2017 financial statements

Contents

Group income statement

Years ended 31 December

	Note	2017 US$m	2016 US$m	2015 US$m
Consolidated operations				
Consolidated sales revenue	2,3	**40,030**	33,781	34,829
Net operating costs (excluding items shown separately)	4	**(26,983)**	(26,799)	(27,919)
Impairment charges	6	**(796)**	(249)	(2,791)
Net gains on disposal of interests in businesses	2,37	**2,344**	515	64
Exploration and evaluation costs	13	**(445)**	(497)	(576)
(Loss)/profit relating to interests in undeveloped projects	13	**(15)**	44	8
Operating profit		**14,135**	6,795	3,615
Share of profit after tax of equity accounted units	7	**339**	321	361
Profit before finance items and taxation		**14,474**	7,116	3,976
Finance items				
Net exchange (losses)/gains on external debt and intragroup balances	24	**(601)**	611	(3,538)
Net gains/(losses) on derivatives not qualifying for hedge accounting		**33**	(24)	(88)
Finance income	8	**141**	89	52
Finance costs	8	**(848)**	(1,111)	(750)
Amortisation of discount		**(383)**	(338)	(378)
		(1,658)	(773)	(4,702)
Profit/(loss) before taxation		**12,816**	6,343	(726)
Taxation	9	**(3,965)**	(1,567)	(993)
Profit/(loss) after tax for the year		**8,851**	4,776	(1,719)
– attributable to owners of Rio Tinto (net earnings/(loss))		**8,762**	4,617	(866)
– attributable to non-controlling interests (net earnings/(loss))		**89**	159	(853)
Basic earnings/(loss) per share	10	**490.4c**	256.9c	(47.5)c
Diluted earnings/(loss) per share	10	**486.9c**	255.3c	(47.5)c

The notes on pages 118 to 201 are an integral part of these consolidated financial statements.

Group statement of comprehensive income

Years ended 31 December

	Note	2017 US$m	2016 US$m	2015 US$m
Profit/(loss) after tax for the year		**8,851**	4,776	(1,719)
Other comprehensive income/(loss):				
Items that will not be reclassified to profit or loss:				
Actuarial gains/(losses) on post-retirement benefit plans	44	**6**	(90)	619
Tax relating to this component of other comprehensive income	9	**(12)**	29	(175)
Adjustments to deferred tax on post-retirement benefit plans due to changes in corporate tax rates in the US and France	9	**(140)**	-	-
		(146)	(61)	444
Items that have been/may be subsequently reclassified to profit or loss:				
Currency translation adjustment [(a)]		**3,096**	(157)	(2,395)
Currency translation on companies disposed of, transferred to the income statement		**78**	99	(2)
Fair value movements:				
– Cash flow hedge gains/(losses)		**62**	(88)	(41)
– Cash flow hedge (gains)/losses transferred to the income statement		**(62)**	116	32
– Gains/(losses) on revaluation of available for sale securities		**19**	13	(19)
– Losses on revaluation of available for sale securities transferred to the income statement		**8**	-	11
Tax relating to these components of other comprehensive income	9	**(1)**	4	(3)
Share of other comprehensive income/(loss) of equity accounted units, net of tax		**34**	11	(57)
Other comprehensive income/(loss) for the year, net of tax		**3,088**	(63)	(2,030)
Total comprehensive income/(loss) for the year		**11,939**	4,713	(3,749)
– attributable to owners of Rio Tinto		**11,691**	4,504	(2,443)
– attributable to non-controlling interests		**248**	209	(1,306)

(a) Excludes a currency translation gain of US$310 million (2016: charge of US$35 million; 2015: charge of US$503 million) arising on Rio Tinto Limited's share capital for the year ended 31 December 2017, which is recognised in the Group statement of changes in equity. Refer to Group statement of changes in equity on page 116.

The notes on pages 118 to 201 are an integral part of these consolidated financial statements.

Group cash flow statement

Years ended 31 December

	Note	2017 US$m	2016 US$m	2015 US$m
Cash flows from consolidated operations [(a)]		**16,670**	11,368	12,102
Dividends from equity accounted units		**817**	253	210
Cash flows from operations		**17,487**	11,621	12,312
Net interest paid		**(897)**	(1,294)	(827)
Dividends paid to holders of non-controlling interests in subsidiaries		**(399)**	(341)	(310)
Tax paid		**(2,307)**	(1,521)	(1,792)
Net cash generated from operating activities		**13,884**	8,465	9,383
Cash flows from investing activities				
Purchases of property, plant and equipment and intangible assets	2	**(4,482)**	(3,012)	(4,685)
Disposals of subsidiaries, joint ventures and associates	37	**2,675**	761	(38)
Purchases of financial assets		**(723)**	(789)	(49)
Sales of financial assets		**40**	582	65
Sales of property, plant and equipment and intangible assets		**138**	354	97
Net funding of equity accounted units		**(3)**	(12)	11
Acquisitions of subsidiaries, joint ventures and associates	37	**-**	-	(3)
Other investing cash flows		**(18)**	12	2
Net cash used in investing activities		**(2,373)**	(2,104)	(4,600)
Cash flows before financing activities		**11,511**	6,361	4,783
Cash flows from financing activities				
Equity dividends paid to owners of Rio Tinto	11	**(4,250)**	(2,725)	(4,076)
Proceeds from additional borrowings		**18**	4,413	1,837
Repayment of borrowings		**(2,795)**	(9,361)	(3,518)
Proceeds from issue of equity to non-controlling interests		**170**	101	103
Own shares purchased from owners of Rio Tinto		**(2,083)**	-	(2,028)
Purchase of non-controlling interests	37	**(194)**	(23)	-
Other financing cash flows		**(7)**	104	12
Net cash flows used in financing activities		**(9,141)**	(7,491)	(7,670)
Effects of exchange rates on cash and cash equivalents		**(12)**	(35)	(159)
Net increase/(decrease) in cash and cash equivalents		**2,358**	(1,165)	(3,046)
Opening cash and cash equivalents less overdrafts		**8,189**	9,354	12,400
Closing cash and cash equivalents less overdrafts	21	**10,547**	8,189	9,354
(a) Cash flows from consolidated operations				
Profit/(loss) after tax for the year		**8,851**	4,776	(1,719)
Adjustments for:				
– Taxation		**3,965**	1,567	993
– Finance items		**1,658**	773	4,702
– Share of profit after tax of equity accounted units		**(339)**	(321)	(361)
– Net gains on disposal and consolidation of interests in businesses	37	**(2,344)**	(515)	(64)
– Impairment charges net of reversals	6	**796**	249	2,791
– Depreciation and amortisation		**4,375**	4,794	4,645
– Provisions (including exchange differences on provisions)	26	**535**	1,417	726
Utilisation of provisions	26	**(714)**	(627)	(585)
Utilisation of provision for post-retirement benefits	26	**(339)**	(370)	(230)
Change in inventories		**(482)**	292	526
Change in trade and other receivables		**(138)**	(794)	1,404
Change in trade and other payables		**421**	229	(431)
Other items [(b)]		**425**	(102)	(295)
		16,670	11,368	12,102

(b) Includes adjustments to add back mark to market losses of US$501 million (2016: gains of US$29 million; 2015: gains of US$227 million) mainly relating to derivative contracts transacted for operational purposes and not designated in a hedge relationship.

The notes on pages 118 to 201 are an integral part of these consolidated financial statements.

Group balance sheet

At 31 December

	Note	2017 US$m	2016 US$m
Non-current assets			
Goodwill	12	**1,037**	951
Intangible assets	13	**3,119**	3,279
Property, plant and equipment	14	**62,093**	58,855
Investments in equity accounted units	15	**4,486**	5,019
Inventories	16	**160**	143
Deferred tax assets	17	**3,395**	3,728
Trade and other receivables	18	**1,724**	1,342
Tax recoverable		**30**	38
Other financial assets (including loans to equity accounted units)	20	**510**	822
		76,554	74,177
Current assets			
Inventories	16	**3,472**	2,937
Trade and other receivables	18	**3,443**	3,460
Tax recoverable		**129**	98
Other financial assets (including loans to equity accounted units)	20	**1,084**	359
Cash and cash equivalents	21	**10,550**	8,201
		18,678	15,055
Assets of disposal groups held for sale	19	**494**	31
Total assets		**95,726**	89,263
Current liabilities			
Borrowings and other financial liabilities	22	**(904)**	(922)
Trade and other payables	25	**(7,061)**	(6,361)
Tax payable		**(1,985)**	(764)
Provisions including post-retirement benefits	26	**(1,275)**	(1,315)
		(11,225)	(9,362)
Non-current liabilities			
Borrowings and other financial liabilities	22	**(15,148)**	(17,470)
Trade and other payables	25	**(856)**	(789)
Tax payable		**(263)**	(274)
Deferred tax liabilities	17	**(3,628)**	(3,121)
Provisions including post-retirement benefits	26	**(13,367)**	(12,479)
		(33,262)	(34,133)
Liabilities of disposal groups held for sale	19	**(124)**	(38)
Total liabilities		**(44,611)**	(43,533)
Net assets		**51,115**	45,730
Capital and reserves			
Share capital			
– Rio Tinto plc	27	**220**	224
– Rio Tinto Limited	28	**4,140**	3,915
Share premium account		**4,306**	4,304
Other reserves	29	**12,284**	9,216
Retained earnings	29	**23,761**	21,631
Equity attributable to owners of Rio Tinto		**44,711**	39,290
Attributable to non-controlling interests		**6,404**	6,440
Total equity		**51,115**	45,730

The notes on pages 118 to 201 are an integral part of these consolidated financial statements.

The financial statements on pages 111 to 201 were approved by the directors on 28 February 2018 and signed on their behalf by

Jan du Plessis
Chairman

Jean-Sébastien Jacques
Chief executive

Chris Lynch
Chief financial officer

Group statement of changes in equity

Year ended 31 December 2017	Attributable to owners of Rio Tinto						
	Share capital (notes 27 and 28) US$m	Share premium account US$m	Other reserves (note 29) US$m	Retained earnings (note 29) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	**4,139**	**4,304**	**9,216**	**21,631**	**39,290**	**6,440**	**45,730**
Total comprehensive income for the year [(a)]	**-**	**-**	**3,078**	**8,613**	**11,691**	**248**	**11,939**
Currency translation arising on Rio Tinto Limited's share capital [(b)]	**310**	**-**	**-**	**-**	**310**	**-**	**310**
Dividends (note 11)	**-**	**-**	**-**	**(4,250)**	**(4,250)**	**(403)**	**(4,653)**
Share buy-back [(c)]	**(89)**	**-**	**4**	**(2,312)**	**(2,397)**	**-**	**(2,397)**
Companies no longer consolidated	**-**	**-**	**(124)**	**130**	**6**	**(8)**	**(2)**
Own shares purchased from Rio Tinto shareholders to satisfy share options [(d)]	**-**	**-**	**(64)**	**(18)**	**(82)**	**-**	**(82)**
Change in equity interest held by Rio Tinto	**-**	**-**	**-**	**43**	**43**	**(43)**	**-**
Treasury shares reissued and other movements	**-**	**2**	**-**	**-**	**2**	**-**	**2**
Equity issued to holders of non-controlling interests	**-**	**-**	**-**	**-**	**-**	**170**	**170**
Employee share options and other IFRS 2 charges to the income statement	**-**	**-**	**41**	**57**	**98**	**-**	**98**
Transfers and other movements	**-**	**-**	**133**	**(133)**	**-**	**-**	**-**
Closing balance	**4,360**	**4,306**	**12,284**	**23,761**	**44,711**	**6,404**	**51,115**

Year ended 31 December 2016	Attributable to owners of Rio Tinto						
	Share capital (notes 27 and 28) US$m	Share premium account US$m	Other reserves (note 29) US$m	Retained earnings (note 29) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	4,174	4,300	9,139	19,736	37,349	6,779	44,128
Total comprehensive income for the year [(a)]	-	-	(49)	4,553	4,504	209	4,713
Currency translation arising on Rio Tinto Limited's share capital [(b)]	(35)	-	-	-	(35)	-	(35)
Dividends	-	-	-	(2,725)	(2,725)	(352)	(3,077)
Companies no longer consolidated	-	-	-	-	-	8	8
Own shares purchased from Rio Tinto shareholders to satisfy share options [(d)]	-	-	(43)	(37)	(80)	-	(80)
Change in equity interest held by Rio Tinto [(e)]	-	-	108	40	148	(313)	(165)
Treasury shares reissued and other movements	-	4	-	-	4	-	4
Equity issued to holders of non-controlling interests	-	-	-	-	-	109	109
Employee share options and other IFRS 2 charges to the income statement	-	-	61	64	125	-	125
Closing balance	4,139	4,304	9,216	21,631	39,290	6,440	45,730

