Understanding (MoU) with China Baowu, the world's biggest steelmaker, to explore a range of industry-leading new projects in China and Australia to help decarbonise the steel value chain.

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Excel in Development

We made significant progress with our objective to excel in development with the following key milestones in the half:

- [achieved](#) first sustainable production at the Oyu Tolgoi underground copper mine in Mongolia, set to become the world's fourth largest copper mine by 2030
 - [entered](#) into an agreement to form a joint venture with First Quantum Minerals to unlock development of the La Granja copper project in Peru
 - [approved](#) \$498 million for development of the North Rim Skarn underground copper mine at Kennecott in Utah
 - [investing](#) \$1.1 billion to expand our AP60 aluminium smelter in Quebec
 - construction under way at Western Range mine to sustain Pilbara Iron Ore production with A\$1 billion of contracts [awarded](#) to Western Australian businesses
 - we are advancing the starter plant at the Rincon lithium project in Argentina: however, full definition of the project, changes to scope and higher inflation have unfortunately led to an increase in the capital estimate to \$335 million (from \$140 million). The learnings and design improvements will be carried over to the full-scale project.
 - investing \$0.7 billion in Matalco aluminium recycling joint venture in North America
 - the Simandou iron ore project in Guinea is advancing at pace, with final approvals expected later this year
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Social licence

We continue to restore trust and rebuild relationships, particularly with Indigenous peoples.

- In February, the Naskapi Nation of Kawawachikamach and Iron Ore Company of Canada [signed](#) an agreement to establish a mutually beneficial relationship based on dialogue, collaboration and trust over the coming decades
 - In March, we [published](#) an independent report based on a global audit of our Cultural Heritage Management compliance and performance
 - In May, we published our [2022 Statement on Modern Slavery](#). Although we are not aware of any recorded modern slavery incidents or complaints in our business during 2022, we are committed to looking for ways to improve.
 - On 2 June, we [announced](#) plans to invest \$395 million in a seawater desalination plant in the Pilbara, Western Australia, to support future water supply for the company's coastal operations and communities in the region.
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People and Culture

We increased our gender diversity to 23.5% (from 22.9% at year end). The increases were distributed across all levels of the organisation with female senior leaders increasing to 28.6% (from 28.3% at year end).

We are taking actions to ensure that everyone at Rio Tinto has a safe, respectful and inclusive workplace:

- expanding "Purple Banner" communications across many of our operations to share disrespectful behaviours, leveraging our strong safety culture
- implementing village councils across sites to provide a safe way for employees and contractors to raise concerns and give feedback
- carried out a contractor survey at Pilbara Iron Ore to better understand their experiences, with more than 950 responses

Guidance

- In 2023, we expect our share of capital investment (refer to APMs on page 77) to be \$7.0 billion, excluding Simandou. In addition, we expect our share of investment in Simandou to be around \$0.5 billion in the second half of 2023. This guidance assumes all Simandou costs are capitalised in the second half of the year following the signature of agreements between the joint venture parties. Our previous guidance was \$8.0 billion, depending on the ramp-up of spend at Simandou.
- In 2024 and 2025, our share of capital investment is expected to be up to \$10.0 billion per year, including up to \$3.0 billion in growth per year, depending on opportunities. Each year also includes sustaining capital of around \$3.5 billion, of which around \$1.5 billion a year is for Pilbara iron ore (subject to ongoing inflationary pressure and exchange rates) and \$2.0 to \$3.0 billion of replacement capital. Guidance includes around \$1.5 billion over the next three years on decarbonisation projects. This remains subject to Traditional Owner and other stakeholder engagement, regulatory approvals and technology developments.
- In 2023, we expect our exploration & evaluation expense (excluding Simandou) to be \$1.0 billion. In addition, we have incurred \$0.3 billion in evaluation costs for the Simandou iron ore project in the first half on a 100% basis. As noted above, our guidance assumes all Simandou costs are capitalised in the second half of the year.
- Effective tax rate on underlying earnings is expected to be around 30% in 2023.

Unit costs	H1 2023 Actuals	2023 Guidance
Pilbara iron ore unit cash costs, free on board (FOB) basis - US\$ per wet metric tonne	21.2	21.0-22.5
Australian dollar exchange rate	0.68	0.70
Copper C1 unit costs (includes Kennecott, Oyu Tolgoi and Escondida) - US cents per lb	184	180-200

Production (Rio Tinto share, unless otherwise stated)	H1 2023 Actuals	2023 Guidance
Pilbara iron ore (shipments, 100% basis) (Mt)	161.7	320 to 335*
Bauxite (Mt)	25.6	54 to 57**
Alumina (Mt)	3.7	7.4 to 7.7
Aluminium (Mt)	1.6	3.1 to 3.3
Mined copper (consolidated basis) (kt) ⁴	290	590 to 640
Refined copper (kt)	95	160 to 190
Diamonds (M carats)	1.9	3.0 to 3.8
Titanium dioxide slag (Mt)	0.6	1.1 to 1.4**
Iron Ore Company of Canada iron ore pellets and concentrate (Mt)	4.6	10.0 to 11.0
Boric oxide equivalent (Mt)	0.3	~0.5

- Production and unit cost guidance is consistent with our Second Quarter Operations Review, released on 19 July 2023.
- Iron ore shipments and bauxite production guidance remain subject to weather impacts.

* In the upper half of the range. With higher iron ore production anticipated in 2023 second half, SP10 is expected to be a larger proportion of shipments (first half 2023: 10%, on a 100% basis).

** In the lower end of the range

Other footnotes set out in full on page 25.

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Decarbonisation targets

- Activity across our global decarbonisation portfolio continues to accelerate and we remain committed to reducing our Scope 1&2 emissions by 50% by 2030. Delivery of this target remains dependent on the development and delivery of new low-carbon energy solutions at our Pacific Aluminium operations that can support an internationally competitive aluminium business. In 2022, this business unit contributed 70% of our total Scope 2 electricity emissions and 48% of total Scope 1&2 emissions.
- In addition to the pursuit of abatement projects to 2030 across renewable electricity, fleet solutions and process heat abatement, we are committed to our ongoing investment in scaling up industry breakthrough technologies to support our pathway to net-zero operations (scope 1&2) by 2050. This approach has contributed to continued investment in ELYSIS+ for aluminium, Hydrogen calcination for alumina¹, BlueSmelting for titanium dioxide and iron and trialling battery electric mining fleets and trains in our mining operations.
- We expect to have made financial commitments to industrial abatement projects representing more than 15% of group emissions by 2025. However, unless we use carbon offsets, we do not expect to achieve our targeted 15% reduction in Scope 1&2 emissions until after 2025. Physical delivery of renewables, diesel replacement and process heat abatement will lag our financial commitments. These delays are the result of a range of factors including engineering and construction timelines, the need to carefully integrate our ambitions with the needs of our local communities and stakeholder groups and a requirement for additional abatement to address underlying emissions growth as our production plans evolve.
- Developing our own nature-based solutions and securing high quality carbon offsets remain a key part of our decarbonisation programme as we work towards our medium and long term carbon reduction targets.

¹ As part of our commitment to [enhanced climate advocacy and transparency](#), we are publishing a series of briefing papers about our key emissions sources, efforts to decarbonise specific assets and how policy settings can support our Scope 1 and 2 emissions reduction targets. The first of these covers decarbonisation of our [Australian alumina refineries](#).

Financial performance

Income Statement

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2023 first half was \$5.1 billion (2022 first half: \$8.9 billion). We recorded a profit after tax in 2023 first half of \$4.9 billion (2022 first half: \$9.4 billion) of which a loss of \$0.2 billion was attributable to non-controlling interests (2022 first half profit: \$0.5 billion).

Underlying EBITDA

To provide additional insight into the performance of our business, we report underlying EBITDA and underlying earnings. Underlying EBITDA and underlying earnings are Non-IFRS Measures. For definitions and a detailed reconciliation of underlying EBITDA and underlying earnings to the nearest IFRS measures, see pages 46 and 74, respectively.

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

	US\$bn
2022 first half underlying EBITDA	15.6
Prices	(3.3)
Exchange rates	0.4
Volumes and mix	0.4
General inflation	(0.2)
Energy	—
Operating cash unit costs	(0.9)
Higher exploration and evaluation expenditure	(0.3)
2023 first half underlying EBITDA	11.7

Solid financial results impacted by significant movements in commodity prices

We saw lower prices, in general, for our commodities, in line with slowing global demand, with the Chinese recovery predominantly led by the service sector.

Movements in commodity prices resulted in a \$3.3 billion decline in underlying EBITDA overall compared with 2022 first half. This was primarily from lower iron ore prices (\$1.6 billion), lower London Metal Exchange (LME) copper prices and a negative provisional pricing impact (\$0.2 billion) and lower pricing for our Aluminium business (\$1.4 billion), driven by LME prices and lower alumina pricing. We have included a table of prices and exchange rates on page 81.

The monthly average Platts index for 62% iron fines converted to a Free on Board (FOB) basis was 14% lower, on average, compared with 2022 first half.

The average LME price for copper was 10% lower, the average LME aluminium price was 24% lower while the gold price was 3% higher compared with 2022 first half.

The midwest premium duty paid for aluminium in the US averaged \$583 per tonne, 27% lower than in 2022 first half.

Benefit from weaker local currencies during 2023 first half

Compared with 2022 first half, on average, the US dollar strengthened by 6% against the Australian dollar and by 6% against the Canadian dollar. Currency movements increased underlying EBITDA by \$0.4 billion relative to 2022 first half.

Improvement in sales volumes and mix

Higher sales volumes and changes in product mix across the portfolio increased underlying EBITDA by \$0.4 billion compared to 2022 first half. This was mostly attributable to increased iron ore sales and enhanced product mix, including higher lump shipments, following improved Pilbara system performance including the ramp-up of Gudai-Darri.

Impact of rising inflation and generally stable energy prices

We saw a \$0.1 billion benefit to underlying EBITDA on the easing of diesel prices compared to 2022 first half: however, the benefit of this was offset by other energy prices that remain elevated, reducing underlying EBITDA by \$0.1 billion. In addition, general price inflation across our global operations resulted in a \$0.2 billion reduction in underlying EBITDA, net of a \$0.2 billion benefit from the impact of inflation on closure provisions.

Lower volumes at some assets drive up unit costs: market-linked raw material price declines to benefit costs in second half

We remained focused on cost control, in particular maintaining discipline on fixed costs. Lower production across several assets triggered an overall rise in our operating cash unit costs, which reduced underlying EBITDA by approximately \$0.4 billion (on a unit cost basis) compared with 2022 first half. This was mainly at Kennecott from the failure of a conveyor in March and the rebuild of the smelter and refinery that commenced in May, along with production being impacted at Iron Ore Company of Canada (IOC) in June following the wildfires in Northern Quebec. Increases to our nominal cost base reduced underlying EBITDA by \$0.5 billion, where a large proportion of this is expected to be temporary. In Aluminium, we made targeted investment to improve the integrity of operations and we continue to see elevated market-linked raw material prices flow through underlying EBITDA: which have moderated but are expected to take three to four months to flow through to the Income Statement. Costs at IOC were higher following the recent collective bargaining agreement and where we also made targeted investment to improve asset reliability at the mine, port and rail, concentrator and pellet plant.

Increasing our global exploration and evaluation activity

We increased our exploration and evaluation expenditure by \$0.3 billion, or 94%, to \$0.7 billion. This was mainly attributable to increased activity at the Simandou iron ore project in Guinea (where costs are included in underlying EBITDA on a 100% basis) and the Rincon lithium project in Argentina.

Net earnings

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

	US\$bn
2022 first half net earnings	8.9
Total changes in underlying EBITDA	(3.9)
Increase in interest and finance items (pre-tax) in underlying earnings	(0.4)
Decrease in tax on underlying earnings	0.6
Decrease in underlying earnings attributable to outside interests	0.7
Total changes in underlying earnings	(3.0)
Changes in exclusions from underlying earnings:	
Gain recognised by Kitimat relating to LNG Canada's project	(0.1)
Movement in impairment charges	(0.8)
Movement in closure estimates (non-operating and fully impaired sites)	0.1
2023 first half net earnings	5.1

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

Net interest and finance items

Interest and finance items (pre-tax) were higher mainly as a result of a \$0.5 billion increase in finance costs due to higher interest rates and a non-cash modification charge on refinancing of the Oyu Tolgoi project finance facility, partially offset by a \$0.2 billion increase in finance income due to higher interest rates.

Tax and non-controlling interests

The 2023 first half effective corporate income tax rate on pre-tax earnings, excluding equity accounted units, was 30.5%, compared with 24.2% (as restated) in 2022 first half, the most significant driver of the lower rate in 2022 being the recognition and use of additional deferred tax assets at Oyu Tolgoi. The effective tax rate on pre-tax earnings in Australia was 30.4%, compared with 28.7% (as restated) in 2022 first half.

Underlying earnings attributable to outside interests

Earnings attributable to non-controlling interests were lower, mainly due to lower underlying earnings at Oyu Tolgoi, the acquisition of the Turquoise Hill minorities in 2022, higher evaluation spend at Simandou and higher interest costs attributable to non-controlling interests.

Items excluded from underlying earnings

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

	Six months ended 30 June 2023 US\$bn	Six months ended 30 June 2022 US\$bn
Underlying earnings	5.7	8.7
Items excluded from underlying earnings		
Impairment charges	(0.8)	—
Gains recognised by Kitimat relating to LNG Canada's project	—	0.1
Foreign exchange and derivative gains on net debt and intragroup balances and derivatives not qualifying for hedge accounting	0.2	0.2
Net earnings	5.1	8.9

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

On pages 74 to 75 there is a detailed reconciliation from net earnings to underlying earnings, including pre-tax amounts and additional explanatory notes. The differences between profit after tax and underlying EBITDA are set out in the table on page 46.

We recognised impairment charges of \$0.8 billion (after tax) in 2023 first half, mainly related to our alumina refineries in Queensland, triggered by the challenging market conditions facing these assets, together with our improved understanding of the capital requirements for decarbonisation and the recently legislated cost escalation for carbon emissions. There is a detailed explanation of the impairment process on page 49.

In 2023 first half, we recognised an exchange and derivative gain of \$0.2 billion, in line with the first half gain of \$0.2 billion. The 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.

Underlying EBITDA and underlying earnings by product group

	Underlying EBITDA			Underlying earnings		
	2023 US\$bn	2022 US\$bn	Change %	2023 US\$bn	2022 US\$bn	Change %
Six months ended 30 June						
Iron Ore	9.8	10.4	(6)%	5.8	6.5	(11)%
Aluminium	1.1	2.9	(60)%	0.3	1.6	(83)%
Copper	1.1	1.5	(29)%	0.2	0.6	(65)%
Minerals	0.7	1.3	(45)%	0.2	0.4	(58)%
Reportable segment total	12.7	16.1	(21)%	6.4	9.0	(29)%
Simandou iron ore project	(0.3)	(0.1)	489 %	(0.1)	—	245 %
Other operations	(0.1)	(0.1)	8 %	(0.2)	(0.2)	5 %
Central pension costs, share-based payments, insurance and derivatives	0.2	0.3	(37)%	0.1	0.2	(38)%
Restructuring, project and one-off costs	(0.1)	(0.1)	(2)%	(0.1)	(0.1)	(2)%
Other central costs	(0.5)	(0.4)	25 %	(0.5)	(0.4)	25 %
Central exploration and evaluation	(0.1)	(0.1)	19 %	(0.1)	(0.1)	20 %
Net interest				0.1	0.1	(23)%
Total	11.7	15.6	(25)%	5.7	8.7	(34)%

Financial figures are rounded to the nearest million, hence small differences may result in the totals and period-on-period change.

Underlying EBITDA and underlying earnings are APMs used by management to assess the performance of the business, and provide additional information which investors may find useful. APMs are reconciled to directly comparable IFRS financial measures on pages 71 to 80.

Simandou iron ore project

Costs attributable to the Simandou iron ore project in Guinea increased to \$318 million (100% basis at EBITDA level), in line with the rise in activity.

Central and other costs

Pre-tax central pension costs, share-based payments, insurance and derivatives were a \$0.2 billion credit compared with a \$0.3 billion credit in 2022 first half, reflecting a net loss on derivatives recognised in 2023 (of -\$65 million) compared to derivative gains recognised in 2022 (of +\$65 million), offset by lower central pension costs.

On a pre-tax basis, restructuring, project and one-off central costs were in line with 2022 first half mainly associated with corporate projects, in particular workstreams surrounding Everyday Respect and to support our CSP objectives.

Other central costs of \$0.5 billion were 25% higher than in 2022 first half, reflecting our increased investment in decarbonisation to support delivery of our targets, along with investment in technology, R&D and associated partnerships. This also includes lower internal cost recoveries recharged to the product groups.

On an underlying earnings basis, net interest was a credit of \$0.1 billion in line with 2022 first half as the impact of higher pre-tax interest costs was offset by an increase in amounts attributable to non-controlling interests and tax effects.

Continuing to invest in greenfield exploration

We have a strong portfolio of greenfield exploration projects in early exploration and studies stages, with activity in 18 countries across eight commodities. This is reflected in our pre-tax central spend of \$0.1 billion. The bulk of this exploration expenditure was focused on copper in Australia, Colombia, Chile, Zambia, Peru, the US and Kazakhstan, and diamonds in Angola. Rio Tinto recently partnered in two lithium exploration projects in Quebec and greenfield lithium exploration continues in Canada, Australia, the US and Africa. Exploration for nickel is ongoing in Canada, Finland, Brazil and Peru. Mine-lease exploration continued at Rio Tinto managed businesses including Bingham Canyon in the US, Pilbara Iron Ore in Australia and Diavik in Canada.

Cash flow

	2023	2022
Six months ended 30 June	US\$bn	US\$bn
Net cash generated from operating activities	7.0	10.5
Purchases of property, plant and equipment and intangible assets	(3.0)	(3.1)
Lease principal payments	(0.2)	(0.2)
Free cash flow¹	3.8	7.1
Dividends paid to equity shareholders	(3.7)	(7.6)
Acquisitions	—	(0.8)
Other	(0.3)	—
Movement in net debt/cash¹	(0.2)	(1.3)

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

Footnotes are set out in full on page 25.

