

Rio Tinto delivers underlying EBITDA of \$15.6 billion and an interim dividend of 267 US cents per share

27 July 2022

Rio Tinto Chief Executive Jakob Stausholm said: "We remain focused on delivering on our long-term strategy, with a steady improvement in operating performance and some notable advances in our growth agenda. We continue to strengthen our partnership with the Mongolian government following commencement of underground mining at Oyu Tolgoi, delivered first iron ore from the Gudai-Darri mine and approved early works funding at the Rincon lithium project.

"Market conditions were good, albeit below last year's record levels. We delivered largely flat production and solid financial results, with underlying EBITDA of \$15.6 billion, free cash flow of \$7.1 billion and underlying earnings of \$8.6 billion, after taxes and government royalties of \$4.8 billion. As a result, we are paying our second highest ever interim dividend of \$4.3 billion, a 50% payout, in line with our policy. The market environment has become more challenging at the end of the period.

"We are committed to making lasting, long-term change to our culture, including to our workplace culture, and to building better relationships with Indigenous peoples, communities and partners. The progress we are making will ensure we continue to deliver attractive returns to shareholders, invest in sustaining and growing our portfolio, and make a broader contribution to society in the drive to net-zero carbon emissions."

Six months ended 30 June	2022	2021	2020	Change vs 2021	Change vs 2020
Net cash generated from operating activities (US\$ millions)	10,474	13,661	5,628	(23)%	86 %
Purchases of property, plant and equipment and intangible assets (US\$ millions)	3,146	3,336	2,693	(6)%	17 %
Free cash flow ¹ (US\$ millions)	7,146	10,181	2,809	(30)%	154 %
Consolidated sales revenue (US\$ millions)	29,775	33,083	19,362	(10)%	54 %
Underlying EBITDA ¹ (US\$ millions)	15,597	21,037	9,640	(26)%	62 %
Profit after tax attributable to owners of Rio Tinto (net earnings) (US\$ millions)	8,908	12,313	3,316	(28)%	169 %
Underlying earnings per share ¹ (EPS) (US cents)	532.7	751.9	293.7	(29)%	81 %
Ordinary dividend per share (US cents)	267.0	376.0	155.0	(29)%	72 %
Special dividend per share (US cents)	—	185.0	—	(100)%	n/a
Total dividend per share (US cents)	267.0	561.0	155.0	(52)%	72 %
Underlying return on capital employed (ROCE) ¹	34 %	50 %	21 %		
	At 30 June 2022	At 31 December 2021			
Net cash ¹ (US\$ millions)	291	1,576			

¹ This financial performance indicator is a non-IFRS (as defined below) alternative performance measure ("APM"). 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. First half 2022 and first half 2021 APMs are reconciled to directly comparable International Financial Reporting Standards (IFRS) financial measures on pages 69 to 76. First half 2020 APMs are reconciled within the [2020 Half Year Results](#) release on our website. Our financial results are prepared in accordance with IFRS - see page 42 for further information. Footnotes are set out in full on page 7.

- Safety remains our top priority: we have now exceeded 3.5 years without a fatality on a managed site but we recognise that safety requires operating discipline every day. Our all-injury frequency rate of 0.35 improved from 2021: fatigue, labour shortages and other pressures from COVID-19 have heightened safety risks in day-to-day operations. We are advancing our enhanced Safety Maturity Model to address these risks.

- \$10.5 billion net cash generated from operating activities, which was 23% lower than 2021 first half, flowed through to 30% lower free cash flow¹ of \$7.1 billion, which included a 6% decrease in capital expenditure to \$3.1 billion, as our current programme of Pilbara replacement projects near completion.
- \$8.9 billion of net earnings, 28% lower than 2021 first half, reflected the movement in commodity prices, the impact of higher energy prices on our operations and higher rates of inflation on our operating costs and closure liabilities. Effective tax rate on net earnings of 24.5% compared with 28.5% in 2021 first half.
- \$15.6 billion underlying EBITDA¹ was 26% below 2021 first half, with an underlying EBITDA margin¹ of 50%.
- \$8.6 billion underlying earnings¹ (underlying EPS¹ of 532.7 US cents) were 29% below 2021 first half with a 25.2% effective tax rate on underlying earnings¹, compared with 28.8% in 2021 first half.
- \$0.3 billion of net cash¹ at 30 June 2022, which compared with net cash¹ of \$1.6 billion at the start of the year, reflected the free cash flow¹ of \$7.1 billion, offset by \$7.6 billion of cash returns to shareholders and the \$0.8 billion Rincon acquisition.
- Interim ordinary dividend of \$4.3 billion, our second highest ever interim, equivalent to 267 US cents per share. This represents 50% of underlying earnings, in line with our shareholder returns policy, and consistent with our practice of paying out 50% on the ordinary interim dividend.
- Following [publication](#) of a comprehensive external review of our workplace culture on 1 February, we are now implementing all recommendations from the report to ensure that everyone at Rio Tinto has a safe, respectful and inclusive workplace.
- We are on track to achieve our gender diversity target to increase female representation (including in senior leadership) by two percentage points this year: this increased by one percentage point in the half to 22.6%.
- We continue to focus on rebuilding our relationships with Indigenous Peoples across our global operations. On 14 February, we [announced](#) an agreement with the Yinhawangka Aboriginal Corporation on a new co-designed management plan to ensure the protection of significant social and cultural heritage values. This is part of our proposed development of the Western Range iron ore project in the Pilbara region of Western Australia. In May, we signed a Heads of Agreement with the Puutu Kunti Kurrama and Pinikura (PKKP) people which will guide the co-management of PKKP country where mining takes place.
- We made significant progress with our objective to excel in development with the following key milestones in the first half:
 - we [delivered](#) first ore from Gudai-Darri, our first greenfield iron ore mine in the Pilbara in more than a decade. We expect it to reach its 43 million tonne per year capacity in 2023.
 - we fired the first and second drawbells from the Hugo North copper-gold underground mine at Oyu Tolgoi in Mongolia. This followed the comprehensive agreement [announced](#) on 25 January 2022, which resets the relationship between partners, and resulted in the start of underground operations. The undercut progression remains on track to achieve sustainable production in the first half of 2023.

- we [made](#) a non-binding all-cash proposal to the Turquoise Hill (TRQ) Board to acquire the ~49% of the issued and outstanding shares of TRQ that Rio Tinto does not currently own. The proposed acquisition price of C\$34 per share values the minority shareholdings at US\$2.7 billion. On 18 May, we [agreed](#) to amend the funding plan with TRQ in order to provide liquidity of up to \$400 million in short-term early advances, while the Special Committee of TRQ evaluates our proposal. The deadline in the funding plan for TRQ to conduct an initial equity offering of at least \$650 million has also been extended from the end of August to the end of 2022.
- following completion of the acquisition of the Rincon lithium project in Argentina, the Board has approved \$190 million to develop a small starter battery-grade lithium carbonate plant with a capacity of 3,000 tonnes per year and first saleable production in 2024. The approval also includes early works to support a full-scale operation, including power line and associated substations, construction camp and airstrip.
- To achieve our ambition of becoming the best operator, we continue to rollout the Rio Tinto Safe Production System (RTSPS). We now have 15 active deployments across the business with 30 rapid improvement projects (Kaizens), targeting bottlenecks, either completed or in progress.
- We set ambitious climate targets in 2021 to reduce our Scope 1 and 2 emissions by 50% by 2030. While, as expected, we are yet to achieve a reduction in our emissions, we are putting the building blocks in place, including a [call](#) for proposals to develop large-scale wind and solar power in Central and Southern Queensland to power our aluminium assets in the Gladstone region. These assets require 1140MW of reliable power to operate, which equates to at least 4GW of quality wind or solar power with firming.
- We [reached](#) agreement with the Australian Taxation Office (ATO) on all tax matters in dispute. We also reached agreement with the Inland Revenue Authority of Singapore in relation to transfer pricing for the same historical years (2010 to 2021). In the second half of 2022, we will pay additional tax of A\$613 million to the ATO, relating to this agreement, which has been fully provided.

Energy Resources of Australia (ERA)

As the majority shareholder of ERA, we were disappointed to learn of the material cost and schedule overruns on the Ranger rehabilitation project in Australia's Northern Territory, announced earlier this year. We remain committed to ensuring the rehabilitation project is completed to a standard that will establish an environment similar to the adjacent Kakadu National Park. We also acknowledge the Traditional Owners, the Mirarr People's [opposition to developing the Jabiluka uranium deposit](#) and restate our full support for ERA's commitment that the deposit would never be developed without the Mirarr People's consent.

Since ERA announced the material cost and schedule overruns, we have sought to work constructively with ERA's Independent Board Committee as they seek to find a funding solution. Rio Tinto's position is that the terms should reflect:

- the material cost overruns and interim funding requirements;
- the Mirarr People's publicly stated position on the future development of Jabiluka; and
- Rio Tinto's expectation that its rehabilitation commitment will not generate any financial return.

These talks are ongoing as we work to ensure ERA has the means to complete this critical rehabilitation project.

Strong cash flow from operations

	Six months ended 30 June 2022	Six months ended 30 June 2021
	US\$m	US\$m
Net cash generated from operating activities	10,474	13,661
Purchases of property, plant and equipment and intangible assets	(3,146)	(3,336)
Sales of property, plant and equipment	1	26
Lease principal payments	(183)	(170)
Free cash flow¹	7,146	10,181
Disposals	—	10
Dividends paid to equity shareholders	(7,595)	(6,435)
Acquisition of Rincon	(825)	—
Other	(11)	48
(Decrease)/Increase in net cash / debt¹	(1,285)	3,804

Footnotes are set out on page 7.

- \$10.5 billion in net cash generated from operating activities, 23% lower than 2021 first half, was primarily driven by price movements for our major commodities. In June 2022, we made a \$1.1 billion (A\$1.5 billion) final payment to the Australian Taxation Office in respect of 2021 profits. We also experienced a rise in working capital, primarily due to elevated prices for raw materials in aluminium inventory, partly offset by a drawdown in iron ore portside inventories.
- \$3.1 billion capital expenditure was comprised of \$0.3 billion of growth capital, \$1.2 billion of replacement capital and \$1.6 billion of sustaining capital.
- \$7.6 billion of dividends paid in 2022 first half, being the 2021 final ordinary and special dividends, including foreign exchange impacts.
- The above movements, together with completion of the \$0.8 billion acquisition of the Rincon lithium project, resulted in net cash¹ decreasing by \$1.3 billion in 2022 first half, with net cash¹ of \$0.3 billion at 30 June 2022.

Guidance

- We expect our share of capital investment¹ (refer to Alternative Performance Measures on page 73) of around \$7.5 billion (previously \$8.0 billion) in 2022. In each of 2023 and 2024, we expect our share of capital investment of \$9.0 to \$10.0 billion, which includes the ambition to invest 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. Around half of our share of capital investment is denominated in Australian dollars. In addition, our guidance includes around \$1.5 billion over the next three years on decarbonisation projects, mainly relating to repowering the Pilbara: this will accelerate from 2025, bringing our best estimate to around \$7.5 billion, in aggregate from 2022 to 2030.
- Effective tax rate on underlying earnings is expected to be around 30% in the second half of 2022. Following a settlement with the Australian Tax Office, we expect to pay A\$0.6 billion in the second half of 2022 in respect of twelve historical years (2010 to 2021).

2022 unit cost guidance	2022 Guidance
Pilbara iron ore unit cash costs, free on board (FOB) basis - US\$ per wet metric tonne*	19.5-21.0
Australian dollar exchange rate	0.71
Copper C1 unit costs (average for Kennecott, Oyu Tolgoi and Escondida) - US cents per lb	130-150

* Excludes COVID-19 costs.

- In 2022, we expect Pilbara iron ore unit cash costs to be \$19.5-21.0 per tonne, at an Australian dollar exchange rate of 0.71 (previously 0.75), excluding any additional COVID-19 response costs.
- In 2022, we continue to expect copper C1 unit costs to be 130 to 150 US cents per pound.

2022 production guidance (Rio Tinto share, unless otherwise stated)	2022 Guidance
Pilbara iron ore (shipments, 100% basis) (Mt)	320 to 335
Bauxite (Mt)	54 to 57
Alumina (Mt)	7.6 to 7.8
Aluminium (Mt)	3.0 to 3.1
Mined copper (kt)	500 to 575
Refined copper (kt)	230 to 290
Diamonds (M carats)	4.5 to 5.0
Titanium dioxide slag (Mt)	1.1 to 1.4
Iron Ore Company of Canada pellets and concentrate (Mt)	10.0 to 11.0
Boric oxide equivalent (Mt)	~0.5

- Production guidance is unchanged from our Second Quarter Operations Review released on 15 July 2022.
- Iron ore shipments and bauxite production guidance remain subject to weather and market conditions.
- Our guidance assumes development of the COVID-19 pandemic does not lead to government-imposed restrictions and widespread protracted cases, which could result in a significant number of our production and maintenance critical workforce and contractor base being unable to work due to illness and/or isolation requirements. This risk extends to prolonged interruption of service from a key partner or supplier which could lead to severely constrained operational activity of a key asset or project.
- Pilbara shipments guidance remains dependent on ramp-up of Gudai-Darri and Robe Valley, availability of skilled operations and maintenance labour, and management of cultural heritage, including any impacts from the Aboriginal Cultural Heritage Act 2021.

Our projects and development options

- We increased our exploration and evaluation spend by 13% to \$367 million in 2022 first half, as we ramped up our activities in Guinea, Argentina and Australia.
- We delivered first ore from the Gudai-Darri greenfield iron ore mine in Western Australia. Production from the mine will continue to ramp up through the remainder of this year and is expected to reach full capacity in 2023. This first phase, with a 43 million tonne annual capacity, will replace depleting orebodies and provide some incremental capacity. The commissioning was achieved amidst ongoing COVID-19 restrictions, including labour access and supply chain quality issues. This led to a rise in the approved capital cost to \$3.1 billion, in line with our disclosure in February that costs could rise by 15%.
- The \$1.0 billion (Rio Tinto share) investment in the Robe River Joint Venture replacement iron ore mines is nearing completion. Mesa A wet plant commissioning challenges impacted production ramp-up in the first quarter. Plant performance stabilised in the second quarter and rectification works remain on track for completion in the third quarter.
- The Kemano hydropower tunnel project in British Columbia is complete. Water flow was achieved through the second tunnel powerhouse in June following completion of tunnel construction works. This project will ensure the long-term, sustainable operation of the Kitimat aluminium smelter.
- The first and second drawbells of the Hugo North underground mine at Oyu Tolgoi in Mongolia were fired in June. This follows the comprehensive agreement [reached](#) with our partners on 25 January 2022. Sustainable production is expected in the first half of 2023, with the capital forecast at \$7.06 billion, an increase of \$0.3 billion against the 2020 Definitive Estimate, largely related to COVID-19 disruptions.
- Stripping for the \$1.5 billion second phase of the south wall pushback at Kennecott in the US, extending operations to 2032, remains on track. A \$108 million investment in underground characterisation studies is ongoing: potential underground mining would occur concurrently with open pit operations and result in increased output.
- At the Jadar lithium-borate project in Serbia, we are continuing to explore all options following the Government of Serbia's cancellation of the Spatial Plan in January, requiring revocation of all related permits. We acknowledge the concerns from communities and are engaging meaningfully to explore ways to address them.
- Following completion of the acquisition of the Rincon lithium project in Argentina, the Board has approved \$190 million to develop a small starter battery-grade lithium carbonate plant with a capacity of 3,000 tonnes per year and first saleable production in 2024. The approval also includes early works to support a full-scale operation, including power line and associated substations, construction camp and airstrip. We have undertaken considerable reviews and baseline studies in the last quarter, including safety and environmental, working closely with the Government of Salta on permitting requirements. In early July, we were granted a permit by the provincial regulators and have commenced an exploration campaign to further understand Rincon's basin and brine reservoir. We will continue to engage with local communities, the Province of Salta and the Government of Argentina to ensure open and transparent dialogue on the work plans. We recently [signed](#) a non-binding Memorandum of Understanding (MoU) with the Ford Motor Company for a significant off-take agreement of Rincon lithium, to support Ford's production of electric vehicles.
- The Zulti South project at Richards Bay Minerals (RBM) in South Africa remains on full suspension.