Year ended 31 December 2015	Attributable to owners of Rio Tinto						
	Share capital (notes 27 and 28) US$m	Share premium account US$m	Other reserves (note 29) US$m	Retained earnings (note 29) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	4,765	4,288	11,122	26,110	46,285	8,309	54,594
Total comprehensive loss for the year [(a)]	-	-	(2,020)	(423)	(2,443)	(1,306)	(3,749)
Currency translation arising on Rio Tinto Limited's share capital [(b)]	(503)	-	-	-	(503)	-	(503)
Dividends	-	-	-	(4,076)	(4,076)	(315)	(4,391)
Share buy-back	(88)	-	6	(1,946)	(2,028)	-	(2,028)
Companies no longer consolidated	-	-	-	-	-	5	5
Own shares purchased from Rio Tinto shareholders to satisfy share options [(d)]	-	-	(25)	(28)	(53)	-	(53)
Change in equity interest held by Rio Tinto	-	-	-	20	20	(17)	3
Treasury shares reissued and other movements	-	12	-	1	13	-	13
Equity issued to holders of non-controlling interests	-	-	-	-	-	103	103
Employee share options and other IFRS 2 charges to the income statement	-	-	56	78	134	-	134
Closing balance	4,174	4,300	9,139	19,736	37,349	6,779	44,128

(a) Refer to Group statement of comprehensive income for further details. Adjustments to other reserves include currency translation attributable to owners of Rio Tinto, other than that arising on Rio Tinto Limited share capital.
(b) Refer to note 1(d).
(c) In 2017, the total amount of US$2,397 million includes own shares purchased from the owners of Rio Tinto as per the cash flow statement of US$2,083 million and a financial liability recognised in respect of an irrevocable contract in place as at 31 December 2017 to cover the share buy-back programme.
(d) Net of contributions received from employees for share options.
(e) The restructure of Coal & Allied Industries Limited completed on 3 February 2016. The restructure involved the exchange of a 32.4 per cent interest in Hunter Valley Operations mine for an additional 20 per cent shareholding in Coal & Allied Industries Limited, increasing Rio Tinto's shareholding of Coal & Allied Industries Limited from 80 per cent to 100 per cent. Rio Tinto sold its 100 per cent interest in Coal & Allied Industries Limited on 1 September 2017.

Reconciliation with Australian Accounting Standards

The Group's financial statements have been prepared in accordance with IFRS, as defined in note 1, which differs in certain respects from the version of International Financial Reporting Standards that is applicable in Australia, referred to as Australian Accounting Standards (AAS).

Prior to 1 January 2004, the Group's financial statements were prepared in accordance with UK GAAP. Under IFRS, as defined in note 1, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US$557 million at 31 December 2017 (2016: US$561 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.

Outline of dual listed companies structure and basis of financial statements

The Rio Tinto Group
These are the financial statements of the Group formed through the merger of economic interests of Rio Tinto plc and Rio Tinto Limited ("Merger"), and presented by both Rio Tinto plc and Rio Tinto Limited as their consolidated financial statements in accordance with both UK and Australian legislation and regulations.

Merger terms
On 21 December 1995, Rio Tinto plc and Rio Tinto Limited, entered into a dual listed companies (DLC) merger. Rio Tinto plc is incorporated in the UK and listed on the London and New York Stock Exchanges and Rio Tinto Limited is incorporated in Australia and listed on the Australian Stock Exchange. The Merger was effected by contractual arrangements between the companies and amendments to Rio Tinto plc's Memorandum and Articles of Association and Rio Tinto Limited's Constitution.

As a result, Rio Tinto plc and Rio Tinto Limited and their respective groups operate together as a single economic enterprise, with neither assuming a dominant role. In particular, the arrangements:

- confer upon the shareholders of Rio Tinto plc and Rio Tinto Limited a common economic interest in both groups;
- provide for common boards of directors and a unified management structure;
- provide for equalised dividends and capital distributions; and
- provide for the shareholders of Rio Tinto plc and Rio Tinto Limited to take key decisions, including the election of directors, through an electoral procedure in which the public shareholders of the two companies in effect vote on a joint basis.

The Merger involved no change in the legal ownership of any assets of Rio Tinto plc or Rio Tinto Limited, nor any change in the ownership of any existing shares or securities of Rio Tinto plc or Rio Tinto Limited, nor the issue of any shares, securities or payment by way of consideration, save for the issue by each company of one special voting share to a trustee company which facilitates the joint electoral procedure for public shareholders. During 2002, each of the parent companies issued a DLC Dividend Share to facilitate the efficient management of funds within the DLC structure.

Accounting standards
The financial statements have been drawn up in accordance with IFRS as defined in note 1. The Merger was accounted for as a merger under UK GAAP. As permitted under the rules governing the transition to IFRS, which are set out in IFRS 1, the Group did not restate business combinations that occurred before the transition date of 1 January 2004. As a result, the DLC Merger of economic interests described above continues to be accounted for as a merger under IFRS as defined in note 1.

The main consequence of adopting merger rather than acquisition accounting is that the balance sheet of the merged Group includes the assets and liabilities of Rio Tinto plc and Rio Tinto Limited at their carrying values prior to the Merger, subject to adjustments to achieve uniformity of accounting policies, rather than at their fair values at the date of the Merger. For accounting purposes Rio Tinto plc and Rio Tinto Limited are viewed as a single public parent company (with their respective public shareholders being the shareholders in that single company). As a result, the amounts attributable to both Rio Tinto plc and Rio Tinto Limited public shareholders are included in the amounts attributed to owners of Rio Tinto on the balance sheet, income statement and statement of comprehensive income.

Australian Corporations Act
The financial statements are drawn up in accordance with an order, under section 340 of the Australian Corporations Act 2001, issued by the Australian Securities and Investments Commission (ASIC) on 14 December 2015. The main effect of the order is that the financial statements are prepared on the basis that Rio Tinto Limited, Rio Tinto plc and their respective controlled entities are treated as a single economic entity, and in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the European Union (EU IFRS) and include a reconciliation from EU IFRS to the Australian equivalents of IFRS (see above).

For further details of the ASIC Class Order relief see page 209.

Notes to the 2017 financial statements

1 Principal accounting policies

Corporate information
Rio Tinto's business is finding, mining and processing mineral resources. Major products are aluminium, copper, diamonds, gold, industrial minerals (borates, titanium dioxide and salt), iron ore, thermal and metallurgical coal and uranium. Activities span the world and are strongly represented in Australia and North America, with significant businesses also in Asia, Europe, Africa and South America.

Rio Tinto plc is incorporated in the UK and listed on the London and New York Stock Exchanges and Rio Tinto Limited is incorporated in Australia and listed on the Australian Stock Exchange. Rio Tinto plc's registered office is at 6 St James's Square, London SW1Y 4AD, UK. Rio Tinto Limited's registered office is at Level 7, 360 Collins Street, Melbourne, Victoria, Australia, 3000.

As described in the "Outline of dual listed companies structure and basis of financial statements" on page 117, for the purposes of preparing the IFRS compliant consolidated financial statements of the Rio Tinto Group, both the DLC companies, Rio Tinto plc and Rio Tinto Limited, are viewed as a single economic entity, and the interests of shareholders of both companies are presented as the equity interests of shareholders in the Rio Tinto Group.

These financial statements consolidate the accounts of Rio Tinto plc and Rio Tinto Limited (together "the Companies") and their respective subsidiaries (together "the Group") and include the Group's share of joint arrangements and associates as explained in note 1(b) below. The Group's financial statements for the year ended 31 December 2017 were authorised for issue in accordance with a directors' resolution on 28 February 2018.

Notes 33 to 36 provide more information on the Group's subsidiaries, joint arrangements and associates and note 40 provides information on the Group's transactions with other related parties.

The 2017 Annual report satisfies the obligations of Rio Tinto Limited to prepare consolidated accounts under Australian company law, as amended by an order issued by the Australian Securities and Investments Commission on 14 December 2015. The 2017 financial statements disclose on page 117 the effect of the adjustments to the Group's consolidated profit/(loss), consolidated total comprehensive income/(loss) and consolidated shareholders' funds as prepared under IFRS as defined below that would be required under the version of International Financial Reporting Standards that is applicable in Australia, referred to as Australian Accounting Standards (AAS).

The US dollar is the presentation currency used in these financial statements, as it most reliably reflects the Group's global business performance.

Basis of preparation of the financial statements
The basis of preparation and the accounting policies used in preparing the Group's 2017 financial statements are set out below.

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

– International Financial Reporting Standards as issued by the International Accounting Standards Board (IASB) and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC) both as adopted by the European Union (EU) and which are mandatory for EU reporting as at 31 December 2017; and
– International Financial Reporting Standards as issued by the IASB and interpretations issued from time to time by the IFRS IC which are mandatory as at 31 December 2017.

The above accounting standards and interpretations are collectively referred to as "IFRS" in this report. The Group has not early adopted any amendments, standards or interpretations that have been issued but are not yet mandatory.

Further detail on the going concern basis of accounting is included on page 110.

The Group's financial statements have been prepared on the basis of accounting policies consistent with those applied in the financial statements for the year ended 31 December 2016. The amendment to IAS 12: "Recognition of Deferred Tax Assets for Unrealised Losses", which is mandatory for 2017, clarifies the accounting treatment for deferred tax assets related to debt instruments measured at fair value. The Group already complied with this amendment. An amendment to IAS 7 "Statement of Cash Flows: Disclosure Initiative", which is mandatory for 2017, requires entities to provide disclosures about changes in liabilities arising from financing activities, including changes from financing cash flows and non-cash changes (such as foreign exchange gains or losses). The Group has expanded the net debt reconciliation in note 24 to comply with this amendment. Both of these amendments have been endorsed by the EU. The clarification in "Annual Improvements 2014 -2016 – IFRS 12 Disclosure of interests in other entities" regarding the scope of the standard is not relevant to the Group in 2017.

Mandatory in 2018
The impact on the Group's net assets of transition to the accounting pronouncements listed below which are mandatory in 2018 is currently expected to be immaterial; however, practice continues to develop on application of these standards.

IFRS 15 "Revenue from Contracts with Customers" (Endorsed by the EU and mandatory in 2018)
The core principle of IFRS 15 is that an entity recognises revenue related to the transfer of promised goods or services when control of the goods or services passes to the customer. The amount of revenue recognised should reflect the consideration to which the entity expects to be entitled in exchange for those goods or services.

The Group has reviewed a representative sample of sales contracts at all of its businesses to identify potential changes in: timing of revenue recognition, measurement of the amount of revenue and note disclosure between the current standard, IAS 18 Revenue, and IFRS 15. The following points were noted.

The Group sells a significant proportion of its products on Cost and Freight (CFR) or Cost, Insurance & Freight (CIF) Incoterms. This means that the Group is responsible for providing shipping services after the date at which control of the goods passes to the customer at the loading port. Under IAS 18, the Group recognises such shipping and other freight revenue and accrues the associated costs in full on loading whereas under IFRS 15, freight and, where applicable, insurance, are required to be accounted for as separate performance obligations with revenue recognised over time as the service is rendered. The impact is immaterial at 31 December 2017.

The nature of the products sold by the Group is such that adjustments may be made to price if the specification of the product sold does not conform to the terms specified in the sales contract. The Group has considered whether revenue arising from the sales of such products should be constrained under the IFRS 15 rules on variable consideration whereby revenue can only be recognised if it is highly unlikely to reverse. Any such constraints are immaterial at 31 December 2017.

Some of the Group's businesses provide volume discounts in certain circumstances which are recognised under IAS 18 based on the 'best estimate' method. The impact of further constraining such variable consideration under IFRS 15 was immaterial at 31 December 2017.

As explained on page 122, certain of the Group's products are provisionally priced at the date revenue is recognised, however, with the exception of copper, prices are generally finalised within the calendar quarter of the month of shipment. Such adjustments to revenue are dealt with under IFRS 9, "Financial Instruments" rather than IFRS 15 and therefore the IFRS 15 rules on variable consideration do not apply. These 'provisional pricing' adjustments will continue to be included in Consolidated sales revenue on the face of the income statement and changes to systems have been made to allow the amount of such adjustments to be disclosed by way of note to the financial statements for 2018 onwards.

Revenues from the sale of significant by-products, such as gold, are within the scope of IFRS 15 and will continue to be included in Consolidated sales revenue. Other operating income, for example, the sale of surplus power, which is incidental to the main revenue-generating activities of the operations, is outside of the scope of IFRS 15 and will continue to be treated as a credit to operating costs.