- \$7.0 billion in net cash generated from operating activities, 33% lower than 2022 first half, primarily driven by price movements for our major commodities and a \$0.9 billion rise in working capital. This reflected a build in blasted and mine stocks in the Pilbara to support overall system health, and higher spares and stores (including seasonality due to the Diavik winter road). Payables were also lower due to the timing of spend, and normal volatility in amounts due to JV partners and employees. Operating cash flow was also impacted by lower dividends from Escondida during the first half (\$0.3 billion in 2023 first half; \$0.6 billion in 2022 first half).
- Our capital expenditure of \$3.0 billion was comprised of \$0.3 billion of growth, \$0.7 billion of replacement, \$1.9 billion of sustaining and \$0.1 billion of decarbonisation capital (in addition to \$0.1 billion of decarbonisation spend in operating costs). We funded our capital expenditure from operating activities and generally expect to continue funding our capital programme from internal sources.
- \$3.7 billion of dividends paid in 2023 first half, being the 2022 final ordinary dividend.
- The above movements, together with \$0.3 billion of other movements, resulted in net debt¹ increasing by \$0.2 billion in 2023 first half to \$4.4 billion at 30 June 2023.

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Balance sheet

Net debt¹ increased by \$0.2 billion in 2023 first half to \$4.4 billion at 30 June 2023 per the above movements.

Our net gearing ratio¹ (net debt/(cash) to total capital) was 8% at 30 June 2023 (31 December 2022: 7%), see page 79.

Our total financing liabilities excluding net debt derivatives at 30 June 2023 (see page 78) were \$14.1 billion (31 December 2022: \$12.3 billion) and the weighted average maturity was around 12 years. At 30 June 2023, approximately 59% of these liabilities were at floating interest rates (65% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year is \$1.6 billion, which matures in 2033.

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

We had \$10.4 billion in cash and cash equivalents plus other short-term cash investments at 30 June 2023 (31 December 2022: \$8.8 billion).

Provision for closure costs

At 30 June 2023, provisions for close-down and restoration costs and environmental clean-up obligations were \$14.8 billion (31 December 2022: \$15.8 billion). The principal movement during the period followed a revision of the closure discount rate to 2.0% (from 1.5%), reflecting expectations of higher yields from long-dated bonds, which resulted in a \$1.1 billion reduction to the provision. This was partly offset by the amortisation of discount (\$0.6 billion) which includes the effect of elevated inflation expectations for the year. Utilisation of the provision through spend (\$0.3 billion) and a weaker Australian dollar, Canadian dollar and South African rand against the US dollar (\$0.1 billion) also contributed to lowering the provision.

Our shareholder returns policy

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

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

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

50% payout ratio on the interim ordinary dividend, in line with our practice

	2023 US\$bn	2022 US\$bn
Ordinary dividend		
Interim*	2.9	4.3
Payout ratio on ordinary dividend	50%	50%

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

We determine dividends in US dollars. We declare and pay Rio Tinto plc dividends in pounds sterling and Rio Tinto Limited dividends in Australian dollars. The 2023 interim dividend has been converted at exchange rates applicable on 25 July 2023 (the latest practicable date before the dividend was declared). American Depositary Receipt (ADR) holders receive dividends at the declared rate in US dollars.

Ordinary dividend per share declared	2023	2022
Rio Tinto Group		
Interim - US cents per share	177.00	267.00
Rio Tinto plc		
Interim - UK pence per share	137.67	221.63
Rio Tinto Limited		
Interim - Australian cents per share	260.89	383.70

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

On 21 September 2023, we will pay the 2023 interim ordinary dividend to holders of ordinary shares and holders of ADRs on the register at the close of business on 11 August 2023 (record date). The ex-dividend date is 10 August 2023.

Rio Tinto plc shareholders may choose to receive their dividend in Australian dollars or New Zealand dollars, and Rio Tinto Limited shareholders may choose to receive theirs in pounds sterling or New Zealand dollars. Currency conversions will be based on the pound sterling, Australian dollar and New Zealand dollar exchange rates five business days before the dividend payment date. Rio Tinto plc and Rio Tinto Limited shareholders must register their currency elections by 31 August 2023.

We will operate our Dividend Reinvestment Plans for the 2023 interim dividend (visit riotinto.com for details). Rio Tinto plc and Rio Tinto Limited shareholders' election notice for the Dividend Reinvestment Plans must be received by 31 August 2023. 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.

Capital projects

Approved projects (Rio Tinto 100% owned unless otherwise stated)	Total approved capital cost (100% unless otherwise stated)	Approved capital remaining to be spent from 1 July 2023	Status/Milestones
Ongoing			
Iron Ore			
Investment in the Western Range iron ore project, a joint venture between Rio Tinto (54%) and China Baowu Steel Group Co. Ltd (46%) in the Pilbara to sustain production of the Pilbara Blend from Rio Tinto's existing Paraburdoo hub. First production is anticipated in 2025.	\$1.3bn (Rio Tinto share) ³	\$1.0bn (Rio Tinto share)	Announced in September 2022, the mine will have a capacity of 25 million tonnes per year. The project includes construction of a primary crusher and an 18-kilometre conveyor connection to the Paraburdoo processing plant. Construction continued in line with schedule during the half with site facilities completed and contractors mobilised, while we progressed bulk earthworks for the fixed plant and pre-strip earthworks for the mine.
Aluminium			
Investment to expand the low-carbon AP60 aluminium smelter at the Complexe Jonqui�re in Quebec. The investment includes up to \$113 million of financial support from the Quebec government.	\$1.1bn	\$1.1bn	Approved in June 2023, the investment will add 96 AP60 pots, representing 160,000 tonnes of primary aluminium per year, replacing the Arvida smelter which is set to gradually close from 2024. Commissioning is expected in the first half of 2026, with the smelter fully ramped up by the end of that year. Once completed, the smelter is expected to be in the first quartile of the industry operating cost curve.
Copper			
Phase two of the south wall pushback to extend mine life at Kennecott in Utah by a further six years.	\$1.8bn	\$1.3bn	Approved in December 2019, the investment will further extend strip waste rock mining and support additional infrastructure development. This will allow mining to continue into a new area of the orebody between 2026 and 2032. In March 2023, a further \$0.3 billion was approved to primarily mitigate the risk of failure in an area of geotechnical instability known as Revere, necessary to both protect open pit value and enable underground development.
Investment in the Kennecott underground development of the North Rim Skarn (NRS) area.	\$0.5bn	\$0.5bn	Approved in June 2023, production from NRS ⁵ will commence in 2024 and is expected to ramp up over two years, to deliver around 250,000 tonnes of additional mined copper over the next ten years ⁶ alongside open cut operations.
Development of the Oyu Tolgoi underground copper/gold mine in Mongolia (Rio Tinto 66%), which is expected to produce (from the open pit and underground) an average of ~500,000 tonnes ⁷ of copper per year from 2028 to 2036, compared with 130,000 tonnes in 2022 (open pit).	\$7.06bn	\$1.4bn	The delivery of infrastructure for ramp-up to full capacity remains on target: we expect commissioning of shafts 3 and 4 and the conveyor to surface in the second half of 2024 and the concentrator conversion in the first half of 2025. We delivered first sustainable underground production from Panel 0 in March 2023. A total of 54 drawbells had been opened at 30 June, including 35 in the first half.

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Future options

	Status
Iron Ore: Pilbara brownfields	
Over the medium term, our Pilbara system capacity remains between 345 and 360 million tonnes per year. Meeting this range, and the planned product mix, will require the approval and delivery of the next tranche of replacement mines over the next five years.	In addition to Western Range (Greater Paraburdo), which is under construction, we continue to progress studies for Hope Downs 1 Sustaining (Hope Downs 2 and Bedded Hilltop), Brockman 4 Sustaining (Brockman Syncline 1), Greater Nammuldi Sustaining and West Angelas Sustaining. We continue to work closely with local communities, Traditional Owners and governments to progress approvals for these new mining projects
Iron Ore: Rhodes Ridge	
In October 2022, Rio Tinto (50%) and Wright Prospecting Pty Ltd (50%) agreed to modernise the joint venture covering the Rhodes Ridge project in the Eastern Pilbara, providing a pathway for development utilising Rio Tinto's rail, port and power infrastructure. Rhodes Ridge contains 5.8 billion tonnes of high-grade Mineral Resources at an average grade of 62.3% Fe. The project's total resource, 6.7 billion tonnes at an average grade of 61.6% Fe, represents approximately one third of our existing Resource base in the Pilbara ⁹ .	A resource-drilling programme is currently underway to support future project studies. An Order of Magnitude study is underway and is expected to be completed in 2023. The Study considers the development of an operation before the end of the decade with initial plant capacity of up to 40 million tonnes annually, subject to the receipt of relevant approvals.
Iron Ore: Simandou	
The Simandou iron ore project in Guinea ⁹ contains one of the world's largest known undeveloped high-grade low-impurity iron ore deposits, demand for which is increasing as steelmakers look to reduce carbon emissions. Simandou is set to diversify our strong iron ore portfolio, complementing our high-grade Iron Ore Company of Canada products and supporting the long-term attractiveness of our Pilbara Blend™ offering.	Negotiations continued to progress, to enable the co-development of rail and port infrastructure by Simfer, Winning Consortium Simandou and the Guinean State. The legal framework for the construction and operations phases will establish access rights, fiscal regime and schedule, as well as joint venture arrangements. We also continued to progress early works, including establishing accommodation camps to support continued mobilisation on both our mine and rail scope, earthworks and geotechnical drilling.
Lithium: Jadar	
Development of the greenfield Jadar lithium-borates project in Serbia. The development will include an underground mine with associated infrastructure and equipment, including electric haul trucks, as well as a beneficiation chemical processing plant.	The Board committed funding in July 2021, subject to receiving all relevant approvals, permits and licences. We are focused on consultation with all stakeholders to explore all options following the Government of Serbia's cancellation of the Spatial Plan in January 2022.
Lithium: Rincon	
We completed the acquisition of the Rincon Lithium project in Salta province, Argentina in March 2022. Development of a 3,000 tonne per year starter, battery-grade lithium carbonate plant is underway with first saleable production now expected at the end of 2024 (previously in the first half of 2024).	In July 2022, we approved \$140 million of investment and \$54 million for early works to support a full-scale operation. To date, the majority of costs have been expensed through exploration and evaluation expenditure. In July 2023, we approved a further \$195 million to complete the starter plant: the increase was driven by the project now being fully defined (previously conceptual), scope adjustments to design (including column performance improvements and changes to waste and spent brine disposal facilities), rising capital costs across the lithium industry, particularly for processing equipment and from broad cost escalation in Argentina. Studies are continuing on the full-scale plant, which will have benefits of economies of scale, with the capital intensity, based on current stage of studies, forecast to be in line with regional lithium industry benchmarks.
Mineral Sands: Zulti South	
Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%).	Approved in April 2019 to underpin RBM's supply of zircon and ilmenite over the life of the mine. The project remains on full suspension.

Copper: Resolution

The Resolution Copper project is a proposed underground copper mine in the Copper Triangle, in Arizona, United States (Rio Tinto 55%). It has the potential to supply up to 25% of US copper demand.

The United States Forest Service (USFS) continued work to progress the Final Environmental Impact Statement and complete actions necessary for the land exchange. We continued to advance partnership discussions with several federally-recognised Native American Tribes who are part of the formal consultation process. We are also monitoring the Apache Stronghold versus USFS case held in the US Ninth Circuit Court of Appeals. While there is significant local support for the project, we respect the views of groups who oppose it and will continue our efforts to address and mitigate these concerns.

Copper: Winu

In late 2017, we discovered copper-gold mineralisation at the Winu project in the Paterson Province in Western Australia. In 2021, we reported our first Indicated Mineral Resource. The pathway is expected to take longer than originally anticipated and remains subject to regulatory and other required approvals.

We continued to strengthen our relationships and advanced agreement making with host Traditional Owners, the Martu and Nyangumarta groups. Drilling, fieldwork and study activities continued, strengthening the development pathway ahead of applications for regulatory and other required approvals.

Copper: La Granja

In March 2023, we entered into an agreement with First Quantum Minerals to form a joint venture that will work to unlock the development of the La Granja copper project in Peru, one of the largest undeveloped copper deposits in the world. The transaction is expected to complete by the end of the third quarter of 2023, subject to the satisfaction of regulatory approvals.

First Quantum will acquire a 55% stake for \$105 million and commit to further invest up to \$546 million to sole fund capital and operational costs through a feasibility study and toward development. Upon completion of the sole funding commitment, all subsequent expenditures will be applied on a pro-rata basis in line with share ownership.

Aluminium: ELYSIS

ELYSIS, our joint venture with Alcoa, supported by Apple, the Government of Canada and the Government of Quebec, is developing a breakthrough inert anode technology that eliminates all direct greenhouse gases from the aluminium smelting process.

Construction of the first commercial-scale prototype cells is underway at our Alma smelter and is expected to become operational in 2023. ELYSIS aims to have its technology available for installation from 2024 and production of larger volumes of carbon-free aluminium approximately two years later.

Review of operations

Iron Ore

Six months ended 30 June	2023	2022	Change
Pilbara production (million tonnes — 100%)	160.5	150.3	7 %
Pilbara shipments (million tonnes — 100%)	161.7	151.4	7 %
Salt production (million tonnes — Rio Tinto share) ¹	3.1	2.6	18 %
Segmental revenue (US\$ millions)	15,600	16,610	(6)%
Average realised price (US\$ per dry metric tonne, FOB basis)	107.2	120.5	(11)%
Underlying EBITDA (US\$ millions)	9,792	10,395	(6)%
Pilbara underlying FOB EBITDA margin ²	69%	70%	
Underlying earnings (US\$ millions) ³	5,787	6,473	(11)%
Net cash generated from operating activities (US\$ millions)	6,782	8,512	(20)%
Capital expenditure (US\$ millions) ⁴	(1,094)	(1,472)	(26)%
Free cash flow (US\$ millions)	5,639	7,023	(20)%
Underlying return on capital employed ^{5 3}	63%	72%	

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

Footnotes are set out in full on page 25.

1. Dampier Salt is reported within Iron Ore, reflecting management responsibility. Iron Ore Company of Canada continues to be reported within Minerals. The Simandou iron ore project in Guinea is now reported within Other Operations.
2. The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara segmental revenue, excluding freight revenue.
3. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to page 41 for details.
4. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
5. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of \$9.8 billion was 6% lower than 2022 first half, due to lower prices (\$1.2 billion), following a 14% decline in the monthly average Platts index for 62% iron fines adjusted to an FOB basis. This was partly offset by higher sales volumes and improved product mix following the ramp-up of Gudai-Darri. We continued to target investment in pit health and asset maintenance across the Pilbara.

Unit costs of \$21.2 per tonne are \$0.6 per tonne lower than 2022 first half. Cost escalation from inflation was offset by a weaker Australian dollar while increased iron ore volumes offset a higher mine work index and mine maintenance costs.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 69%, compared with 70% in 2022 first half, largely due to the change in the iron ore price.

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

We achieved an average iron ore price of \$98.6 per wet metric tonne on an FOB basis (2022 first half: \$110.9 per wet metric tonne) across our product suite. This equates to \$107.2 per dry metric tonne, assuming 8% moisture (2022 first half: \$120.5 per dry metric tonne), which compares with the monthly average Platts index for 62% iron fines converted to an FOB basis of \$109.8 per dry metric tonne (2022 first half: \$128.2 per dry metric tonne). The 2% lower realised price compared to the Platts index was due to lower average grades.

Segmental revenue for our Pilbara operations included freight revenue of \$0.9 billion (2022 first half: \$1.1 billion).

Net cash generated from operating activities of \$6.8 billion was \$1.7 billion lower than 2022 first half, due to lower pricing and a build in working capital, partially offset by higher volumes. Free cash flow of \$5.6 billion was \$1.4 billion lower than 2022 first half due to the factors above, partially offset by a \$0.4 billion reduction in capital expenditure to \$1.1 billion following completion of brownfield mines in 2022.

Review of operations

Pilbara operations produced 160.5 million tonnes (Rio Tinto share 135.8 million tonnes), 7% higher than 2022 first half. Shipments of 161.7 million tonnes (Rio Tinto share 136.4 million tonnes), which were also 7% higher, included 16.8 million tonnes of lower grade SP10 products, 10% of shipments, on a 100% basis (2022 first half: 15% of shipments).

The ramp-up of Gudai-Darri continued to plan, with the mine reaching nameplate capacity on a sustained basis during the second quarter. We achieved record first quarter shipments and the highest first half shipments since 2018. At Dampier Port there was planned major maintenance and a train derailment on 17 June. The rail line was reopened on 21 June.

We continue to see strong demand for our portside product in China, with sales totalling 11.9 million tonnes in the first half of 2023 (14.2 million tonnes in 2022 first half). At the end of June, inventory levels were 5.7 million tonnes, including 2.6 million tonnes of Pilbara product. In 2023 first half, approximately 90% of our portside sales were either screened or blended in Chinese ports.

Aluminium

Six months ended 30 June	2023	2022	Change
Bauxite production ('000 tonnes — Rio Tinto share)	25,581	27,757	(8)%
Alumina production ('000 tonnes — Rio Tinto share)	3,720	3,765	(1)%
Aluminium production ('000 tonnes — Rio Tinto share)	1,598	1,467	9 %
Segmental revenue (US\$ millions)	6,263	7,796	(20)%
Average realised aluminium price (US\$ per tonne)	2,866	3,808	(25)%
Underlying EBITDA (US\$ millions)	1,140	2,866	(60)%
Underlying EBITDA margin (integrated operations)	21%	41%	
Underlying earnings (US\$ millions) ¹	260	1,570	(83)%
Net cash generated from operating activities (US\$ millions)	777	2,088	(63)%
Capital expenditure — excluding EAUs (US\$ millions) ²	(597)	(625)	(4)%
Free cash flow (US\$ millions)	165	1,450	(89)%
Underlying return on capital employed ³	4%	20%	

Footnotes are set out in full on page 25.

1. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to page 41 for details.
2. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).
3. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Weaker demand from western markets, partly offset by a recovery in demand in China, where inventories are at a seven-year low, led to a 24% reduction in the LME price and lower market and product premiums. Market-related costs for key materials such as caustic, coke and pitch are moderating in line with the oil price: this benefit will not flow through to underlying EBITDA until the second half. These two factors led to significant margin compression for our Aluminium business and a 60% decrease in underlying EBITDA to \$1.1 billion. Underlying EBITDA margin fell 20 percentage points to 21%.

We achieved an average realised aluminium price of 2,866 per tonne, 25% lower than 2022 first half.

Average realised aluminium prices comprise the LME price, a market premium and a value-added product (VAP) premium. The cash LME price averaged \$2,329 per tonne, 24% lower than 2022 first half, while in our key US market, the mid-west premium duty paid, which is 56% of our total volumes (2022 first half: 58%), decreased by 27% to \$583 per tonne (2022 first half: \$801 per tonne). Our VAP sales represented 47% of the primary metal we sold (2022 first half: 52%) and generated product premiums averaging \$377 per tonne of VAP sold (2022 first half: \$422 per tonne).

Review of operations

Bauxite production of 25.6 million tonnes was 8% lower than 2022 first half, as our Weipa operations were affected by higher-than-average rainfall during the wet season, resulting in reduced pit access and longer haul distances. Production was further affected by equipment downtime at both Weipa and Gove.