- At the Winu copper-gold project in Western Australia, a programme of work is ongoing to supplement our understanding of the deposit and the environmental and cultural heritage impacts in advance of submitting the regulatory approval requests. We also continue to strengthen our partnerships with Traditional Owners and advance agreement making.
- At the Resolution Copper project in Arizona, we are working with the US Forest Service to progress the Final Environmental Impact Statement (FEIS) and complete actions necessary for the land exchange. We continue to advance partnership discussions with 11 federally-recognised Tribes that are participating in the formal consultation process on the FEIS and land exchange. We note the Ninth Circuit's decision to uphold the lower court ruling denying Apache Stronghold's request for injunctive relief. We are encouraged by the significant local support for the project but respect the views of certain groups who oppose it, and will continue our efforts to address and mitigate these concerns.
- At the Simandou iron ore project in Guinea², project activities have stopped following an order from the Government of Guinea to all parties to stop work in country. We are actively engaging with the Government and the Winning Consortium Simandou (WCS) towards the resumption of formal negotiations. We remain committed to delivering Simandou in accordance with international ESG standards, ensuring that the project results in sustainable benefits to Guinea and its people, along with our shareholders and customers.

1. *This financial performance indicator is an APM. 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. APMs are reconciled to directly comparable IFRS financial measures on pages 69 to 76.*
2. *Operating under the Simfer joint venture where the government of Guinea holds 15% and Simfer Jersey holds 85%. Simfer Jersey is owned by Chalco Iron Ore Holdings (CIOH) (47%) and Rio Tinto (53%). CIOH is owned by Chinalco (75%), Baosteel Resources (20%), China Civil Engineering Construction Corporation (CCECC) (2.5%) and China Harbour Engineering Company (CHEC) (2.5%). This structure has been in place since 2017.*

Update on our Sustainability targets

Our strategy, objectives and values guide our approach to sustainability – being a trusted steward of resources and being a socially responsible business partner.

Progress against our Safety targets

Nothing is more important than the safety and wellbeing of our employees, contractors and communities. Our first priority is to operate with zero fatalities, reduce workplace injuries and prevent catastrophic events. We have exceeded 3.5 years without a fatality on a managed site. The first half of 2022 has been stable, with our all-injury frequency rate (AIFR) of 0.35 representing an improvement on the 2022 target of 0.38 and 2021 actual of 0.40.

The primary causes of Potentially Fatal Incidents (PFIs) remain falling objects, vehicles and driving. As a result of focused work by our sites, there has been a 33% reduction in PFIs relating to falling objects compared to the same period in 2021.

We believe our Safety Maturity Model – which brings together the key elements of building a strong safety culture and leadership maturity – is the route to achieve a safe and productive workplace. Successfully introduced in 2019, we have enhanced the model this year to extend our leadership maturity approach to contractors, as well as health and environment management. It will also include a focus on mindsets and behaviours to strengthen our culture of safety for everyone.

Progress against our Water targets

By 2023, for all our managed operations, we will disclose their permitted surface water allocation, how much of their allocation they have used, and the average rainfall volume that the catchment receives.

We have been focused on the collection and analysis of data for all our product groups and are now finalising the dataset verification ahead of external disclosure. We have developed standardised controls for our assets to prevent or mitigate water security risks and those associated with discharge quality and quantity, long-term dewatering and geochemical impacts. Integrating these controls completes the realignment of our water risk management approach and further enables our assets to improve water stewardship.

Progress against our Climate targets

We are targeting a reduction in our absolute Scope 1 and 2 emissions of 15% by 2025 and a reduction of 50% by 2030 relative to our 2018 equity baseline.

In the first half of 2022, we continued to progress our climate strategy by initiating a number of partnerships to address our operational and value chain emissions. In the lead up to COP27, we are working to identify and develop options to raise our climate ambition in line with the goals of the Paris Agreement.

Reducing the carbon footprint of our operations

Mt CO ₂ e	H1 2022*	H1 2021	2021	2020	2019	2018**
Scope 1 emissions	11.2	11.3	22.7	22.8	23.1	23.7
Scope 2 emissions	4.3	4.3	8.4	8.7	8.3	8.9
Total	15.5	15.6	31.1	31.5	31.5	32.6

**Emissions from non-managed operations and emissions for June 2022 are estimated based on production and emission intensity*

***Adjusted baseline target due to divestments and acquisitions. Refer to our [Scope 1, 2 and 3 Emissions Calculation Methodology 2021](#) report for more information.*

Our emissions in the first half of 2022 remain at approximately the same level as 2021. The abatement projects identified in the short-term incentive plan targets have continued to progress through feasibility, design and approvals stages. However, as indicated in the 2021 Climate Change Report, these projects are expected to deliver more significant reductions later this decade. Current emissions levels are mostly influenced by changes in operational factors.

We continued to identify preferred locations in the Pilbara for wind and solar energy developments. We have a particular focus on our proposed 100MW solar farm near Karratha, one of the first projects identified as part of our programme to generate 1GW of renewable energy to replace gas power to meet demand from our fixed plants and infrastructure, as well as support early electrification and decarbonisation of our mobile fleet. Planning for additional engineering, environmental and heritage studies on these preferred locations is ongoing and we continue to engage with the Western Australian Government, Traditional Owners and other stakeholders.

In the first half of 2022, we established new partnership initiatives to reduce our future emissions, such as a one-year biofuel [trial](#) with bp to help reduce carbon emissions from our marine fleet, a [letter of intent](#) with BHP, Oldendorff Carriers and Star Bulk Carriers Corp to assess the development of an iron ore Green Corridor between Australia and East Asia and [selected](#) eight technology innovators' submissions to progress beyond the 'Charge On Innovation Challenge'. This global challenge, a partnership between BHP, Rio Tinto and Vale, seeks to accelerate commercialisation of effective solutions for charging large electric haul trucks while demonstrating there is an emerging market in mining for these solutions.

We also [issued](#) a call for proposals to repower our Gladstone aluminium assets by developing up to 4GW of large-scale wind and solar renewable energy projects in Central and Southern Queensland. This is an outcome of the Statement of Cooperation signed with the Queensland Government in October 2021.

We have established a small team to identify investment opportunities in nature-based solutions on or near our landholdings. We will look for high quality, high integrity projects that could deliver carbon offsets with biodiversity and community benefits.

Climate partnerships across our value chains

In the first half of 2022, we made progress against our Scope 3 goals through partnerships to decarbonise our value chain.

We [signed](#) a Memorandum of Understanding (MoU) with Salzgitter AG to work towards carbon-free steelmaking. Under the MoU, Rio Tinto and Salzgitter will explore optimisation of iron ore pellets, lump and fines for use in hydrogen direct reduction steelmaking and explore the potential for greenhouse gas emission certification across the steel value chain.

Research work on the Low Carbon Research Project announced in October 2021 is continuing. We are investigating making iron by using Pilbara iron ore fines, with a sustainable raw biomass as a coking coal replacement, and microwaves as a highly efficient supplementary energy source. Initial testing has resulted in the successful production of highly metallised directly reduced iron with targeted levels of carbon. Based on these results we have progressed the design of a larger scale continuous pilot plant to further our research and development and assess the potential of the process at commercial scale. In parallel, we continue to progress the other five focus areas for iron and steel decarbonisation.

Progress against our Gender Diversity targets

We are on track to achieve our target to increase female representation (including in senior leadership) by two percentage points each year. In the first half of 2022, representation of women increased by one percentage point to 22.6% of total workforce.

Progress against the Everyday Respect recommendations

We continue to focus on becoming a more outward-looking and caring company, ensuring that everyone at Rio Tinto can count on a safe, respectful and inclusive workplace. To date, over 57% of our ~7,000 leaders have either registered for or completed the Everyday Respect training. We are also completing facilities assessments at all our operations and engaging with our workforce to prioritise rectification and improvement works.

We have created a discrete unit, dedicated to providing early intervention options for people experiencing harmful behaviours, as well as those providing support to people experiencing these behaviours, such as leaders and human resources advisors. We are also enhancing our confidential reporting ("myVoice") programme and investigations framework to ensure people are at the heart of these processes and feel they are truly cared for and supported every step of the way.

We are enabling ways for people who have experienced harm to sensitively share their story in their own words with senior leaders. This allows people to be heard and is an important part of healing, while surfacing issues constructively to keep learning and improving.

Leveraging our strong safety culture, we have introduced "Purple Banner" communications – initially implemented in Iron Ore and now being expanded in other parts of the company. The intent of a Purple Banner is to increase the transparency of disrespect and other harmful behaviours that occur across the business and share important information about incidents that bring to light different learnings to prevent disrespectful behaviours.

In order to independently measure our progress and shape additional future actions, we have committed to commissioning another comprehensive independent review of our workplace culture, which we expect to conduct in 2024.

Progress against our Communities and Social Performance targets

In February, we [announced](#) an agreement with the Yinhawangka Aboriginal Corporation on a new co-designed management plan to ensure the protection of significant social and cultural heritage values as part of our proposed development of the Western Range iron ore project in the Pilbara region of Western Australia. The Social, Cultural Heritage Management Plan is the result of strong collaboration over the past year between the Yinhawangka people and Rio Tinto including "on-Country" visits, archaeological and ethnographic surveys and workshops. As a result, the mine has been designed to reduce impacts on social and cultural heritage values. We submitted the plan to Western Australia's Environmental Protection Authority (EPA) on 1 February 2022, as part of our submission regarding the Greater Paraburdoo Iron Ore Hub Proposal. The EPA recommended approval of the Western Range Proposal, subject to certain conditions. We are now awaiting final environmental approval decisions by the Western Australian State and Australian federal governments.

In May, we recognised two years since the destruction of the rock shelters on the land of the Puutu Kunti Kurrama and Pinikura (PKKP) people at our Brockman iron ore mine in the Pilbara. We are committed to transforming our culture, building better relationships and ensuring cultural heritage is understood, valued and better protected. In May, the PKKP Aboriginal Corporation entered a co-management Heads of Agreement with Rio Tinto. This agreement is an important step towards rebuilding our relationship with the PKKP peoples and sets out how we will work together in partnership on a co-management approach to mining activities on PKKP Country. We also continue to work to remediate the Juukan Gorge area under the guidance of the Puutu Kunti Kurrama Traditional Owners.

We continued to build on our relationship reset in Mongolia, with the Oyu Tolgoi Board approving a \$50 million five-year funding programme to support the long-term, sustainable development of Khanbogd town - our neighbouring host community in the South Gobi region.

In July, we signed a Memorandum of Understanding (MoU) with four Weipa region Traditional Owner groups detailing an agreed consultation process around closure planning for the East Weipa bauxite mine. The MoU was jointly developed by Traditional Owners and Rio Tinto and lays a path regarding the eventual return of their lands after mining at East Weipa ceases operation in 2024.

Indigenous leadership and engagement

We have established an Australian Advisory Group (AAG) to provide guidance on current and emerging issues, and better manage policies and positions that are important to both Australian communities and our broader business. The AAG held its second meeting in Weipa, in northern Queensland and continues to refine its scope and bespoke procedures for providing high quality advice for the Chief Executive Australia and the Executive Committee. The AAG is focusing its attention on high level policies including the work of the Everyday Respect Taskforce, and Rio Tinto's approach to protecting and managing Cultural Heritage.

Our \$50 million investment, announced in 2021, to attract, retain and grow Indigenous professionals and leaders has enabled us to increase the number of Indigenous leaders in Rio Tinto fivefold since November 2020, through internal promotion and recruitment.

Former Panguna copper mine in Bougainville

In late 2021, a joint Committee was formed to oversee a detailed independent impact assessment of the Panguna mine in Bougainville, Papua New Guinea, to identify and better understand the environmental and human rights impacts of the mine. The Committee, which includes representatives from the Autonomous Bougainville Government, Papua New Guinea Government, community members and landowners, the Human Rights Law Centre, Bougainville Copper Limited and Rio Tinto, has met three times since its establishment and the meetings have been constructive and collaborative. In the second half of the year, the Committee plans to finalise selection and endorsement of the consulting firm to undertake the impact assessment.

Underlying EBITDA and underlying earnings by product group

	Underlying EBITDA			Underlying earnings		
	2022 US\$m	2021 US\$m	Change %	2022 US\$m	2021 US\$m	Change %
Six months ended 30 June						
Iron Ore	10,395	16,060	(35)%	6,461	10,216	(37)%
Aluminium	2,866	1,924	49 %	1,547	921	68 %
Copper	1,487	2,048	(27)%	543	885	(39)%
Minerals	1,259	1,398	(10)%	420	498	(16)%
Reportable segment total	16,007	21,430	(25)%	8,971	12,520	(28)%
Other operations	(78)	(4)	1850 %	(167)	(51)	227 %
Inter-segment transactions	(1)	(6)	(83)%	—	(3)	(100)%
Product group total	15,928	21,420	(26)%	8,804	12,466	(29)%
Central pension costs, share-based payments, insurance and derivatives	265	119	123 %	237	120	98 %
Restructuring, project and one-off costs	(86)	(36)	139 %	(61)	(23)	165 %
Other central costs	(397)	(346)	15 %	(363)	(294)	23 %
Central exploration and evaluation	(113)	(120)	(6)%	(95)	(100)	(5)%
Net interest				105	(3)	(3600)%
Total	15,597	21,037	(26)%	8,627	12,166	(29)%

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 69 to 76.

Central and other costs

Pre-tax central pension costs, share-based payments, insurance and derivatives were a \$265 million credit compared with a \$119 million credit in 2021 first half, reflecting gains on derivatives recognised in the first half of 2022 of \$65 million, compared to derivative losses recognised in 2021 first half of \$41 million, higher insurance recoveries, along with lower central pension costs and share based payments.

On a pre-tax basis, restructuring, project and one-off central costs were 139% higher than 2021 first half mainly associated with specific projects undertaken to support our CSP objectives including donations to humanitarian agencies to support those in Ukraine, along with increased compliance and legal costs.

Other central costs of \$397 million were 15% higher than in 2021 first half, reflecting the Group's investment in the rollout of RTSPS across the Group and enhancing capability to progress our ESG and CSP objectives.

Central exploration

We have a strong portfolio of exploration projects with activity in 19 countries across seven commodities in early exploration and studies stages, reflected in our pre-tax central spend of \$113 million. In 2022 first half, we continued to prioritise our exploration portfolio, with a particular focus on copper projects in Australia, Peru, Zambia and the United States, diamonds in Canada and Angola, and nickel in Canada and Finland. Mine-lease exploration continued at our managed businesses including Pilbara Iron in Australia, Diavik in Canada and Cape York in Australia. The Falcon Project in Saskatchewan, Canada will remain in care and maintenance until the end of 2022 during which time we will consider alternative commercial options, including potential exit.

Commentary on financial results

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

	US\$m
2021 first half underlying EBITDA	21,037
Prices	(3,404)
Exchange rates	312
Volumes and mix	283
General inflation	(595)
Energy	(560)
Operating cash unit costs	(1,259)
Higher exploration and evaluation spend	(43)
One-off items - impact of Kitimat strike	(339)
Non-cash costs/other	165
2022 first half underlying EBITDA	15,597

Robust financial results driven by significant movement in pricing

We saw significant movement in the pricing for our commodities in the half, amidst growing recession fears and a decline in consumer confidence.

Movements in commodity prices resulted in a \$3,404 million decline in underlying EBITDA overall compared with 2021 first half. This was primarily from lower iron ore prices (-\$5,739 million), which was partly offset by a significant price uplift for our Aluminium business (\$1,813 million), driven by a rise in London Metal Exchange (LME) prices, improved market and product premiums and higher alumina pricing. The pricing impact overall for our Copper business was broadly flat, including the impact of provisional pricing. We have included a table of prices and exchange rates on page 28.

The monthly average Platts index for 62% iron fines converted to an FOB basis was 26% lower on average compared with 2021 first half.

The average LME price for copper was 7% higher, while the LME aluminium price was 37% higher, compared with 2021 first half. The gold price rose 4%.

The mid-west premium duty paid for aluminium in the US averaged \$801 per tonne, 72% higher than in 2021 first half.

Weaker local currencies during 2022 first half

Compared with 2021 first half, on average, the US dollar strengthened by 6% against the Australian dollar and by 1% against the Canadian dollar. Currency movements increased underlying EBITDA by \$312 million relative to 2021 first half.

Improvement in sales volumes and mix

Higher sales volumes and changes in product mix across the portfolio increased underlying EBITDA by \$283 million compared to 2021 first half. This was mostly attributable to increased iron ore portside sales in China and favourable market and value-added product premiums for our Aluminium business.