The Group has an 'uplift' arrangement with a partner in a joint operation whereby sales revenue is recognised under IAS 18 when the Group sells product from other operations to its partner to allow it to meet its contractual obligations when insufficient product is available in the jointly owned operation. The Group recognises an asset for product which will be receivable from the partner out of the partner's share of future production of the joint operation. Under IFRS 15, such transactions with partners in joint operations cannot be recognised as sales revenue. The impact on adoption will be to derecognise a receivable of US$235 million (US$164 million post tax) which has accumulated over prior years as a transition adjustment. There is no impact on the commercial arrangement or current or future cash flows. Sales revenue will be recognised in the income statement in the future when product is received from the partner and sold to a customer. The annual impact is expected to be immaterial (2017: US$15 million decrease in sales revenue).

The Group will adopt the modified transitional approach to implementation where any transitional adjustment is recognised in retained earnings at 1 January 2018 without adjustment of comparatives and the new standard will only be applied to contracts that remain in force at that date.

IFRS 9 "Financial Instruments"
(Endorsed by the EU and mandatory in 2018)
The standard includes a single approach for the classification of financial assets, based on a) the business model used to manage financial assets in order to generate cash flows, and b) the cash flow characteristics of those financial assets. A financial asset held at amortised cost must be managed under a business model where financial assets are held to collect contractual cash flows and have cash flows which relate solely to payments of principal and interest ('SPPI'). A financial asset held under a business model under which financial assets may be either held to collect contractual cash flows or sold will be classified as held at fair value through Other Comprehensive Income ("FVOCI") if the SPPI criteria are met. Any other financial assets will be held at fair value through profit or loss ("FVTPL") or FVOCI as appropriate.

The Group's strategy for investing surplus cash is to balance security, liquidity and return with a focus on security and liquidity. The Group manages its financial assets on a hold to collect basis with some minor exceptions. Money market funds (US$7.8 billion at 31 December 2017) are an important component of the Group's investment portfolio but do not meet the strict SPPI definition and will therefore be held at FVTPL under IFRS 9 (held at amortised cost under IAS 39). These money market funds continue to meet the cash and cash equivalents criteria of IAS 7 "Statement of Cash Flows". Similarly, provisionally priced receivables, as defined in note 1 (c) below will be held at FVTPL at 1 January 2018. Both of these types of financial asset have a short maturity and therefore this change in classification is expected to have minimal impact on measurement.

IFRS 9 also introduces the expected credit loss model for impairment of financial assets which replaces the incurred loss model used in IAS 39 "Financial instruments; recognition and measurement". Application of the IFRS 9 impairment model is expected to have minimal impact given the Group's credit risk management policies.

Lastly, the standard amends the rules on hedge accounting to align the accounting treatment with the risk management practices of the reporting entity. The Group will apply hedge accounting under IFRS 9 to the aluminium forward and option contracts embedded in the electricity purchase contracts of certain aluminium smelters. It is not currently possible to hedge account for these contracts under IAS 39. The increased application of hedge accounting will eliminate some of the income statement volatility arising from the mark to market of these embedded derivatives.

The Group will amortise the cost of hedging over the life of the hedging instrument. This will impact the Group's cross currency swaps as the cost is taken directly to the income statement under IAS 39. The impact is not expected to be material.

IFRIC 22 "Foreign Currency Transactions and Advance Consideration"
(Mandatory in 2018 and not yet endorsed by the EU)
The Interpretation covers those foreign currency transactions where an entity recognises a non-monetary asset or non-monetary liability arising from the payment or receipt of advance consideration before the entity recognises the related asset, expense or income. The Group has made some minor changes to systems and processes to comply with the pronouncement.

"Amendments to IFRS 2 Classification and Measurement of Share Based Payment Transactions", "Amendments to IAS 40 Investment Property and Annual Improvements to IFRS Standards 2014 -2016 Cycle" (Mandatory in 2018 and not endorsed by the EU)

"Amendments to IFRS 4 Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts" (Endorsed by the EU and mandatory in 2018)

Mandatory in 2019 and beyond

IFRS 16 "Leases" (Endorsed by the EU and mandatory in 2019)
Under the new standard, a lessee is in essence required to:

(a) recognise all right of use assets and lease liabilities, with the exception of short term (under 12 months) and low value leases, on the balance sheet. The liability is initially measured at the present value of future lease payments for the lease term. Where a lease contains an extension option, the lease payments for the extension period will be included in the IFRS 16 liability if the Group is reasonably certain that it will exercise the option. The liability includes variable lease payments that depend on an index or rate but excludes other variable lease payments. The right of use asset reflects the lease liability, initial direct costs and any lease payments made before the commencement date of the lease less any lease incentives and, where applicable, provision for dismantling and restoration.
(b) recognise depreciation of right of use assets and interest on lease liabilities in the income statement over the lease term.
(c) separate the total amount of cash paid into a principal portion (presented within financing activities) and interest portion (which the Group presents in operating activities) in the cash flow statement.

IFRS 16 will therefore result in higher assets and liabilities on the balance sheet. Information on the undiscounted amount of the Group's non-cancellable operating lease commitments as defined under IAS 17, the current leasing standard, as at 31 December 2017 is disclosed in note 31. The present value of the Group's operating lease payments as defined under the new standard will be recognised as lease liabilities on the balance sheet and included in net debt. There are a number of differences in definition between the two standards.

EBITDA, as disclosed in the Financial Information by Business Unit on page 206 will increase as the operating lease cost is charged against EBITDA under IAS 17 while under IFRS 16 the charge will be included in depreciation and interest which are excluded from EBITDA (although included in earnings).

Operating cash flow will increase under IFRS 16 as the element of cash paid attributable to the repayment of principal will be included in financing cash flow. The net increase/decrease in cash and cash equivalents will remain the same.

This standard must be implemented retrospectively, either with the restatement of comparatives or with the cumulative impact of application recognised as at 1 January 2019 under the modified retrospective approach. The Group currently expects to use the modified retrospective approach.

IFRS 16 contains a number of practical expedients, one of which permits the retention of the classification of existing contracts as leases under current accounting standards instead of reassessing whether existing contracts are or contain a lease at the date of initial application of the new standard.

Notes to the 2017 financial statements
continued

1 Principal accounting policies continued

Under the modified retrospective approach, the right of use asset may be deemed to be equivalent to the liability at transition or calculated retrospectively as at inception of the lease, on a lease-by-lease basis.

IFRS 16 is expected to be the most significant of the new accounting pronouncements for the Group in terms of impact on the primary statements and on systems and processes.

To date, work has focused on the identification and understanding of the provisions of the standard which will most impact the Group, establishing the population of lease contracts which will extend beyond 1 January 2019, the provision of training, impact analysis, discount rate determination, adapting the contract review process where required, and the review of system requirements. In 2018, work on these issues and their resolution will continue, system requirements will be addressed and work on the accounting processes will commence. A significant proportion by value of the Group's current operating lease commitments relate to dry bulk vessels and offices and effort to date has focussed on these areas.

IFRIC 23 "Uncertainty over Income Tax Treatments"
(Mandatory in 2019 and not yet endorsed by the EU)
The method of calculating provisions for uncertain tax positions will be subject to revision, as a result of this interpretation. The Group currently recognises provisions based on the most likely amount of the liability, if any, for each uncertain tax position.

The interpretation requires a probability weighted average approach to be taken for tax issues for which there are a wide range of possible outcomes. For tax issues with a binary outcome, the most likely amount method should continue to be used.

The Group is currently evaluating the impact of this pronouncement.

"Amendments to IFRS 9: Prepayment Features with Negative Compensation", "Amendments to IAS 28: Long-term Interests in Associates and Joint Ventures", "Annual Improvements to IFRS Standards 2015-2017 Cycle" and "Amendments to IAS19 – Plan Amendment, Curtailment or Settlement" (Mandatory in 2019 and not yet endorsed by the EU)

The Group is currently evaluating the impact of these pronouncements.

IFRS 17 "Insurance Contracts"
(Mandatory in 2021 and not yet endorsed by the EU)
The standard provides consistent principles for all aspects of accounting for insurance contracts. The Group will evaluate the impact of this pronouncement in due course.

Judgments in applying accounting policies and key sources of estimation uncertainty
The preparation of the financial statements requires management to use judgment in applying accounting policies and in making critical accounting estimates.

These judgments and estimates are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements. Areas of judgment in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements and key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are noted below and further information is contained in the accounting policies and/or the notes to the financial statements.

These areas of judgment and estimation are discussed further in critical accounting policies and estimates on pages 128 to 130. The quantum of ore reserves and mineral resources impacts many of these areas and the basis of calculation is explained below. Information on less material judgments and sources of estimation uncertainty has been incorporated into the relevant accounting policy notes.

Areas of judgment in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements are:

- Impairment of non-current assets - determination of Cash Generating Units (CGUs) and assessment of indicators of impairment – note 1(e) and (i), note 6, note 12 and note 13;
- Estimation of asset lives – whether certain assets are indefinite lived - note 1(e) and (i);
- Provision for onerous contracts – determination of assets dedicated to a contract - note 1(i);
- Close-down, restoration and environmental obligations – determining when an estimate is sufficiently reliable to update - note 1(k);
- Deferral of stripping costs – judgment on components/strip ratios and separate or integrated multiple pit mines - note 1(h);
- Uncertain tax positions – technical interpretation of tax law and the use of the most likely scenario for provision - note 1(m), note 9 and note 31;
- Recoverability of potential deferred tax assets – recognition of deferred tax assets for loss making operations - note 17(c), (e) and (f);
- Identification of functional currencies – different companies may make different judgments based on similar facts - note 1(d);
- Basis of consolidation – judgment as to when the Group has control, joint control or significant influence - notes 33 to 36;
- Contingencies –assessing the probability of any loss and whether it is possible to quantify any loss - note 31;
- Exclusions from underlying earnings – judgment on items to be excluded on grounds of nature or size - note 2.

Key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are:

- Impairment of non-current assets - review of asset carrying values, impairment charges and reversals and the recoverability of goodwill – determination of discounted cash flows - note1(e) and (i), note 6, note 12 and note 13;
- Provision for onerous contracts - cash flow estimates and the discount rate to be used – note 1(i);
- Close-down, restoration and environmental cost obligations – estimation of costs and the timing of expenditure – note 1(k) and note 26;
- Uncertain tax positions – estimating the potential exposures for each possible scenario - note 1(m), note 9 and note 31;
- Recoverability of potential deferred tax assets – determination of cash flows - note 1 (m), note 17 (c), (e) and (f);
- Estimation of obligations for post-employment costs – note 1(n) and note 44;
- Contingencies – estimate of possible liability - note 31.

Ore reserves and mineral resources
Estimates of ore reserves and, in some cases, mineral resources can impact: depreciation and amortisation rates; the carrying values of intangible assets and property, plant and equipment; deferred stripping costs; provisions for close-down and restoration costs; and the recovery of deferred tax assets.
The Group estimates its ore reserves and mineral resources based on information compiled by Competent Persons as defined in accordance with the Joint Ore Reserves Committee (JORC) code (see note 1(j)).

The estimation of ore reserves and mineral resources requires judgment to interpret available geological data and subsequently to select an appropriate mining method and then to establish an extraction schedule. Estimation requires assumptions about future commodity prices and demand, exchange rates, production costs, transport costs, close-down and restoration costs, recovery rates and discount rates and, in some instances, the renewal of mining licences.

There are many uncertainties in the estimation process and assumptions that are valid at the time of estimation may change significantly when new information becomes available. New geological or economic data, or unforeseen operational issues may change estimates of ore reserves and mineral resources.

The Group uses judgment as to when to include mineral resources in accounting estimates, for example, the use of mineral resources in the Group's depreciation policy is described in note 1(i) below and in the determination of the date of closure as described in note 1(k). The unaudited statement of ore reserves is included on page 228 and of mineral resources on page 234.

(a) Accounting convention
The financial information included in the financial statements for the year ended 31 December 2017, and for the related comparative periods, has been prepared under the historical cost convention, as modified by the revaluation of certain derivative contracts and financial assets, the impact of fair value hedge accounting on the hedged item and the accounting for post-employment assets and obligations. The Group's policy in respect of these items is set out in the notes below.

The Group's financial statements are presented in US dollars and all values are rounded to the nearest million (US$m) unless otherwise stated.

Where applicable, comparatives have been adjusted to measure or present them on the same basis as current period figures.

(b) Basis of consolidation (notes 33 to 36)
All intragroup transactions and balances have been eliminated on consolidation.