We shipped 17.0 million tonnes of bauxite to third parties, 14% lower than 2022 first half. Segmental revenue for bauxite declined 11% to \$1.1 billion; this includes freight revenue of \$0.2 billion (2022 first half: \$0.3 billion).

Alumina production of 3.7 million tonnes was 1% lower than 2022 first half, with improved operational stability at our Yarwun and Vaudreuil refineries offset by unplanned plant downtime at Queensland Alumina Limited (QAL).

As the result of QAL's activation of a step-in process following sanction measures by the Australian Government, we have taken on 100% of capacity for as long as the step-in continues. We are using Rusal's 20% share of capacity under the tolling arrangement with QAL. This additional output is excluded from our production results as QAL remains 80% owned by Rio Tinto and 20% owned by Rusal.

Aluminium production of 1.6 million tonnes was 9% higher than 2022 first half, as we benefited from the continued ramp-up of the Kitimat smelter. Recovery at the Boyne and Kitimat smelters is progressing to plan with full ramp-up expected to be completed later in the year. All of our other aluminium smelters continued to demonstrate stable performance in the half.

Copper

Six months ended 30 June	2023	2022	Change
Mined copper production ('000 tonnes — consolidated basis)	290	292	(1)%
Refined copper production ('000 tonnes — Rio Tinto share)	95	104	(9)%
Segmental revenue (US\$ millions)	3,487	3,547	(2)%
Average realised copper price (US cents per pound) ¹	396	447	(11)%
Underlying EBITDA (US\$ millions)	1,082	1,534	(29)%
Underlying EBITDA margin (product group operations)	43%	54%	
Underlying earnings (US\$ millions)	198	571	(65)%
Net cash generated from operating activities (US\$ millions) ²	409	1,094	(63)%
Capital expenditure — excluding EAUs ³ (US\$ millions)	(917)	(730)	26 %
Free cash flow (US\$ millions)	(512)	(354)	(45)%
Underlying return on capital employed (product group operations) ⁴	4%	10%	

Footnotes are set out in full on page 25. 2022 has been restated following the transfer of Simandou to Other operations.

1. Average realised price for all units sold. Realised price does not include the impact of the provisional pricing adjustments, which negatively impacted revenues by \$4 million (2022 first half: \$30 million negative).
2. Net cash generated from operating activities excludes the operating cash flows of equity accounted units (EAUs) but includes dividends from EAUs (Escondida).
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes EAUs.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.

Financial performance

We delivered first sustainable production from the underground mine at Oyu Tolgoi and benefited from a doubling in our interest following the acquisition of Turquoise Hill Resources in 2022. However, the \$0.2 billion impact of lower LME prices and higher unit costs, driven by lower production volumes from Kennecott due to the conveyor failure and the planned smelter and refinery rebuild, led to underlying EBITDA being down 29% to \$1.1 billion. Rising cash costs, higher energy prices and an increase in exploration and evaluation expenditure also impacted underlying EBITDA. Underlying EBITDA margin remained strong at 43%.

Our copper unit costs, at 184 cents per pound, increased by 36 cents, largely driven by the decline in copper volumes, together with rising input and higher labour costs.

We generated \$0.4 billion in net cash from operating activities, a 63% decrease on 2022 first half, from the same drivers as underlying EBITDA, together with \$0.3 billion lower dividends from Escondida.

Negative free cash flow of \$0.5 billion reflected the above movements and significant investment of \$1.0 billion in our projects. This mainly related to the ongoing development of Oyu Tolgoi underground, the projects at Kennecott and evaluation costs at Resolution and Winu.

Review of operations

Mined copper production, at 290 thousand tonnes, was 1% lower than 2022 first half. While we benefited from the continued ramp-up of the high grade underground mine at Oyu Tolgoi, this was offset by Kennecott's concentrator operating at reduced rates, as we recovered from a conveyor failure in March 2023.

The 9% decrease in refined copper production to 95 thousand tonnes reflected the largest rebuild of the smelter and refinery in Kennecott's history which commenced in May and is now expected to conclude in September 2023, reflected in our revised refined copper guidance.

Oyu Tolgoi underground project

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

We continue to see strong performance from the underground mine, with a total of 54 drawbells opened from Panel 0, including 35 drawbells during the half. To date we are yet to lose a drawbell or draw point from the underground mine.

At the end of June, shafts 3 and 4 sinking had reached 627 metres and 740 metres below ground level respectively. Final depths required for shafts 3 and 4 are 1,148 and 1,149 metres below ground level respectively. As [reported](#) in our presentation materials for the Oyu Tolgoi site tour in July, we now expect both shafts to be commissioned in the second half of 2024 (previously first half of 2024) with shaft sinking rates now meeting those required for commissioning.

Technical studies for mine design and schedule optimisation for Panels 1 and 2 were completed during the second quarter¹⁰. The operation remains on track to ramp up to deliver average mined copper production of ~500ktpa (100% basis) between 2028 and 2036⁷.

Minerals

Six months ended 30 June	2023	2022	Change
Iron ore pellets and concentrates production ¹ (million tonnes — Rio Tinto share)	4.6	5.0	(8)%
Titanium dioxide slag production ('000 tonnes — Rio Tinto share)	589	566	4 %
Borates production ('000 tonnes — Rio Tinto share)	257	260	(1)%
Diamonds production ('000 carats — Rio Tinto share)	1,924	2,140	(10)%
Segmental revenue (US\$ millions)	2,889	3,403	(15)%
Underlying EBITDA (US\$ millions)	689	1,259	(45)%
Underlying EBITDA margin (product group operations)	30%	40%	
Underlying earnings (US\$ millions) ²	179	423	(58)%
Net cash generated from operating activities (US\$ millions)	89	636	(86)%
Capital expenditure (US\$ millions) ³	(304)	(268)	13 %
Free cash flow (US\$ millions)	(229)	353	(165)%
Underlying return on capital employed (product group operations) ⁴	13%	21%	

Footnotes are set out in full on page 25.

1. Iron Ore Company of Canada (IOC) continues to be reported within Minerals.
2. Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to page 41 for details.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of \$0.7 billion was 45% lower than 2022 first half, primarily due to lower iron ore prices, lower volumes for Iron & Titanium and diamonds, some of which have been deferred to the second half of the year, and higher costs.

Net cash generated from operating activities of \$0.1 billion was 86% lower than 2022 first half, while negative free cash flow of \$0.2 billion, reflected the lower underlying EBITDA and a modest rise in capital expenditure.

Review of operations

Production of iron ore pellets and concentrate at IOC was 8% lower than 2022 first half. Performance improved during the first five months of the year but we then lost ~3.5 weeks of production due to wild fires in Northern Quebec, which resulted in an extended shutdown.

Titanium dioxide production was 4% higher than 2022 first half due to improved operational performance at our smelters, despite some production constraints at RBM from nationwide loadshedding of electrical power.

Borates production was 1% lower than 2022 first half, as we adjusted to timing of customer demand, despite strong production rates, higher grades and improved equipment reliability.

Our share of carats recovered was 10% lower than 2022 first half, due to an underground pipe and an area of the open pit reaching end of life of during the period.

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 2023 first half	US\$ million impact on full-year 2023 underlying EBITDA of a 10% change in prices/exchange rates
Aluminium - US\$ per tonne	2,329	1,151
Copper - US cents per pound	396	523
Gold - US\$ per troy ounce	1,932	59
Iron ore realised price (FOB basis) - US\$ per dry metric tonne	107.2	2,786
Australian dollar against the US dollar	0.68	712
Canadian dollar against the US dollar	0.74	369
Oil (Brent) - US per barrel	86	193

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Footnotes

1. *This financial performance indicator is a non-IFRS (as defined below) measure which is reconciled to directly comparable IFRS financial measures (non-IFRS measures). It is used internally by management to assess the performance of the business and is therefore considered relevant to readers of this document. It is presented here to give more clarity around the underlying business performance of the Group's operations. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APM) and the detailed reconciliations on pages 71 to 80. Our financial results are prepared in accordance with IFRS — see page 39 for further information.*
2. *Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to page 41 for details.*
3. *Rio Tinto share includes 100% of funding costs for Paraburdoo plant upgrades.*
4. *Mined copper guidance: subsequent to Rio Tinto's acquisition of Turquoise Hill Resources which completed on 16 December, 2023 mined copper guidance includes Oyu Tolgoi on a 100% consolidated basis and continues to reflect our 30% share of Escondida.*
5. *The NRS Mineral Resources and Ore Reserves, together with the Lower Commercial Skarn (LCS) Mineral Resources and Ore Reserves, form the Underground Skarns Mineral Resources and Ore Reserves.*
6. *This production target for 2023 to 2033 is underpinned as to 25% by Probable Ore Reserves, 9% by Indicated Resources, and 66% by Inferred Resources. Mined copper is reported as total recoverable metal. These estimates of Mineral Resources and Ore Reserves were reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 titled "Rio Tinto Kennecott Mineral Resources and Ore Reserves" which is available on Rio Tinto's website at Resources & Reserves (riotinto.com), and have been prepared by Competent Persons in accordance with the requirements of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 (JORC Code) and the ASX Listing Rules.*
7. *The 500kpta copper and 350kozpa gold target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 is underpinned 13% by Proved Ore Reserves and 87% by Probable Ore Reserves. This production target has been scheduled from mine designs based on the Oyu Tolgoi Feasibility Study 2020 (OTFS20), which are not materially different to current mine designs, by Competent Persons in accordance with the requirements of the JORC code.*
8. *The Mineral Resource estimates for the Rhodes Ridge Joint Venture (JV) were reported in our 2020 Annual Report released to the ASX on 22 February 2021 (and form part of the Pilbara Mineral Resource estimates reported in our 2021 Annual Report released to the ASX on 24 February 2022). The Competent Persons responsible for reporting these Mineral Resource estimates were Mr P Savory, who is a Fellow of The Australasian Institute of Mining and Metallurgy, and Ms N Brajkovich and Mr C Kyngdon, who are Members of The Australasian Institute of Mining and Metallurgy. We are not aware of any new information or data that materially affects these Mineral Resource estimates and confirm that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed. The form and context in which the Competent Persons' findings are presented have not been materially modified from when they were reported. Mineral Resources are quoted in this release on a 100% basis, as dry in-situ tonnes.*
9. *The Simandou iron ore project operates under the Simfer joint venture where the Government of Guinea holds 15% and Simfer Jersey holds 85%. Simfer Jersey is owned by Rio Tinto (53%) and Chalco Iron Ore Holdings (CIOH) (47%). CIOH is owned by Chinalco (75%), Baowu (20%), China Civil Engineering Construction Corporation (CCECC) (2.5%) and China Harbour Engineering Company (CHEC) (2.5%).*
10. *Mine design and plans will be reviewed by regulatory bodies as part of the OTFS23 process.*

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DIRECTORS' REPORT

for the half year ended 30 June 2023

Review of operations and important events

A detailed review of the Group's operations, the results of those operations during the half year ended 30 June 2023 and likely future developments are given on pages 1 to 25. Important events that have occurred during the period and up until the date of this report are set out below.

Financial

On 6 March 2023, we resolved a previously self-disclosed investigation by the SEC into certain contractual payments made to a former consultant in 2011, relating to the Simandou project in the Republic of Guinea. Without admitting to or denying the SEC's findings, Rio Tinto paid a \$15 million civil penalty for violations of the books and records and internal controls provisions of the Foreign Corrupt Practices Act.

On 7 March 2023, we priced US\$650 million of 10-year fixed rate SEC-registered debt securities and US\$1.1 billion of 30-year fixed rate SEC-registered debt securities. The bonds were issued by Rio Tinto Finance (USA) plc and are fully and unconditionally guaranteed by Rio Tinto plc and Rio Tinto Limited. The 10-year notes will pay a coupon of 5.000% and will mature on 9 March 2033 and the 30-year notes will pay a coupon of 5.125% and will mature 9 March 2053.

On 3 April 2023, we published our 2022 Taxes and Royalties Paid Report, detailing \$10.8 billion of global taxes and royalties paid during the year. This compares to \$13.3 billion in 2021, during very strong commodity prices, and is the third-highest annual global taxes and royalties paid by Rio Tinto since it published its first annual Taxes Paid report, for 2010. In the past ten years, Rio Tinto has paid \$74.9 billion in taxes and royalties globally, of which more than 78% was paid in Australia.

On 4 April 2023, we announced our support for Energy Resources of Australia Ltd's (ERA) plans for an Interim Entitlement Offer (IEO), which sought to raise up to A\$369 million to address funding requirements for the Ranger Rehabilitation Project in Australia's Northern Territory to the end of the second quarter of 2024. Rio Tinto, which owns 86.3% of ERA's shares, subscribed for its full entitlements under the terms of the IEO, at a cost of A\$319 million. Rio Tinto notes that ERA has, in the IEO offer material, recognised the Mirarr People's opposition to further uranium mining on their land. This was a relevant factor in Rio Tinto's recent decision to no longer report the Jabiluka deposit as a Mineral Resource.

On 30 May 2023, we published a report on payments to governments made by Rio Tinto and its subsidiary undertakings for the year ended 31 December 2022 as required under the UK's Report on Payments to Governments Regulations 2014 (as amended in December 2015). Rio Tinto paid \$10.8 billion of taxes and royalties and a further \$1.6 billion on behalf of its employees during 2022.

On 2 June 2023, we announced plans to invest \$395 million in a seawater desalination plant in the Pilbara, Western Australia, to support future water supply for the company's coastal operations and communities in the region. The proposed Dampier Seawater Desalination Plant, which remains subject to Commonwealth and State Government approvals, will be located within Rio Tinto's existing iron ore port operations at Parker Point. It will have an initial nominal capacity of four gigalitres annually with the potential for this to increase to eight gigalitres in the future. The project includes construction of a new supply pipeline to connect to the existing water network. Subject to relevant approvals, construction is expected to commence in 2024 with the facility expected to be operational and producing water in 2026.

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Operations

On 30 March 2023, we announced we had entered into an agreement with First Quantum Minerals ("First Quantum") to form a joint venture that will work to unlock the development of the La Granja copper project in Peru. Under the proposed transaction, First Quantum will acquire a 55% stake in the project for \$105 million, and commit to further invest up to \$546 million into the joint venture to sole fund capital and operational costs to take the project through a feasibility study and toward development.

On 2 May 2023, together with BHP, we invited expressions of interest from technology providers, equipment manufacturers, reagent suppliers, startups and research groups across the globe with innovative ideas and technologies to help improve tailings dewatering and management performance. Together we aim to jointly identify a portfolio of tailings management partners with whom they can work to accelerate the development of technologies that could increase water recovery and reduce potential safety risks and environmental footprints associated with tailings storage facilities.

On 12 June 2023, we announced we had signed a Memorandum of Understanding with China Baowu to explore a range of industry leading new projects in China and Australia to help decarbonise the steel value chain.

On 12 June 2023, we announced an investment of \$1.1 billion to expand our AP60 aluminium smelter equipped with low-carbon technology at Complexe Jonquière in Canada. The total investment includes up to \$113 million of financial support from the Quebec government. This expansion will coincide with the gradual closure of potrooms at the Arvida smelter on the same site. While at our Alma smelter in Lac-Saint-Jean, Quebec, we commenced construction to increase our capacity to cast low-carbon, high-value aluminium billets.

On 13 June 2023, we announced a partnership with Gemco Rail to bring local iron ore rail car manufacturing and bearing maintenance to the Pilbara region in an industry-first. This partnership will enable Gemco Rail to expand its existing operations to establish the first ever rail ore car manufacturing and maintenance facility in the Pilbara, creating new jobs, increasing spend with local and Indigenous businesses and supporting local economic growth. Rio Tinto expects to invest approximately A\$150 million to purchase 100 locally built ore rail cars over six years as well as continued investment in bearing refurbishment over ten years, to support the company's Pilbara operations.

On 20 June 2023, we announced \$498 million of funding to deliver underground development and infrastructure for an area known as the North Rim Skarn¹ (NRS) at Kennecott. Production from the NRS will commence in 2024 and is expected to ramp up over two years, to deliver ~250 thousand tonnes of additional mined copper over the next 10 years² alongside open cut operations.

1. *The NRS Mineral Resources and Ore Reserves, together with the Lower Commercial Skarn (LCS) Mineral Resources and Ore Reserves, form the Underground Skarns Mineral Resources and Ore Reserves.*

2. *This production target for 2023 to 2033 is underpinned 25% by Probable Ore Reserves, 9% by Indicated Resources, and 66% by Inferred Resources. Mined copper is reported as total recoverable metal. These estimates of Mineral Resources and Ore Reserves were reported in a release dated 20 June 2023 titled "Rio Tinto Kennecott Mineral Resources and Ore Reserves" (Table 1 Release) which is available on Rio Tinto's website at resources & reserves (riotinto.com), and have been prepared by Competent Persons in accordance with the requirements of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 (JORC Code) and the ASX Listing Rules.*

People

On 16 March 2023, we announced that we had appointed Dean Dalla Valle and Susan Lloyd-Hurwitz as non-executive directors effective 1 June 2023.

On 13 June 2023, we announced that Ivan Vella, Chief Executive Aluminium will leave Rio Tinto in December 2023.

Rio Tinto 2023 Annual General Meetings (AGMs)

The annual general meetings of Rio Tinto plc and Rio Tinto Limited were held on 6 April 2023 and 4 May 2023, respectively. Under Rio Tinto's dual listed companies structure established in 1995, decisions on significant matters affecting shareholders of Rio Tinto plc and Rio Tinto Limited in similar ways are taken through a joint electoral procedure.

At Rio Tinto plc's AGM on 6 April 2023, Resolution 21 (Authority to purchase Rio Tinto plc shares), put to Rio Tinto plc shareholders only, was passed with less than 80% of votes in favour. Shining Prospect (a subsidiary of the Aluminium Corporation of China "Chinalco") voted against it. Chinalco has not sold any of its shares in Rio Tinto plc and now has a holding of over 14% given its non-participation in the Company's significant share buy-back programmes. This places Chinalco close to the 14.99% holding threshold agreed with the Australian Government at the time of its original investment in Rio Tinto.