Impact of rising inflation and higher energy prices

Average movements in energy prices compared with 2021 first half reduced underlying EBITDA by \$560 million, mainly due to higher diesel prices for our trucks, trains and ships. Rising general price inflation across our global operations resulted in a \$595 million reduction in underlying EBITDA, including \$137 million for the impact of higher than expected inflation on closure provisions (closed / fully impaired sites and environment liabilities).

Disciplined focus on costs to help offset market-linked increases

We remained focused on cost control throughout the half, in particular maintaining discipline on our long-run fixed costs: however, a rise in our operating cash unit costs reduced underlying EBITDA by \$1,259 million (on a unit cost basis) compared with 2021 first half. This mainly reflected temporary cost pressures over and above general inflation from higher market-linked prices for raw materials, in our Aluminium and Copper businesses. We also increased resourcing in our iron ore business, to support the ramp-up at Gudai-Darri and investment in pit health and system reliability, and incurred additional costs at the Kitimat and Boyne aluminium smelters due to production disruptions. The impact of these other costs increases was relatively muted, reflecting disciplined cost control across the business.

Increasing our global exploration and evaluation activity

We increased our exploration and evaluation spend by \$43 million, or 13%, to \$367 million. This was focused on our greenfield programmes across 19 countries and our highest value evaluation projects.

Net earnings

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

	US\$m
2021 first half net earnings	12,313
Total changes in underlying EBITDA	(5,440)
Increase in depreciation and amortisation (pre-tax) in underlying earnings	(145)
Increase in interest and finance items (pre-tax) in underlying earnings	(288)
Decrease in tax on underlying earnings	2,080
Decrease in underlying earnings attributable to outside interests	254
Total changes in underlying earnings	(3,539)
Changes in exclusions from underlying earnings:	
Gains recognised by Kitimat relating to LNG Canada's project	107
Movement in exchange differences and gains/losses on debt	(65)
Movement in closure estimates (non-operating and fully impaired sites)	92
2022 first half net earnings	8,908

Depreciation and amortisation, net interest and finance items, tax and non-controlling interests

The depreciation and amortisation charge was \$145 million higher than 2021 first half, mainly due to depreciation on capitalised closure costs which increased in 2021 at a number of our Aluminium sites. Our capital base was also higher in Iron Ore, Copper and Minerals as a result of our investment activities. This was partially offset by a weaker Australian dollar against the US dollar.

Interest and finance items (pre-tax) were higher mainly as a result of a \$296 million increase in amortisation of discount on provisions, as higher inflation had an impact on the Group's closure and restoration/environmental liabilities. The amortisation charge of \$503 million (2021 first half: \$207 million) is based on expected inflation for 2022 at the start of the year. Subsequent changes to our outlook on 2022 inflation are recorded as operating costs within underlying EBITDA (increase of \$137 million) and capitalised within mining properties (increase of \$360 million).

The 2022 first half effective corporate income tax rate on underlying earnings, excluding equity accounted units, was 25.2%, compared with 28.8% in 2021 first half. The effective tax rate on underlying earnings in Australia was 29% in 2022 first half compared with just over 30% in 2021 first half. We anticipate the effective tax rate on underlying earnings to be around 30% in the second half of 2022. We [reached](#) agreement with the Australian Taxation Office (ATO) on all tax matters in dispute. We also reached agreement with the Inland Revenue Authority of Singapore in relation to transfer pricing for the same historical years (2010 to 2021). In the second half of 2022, we will pay additional tax of A\$613 million to the ATO, relating to this agreement, which has been fully provided.

Items excluded from underlying earnings

During the first half of 2022, LNG Canada elected to terminate their option to purchase additional land at Kitimat, Canada. This resulted in a \$107 million gain which includes the release of deferred income and receipt of a cancellation fee payment. This has been excluded from underlying earnings consistent with prior years as it is part of a series of material transactions unrelated to the core business.

In 2022 first half, we recognised a non-cash exchange and derivative gain of \$215 million. This was mainly on US dollar debt in non-US dollar functional currency Group companies, intragroup balances, and the revaluation of certain derivatives which do not qualify for hedge accounting. These gains compared with a 2021 first half gain of \$280 million, giving rise to a unfavourable period-on-period movement of \$65 million. 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.

In 2022 first half, we recognised \$41 million in closure costs relating to inflationary increases to closure provisions for non-operating and fully impaired sites in excess of the unwind of the discount. This was \$92 million lower than 2021 first half closure charges which related to Diavik closure provision increases and further increases at a number of the Group's legacy sites where the environmental damage preceded ownership by Rio Tinto.

Profit

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2022 first half was \$8.9 billion (2021 first half: \$12.3 billion). We recorded a profit after tax in 2022 first half of \$9.4 billion (2021 first half: \$13.1 billion) of which a profit of \$0.5 billion (2020: \$0.8 billion) was attributable to non-controlling interests.

Net earnings and 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 2022 US\$m	Six months ended 30 June 2021 US\$m
Underlying earnings	8,627	12,166
Items excluded from underlying earnings		
Gains recognised by Kitimat relating to LNG Canada's project	107	—
Foreign exchange and derivative gains on net debt and intragroup balances and derivatives not qualifying for hedge accounting	215	280
Net losses from movements to closure estimates (non-operating and fully impaired sites)	(41)	(133)
Net earnings	8,908	12,313

On pages 47 to 49 there is a detailed reconciliation from underlying earnings to net 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 48.

Balance sheet

Net cash reduced by \$1.3 billion in 2022 first half, resulting in a net cash position of \$0.3 billion at 30 June 2022. This reflected our strong free cash flow, partly offset by dividend payments of \$7.6 billion and the \$0.8 billion acquisition of the Rincon lithium project.

Our net gearing ratio (net cash to total capital) was (1)% at 30 June 2022 (31 December 2021: (3)%), see page 76.

Our total financing liabilities excluding net debt derivatives at 30 June 2022 (see page 75) were \$12.9 billion (31 December 2021: \$13.5 billion) and the weighted average maturity was around 10 years. At 30 June 2022, approximately 88% of these liabilities were at floating interest rates (95% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year is \$1.5 billion, which mature in 2024.

We had \$13.7 billion in cash and cash equivalents plus other short-term cash investments at 30 June 2022 (31 December 2021: \$15.2 billion).

Provision for closure costs

At 30 June 2022, provisions for close-down and restoration costs and environmental clean-up obligations were \$14.8 billion (31 December 2021: \$14.5 billion). The principal movements during the half were increases in existing and new provisions that were partially adjusted to mining properties (\$0.3 billion) and partially charged to profit (\$0.2 billion). Also contributing to the increase in the provision was amortisation of discount (\$0.5 billion). These increases were partly offset by utilisations of the provision through spend (-\$0.3 billion) and a weaker Australian dollar against the US dollar (-\$0.5 billion).

The provisions are based on risk-adjusted real cash flows using a real-rate discount rate of 1.5% to reflect obligations at the present value of cash flows on 30 June 2022 terms.

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 ordinary dividends maintained

	2022 US\$ billion	2021 US\$ billion
Ordinary dividend		
Interim	4.3	6.1
Payout ratio on ordinary dividend	50 %	50 %
Additional returns		
Special dividend announced in July 2021, paid in September 2021	n/a	3.0
Total cash returns to shareholders declared*	4.3	9.1
Combined total as % of underlying earnings	50 %	75 %

*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 2022 interim dividend has been converted at exchange rates applicable on 26 July 2022 (the latest practicable date before the dividend was declared). American Depositary Receipt (ADR) holders receive dividends at the declared rate in US dollars.

	2022 interim	2021 interim
Ordinary dividend per share declared		
Rio Tinto Group		
US cents per share	267.00	376.00
Rio Tinto plc		
UK pence per share	221.63	270.84
Rio Tinto Limited		
Australian cents per share	383.70	509.42

	2022 interim	2021 interim
Special dividend per share declared		
Rio Tinto Group		
US cents per share	n/a	185.00
Rio Tinto plc		
UK pence per share	n/a	133.26
Rio Tinto Limited		
Australian cents per share	n/a	250.64

The 2022 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 22 September 2022, we will pay the 2022 interim ordinary dividend to holders of ordinary shares and holders of ADRs on the register at the close of business on 12 August 2022 (record date). The ex-dividend date is 11 August 2022.

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 1 September 2022.

We will operate our Dividend Reinvestment Plans for the 2022 interim dividend – see our website riotinto.com for details. Rio Tinto plc and Rio Tinto Limited shareholders' election notice for the Dividend Reinvestment Plans must be received by 1 September 2022. 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.

Review of operations

Iron Ore

Six months ended 30 June	2022	2021	Change
Pilbara production (million tonnes - 100%)	150.3	152.3	(1)%
Pilbara shipments (million tonnes - 100%)	151.4	154.1	(2)%
Salt production (million tonnes - Rio Tinto share) ¹	2.6	2.9	(10)%
Gross product sales (US\$ millions)	16,610	21,707	(23)%
Average realised price (US\$ per dry metric tonne, FOB basis)	120.5	168.4	(28)%
Underlying EBITDA (US\$ millions)	10,395	16,060	(35)%
Pilbara underlying FOB EBITDA margin ²	70 %	79 %	
Underlying earnings (US\$ millions)	6,461	10,216	(37)%
Net cash generated from operating activities (US\$ millions)	8,512	11,049	(23)%
Capital expenditure (US\$ millions) ³	(1,472)	(1,912)	(23)%
Free cash flow (US\$ millions)	7,023	9,112	(23)%
Underlying return on capital employed ⁴	73 %	121 %	

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 reported within Copper.
2. The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara gross product sales, excluding freight revenue.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Our Pilbara iron ore shipments were 2% lower than 2021 first half due to skilled labour supply constraints, COVID-19 disruptions, ongoing mine depletion due to delays to mine replacement projects and significantly higher than average rainfall in May. Improved second quarter shipments were supported by a continued focus on mine pit health and commissioning of the new Gudai-Darri mine. We are currently experiencing elevated levels of unplanned absences at our Pilbara operations due to COVID-19 case spikes in Western Australia.

Underlying EBITDA of \$10.4 billion was 35% lower than 2021 first half, due to lower prices (\$5.7 billion), following the 26% drop in the monthly average Platts index for 62% iron fines adjusted to an FOB basis. Higher cash costs were offset by increased sales portside in China.

2022 first half Pilbara unit cash costs of \$21.2 per tonne (excluding COVID-19 costs of \$0.6 per tonne) compared with \$17.4 per tonne in 2021 first half (excluding COVID-19 costs of \$0.5 per tonne). Key drivers were higher input prices for materials, diesel and contractors. We also saw a rise in labour costs given tight local markets and actions taken to secure critical skills including core maintenance crews and mining operators to reduce the impact of COVID-19 disruption. We have maintained our full year guidance of \$19.5 to \$21.0 per tonne at an Australian dollar exchange rate of 0.71 (previously 0.75), excluding any additional COVID-19 response costs: we expect higher volumes in the second half in line with the ramp-up of Gudai-Darri.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 70%, compared with 79% in 2021 first half, largely due to the change in the iron ore price.

We price the majority of our iron ore sales (77%) by reference to the average index price for the month of shipment. In 2022 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 73% of sales including freight and 27% on an FOB basis.

We achieved an average iron ore price of \$110.9 per wet metric tonne on an FOB basis (2021 first half: \$154.9 per wet metric tonne) across our product suite. This equates to \$120.5 per dry metric tonne, assuming 8% moisture (2021 first half: \$168.4 per dry metric tonne), which compares with the monthly average Platts index for 62% iron fines converted to an FOB basis of \$128.2 per dry metric tonne (2021 first half: \$172.6 per dry metric tonne). The 6% lower realised price compared to the Platts index was due to the higher proportion of SP10 volumes (15% of shipments - on a 100% basis - in 2022 first half compared with 8% in 2021 first half) and increased discounts for lower grade products.

Gross product sales for our Pilbara operations included freight revenue of \$1.1 billion (2021 first half: \$1.0 billion).

Net cash generated from operating activities of \$8.5 billion was 23% lower than 2021 first half, with lower pricing partly offset by favourable working capital movements. Free cash flow of \$7.0 billion was 23% lower than 2021 first half in line with the 23% reduction in capital expenditure to \$1.5 billion following completion of brownfield mine replacement tie-in projects.

Review of operations

Pilbara operations produced 150.3 million tonnes (Rio Tinto share 126.1 million tonnes), 1% lower than 2021 first half. While significantly higher than average rainfall in May impacted mine production, continued focus on mine pit health and commissioning of Gudai-Darri supported a stronger end to the half.

First half 2022 shipments of 151.4 million tonnes (Rio Tinto share 126.8 million tonnes) included 22.1 million tonnes of lower grade SP10 products, 15% of shipments, on a 100% basis (first half 2021: 8%).

We continue to increase our iron ore portside sales in China, with 14.2 million tonnes of sales in the first half of 2022 (5.4 million tonnes in the first half of 2021). At 30 June, inventory levels are 6.5 million tonnes, including 4.5 million tonnes of Pilbara product (11.4 million tonnes at the end of 2021, including 8.8 million tonnes of Pilbara product). In the first half of 2022 approximately 75% of our portside sales were either screened or blended in Chinese ports.

Future development

Pilbara system capacity over the medium term remains between 345 and 360 million tonnes per year. Meeting this range, and the planned product mix, will require approval and delivery of the next tranche of replacement mines. Key projects to be delivered over the next five years include Western Range, Hope Downs 2 (includes Bedded Hilltop), and Brockman Syncline 1. We continue to work closely with local communities, Traditional Owners and government to progress approvals for the new mining projects.

Aluminium

Six months ended 30 June	2022	2021	Change
Bauxite production (000 tonnes - Rio Tinto share)	27,757	27,264	2 %
Alumina production (000 tonnes - Rio Tinto share)	3,765	4,047	(7)%
Aluminium production (000 tonnes - Rio Tinto share)	1,467	1,619	(9)%
Gross product sales (US\$ millions)	7,796	5,932	31 %
Average realised aluminium price (US\$ per tonne)	3,808	2,626	45 %
Underlying EBITDA (US\$ millions)	2,866	1,924	49 %
Underlying EBITDA margin (integrated operations)	41 %	36 %	
Underlying earnings (US\$ millions)	1,547	921	68 %
Net cash generated from operating activities (US\$ millions)	2,088	1,384	51 %
Capital expenditure - excluding EAUs (US\$ millions) ¹	(625)	(487)	28 %
Free cash flow (US\$ millions)	1,450	880	65 %
Underlying return on capital employed ²	20 %	12 %	

1. 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).

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

Financial performance

2022 first half saw a continuation in pricing strength and was the key driver for our Aluminium business to increase underlying EBITDA by 49% to \$2.9 billion, lifting our industry-leading underlying EBITDA margin to 41%.

Underlying EBITDA of \$2.9 billion benefited from higher product premiums for primary metal in addition to the stronger pricing environment for primary metal and alumina. This was partly offset by higher input costs for key materials such as caustic soda, coke, pitch and anodes, leading to an increase in cash costs for alumina and primary metal.

We achieved an average realised aluminium price of \$3,808 per tonne, 45% higher than 2021 first half (\$2,626 per tonne). This comprised the LME price, a market premium and a value-added product (VAP) premium. The cash LME price averaged \$3,082 per tonne, 37% higher than 2021 first half, while in our key US market, the midwest premium duty paid, which is 58% of our volumes (2021 first half: 55%) increased by 72% to \$801 per tonne (2021 first half: \$467 per tonne). Our VAP sales improved to 52% of the primary metal we sold (2021 first half: 50%) and generated product premiums averaging \$422 per tonne of VAP sold (2021 first half: \$207 per tonne).

We generated \$2.1 billion in net cash from operating activities, reflective of the higher underlying EBITDA achieved, net of a \$0.5 billion cash build in working capital, driven by the higher cost of key raw materials and supply chain constraints. Free cash flow increased by 65% to \$1.5 billion.

Review of operations

Bauxite production of 27.8 million tonnes was 2% higher than 2021 first half due to a strong operational performance at Weipa as a result of improved equipment reliability at Amrun.

We shipped 19.7 million tonnes of bauxite to third parties in 2022 first half, 7% higher than 2021 first half, due to less direct shipping interruptions from the major weather events. In 2022 first half, gross product sales for bauxite increased 13% to \$1.2 billion: this includes freight revenue of \$0.3 billion (2021 first half: \$0.2 billion).

Alumina production of 3.8 million tonnes was 7% lower than 2021 first half. The refineries in the Pacific (Yarwun and Queensland Alumina Limited) have been impacted by a range of challenges in the first half including significant COVID-19 absenteeism, above average rainfall in Eastern Australia, and some unplanned outages and equipment reliability. Production at the Vaudreuil refinery in Quebec was impacted by overruns on key shutdowns.