Where necessary, adjustments are made to the locally reported assets, liabilities, and results of subsidiaries, joint arrangements and associates to bring their accounting policies in line with those used by the Group.

Subsidiaries: Subsidiaries are entities controlled by either of the Companies. Control exists where either of the Companies has: power over the entities, that is, existing rights that give it the current ability to direct the relevant activities of the entities (those that significantly affect the Companies' returns); exposure, or rights, to variable returns from its involvement with the entities; and the ability to use its power to affect those returns. Subsidiaries are fully consolidated from the date on which the Group obtains control. They are deconsolidated from the date that control ceases.

Joint arrangements: A joint arrangement is an arrangement in which two or more parties have joint control. Joint control is the contractually agreed sharing of control such that decisions about the relevant activities of the arrangement (those that significantly affect the Companies' returns) require the unanimous consent of the parties sharing control. The Group has two types of joint arrangements:

Joint operations (JO): A JO is a joint arrangement in which the parties that share joint control have rights to the assets, and obligations for the liabilities, relating to the arrangement. This includes situations where the parties benefit from the joint activity through a share of the output, rather than by receiving a share of the results of trading. In relation to its interest in a JO, the Group recognises: its share of assets and liabilities; revenue from the sale of its share of the output and its share of any revenue generated from the sale of the output by the JO; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to the Group's interest in the JO. These amounts are recorded in the Group's financial statements on the appropriate lines.

Joint ventures (JV): A JV is a joint arrangement in which the parties that share joint control have rights to the net assets of the arrangement. JVs are accounted for using the equity accounting method.

Other unincorporated arrangements: In some cases, the Group participates in unincorporated arrangements and has rights to its share of the assets and obligations for its share of the liabilities of the arrangement rather than a right to a net return, but does not share joint control. In such cases, the Group recognises: its share of assets and liabilities; revenue from the sale of its share of the output and its share of any revenue generated from the sale of the output by the unincorporated arrangement; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to the Group's interest in the arrangement. These amounts are recorded in the Group's financial statements on the appropriate lines.

Associates: An associate is an entity that is neither a subsidiary nor a joint arrangement, over which the Group has significant influence. Significant influence is presumed to exist where there is neither control nor joint control and the Group has over 20 per cent of the voting rights, unless it can be clearly demonstrated that this is not the case. Significant influence can arise where the Group holds less than 20 per cent of the voting rights if it has the power to participate in the financial and operating policy decisions affecting the entity. Investments in associates are accounted for using the equity accounting method.

The Group uses the term "equity accounted units" (EAUs) to refer to associates and JVs collectively. Under the equity accounting method the investment is recorded initially at cost to the Group, including any goodwill on acquisition. In subsequent periods the carrying amount of the investment is adjusted to reflect the Group's share of the EAUs' retained post-acquisition profit or loss and other comprehensive income. Long term loans to EAUs that in substance form part of the Group's net investment (quasi equity loans) are financial assets but are included in the line "Investments in equity accounted units" on the face of the balance sheet. When the Group's share of losses in an EAU equals or exceeds its interest in the EAU, including such long term loans and any other unsecured receivables, the Group does not recognise further losses, unless it has incurred legal or constructive obligations to continue to make payments on behalf of the EAU.

Acquisitions (note 37)
Under the "acquisition" method of accounting for business combinations, the purchase consideration is allocated to the identifiable assets acquired and liabilities and contingent liabilities assumed (the identifiable net assets) on the basis of their fair value at the date of acquisition, which is the date on which control is obtained.

The consideration transferred for the acquisition of a subsidiary comprises the fair values of the assets transferred, the liabilities incurred to the former owners of the acquiree, the fair value of any asset or liability resulting from a contingent consideration arrangement and any equity interests issued by the Group. Costs related to the acquisition of a subsidiary are expensed as incurred.

The excess of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the identifiable net assets acquired is recorded as goodwill. Any shortfall is immediately recognised in the income statement.

Non-controlling interests in the acquiree, that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation, are recognised by the Group in one of two ways with the choice being available on an acquisition-by-acquisition basis. They can be measured at either the non-controlling interest's proportionate share of the acquiree's identifiable net assets or at fair value. In some cases, non-controlling interests may be treated as equity options and valued on that basis. Goodwill (see note (e)) and amounts attributable to non-controlling interests will differ depending on the basis used.

Where the Group has a previously held non-controlling interest in the acquiree, this is remeasured to fair value at the date control is obtained with any gain or loss recognised in the income statement. The cash cost of the share purchase that gives rise to control is included within "Investing activities" in the cash flow statement.

Notes to the 2017 financial statements
continued

1 Principal accounting policies continued

Where the Group increases its ownership interest in a subsidiary, the difference between the purchase price and the carrying value of the share of net assets acquired is recorded in equity. The cash cost of such purchases is included within "Financing activities" in the cash flow statement.

Provisional fair values allocated at a reporting date are finalised within 12 months of the acquisition date.

The results of businesses acquired during the year are included in the consolidated financial statements from the date on which control, joint control or significant influence is obtained.

Disposals (note 37)

Individual non-current assets or "disposal groups" (that is, groups of assets and liabilities) to be disposed of by sale or otherwise in a single transaction are classified as "held for sale" if the following criteria are met at the period end:

- the carrying amount will be recovered principally through a sale transaction rather than through continuing use; and
- the disposal group is available for immediate sale in its present condition subject only to terms that are usual and customary for such sales; and
- the sale is highly probable.

Disposal groups held for sale are carried at the lower of their carrying amount and fair value less costs to sell. The comparative balance sheet is not restated. Disposal groups acquired with a view to resale are held at the fair value determined at the acquisition date. For these assets acquired for resale no profits or losses are recognised between the acquisition date and the disposal date, unless there is a subsequent impairment.

On classification as held for sale, the assets are no longer depreciated and, if applicable, equity accounting ceases.

If control is lost, any interest in the entity retained by the Group is remeasured to its fair value and the change in carrying amount is recognised in the income statement. The retained interest may be subsequently accounted for as a joint venture, joint operation, associate or financial asset depending on the facts. Certain amounts previously recognised in other comprehensive income in respect of the entity disposed of, or for which control, joint control or significant influence has ceased, may be recycled to the income statement. The cash proceeds of disposals are included within "Investing activities" in the cash flow statement.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for in equity. The cash proceeds of such disposals are included within "Financing activities" in the cash flow statement.

(c) Sales revenue
Sales revenue comprises sales to third parties. All shipping and handling costs incurred by the Group are recognised as operating costs. If the Group is acting solely as an agent, amounts billed to customers for shipping and handling are offset against the relevant costs. Revenue from services is recognised as those services are rendered to, and accepted by, the customer.

Sales revenue excludes any applicable sales taxes. Mining royalties payable are presented as an operating cost or, where they are in substance a profit-based tax, within taxation.

Revenues from the sale of significant by-products, such as gold, are included in sales revenue. Other operating income, incidental to the main revenue-generating activities of the operations, is treated as a credit to operating costs.

Third-party commodity swap arrangements principally for delivery and receipt of smelter grade alumina are offset within operating costs.

Sales of copper concentrate are stated at their invoiced amount which is net of treatment and refining charges.

Sales revenue is only recognised on individual sales when all of the following criteria are met:

- the significant risks and rewards of ownership of the product have been transferred to the buyer;
- neither continuing managerial involvement to the degree usually associated with ownership, nor effective control over the goods sold, has been retained;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the sale will flow to the Group; and
- the costs incurred or to be incurred in respect of the sale can be measured reliably.

In most instances, sales revenue is recognised when the product is delivered to the destination specified by the customer, which is typically the vessel on which it will be shipped, the destination port or the customer's premises.

The Group's products are sold to customers under contracts which vary in tenure and pricing mechanisms, including some volumes sold in the spot market. Sales revenue may be subject to adjustment if the product specification does not conform to the terms specified in the sales contract.

Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms, with a smaller proportion of iron ore volumes being sold on the spot market.

Certain of the Group's products are provisionally priced at the date revenue is recognised, however, with the exception of copper, prices are generally finalised within the calendar quarter of the month of shipment. The final selling price is based on the price for the quotational period stipulated in the contract. Substantially all iron ore and aluminium sales are reflected at final prices in the results for the period. Final prices for copper concentrate are normally determined between 30 to 180 days after delivery to the customer. The change in value of the embedded pricing derivative included in the receivable is based on relevant forward market prices and is included in sales revenue.

Information on provisionally priced sales contracts is included in note 30.

(d) Currency translation
The functional currency for each entity in the Group, and for joint arrangements and associates, is the currency of the primary economic environment in which that entity operates. For many of these entities, this is the currency of the country in which they are located. Transactions denominated in other currencies are converted to the functional currency at the exchange rate ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at period-end exchange rates.

The Group's financial statements are presented in US dollars, as that presentation currency most reliably reflects the global business performance of the Group as a whole. On consolidation, income statement items for each entity are translated from the functional currency into US dollars at average rates of exchange, except for material one-off transactions, which are translated at the rate prevailing on the transaction date. Balance sheet items are translated into US dollars at period-end exchange rates.

Exchange differences arising on the translation of the net assets of entities with functional currencies other than the US dollar are recognised directly in the currency translation reserve. These translation differences are shown in the statement of comprehensive income, with the exception of translation adjustments relating to Rio Tinto Limited's share capital which are shown in the statement of changes in equity.

Where an intragroup balance is, in substance, part of the Group's net investment in an entity, exchange gains and losses on that balance are taken to the currency translation reserve.

Except as noted above, or in note 1(p) relating to derivative contracts, all other exchange differences are charged or credited to the income statement in the year in which they arise.

(e) Goodwill and intangible assets (excluding exploration and evaluation expenditure) (notes 12 and 13)
Goodwill is not amortised; it is tested annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment. Investments in EAUs, including any goodwill, are tested for impairment as a single asset when a trigger for impairment has been identified. The Group's impairment policy is explained in note 1(i).

Purchased intangible assets are initially recorded at cost. Finite-life intangible assets are amortised over their useful economic lives on a straight-line or units of production basis, as appropriate. Intangible assets that are deemed to have indefinite lives and intangible assets that are not yet ready for use are not amortised; they are reviewed annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment in accordance with accounting policy note 1(i).

The Group considers that intangible assets have indefinite lives when, based on an analysis of all of the relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate cash flows for the Group. The factors considered in making this judgment include the existence of contractual rights for unlimited terms or evidence that renewal of the contractual rights without significant incremental cost can be expected for indefinite future periods in view of the Group's investment intentions. The life cycles of the products and processes that depend on the asset are also considered.

(f) Exploration and evaluation (note 13)
Exploration and evaluation expenditure comprises costs that are directly attributable to:

- researching and analysing existing exploration data;
- conducting geological studies, exploratory drilling and sampling;
- examining and testing extraction and treatment methods; and/or
- compiling various studies (order of magnitude, pre-feasibility and feasibility).

Exploration expenditure relates to the initial search for deposits with economic potential. Expenditure on exploration activity undertaken by the Group is not capitalised.

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. Capitalisation of evaluation expenditure commences when there is a high degree of confidence that the Group will determine that a project is commercially viable, that is the project will provide a satisfactory return relative to its perceived risks, and therefore it is considered probable that future economic benefits will flow to the Group. The Group's view is that a high degree of confidence is greater than "more likely than not" (that is, greater than 50 per cent certainty) and less than "virtually certain" (that is, less than 90 per cent certainty).

Assessing whether there is a high degree of confidence that the Group will ultimately determine that an evaluation project is commercially viable requires a significant degree of judgment and consideration of all relevant factors such as the nature and objective of the project; the project's current stage; project timeline; current estimates of the project's net present value, including sensitivity analyses for the key assumptions; and the main risks of the project. Development expenditure incurred prior to the decision to proceed is subject to the same criteria for capitalisation, being a high degree of confidence that the Group will ultimately determine that a project is commercially viable.

In some cases, undeveloped projects are regarded as successors to orebodies, smelters or refineries currently in production. Where this is the case, it is intended that these will be developed and go into production when the current source of ore is exhausted or when existing smelters or refineries are closed.

Ore reserves may be declared for an undeveloped mining project before its commercial viability has been fully determined. Evaluation costs may continue to be capitalised during the period between declaration of ore reserves and approval to mine as further work is undertaken in order to refine the development case to maximise the project's returns.

In accordance with IFRS 6 "Exploration for and Evaluation of Mineral Resources", the criteria for the capitalisation of evaluation costs are applied consistently from period to period.