Directors

The directors serving on the Boards of Rio Tinto plc and Rio Tinto Limited as at 30 June 2023 were:

	Notes	Date of appointment
Chairman		
Dominic Barton	(P&R, N and S)	4 April 2022
Executive directors		
Jakob Stausholm, Chief Executive Officer		3 September 2018
Peter Cunningham, Chief Financial Officer		17 June 2021
Non-executive directors		
Sam Laidlaw (senior independent director, Rio Tinto plc)	(P&R, N and S)	10 February 2017
Simon McKeon (senior independent director, Rio Tinto Limited)	(A&R, P&R and N)	1 January 2019
Megan Clark	(P&R, N and S)	20 November 2014
Simon Henry	(A&R and N)	1 April 2017
Jennifer Nason	(P&R and N)	1 March 2020
Ngairé Woods	(P&R, N and S)	1 September 2020
Ben Wyatt	(A&R and N)	1 September 2021
Kaisa Hietala	(N and S)	1 March 2023
Dean Dalla Valle	(N and S)	1 June 2023
Susan Lloyd-Hurwitz	(P&R and N)	1 June 2023

Notes

(A&R) Audit & Risk Committee, (P&R) People & Remuneration Committee, (N) Nominations Committee, (S) Sustainability Committee

Dividend

The 2022 final dividend was paid on 20 April 2023 to holders of Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADR holders. The 2022 final dividend, equivalent to 225 US cents per share was determined by the Board on 21 February 2023. Rio Tinto plc shareholders received 185.35 pence per share for the final dividend and Rio Tinto Limited shareholders received 326.49 Australian cents per share for the final dividend based on the applicable exchange rates on 13 April 2023. ADR holders receive dividends at the declared rate in US dollars.

The 2023 interim dividend, equivalent to 177 US cents per share will be paid on 21 September 2023 to Rio Tinto Limited, Rio Tinto plc and Rio Tinto plc ADR shareholders on the register at the close of business on 11 August 2023. The ex-dividend date for the 2023 interim dividend for Rio Tinto Limited, Rio Tinto plc and Rio Tinto plc ADR shareholders is 10 August 2023. Rio Tinto plc shareholders will receive 137.67 pence per share for the interim dividend and Rio Tinto Limited shareholders will receive 260.89 Australian cents per share for the interim dividend based on the applicable exchange rates on 25 July 2023. ADR holders receive dividends at the declared rate in US dollars.

Principal risks and uncertainties

The principal risks and uncertainties that could materially impact our ability to deliver on our strategic priorities are set out on pages 79 to 86 of the 2022 Annual Report. For the remaining six months of the financial year, these remain broadly consistent with the trends reported in the Annual Report.

Our operations and growth projects continue to be impacted by high unplanned absences, tight labour markets, rising input costs and supply chain disruptions. We continue to monitor areas of uncertainty in the short to medium term, including the evolving situation with the war in Ukraine and potential further Russian sanctions and elevated inflation.

Publication of half year results

In accordance with the UK Financial Conduct Authority's Disclosure Guidance & Transparency Rules and the Australian Securities Exchange Listing Rules, the half year results will be made public and are available on the Rio Tinto Group website.

Auditor's independence declaration

KPMG, the auditors of Rio Tinto Limited, have provided the auditor's independence declaration as required under section 307C of the Corporations Act 2001 in Australia. This has been reproduced on page 66 and forms part of this report.

The Directors' report is made in accordance with a resolution of the Board.

Dominic Barton

Chairman

26 July 2023

FINANCIAL REPORT FOR THE HALF YEAR ENDED 30 JUNE 2023

NAME OF ENTITY

Rio Tinto Limited

ACN

Preliminary Final

HALF YEAR ENDED

004 458 404



*

30 June 2023

The half year financial information included in this announcement gives a true and fair view of the matters disclosed and is unaudited but has been reviewed by the auditors. The report has been prepared on a going concern basis in accordance with UK-adopted international accounting standards and an Order under section 340 of the Australian Corporations Act 2001 issued by the Australian Securities & Investments Commission on 16 July 2021.

The report should be read in conjunction with the Rio Tinto Annual report for 2022.

Results for announcement to the market

		<u>US\$ millions</u>
Consolidated sales revenue	down from previous corresponding period	10.4% to 26,667
Net earnings attributable to members	down from previous corresponding period	42.8% to 5,117
Underlying earnings attributable to members	down from previous corresponding period	34.0% to 5,720
		<u>US cents</u>
Dividends	Amount per share	Franked amount per share
Interim dividend	177.00	177.00 (at 30%)
2022 Final dividend - paid 20 April 2023	225.00	225.00 (at 30%)
		<u>Australian cents</u>
Dividends	Amount per share	Franked amount per share
Interim dividend	260.89	260.89 (at 30%)
2022 Final dividend - paid 20 April 2023	326.49	326.49 (at 30%)
<p>Registrable transfers received by the company up to 5 p.m. (or 7 p.m. in respect of holdings on the CHESSE subregister) on 11 August 2023 will be registered before entitlements to the dividend are determined.</p> <p>A definition of underlying earnings is given on page 73 of the financial information, which accompanies this document.</p>		
		
<p>Tim Paine, Joint Company Secretary 26 July 2023</p>		<p>Steve Allen, Joint Company Secretary 26 July 2023</p>

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**Condensed consolidated interim financial statements for the
six months ended 30 June 2023**

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Group income statement

Six months ended 30 June	Note	2023 US\$m	2022 US\$m Restated ^(a)
Consolidated operations			
Consolidated sales revenue	3, 4	26,667	29,775
Net operating costs (excluding items disclosed separately)		(17,535)	(17,202)
Impairment charges	5	(1,175)	—
Exploration and evaluation expenditure (net of profit relating to interests in undeveloped projects)		(710)	(367)
Operating profit		7,247	12,206
Share of profit after tax of equity accounted units		431	468
Profit before finance items and taxation		7,678	12,674
Finance items			
Net exchange gains on external and intragroup net debt balances		103	387
Net gains/(losses) on derivatives not qualifying for hedge accounting		32	(205)
Finance income		245	17
Finance costs		(536)	(55)
Amortisation of discount on provisions	9	(592)	(503)
		(748)	(359)
Profit before taxation		6,930	12,315
Taxation	2, 6	(1,983)	(2,867)
Profit after tax for the period		4,947	9,448
– attributable to owners of Rio Tinto (net earnings)		5,117	8,943
– attributable to non-controlling interests		(170)	505
Basic earnings per share		315.7c	552.3c
Diluted earnings per share		313.9c	549.0c

(a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

The notes on pages 39 to 61 are an integral part of these condensed consolidated interim financial statements.

Group statement of comprehensive income

Six months ended 30 June	Note	2023 US\$m	2022 US\$m Restated ^(a)
Profit after tax for the period		4,947	9,448
Other comprehensive (loss)/income			
Items that will not be reclassified to the income statement:			
Re-measurement (losses)/gains on pension and post-retirement healthcare plans		(53)	829
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)		(17)	(8)
Tax relating to these components of other comprehensive income		16	(216)
Share of other comprehensive (losses)/income of equity accounted units, net of tax		(3)	5
		(57)	610
Items that have been/may be subsequently reclassified to the income statement:			
Currency translation adjustment ^(b)		(387)	(1,532)
Fair value movements:			
– Cash flow hedge gains/(losses)		50	(79)
– Cash flow hedge (gains)/losses transferred to the income statement		(26)	100
Net change in costs of hedging reserve		2	(38)
Tax relating to these components of other comprehensive loss		(16)	8
Share of other comprehensive income/(losses) of equity accounted units, net of tax		11	(7)
		(366)	(1,548)
Total other comprehensive loss for the period, net of tax		(423)	(938)
Total comprehensive income for the period		4,524	8,510
– attributable to owners of Rio Tinto		4,698	8,078
– attributable to non-controlling interests		(174)	432

(a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

(b) Excludes a currency translation charge of US\$66 million (30 June 2022: charge of US\$185 million) arising on Rio Tinto Limited's share capital for the period ended 30 June 2023, which is recognised in the Group statement of changes in equity on page 37.

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Group cash flow statement

Six months ended 30 June	Note	2023 US\$m	2022 US\$m
Cash flows from consolidated operations^(a)		9,435	13,912
Dividends from equity accounted units		287	633
Cash flows from operations		9,722	14,545
Net interest paid		(286)	(217)
Dividends paid to holders of non-controlling interests in subsidiaries		(46)	(41)
Tax paid		(2,415)	(3,813)
Net cash generated from operating activities		6,975	10,474
Cash flows from investing activities			
Purchases of property, plant and equipment and intangible assets		(3,001)	(3,146)
Sales of property, plant and equipment and intangible assets		8	1
Acquisitions of subsidiaries, joint ventures and associates	7	(15)	(825)
Purchases of financial assets		(16)	(66)
Sales of financial assets ^(b)		862	52
Net funding of equity accounted units		(88)	(48)
Other investing cash flows		14	10
Net cash used in investing activities		(2,236)	(4,022)
Cash flows before financing activities		4,739	6,452
Cash flows from financing activities			
Equity dividends paid to owners of Rio Tinto		(3,691)	(7,595)
Proceeds from additional borrowings ^(c)		1,858	144
Repayment of borrowings and associated derivatives		(272)	(211)
Lease principal payments		(213)	(183)
Proceeds from issue of equity to non-controlling interests		61	22
Purchase of non-controlling interests		(23)	—
Other financing cash flows		—	1
Net cash used in financing activities		(2,280)	(7,822)
Effects of exchange rates on cash and cash equivalents		(59)	(26)
Net increase/(decrease) in cash and cash equivalents		2,400	(1,396)
Opening cash and cash equivalents less overdrafts		6,774	12,805
Closing cash and cash equivalents less overdrafts	8	9,174	11,409
(a) Cash flows from consolidated operations			
Profit after tax for the period (comparative restated)	2	4,947	9,448
Adjustments for:			
– Taxation (comparative restated)	2, 6	1,983	2,867
– Finance items		748	359
– Share of profit after tax of equity accounted units		(431)	(468)
– Impairment charges	5	1,175	—
– Depreciation and amortisation		2,485	2,459
– Provisions (including exchange differences on provisions)	9	63	496
Utilisation of other provisions	9	(44)	(51)
Utilisation of provisions for close-down and restoration	9	(333)	(256)
Utilisation of provisions for post-retirement benefits and other employment costs	9	(115)	(122)
Change in inventories		(293)	(582)
Change in receivables and other assets		(6)	(128)
Change in trade and other payables		(628)	267
Other items ^(d)		(116)	(377)
		9,435	13,912

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Group cash flow statement (continued)

- (b) During the six months to 30 June 2023, we received net proceeds of US\$801 million (30 June 2022: US\$51 million) from our sales and purchases of investments within a separately managed portfolio of fixed income instruments. Purchases and sales of these securities are reported on a net cash flow basis within “Sales of financial assets” or “Purchases of financial assets” depending on the overall net position at each reporting date.
- (c) On 7 March 2023, we issued US\$650 million 10-year fixed rate, and US\$1.1 billion of 30-year fixed rate, SEC-registered bonds. The 10-year notes, which mature on 9 March 2033, have a coupon of 5% and the 30-year notes, which mature on 9 March 2053 have a coupon of 5.125%. The funds were received net of issuance fees and discount. There were no issuances during the period ended 30 June 2022.
- (d) Other items includes recognition of realised gains of US\$32 million on currency forwards not designated as hedges (30 June 2022: realised losses US\$242 million).

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Group balance sheet

	Note	30 June 2023 US\$m	31 December 2022 US\$m Restated ^(a)
Non-current assets			
Goodwill		776	826
Intangible assets		3,697	3,645
Property, plant and equipment		63,101	64,734
Investments in equity accounted units		3,574	3,298
Inventories		214	203
Deferred tax assets	2	3,085	2,796
Receivables and other assets		1,927	1,893
Other financial assets		404	406
		76,778	77,801
Current assets			
Inventories		6,423	6,213
Receivables and other assets		3,544	3,478
Tax recoverable		305	347
Other financial assets		1,327	2,160
Cash and cash equivalents	8	9,179	6,775
		20,778	18,973
Total assets		97,556	96,774
Current liabilities			
Borrowings		(176)	(923)
Leases		(298)	(292)
Other financial liabilities		(13)	(69)
Trade and other payables		(7,630)	(8,047)
Tax payable		(204)	(223)
Close-down and restoration provisions	9	(1,249)	(1,142)
Provisions for post-retirement benefits and other employment costs	9	(352)	(353)
Other provisions	9	(524)	(554)
		(10,446)	(11,603)
Non-current liabilities			
Borrowings		(12,673)	(10,148)
Leases		(931)	(908)
Other financial liabilities		(782)	(904)
Trade and other payables		(587)	(604)
Tax payable		(35)	(36)
Deferred tax liabilities	2	(3,078)	(3,164)
Close-down and restoration provisions	9	(13,597)	(14,617)
Provisions for post-retirement benefits and other employment costs	9	(1,346)	(1,305)
Other provisions	9	(724)	(744)
		(33,753)	(32,430)
Total liabilities		(44,199)	(44,033)
Net assets			
Capital and reserves			
Share capital ^(b)			
– Rio Tinto plc		207	207
– Rio Tinto Limited		3,264	3,330
Share premium account		4,324	4,322
Other reserves		7,400	7,755
Retained earnings		36,430	35,020
Equity attributable to owners of Rio Tinto		51,625	50,634
Attributable to non-controlling interests		1,732	2,107
Total equity		53,357	52,741

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Group balance sheet (continued)

- (a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.
- (b) At 30 June 2023, Rio Tinto plc had 1,255.9 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. There were no cross holdings of shares between Rio Tinto Limited and Rio Tinto plc in either periods presented. As required to be disclosed under the ASX Listing Rules, the net tangible assets per share amounted to US\$29.07 (31 December 2022: US\$28.48).

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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			
Six months ended 30 June 2023								
Opening balance as previously reported	3,537	4,322	7,805	34,511	50,175	2,099	52,274	
Change in accounting policy (note 2)	—	—	(50)	509	459	8	467	
Restated opening balance	3,537	4,322	7,755	35,020	50,634	2,107	52,741	
Total comprehensive income for the year	—	—	(379)	5,077	4,698	(174)	4,524	
Currency translation arising on Rio Tinto Limited's share capital	(66)	—	—	—	(66)	—	(66)	
Dividends ^(a)	—	—	—	(3,691)	(3,691)	(262)	(3,953)	
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees ^(b)	—	—	(3)	(3)	(6)	—	(6)	
Treasury shares reissued and other movements	—	2	—	—	2	—	2	
Equity issued to holders of non-controlling interests	—	—	—	—	—	61	61	
Employee share awards charged to the income statement	—	—	27	27	54	—	54	
Closing balance	3,471	4,324	7,400	36,430	51,625	1,732	53,357	

	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			
Six months ended 30 June 2022								
Opening balance as previously reported	3,777	4,320	9,998	33,320	51,415	5,158	56,573	
Change in accounting policy (note 2)	—	—	(22)	537	515	8	523	
Restated opening balance	3,777	4,320	9,976	33,857	51,930	5,166	57,096	
Total comprehensive income for the period (restated: refer to note 2)	—	—	(1,477)	9,555	8,078	432	8,510	
Currency translation arising on Rio Tinto Limited's share capital	(185)	—	—	—	(185)	—	(185)	
Dividends ^(a)	—	—	—	(7,584)	(7,584)	(266)	(7,850)	
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees ^(b)	—	—	(3)	(3)	(6)	—	(6)	
Change in equity interest held by Rio Tinto	—	—	—	(484)	(484)	484	—	
Treasury shares reissued and other movements	—	2	—	—	2	—	2	
Equity issued to holders of non-controlling interests	—	—	—	(711)	(711)	733	22	
Employee share awards charged to the income statement	—	—	24	23	47	—	47	
Closing balance (restated)	3,592	4,322	8,520	34,653	51,087	6,549	57,636	

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Group statement of changes in equity (continued)

(a) Dividends per share announced or paid during the period are summarised below:

Six months ended 30 June	2023 US\$m	2022 US\$m
Dividends per share: Ordinary - paid during the period	225.0c	417.0c
Dividends per share: Special - paid during the period	—	62.0c
Ordinary dividends per share: announced with the results for the period	177.0c	267.0c

(b) Net of contributions received from employees for share awards.

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Selected explanatory notes to the interim financial statements

1. Basis of preparation

The condensed consolidated interim financial statements included in this report have been prepared in accordance with: International Accounting Standards (IAS) 34 'Interim Financial Reporting' as issued by the International Accounting Standards Board (IASB) and as adopted for use in the United Kingdom (UK), the UK law (Companies Act 2006) applicable to companies reporting under International Financial Reporting Standards (IFRS), applicable Australian law (Australian Corporations Act 2001) and in accordance with an order, under section 340 of the Australian Corporations Act 2001, issued by the Australian Securities and Investments Commission (ASIC) on 16 July 2021 (ASIC order).

These condensed consolidated interim financial statements represent a 'condensed set of financial statements' as referred to in the Disclosure Guidance and Transparency Rules sourcebook (DTR) issued by the Financial Conduct Authority (FCA) applicable to interim financial reporting. Accordingly, they do not include all of the information required for a full annual financial report and are to be read in conjunction with the Group's annual financial statements for the year ended 31 December 2022.

The 2022 annual financial statements were prepared on a going concern basis in accordance with UK-adopted international accounting standards, applicable UK law and applicable Australian law as amended by the ASIC class Order and to meet IAS as issued by the IASB and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC) which were mandatory at 31 December 2022.

The above accounting standards and interpretations are collectively referred to as 'IFRS' in this report and contain the principles we use to create our accounting policies. Where necessary, adjustments are made to the locally reported assets, liabilities, and results of subsidiaries, joint arrangements and associates to bring their accounting policies in line with ours for consistent reporting.

These condensed consolidated interim financial statements are unaudited and do not constitute statutory accounts as defined in Section 434 of the United Kingdom Companies Act 2006. The financial information as at 31 December 2022 included in this report has been extracted from the full financial statements filed with the Registrar of Companies and adjusted for new accounting policies (refer to note 2 for further details). The Auditors' report on these full financial statements was unqualified, did not include a reference to any matters to which the auditor drew attention by way of emphasis of matter and did not contain statements 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 Companies Act 2006.

Going concern

Management has prepared detailed cash flow forecasts for the next 18 months and has updated life-of-mine plan models with longer-term cash flow projections. These forecasts demonstrate that the Group has sufficient cash, other liquid resources and undrawn credit facilities to enable it to meet its obligations as they fall due. As such, the directors considered it appropriate to adopt the going concern basis of accounting in preparing the interim financial information.

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1. Basis of preparation (continued)

Alternative performance measures

We present certain alternative performance measures (APMs), which are reconciled to directly comparable IFRS financial measures on pages 71 to 80 of this report. These APMs are used 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 supplementary to those measures.

Reconciliation with Australian Accounting Standards

Our financial statements have been prepared in accordance with IFRS 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). We are required to disclose the effect of the adjustments to our consolidated income statement, consolidated total comprehensive income/(loss) and consolidated shareholders' funds if our accounts were prepared under the version of IFRS that is applicable in Australia. This is in order to satisfy the obligations of Rio Tinto Limited to prepare consolidated accounts under Australian company law, as amended by an order issued by the Australian Securities and Investments Commission on 16 July 2021.