As the result of Queensland Alumina Limited's (QAL) activation of a step-in process following sanction measures by the Australian Government, Rio Tinto has taken on 100% of capacity for as long as the step-in continues. This results in use of Rusal's 20% share of capacity by Rio Tinto 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 1.5 million tonnes was 9% lower than 2021 first half due to reduced capacity at our Kitimat smelter in British Columbia following a strike which commenced in July 2021, with a controlled restart at the end of the first half of 2022. Production at the Boyne smelter in Queensland was impacted by process instability following COVID-19 related absenteeism. Production has been stabilised and the cells that have been taken offline are being ramped up over the next 12 months. All of our other smelters continued to have stable performance.

Future development

ELYSIS, our joint venture with Alcoa, supported by Apple and the Governments of Canada and Quebec, is developing a breakthrough technology that eliminates all direct greenhouse gases from the aluminium smelting process. Construction of the first commercial-scale prototype cells of ELYSIS™ inert anode technology is underway at our Alma smelter. These prototype cells are 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.

We are [investing](#) \$188 million to increase production capacity for low-carbon, high-value aluminium billets at our Alma smelter in Lac-Saint-Jean, Quebec by 202,000 metric tonnes. Around half will come from non value-added products being converted to billets, with the rest from the conversion of existing value-added product. The casting centre at Alma will be expanded to accommodate new state-of-the-art equipment, including a casting pit and furnaces, allowing a larger portion of the aluminium produced to be converted to higher value billets. Construction is set to begin in May 2023 with commissioning in the first quarter of 2025.

Copper

Six months ended 30 June	2022	2021	Change
Mined copper production (000 tonnes - Rio Tinto share)	251.9	236.1	7 %
Refined copper production (000 tonnes - Rio Tinto share)	104.1	111.4	(7)%
Gross product sales (US\$ millions)	3,547	3,779	(6)%
Average realised copper price (US cents per pound) ¹	447	415	8 %
Underlying EBITDA (US\$ millions)	1,487	2,048	(27)%
Underlying EBITDA margin (product group operations)	54 %	61 %	
Underlying earnings (US\$ millions)	543	885	(39)%
Net cash generated from operating activities (US\$ millions) ²	1,050	1,232	(15)%
Capital expenditure - excluding EAUs ³ (US\$ millions)	(731)	(668)	9 %
Free cash flow (US\$ millions)	310	561	(45)%
Underlying return on capital employed (product group operations) ⁴	10 %	15 %	

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 \$140 million (2021 first half: \$202 million benefit).
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

Underlying EBITDA was down 27% to \$1.5 billion driven by lower refined copper at Kennecott and by-product sales volumes, particularly lower gold in concentrate at Oyu Tolgoi, resulting in associated fixed cost inefficiencies.

Our average realised copper price increased by 8% to 447 US cents per pound, offset by the provisional pricing adjustment which negatively impacted revenues by \$140 million in 2022 first half. The benchmark gold price rose 4% to \$1,874 per ounce.

Our copper unit costs, at 148 cents per pound in 2022 first half, were in line with full year guidance of 130 to 150 cents per pound and 108% higher than in 2021 first half, primarily driven by lower gold volumes at Oyu Tolgoi. Increased pressure on costs for employees, consumables and raw materials were also key drivers of the increase.

We generated \$1.1 billion in net cash from operating activities, a 15% decrease on 2021 first half, from the same drivers as underlying EBITDA and a \$0.1 billion decrease in dividends from our 30% equity holding in Escondida. Free cash flow of \$0.3 billion reflected the lower operating cash flow and high level of capital expenditure (\$0.7 billion), mainly relating to the ongoing development of the Oyu Tolgoi underground project, where we have a 34% effective interest but fully consolidate on the basis of management control.

Review of operations

Mined copper production, at 252 thousand tonnes, was 7% higher than 2021 first half, due to higher grades and recoveries at Kennecott and an improvement in concentrator feed grade at Escondida which more than offset lower grades and recoveries at Oyu Tolgoi.

The 7% decline in refined copper production to 104 thousand tonnes mainly reflected the impact of unplanned downtime and labour shortages at the Kennecott smelter.

Oyu Tolgoi underground project

A comprehensive agreement was [reached](#) with all Oyu Tolgoi partners on 25 January 2022, resetting the relationship between the partners, increasing the value the project delivers for Mongolia, and allowing underground operations to commence.

As part of a comprehensive package, Turquoise Hill Resources (TRQ) agreed to waive in full, funding balances arising from a carry account loan with Erdenes Oyu Tolgoi (EOT) of \$2.4 billion, comprising the amount of common share investments in Oyu Tolgoi LLC funded by TRQ on behalf of EOT to build the project to date, plus accrued interest.

In May, we [agreed](#) to amend the funding plan with TRQ in order to provide liquidity of up to \$400 million in short-term early advances, while the Special Committee of TRQ evaluates our C\$34 per share all-cash proposal to acquire the approximately 49% of the issued and outstanding shares of TRQ that Rio Tinto does not currently own. The deadline in the funding plan for TRQ to conduct an initial equity offering of at least \$650 million has also been extended from the end of August to the end of 2022.

The first and second drawbells of the Hugo North underground mine were fired in June. The undercut progression remains on track to achieve first sustainable production from Panel 0 in the first half of 2023.

A cost and schedule reforecast was completed in June resulting in a total project cost estimate of \$7.06 billion, which remains under review by the Oyu Tolgoi Board. This \$0.3 billion increase against the 2020 Definitive Estimate is largely related to COVID-19 disruptions. The 2022 reforecast assumes there are no further COVID-19 disruptions.

Shafts 3 and 4 have been delayed due to COVID-19 restrictions and reprioritisation of the mobilised workforce, as previously reported. However progress has been made and the Shafts 3 and 4 are now at depths of 174 metres and 276 metres, respectively. Both shafts are now expected to be commissioned in the first half of 2024, 15 months later than the 2020 Definitive Estimate (previously nine months delay).

Study work for Panels 1 and 2 (required to support the ramp-up to 95,000 tonnes of ore per day) is expected to be completed in the first half of 2023 and will incorporate any potential impacts due to the Shafts 3 and 4 delays.

Future development

Pre-feasibility studies at Kennecott are being progressed to extend open-pit mining beyond 2032, with a further pushback of the north wall. We are also advancing studies to support an underground mine below the existing open pit, due to be complete by 2024. Potential underground mining would occur concurrently with open pit operations and result in increased copper output.

At Kennecott, we have [started](#) producing tellurium, becoming one of only two U.S. producers of the critical mineral used in advanced thin film photovoltaic solar panels. We will produce approximately 20 tonnes of tellurium per year. Tellurium is listed as a critical mineral by the U.S. Government due to its importance to the economy and energy security.

Nuton™, an innovative new Rio Tinto venture, has entered into two agreements as we work towards commercialising a portfolio of proprietary copper leach-related technologies and capability. In March, Nuton™ entered into an Option to Earn-in Agreement with Lion Copper and Gold Corp. to advance studies and exploration at Lion Copper and Gold's two copper assets in Mason Valley, Nevada. The parties have progressed to a Stage 1 work programme, which will include permitting and baseline studies, metallurgical testing of Nuton™ technologies and a drill programme, among other things, at both assets. In April, Nuton™ participated in a private placement offering for shares of Arizona Sonoran Copper Company (ASCU), which operates the Cactus Mine and Parks/Salyer projects in Arizona. Under an associated Investor Rights Agreement, Nuton™ has a one-year exclusivity period with ASCU related to copper heap leach technologies.

Minerals

Six months ended 30 June	2022	2021	Change
Iron ore pellets and concentrates production ¹ (million tonnes - Rio Tinto share)	5,007	5,066	(1)%
Titanium dioxide slag production (000 tonnes - Rio Tinto share)	566	577	(2)%
Borates production (000 tonnes - Rio Tinto share)	260	248	5 %
Diamonds production (000 carats - Rio Tinto share) ²	2,140	1,858	15 %
Gross product sales (US\$ millions)	3,403	3,270	4 %
Underlying EBITDA (US\$ millions)	1,259	1,398	(10)%
Underlying EBITDA margin (product group operations)	40 %	46 %	
Underlying earnings (US\$ millions)	420	498	(16)%
Net cash generated from operating activities (US\$ millions)	636	582	9 %
Capital expenditure (US\$ millions) ³	(269)	(209)	29 %
Free cash flow (US\$ millions)	353	362	(2)%
Underlying return on capital employed (product group operations) ⁴	21 %	23 %	

1. Iron Ore Company of Canada (IOC) continues to be reported within Minerals.
2. On 17 November 2021, Rio Tinto's interest in Diavik increased from 60% to 100%. Production and financials reflect this from 1 November 2021.
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

In 2022 first half, we benefited from strong market conditions for titanium dioxide pigment and borates, partially offset by a weakening market for iron ore pellets and concentrate. We also saw higher diamond prices compared with 2021 first half, following a pandemic-related build-up of demand and low inventory levels.

Underlying EBITDA of \$1.3 billion was 10% lower than 2021 first half, primarily due to higher cash costs, energy price increases and lower volumes. This was partially offset by higher EBITDA in relation to the increased ownership in Diavik.

Net cash generated from operating activities of \$0.6 billion was 9% higher than 2021 first half, while free cash flow of \$0.4 billion was 2% lower, reflecting lower dividends paid to holders of non-controlling interests.

Review of operations

Production of iron ore pellets and concentrate at Iron Ore Company of Canada (IOC) was 1% lower than 2021 first half due to the planned 7-day annual maintenance shutdown which was successfully completed in June (vs September in 2021).

Titanium dioxide production of 0.6 million tonnes was 2% lower than 2021 first half with a steady performance at Richards Bay Minerals in South Africa and improved stability of operations at Rio Tinto Fer et Titane (RTFT), Canada. There were some operational disruptions at QIT Madagascar Minerals following cyclones.

Borates production was 5% higher than 2021 first half with strong production rates, higher grades and improved equipment reliability.

At Diavik, our share of carats recovered were 15% higher than 2021 first half, due to our full ownership since November 2021 (previously 60%), partially offset by maintenance deficit build-up following COVID-19 disruptions.

Future development

Following completion of the acquisition of the Rincon lithium project in Argentina for \$825 million, the Board has approved \$190 million to develop a small starter battery-grade lithium carbonate plant with a capacity of 3,000 tonnes per year and first saleable production in 2024. The approval also includes early works to support a full-scale operation, including power line and associated substations, construction camp and airstrip. We have undertaken considerable reviews and baseline studies in the last quarter, including safety and environmental, working closely with the Government of Salta on permitting requirements. In early July, we were granted a permit by the provincial regulators and have commenced an exploration campaign to further understand Rincon's basin and brine reservoir. We will continue to engage with local communities, the Province of Salta and the Government of Argentina to ensure open and transparent dialogue on the work plans. We recently [signed](#) a non-binding MoU with the Ford Motor Company for a significant off-take agreement of Rincon lithium, to support Ford's production of electric vehicles.

In May, we [produced](#) a first batch of high-purity scandium oxide at our RTFT commercial scale demonstration plant in Sorel-Tracy, becoming the first North American producer of this critical mineral, which is notably used in solid oxide fuel cells and in aluminium alloys. The RTFT team is now focusing on production ramp-up to bring the plant to its nameplate capacity of three tonnes of scandium oxide per year, representing approximately 20% of the global market. The plant uses an innovative process developed by RTFT to extract high purity scandium oxide from the waste streams of titanium dioxide production, without the need for any additional mining.

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 2022 first half	US\$ million impact on full year 2022 underlying EBITDA of a 10% change in prices/exchange rates
Aluminium - US\$ per tonne	3,082	1,374
Copper - US cents per pound	442	629
Gold - US\$ per troy ounce	1,874	69
Iron ore realised price (62% Fe CFR freight-adjusted) - US\$ per dry metric tonne	120.5	3,112
Australian dollar against the US dollar	0.72	671
Canadian dollar against the US dollar	0.79	346
Oil (Brent) - US per barrel	105.9	203

The impact of a \$100 per tonne change in each of the input costs below is expected to have the following impact on our Canadian¹ aluminium smelting unit cash cost² of \$1,732 per tonne in 2022 first half (\$1,262 per tonne in 2021 first half):

	US\$/t
Alumina (FOB)	191
Green petroleum coke (FOB)	25
Calcined petroleum coke (FOB)	36
Coal tar pitch (FOB)	8

1. Canadian smelters include all fully-owned smelters in Canada (Alma, AP60, Arvida, Grande-Baie, Kitimat and Laterrière), as well as our share of the Becancour and Alouette smelters.
2. The smelting unit cash cost refers to all costs which have been incurred before casting, excluding depreciation but including corporate allocations and with alumina at market price, to produce one metric tonne of primary aluminium.

Capital projects

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 2022	Status/Milestones
Completed in 2022			
Investment in Gudai-Darri, a new production hub in the Pilbara region of Western Australia. The investment incorporates a processing plant and infrastructure including a 166-kilometre rail line connecting the mine to our existing network. The mine will have an initial annual capacity of 43 million tonnes and an expected life of more than 40 years.	\$3.1bn	\$0.4bn	The project was initially approved in November 2018 for \$2.6 billion, with an additional \$0.5 billion, approved by the Board in April 2022, due to COVID-19 impacts, including labour access and supply chain quality issues, as advised in February 2022. First ore was delivered in June 2022. Production will continue to ramp up through 2022 and is expected to reach full capacity in 2023.
Investment in a second tunnel at the 1000MW Kemano hydropower facility at Kitimat, British Columbia, Canada, which will ensure the long-term reliability of the power supply to the Kitimat smelter.	\$0.8bn	\$0.1bn	The project was first approved in 2017, with \$155 million of additional capital approved in 2020 and a further \$132 million approved in July 2021. Works resumed at full capacity in 2021 first half and water flow was achieved through the second tunnel powerhouse in June 2022, following completion of tunnel construction works.
Ongoing			
Iron ore			
Investment in the Robe River Joint Venture (West Angelas C and D and Mesa B, C and H at Robe Valley) in the Pilbara to sustain production capacity.	\$1.0bn (Rio Tinto share)	\$0.2bn (Rio Tinto share)	Approved in October 2018, the investments will enable us to sustain production of our Pilbara Blend™ and Robe Valley products. Mesa A wet plant commissioning challenges impacted production ramp-up in the first quarter. Plant performance stabilised in the second quarter and rectification works remain on track for completion in the third quarter. An additional \$0.1 billion (Rio Tinto share) was approved by the Board in April 2022.

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 2022	Status/Milestones
Ongoing			
Copper			
Phase two of the south wall pushback to extend mine life at Kennecott by a further six years.	\$1.5bn	\$1.2bn	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.
Development of the Oyu Tolgoi underground copper/gold mine in Mongolia (Rio Tinto 34%), which is expected to produce (from the open pit and underground) an average of ~500,000 tonnes ¹ of copper per year from 2028 to 2036 and an average of ~350,000 tonnes ¹ of copper per year for a further five years, compared with 163,000 tonnes in 2021 (open pit).	\$7.06bn	\$1.9bn	The project was originally approved in May 2016 for \$5.3 billion, with an additional \$1.45 billion approved by the Rio Tinto Board in December 2020, following completion of the Definitive Estimate. A cost and schedule reforecast was completed in June 2022 resulting in a total project cost estimate of \$7.06 billion, which remains under review by the Oyu Tolgoi Board. The \$0.3 billion increase is largely related to COVID-19 disruptions. The 2022 reforecast assumes there are no further COVID-19 disruptions. First sustainable production is expected in the first half of 2023, following the comprehensive agreement between the Oyu Tolgoi partners announced in January 2022.
Minerals			
Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%).	\$0.5bn	\$0.3bn	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.
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.	\$2.4bn	\$2.4bn	The Board committed the funding in July 2021, subject to receiving all relevant approvals, permits and licences. We acknowledge the concerns from communities and are engaging meaningfully to explore ways to address them.

1. The 500ktpa target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines is underpinned 17% by Proved Ore Reserves and 83% by Probable Ore Reserves for the years 2028-2036. The 350ktpa production target for the following five years is underpinned 18% by Proved Ore Reserves and 82% by Probable Ore Reserves. These production targets have been scheduled from current mine designs by Competent Persons in accordance with the requirements of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves, 2012 Edition (the JORC code).

DIRECTORS' REPORT

for the half year ended 30 June 2022

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 2022 and likely future developments are given on pages 1 to 30. Important events that have occurred during the period and up until the date of this report are set out below.