The carrying values of capitalised evaluation expenditure for undeveloped mining projects (projects for which the decision to mine has not yet been approved at the appropriate authorisation level within the Group) are reviewed at each reporting date for indicators of impairment in accordance with IFRS 6, and when indicators are identified are tested in accordance with IAS 36. Evaluation expenditure for non-mining projects is reviewed and tested under IAS 36.

In the case of undeveloped mining projects which have arisen through acquisition, the allocation of the purchase price consideration may result in undeveloped properties being recognised at an earlier stage of project evaluation compared with projects arising from the Group's exploration and evaluation programme. Subsequent expenditure on acquired undeveloped projects is only capitalised if it meets the high degree of confidence threshold discussed above.

The impairment review is based on a status report summarising the Group's intentions to recover value through development, sale or other partnering arrangements. If a project does not prove viable and is cancelled, all irrecoverable costs associated with the project net of any previously recorded impairment provisions are charged to the income statement.

(g) Property, plant and equipment (note 14)
Once an undeveloped mining project has been determined as commercially viable and approval to mine has been given, expenditure other than that on land, buildings, plant, equipment and capital work in progress is capitalised under "Mining properties and leases" together with any amount transferred from "Exploration and evaluation".

Costs which are necessarily incurred whilst commissioning new assets, in the period before they are capable of operating in the manner intended by management, are capitalised. Development costs incurred after the commencement of production are capitalised to the extent they are expected to give rise to a future economic benefit. Interest on borrowings related to construction or development projects is capitalised, at the rate payable on project-specific debt if applicable or at the Group or subsidiary's cost of borrowing if not, until the point when substantially all the activities that are necessary to make the asset ready for its intended use are complete. It may be appropriate to use a subsidiary's cost of borrowing when the debt was negotiated based on the financing requirements of that subsidiary.

Property, plant and equipment is stated at cost, as defined in IAS 16, less accumulated depreciation and accumulated impairment losses. The cost of property, plant and equipment includes, where applicable, the estimated close-down and restoration costs associated with the asset.

Notes to the 2017 financial statements
continued

1 Principal accounting policies continued

(h) Deferred stripping (note 14)
In open pit mining operations, overburden and other waste materials must be removed to access ore from which minerals can be extracted economically. The process of removing overburden and waste materials is referred to as stripping. During the development of a mine (or, in some instances, pit; see below), before production commences, stripping costs related to a component of an orebody are capitalised as part of the cost of construction of the mine (or pit) and are subsequently amortised over the life of the mine (or pit) on a units of production basis.

Where a mine operates several open pits that are regarded as separate operations for the purpose of mine planning, initial stripping costs are accounted for separately by reference to the ore from each separate pit. If, however, the pits are highly integrated for the purpose of mine planning, the second and subsequent pits are regarded as extensions of the first pit in accounting for stripping costs. In such cases, the initial stripping (i.e. overburden and other waste removal) of the second and subsequent pits is considered to be production phase stripping (see below).

The Group's judgment as to whether multiple pit mines are considered separate or integrated operations depends on each mine's specific circumstances.

The following factors would point towards the initial stripping costs for the individual pits being accounted for separately:

- If mining of the second and subsequent pits is conducted consecutively following that of the first pit, rather than concurrently.
- If separate investment decisions are made to develop each pit, rather than a single investment decision being made at the outset.
- If the pits are operated as separate units in terms of mine planning and the sequencing of overburden removal and ore mining, rather than as an integrated unit.
- If expenditures for additional infrastructure to support the second and subsequent pits are relatively large.
- If the pits extract ore from separate and distinct orebodies, rather than from a single orebody.

If the designs of the second and subsequent pits are significantly influenced by opportunities to optimise output from several pits combined, including the co-treatment or blending of the output from the pits, then this would point to treatment as an integrated operation for the purposes of accounting for initial stripping costs.

The relative importance of each of the above factors is considered in each case.

In order for production phase stripping costs to qualify for capitalisation as a stripping activity asset, three criteria must be met:

- It must be probable that there will be an economic benefit in a future accounting period because the stripping activity has improved access to the orebody;
- It must be possible to identify the "component" of the orebody for which access has been improved; and
- It must be possible to reliably measure the costs that relate to the stripping activity.

A "component" is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).

Production phase stripping can give rise to two benefits: the extraction of ore in the current period and improved access to ore which will be extracted in future periods. When the cost of stripping which has a future benefit is not distinguishable from the cost of producing current inventories, the stripping cost is allocated to each of these activities based on a relevant production measure using a life-of-component strip ratio. The ratio divides the tonnage of waste mined for the component for the period either by the quantity of ore mined for the component or by the quantity of minerals contained in the ore mined for the component. In some operations, the quantity of ore is a more appropriate basis for allocating costs, particularly where there are significant by-products. Stripping costs for the component are deferred to the extent that the current period ratio exceeds the life of component ratio. The stripping activity asset is depreciated on a "units of production" basis based on expected production of either ore or minerals contained in the ore over the life of the component unless another method is more appropriate.

The life-of-component ratios are based on the ore reserves of the mine (and for some mines, other mineral resources) and the annual mine plan; they are a function of the mine design and, therefore, changes to that design will generally result in changes to the ratios. Changes in other technical or economic parameters that impact the ore reserves (and for some mines, other mineral resources) may also have an impact on the life-of-component ratios even if they do not affect the mine design. Changes to the ratios are accounted for prospectively.

It may be the case that subsequent phases of stripping will access additional ore and that these subsequent phases are only possible after the first phase has taken place. Where applicable, the Group considers this on a mine-by-mine basis. Generally, the only ore attributed to the stripping activity asset for the purposes of calculating a life-of-component ratio, and for the purposes of amortisation, is the ore to be extracted from the originally identified component.

Deferred stripping costs are included in "Mining properties and leases" within "Property, plant and equipment" or within "Investments in equity accounted units", as appropriate. Amortisation of deferred stripping costs is included in "Depreciation of property, plant and equipment" within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

(i) Depreciation and impairment (notes 13 and 14)

Depreciation of non-current assets
Property, plant and equipment is depreciated over its useful life, or over the remaining life of the mine or smelter or refinery if that is shorter and there is no reasonable alternative use for the asset by the Group.

The useful lives of the major assets of a cash-generating unit are often dependent on the life of the orebody to which they relate. Where this is the case, the lives of mining properties, and their associated refineries, concentrators and other long-lived processing equipment are generally limited to the expected life of the orebody. The life of the orebody, in turn, is estimated on the basis of the life-of-mine plan. Where the major assets of a cash-generating unit are not dependent on the life of a related orebody, management applies judgment in estimating the remaining service potential of long-lived assets. Factors affecting the remaining service potential of smelters include, for example, smelter technology and electricity purchase contracts when power is not sourced from the company's, or in some cases a local government's, renewably sourced electricity generating capacity.

The useful lives and residual values for material assets and categories of assets are reviewed annually and changes are reflected prospectively.

Depreciation commences when an asset is available for use. The major categories of property, plant and equipment are depreciated on a units of production and/or straight-line basis as follows:

Units of production basis
For mining properties and leases and certain mining equipment, consumption of the economic benefits of the asset is linked to production. Except as noted below, these assets are depreciated on the units of production basis.

In applying the units of production method, depreciation is normally calculated based on production in the period as a percentage of total expected production in current and future periods based on ore reserves and, for some mines, other mineral resources. Other mineral resources may be included in the calculations of total expected production in limited circumstances where there are very large areas of contiguous mineralisation, for which the economic viability is not sensitive to likely variations in grade, as may be the case for certain iron ore, bauxite and industrial minerals deposits and where there is a high degree of confidence that the other mineral resources can be extracted economically. This would be the case when the other mineral resources do not yet have the status of ore reserves merely because the necessary detailed evaluation work has not yet been performed and the responsible technical personnel agree that inclusion of a proportion of measured and indicated resources in the calculation of total expected production is appropriate based on historical reserve conversion rates.

The required level of confidence is unlikely to exist for minerals that are typically found in low-grade ore (as compared with the above), such as copper or gold. In these cases, specific areas of mineralisation have to be evaluated in considerable detail before their economic status can be predicted with confidence.

Where measured and indicated resources are used in the calculation of depreciation for infrastructure, primarily rail and port, which will benefit current and future mines, then the measured and indicated resources may relate to mines which are currently in production or to mines where there is a high degree of confidence that they will be brought into production in the future. The quantum of mineral resources is determined taking into account future capital costs as required by the JORC code. The depreciation calculation, however, applies to current mines only and does not take into account future development costs for mines which are not yet in production. Measured and indicated resources are currently incorporated into depreciation calculations in the Group's Australian iron ore business.

Straight-line basis

Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight-line basis.

Impairment charges/reversals of non-current assets

Impairment charges and reversals are assessed at the level of cash-generating units which, in accordance with IAS 36 "Impairment of Assets", are identified as the smallest identifiable asset or group of assets that generate cash inflows, which are largely independent of the cash inflows from other assets. Separate cash-generating units are identified where an active market exists for intermediate products, even if the majority of those products are further processed internally. Impairment of financial assets is evaluated in accordance with IAS 39.

In some cases, individual business units consist of several operations with independent cash-generating streams which constitute separate cash-generating units.

Goodwill acquired through business combinations is allocated to the cash-generating unit or groups of cash-generating units that are expected to benefit from the related business combination, and tested for impairment at the lowest level within the Group at which goodwill is monitored for internal management purposes. All goodwill, intangible assets that have an indefinite life and intangible assets that are not ready for use are tested annually for impairment as at 30 September, regardless of whether there has been an impairment trigger, or more frequently if events or changes in circumstances indicate a potential impairment.

Property, plant and equipment and intangible assets with finite lives are reviewed for impairment if there is an indication that the carrying amount may not be recoverable. The Group conducts an internal review of the asset values annually as at 30 September which is used as a source of information to assess for indications of impairment or reversal of previously recognised impairment losses. External factors, such as changes in forecasted commodity prices, costs and other market factors as well as internal factors such as cancellation of a project or reduced project scope, are also monitored to assess for indications of impairment or reversal of previously recognised impairment losses. If any such indication exists then an impairment review is undertaken; the recoverable amount is assessed by reference to the higher of value in use (being the net present value of expected future cash flows of the relevant cash-generating unit in its current condition) and fair value less costs of disposal (FVLCD).

When the recoverable amount of the cash-generating unit is measured by reference to FVLCD, this amount is further classified in accordance with the fair value hierarchy for observable market data that is consistent with the unit of account for the cash-generating unit being tested. The Group considers that the best evidence of FVLCD is the value obtained from an active market or binding sale agreement and, in this case, the recoverable amount is classified in the fair value hierarchy as level 1. When FVLCD is based on quoted prices for equity instruments but adjusted to reflect factors such as a lack of liquidity in the market, the recoverable amount is classified as level 2 in the fair value hierarchy. No cash-generating units are currently assessed for impairment by reference to a recoverable amount based on FVLCD classified as level 1 or level 2.

Where unobservable inputs are material to the measurement of the recoverable amount, FVLCD is based on the best information available to reflect the amount the Group could receive for the cash-generating unit in an orderly transaction between market participants at the measurement date. This is often estimated using discounted cash flow techniques and is classified as level 3 in the fair value hierarchy.

Where the recoverable amount is assessed using FVLCD based on discounted cash flow techniques, the resulting estimates are based on detailed life-of-mine and/or long-term production plans. These may include anticipated expansions which are at the evaluation stage of study.

The cash flow forecasts for FVLCD purposes are based on management's best estimates of expected future revenues and costs, including the future cash costs of production, capital expenditure, and closure, restoration and environmental costs. For the purposes of determining FVLCD from a market participant's perspective, the cash flows incorporate management's price and cost assumptions in the short and medium term. In the longer term, operating margins are assumed to remain constant where appropriate; as it is considered unlikely that a market participant would prepare detailed forecasts over a longer term. The cash flow forecasts may include net cash flows expected to be realised from the extraction, processing and sale of material that does not currently qualify for inclusion in ore reserves. Such non-reserve material is only included when there is a high degree of confidence in its economic extraction. This expectation is usually based on preliminary drilling and sampling of areas of mineralisation that are contiguous with existing ore reserves. Typically, the additional evaluation required to achieve reserves status for such material has not yet been done because this would involve incurring evaluation costs earlier than is required for the efficient planning and operation of the mine.

As noted above, cost levels incorporated in the cash flow forecasts for FVLCD purposes are based on the current life-of-mine plan or long-term production plan for the cash-generating unit. This differs from value in use which requires future cash flows to be estimated for the asset in its current condition and therefore does not include future cash flows associated with improving or enhancing an asset's performance. Anticipated enhancements to assets may be included in FVLCD calculations and, therefore, generally result in a higher value.