Prior to 1 January 2004, our financial statements were prepared in accordance with UK GAAP. Under IFRS, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US\$381 million at 30 June 2023 (31 December 2022: US\$380 million).

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

2. Changes in accounting policies

The condensed consolidated interim financial statements have been drawn up on the basis of accounting policies, methods of computation and presentation consistent with those applied in the financial statements for the year ended 31 December 2022, except for the accounting requirements set out below, effective as at 1 January 2023.

New standards and amendments applicable for the current period

Deferred Tax related to Assets and Liabilities arising from a Single Transaction (Amendments to IAS 12 'Income Taxes' (IAS 12), mandatory in 2023 and endorsed by the UK)

At 1 January 2023, we adopted narrow-scope amendments to IAS 12 and have restated comparative periods in accordance with the transition arrangements. These amendments introduce an exclusion to the initial recognition exemption application for transactions giving rise to equal and offsetting taxable and deductible temporary differences.

Under the amendments, separate deferred tax assets and liabilities are calculated and recognised, prior to application of any required recovery testing and permitted offsetting, and subsequent movements in those deferred tax assets and liabilities are recognised in the income statement. Our previous accounting policy stated that “where the recognition of an asset and liability from a single transaction gives rise to equal and offsetting temporary differences, we apply the initial recognition exemption allowed by IAS 12, and consequently recognise neither a deferred tax asset nor a deferred tax liability in respect of these temporary differences”.

The most significant impact of implementing these amendments was from temporary differences related to the Group’s provisions for close-down and restoration, and lease obligations and corresponding capitalised closure costs and right-of-use assets. Adjustments to deferred tax assets and liabilities related to these balances have been recognised as at 1 January 2021, being the beginning of the earliest comparative period to be presented in the financial statements for the year ended 31 December 2023, with the cumulative effect recognised as an adjustment to retained earnings or other components of equity at that date. For other transactions, the impact of which was immaterial, the amendments apply only to those taking place on or after 1 January 2021. The impact on equity attributable to owners of Rio Tinto at 1 January 2023 of implementing the amendments to IAS 12 is as follows:

At 1 January	2023 US\$m	2022 US\$m	2021 US\$m
Equity attributable to owners of Rio Tinto (previously reported)	50,175	51,415	47,054
Impact of IAS 12 amendments ^(a)	459	515	516
Restated equity attributable to owners of Rio Tinto	50,634	51,930	47,570

(a) Retained earnings adjustments at 1 January 2023 and 2022 include the impact of income statement adjustments for the years ended 31 December 2022 and 2021, respectively.

2. Changes in accounting policies (continued)

The restatement of deferred tax balances for the comparative reporting date is as follows:

	31 December 2022 US\$m
Deferred tax assets (previously reported)	2,766
Impact of IAS 12 amendments	30
Deferred tax assets (restated)	2,796
Deferred tax liabilities (previously reported)	(3,601)
Impact of IAS 12 amendments	437
Deferred tax liabilities (restated)	(3,164)
Net impact of IAS 12 amendments on deferred tax balances	467
Comprising, prior to offsetting of balances:	
Deferred tax assets arising from:	
- Provisions and other liabilities	1,586
- Capital allowances	(57)
	1,529
Deferred tax liabilities arising from Capital allowances	(1,062)

Restatement of pre-offset balances at 31 December 2022 represents additional gross deferred tax liabilities of US\$922 million and gross deferred tax assets of US\$1,380 million in relation to close-down and restoration obligations and related capitalised closure costs, and additional gross deferred tax liabilities of US\$140 million and gross deferred tax assets of US\$149 million in relation to lease liabilities and related right-of-use assets.

The impact of restatement on net earnings for the six months ended 30 June 2022 is a net credit of US\$35 million related to depreciation of closure and right of use assets and settlement of closure and lease liabilities.

IFRS 17 'Insurance Contracts' and amendments to IFRS 17 'Insurance Contracts' (mandatory in 2023 and endorsed by the UK)

We implemented IFRS 17 'Insurance Contracts' on 1 January 2023, which provides consistent principles for all aspects of accounting for insurance contracts. The standard does not have a material impact on the Group.

2. Changes in accounting policies (continued)

Other amendments

We adopted amendments to IAS 1 'Presentation of Financial Statements' and IFRS Practice Statement 2 'Making Materiality Judgements', requiring companies to disclose their material accounting policies rather than their significant accounting policies. The amendments do not have a material impact on the Group.

We adopted amendments to IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors clarifying how companies should distinguish changes in accounting policies from changes in accounting estimates, with a primary focus on the definition of and clarifications on accounting estimates. The amendments do not have a material impact on the Group.

New standards or amendments issued but not yet effective

During the six months ended 30 June 2023, we have not early adopted any amendments, standards or interpretations that have been issued but are not yet effective.

3. Segmental information

Our management structure is based on principal product groups (PG) together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to our Chief Executive who is the chief operating decision maker (CODM) and is responsible for allocating resources and assessing performance of the operating segments. The CODM's primary measure of profit is underlying EBITDA. Finance costs and net debt are managed on a Group-wide basis and are therefore excluded from the segmental results.

The Copper reportable segment has been adjusted to reflect a change in management responsibility for the Simandou iron ore project in Guinea (Simandou) to the Chief Technical Officer. As a result, Simandou is now included in "Other Operations", which is below reportable segments in our segmental analysis. Prior period comparatives have been adjusted accordingly.

Our reportable segments are as follows:

Reportable segment	Principal activities
Iron Ore	Iron ore mining and salt and gypsum production in Western Australia.
Aluminium	Bauxite mining; alumina refining; aluminium smelting.
Copper	Mining and refining of copper, gold, silver, molybdenum, other by-products and exploration activities which is the responsibility of the Copper product group chief executive.
Minerals	Includes businesses with products such as borates, titanium dioxide feedstock together with the Iron Ore Company of Canada (iron ore mining and iron concentrate/pellet production). Also includes diamond mining, sorting and marketing and development projects for battery minerals, such as lithium.

The Rio Tinto financial information by business unit provided on pages 67 to 70 provides additional voluntary business unit disclosure which we consider useful to the users of the financial statements.

3. Segmental information (continued)

	2023			2022 Adjusted ^(a)		
	Segmental revenue ^(b) US\$m	Underlying EBITDA ^(c) US\$m	Capital expenditure ^(d) US\$m	Segmental revenue ^(b) US\$m	Underlying EBITDA ^(c) US\$m	Capital expenditure ^(d) US\$m
Six months ended 30 June						
Iron Ore	15,600	9,792	1,094	16,610	10,395	1,472
Aluminium	6,263	1,140	597	7,796	2,866	625
Copper	3,487	1,082	917	3,547	1,534	730
Minerals	2,889	689	304	3,403	1,259	268
Reportable segments total	28,239	12,703	2,912	31,356	16,054	3,095
Other Operations	97	(395)	32	107	(125)	9
Inter-segment transactions	(154)	(17)		(149)	(1)	
Share of equity accounted units ^(e)	(1,515)			(1,539)		
Central pension costs, share-based payments, insurance and derivatives		167			265	
Restructuring, project and one-off costs		(84)			(86)	
Central costs		(512)			(397)	
Central exploration and evaluation expenditures		(134)			(113)	
Proceeds from disposal of property, plant and equipment			8			1
Other items			49			41
Consolidated sales revenue/Purchases of property, plant and equipment and intangible assets	26,667		3,001	29,775		3,146
Underlying EBITDA		11,728			15,597	

- (a) Comparative information has been adjusted to reflect the movement of the Simandou iron ore project from the "Copper" reportable segment to "Other Operations".
- (b) Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units in proportion to our equity interest (after adjusting for sales to/from subsidiaries). Segmental revenue measures revenue on a basis that is comparable to our underlying EBITDA metric.
- (c) Underlying EBITDA (calculated on page 46) is reported to provide greater understanding of the underlying business performance of Rio Tinto's operations.
- (d) Capital expenditure for reportable segments includes the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations. Following a change in definition applied for the first time in the second half of 2022, capital expenditure numbers have been adjusted to exclude capitalised expenditure relating to equity accounted units.
- (e) Consolidated sales revenue includes subsidiary sales of US\$21 million (2022: US\$27 million) to equity accounted units which are not included in segmental revenue. Segmental revenue includes the Group's proportionate share of product sales by equity accounted units (after adjusting for sales to subsidiaries) of US\$1,536 million (2022: US\$1,566 million) which are not included in consolidated sales revenue.

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3. Segmental information (continued)

Reconciliation of profit after tax to underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items which do not reflect the underlying performance of our reportable segments.

Items excluded from profit after tax are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into the underlying business performance. The following items are excluded from profit after tax in arriving at underlying EBITDA in each period irrespective of materiality:

- Depreciation and amortisation in subsidiaries and equity accounted units;
- Taxation and finance items in equity accounted units;
- Taxation and finance items relating to subsidiaries;
- Unrealised gains/(losses) on embedded derivatives not qualifying for hedge accounting;
- Net gains/(losses) on disposal of interests in subsidiaries;
- Impairment charges net of reversals;
- The underlying EBITDA of discontinued operations;
- Adjustments to closure provisions where the adjustment is associated with an impairment charge and for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgmental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. In the six months ended to 30 June 2023 there is no item in this category. For the period ended 30 June 2022 the category included the gain recognised by Kitimat relating to LNG Canada's project.

Six months ended 30 June	2023 US\$m	2022 US\$m Restated ^(a)
Profit after tax for the period	4,947	9,448
Taxation	1,983	2,867
Profit before taxation	6,930	12,315
Depreciation and amortisation in subsidiaries excluding capitalised depreciation ^(b)	2,405	2,405
Depreciation and amortisation in equity accounted units	238	242
Finance items in subsidiaries	748	359
Taxation and finance items in equity accounted units	373	363
Gains on embedded commodity derivatives not qualifying for hedge accounting (including foreign exchange)	(112)	(14)
Impairment charges ^(c)	1,175	—
Change in closure estimates (non-operating and fully impaired sites) ^(d)	(29)	43
Gain recognised by Kitimat relating to LNG Canada's project ^(e)	—	(116)
Underlying EBITDA	11,728	15,597

(a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

3. Segmental information (continued)

- (b) Depreciation and amortisation in subsidiaries for the period ended 30 June 2023 is net of capitalised depreciation of US\$80 million (30 June 2022: US\$54 million).
- (c) Refer to note 5.
- (d) For the period ended 30 June 2023, the credit to the income statement relates to the impact of a change in discount rate applied to provisions for close-down, restoration and environmental liabilities at legacy sites where the environmental damage preceded ownership by Rio Tinto, from 1.5% to 2%. In the six months ended 30 June 2022, the charge relates to re-estimates of underlying closure cash flows of these sites.
- (e) During the first half of 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying EBITDA consistent with prior periods as it was part of a series of transactions that together were material.

4. Segmental information - additional information

Consolidated sales revenue by destination^(a)

	2023 %	2022 % Adjusted	2023 US\$m	2022 US\$m Adjusted
Six months ended 30 June				
Greater China ^(b)	58.1 %	54.6 %	15,482	16,261
United States of America	14.6 %	16.3 %	3,885	4,848
Asia (excluding Greater China and Japan)	7.3 %	6.6 %	1,957	1,958
Japan	6.7 %	6.8 %	1,791	2,039
Europe (excluding UK)	5.8 %	6.7 %	1,537	1,995
Canada	2.9 %	3.1 %	785	933
Australia	1.7 %	2.0 %	451	596
UK	0.2 %	0.4 %	66	133
Other countries	2.7 %	3.5 %	713	1,012
Consolidated sales revenue	100.0 %	100.0 %	26,667	29,775

(a) Consolidated sales revenue by geographical destination is based on the ultimate country of the product's destination, if known. Where the ultimate destination is not known, we have defaulted to the shipping address of the customer. Rio Tinto is domiciled in both the UK and Australia.

(b) Consolidated sales revenue by destination has been adjusted to classify Taiwan and China together as "Greater China", as noted in our 2022 Annual Report.

Consolidated sales revenue by product

	Revenue from contracts with customers 2023 US\$m	Other revenue ^(a) 2023 US\$m	Consolidated sales revenue 2023 US\$m	Revenue from contracts with customers 2022 US\$m	Other revenue ^(a) 2022 US\$m	Consolidated sales revenue 2022 US\$m
Six months ended 30 June						
Iron ore	16,319	12	16,331	17,547	91	17,638
Aluminium, alumina and bauxite	6,194	(45)	6,149	7,321	298	7,619
Copper	1,695	(6)	1,689	1,702	(38)	1,664
Industrial minerals (comprising titanium dioxide slag, borates and salt)	1,246	(1)	1,245	1,233	(3)	1,230
Gold	236	3	239	322	9	331
Diamonds	250	—	250	465	—	465
Other products ^(b)	765	(1)	764	829	(1)	828
Consolidated sales revenue	26,705	(38)	26,667	29,419	356	29,775

(a) Consolidated sales revenue includes both revenue from contracts with customers, accounted for under IFRS 15 and subsequent movements in provisionally priced receivables, accounted for under IFRS 9, and included in "Other revenue" above.

(b) "Other products" includes metallic co-products, molybdenum, silver and other commodities. Individually the revenue from each of these products is less than 15% of the total "Other products" category.

5. Impairment charges

Six months ended 30 June	2023 US\$m	2022 US\$m
Aluminium – Alumina refineries	(1,175)	—
Allocated as:		
Property, plant and equipment	(1,175)	—

30 June 2023

Aluminium - Alumina refineries, Australia

The Gladstone alumina refineries are responsible for more than half of our scope 1 carbon dioxide emissions in Australia and therefore have been a key focus as we evaluate options to decarbonise our assets. In March 2023, the Australian Parliament legislated to introduce a requirement for large heavy industrial carbon emitters to purchase carbon credits based upon their scope 1 emissions with a reducing baseline for these emissions. The challenging market conditions facing these assets, together with our improved understanding of the capital requirements for decarbonisation and the now legislated cost escalation for carbon emissions have been identified as impairment triggers.

Using a fair value less cost of disposal methodology and discounting real-terms post-tax cash flows at 6.6%, we have recognised a pre-tax impairment charge of US\$1,175 million (post-tax US\$828 million). This represents a full impairment of the property, plant and equipment at the Yarwun alumina refinery (US\$948 million) and an impairment of US\$227 million for the property, plant and equipment of Queensland Alumina Limited (QAL). These impairments reflect market participant assumptions and the difficult trading conditions for these assets which have operated below our planned output.

For QAL, the recoverable amount (net present value of US\$325 million) is represented by future cash flows attributable to the double digestion project. This major capital project improves the energy efficiency of the alumina production process and significantly reduces carbon emissions. These cash flows have been risk adjusted to reflect the pre-feasibility study stage of project evaluation. If investment in the double digestion project was not approved, the post-tax impairment charge would be US\$325 million greater and result in a full impairment of QAL.

Impact of climate change on our business - Gladstone alumina refineries

We are committed to the decarbonisation of our assets to reduce scope 1 and scope 2 emissions by 50% by 2030 and to net zero emissions by 2050 relative to our 2018 equity baseline. We anticipate that further carbon action may be necessary to align with the goals of the Paris agreement to limit temperature increases to 1.5°C. To illustrate the sensitivity of the refinery valuations to the cost of carbon credits, we have modelled a 10% increase in those unit costs across all years, before the impact of decarbonisation projects with all other inputs remaining constant. For QAL, this sensitivity indicates a reduction in the pre-tax value by US\$99 million, however this is expected to be largely mitigated by decarbonisation projects, including double digestion. There is no impact at Yarwun as all property, plant and equipment is already fully impaired.

30 June 2022

There were no impairment charges during the six months ended 30 June 2022.

6. Taxation

Prima facie tax reconciliation

Six months ended 30 June	2023 US\$m	2022 ^(a) US\$m Restated ^(b)
Profit before taxation	6,930	12,315
Prima facie tax payable at UK rate of 23.5% (2022: 19%) ^(c)	1,628	2,340
Higher rate of taxation of 30% on Australian earnings (2022: 30%)	373	924
Other tax rates applicable outside the UK and Australia	(130)	68
Tax effect of profit from equity accounted units and related expenses ^(d)	(101)	(89)
Impact of changes in tax rates	—	(12)
Resource depletion allowances	(6)	(14)
Recognition of previously unrecognised deferred tax assets ^(e)	(62)	(209)
Write-down of previously recognised deferred tax assets	40	8
Utilisation of previously unrecognised deferred tax assets	(10)	(50)
Unrecognised current period operating losses ^(f)	259	71
Adjustments in respect of prior periods ^(g)	(4)	(137)
Other items	(4)	(33)
Total taxation charge	1,983	2,867

- (a) Consistent with the presentation adopted in the 2022 Financial Statements, prima facie tax reconciliation comparatives have been revised. We have allocated the tax relating to exclusions (historically shown separately in the financial statements) to the appropriate tax line items above. The presentation of the impact of including profit after tax from equity accounted units within the Group profit before tax has also been revised as described in note (d) below.
- (b) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.
- (c) As a UK headquartered and listed Group, the reconciliation of expected tax on accounting profit to tax charge uses the UK corporation tax rate to calculate the prima facie tax payable. Given the increase in the UK corporation tax rate from 19% to 25% effective 1 April, the UK rate for the year will be 23.5%. Rio Tinto is also listed in Australia, and the reconciliation includes the impact of the higher tax rate in Australia where a significant proportion of the Group's profits are currently earned. The impact of other tax rates applicable outside the UK and Australia is also included. The weighted average statutory corporate tax rate on profit before tax is approximately 30% (30 June 2022: 29%).
- (d) The Group profit before tax includes profit after tax of equity accounted units. Consequently, the tax effect on the profit from equity accounted units is included as a separate reconciling item in this prima facie tax reconciliation.
- (e) Recognition of previously unrecognised deferred tax assets includes amounts in respect of Oyu Tolgoi where ongoing progress towards sustainable underground production reduces the risk that tax losses will expire if not recovered against taxable profits within eight years.

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6. Taxation (continued)

- (f) Unrecognised current period operating losses include tax losses around the Group for which no tax benefit is currently recognised due to uncertainty for the purposes of IAS 12 regarding whether suitable taxable profits will be earned in future to obtain value for the tax losses.
- (g) In the six months ended 30 June 2022, adjustments in respect of prior periods include amounts related to the settlement of all tax disputes with the Australian Tax Office for the years 2010 to 2021.

Future tax developments

We continue to monitor and evaluate the Organisation for Economic Co-operation and Development's (OECD) Two Pillar Solution to Address the Tax Challenges Arising from the Digitalisation of the Economy. Pillar Two of those proposals seeks to apply a 15% global minimum tax and was substantively enacted by the United Kingdom on 20 June 2023, with application from 1 January 2024.