Financial

On 7 March 2022, we reached a settlement with the Australian Securities and Investment Commission regarding the disclosure of the impairment of Rio Tinto Coal Mozambique, which was reflected in Rio Tinto's 2012 year-end accounts.

On 14 March 2022, we made a non-binding proposal to the Turquoise Hill Board to acquire the approximately 49% of the issued and outstanding shares of Turquoise Hill that Rio Tinto did not currently own. Under the terms of the Proposed Transaction, Turquoise Hill minority shareholders would receive C\$34 in cash per Turquoise Hill share, representing a premium of 32% to Turquoise Hill's closing share price on 13 March 2022 on the Toronto Stock Exchange. This proposal would value the Turquoise Hill minority share capital at approximately US\$2.7 billion.

On 29 March 2022, we completed the acquisition of the Rincon lithium project in Argentina for \$825 million, following approval from Australia's Foreign Investment Review Board.

On 6 April 2022, we published our [2021 Taxes paid: Our economic contribution report](#), which details \$13.3 billion of global taxes and royalties paid during the year, up from \$8.4 billion in 2020. Despite the ongoing challenges of COVID-19, Rio Tinto made a total direct economic contribution of \$66.6 billion in the countries and communities where it operates in 2021, compared to \$47 billion the previous year. In Australia, which is home to around half of the company's assets, Rio Tinto paid \$11.1 billion (A\$14.8 billion) in taxes and royalties, up from \$6.8 billion (A\$9.8 billion) the previous year. The company also made significant payments in Canada (\$855 million), Mongolia (\$544 million), Chile (\$562 million) and the United States (\$81 million).

On 19 May 2022, we agreed to amend the previously agreed funding plan with Turquoise Hill Resources (TRQ) (9 April 2021) in order to provide liquidity of up to \$400 million in short-term early advances, while the Special Committee of TRQ evaluated Rio Tinto's C\$34 per share all-cash proposal to acquire the approximately 49% of the issued and outstanding shares of TRQ that Rio Tinto does not currently own.

On 31 May 2022, we published a report on payments to governments made by Rio Tinto and its subsidiary undertakings for the year ended 31 December 2021 as required under the UK's Report on Payments to Governments Regulations 2014 (as amended in December 2015). Rio Tinto paid \$13.3 billion of taxes and royalties and a further \$1.5 billion on behalf of its employees during 2021.

Operations

On 25 January 2022, we reached an agreement with TRQ and the Government of Mongolia to move the Oyu Tolgoi (OT) project forward, resetting the relationship between the partners and increasing the value the project delivers for Mongolia. As a result, the OT Board, comprised of representatives of Rio Tinto, TRQ and Erdenes Oyu Tolgoi which is wholly owned by the Government of Mongolia, unanimously approved commencement of underground operations.

On 2 February 2022, we announced that Energy Resources of Australia Ltd had released the preliminary findings from its reforecast of the cost and schedule for the Ranger rehabilitation project in Australia's Northern Territory, which had been subject to an independent review.

On 23 February 2022, we announced changes to estimates of Mineral Resources and Ore Reserves compared to those published in the 2020 Rio Tinto Annual Report: Mineral Resources at Rio Tinto's Winu project in Western Australia; Ore Reserves and Mineral Resources at Rio Tinto Aluminium Pacific Operations at Weipa; and Ore Reserves and Mineral Resources at Rio Tinto's Jadar project in Serbia.

On 15 June 2022, we delivered first ore from the Gudai-Darri iron ore mine in the Pilbara, Western Australia, bringing Rio Tinto's first greenfield mine online in over a decade.

People

On 25 February 2022, we announced that Hinda Gharbi had notified the Board of her intention to step down as a non-executive director of Rio Tinto at the conclusion of the Rio Tinto plc AGM on 8 April 2022.

Rio Tinto 2022 Annual General Meetings ("AGMs")

The annual general meetings of Rio Tinto plc and Rio Tinto Limited were held on 8 April 2022 and 5 May 2022, 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 8 April 2022, Resolution 20 ("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 2022 were:

	Notes	Date of appointment
Chairman		
Dominic Barton	(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)	(R, N and S)	10 February 2017
Simon McKeon (senior independent director, Rio Tinto Limited)	(A, R and N)	1 January 2019
Megan Clark	(R, N and S)	20 November 2014
Simon Henry	(A and N)	1 April 2017
Jennifer Nason	(R and N)	1 March 2020
Ngaire Woods	(R, N and S)	1 September 2020
Ben Wyatt	(A and N)	1 September 2021

Notes

(A) Audit Committee, (R) Remuneration Committee, (N) Nominations Committee, (S) Sustainability Committee

Dividend

The 2021 final dividend and special dividend was paid on 21 April 2022 to holders of Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADR holders. The 2021 final dividend, equivalent to 417 US cents per share and the 2021 special dividend, equivalent to 62 US cents, was determined by the board on 22 February 2022. Rio Tinto plc shareholders received 306.72 pence per share for the final dividend and 45.60 pence per share for the special dividend and Rio Tinto Limited shareholders received 577.04 Australian cents per share for the final dividend and 85.80 Australian cents per share for the special dividend based on the applicable exchange rates on 22 February 2022. ADR holders receive dividends at the declared rate in US dollars.

The 2022 interim dividend, equivalent to 267 US cents per share will be paid on 22 September 2022 to Rio Tinto Limited, Rio Tinto plc and Rio Tinto plc ADR shareholders on the register at the close of business on 12 August 2022. The ex-dividend date for the 2022 interim dividend for Rio Tinto Limited, Rio Tinto plc and Rio Tinto plc ADR shareholders is 11 August 2022. Rio Tinto plc shareholders will receive 221.63 pence per share for the interim dividend and Rio Tinto Limited shareholders will receive 383.70 Australian cents per share for the interim dividend based on the applicable exchange rates on 26 July 2022. 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 117 to 130 of the 2021 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 the 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, namely the evolving situation with the war in Ukraine and potential further Russian sanctions, rising inflation and COVID-19 related disruptions.

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 65 and forms part of this report.

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

Dominic Barton

Chairman

27 July 2022

Condensed consolidated interim financial statements for the six months ended 30 June 2022

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Group income statement

Six months ended 30 June	Note	2022 US\$m	2021 US\$m
Consolidated operations			
Consolidated sales revenue	3,4	29,775	33,083
Net operating costs (excluding exploration and evaluation)		(17,202)	(15,322)
Exploration and evaluation costs		(367)	(324)
Operating profit		12,206	17,437
Share of profit after tax of equity accounted units		468	556
Profit before finance items and taxation		12,674	17,993
Finance items			
Net exchange gains on net cash and intragroup balances		387	375
Net losses on derivatives not qualifying for hedge accounting		(205)	(63)
Finance income		17	42
Finance costs		(55)	(91)
Amortisation of discount on provisions		(503)	(207)
		(359)	56
Profit before taxation		12,315	18,049
Taxation	5	(2,902)	(4,981)
Profit after tax for the period		9,413	13,068
– attributable to owners of Rio Tinto (net earnings)		8,908	12,313
– attributable to non-controlling interests		505	755
Basic earnings per share		550.1c	761.0c
Diluted earnings per share		546.9c	756.1c

The notes on pages 42 to 60 are an integral part of these condensed consolidated interim financial statements.

Group statement of comprehensive income

Six months ended 30 June	Note	2022 US\$m	2021 US\$m
Profit after tax for the period		9,413	13,068
Other comprehensive (loss)/income			
Items that will not be reclassified to the income statement:			
Re-measurement gains on pension and post-retirement healthcare plans		829	712
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)		(8)	12
Tax relating to these components of other comprehensive income		(216)	(219)
Share of other comprehensive income of equity accounted units, net of tax		5	12
		610	517
Items that have been/may be subsequently reclassified to the income statement:			
Currency translation adjustment ^(a)		(1,512)	(365)
Fair value movements:			
– Cash flow hedge losses		(79)	(142)
– Cash flow hedge losses/(gains) transferred to the income statement		100	(20)
Net change in costs of hedging reserve		(38)	(20)
Tax relating to these components of other comprehensive loss		8	55
Share of other comprehensive (losses)/income of equity accounted units, net of tax		(7)	10
Other comprehensive (loss)/income for the period, net of tax		(918)	35
Total comprehensive income for the period		8,495	13,103
– attributable to owners of Rio Tinto		8,063	12,342
– attributable to non-controlling interests		432	761

(a) Excludes a currency translation charge of US\$185 million for the period ended 30 June 2022 (30 June 2021: charge of US\$82 million) arising on Rio Tinto Limited's share capital, which is recognised in the Group statement of changes in equity on page 40.

Group cash flow statement

Six months ended 30 June	Note	2022 US\$m	2021 US\$m
Cash flows from consolidated operations^(a)		13,912	18,179
Dividends from equity accounted units		633	726
Cash flows from operations		14,545	18,905
Net interest paid		(217)	(208)
Dividends paid to holders of non-controlling interests in subsidiaries		(41)	(407)
Tax paid		(3,813)	(4,629)
Net cash generated from operating activities		10,474	13,661
Cash flows from investing activities			
Purchases of property, plant and equipment and intangible assets		(3,146)	(3,336)
Acquisitions of subsidiaries, joint ventures and associates	6	(825)	—
Disposals of subsidiaries, joint ventures, unincorporated joint operations and associates		—	10
Purchases of financial assets		(66)	(18)
Sales of financial assets		52	16
Sales of property, plant and equipment and intangible assets		1	26
Net (funding of)/receipts from equity accounted units		(48)	28
Other investing cash flows		10	(33)
Net cash used in investing activities		(4,022)	(3,307)
Cash flows before financing activities		6,452	10,354
Cash flows from financing activities			
Equity dividends paid to owners of Rio Tinto		(7,595)	(6,435)
Proceeds from additional borrowings		144	137
Repayment of borrowings and associated derivatives		(211)	(257)
Lease principal payments		(183)	(170)
Proceeds from issue of equity to non-controlling interests		22	28
Other financing cash flows		1	6
Net cash used in financing activities		(7,822)	(6,691)
Effects of exchange rates on cash and cash equivalents		(26)	(21)
Net (decrease)/increase in cash and cash equivalents		(1,396)	3,642
Opening cash and cash equivalents less overdrafts		12,805	10,381
Closing cash and cash equivalents less overdrafts	7	11,409	14,023
(a) Cash flows from consolidated operations			
Profit after tax for the period		9,413	13,068
Adjustments for:			
– Taxation	5	2,902	4,981
– Finance items		359	(56)
– Share of profit after tax of equity accounted units		(468)	(556)
– Depreciation and amortisation		2,459	2,307
– Provisions (including exchange differences on provisions)	8	496	485
– Pension settlement		—	(291)
Utilisation of provision for post-retirement benefits	8	(66)	(76)
Utilisation of provisions	8	(363)	(349)
Change in inventories		(582)	(518)
Change in receivables and other assets		(128)	(966)
Change in trade and other payables		267	250
Other items ^(b)		(377)	(100)
		13,912	18,179

(b) Other items includes realised losses of US\$242 million on currency forwards not designated as hedges (30 June 2021: realised gain US\$10 million).

Group balance sheet

	Note	30 June 2022 US\$m	31 December 2021 US\$m
Non-current assets			
Goodwill		849	879
Intangible assets	6	3,607	2,832
Property, plant and equipment		64,379	64,927
Investments in equity accounted units		3,392	3,504
Inventories		194	196
Deferred tax assets		3,411	3,375
Receivables and other assets		2,175	2,194
Tax recoverable		4	29
Other financial assets		477	528
		78,488	78,464
Current assets			
Inventories		5,798	5,436
Receivables and other assets		3,645	3,574
Tax recoverable		60	72
Other financial assets		2,502	2,543
Cash and cash equivalents	7	11,412	12,807
		23,417	24,432
Total assets		101,905	102,896
Current liabilities			
Borrowings and other financial liabilities		(1,770)	(1,381)
Trade and other payables		(7,986)	(7,733)
Tax payable		(1,045)	(1,407)
Provisions including post-retirement benefits	8	(2,308)	(2,106)
		(13,109)	(12,627)
Non-current liabilities			
Borrowings and other financial liabilities		(11,976)	(12,788)
Trade and other payables		(624)	(798)
Tax payable		(45)	(660)
Deferred tax liabilities		(3,729)	(3,503)
Provisions including post-retirement benefits	8	(15,324)	(15,930)
		(31,698)	(33,679)
Total liabilities		(44,807)	(46,306)
Net assets		57,098	56,590
Capital and reserves			
Share capital ^(a)			
– Rio Tinto plc		207	207
– Rio Tinto Limited		3,385	3,570
Share premium account		4,322	4,320
Other reserves		8,562	9,998
Retained earnings		34,081	33,337
Equity attributable to owners of Rio Tinto		50,557	51,432
Attributable to non-controlling interests		6,541	5,158
Total equity		57,098	56,590

Group balance sheet (continued)

- (a) At 30 June 2022, Rio Tinto plc had 1,249.3 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\$28.45 (31 December 2021: US\$29.47).

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 2022							
Opening balance	3,777	4,320	9,998	33,337	51,432	5,158	56,590
Change in accounting policy (refer to note 2)	—	—	—	(17)	(17)	—	(17)
Revision to opening balance	3,777	4,320	9,998	33,320	51,415	5,158	56,573
Total comprehensive income for the period	—	—	(1,457)	9,520	8,063	432	8,495
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 (refer to note 11)	—	—	—	(484)	(484)	484	—
Treasury shares reissued and other movements	—	2	—	—	2	—	2
Equity issued to holders of non-controlling interests (refer to note 11)	—	—	—	(711)	(711)	733	22
Employee share awards charged to the income statement	—	—	24	23	47	—	47
Closing balance	3,592	4,322	8,562	34,081	50,557	6,541	57,098

	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 2021							
Opening balance	3,988	4,314	11,960	26,792	47,054	4,849	51,903
Total comprehensive income for the period	—	—	(466)	12,808	12,342	761	13,103
Currency translation arising on Rio Tinto Limited's share capital	(82)	—	—	—	(82)	—	(82)
Dividends ^(a)	—	—	—	(6,435)	(6,435)	(407)	(6,842)
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees ^(b)	—	—	(13)	(4)	(17)	—	(17)
Change in equity interest held by Rio Tinto	—	—	—	37	37	(37)	—
Treasury shares reissued and other movements	—	6	—	—	6	—	6
Equity issued to holders of non-controlling interests	—	—	—	—	—	28	28
Employee share awards charged to the income statement	—	—	28	42	70	—	70
Closing balance	3,906	4,320	11,509	33,240	52,975	5,194	58,169

Group statement of changes in equity (continued)

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

For six months ended 30 June	2022 US\$m	2021 US\$m
Dividends per share: Ordinary - paid during the period	417.0c	309.0c
Dividends per share: Special - paid during the period	62.0c	93.0c
Ordinary dividends per share: announced with the results for the period	267.0c	376.0c
Special dividends per share: announced with the results for the period	—	185.0c

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

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 Standard ('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 Companies Act 2006 applicable to companies reporting under International Financial Reporting Standards, applicable UK law and applicable Australian law as amended by the Australian Securities and Investments Commission Order dated 16 July 2021.

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 2021 and any public announcements made by the Group during the interim reporting period.

The 2021 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 Australian Securities and Investments Commission Order dated 16 July 2021 and also with International Financial Reporting Standards ('IFRS') 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 2021.

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 2021 included in this report has been extracted from the full financial statements filed with the Registrar of Companies. 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 eighteen 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 the Group 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.

Alternative performance measures

The Group presents certain alternative performance measures ('APM's), including underlying earnings, which are reconciled to directly comparable IFRS financial measures. The reconciliations included on pages 69 to 76 of this report do not form part of these condensed consolidated interim financial statements. 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.

1. Basis of preparation (continued)

Reconciliation with Australian Accounting Standards

The Group's financial statements have been prepared in accordance with IFRS as defined on page 42, which differs in certain respects from the version of IFRS that is applicable in Australia, referred to as Australian Accounting Standards ('AAS').

Prior to 1 January 2004, the Group's financial statements were prepared in accordance with UK GAAP. Under IFRS, 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\$378 million at 30 June 2022 (31 December 2021: US\$377 million).

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

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 2021, except for the modifications set out below. This basis of accounting is referred to as 'IFRS' in this report. Adoption of changes to IFRS applicable in 2022 did not have a significant impact on the Group's financial statements.

Basis of preparation of the financial statements – accounting policies:

During the six months ended 30 June 2022, the Group did not early adopt any amendments, standards or interpretations that have been issued but are not yet mandatory.