Where the recoverable amount of a cash-generating unit is dependent on the life of its associated orebody, expected future cash flows reflect the current life of mine and/or long-term production plans, which are based on detailed research, analysis and iterative modelling to optimise the level of return from investment, output and sequence of extraction. The mine plan takes account of all relevant characteristics of the orebody, including waste-to-ore ratios, ore grades, haul distances, chemical and metallurgical properties of the ore impacting process recoveries and capacities of processing equipment that can be used. The life-of-mine plan and/or long term production plans are, therefore, the basis for forecasting production output and production costs in each future year.

Notes to the 2017 financial statements
continued

1 Principal accounting policies continued

Forecast cash flows for ore reserve estimation for JORC purposes are generally based on Rio Tinto's commodity price forecasts, which assume short-term market prices will revert to the Group's assessment of the long-term price, generally over a period of three to five years. For most commodities, these forecast commodity prices are derived from a combination of analyses of the marginal costs of the producers and of the incentive price of these commodities. These assessments often differ from current price levels and are updated periodically. The Group does not believe that published medium and long-term forward prices necessarily provide a good indication of future levels because they tend to be strongly influenced by spot prices. The price forecasts used for ore reserve estimation are generally consistent with those used for impairment testing unless management deems that in certain economic environments, a market participant would not assume Rio Tinto's view on prices, in which case in preparing FVLCD impairment calculations management estimates the assumptions that a market participant would be expected to use.

Forecast future cash flows of a cash-generating unit take into account the sales prices under existing sales contracts.

The discount rates applied to the future cash flow forecasts represent an estimate of the rate the market would apply having regard to the time value of money and the risks specific to the asset for which the future cash flow estimates have not been adjusted. The Group's weighted average cost of capital is generally used as a starting point for determining the discount rates, with appropriate adjustments for the risk profile of the countries in which the individual cash-generating units operate. For final feasibility studies and ore reserve estimation, internal hurdle rates, which are generally higher than the Group's weighted average cost of capital, are used. For developments funded with project finance, the debt component of the weighted average cost of capital may be calculated by reference to the specific interest rate of the project finance and anticipated leverage of the project.

For operations with a functional currency other than the US dollar, the impairment review is undertaken in the relevant functional currency. In estimating FVLCD, internal forecasts of exchange rates take into account spot exchange rates, historical data and external forecasts, and are kept constant in real terms after five years. The great majority of the Group's sales are based on prices denominated in US dollars. To the extent that the currencies of countries in which the Group produces commodities strengthen against the US dollar without an increase in commodity prices, cash flows and, therefore, net present values are reduced. Management considers that over the long term, there is a tendency for movements in commodity prices to compensate to some extent for movements in the value of the US dollar, particularly against the Australian dollar and Canadian dollar, and vice versa. However, such compensating changes are not synchronised and do not fully offset each other. In estimating value in use, the present value of future cash flows in foreign currencies is translated at the spot exchange rate on the testing date.

Non-current assets (excluding goodwill) that have suffered impairment are reviewed using the same basis for valuation as explained above whenever events or changes in circumstances indicate that the impairment loss may no longer exist, or may have decreased. If appropriate an impairment reversal will be recognised. The carrying amount of the cash-generating unit after reversal must be the lower of (a) the recoverable amount, as calculated above, and (b) the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the cash-generating unit in prior periods.

An onerous contract is defined under IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" as a contract under which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. Provision is made when the assets dedicated to the contract are fully impaired or the contract becomes stranded as a result of a business decision.

(j) Determination of ore reserve and mineral resource estimates
The Group estimates its ore reserves and mineral resources based on information compiled by Competent Persons as defined in accordance with the JORC code.

Ore reserves and, for certain mines, other mineral resources, determined in this way are used in the calculation of depreciation, amortisation and impairment charges and for forecasting the timing of the payment of close-down and restoration costs and the recovery of deferred tax assets. The depreciation and impairment policy above notes instances in which mineral resources are taken into account for accounting purposes. In addition, value may be attributed to mineral resources in purchase price allocations undertaken for the purposes of business combination accounting.

(k) Close-down, restoration and environmental obligations (note 26)
The Group has provisions for close-down and restoration costs which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. These provisions are based on all regulatory requirements and any other commitments made to stakeholders.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated. This applies primarily to certain Canadian smelters which have indefinite-lived water rights or power agreements for renewably sourced power with local governments.

Close-down and restoration costs are a normal consequence of mining or production, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their costs using current restoration standards and techniques.

Close-down and restoration costs are provided for in the accounting period when the obligation arising from the related disturbance occurs, based on the net present value of the estimated future costs of restoration to be incurred during the life of the operation and post closure. Where appropriate, the provision is estimated using probability weighting of the different remediation and closure scenarios. The obligation may occur during development or during the production phase of a facility.

Provisions for close-down and restoration costs do not include any additional obligations which are expected to arise from future disturbance.

The costs are estimated on the basis of a closure plan, and are reviewed at each reporting period during the life of the operation to reflect known developments. The estimates are also subject to formal review, with appropriate external support, at regular intervals.

The initial close-down and restoration provision is capitalised within "Property, plant and equipment". Subsequent movements in the close-down and restoration provisions for ongoing operations, including those resulting from new disturbance related to expansions or other activities qualifying for capitalisation, updated cost estimates, changes to the estimated lives of operations, changes to the timing of closure activities and revisions to discount rates are also capitalised within "Property, plant and equipment". These costs are then depreciated over the lives of the assets to which they relate. Changes in closure provisions relating to closed operations are charged/credited to "Net operating costs" in the income statement.

Where rehabilitation is conducted systematically over the life of the operation, rather than at the time of closure, provision is made for the estimated outstanding continuous rehabilitation work at each balance sheet date and the cost is charged to the income statement.

The amortisation or "unwinding" of the discount applied in establishing the provisions is charged to the income statement in each accounting period. The amortisation of the discount is shown within "Finance items" in the income statement.

Environmental costs result from environmental damage that was not a necessary consequence of operations, and may include remediation, compensation and penalties. Provision is made for the estimated present value of such costs at the balance sheet date. These costs are charged to "Net operating costs", except for the unwinding of the discount which is shown within "Finance items".

Remediation procedures may commence soon after the time the disturbance, remediation process and estimated remediation costs become known, but can continue for many years depending on the nature of the disturbance and the remediation techniques used.

(l) Inventories (note 16)
Inventories are valued at the lower of cost and net realisable value, primarily on a weighted average cost basis. Average costs are calculated by reference to the cost levels experienced in the relevant month together with those in opening inventory. The cost of raw materials and consumable stores is the purchase price. The cost of partly-processed and saleable products is generally the cost of production, including:

– labour costs, materials and contractor expenses which are directly attributable to the extraction and processing of ore or the production of alumina and aluminium;
– the depreciation of mining properties and leases and of property, plant and equipment used in the extraction and processing of ore or the production of alumina and aluminium; and
– production overheads.

Work in progress includes ore stockpiles and other partly processed material. Stockpiles represent ore that has been extracted and is available for further processing. If there is significant uncertainty as to if and/or when the stockpiled ore will be processed, the ore is expensed as mined. If the ore will not be processed within 12 months after the balance sheet date, it is included within non-current assets and net realisable value is calculated on a discounted cash flow basis. Quantities of stockpiled ore are assessed primarily through surveys and assays. Certain estimates, including expected metal recoveries, are calculated using available industry, engineering and scientific data, and are periodically reassessed taking into account technical analysis and historical performance.

(m) Taxation (note 9 and note 17)
Current tax is the tax expected to be payable on the taxable income for the year calculated using rates that have been enacted or substantively enacted at the balance sheet date. It includes adjustments for tax expected to be payable or recoverable in respect of previous periods. Where the amount of tax payable or recoverable is uncertain, Rio Tinto establishes provisions based on the Group's judgment of the most likely amount of the liability, or recovery.

Deferred tax is calculated in accordance with IAS 12. The Group provides for deferred tax in respect of fair value adjustments on acquisitions including mining rights that, in general, are not eligible for income tax allowances. Provision for deferred tax is based on the difference between the carrying value of the asset and its income tax base (which may be nil). Even when there is no income tax base, the existence of a tax base for capital gains tax purposes is not usually taken into account in determining the deferred tax provision for the assets, unless they are classified as held for sale or it is determined for other reasons that the carrying amount is expected to be recovered primarily through disposal and not through use of the assets.

(n) Post-employment benefits (note 44)
The Group operates a number of defined benefit plans which provide lump sums, pensions, medical benefits and life insurance to retirees. In accordance with IAS 19, for post-employment defined benefit plans, the difference between the fair value of any plan assets and the present value of the plan obligations is recognised as an asset or liability in the balance sheet.

Where appropriate, the recognition of assets may be restricted to the present value of any amounts the Group expects to recover by way of refunds from the plan or reductions in future contributions. In determining the extent to which a refund will be available the Group considers whether any third party, such as a trustee or pension committee, has the power to enhance benefits or to wind up a pension plan without the Group's consent.

The most significant assumptions used in accounting for pension plans are the discount rate, the inflation rate and mortality rates. The discount rate is used to determine the net present value of the obligations, the interest cost on the obligations and the interest income on plan assets. The discount rate used is the yield on high-quality corporate bonds with maturities and terms that match those of the post-employment obligations as closely as possible. Where there is no developed corporate bond market in a currency, the rate on government bonds is used. The inflation rate is used to project increases in future benefit payments for those plans that have benefits linked to inflation. The mortality rates are used to project the period over which benefits will be paid, which is then discounted to arrive at the net present value of the obligations.

The current service cost, any past service cost and the effect of any curtailment or settlements are recognised in the income statement. The interest cost less interest income on assets held in the plans is also charged to the income statement. All amounts charged to the income statement in respect of these plans are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

The Group's contributions to defined contribution plans are charged to the income statement in the period to which the contributions relate. These are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

(o) Cash and cash equivalents (note 21)
For the purpose of the balance sheet, cash and cash equivalents comprise: cash on hand, deposits held with banks, and short-term, highly liquid investments (mainly money market funds) that are readily convertible into known amounts of cash and which are subject to insignificant risk of changes in value. Bank overdrafts are shown as current liabilities in the balance sheet.

Further detail on cash and cash equivalents, including restricted cash, is shown in note 21).

For the purposes of the cash flow statement, cash and cash equivalents are net of bank overdrafts that are repayable on demand.

(p) Financial instruments (note 30)
(i) Financial assets
Classification
The Group classifies its financial assets in the following categories: at fair value through profit or loss; loans and receivables; held-to-maturity; and available-for-sale investments. The classification depends on the purpose for which the financial assets were acquired. The Group's policy with regard to financial risk management is set out in note 30. Generally, the Group does not acquire financial assets for the purpose of selling in the short term. When the Group enters into derivative contracts, these transactions are designed to reduce exposures related to assets and liabilities, firm commitments or anticipated transactions.

Management determines the classification of financial assets at initial recognition.

(a) Financial assets at fair value through profit or loss
Assets in this category are classified as current assets if expected to be settled within 12 months, otherwise they are classified as non-current. Derivative assets, including embedded derivatives separated from the host contracts, are included within financial assets at fair value through profit or loss unless they are designated as hedging instruments.

(b) Loans and receivables
Loans and receivables comprise non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Trade receivables are included within this category; however, the embedded derivatives for provisional pricing included within some trade receivables are valued as explained in note 1(c) Sales revenue.

(c) Held-to-maturity
Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity that the Group has the intention and ability to hold to maturity and which do not qualify as loans and receivables. Assets in this category are classified as Other investments and are classified as current assets or non-current assets based on their maturity.

1 Principal accounting policies continued

(d) Available-for-sale
Available-for-sale financial assets are non-derivative financial assets that are either designated as available-for-sale or not classified in any of the other categories. Assets in this category are included in non-current assets unless the Group intends to dispose of the assets within 12 months of the balance sheet date or the asset matures within 12 months.

Recognition and measurement
Available-for-sale financial assets and financial assets at fair value through profit or loss are initially recognised at fair value and are subsequently measured at fair value. Initial transaction costs are expensed in the income statement for those assets at fair value through profit or loss. Loans and receivables and held-to-maturity financial assets are initially recognised at fair value plus transaction costs and are subsequently measured at amortised cost using the effective interest method.

The fair values of the various derivative instruments used for hedging purposes are disclosed in note 30. Movements on the hedging reserve are disclosed in note 29.

(ii) Financial liabilities
Borrowings and other financial liabilities (including trade payables but excluding derivative liabilities) are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost.