We have adopted the guidance contained in International Tax Reform – Pillar Two Model Rules – Amendments to IAS 12 released on 23 May 2023 that provides a temporary mandatory exception from deferred tax accounting for Pillar Two. Under these amendments, any Pillar Two taxes incurred by the Group will be accounted for as current taxes from 1 January 2024. We are in the process of evaluating the cash tax implications of the global minimum tax rules and will include disclosures related to expected impacts, if any, in the Group's 2023 full year consolidated financial statements.

On 17 May 2023, the Chamber of Deputies of Chile approved a new mining royalty which will impact Escondida through a 1% ad-valorem component and an increased operating margin component, all limited by a maximum overall tax rate of 46.5%. The new mining royalty will be effective as of 1 January 2024. The legislation was not substantively enacted at 30 June 2023 and therefore the impact on our results for the year ended 31 December 2023, which is not expected to be material, will be accounted for in the second half of the year following substantive enactment.

7. Acquisitions

30 June 2023

There were no material acquisitions during six months to 30 June 2023.

30 June 2022

On 29 March 2022, we completed the acquisition of Rincon Mining Pty Limited, the owner of a lithium project in Argentina. Total cash consideration was US\$825 million. The transaction was treated as an asset purchase with US\$822 million of capitalised exploration and evaluation recorded for the principal economic resource. The balance of total consideration was allocated to property, plant & equipment and other assets/liabilities. For the Group cash flow statement we had determined that, since Rincon constitutes a group of companies, it was appropriate to present the cash outflow as "Acquisitions of subsidiaries, joint ventures and associates" rather than as separate asset purchases even though it did not meet the definition of a business combination.

8. Cash and cash equivalents

Closing cash and cash equivalents less overdrafts for the purposes of the cash flow statement differs from cash and cash equivalents on our balance sheet as per the following reconciliation:

	30 June 2023	31 December 2022	30 June 2022
	US\$m	US\$m	US\$m
Closing cash and cash equivalents less overdrafts			
Balance per Group balance sheet	9,179	6,775	11,412
Bank overdrafts repayable on demand (unsecured)	(5)	(1)	(3)
Balance per Group cash flow statement	9,174	6,774	11,409

9. Provisions including post-retirement benefits

	Post-retirement benefits and other employee entitlements ^(a)	Close-down, restoration and environmental ^(b)	Other provisions	30 June 2023	31 December 2022
	US\$m	US\$m	US\$m	US\$m	US\$m
Opening balance as previously reported	1,658	15,759	1,298	18,715	18,053
Adjustment on currency translation	14	(105)	(7)	(98)	(841)
Adjustments to mining properties/right of use assets:					
– changes to existing and new provisions	—	(55)	—	(55)	524
– change in discount rate ^(c)	—	(960)	—	(960)	—
Charged/(credited) to profit:					
– increases to existing and new provisions	100	185	51	336	1,137
– change in discount rate ^(c)	—	(166)	(18)	(184)	—
– decreases and unused amounts reversed	(2)	(52)	(24)	(78)	(150)
– exchange (gains)/losses on provisions	—	(9)	(2)	(11)	17
– amortisation of discount ^(d)	—	578	14	592	1,519
Utilised in the period	(115)	(333)	(44)	(492)	(1,039)
Re-measurement losses/(gains) recognised in other comprehensive income	42	—	—	42	(701)
Transfers and other movements	1	4	(20)	(15)	196
Closing balance	1,698	14,846	1,248	17,792	18,715
Balance sheet analysis:					
Current	352	1,249	524	2,125	2,049
Non-current	1,346	13,597	724	15,667	16,666
Total	1,698	14,846	1,248	17,792	18,715

(a) The provision for post-retirement benefits and other employee entitlements includes a provision for long service leave of US\$281 million (31 December 2022: US\$271 million), based on the relevant entitlements in certain Group operations and includes US\$28 million (31 December 2022: US\$32 million) of provision for redundancy and severance payments.

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9. Provisions including post-retirement benefits (continued)

- (b) Close-down, restoration and environmental liabilities at 30 June 2023 have not been adjusted for closure-related receivables amounting to US\$348 million (31 December 2022: US\$351 million) due from the ERA trust fund and other financial assets held for the purposes of meeting closure obligations. These are included within “Receivables and other assets” on the balance sheet.
- (c) Provisions of US\$14,846 million (31 December 2022: US\$15,759 million) for close-down and restoration costs and environmental clean-up obligations are based on risk-adjusted discounted cash flows expressed in real-terms. The present volatility in interest rates has filtered down to expectations of higher yields from long-dated bonds, including the 30-year US Treasury Inflation Protected Securities, which is a key input to our closure provision discount rate. On 30 June 2023 we revised the closure discount rate to 2% (from 1.5%), applied prospectively from that date.
- (d) The present value of close-down, restoration and environmental liabilities has been uplifted due to the re-measurement of underlying cash flows for inflation in the year. The amortisation of discount of US\$578 million (30 June 2022: US\$503 million) is used to systematically uplift cash-flows including a forecast of full year inflation at the start of each reporting period. At the end of each half-year we updated the underlying cash flows for the latest estimate of experienced inflation for the current period and recorded this as “changes to existing provisions”. For operating sites this adjustment usually results in a corresponding adjustment to Property, Plant and Equipment and for closed and fully impaired sites the adjustment is charged or credited to the income statement.

10. Financial Instruments

Valuation hierarchy of financial instruments carried at fair value on a recurring basis

The table below shows the classifications of our financial instruments by valuation method in accordance with IFRS 13 at 30 June 2023 and 31 December 2022.

All instruments shown as being held at fair value have been classified as fair value through the profit and loss unless specifically footnoted.

	At 30 June 2023					At 31 December 2022				
	Held at fair value					Held at fair value				
	Total US\$m	Level 1 ^(a) US\$m	Level 2 ^(b) US\$m	Level 3 ^(c) US\$m	Held at amortised cost US\$m	Total US\$m	Level 1 ^(a) US\$m	Level 2 ^(b) US\$m	Level 3 ^(c) US\$m	Held at amortised costs US\$m
Assets										
Cash and cash equivalents ^(d)	9,179	2,455	—	—	6,724	6,775	2,725	—	—	4,050
Investments in equity shares and funds ^(e)	167	86	—	81	—	222	147	—	75	—
Other investments, including loans ^(f)	1,474	1,232	—	200	42	2,275	2,018	—	229	28
Trade and other financial receivables ^(g)	2,908	13	1,242	—	1,653	2,765	18	1,306	—	1,441
Forward, option and embedded derivatives contracts, not designated as hedges ^(h)	90	—	18	72	—	67	—	16	51	—
Derivatives related to net debt ⁽ⁱ⁾	—	—	—	—	—	2	—	2	—	—
Liabilities										
Trade and other financial payables ⁽ⁱ⁾	(6,175)	—	(72)	—	(6,103)	(6,485)	—	(30)	—	(6,455)
Forward, option and embedded derivatives contracts, designated as hedges ^(h)	(104)	—	—	(104)	—	(189)	—	—	(189)	—
Forward, option and embedded derivatives contracts, not designated as hedges ^(h)	(27)	—	(12)	(15)	—	(92)	—	(57)	(35)	—
Derivatives related to net debt ⁽ⁱ⁾	(664)	—	(664)	—	—	(692)	—	(692)	—	—

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10. Financial Instruments (continued)

- (a) Valuation is based on unadjusted quoted prices in active markets for identical financial instruments.
- (b) Valuation is based on inputs that are observable for the financial instruments, which include quoted prices for similar instruments or identical instruments in markets which are not considered to be active, or inputs, either directly or indirectly based on observable market data.
- (c) Valuation is based on inputs that cannot be observed using market data (unobservable inputs). The change in valuation of our level 3 instruments for the period to 30 June 2023 is below:

	30 June 2023
Level 3 financial assets and liabilities	US\$m
Opening balance	131
Currency translation adjustments	(6)
Total realised gains/(losses) included in:	
– consolidated sales revenue	5
– net operating costs	(13)
Total unrealised gains included in:	
– net operating costs	66
Total unrealised gains transferred into other comprehensive income through cash flow hedges	49
Additions to financial assets/(liabilities)	13
Disposals/maturity of financial instruments	(11)
Closing balance	234
Net gains included in the income statement for assets and liabilities held at period end	70

- (d) Our "cash and cash equivalents" of US\$9,179 million (31 December 2022: US\$6,775 million), includes US\$2,455 million (31 December 2022: US\$2,725 million) relating to money market funds which are treated as fair value through profit or loss (FVPL) under IFRS 9 with the fair value movements going into finance income.
- (e) Investments in equity shares and funds include US\$152 million (31 December 2022: US\$153 million) of equity shares, not held for trading, where we have irrevocably elected to present fair value gains and losses on revaluation in other comprehensive income (FVOCI). The election is made at an individual investment level.
- (f) Other investments, including loans, covers, cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty receivables.
- (g) Trade receivables include provisionally priced invoices. The related revenue is initially based on forward market selling prices for the quotation periods stipulated in the contracts with changes between the provisional price and the final price recorded separately within "Other revenue". The selling price can be measured reliably for the Group's products, as it operates in active and freely traded commodity markets. At 30 June 2023, US\$1,154 million (31 December 2022: US\$1,234 million) of provisionally priced receivables were recognised.

10. Financial Instruments (continued)

- (h) Level 3 derivatives consist of derivatives embedded in electricity purchase contracts linked to the LME, midwest premium and billet premium with terms expiring between 2025 and 2036 (31 December 2022: 2025 and 2036).
- (i) Net debt derivatives include interest rate swaps and cross-currency swaps. As part of the International Swaps and Derivatives Association (ISDA) Fallbacks Protocol, on 1 July 2023 we completed the transition of our US LIBOR derivatives to SOFR on cessation of US LIBOR at 30 June 2023. There has been no impact on our hedging arrangements after taking into account the IFRS 9 'Financial Instruments' LIBOR reform reliefs.
- (j) Trade and other financial payables comprise trade payables, other financial payables, accruals and amounts due to equity accounted units.

There were no material transfers between level 1 and level 2, or between level 2 and level 3 in the period ended 30 June 2023 or in the year ended 31 December 2022.

Valuation techniques and inputs

The techniques used to value our more significant fair value assets/(liabilities) categorised under Level 2 and Level 3 are summarised below:

Description	Fair Value US\$m	Valuation technique	Significant Inputs
Level 2			
Interest rate swaps	(346)	Discounted cash flows	Applicable market quoted swap yield curves Credit default spread
Cross currency interest rate swaps	(320)	Discounted cash flows	Applicable market quoted swap yield curves Credit default spread Market quoted FX rate
Provisionally priced receivables	1,154	Closely related listed product	Applicable forward quoted metal price
Level 3			
Derivatives embedded in electricity contracts	(79)	Option pricing model	LME forward aluminium price Midwest premium and billet premium
Royalty receivables	191	Discounted cash flows	Forward commodity price Mine production

Sensitivity analysis in respect of level 3 financial instruments

For assets/(liabilities) classified under level 3, the effect of changing the significant unobservable inputs on carrying value has been calculated using a movement that we deem to be reasonably probable.

To value the long-term aluminium embedded power derivatives, we use unobservable inputs when the term of the derivative extends beyond observable market prices. Changing the level 3 inputs to reasonably possible alternative assumptions does not change the fair value significantly, taking into account the expected remaining term of contracts for either reported period. The fair value of these derivatives is a net liability of US\$79 million at 30 June 2023 (31 December 2022: US\$208 million).

10. Financial Instruments (continued)

Royalty receivables include amounts arising from our divested coal businesses with a carrying value of US\$191 million (31 December 2022: US\$209 million). These are classified as "Other investments, including loans" within "Other financial assets". The fair values are determined using level 3 unobservable inputs. These royalty receivables include US\$82 million from forecast production beyond 2030. These have not been adjusted for potential changes in production rates that could occur due to climate change targets impacting the operator.

The main unobservable input is the long-term coal price used over the life of these royalty receivables. A 15% increase in the coal spot price would result in a US\$61 million increase (31 December 2022: US\$68 million increase) in the carrying value. A 15% decrease in the coal spot price would result in a US\$21 million decrease (31 December 2022: US\$18 million decrease) in the carrying value. We have used a 15% assumption to calculate our exposure as it represents the annual coal price movement that we deem to be reasonably probable (on an annual basis over the long run).

Fair values disclosure of financial instruments

The following table shows the carrying amounts and fair values of our borrowings including those which are not carried at an amount which approximates their fair value at 30 June 2023 and 31 December 2022. The fair values of our remaining financial instruments approximate their carrying values because of their short maturity, or because they carry floating rates of interest.

	30 June 2023		31 December 2022	
	Carrying value US\$m	Fair value US\$m	Carrying value US\$m	Fair value US\$m
Borrowings (including overdrafts)	12,849	13,048	11,071	11,192

Total borrowings with a carrying value of US\$8.4 billion (31 December 2022: US\$6.6 billion) relate to listed bonds with a fair value of US\$8.4 billion (31 December 2022: US\$6.6 billion) and are categorised as level 1 in the fair value hierarchy. Borrowings with a carrying value of US\$3.8 billion (31 December 2022: US\$3.8 billion) relate to project finance drawn down by Oyu Tolgoi, with a fair value of US\$4.1 billion (31 December 2022: US\$3.9 billion) using a number of level 3 valuation inputs. We refinanced the project finance on 16 February 2023 with a syndicate of international financial institutions, export credit agencies and commercial lenders. The lenders have agreed to a deferral of the principal repayments by three years to June 2026 and to an extension of the final maturity date by five years from 2030 to 2035. As part of refinancing, the debt transitioned to the SOFR benchmark to which we applied the Phase 2 IBOR reform relief under IFRS 9. The refinancing did not result in a derecognition of the drawn down amount, however we recognised an accounting loss on modification of US\$123 million related to changes other than the benchmark transition and capitalised transaction costs incurred of US\$50 million. Our remaining borrowings have a fair value measured by discounting estimated cash flows with an applicable market quoted yield, and are categorised as level 2 in the fair value hierarchy.

11. Commitments and contingencies

Contingent liabilities (subsidiaries, joint operations, joint ventures and associates)

Contingent liabilities, indemnities and other performance guarantees represent the potential outflow of funds from the Group for the satisfaction of obligations including those under contractual arrangements (for example undertakings related to supplier agreements) not provided for in the balance sheet, where the likelihood of the contingent liabilities, guarantees or indemnities being called is assessed as possible rather than probable or remote.

Contingent liabilities, indemnities and other performance guarantees were US\$486 million at 30 June 2023 (31 December 2022: US\$498 million).

There were no material contingent liabilities arising in relation to the Group's joint ventures and associates. We have not established provisions for certain additional legal claims in cases where we have assessed that a payment is either not probable or cannot be reliably estimated. A number of our companies are, and will likely continue to be, subject to various legal proceedings and investigations that arise from time to time. As a result, the Group may become subject to substantial liabilities that could affect our business, financial position and reputation. Litigation is inherently unpredictable and large judgments may at times occur. The Group may in the future incur judgments or enter into settlements of claims that could lead to material cash outflows. We do not believe that any of these proceedings will have a materially adverse effect on our financial position.

Contingent liabilities - not quantifiable

The current status of contingent liabilities where it is not practicable to provide a reliable estimate of possible financial exposure is:

11. Commitments and contingencies (continued)

Litigation disputes

Litigation matter	Latest update
Timing of the impairment of Rio Tinto Coal Mozambique (US securities and exchange commission)	<p>In October 2017, Rio Tinto announced that it had been notified by the U.S. Securities and Exchange Commission (SEC) that the SEC had filed a complaint in relation to Rio Tinto's disclosures and timing of the impairment of Rio Tinto Coal Mozambique (RTCM). The impairment was reflected in Rio Tinto's 2012 year-end accounts. The SEC alleges that Rio Tinto, a former chief executive, Tom Albanese, and a former chief financial officer, Guy Elliott, committed violations of the antifraud, reporting, books and records, and internal control provisions of the federal securities law by not accurately disclosing the value of RTCM and not impairing it when Rio Tinto published its 2011 year-end accounts in February 2012 or its 2012 interim results in August 2012. In June 2019, the trial court dismissed an associated US class action on behalf of securities holders. In August 2020, the appeals court partially overturned the court's dismissal and the trial court dismissed the case again in 2022. The securities holders have appealed further to reinstate their claims, and the court received briefing in 2023. No provision has been recognised for this case.</p>
2011 Contractual payments in Guinea	<p>Rio Tinto continues to co-operate fully with relevant authorities in connection with their investigations in relation to contractual payments totalling US\$10.5 million made to a consultant who had provided advisory services in 2011 on the Simandou project in Guinea. In August 2018, the court dismissed a related US class action commenced on behalf of securities holders.</p> <p>On 6 March 2023, we resolved a previously self-disclosed investigation by the SEC into certain contractual payments totalling US\$10.5 million made to a consultant who had provided advisory services in 2011, relating to the Simandou project in the Republic of Guinea. Without admitting to or denying the SEC's findings, Rio Tinto paid US\$15 million civil penalty for violations of the books and records and internal controls provisions of the Foreign Corrupt Practices Act.</p> <p>No provision has been recognised for other related investigations.</p>

At 30 June 2023, the outcome of these matters remains uncertain, but they could ultimately result in a material financial impact. We believe these cases are unwarranted and will defend against the allegations vigorously. A dedicated Board committee continues to monitor the progress of these matters.

11. Commitments and contingencies (continued)

Other contingent liabilities

We are modernising agreements with Traditional Owner groups in response to the Juukan Gorge incident. We have created provisions, within “Other provisions”, based on our best estimate of historical claims; however, the process is incomplete and it is possible that further claims could arise relating to past events.

Close-down and restoration provisions are not recognised for those operations that have no known restrictions on their lives as the date of closure cannot be reliably estimated. This applies primarily to our Canadian aluminium smelters, which are not dependent upon a specific orebody and have access to indefinite-lived power from owned hydro-power stations with water rights permitted by local governments. In these instances, a closure obligation may exist at the reporting date; however, due to the indefinite nature of asset lives it is not possible to arrive at a sufficiently reliable estimate for the purposes of recognising a provision. Close-down and restoration provisions are recognised at these operations for separately identifiable closure activities which can be reasonably estimated, such as the demolition and removal of fixed structures after a pre-determined period. Any contingent liability for these assets will crystallise into a closure provision if and when a decision is taken to cease operations.