The Group adopted Proceeds before Intended Use (Amendments to IAS 16 "Property, Plant and Equipment") at 1 January 2022. The amendment prohibits the deduction, from the cost of major project construction work in progress, of proceeds (net of additional processing costs) from selling items before the related item of property, plant and equipment is available for use. Under the amendment such proceeds are recognised in the income statement together with the costs of producing those items. During 2021 the Group completed a review of the impact of these amendments and concluded that adjustments to Group retained earnings as at 1 January 2020, and restatement of the 2020 and 2021 Group Income Statement and Balance Sheet upon adoption of the amendments were insignificant and as a result no restatements were made to comparative periods.

The Group adopted Onerous Contracts – Cost of Fulfilling a Contract (Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets") at 1 January 2022. The amendments specify that the costs an entity includes in determining whether a contract is onerous comprise all directly related costs, including both incremental amounts and an allocation of other directly related expenditure. Previously, the Group made provision for onerous contracts when the assets dedicated to the contract were fully impaired or the contract became stranded as a result of a business decision (refer to note 1(i) of Annual Report 2021). From 2022, the Group records a provision if a contract is found to be loss-making on a stand-alone basis following allocation of all directly related costs as required by the amendments to IAS 37.

2. Changes in accounting policies(continued)

The Group has applied the amendments without revision to comparative amounts, with a reduction to retained earnings as at 1 January 2022 of US\$17 million.

The Group is continuing to evaluate the impact of IAS 12 "Income Taxes" - Deferred Tax related to Assets and Liabilities arising from a Single Transaction, mandatory in 2023 and not yet endorsed by the UK. Narrow-scope amendments to IAS 12 introduce an exception to the initial recognition exemption for transactions that give rise to equal taxable and deductible temporary differences. The most significant impact from implementing these amendments is expected to be from temporary differences related to the Group's provisions for close-down and restoration / environmental and lease obligations and corresponding capitalised closure costs and right-of-use assets. Our existing accounting policy states that "where the recognition of an asset and liability from a single transaction gives rise to equal and off-setting temporary differences, Rio Tinto applies the Initial Recognition Exemption allowed by IAS 12, and consequently recognises neither a deferred tax asset nor a deferred tax liability in respect of these temporary differences".

Under the amendment, deferred tax assets and liabilities will be required to be recognised in respect of such temporary differences. Upon transition in 2023, the Group anticipates material adjustments to gross deferred tax assets and deferred tax liabilities (prior to required offsetting within the same tax jurisdiction) as at 1 January 2021 and that these adjustments will partially offset one another, with the net difference recorded in reserves. Work is ongoing to quantify the impact. There will be no impact on tax cash flows or balance sheet tax recoverable or payable as a result of implementing these amendments and the unwind of the newly recognised deferred tax is not expected to materially impact the income statement.

Principal accounting policies:

Principal accounting policy information has been amended to reflect changes in 2022 to the following policies:

Proceeds before Intended Use (Amendments to IAS 16 "Property, Plant and Equipment"). Proceeds from selling items before the related item of property, plant and equipment is available for use are recognised within "Consolidated sales revenue" in the income statement along with the costs of producing those items within "Net operating costs (excluding exploration and evaluation)". The production cost of material sold is determined using an unit of production method for allocating development expenditure during the period, based on production in the period as a proportion of total expected production over the life of mine based on total ore reserves.

Onerous Contracts – Cost of Fulfilling a Contract (Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets"). The cost of fulfilling a contract comprises all directly related costs, including both incremental amounts and an allocation of other directly related expenditure in determining the cost of fulfilling a contract for the purpose of assessing whether the contract is onerous. The Group records a provision if a contract is found to be loss-making on a stand-alone basis following allocation of all directly related costs.

3. Segmental information

Rio Tinto's management structure is based on the principal product groups (PGs) together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to the Chief Executive of Rio Tinto who is the chief operating decision maker (CODM) and is responsible for allocating resources and assessing performance of the operating segments. The CODM monitors the performance of each product group based on a number of measures, including underlying earnings, underlying EBITDA, capital expenditure, net cash generated from operating activities and free cash flow. Our primary measure of profit is underlying EBITDA. Finance items and net cash are managed on a group-wide basis and are therefore excluded from the segmental results

The Group's reportable segments are based on principal Product Groups (PGs) and are consistent with the internal reporting structure as at 30 June 2022. Business units (BUs) are allocated to PGs based on management structure. The reportable segments are described as follows:

Reportable segment	Principal activities
Iron Ore	Iron ore mining, salt and gypsum production in Western Australia.
Aluminium	Bauxite mining; alumina refining; aluminium smelting.
Copper	Mining and refining of copper, gold, silver, molybdenum and other by-products; exploration activities together with the Simandou iron ore project, which is the responsibility of the Copper product group chief executive.
Minerals	Includes businesses with products such as borates, lithium, 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.

The Rio Tinto financial information by business unit provided on pages 66 to 68 provides additional voluntary business unit disclosure which the Group considers useful to the users of the financial statements.

3. Segmental information (continued)

Six months ended 30 June 2022	Gross product sales ^(a) US\$m	Underlying EBITDA ^(b) US\$m	Underlying earnings ^(c) US\$m	Capital expenditure ^(d) US\$m
Iron Ore	16,610	10,395	6,461	1,472
Aluminium	7,796	2,866	1,547	681
Copper	3,547	1,487	543	867
Minerals	3,403	1,259	420	268
Reportable segments total	31,356	16,007	8,971	3,288
Other Operations	107	(78)	(167)	9
Inter-segment transactions	(149)	(1)	—	—
Product group total	31,314	15,928	8,804	3,297
Other items				41
Share of equity accounted units	(1,539)			(193)
Proceeds from disposal of property, plant and equipment				1
Central pension costs, share-based payments & insurance & derivatives		265	237	
Restructuring, project and one-off costs		(86)	(61)	
Central costs		(397)	(363)	
Central exploration and evaluation		(113)	(95)	
Net interest			105	
Consolidated sales revenue/Capital expenditure	29,775			3,146
Underlying EBITDA/Underlying Earnings		15,597	8,627	

3. Segmental information (continued)

Six months ended 30 June 2021	Gross product sales ^(a) US\$m	Underlying EBITDA ^(b) US\$m	Underlying earnings ^(c) US\$m	Capital expenditure ^(d) US\$m
Iron Ore	21,707	16,060	10,216	1,912
Aluminium	5,932	1,924	921	524
Copper	3,779	2,048	885	750
Minerals	3,270	1,398	498	209
Reportable segments total	34,688	21,430	12,520	3,395
Other Operations	85	(4)	(51)	—
Inter-segment transactions	(145)	(6)	(3)	—
Product group total	34,628	21,420	12,466	3,395
Other items				35
Share of equity accounted units	(1,545)			(120)
Proceeds from disposal of property, plant and equipment				26
Central pensions, share-based payments, insurance and derivatives		119	120	
Restructuring, project and one-off costs		(36)	(23)	
Central costs		(346)	(294)	
Central exploration and evaluation		(120)	(100)	
Net interest			(3)	
Consolidated sales revenue/Capital expenditure	33,083			3,336
Underlying EBITDA/ Underlying Earnings		21,037	12,166	

- (a) Gross product sales include the sales revenue of equity accounted units on a proportionate basis (after adjusting for sales to subsidiaries) in addition to consolidated sales. Consolidated sales revenue includes subsidiary sales to equity accounted units, which are not included in gross product sales.
- (b) Underlying EBITDA (calculated on page 48) is reported to provide greater understanding of the underlying business performance of Rio Tinto's operations. It represents profit before tax, net finance items, depreciation and amortisation excluding the EBITDA impact of the same items that are excluded in arriving at underlying earnings (as defined below).
- (c) Underlying earnings (calculated on page 49) represent net earnings attributable to the owners of Rio Tinto, adjusted to exclude items, which do not reflect the underlying performance of the Group's operations. Underlying earnings and net earnings both represent amounts attributable to owners of Rio Tinto. Exclusions from underlying earnings relating to equity accounted units are stated after tax and included in "Pre-tax" earnings, consistent with the requirements of the equity accounting method.

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.

3. Segmental information (continued)

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 businesses.
- 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 cash 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 and for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

- (d) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.

Reconciliation of underlying EBITDA to profit after taxation

For six months ended 30 June	2022 US\$m	2021 US\$m
Underlying EBITDA	15,597	21,037
Depreciation and amortisation in subsidiaries excluding capitalised depreciation	(2,405)	(2,253)
Depreciation and amortisation in equity accounted units	(242)	(249)
Finance items in subsidiaries	(359)	56
Taxation in subsidiaries	(2,902)	(4,981)
Taxation and finance items in equity accounted units	(363)	(365)
Gains recognised by Kitimat relating to LNG Canada's project	116	—
Gains/(Losses) on embedded commodity derivatives not qualifying for hedge accounting (including foreign exchange)	14	(2)
Increase in closure estimates (non-operating and fully impaired sites)	(43)	(175)
Profit after tax	9,413	13,068

3. Segmental information (continued)

Reconciliation of underlying earnings to net earnings

	Pre-tax 2022 US\$m	Taxation 2022 US\$m	Non- controlling interests 2022 US\$m	Net amount 2022 US\$m	Net amount 2021 US\$m
Six months ended 30 June					
Underlying earnings	12,044	(2,918)	(499)	8,627	12,166
Items excluded from underlying earnings					
Foreign exchange and derivative gains/(losses):					
– Foreign exchange gains on external net cash, intragroup balances and derivatives ^(a)	383	(15)	—	368	347
– Losses on currency and interest rate derivatives not qualifying for hedge accounting ^(b)	(194)	42	(2)	(154)	(45)
– Gains/(Losses) on embedded commodity derivatives not qualifying for hedge accounting ^(c)	9	(4)	(4)	1	(22)
Gains recognised by Kitimat relating to LNG Canada's project ^(d)	116	(9)	—	107	—
Losses from movements to closure estimates (non-operating and fully impaired sites) ^(e)	(43)	2	—	(41)	(133)
Total excluded from underlying earnings	271	16	(6)	281	147
Net earnings	12,315	(2,902)	(505)	8,908	12,313

- (a) Foreign exchange gains on external net cash and intragroup balances comprise post-tax gains of US\$508 million (30 June 2021: US\$351 million) on intragroup balances offset by post-tax foreign exchange losses on net cash of US\$140 million (30 June 2021: US\$4 million) primarily as a result of the Australian dollar weakening against the US dollar.
- (b) 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.
- (c) 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.
- (d) 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. This has been excluded from underlying earnings consistent with prior years as it is part of a series of transactions that together were material.
- (e) In 2022 the charge relates to inflationary increases to the closure provision for non-operating and fully impaired sites in excess of the unwind of the discount. In 2021, the charge related to an increase to the Diavik closure provision to reflect the final results of the Pre-Feasibility Study that was in progress when the asset was fully impaired in 2020 and further increases at a number of the Group's legacy sites where the environmental damage preceded ownership by Rio Tinto.

4. Segmental information - additional information

Geographical analysis (by destination)

Consolidated sales revenue by destination ^(a)	Six months ended 30 June			
	2022 %	2021 %	2022 US\$m	2021 US\$m
China	52.1 %	59.9 %	15,521	19,805
United States of America	16.3 %	11.5 %	4,848	3,816
Asia (excluding China and Japan)	9.1 %	9.5 %	2,698	3,157
Japan	6.8 %	7.2 %	2,039	2,373
Europe (excluding UK)	6.7 %	5.0 %	1,995	1,667
Canada	3.1 %	2.4 %	933	793
Australia	2.0 %	1.6 %	596	519
UK	0.4 %	0.5 %	133	166
Other countries	3.5 %	2.4 %	1,012	787
Consolidated sales revenue	100.0 %	100.0 %	29,775	33,083

(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.

Product analysis (by revenue type)

Consolidated sales revenue by product	Six months ended 30 June 2022			Six months ended 30 June 2021		
	Revenue from contracts with customers 2022 US\$m	Other revenue ^(a) 2022 US\$m	Consolidated sales revenue 2022 US\$m	Revenue from contracts with customers 2021 US\$m	Other revenue ^(a) 2021 US\$m	Consolidated sales revenue 2021 US\$m
Iron ore	17,547	91	17,638	21,964	1,108	23,072
Aluminium, alumina and bauxite	7,321	298	7,619	5,733	84	5,817
Copper	1,702	(38)	1,664	1,472	77	1,549
Industrial minerals (comprising titanium dioxide slag, borates and salt)	1,233	(3)	1,230	1,141	4	1,145
Gold	322	9	331	506	(6)	500
Diamonds	465	—	465	160	—	160
Other products ^(b)	829	(1)	828	827	13	840
Consolidated sales revenue	29,419	356	29,775	31,803	1,280	33,083

(a) Certain of the Group's products may be provisionally priced at the date revenue is recognised. The change in value of the provisionally priced receivables is based on relevant forward market prices and is included in "Other revenue" above.

(b) "Other products" includes metallic co-products, molybdenum, silver and other commodities with immaterial revenues.

5. Taxation

Prima facie tax reconciliation

Six months ended 30 June	2022 US\$m	2021 US\$m
Profit before taxation	12,315	18,049
Deduct: share of profit after tax of equity accounted units ^(a)	(468)	(556)
Parent companies' and subsidiaries' profit before tax	11,847	17,493
Prima facie tax payable at UK rate of 19% (2021: 19%) ^(b)	2,251	3,324
Higher rate of taxation of 30% on Australian underlying earnings (2021: 30%)	924	1,609
Other tax rates applicable outside the UK and Australia on underlying earnings	60	77
Impact of items excluded in arriving at underlying earnings ^(c) :		
– Losses/gains on foreign exchange and on derivatives	(61)	(34)
– Losses from increases to closure estimates (non-operating and fully impaired sites)	6	(9)
– Utilisation of capital losses on the gain recognised by Kitimat relating to LNG Canada's project	(13)	—
Impact of changes in tax rates and laws	(12)	—
Recognition of previously unrecognised deferred tax assets ^(d)	(209)	(77)
Write-down of previously recognised deferred tax assets	8	8
Adjustments in respect of prior periods ^(e)	(137)	43
Other items	85	40
Total taxation charge^(a)	2,902	4,981

- (a) This tax reconciliation relates to the Group's parent companies, subsidiaries and joint operations, and excludes equity accounted units. The Group's share of profit of equity accounted units is net of tax charges of US\$289 million (30 June 2021: US\$318 million).
- (b) 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. 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 corporation tax rate on profit before tax is approximately 29% (30 June 2021: 29%).
- (c) The impact for each item includes the effect of tax rates applicable outside the UK.
- (d) In the period to 30 June 2022 and 30 June 2021 the recognition of previously unrecognised deferred tax assets relates to the recognition of prior year deferred tax assets at Oyu Tolgoi due to improved deferred tax asset recovery expectations.
- (e) In the period to 30 June 2022, adjustments in respect of prior periods includes amounts related to the settlement of all tax disputes with the Australian Tax Office for the years 2010 to 2021.

5. Taxation (continued)

Future tax developments

We continue to closely monitor 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 which are currently expected to be enacted in 2023 with application to the Group from 1 January 2024. We note the release of associated draft legislation on 20 July 2022 by the UK government in relation to a proposed "Multinational Top-up Tax" on a country-by-country basis in line with the OECD Pillar Two 15% global minimum tax.

We are in the process of evaluating the cash tax and accounting implications of the Pillar Two global minimum tax rules under IAS 12. Given the UK legislation is only in draft form and is subject to further consultation it is too early to reliably estimate the potential impact. Recognition of any such impact will only occur once legislation has been substantively enacted. We will closely monitor developments to the proposed legislation accordingly.

6. Acquisitions

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, following approval from Australia's Foreign Investment Review Board (FIRB). The transaction has been 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 has been allocated to property, plant & equipment and other assets / liabilities. No goodwill was recorded on the transaction as the Rincon project's activities did not, at the time of purchase, meet the definition of a business as defined by IFRS 3 "Business Combinations".