The Group participates in supply chain finance arrangements whereby vendors may elect to receive early payment of their invoice from a bank by factoring their receivable from Rio Tinto. These arrangements do not modify the terms of the original liability and therefore, financial liabilities subject to supply chain finance continue to be classified as trade payables.

(q) Share-based payments (note 43)
The fair value of the Group's share plans is recognised as an expense over the expected vesting period with an offset to retained earnings for Rio Tinto plc plans and to other reserves for Rio Tinto Limited plans.

The Group uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model.

The terms of each plan are considered at the balance sheet date to determine whether the plan should be accounted for as equity or cash settled. The Group does not operate any plans as cash-settled. However the Performance Share Plan can, at the discretion of the directors, offer employees an equivalent amount in cash. This is not standard practice. In some jurisdictions, employees are granted cash-settled awards where equity-settled awards are prohibited by local laws and regulations. The value of these awards is immaterial.

The Group's equity-settled share plans are settled either by: the issuance of shares by the relevant parent company, the purchase of shares on market, or the use of shares held in treasury which were previously acquired as part of a share buy-back. If the cost of shares acquired to satisfy the plans differs from the expense charged, the difference is taken to retained earnings or other reserves, as appropriate.

(r) Share capital (notes 27 and 28)
Ordinary shares are classified as equity. Incremental costs directly attributable to the issuance of new shares are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Group's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to owners of Rio Tinto. Where such shares are subsequently reissued, any consideration received, net of any directly-attributable incremental costs and the related income tax effects, is included in equity attributable to owners of Rio Tinto. If purchased Rio Tinto plc shares are cancelled, an amount equal to the nominal value of the cancelled share is credited to the capital redemption reserve.

(s) Segment reporting (notes 2 and 3)
Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision maker (CODM). The Group considers that Rio Tinto's chief executive is the CODM, who is responsible for allocating resources and assessing performance of the operating segments.

Critical accounting policies and estimates
(i) Determination of CGUs, assessment of indicators of impairment, review of asset carrying values, impairment charges and reversals and the recoverability of goodwill (notes 6, 12 and 13)
Impairment is assessed at the Cash Generating Unit (CGU) level. A CGU is the smallest identifiable asset or group of assets that generates independent cash inflows. Judgment is applied to identify the Group's CGUs, particularly when assets belong to integrated operations, and changes in CGUs could impact impairment charges and reversals.

External and internal factors are monitored for indicators of impairment and include an annual internal review of asset values as described in note (i) above. Judgment is required to determine whether the impact of adverse spot commodity price movements is significant and structural in nature. There were no material instances of this judgment as at 31 December 2017.

Generally, discounted cash flow models are used to determine the recoverable amount of CGUs. In this case, significant judgment is required to determine the appropriate estimates and assumptions used and there is significant estimation uncertainty. In particular, for fair value less costs of disposal valuations, judgment is required to determine the estimates a market participant would use. The discounted cash flow model is most sensitive to the following estimates: the timing of project expansions, the cost to complete asset construction, long-term commodity prices, production timing and recovery rates, exchange rates, operating costs, reserve estimates, closure costs and discount rates and, in some instances, the renewal of mining licences. Some of these variables are unique to an individual CGU. Future changes in these variables may differ from management's expectations and may materially alter the recoverable amounts of the CGUs.

Note (i) above also describes the Group's methodology for estimating long-term commodity prices, exchange rates and discount rates for impairment testing purposes. Note 6 outlines the significant judgments, assumptions and sensitivities made for both measuring the impairments recorded and for determining whether a reversal of part or all of previous impairment was appropriate. Judgments, assumptions and sensitivities in relation to the testing of CGUs containing goodwill and indefinite-life intangible assets are outlined in notes 12 and 13 respectively.

(ii) Estimation of asset lives
Intangible assets are considered to have indefinite lives (and therefore no related depreciation or amortisation charge) if, in the Group's judgment, there is no foreseeable limit to the period over which the asset is expected to generate cash flows. Factors that are considered in making this judgment include the existence of contractual rights for unlimited terms; or evidence that renewal of the contractual rights without significant incremental costs can be expected for indefinite periods into the future in view of the Group's investment intentions.

The useful lives of the major assets of a CGU are often dependent on the life of the orebody to which they relate. The life of the orebody will be determined on the basis of the life-of-mine plan which is based on the estimates of ore reserves, and in some cases, mineral resources as described on page 234.

(iii) Provision for onerous contracts
Provision for an onerous contract is made only when the assets dedicated to that contract are fully impaired or the contract becomes stranded as a result of a business decision. Judgment is required in determining which assets are considered dedicated to a contract when there is optionality as to how the contract obligations can be settled. Key estimates are the cash flows associated with the contract and the discount rate assumption. The Group has made provision in past periods for rail infrastructure take or pay contracts in the Coal business which were considered stranded. As at 31 December 2017 the balance of the provision was US$407 million.

(iv) Close-down, restoration and environmental obligations (note 26)
Provision is made for close-down, restoration and environmental costs when the obligation occurs, based on the net present value of estimated future costs required to satisfy the obligation. Management uses its judgment and experience to determine the potential scope of closure rehabilitation work required to meet the Group's legal, statutory and constructive obligations, and any other commitments made to stakeholders, and the options and techniques available to meet those obligations and estimate the associated costs and the likely timing of those costs. Significant judgment is also required to determine both the costs associated with that work and the other assumptions used to calculate the provision. External experts support the cost estimation process where appropriate but there remains significant estimation uncertainty.

The key judgment in applying this accounting policy is determining when an estimate is sufficiently reliable to make or adjust a closure provision.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated. This applies primarily to certain Canadian smelters which have indefinite-lived water rights or power agreements for renewably sourced power with local governments.

Cost estimates are updated throughout the life of the operation; generally cost estimates must comply with the Group's Capital Project Framework once the operation is ten years from expected closure. This means, for example, that where an Order of Magnitude (OoM) study is required for closure it must be of the same standard as an OoM study for a new mine, smelter or refinery. As at 31 December 2017, there are ten operations with remaining lives of under ten years before taking into account unapproved extensions; the largest of these is Rio Tinto Kennecott for which a pre-feasibility study is expected to be concluded in the next 24 months. Adjustments are made to provisions when the range of possible outcomes becomes sufficiently narrow to permit reliable estimation. Depending on the materiality of the change, adjustments may require review and endorsement by the Group's Closure Steering Committee before the provision is updated.

In some cases, the closure study may indicate that monitoring and, potentially, remediation will be required in perpetuity. In this case, the provision may be restricted to a period for which the costs can be reliably estimated; on average this is around 30 years for operations in closure.

The most significant assumptions and estimates used in calculating the provision are:

- The weighted average remaining lives of operations is shown in note 26 c). Some expenditure may be incurred before closure whilst the operation as a whole is in production. The length of any post closure monitoring period will depend on the specific site requirements; some expenditure can continue into perpetuity.
- The probability weighting of possible closure scenarios. The most significant impact of probability weighting is at the Pilbara operations (Iron Ore) relating to infrastructure and incorporates the possibility that some infrastructure may be retained by the relevant State authorities post closure. The assignment of probabilities to this scenario reduces the closure provision by US$0.7 billion.
- Appropriate sources on which to base the calculation of the risk-free discount rate. At 31 December 2017 the carrying value of the close-down, restoration and environmental provision was US$9,983 million. The change in carrying value of the provision which would result if the real discount rate was 0.5 per cent lower than that assumed by management is shown in note 26.

There is significant estimation uncertainty in the calculation of the provision and cost estimates can vary in response to many factors including:

- Changes to the relevant legal or local/national government requirements and any other commitments made to stakeholders;
- Review of remediation and relinquishment options;
- Additional remediation requirements identified during the rehabilitation;
- The emergence of new restoration techniques;
- Change in the expected closure date;
- Change in the discount rate and;
- The effects of inflation.

Experience gained at other mine or production sites may also change expected methods or costs of closure, although elements of the restoration and rehabilitation of each site are relatively unique to a site. Generally, there is relatively limited restoration and rehabilitation activity and historical precedent elsewhere in the Group, or in the industry as a whole, against which to benchmark cost estimates.

The expected timing of expenditure can also change for other reasons, for example because of changes to expectations around ore reserves and mineral resources, production rates, renewal of operating licences or economic conditions.

As noted in note (k) above, changes in closure and restoration provisions for ongoing operations (other than the impact relating to current year production) are capitalised and therefore will impact assets and liabilities but have no impact on equity at the time the change is made. However, these changes will impact depreciation and the unwind of discount in future years. Changes in closure estimates at the Group's ongoing operations could result in a material adjustment to assets and liabilities in the next 12 months.

Changes to closure cost estimates for closed operations, and changes to environmental cost estimates at any operation, would impact equity, however, the Group does not consider that there is significant risk of a change in estimates for these liabilities causing a material adjustment to equity in the next twelve months. Any new environmental incidents may require a material provision but cannot be predicted.

Cash flow estimates must be discounted at the risk free interest rate if this has a material effect on the provision. The selection of appropriate sources on which to base the calculation of the risk-free discount rate requires judgment. The two per cent real rate currently used by the Group is based on a number of inputs including observable historic yields on 30 year US Treasury Inflation Protected Securities ("TIPS"), and recommendations by independent valuation experts. These inputs are considered in the broader global context that spot yields remain volatile and somewhat depressed in response to macroeconomic turbulence in recent years.

(v) Deferral of stripping costs (note 14)
Stripping of waste materials takes place throughout the production phase of a surface mine or pit. The identification of components within a mine and of the life of component strip ratios requires judgment and is dependent on an individual mine's design and the estimates inherent within that. Changes to that design may introduce new components and/or change the life of component strip ratios. Changes in other technical or economic parameters that impact ore reserves may also have an impact on the life of component strip ratios, even if they do not affect the mine's design. Changes to the life of component strip ratios are accounted for prospectively.

The Group's judgment as to whether multiple pit mines are considered separate or integrated operations determines whether initial stripping of a pit is deemed to be pre-production or production phase stripping and, therefore, the amortisation base for those costs. The analysis depends on each mine's specific circumstances and requires judgment: another mining company could make a different judgment even when the fact pattern appears to be similar.

Notes to the 2017 financial statements
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1 Principal accounting policies continued

(vi) Uncertain tax positions
The Group operates across a large number of jurisdictions and is subject to periodic challenges by local tax authorities on a range of tax matters during the normal course of business, including transfer pricing, indirect taxes and transaction related issues. Where the amount of tax payable or recoverable is uncertain, the Group establishes provisions based on the Group's interpretation of tax law and judgment of the most likely amount of the liability, or recovery. An alternative approach under current standards is to use a weighted average of various possible scenarios. The weighted average approach is required under IFRIC 23 "Uncertainty over Income Tax Treatments" which is mandatory in 2019 although for issues with a binary outcome, the most likely amount method can continue to be applied. The Group is currently evaluating the impact of IFRIC 23 as noted on page 120. Further information on uncertain tax positions is given in note 9.

(vii) Recoverability of potential deferred tax assets (note 17)
The Group has tax losses, and other deductible temporary differences, mainly in Australian, Canadian, French, US and Mongolian taxable entities, that have the potential to reduce tax payments in future years. Deferred tax assets have been recognised to the extent that their recovery is probable, having regard to the availability of sufficient taxable temporary differences relating to the same taxation authority and the same taxable entity, the estimates of projected future taxable income of these taxable entities and after taking account of specific risk factors that are expected to affect the recovery of these assets including the risk of expiry of losses. Further information on deferred tax assets is given in note 17.

In addition to the risk of expiry of losses the projections on which recovery of tax losses are based are subject to the same estimation uncertainty as noted in (i) above in relation to impairment. The key judgment in the application of this accounting policy is the recognition of deferred tax assets for losses where the operation is not currently profitable for tax purposes.

(viii) Identification of functional currencies
The functional currency for each subsidiary, unincorporated arrangement, joint operation and equity accounted unit, is the currency of the primary economic environment in which it operates. Determination of functional currency involves significant judgment and other companies may make different judgments based on similar facts. For many of Rio Tinto's businesses, their functional currency is the currency of the country in which they operate. The Group reconsiders the functional currency of its businesses if there is a change in the underlying transactions, events or conditions which determine their primary economic environment.

The determination of functional currency is a key judgment which affects the measurement of non-current assets included in the balance sheet and, as a consequence, the amortisation of those assets included in the income statement. It also impacts exchange gains and losses included in the income statement and in equity. The Group applies judgment to determine whether or not certain intragroup loans are likely to be repaid in the foreseeable future and therefore whether the associated exchange gains and losses can be taken to equity. During 2017, A$21 billion of intragroup loans continued to meet these criteria and associated exchange gains were taken to equity.