Capital commitments at 30 June 2023

Capital commitments, excluding the Group's share of joint venture capital commitments, were US\$3,743 million (31 December 2022: US\$3,354 million). Our capital commitments include open purchase orders for managed operations and expenditure on major projects already authorised by our Investment Committee for non-managed operations. They do not include the estimated incremental capital expenditure relating to decarbonisation projects of US\$7.5 billion between 2022 and 2030 unless otherwise contractually committed. On a legally enforceable basis, capital commitments would be approximately US\$1.3 billion (31 December 2022: US\$1.0 billion) as many of the contracts relating to the Group's projects have various cancellation clauses.

The Group's share of joint venture capital commitments was US\$13 million at 30 June 2023 (31 December 2022: US\$15 million).

12. Events after the balance sheet date

On 21 July 2023, we announced that the Group would form a joint venture with the Giampaolo Group to manufacture and market recycled aluminium products. Under the terms of the agreement, the Group will acquire a 50% equity stake in Giampaolo Group's wholly-owned Matalco business for US\$700 million, subject to usual closing adjustments. Matalco has 6 facilities in the US and 1 in Canada, with capacity to produce around 900,000 tonnes of recycled aluminium a year. Matalco's leadership team will continue to manage its operations and Rio Tinto will be responsible for sales and marketing following a transition period after completion of the transaction. We expect the transaction to complete in the first half of 2024, subject to customary regulatory approvals.

There were no other significant events after the balance sheet date requiring disclosure.

Directors' declaration

Directors' statement of responsibility

In the directors' opinion:

The condensed consolidated interim financial statements on pages 31 to 61 including the notes have been prepared in accordance with IAS 34 'Interim Financial Reporting' as adopted by the UK, applicable UK law, and applicable Australian law as amended by the Australian Securities and Investments Commission Order dated 16 July 2021. We have used the most appropriate accounting policies for Rio Tinto's business, supported by reasonable and prudent judgements.

The condensed consolidated interim financial statements give a true and fair view of the Rio Tinto Group's financial position as at 30 June 2023 and of its performance, as represented by the results of its operations, comprehensive income and expense and its cash flows for the six months then ended. There are reasonable grounds to believe that each of the Rio Tinto Group, Rio Tinto Limited and Rio Tinto plc will be able to pay its debts as and when they become due and payable.

The interim management report includes a fair review of the information required by DTR 4.2.7R and DTR 4.2.8R, namely:

- an indication of important events that have occurred during the first six months and their impact on the condensed set of consolidated interim financial statements, and a description of the principal risks and uncertainties for the remaining six months of the financial year; and
- material related-party transactions in the first six months and any material changes in the related-party transactions described in the last annual report.

Signed in accordance with a resolution of the Board of Directors.

Dominic Barton
Chairman
26 July 2023

Jakob Stausholm
Chief executive
26 July 2023

Peter Cunningham
Chief financial officer
26 July 2023

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Independent Auditors' Review Reports of KPMG LLP ("KPMG UK") to Rio Tinto plc and of KPMG ("KPMG Australia") to the members of Rio Tinto Limited

Conclusions

For the purpose of these reports, the terms 'we' and 'our' denote KPMG UK in relation to UK responsibilities and reporting obligations to Rio Tinto plc, and KPMG Australia in relation to Australian responsibilities and reporting obligations to the members of Rio Tinto Limited.

We have been engaged and have reviewed the accompanying condensed consolidated interim financial statements ("Interim Financial Statements") in the Interim Results 2023 ("Interim Report") of the Rio Tinto Group ("the Group") as at and for the six months ended 30 June 2023 which comprises the:

- Group income statement
- Group statement of comprehensive income;
- Group cash flow statement;
- Group balance sheet;
- Group statement of changes in equity; and
- The related explanatory notes to the Interim Financial Statements on pages 39 to 61.

The Rio Tinto Group consists of Rio Tinto plc, Rio Tinto Limited and their respective subsidiaries including the Group's share of joint arrangements and associates at 30 June 2023 or during the six months ended 30 June 2023. KPMG Australia considers the Directors' Declaration to be part of the Interim Financial Statements when forming its conclusion.

Review conclusion by KPMG UK

Based on our review, nothing has come to our attention that causes us to believe that the Interim Financial Statements in the Interim Report are not prepared, in all material respects, in accordance with International Accounting Standard ('IAS') 34 *Interim Financial Reporting* as adopted for use in the UK and the Disclosure Guidance and Transparency Rules ("the DTR") of the UK's Financial Conduct Authority ("the UK FCA").

Review conclusion by KPMG Australia

Based on our review, which is not an audit, we have not become aware of any matter that makes us believe that the Interim Financial Statements of the Rio Tinto Group, including the Directors' Declaration, do not comply with the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021, including:

- giving a true and fair view of the Group's financial position as at 30 June 2023 and of its performance for the six months ended on that date; and
- complying with International Accounting Standard ('IAS') 34 *Interim Financial Reporting* as adopted for use in the UK and the Australian Corporations Regulations 2001.

Basis for conclusions

KPMG UK conducted its review in accordance with International Standard on Review Engagements (UK) 2410 *Review of Interim Financial Information Performed by the Independent Auditor of the Entity* ("ISRE (UK) 2410") issued for use in the UK.

In conducting its review, KPMG UK has complied with the ethical and independence requirements of the UK FRC Ethical Standard as applied to listed public interest entities.

KPMG Australia conducted its review in accordance with Auditing Standard on Review Engagements ASRE 2410 *Review of a Financial Report Performed by the Independent Auditor of the Entity* ("ASRE 2410"), as issued by the Australian Auditing and Assurance Standards Board.

KPMG Australia is independent of the Group in accordance with the auditor independence requirements of the Australian Corporations Act 2001 and the ethical requirements of the *Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants (including Independence Standards)* (the Code) that are relevant to its audit of the annual Group financial statements in Australia. In conducting its review, KPMG Australia has also fulfilled its other ethical responsibilities in accordance with these requirements.

KPMG UK's and KPMG Australia's responsibilities are further described in the *Auditors' Responsibilities for the Review of the Interim Financial Statements* section of our report.

KPMG UK's conclusions relating to going concern

Based on KPMG UK's review procedures, which are less extensive than those performed in an audit as described in the Basis for conclusions section of this report, nothing has come to KPMG UK's attention that causes it to believe that the directors have inappropriately adopted the going concern basis of accounting, or that the directors have identified material uncertainties relating to going concern that have not been appropriately disclosed.

This conclusion is based on the review procedures performed in accordance with ISRE (UK) 2410. However, future events or conditions may cause the group to cease to continue as a going concern, and the above conclusions are not a guarantee that the group will continue in operation.

Responsibilities of the Directors for the Interim Financial Statements and Interim Report

The Interim Report is the responsibility of, and has been approved by, the Directors of Rio Tinto plc and the Directors of Rio Tinto Limited.

The Directors of Rio Tinto plc are responsible for:

- preparing the Interim Report in accordance with the DTR of the UK FCA;
- the preparation of Interim Financial Statements in accordance with IAS 34 as adopted for use in the UK. As disclosed in note 1, the annual financial statements of the group are prepared in accordance with UK-adopted international accounting standards; and
- assessing the group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the group or to cease operations, or have no realistic alternative but to do so, in the preparation of the Interim Financial Statements.

The Directors of Rio Tinto Limited are responsible for:

- the preparation of Interim Financial Statements, including the Directors' Declaration, that give a true and fair view in accordance with International Accounting Standard 34 *Interim Financial Reporting* as adopted for use in the UK and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021
- such internal control as the Directors of Rio Tinto Limited determine is necessary to enable the preparation of the Interim Financial Statements, including the Directors' Declaration, that give a true and fair view and are free from material misstatement, whether due to fraud or error.

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Auditors' Responsibilities for the Review of the Interim Financial Statements

KPMG UK's responsibility is to express to Rio Tinto plc a conclusion on the Interim Financial Statements based on its review. KPMG UK's conclusion, including its conclusions relating to going concern, are based on procedures that are less extensive than audit procedures, as described in the Basis for Conclusions section of this report.

KPMG Australia's responsibility is to express a conclusion on the Interim Financial Statements, including the Directors' Declaration, based on its review. ASRE 2410 requires KPMG Australia to conclude whether we have become aware of any matter that makes us believe that the Interim Financial Statements, including the Directors' Declaration, do not comply with the Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021, including giving a true and fair view of the Group's financial position as at 30 June 2023 and its performance for the six months ended on that date, and complying with International Accounting Standard 34 *Interim Financial Reporting* as adopted for use in the UK and the Corporations Regulations 2001.

A review of Interim Financial Statements consists of making enquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. We read the other information that accompanies the Interim Financial Statements and is contained in the Interim Report and consider whether it contains any apparent misstatements or material inconsistencies with the information in the Interim Financial Statements.

A review is substantially less in scope than an audit conducted in accordance with International Standards on Auditing (UK) or Australian Auditing Standards and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, neither KPMG UK or KPMG Australia expresses an audit opinion.

The purpose of our review work and to whom we owe our responsibilities

KPMG UK's report is made solely to Rio Tinto plc in accordance with the terms of KPMG UK's engagement to assist Rio Tinto plc in meeting the requirements of the DTR of the UK FCA. Our review work has been undertaken so that we might state to Rio Tinto plc those matters we are required to state to it in this report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto plc for our review work, for this report, or for the conclusions we have reached.

KPMG Australia's report is made solely to Rio Tinto Limited's members, as a body, in accordance with the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 16 July 2021. Our review work has been undertaken so that we might state to the members of Rio Tinto Limited those matters we are required to state to them in this report, and the further matters we are required to state to them in accordance with the terms agreed with Rio Tinto Limited, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto Limited's members, as a body, for our review work, for this report, or for the conclusion we have reached.

Jonathan Downer
for and on behalf of KPMG LLP
Chartered Accountants
London
26 July 2023

Trevor Hart
Partner
Perth
26 July 2023

KPMG
26 July 2023

Lead Auditor's Independence Declaration under Section 307C of the Australian Corporations Act 2001

To the Directors of Rio Tinto Limited

I declare that, to the best of my knowledge and belief, in relation to the review of Rio Tinto Limited for the six months ended 30 June 2023 there have been:

- a) no contraventions of the auditor independence requirements as set out in the *Australian Corporations Act 2001* in relation to the review; and
- b) no contraventions of any applicable code of professional conduct in relation to the review.

This declaration is in respect of Rio Tinto Limited and the entities it controlled as at or during the six-months ended 30 June 2023.

KPMG

Trevor Hart
Partner
Perth
26 July 2023

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KPMG Australia's liability is limited by a scheme approved under Professional Standards Legislation.

Rio Tinto financial information by business unit

Six months ended 30 June	Rio Tinto interest %	Segmental revenue ^(c)		Underlying EBITDA ^(c)		Depreciation and amortisation		Underlying earnings ^(c)	
		2023	2022	2023	2022	2023	2022	2023	2022
		US\$m	US\$m	US\$m	US\$m	US\$m	US\$m	US\$m	US\$m
			Adjusted ^(a)		Adjusted ^(a)		Adjusted ^(a)		Restated ^{(a)(b)}
Iron Ore									
Pilbara	(d)	14,705	15,517	9,541	10,119	1,036	1,013	5,712	6,239
Dampier Salt	68.4	192	161	54	9	10	10	22	—
Evaluation projects/other	(e)	1,356	1,698	59	268	—	—	(50)	234
Intra-segment	(e)	(653)	(766)	138	(1)	—	—	103	—
Total Iron Ore Segment		15,600	16,610	9,792	10,395	1,046	1,023	5,787	6,473
Aluminium									
Bauxite		1,091	1,219	279	337	189	180	18	80
Alumina		1,406	1,716	36	415	105	96	(70)	227
Primary Metal		3,457	4,246	779	1,714	349	348	315	1,002
Pacific Aluminium		1,303	1,705	111	463	69	60	55	317
Intra-segment and other		(1,456)	(1,724)	12	12	1	1	1	—
Integrated operations		5,801	7,162	1,217	2,941	713	685	319	1,626
Other product group items		462	634	10	26	—	—	6	19
Product group operations		6,263	7,796	1,227	2,967	713	685	325	1,645
Evaluation projects/other		—	—	(87)	(101)	—	—	(65)	(75)
Total Aluminium Segment		6,263	7,796	1,140	2,866	713	685	260	1,570
Copper									
Kennecott	100.0	832	983	139	442	213	298	(93)	68
Escondida	30.0	1,427	1,401	863	966	173	171	411	490
Oyu Tolgoi	(f)	826	805	320	313	146	88	55	142
Product group operations		3,085	3,189	1,322	1,721	532	557	373	700
Evaluation projects/other ^(a)		402	358	(240)	(187)	3	2	(175)	(129)
Total Copper Segment		3,487	3,547	1,082	1,534	535	559	198	571
Minerals									
Iron Ore Company of Canada	58.7	1,221	1,480	399	775	101	99	120	268
Rio Tinto Iron & Titanium	(g)	1,011	1,090	287	337	101	113	118	142
Rio Tinto Borates	100.0	401	359	102	57	30	25	56	21
Diamonds	(h)	250	465	70	193	17	17	44	91
Product group operations		2,883	3,394	858	1,362	249	254	338	522
Evaluation projects/other		6	9	(169)	(103)	—	—	(159)	(99)
Total Minerals Segment		2,889	3,403	689	1,259	249	254	179	423
Reportable segments total		28,239	31,356	12,703	16,054	2,543	2,521	6,424	9,037
Simandou iron ore project	(i)	—	—	(318)	(54)	—	—	(114)	(33)
Other operations	(j)	97	107	(77)	(71)	137	133	(173)	(165)
Inter-segment transactions		(154)	(149)	(17)	(1)	—	—	(18)	—
Central pension costs, share-based payments, insurance and derivatives		—	—	167	265	—	—	147	237
Restructuring, project and one-off costs		—	—	(84)	(86)	—	—	(60)	(61)
Central costs		—	—	(512)	(397)	43	47	(453)	(363)
Central exploration and evaluation		—	—	(134)	(113)	—	—	(114)	(95)
Net interest		—	—	—	—	—	—	81	105
Underlying EBITDA/earnings				11,728	15,597			5,720	8,662
Items excluded from underlying EBITDA/earnings				141	87			(603)	281
Reconciliation to Group income statement									
Share of equity accounted unit sales and intra-subsi- diary/equity accounted unit sales		(1,515)	(1,539)						
Impairment charges				(1,175)	—				
Depreciation and amortisation in subsidiaries excluding capitalised depreciation				(2,405)	(2,405)				
Depreciation and amortisation in equity accounted units				(238)	(242)	(238)	(242)		
Taxation and finance items in equity accounted units				(373)	(363)				
Finance items				(748)	(359)				
Consolidated sales revenue/profit before taxation/depreciation and amortisation/net earnings		26,667	29,775	6,930	12,315	2,485	2,459	5,117	8,943

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Rio Tinto financial information by business unit (continued)

	Rio Tinto interest %	Capital expenditure ^(k) for the six months ended 30 June		Operating assets ^(l) as at	
		2023 US\$m	2022 US\$m	30 June 2023 US\$m	31 December 2022 US\$m
			Adjusted ^(a)		Restated ^{(a)(b)}
Iron Ore					
Pilbara	(d)	1,085	1,459	17,770	17,785
Dampier Salt	68.4	9	13	160	153
Evaluation projects/other	(e)	—	—	636	835
Intra-segment	(e)	—	—	(117)	(220)
Total Iron Ore Segment		1,094	1,472	18,449	18,553
Aluminium					
Bauxite		79	57	2,455	2,458
Alumina		151	164	1,293	2,400
Primary Metal		314	358	9,618	9,343
Pacific Aluminium		53	46	302	159
Intra-segment and other		—	—	700	629
Total Aluminium Segment		597	625	14,368	14,989
Copper					
Kennecott	100.0	327	246	2,195	2,027
Escondida	30.0	—	—	2,726	2,792
Oyu Tolgoi	(f)	585	484	14,293	13,479
Product group operations		912	730	19,214	18,298
Evaluation projects/other		5	—	224	165
Total Copper Segment		917	730	19,438	18,463
Minerals					
Iron Ore Company of Canada	58.7	120	126	1,217	1,147
Rio Tinto Iron & Titanium	(g)	107	106	3,342	3,351
Rio Tinto Borates	100.0	25	13	513	496
Diamonds	(h)	37	22	37	(84)
Product group operations		289	267	5,109	4,910
Evaluation projects/other		15	1	878	874
Total Minerals Segment		304	268	5,987	5,784
Reportable segments total		2,912	3,095	58,242	57,789
Simandou iron ore project	(i)	—	—	128	(22)
Other operations	(j)	32	9	(1,703)	(1,850)
Inter-segment transactions				(6)	12
Other items		49	41	(686)	(1,107)
Total		2,993	3,145	55,975	54,822
Add back: Proceeds from disposal of property, plant and equipment		8	1		
Total purchases of property, plant & equipment and intangibles as per cash flow statement		3,001	3,146		
Add: Net debt				(4,350)	(4,188)
Equity attributable to owners of Rio Tinto				51,625	50,634

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Notes to financial information by business unit

Business units are classified according to the Group's management structure.

- (a) The financial information by business unit has been adjusted to reflect a change in management responsibility for the Simandou iron ore project from Copper to the Chief Technical Officer. As a result, we have moved Simandou outside of reportable segments and accordingly adjusted prior period comparatives.
- (b) Underlying earnings for the six months ended 30 June 2022 and operating assets as at 31 December 2022 have been restated for the impact of narrow-scope amendments to IAS 12, refer to note 2 for details.
- (c) Segmental revenue, underlying EBITDA and capital expenditure are defined and calculated in note 3 from pages 44 to 47. Underlying earnings is defined and calculated within the alternative performance measures section on pages 71 to 80.
- (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) Segmental revenue, underlying EBITDA, underlying earnings and operating assets within Evaluation projects/other include activities relating to the shipment and blending of Pilbara and Iron Ore Company of Canada (IOC) iron ore inventories held at portside in China and sold to domestic customers. Transactions between Pilbara and our portside trading business are eliminated through the Iron Ore "intra-segment" line and transactions between IOC and the portside trading business are eliminated through "inter-segment transactions".
- (f) Until 16 December 2022, our interest in Oyu Tolgoi was held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset was its 66% investment in Oyu Tolgoi LLC, which owned the Oyu Tolgoi copper-gold mine. Following the purchase of TRQ we now directly hold a 66% investment in Oyu Tolgoi LLC.
- (g) Includes our interests in Rio Tinto Iron and Titanium Quebec Operations (100%), QIT Madagascar Minerals (QMM, 80%) and Richards Bay Minerals (attributable interest of 74%).
- (h) Includes our interests in Argyle (100%) residual operations which relates to the sale of previously mined inventory and Diavik.
- (i) Simfer Jersey Limited, a company incorporated in Jersey, 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.