7. 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 the Group balance sheet as per the following reconciliation:

	30 June 2022	31 December 2021	30 June 2021
	US\$m	US\$m	US\$m
Closing cash and cash equivalents less overdrafts			
Balance per Group balance sheet	11,412	12,807	14,027
Bank overdrafts repayable on demand (unsecured)	(3)	(2)	(4)
Balance per Group cash flow statement	11,409	12,805	14,023

8. Provisions including post-retirement benefits

	Pensions and post-retirement healthcare	Other employee entitlements ^(a)	Close-down and restoration/environmental ^(b)	Other	Total 30 June 2022
	US\$m	US\$m	US\$m	US\$m	US\$m
Opening Balance	2,098	394	14,542	1,002	18,036
Change in accounting policy ^(c)	—	—	—	17	17
Revision to opening balance	2,098	394	14,542	1,019	18,053
Adjustment on currency translation	(20)	(19)	(514)	(34)	(587)
Adjustments to mining properties/right of use assets:					
– increases to existing and new provisions ^(d)	—	—	345	—	345
Charged/(credited) to profit:					
– increases to existing and new provisions ^(d)	62	57	206	200	525
– unused amounts reversed	—	(10)	(18)	(26)	(54)
– exchange losses on provisions	—	—	24	1	25
– amortisation of discount ^(d)	—	—	503	1	504
Utilised in the period	(66)	(56)	(256)	(51)	(429)
Re-measurement gains recognised in other comprehensive income	(739)	—	—	—	(739)
Transfers and other movements	—	—	3	(14)	(11)
Closing balance	1,335	366	14,835	1,096	17,632
Balance sheet analysis:					
Current	68	293	1,145	802	2,308
Non-current	1,267	73	13,690	294	15,324
Total	1,335	366	14,835	1,096	17,632

- (a) The provision for other employee entitlements includes a provision for long service leave of US\$275 million (31 December 2021: US\$272 million), based on the relevant entitlements in certain Group operations and includes US\$31 million (31 December 2021: US\$60 million) of provision for redundancy and severance payments.
- (b) Close-down, restoration and environmental liabilities at 30 June 2022 have not been adjusted for closure related receivables amounting to US\$391 million (31 December 2021: US\$410 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) The way we calculate the cost of fulfilling a contract when assessing whether it is onerous has changed with the adoption of the amendments of IAS 37 (refer to note 2). This has led to an increase in the opening provision by US\$17 million.
- (d) Higher inflation has driven increases in closure and restoration/environmental liabilities. The Income Statement charge for amortisation of discount of US\$503 million (30 June 2021: US\$207 million) incorporates inflation expectations for 2022 as at the start of the year. We also recorded adjustments to mining properties and charges within operating costs of US\$360 million and US\$180 million respectively, reflecting changes in forecast cash flows due to our current outlook on inflation being in excess of expectations at the start of the year.

9. Financial Instruments

Except where stated, the information relates to the financial instruments of the parent companies and their subsidiaries and joint operations, and excludes those of equity accounted units.

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

The Group classifies its financial assets into those to be measured subsequently at fair value and those to be held at amortised cost. Trade and other financial payables are recognised initially at fair value, net of transaction cost incurred and are subsequently measured at amortised cost. The table below shows the classifications of financial instruments carried at fair value by valuation method in accordance with IFRS 13 at 30 June 2022 and 31 December 2021:

	At 30 June 2022			At 31 December 2021		
	Held at fair value			Held at fair value		
	Level 1 ^(a) US\$m	Level 2 ^(b) US\$m	Level 3 ^(c) US\$m	Level 1 ^(a) US\$m	Level 2 ^(b) US\$m	Level 3 ^(c) US\$m
Assets						
Cash and cash equivalents ^(d)	3,916	—	—	4,138	—	—
Investments in equity shares and funds	76	—	63	64	—	53
Other investments, including loans ^(e)	2,326	—	254	2,422	—	238
Trade and other financial receivables ^(f)	3	1,365	—	1	1,163	—
Derivatives (net)						
Forward contracts and option contracts: designated as hedges ^(g)	—	—	(148)	—	—	(125)
Forward contracts and option contracts, not designated as hedges ^(g)	—	32	17	—	(131)	11
Derivatives related to net cash	—	(566)	—	—	(101)	—
Liabilities						
Trade and other financial payables	—	(80)	—	—	(67)	—
Total	6,321	751	186	6,625	864	177

9. 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 six months to 30 June 2022 is below:

	30 June 2022
Level 3 financial assets and liabilities	US\$m
Opening balance	177
Currency translation adjustments	(8)
Total realised gains/(losses) included in:	
– consolidated sales revenue	11
– net operating costs	(31)
Total unrealised gains included in:	
– net operating costs	32
Total unrealised losses transferred into other comprehensive income through cash flow hedges	(60)
Additions to financial instruments	36
Disposals/maturity of financial instruments	29
Closing balance	186
Net gains included in the income statement for assets and liabilities held at period end	20

- (d) Our "cash and cash equivalents" of US\$11,412 million, includes US\$3,916 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) Other investments, including loans, comprise: cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty receivables.
- (f) 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 2022, US\$1,155 million (31 December 2021: US\$1,114 million) of provisionally priced receivables were recognised.
- (g) 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 2021: 2025 and 2036).

There were no material transfers between level 1 and level 2, or between level 2 and level 3 in the period ended 30 June 2022 or in the year ended 31 December 2021.

9. Financial Instruments (continued)

Valuation techniques and inputs

The techniques used to value our material 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	(257)	Discounted cash flows	Applicable market quoted swap yield curves Credit default spread
Cross currency interest rate swaps	(309)	Discounted cash flows	Applicable market quoted swap yield curves Credit default spread Market quoted FX rate
Provisionally priced receivables	1,155	Closely related listed product	Applicable forward quoted metal price

Level 3			
Derivatives embedded in electricity contracts	(178)	Discounted cash flows/option model	LME forward aluminium price Midwest premium and billet premium
Royalty receivables	235	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 are a net liability of US\$178 million at 30 June 2022 (31 December 2021: net liability of US\$146 million).

Royalty receivables includes amounts arising from our divested coal businesses with a carrying value of US\$146 million (31 December 2021: US\$136 million). These are classified as “Other investments”, including loans within “Other financial assets”. The fair values are determined using level 3 unobservable inputs. This royalty receivable includes US\$55 million from forecast production beyond 2030. This has 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 this royalty receivable. A 15% increase in the coal spot price would result in a US\$15 million increase (31 December 2021: US\$63 million increase) in the carrying value. A 15% decrease in the coal spot price would result in a US\$41 million decrease (31 December 2021: US\$53 million decrease) in the carrying value. We have

9. Financial Instruments (continued)

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 2022 and 31 December 2021. 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 2022		31 December 2021	
	Carrying value US\$m	Fair value US\$m	Carrying value US\$m	Fair value US\$m
Borrowings (including overdrafts)	11,587	11,997	12,168	13,904

Total borrowings with a carrying value of US\$6.7 billion (31 December 2021: US\$7.3 billion) relate to listed bonds with a fair value of US\$7.0 billion (31 December 2021: US\$8.7 billion) and are categorised as level 1 in the fair value hierarchy. Borrowings with a carrying value of US\$4.1 billion (31 December 2021: US\$4.2 billion) relate to project finance drawn down by Oyu Tolgoi, with a fair value of US\$4.3 billion (31 December 2021: US\$4.4 billion) using a number of level 3 valuation inputs. 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.

10. Commitments and contingencies

Capital commitments at 30 June 2022

Capital commitments, excluding the Group's share of joint venture capital commitments, were US\$2,905 million (31 December 2021: US\$2,551 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. It does 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 2021: US\$1.1 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\$17 million at 30 June 2022 (31 December 2021: US\$11 million).

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.

10. Commitments and contingencies (continued)

Contingent liabilities, indemnities and other performance guarantees were US\$275 million at 30 June 2022 (31 December 2021: US\$441 million).

There were no material contingent liabilities arising in relation to the Group's joint ventures and associates. The Group has 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 Group 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 incur, in the future, 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 the following contingent liabilities means it is not practicable to provide a reliable estimate of possible financial exposure:

Litigation disputes

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.

On 6 March 2022 we reached a settlement with the Australian Securities and Investment Commission (ASIC) regarding the disclosure of the impairment of Rio Tinto Coal Mozambique (RTCM), which was reflected in Rio Tinto's 2012 year-end accounts. As part of this court approved settlement, we paid a A\$750,000 penalty for a single contravention of its continuous disclosure obligations in the period 21 December 2012 to 17 January 2013, immediately preceding the impairment announcement. As part of this court approved settlement between ASIC and Rio Tinto, there were no findings of fraud or any systemic or widespread failure by Rio Tinto. The case against Tom Albanese and Guy Elliott brought by ASIC has been wholly dismissed.

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.

At 30 June 2022, the outcomes of these matters remain uncertain, but they could ultimately expose the Group to material financial cost. We believe these cases are unwarranted and will defend the allegations vigorously. No provisions have been recognised for these cases however a dedicated Board committee continues to monitor the progress of these matters, as appropriate.

10. Commitments and contingencies (continued)

Other contingent liabilities

The Group is in the process of modernising agreements with Traditional Owner groups as outlined in our response to the Juukan Gorge incident. We have provided for 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 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, refer to note 8. Any contingent liability for these assets will crystallise into a closure provision if and when a decision is taken to cease operations.

11. Non-controlling interests material to the Group

Since 31 December 2021 the only significant changes at subsidiaries that have non-controlling interest that are material to the Group related to Turquoise Hill Resources Limited (Turquoise Hill).

On 25 January 2022, Turquoise Hill waived in full, funding balances arising from a carry account loan with Erdenes Oyu Tolgoi (Erdenes) of US\$2.4 billion, comprising the amount of common share investments in Oyu Tolgoi LLC (Oyu Tolgoi) funded by Turquoise Hill on behalf of Erdenes to build the project, plus US\$1.0 billion of accrued interest. The waiver formed part of a comprehensive project budget and funding package undertaken between Rio Tinto, Turquoise Hill and the Government of Mongolia, upon agreement to commencement of underground operations.

Prior to the waiver agreement, funding balances owing from Erdenes to Turquoise Hill were expected to be repaid via a pledge over Erdenes' share of future Oyu Tolgoi common share dividends. For this reason, and because the arrangement was between Turquoise Hill and Erdenes rather than with Oyu Tolgoi itself, both the principal and interest were treated as transactions with owners acting in their capacity as owners. Consequently, at 31 December 2021, related amounts were recorded as a reduction in the share of equity attributable to non-controlling interests, resulting in an increase to the effective interest in Oyu Tolgoi attributable to owners of Rio Tinto. Accumulation of interest on the funding balances increased the share of retained earnings attributable to Rio Tinto as it was accrued.

Waiving the funding balances increased Erdenes' economic share through earlier entitlement to cash flows from future dividends of Oyu Tolgoi. In the six months ended 30 June 2022, there was no Group Income Statement charge for loan forgiveness or write-off as a result of the waiver. The waiver did not have an impact on the Group's assessment of impairment indicators for the Oyu Tolgoi cash generating unit at 30 June 2022.

11. Non-controlling interests material to the Group (continued)

A reallocation of the net asset value attribution between owners of Oyu Tolgoi has been recorded in the Group Statement of Changes in Equity for the six months ended 30 June 2022 by reducing equity attributable owners of Rio Tinto and increasing equity attributable to non-controlling interests:

	Retained earnings	Non-controlling interests
	US\$m	US\$m
Change in equity interest held by Rio Tinto		
- interest accrued in 2022 (between 1 January and waiver date)	6	(6)
- total accrued interest on funding balances waived on 25 January 2022	(490)	490
	(484)	484
Equity issued to owners of non-controlling interests		
- funding balance principal waived on 25 January 2022	(711)	711
- equity issued to owners of non-controlling interests (subsidiaries other than Turquoise Hill)	—	22
	(711)	733

12. Events after the balance sheet date

On 20 July 2022 we announced that agreement had been reached with the Australian Taxation Office (ATO) on all tax matters in dispute. We also reached agreement with the Inland Revenue Authority of Singapore in relation to transfer pricing for the same historical years (2010 to 2021). In the second half of 2022, we will pay additional tax of A\$613 million to the ATO, relating to this agreement. This was fully provided for at 30 June 2022.

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 35 to 60 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 2022 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

27 July 2022

Jakob Stausholm

Chief executive

27 July 2022

Peter Cunningham

Chief financial officer

27 July 2022

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 reviewed the accompanying interim financial information ("Interim Financial Statements") in the Interim Results 2022 ("Interim Report") of the Rio Tinto Group ("the Group") as at and for the six months ended 30 June 2022 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 notes to the Interim Financial Statements on pages 42 to 60 comprising a summary of significant accounting policies and other explanatory information.

Rio Tinto ('the Group' or '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 2022 or during the six months ended 30 June 2022. 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 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, including the Directors' Declaration, are not in accordance 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 2022 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 consolidated financial report 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; and
- 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.
- 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; and
- 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.

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 2022 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 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
27 July 2022

Trevor Hart
Partner
Perth
27 July 2022

KPMG
27 July 2022

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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 2022 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 during the financial period.

KPMG

Trevor Hart
Partner
Perth
27 July 2022

Liability limited by a scheme approved under Professional Standards Legislation

Rio Tinto financial information by business unit

		Gross product sales ^(a)		Underlying EBITDA ^(a)		Underlying earnings ^(a)	
	Rio Tinto interest %	2022 US\$m	2021 US\$m	2022 US\$m	2021 US\$m	2022 US\$m	2021 US\$m
Six months ended 30 June							
Iron Ore							
Pilbara	(b)	15,517	21,476	10,119	16,207	6,227	10,348
Dampier Salt	68.4	161	145	9	21	—	5
Evaluation projects/other	(c)	1,698	1,003	268	161	234	110
Intra-segment	(c)	(766)	(917)	(1)	(329)	—	(247)
Total Iron Ore		16,610	21,707	10,395	16,060	6,461	10,216
Aluminium							
Bauxite		1,219	1,082	337	338	68	105
Alumina		1,716	1,359	415	295	227	155
Primary Metal		4,246	3,193	1,714	1,101	1,002	564
Pacific Aluminium		1,705	1,285	463	273	306	174
Intra-segment and other		(1,724)	(1,391)	12	(36)	—	(40)
Integrated operations		7,162	5,528	2,941	1,971	1,603	958
Other product group items		634	404	26	17	19	12
Product group operations		7,796	5,932	2,967	1,988	1,622	970
Evaluation projects/other		—	—	(101)	(64)	(75)	(49)
Total Aluminium		7,796	5,932	2,866	1,924	1,547	921
Copper							
Kennecott	100.0	983	1,318	442	676	68	323
Escondida	30.0	1,401	1,486	966	1,033	490	537
Oyu Tolgoi and Turquoise Hill	(d)	805	844	313	528	142	152
Product group operations		3,189	3,648	1,721	2,237	700	1,012
Simandou iron ore project	(e)	—	—	(54)	(6)	(33)	(2)
Evaluation projects/other		358	131	(180)	(183)	(124)	(125)
Total Copper		3,547	3,779	1,487	2,048	543	885
Minerals							
Iron Ore Company of Canada	58.7	1,480	1,807	775	1,105	268	398
Rio Tinto Iron & Titanium	(f)	1,090	973	337	305	139	146
Rio Tinto Borates	100.0	359	300	57	64	21	34
Diamonds	(g)	465	160	193	16	91	5
Product group operations		3,394	3,240	1,362	1,490	519	583
Evaluation projects/other		9	30	(103)	(92)	(99)	(85)
Total Minerals		3,403	3,270	1,259	1,398	420	498
Other operations	(h)	107	85	(78)	(4)	(167)	(51)
Inter-segment transactions		(149)	(145)	(1)	(6)	—	(3)
Product group total		31,314	34,628	15,928	21,420	8,804	12,466
Central pension costs, share-based payments, insurance and derivatives				265	119	237	120
Restructuring, project and one-off costs				(86)	(36)	(61)	(23)
Central costs				(397)	(346)	(363)	(294)
Central exploration and evaluation				(113)	(120)	(95)	(100)
Net interest						105	(3)
Underlying EBITDA/earnings				15,597	21,037	8,627	12,166
Items excluded from underlying EBITDA/earnings				87	(177)	281	147
Reconciliation to Group income statement							
Share of equity accounted unit sales and intra-subsidary/equity accounted unit sales		(1,539)	(1,545)				
Depreciation and amortisation in subsidiaries excluding capitalised depreciation				(2,405)	(2,253)		
Depreciation and amortisation in equity accounted units				(242)	(249)		
Taxation and finance items in equity accounted units				(363)	(365)		
Finance items				(359)	56		
Consolidated sales revenue/profit before taxation/net earnings		29,775	33,083	12,315	18,049	8,908	12,313

Rio Tinto financial information by business unit (continued)

		Capital expenditure ^(a) for the six months ended 30 June		Depreciation and amortisation for the six months ended 30 June		Operating assets ⁽ⁱ⁾ as at	
	Rio Tinto interest %	2022 US\$m	2021 US\$m	2022 US\$m	2021 US\$m	30 June 2022 US\$m	31 December 2021 US\$m
Iron Ore							
Pilbara	(b)	1,459	1,907	1,013	1,011	16,823	16,850
Dampier Salt	68.4	13	5	10	11	164	159
Evaluation projects/other	(c)	—	—	—	—	807	1,283
Intra-segment	(c)	—	—	—	—	(255)	(255)
Total Iron Ore		1,472	1,912	1,023	1,022	17,539	18,037
Aluminium							
Bauxite		84	67	180	165	2,404	2,542
Alumina		164	113	96	80	1,999	2,258
Primary Metal		364	285	348	347	9,628	9,734
Pacific Aluminium		68	58	60	53	352	228
Intra-segment and other		1	1	1	—	934	839
Total Aluminium		681	524	685	645	15,317	15,601
Copper							
Kennecott	100.0	246	203	298	249	2,371	2,404
Escondida	30.0	137	83	171	174	2,654	2,515
Oyu Tolgoi and Turquoise Hill	(d)	484	460	88	98	8,246	8,998
Product group operations		867	746	557	521	13,271	13,917
Simandou iron ore project	(e)	—	—	—	—	26	13
Evaluation projects/other		—	4	2	2	202	210
Total Copper		867	750	559	523	13,499	14,140
Minerals							
Iron Ore Company of Canada	58.7	126	90	99	96	1,160	1,077
Rio Tinto Iron & Titanium	(f)	106	83	113	109	3,374	3,369
Rio Tinto Borates	100.0	13	17	25	25	472	487
Diamonds	(g)	22	11	17	2	(36)	(19)
Product group operations		267	201	254	232	4,970	4,914
Evaluation projects/other		1	8	—	—	869	43
Total Minerals		268	209	254	232	5,839	4,957
Other operations	(h)	9	—	133	92	(1,347)	(1,533)
Inter-segment transactions						(19)	(12)
Product group total		3,297	3,395	2,654	2,514	50,828	51,190
Other items		41	35	47	42	(562)	(1,334)
Less: equity accounted units		(193)	(120)	(242)	(249)		
Total		3,145	3,310	2,459	2,307	50,266	49,856
Add back: Proceeds from disposal of property, plant and equipment		1	26				
Total capital expenditure per cash flow statement		3,146	3,336			291	1,576
Add: Net cash							
Equity attributable to owners of Rio Tinto						50,557	51,432

Notes to financial information by business unit

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

- (a) Gross product sales, Underlying EBITDA, Underlying Earnings and Capital expenditure are defined and calculated in note 3 on pages 47 to 49.
- (b) 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.
- (c) Gross product sales, Underlying EBITDA, Net 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".
- (d) Our interest in Oyu Tolgoi is held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset is its 66% investment in Oyu Tolgoi LLC, which owns the Oyu Tolgoi copper-gold mine.
- (e) 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.
- (f) Includes our interests in Rio Tinto Fer et Titane (100%), QIT Madagascar Minerals (QMM, 80%) and Richards Bay Minerals (attributable interest of 74%).
- (g) Includes our interests in Argyle (100%) residual operations which relates to the sale of remaining inventory and Diavik. Prior to 18 November 2021 we recognised our 60% share of assets, revenue and expenses relating to the Diavik joint venture. Liabilities were recognised according to Diavik Diamond Mine Inc's contractual obligations at 100%, with a corresponding 40% receivable or contingent asset representing the co-owner's share where applicable. Post acquisition, we now consolidate (100%) of the Diavik Diamond Mine. From 1 June 2021, management responsibility for rehabilitation of the Argyle site moved from Minerals to Rio Tinto Closure (RTC), hence, Argyle closure is reported in Other operations effective from 1 January 2021.
- (h) 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. From 16 June 2022, Commercial Treasury and related central costs are reported as part of Other Operations instead of other items in previous periods. We have not restated prior year balances as the impact was not significant.
- (i) Operating assets of the Group represents equity attributable to Rio Tinto adjusted to remove net cash. Operating assets of subsidiaries, joint operations and the Group's share relating to equity accounted units are comprised of net assets adjusted to remove net cash 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.

Gross product sales

Gross product sales include 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).

Gross product sales measures revenue on a basis that is comparable to our Underlying EBITDA metric.

For six months ended 30 June	2022 US\$m	2021 US\$m
Consolidated sales revenue	29,775	33,083
Share of equity accounted unit sales and inter-subsidiary/equity accounted unit sales	1,539	1,545
Gross product sales	31,314	34,628

Underlying EBITDA

Underlying EBITDA represents profit before tax, net finance items, depreciation and amortisation excluding the EBITDA impact of the same items that are excluded in arriving at underlying earnings (as defined in the underlying earnings section below). The reconciliation of underlying EBITDA to profit after tax can be found in the segmental information note on page 48.

Alternative performance measures (continued)

Underlying EBITDA margin

Underlying EBITDA margin is defined as Group underlying EBITDA divided by gross product sales.

For six months ended 30 June	2022 US\$m	2021 US\$m
Underlying EBITDA	15,597	21,037
Gross product sales	31,314	34,628
Underlying EBITDA margin	50 %	61 %

Pilbara underlying FOB EBITDA margin

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

For six months ended 30 June	2022 US\$m	2021 US\$m
Pilbara		
Underlying EBITDA	10,119	16,207
Pilbara gross product sales	15,517	21,476
Less: Freight revenue	(1,110)	(1,023)
Pilbara gross product sales, excluding freight revenue	14,407	20,453
Pilbara underlying FOB EBITDA margin	70 %	79 %

Underlying EBITDA margin from Aluminium integrated operations

Underlying EBITDA margin from integrated operations is defined as underlying EBITDA divided by gross product sales.

For six months ended 30 June	2022 US\$m	2021 US\$m
Aluminium		
Underlying EBITDA - integrated operations	2,941	1,971
Gross product sales - integrated operations	7,162	5,528
Underlying EBITDA margin from integrated operations	41 %	36 %

Alternative performance measures (continued)

Underlying EBITDA margin (product group operations)

Underlying EBITDA margin (product group operations) is defined as underlying EBITDA divided by gross product sales.

For six months ended 30 June	2022 US\$m	2021 US\$m
Copper		
Underlying EBITDA - product group operations	1,721	2,237
Gross product sales - product group operations	3,189	3,648
Underlying EBITDA margin - product group operations	54 %	61 %
For six months ended 30 June	2022 US\$m	2021 US\$m
Minerals		
Underlying EBITDA - product group operations	1,362	1,490
Gross product sales - product group operations	3,394	3,240
Underlying EBITDA margin - product group operations	40 %	46 %

Underlying earnings

The definition and reconciliation of underlying earnings to net earnings can be found in the segmental information note on pages 47 to 49 .

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.

On a per share basis, this allows the comparability of underlying financial performance adjusted to exclude items, which do not reflect the underlying performance of the Group's operations.

For six months ended 30 June	2022	2021
Net earnings (US\$ million)	8,908	12,313
Weighted average number of shares (millions)	1,619.3	1,618.1
Basic earnings per ordinary share (cents)	550.1	761.0
Items excluded from underlying earnings per share (cents) ^(a)	(17.4)	(9.1)
Basic underlying earnings per ordinary share (cents)	532.7	751.9
(a) Calculation of items excluded from underlying earnings per share	2022	2021
Income excluded from underlying earnings (refer to page 49)	(281)	(147)
Weighted average number of shares (millions)	1,619.3	1,618.1
Items excluded from underlying earnings per share (cents)	(17.4)	(9.1)

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) is 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.

For six months ended 30 June	2022 US\$m	2021 US\$m
Profit before taxation	12,315	18,049
Add back		
Finance income	(17)	(42)
Finance costs	55	91
Share of profit after tax of equity accounted units	(468)	(556)
Items excluded from underlying earnings	(271)	(131)
Add: Dividends from equity accounted units	633	726
Calculated earnings	12,247	18,137
Finance income	17	42
Finance costs	(55)	(91)
Add: Amounts capitalised	(208)	(174)
Total Finance income/costs before capitalisation	(246)	(223)
Interest cover	50	81

Payout ratio

The payout ratio is used by us to guide the dividend policy we implemented in 2016, with 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.

For six months ended 30 June	2022 (cents)	2021 (cents)
Interim dividend declared per share	267.0	376.0
Interim special dividend declared per share	—	185.0
Total dividend declared per share for the period	267.0	561.0
Underlying earnings per share	532.7	751.9
Payout ratio	50 %	75 %

Alternative performance measures (continued)

APMs derived from cash flow statement

Capital expenditure

Capital expenditure comprises 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 share of capital investment represents the Group's economic investment in capital projects. It has been newly introduced to better represent the group's share of funding for capital projects which are jointly funded with other shareholders, which may differ from the consolidated basis included in the Capital expenditure APM. This better reflects the Group's 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. 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 5 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.

	2022 US\$m	2021 US\$m
For six months ended 30 June		
Net cash generated from operating activities	10,474	13,661
Less: Purchase of property, plant and equipment and intangible assets	(3,146)	(3,336)
Less: Lease principal payments	(183)	(170)
Add: Sales of property, plant and equipment and intangible assets	1	26
Free cash flow	7,146	10,181

Alternative performance measures (continued)

APMs derived from the balance sheet

Net cash

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

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

	Financing liabilities			Other assets		Net cash US\$m
	Borrowings excluding overdrafts ^(a) US\$m	Lease liabilities ^(b) US\$m	Net-cash related derivatives (included in Other financial assets/ liabilities) ^(c) US\$m	Cash and cash equivalents including overdrafts US\$m	Other investments ^(d) US\$m	
Six months ended 30 June 2022						
Analysis of changes in consolidated net cash						
Opening balance	(12,166)	(1,363)	(101)	12,805	2,401	1,576
Foreign exchange adjustment	116	50	(97)	(26)	—	43
Cash movements excluding exchange movements	67	183	(2)	(1,370)	(52)	(1,174)
Other non-cash movements	399	(142)	(366)	—	(45)	(154)
Closing balance	(11,584)	(1,272)	(566)	11,409	2,304	291

(a) Borrowings excluding overdrafts and including lease liabilities at 30 June 2022 of US\$12,856 million (31 December 2021: US\$13,529 million) differ from total borrowings and other financial liabilities of US\$13,746 million (31 December 2021: US\$14,169 million) on the balance sheet as they exclude other current financial liabilities of US\$360 million (31 December 2021: US\$245 million), other non-current financial liabilities of US\$527 million (31 December 2021: US\$393 million) and bank overdraft of US\$3 million (31 December 2021: US\$2 million).

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

(c) Included within “Net cash-related derivatives” are interest rate and cross currency interest rate swaps that are in hedge relationships with the Group's debt. This also includes currency forwards that we use to mitigate the foreign exchange exposure on our non-US dollar separately managed funds. These forwards are not in a hedge relationship but are included within the Group's net cash definition.

(d) Other investments comprise US\$2,304 million (31 December 2021: US\$2,401 million) of highly liquid financial assets held in managed investment funds classified as held for trading.

Alternative performance measures (continued)

Net gearing ratio

Net gearing ratio is defined as net cash divided by the sum of net cash 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 2022 US\$m	31 December 2021 US\$m
Net cash	291	1,576
Net cash	291	1,576
Total equity	(57,098)	(56,590)
Net cash plus total equity	(56,807)	(55,014)
Net gearing ratio	(0.5%)	(3%)

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 2022 US\$m	30 June 2021 US\$m
Profit after tax attributable to owners of Rio Tinto (net earnings)	8,908	12,313
Items added back to derive underlying earnings (refer to page 49)	(281)	(147)
Underlying earnings	8,627	12,166
Add/(deduct):		
Finance income per the income statement	(17)	(42)
Finance costs per the income statement	55	91
Tax on finance cost	(120)	(10)
Non-controlling interest share of net finance costs	(40)	(52)
Net interest cost in equity accounted units (Rio Tinto share)	17	16
Net interest	(105)	3
Adjusted underlying earnings	8,522	12,169
Annualised adjusted underlying earnings	17,044	24,338
Equity attributable to owners of Rio Tinto - beginning of the period	51,432	47,054
Net (cash)/debt - beginning of the period	(1,576)	664
Capital employed - beginning of the period	49,856	47,718
Equity attributable to owners of Rio Tinto - end of the period	50,557	52,975
Net (cash) - end of the period	(291)	(3,140)
Capital employed - end of the period	50,266	49,835
Average capital employed	50,061	48,777
Underlying return on capital employed	34 %	50 %

Summary financial data in Australian dollars, sterling and US dollars

30 June 2022 A\$m	30 June 2021 A\$m	30 June 2022 £m	30 June 2021 £m		30 June 2022 US\$m	30 June 2021 US\$m
41,374	42,876	22,915	23,823	Consolidated sales revenue	29,775	33,083
43,512	44,879	24,100	24,935	Gross product sales	31,314	34,628
17,112	23,392	9,478	12,997	Profit before tax from continuing operations	12,315	18,049
13,080	16,936	7,244	9,410	Profit for the period from continuing operations	9,413	13,068
12,378	15,958	6,856	8,866	Net earnings attributable to Rio Tinto shareholders	8,908	12,313
21,673	27,264	12,004	15,148	Underlying EBITDA	15,597	21,037
11,988	15,767	6,640	8,761	Underlying earnings ^(a)	8,627	12,166
764.4c	986.2c	423.4p	548.0p	Basic earnings per ordinary share ^(b)	550.1c	761.0c
740.3c	974.4c	410.0p	541.4p	Basic underlying earnings per ordinary share ^{(a)(b)}	532.7c	751.9c
				Dividends per share to Rio Tinto shareholders ^(c)		
577.04c	397.48c	306.72p	221.86p	- paid – ordinary dividend	417.0c	309.0c
85.80c	119.63c	45.60p	66.77p	- paid – special dividend	62.0c	93.0c
383.70c	509.42c	221.63p	270.84p	- proposed – ordinary interim dividend	267.0c	376.0c
—	250.64c	—	133.26p	- proposed – special interim dividend	—	185.0c
8,965	13,419	4,966	7,456	Cash flow before financing activities	6,452	10,354
30 June 2022 A\$m	31 December 2021 A\$m	30 June 2022 £m	31 December 2021 £m		30 June 2022 US\$m	31 December 2021 US\$m
423	2,173	240	1,168	Net cash	291	1,576
73,516	70,906	41,707	38,108	Equity attributable to Rio Tinto shareholders	50,557	51,432

(a) Underlying earnings excludes income of US\$281 million (30 June 2021: US\$147 million), which are analysed on page 49.

(b) Basic earnings per ordinary share and basic underlying earnings per ordinary share do not recognise the dilution resulting from share options on issue.

(c) The Australian dollar and sterling amounts are based on the US dollar amounts, retranslated at average or closing rates as appropriate, except for the dividends which are the actual amounts.

Metal prices and exchange rates

		Six months to 30 June 2022	Six months to 30 June 2021	Increase/ (Decrease)	Year to 31 December 2021
Metal prices - average for the period					
Copper	- US cents/lb	442	413	7 %	422
Aluminium	- US\$/tonne	3,082	2,246	37 %	2,480
Gold	- US\$/troy oz	1,874	1,805	4 %	1,799

	Six months average to 30 June			At 30 June			At 31 December 2021
Exchange rates against the US dollar	2022	2021	Increase/ (Decrease)	2022	2021	Increase/ (Decrease)	
Pound sterling	1.30	1.39	(6)%	1.21	1.38	(12)%	1.35
Australian dollar	0.72	0.77	(6)%	0.69	0.75	(8)%	0.73
Canadian dollar	0.79	0.80	(1)%	0.78	0.81	(4)%	0.78
Euro	1.09	1.21	(10)%	1.05	1.19	(12)%	1.13
South African rand	0.065	0.069	(6)%	0.062	0.070	(11)%	0.06

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), are forward-looking statements. The words “intend”, “aim”, “project”, “anticipate”, “estimate”, “plan”, “believes”, “expects”, “may”, “should”, “will”, “target”, “set to” or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto’s present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto’s actual results, performance or achievements to differ materially from those in the forward-looking statements 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; 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 Covid-19 pandemic; breaches of Rio Tinto’s policies, standard and procedures, laws or regulations; trade tensions between the world’s major economies; 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”) or Form 6-Ks furnished to, or filed with, the SEC. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements. These forward-looking statements speak only as of the date of this 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.

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