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Notes to financial information by business unit (continued)

- (j) Other operations include our 100% interest in the Gove alumina refinery (under rehabilitation), Rio Tinto Marine, and the remaining legacy liabilities of Rio Tinto Coal Australia. These include provisions for onerous contracts, in relation to rail infrastructure capacity, partly offset by financial assets and receivables relating to contingent royalties and disposal proceeds.
- (k) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets as derived from the Group cash flow statement. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations but exclude equity accounted units. We have adjusted the comparatives for this change in definition.
- (l) Operating assets of the Group represents equity attributable to Rio Tinto adjusted for net debt. Operating assets of subsidiaries, joint operations and the Group's share relating to equity accounted units are made up of net assets adjusted for net debt and post-retirement assets and liabilities, net of tax. Operating assets are stated after the deduction of non-controlling interests; these are calculated by reference to the net assets of the relevant companies (i.e., inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).

Alternative performance measures

The Group presents certain alternative performance measures (APMs) which are reconciled to directly comparable IFRS financial measures below. These APMs are used by management to assess the performance of the business and provide additional information, which investors may find useful. APMs are presented in order to give further insight into the underlying business performance of the Group's operations.

APMs are not consistently defined and calculated by all companies, including those in the Group's industry. Accordingly, these measures used by the Group may not be comparable with similarly titled measures and disclosures made by other companies. Consequently, these APMs should not be regarded as a substitute for the IFRS measures and should be considered supplementary to those measures.

The following tables present the Group's key financial measures not defined according to IFRS and a reconciliation between those APMs and their nearest respective IFRS measures.

APMs derived from the income statement

The following income statement measures are used by the Group to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods. They indicate the underlying commercial and operating performance of our assets including revenue generation, productivity and cost management.

Segmental revenue

Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units in proportion to our equity interest (after adjusting for sales to/from subsidiaries). The reconciliation can be found in note 3.

Underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items that do not reflect the underlying performance of our reportable segments. The reconciliation of profit after tax to underlying EBITDA can be found in the segmental information note on page 46.

Alternative performance measures (continued)

Underlying EBITDA margin

Underlying EBITDA margin is defined as Group underlying EBITDA divided by the aggregate of consolidated sales revenue and our share of equity account unit sales after eliminations.

Six months ended 30 June	2023 US\$m	2022 US\$m
Underlying EBITDA	11,728	15,597
Consolidated sales revenue	26,667	29,775
Share of equity accounted unit sales and inter-subsiary/equity accounted unit sales eliminations	1,515	1,539
	28,182	31,314
Underlying EBITDA margin	42 %	50 %

Pilbara underlying FOB EBITDA margin

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

Six months ended 30 June	2023 US\$m	2022 US\$m
Pilbara		
Underlying EBITDA	9,541	10,119
Pilbara segmental revenue	14,705	15,517
Less: Freight revenue	(913)	(1,110)
Pilbara segmental revenue, excluding freight revenue	13,792	14,407
Pilbara underlying FOB EBITDA margin	69 %	70 %

Underlying EBITDA margin from Aluminium integrated operations

Underlying EBITDA margin from integrated operations is defined as underlying EBITDA divided by segmental revenue.

Six months ended 30 June	2023 US\$m	2022 US\$m
Aluminium		
Underlying EBITDA - integrated operations	1,217	2,941
Segmental revenue - integrated operations	5,801	7,162
Underlying EBITDA margin from integrated operations	21 %	41 %

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Alternative performance measures (continued)

Underlying EBITDA margin (product group operations)

Underlying EBITDA margin (product group operations) is defined as underlying EBITDA divided by segmental revenue.

Six months ended 30 June	2023 US\$m	2022 US\$m
Copper		
Underlying EBITDA - product group operations	1,322	1,721
Segmental revenue - product group operations	3,085	3,189
Underlying EBITDA margin - product group operations	43 %	54 %

Six months ended 30 June	2023 US\$m	2022 US\$m
Minerals		
Underlying EBITDA - product group operations	858	1,362
Segmental revenue - product group operations	2,883	3,394
Underlying EBITDA margin - product group operations	30 %	40 %

Underlying earnings

Underlying earnings represents net earnings attributable to the owners of Rio Tinto, adjusted to exclude items that do not reflect the underlying performance of the Group's operations.

Exclusions from underlying earnings are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into underlying business performance.

The following items are excluded from net earnings in arriving at underlying earnings in each period irrespective of materiality:

- Net gains/(losses) on disposal of interests in subsidiaries.
- Impairment charges and reversals.
- Profit/(loss) after tax from discontinued operations.
- Exchange and derivative gains and losses. This exclusion includes exchange gains/(losses) on external net debt and intragroup balances, unrealised gains/(losses) on currency and interest rate derivatives not qualifying for hedge accounting, unrealised gains/(losses) on certain commodity derivatives not qualifying for hedge accounting, and unrealised gains/(losses) on embedded derivatives not qualifying for hedge accounting.
- Adjustments to closure provisions where the adjustment is associated to an impairment charge, for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgmental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance.

Alternative performance measures (continued)

Earnings and exclusions relating to equity accounted units are stated after tax and included in the column "Pre-tax".

Reconciliation of net earnings to underlying earnings

	Pre-tax 2023 US\$m	Taxation 2023 US\$m	Non- controlling interests 2023 US\$m	Net amount 2023 US\$m	Net amount 2022 US\$m Restated ^(a)
Six months ended 30 June					
Net earnings	6,930	(1,983)	170	5,117	8,943
Items excluded from underlying earnings					
Impairment charges ^(b)	1,175	(347)	—	828	—
Foreign exchange and derivative (gains)/losses:					
– Foreign exchange gains on external net debt and intragroup balances ^(c)	(104)	5	1	(98)	(368)
– (Gains)/losses on currency and interest rate derivatives not qualifying for hedge accounting ^(d)	(42)	16	2	(24)	154
– Gains on embedded commodity derivatives not qualifying for hedge accounting ^(e)	(101)	26	(1)	(76)	(1)
Change in closure estimates (non-operating and fully impaired sites) ^(f)	(29)	2	—	(27)	41
Gain recognised by Kitimat relating to LNG Canada's project ^(g)	—	—	—	—	(107)
Total excluded from underlying earnings	899	(298)	2	603	(281)
Underlying earnings	7,829	(2,281)	172	5,720	8,662

(a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

(b) Refer to note 5.

(c) Exchange gains on external net debt and intragroup balances included post-tax foreign exchange losses on net debt of US\$6 million offset by post-tax gains of US\$104 million on intragroup balances, primarily as a result of the Australian dollar weakening against the US dollar. During the six months ended 30 June 2022, exchange gains on external net debt and intragroup balances included post-tax foreign exchange gains on intragroup balances of US\$508 million partially offset by post-tax losses of US\$140 million on external net debt/cash, primarily as a result of a weakening Australian dollar against the US dollar during the period.

(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. Mark-to-market movements on commodity derivatives entered into with the commercial objective of achieving spot pricing for the underlying transaction at the date of settlement are included in underlying earnings.

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Alternative performance measures (continued)

- (f) For the six months ended 30 June 2023, a post-tax credit of US\$27 million arose from the change in discount rate applied to provisions for close-down, restoration and environmental liabilities at legacy sites where the environmental damage preceded ownership by Rio Tinto, from 1.5% to 2%. In the six months ended 30 June 2022, a post-tax charge of US\$41 million arose from inflationary increases, to provisions for such liabilities, in excess of discount amortisation.
- (g) During the first half of 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying earnings consistent with prior periods as it was part of a series of transactions that together were material.

Basic underlying earnings per share

Basic underlying earnings per share is calculated as underlying earnings divided by the weighted average number of shares outstanding during the period.

Six months ended 30 June	2023	2022 Restated ^(a)
Net earnings (US\$ million)	5,117	8,943
Weighted average number of shares (millions)	1,621.0	1,619.3
Basic earnings per ordinary share (cents)	315.7	552.3
Items excluded from underlying earnings per share (cents) ^(b)	37.2	(17.4)
Basic underlying earnings per ordinary share (cents)	352.9	534.9

- (a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

(b) Calculation of items excluded from underlying earnings per share	2023	2022
Expense/(income) excluded from underlying earnings (refer to page 74)	603	(281)
Weighted average number of shares (millions)	1,621.0	1,619.3
Items excluded from underlying earnings per share (cents)	37.2	(17.4)

We have provided basic underlying earnings per share as this allows the comparability of underlying financial performance adjusted to exclude items, that do not reflect the underlying performance of the Group's operations.

Alternative performance measures (continued)

Interest cover

Interest cover is a financial metric used when managing our risk. It represents the number of times finance income and finance costs (including amounts capitalised) are covered by profit before taxation before finance income, finance costs, share of profit after tax of equity accounted units and items excluded from underlying earnings, plus dividends from equity accounted units.

Six months ended 30 June	2023 US\$m	2022 US\$m
Profit before taxation	6,930	12,315
Add back		
Finance income	(245)	(17)
Finance costs	536	55
Share of profit after tax of equity accounted units	(431)	(468)
Items excluded from underlying earnings	899	(271)
Add: Dividends from equity accounted units	287	633
Calculated earnings	7,976	12,247
Finance income	245	17
Finance costs	(536)	(55)
Add: Amounts capitalised	(120)	(208)
Total net finance costs before capitalisation	(411)	(246)
Interest cover	19	50

Payout ratio

The payout ratio is used by us to guide the dividend policy we implemented in 2016, under which we have sought to return 40-60% of underlying earnings, on average through the cycle to shareholders as dividends. It is calculated as total equity dividends per share to owners of Rio Tinto declared in respect of the financial year divided by underlying earnings per share (as defined above). Dividends declared usually include an interim dividend paid in the year, and a final dividend paid after the end of the year. Any special dividends declared in respect of the financial year are also included.

Six months ended 30 June	2023 (cents)	2022 (cents)
Interim dividend declared per share	177.0	267.0
Underlying earnings per share (comparative restated, refer to note 2)	352.9	534.9
Payout ratio	50 %	50 %

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Alternative performance measures (continued)

APMs derived from cash flow statement

Capital expenditure

Capital expenditure includes the net sustaining and development expenditure on property, plant and equipment and on intangible assets. This is equivalent to "Purchases of property, plant and equipment and intangible assets" in the cash flow statement less "Sales of property, plant and equipment and intangible assets".

This measure is used to support management's objective of effective and efficient capital allocation as we need to invest in existing assets in order to maintain and improve productive capacity, and in new assets to grow the business.

Rio Tinto share of capital investment

Rio Tinto's share of capital investment represents our economic investment in capital projects. This measure was introduced in 2022 to better represent the Group's share of funding for capital projects which are jointly funded with other shareholders, and which may differ from the consolidated basis included in the Capital expenditure APM. This better reflects our approach to capital allocation.

The measure is based upon the Capital expenditure APM, adjusted to deduct equity or shareholder loan financing provided to partially owned subsidiaries by non-controlling interests in respect of major capital projects in the period. In circumstances where the funding to be provided by non-controlling interests is not received in the same period as the underlying capital investment, this adjustment is applied in the period in which the underlying capital investment is made, not when the funding is received. Where funding which would otherwise be provided directly by shareholders is replaced with project financing, an adjustment is also made to deduct the share of project financing attributable to the non-controlling interest. This adjustment is not made in cases where Rio Tinto has unilaterally guaranteed this project financing. Lastly, funding contributed by the Group to Equity Accounted Units for its share of investment in their major capital projects is added to the measure. No adjustment is made to the Capital expenditure APM where capital expenditure is funded from the operating cash flows of the subsidiary or Equity Accounted Unit.

In the current and prior periods the Capital expenditure APM and Rio Tinto share of capital investment are identical. However, the capital guidance on page 4 has been provided on this new basis and a reconciliation of the measure will be published in future periods when the two measures differ.

Alternative performance measures (continued)

Free cash flow

Free cash flow is defined as net cash generated from operating activities minus purchases of property, plant and equipment and intangibles and payments of lease principal, plus proceeds from the sale of property, plant and equipment and intangible assets.

This measures the net cash returned by the business after the expenditure of sustaining and development capital. This cash can be used for shareholder returns, reducing debt and other investing/financing activities.

	2023 US\$m	2022 US\$m
Six months ended 30 June		
Net cash generated from operating activities	6,975	10,474
Less: Purchase of property, plant and equipment and intangible assets	(3,001)	(3,146)
Less: Lease principal payments	(213)	(183)
Add: Sales of property, plant and equipment and intangible assets	8	1
Free cash flow	3,769	7,146

APMs derived from the balance sheet

Net debt

Net debt is total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net debt.

Net debt measures how we are managing our balance sheet and capital structure.

	Financing liabilities			Other assets		Net debt US\$m
	Borrowings excluding overdrafts ^(a) US\$m	Lease liabilities ^(b) US\$m	Net debt related derivatives ^(c) US\$m	Cash and cash equivalents including overdrafts ^(a) US\$m	Other investments ^(d) US\$m	
Six months ended 30 June 2023						
Analysis of changes in net debt						
Opening balance	(11,070)	(1,200)	(690)	6,774	1,998	(4,188)
Foreign exchange adjustment	(48)	(1)	45	(59)	—	(63)
Cash movements excluding exchange movements	(1,586)	213	—	2,459	(801)	285
Other non-cash movements	(140)	(241)	(19)	—	16	(384)
Closing balance	(12,844)	(1,229)	(664)	9,174	1,213	(4,350)

(a) Borrowings excluding overdrafts, of US\$12,844 million (31 December 2022: US\$11,070 million) differs from Borrowings on the balance sheet as it excludes bank overdrafts of US\$5 million (31 December 2022: US\$1 million) which has been included in cash and cash equivalents for the net debt reconciliation.

(b) Other non-cash movements in lease liabilities include the net impact of additions, modifications and terminations during the period.

Alternative performance measures (continued)

- (c) Included within “Net 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 highly liquid financial assets held in managed investment funds classified as held for trading.

Net gearing ratio

Net gearing ratio is defined as net debt divided by the sum of net debt and total equity at the end of each period. It demonstrates the degree to which the Group's operations are funded by debt versus equity.

	30 June 2023 US\$m	31 December 2022 US\$m
Net debt	(4,350)	(4,188)
Net debt	(4,350)	(4,188)
Total equity (comparative restated, refer to note 2)	(53,357)	(52,741)
Net debt plus total equity	(57,707)	(56,929)
Net gearing ratio	8%	7%

Alternative performance measures (continued)

Underlying return on capital employed

Underlying return on capital employed ("ROCE") is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Underlying ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

	30 June 2023 US\$m	30 June 2022 US\$m Restated ^(a)
Profit after tax attributable to owners of Rio Tinto (net earnings)	5,117	8,943
Items added back to derive underlying earnings (refer to page 74)	603	(281)
Underlying earnings	5,720	8,662
Add/(deduct):		
Finance income per the income statement	(245)	(17)
Finance costs per the income statement	536	55
Tax on finance cost	(191)	(120)
Non-controlling interest share of net finance costs	(207)	(40)
Net interest cost in equity accounted units (Rio Tinto share)	26	17
Net interest	(81)	(105)
Adjusted underlying earnings	5,639	8,557
Annualised adjusted underlying earnings	11,278	17,114
Equity attributable to owners of Rio Tinto - beginning of the period (restated, refer to note 2)	50,634	51,930
Net debt/(cash) - beginning of the period	4,188	(1,576)
Operating assets - beginning of the period	54,822	50,354
Equity attributable to owners of Rio Tinto - end of the period (restated, refer to note 2)	51,625	51,087
Net debt/(cash) - end of the period	4,350	(291)
Operating assets - end of the period	55,975	50,796
Average operating assets	55,399	50,575
Underlying return on capital employed	20 %	34 %

(a) Comparative information has been restated to reflect the adoption of narrow scope amendments to IAS12 'Income Taxes', refer to note 2 for details.

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Metal prices and exchange rates

		Six months to 30 June 2023	Six months to 30 June 2022	Increase/ (Decrease)	Year to 31 December 2022
Metal prices - average for the period					
Copper	- US cents/lb	396	442	(10)%	398
Aluminium	- US\$/tonne	2,329	3,082	(24)%	2,703
Gold	- US\$/troy oz	1,932	1,874	3 %	1,800

	Six month average to 30 June			At 30 June			At 31 December 2022
	2023	2022	Increase/ (Decrease)	2023	2022	Increase/ (Decrease)	
Exchange rates against the US dollar							
Pound sterling	1.23	1.30	(5)%	1.26	1.21	4 %	1.21
Australian dollar	0.68	0.72	(6)%	0.66	0.69	(4)%	0.68
Canadian dollar	0.74	0.79	(6)%	0.75	0.78	(4)%	0.74
Euro	1.08	1.09	(1)%	1.09	1.05	4 %	1.07
South African rand	0.055	0.065	(15)%	0.053	0.062	(15)%	0.059

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Forward-looking statements

This report includes “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts included in this report, including, without limitation, those regarding Rio Tinto’s financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto’s products, production forecasts and reserve and resource positions) and for future total cash returns to shareholders, are forward-looking statements. The words “aim”, “anticipate”, “estimate”, “plan”, “believes”, “expects”, “may”, “should”, “will”, “target”, “set to”, “continue” or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption arising in connection with the Ukraine conflict. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto’s present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto’s actual results, performance or achievements to differ materially from those in the forward-looking statements include, but are not limited to: an inability to live up to Rio Tinto’s values and any resultant damage to its reputation; the impacts of geopolitics on trade and investment; the impacts of climate change and the transition to a low-carbon future; an inability to successfully execute and/or realise value from acquisitions and divestments; the level of new ore resources, including the results of exploration programmes and/or acquisitions; disruption to strategic partnerships that play a material role in delivering growth, production, cash or market positioning; damage to Rio Tinto’s relationships with communities and governments; an inability to attract and retain requisite skilled people; declines in commodity prices and adverse exchange rate movements; the impacts of inflation; an inability to raise sufficient funds for capital investment; inadequate estimates of ore resources and reserves; delays or overruns of large and complex projects; changes in tax regulation; safety incidents or major hazard events; cyber breaches; physical impacts from climate change; the impacts of water scarcity; natural disasters; an inability to successfully manage the closure, reclamation and rehabilitation of sites; the impacts of civil unrest; the impacts of the Ukraine conflict; breaches of Rio Tinto’s policies, standard and procedures, laws or regulations; trade tensions between the world’s major economies; potential further Russian sanctions; increasing societal and investor expectations, in particular with regard to environmental, social and governance considerations; the impacts of technological advancements; and such other risks 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). 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 report. Rio Tinto expressly disclaims any obligation or undertaking (except as required by applicable law, the UK Listing Rules, the Disclosure Guidance and Transparency Rules of the Financial Conduct Authority and the Listing Rules of the Australian Securities Exchange) to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in Rio Tinto’s expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Nothing in this report 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. Past performance cannot be relied on as a guide to future performance.

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

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