(ix) Estimation of obligations for post-employment costs (note 44)
The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. The discount rate is a key assumption and is based upon the yields on high quality corporate bonds in the relevant currency which have durations consistent with the term of the obligations. The discount rate will vary from one period to another in line with movements in corporate bond yields, but at any given measurement date there is relatively little estimation uncertainty. This rate is also used to calculate the interest cost on obligations and interest income on plan assets.

The following key assumptions are used to calculate the estimated benefit: future pay increases to be received by members of final pay plans, the level of inflation (for those benefits that are subject to some form of inflation protection), current mortality rates and future improvements in mortality rates:

- The assumption regarding future inflation is based on market yields on inflation linked instruments, where possible, combined with consensus views.
- The Group reviews the actual mortality rates of retirees in its major pension plans on a regular basis and uses these rates to set its current mortality assumptions. It also uses its judgment with respect to allowances for future improvements in longevity having regard to standard improvement scales in each relevant country and after taking external actuarial advice.

Most of the Group's defined benefit pension plans are closed to new entrants and the majority of the obligations relate to former employees. The carrying value of the Group's post-employment obligations is therefore less sensitive to assumptions about future salary increases than it is to assumptions regarding future inflation.

Details of the key assumptions, how they have moved since the previous balance sheet date and the sensitivity of the carrying value to changes in the assumptions are set out in note 44.

(x) Contingencies (note 31)
Disclosure is made of material contingent liabilities unless the possibility of any loss arising is considered remote based on the Group's judgment and legal advice. Contingent liabilities are quantified unless, in the Group's judgment, the amount cannot be reliably estimated.

(xi) Basis of consolidation (notes 33 to 36)
Judgment is sometimes required to determine whether after considering all relevant factors, the Group has control, joint control or significant influence over an entity or arrangement. Other companies may make different judgments regarding the same entity or arrangement. Significant influence includes situations of collective control (see note 36a).

(xii) Exclusions from underlying earnings (note 2)
As set out in note 2), certain items are excluded from net earnings/(loss) in arriving at underlying earnings in each period irrespective of materiality. In addition, there is a final judgmental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. The exclusion of the impact of the remeasurement of deferred tax assets in the US and other jurisdictions for rate changes, of the derecognition of deferred tax assets related to expected divestments and of an element of the insurance proceeds received in relation to the Manefay slide were the only judgments in this respect in 2017; the treatment of the insurance proceeds was consistent with prior years.

2 Operating segments

Rio Tinto's management structure is based on the principal product groups in the tables below together with the global functions that support the business, which include Growth & Innovation. Certain comparative amounts have been reallocated to appropriately represent changes in management responsibility. The chief executive of each product group reports to the chief executive of Rio Tinto. The chief executive of Rio Tinto monitors the performance of each product group based on a number of measures, including EBITDA, capital expenditure and operating cash flows, with underlying earnings and free cash flow being the key financial performance indicators. Finance costs and net debt are managed on a Group basis.

Generally, business units are allocated to product groups based on their primary product. The Energy & Minerals product group includes businesses with products such as uranium, borates, salt and titanium dioxide feedstock together with coal operations, Iron Ore Company of Canada and the Simandou iron ore project, which is the responsibility of the Energy & Minerals product group chief executive. The Copper & Diamonds product group also produces gold, silver, molybdenum and other by-products.

The financial information by business unit provided on pages 206 to 208 of these financial statements provides additional voluntary disclosure which the Group considers useful to the users of the financial statements.

Gross sales revenue	2017 US$m	2016 US$m	2015 US$m
Iron Ore	**18,251**	14,605	13,952
Aluminium	**11,005**	9,458	10,117
Copper & Diamonds	**4,842**	4,524	5,592
Energy & Minerals	**7,764**	6,734	7,140
Other Operations	**10**	8	18
Reportable segments total	**41,872**	35,329	36,819
Inter-segment transactions	**(15)**	(11)	(34)
Product group total	**41,857**	35,318	36,785
Items excluded from underlying earnings	**10**	18	(1)
Gross sales revenue	**41,867**	35,336	36,784
Share of equity accounted units and adjustments for inter-subsidiary/equity accounted units sales	**(1,837)**	(1,555)	(1,955)
Consolidated sales revenue per income statement	**40,030**	33,781	34,829

Gross sales revenue includes the Group's proportionate share of sales revenue of equity accounted units (after adjusting for sales to subsidiaries) of US$1,859 million (2016: US$1,585 million; 2015: US$1,987 million) which are not included in consolidated sales revenue. Consolidated sales revenue includes subsidiary sales of US$22 million (2016: US$30 million; 2015: US$32 million) to equity accounted units which are not included in gross sales revenue.

Capital expenditure	2017 US$m	2016 US$m	2015 US$m
Iron Ore	**1,201**	868	1,608
Aluminium	**1,436**	916	1,682
Copper & Diamonds	**1,622**	1,441	1,576
Energy & Minerals	**467**	141	552
Other Operations	**(35)**	(11)	(36)
Reportable segments total	**4,691**	3,355	5,382
Other items	**70**	(46)	65
Less: capital expenditure of equity accounted units	**(417)**	(651)	(859)
Capital expenditure per financial information by business units	**4,344**	2,658	4,588
Add: proceeds from disposal of property, plant and equipment	**138**	354	97
Capital expenditure per cash flow statement	**4,482**	3,012	4,685

Capital expenditure for reportable segments comprises the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100 per cent of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.

Depreciation and amortisation	2017 US$m	2016 US$m	2015 US$m
Iron Ore	**1,645**	1,645	1,744
Aluminium	**1,199**	1,250	1,172
Copper & Diamonds	**1,452**	1,601	1,261
Energy & Minerals	**652**	739	830
Other Operations	**32**	34	32
Reportable segments total	**4,980**	5,269	5,039
Other items	**42**	51	68
Less: depreciation and amortisation of equity accounted units	**(647)**	(526)	(462)
Depreciation and amortisation per note 4	**4,375**	4,794	4,645

Notes to the 2017 financial statements
continued

2 Operating segments continued

Product group depreciation and amortisation for reportable segments totals include 100 per cent of subsidiaries' depreciation and amortisation and Rio Tinto's share of the depreciation and amortisation of equity accounted units. Rio Tinto's share of the depreciation and amortisation charge of equity accounted units is deducted to arrive at depreciation and amortisation, excluding equity accounted units, as shown in note 4. These figures exclude impairment charges and reversals, which are excluded from underlying earnings.

Tax charge/(credit)	2017 US$m	2016 US$m	2015 US$m
Iron Ore	**2,871**	2,005	1,747
Aluminium	**543**	171	303
Copper & Diamonds	**48**	(320)	(77)
Energy & Minerals	**652**	331	122
Other Operations	**(84)**	(73)	(73)
Reportable segments total	**4,030**	2,114	2,022
Other items	**(261)**	(191)	(192)
Exploration and evaluation not attributed to product groups	**(36)**	(27)	(25)
Net finance costs	**(364)**	(484)	(245)
	3,369	1,412	1,560
Tax charge/(credit) excluded from underlying earnings	**596**	155	(567)
Tax charge per income statement	**3,965**	1,567	993

Tax charge/(credit) excludes amounts relating to equity accounted units. Further information on the tax charge/(credit) excluded from underlying earnings is provided below in the section "Underlying earnings".

Underlying earnings (Refer overleaf)	2017 US$m	2016 US$m	2015 US$m
Iron Ore	**6,692**	4,611	3,940
Aluminium	**1,583**	947	1,118
Copper & Diamonds	**263**	(18)	370
Energy & Minerals	**1,242**	612	177
Other Operations	**(138)**	(88)	(90)
Reportable segments total	**9,642**	6,064	5,515
Other items	**(483)**	(241)	(375)
Exploration and evaluation not attributed to product groups	**(178)**	(147)	(211)
Net finance costs	**(354)**	(576)	(389)
Underlying earnings	**8,627**	5,100	4,540
Items excluded from underlying earnings (Refer overleaf)	**135**	(483)	(5,406)
Net earnings/(loss) attributable to owners of Rio Tinto per income statement	**8,762**	4,617	(866)

Underlying earnings is reported by Rio Tinto to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods.

The measure of underlying earnings, in conjunction with net cash generated from operating activities and capital expenditure (net of proceeds on disposals), is used by the chief executive of Rio Tinto to assess the performance of the product groups. Underlying earnings and net earnings/(loss) both represent amounts net of tax attributable to owners of Rio Tinto.

The following items are excluded from net earnings/(loss) 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 US dollar net debt and intragroup balances, gains/(losses) on currency and interest rate derivatives not qualifying for hedge accounting and gains/(losses) on embedded commodity derivatives not qualifying for hedge accounting.

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

Product group earnings include earnings of subsidiaries and the Group's share of the underlying earnings of equity accounted units stated before finance items but after the amortisation of discount on provisions.

Rio Tinto's share of the underlying earnings of equity accounted units amounted to US$332 million in 2017 (2016: US$309 million; 2015: US$390 million). This amount is attributable as follows: US$295 million profit to the Copper & Diamonds product group and US$37 million profit to other product groups (2016: US$272 million profit to the Copper & Diamonds product group and US$37 million profit to other product groups; 2015: US$307 million profit to the Copper & Diamonds product group and US$83 million profit to other product groups). These amounts are included in underlying earnings and include the underlying earnings of the Group's tolling entities which process alumina. Tolling entities recharge the majority of their costs and generally have minimal earnings.

Reconciliation of net earnings/(losses) to underlying earnings

Exclusions from underlying earnings	Pre-tax (l) 2017 US$m	Taxation 2017 US$m	Non-controlling interests 2017 US$m	Net amount 2017 US$m	Net amount 2016 US$m	Net amount 2015 US$m
Impairment charges (note 6)	(796)	141	174	(481)	(183)	(1,802)
Net gains on disposal of interests in businesses [a]	2,344	(322)	-	2,022	382	48
Exchange and derivative (losses)/gains:						
– Exchange (losses)/gains on external US dollar net debt and intragroup balances [b]	(613)	113	12	(488)	516	(3,282)
– Gain/(losses) on currency and interest rate derivatives not qualifying for hedge accounting [c]	33	(5)	2	30	(12)	(88)
– (Losses)/gains on embedded commodity derivatives not qualifying for hedge accounting [d]	(498)	146	-	(352)	32	88
Changes in corporate tax rates in the US and France [e]	-	(439)	-	(439)	-	-
Onerous port and rail contracts [f]	-	-	-	-	(329)	-
Restructuring costs and global headcount reductions	-	-	-	-	(177)	(258)
Increased closure provision for non-operating and legacy operations [g]	-	-	-	-	(282)	(233)
Rio Tinto Kennecott insurance settlement [h]	73	(28)	-	45	-	18
Tax provision [i]	-	-	-	-	(380)	-
Adjustment to deferred tax assets relating to expected divestments [j]	-	(202)	-	(202)	-	234
Other exclusions [k]	-	-	-	-	(50)	(131)
Total excluded from underlying earnings	543	(596)	188	135	(483)	(5,406)
Net earnings/(loss)	12,816	(3,965)	(89)	8,762	4,617	(866)
Underlying earnings	12,273	(3,369)	(277)	8,627	5,100	4,540

(a) Net gains on disposal of interests in businesses in 2017 relate mainly to the sale of Coal & Allied Industries Limited which completed on 1 September 2017.
In 2016, the net gain related mainly to the sale of Rio Tinto's 40 per cent interest in the Bengalla Joint Venture on 1 March 2016 and the sale of the Lochaber assets in Scotland on 23 November 2016. This was partially offset by a loss on disposal of the 100 per cent interest in Carbone Savoie on 31 March 2016.

(b) Exchange (losses)/gains on external US dollar net debt and intragroup balances comprise of post-tax foreign exchange gains on US dollar denominated net debt in non-US dollar functional currency companies of US$420 million and post-tax losses of US$908 million on intragroup balances.
Net exchange gains in 2016 comprise post-tax foreign exchange gains of US$123 million on external US dollar denominated net debt, and US$393 million gains on intragroup balances, mainly as the Canadian dollar strengthened against the US dollar.

(c) 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.

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

(e) Deferred tax assets have been re-measured to reflect lower corporate income tax rates in the US and France as a result of tax legislation changes substantively enacted in December 2017.

(f) In 2016, a review of the infrastructure capacity requirements in Queensland, Australia confirmed that it was no longer likely that Rio Tinto would utilise the Abbot Point Coal Terminal and associated rail infrastructure capacity contracted under take or pay arrangements and agreement was reached with Adani, the owner of the port, to relinquish that capacity. Accordingly, an onerous contract provision was recognised based on the net present value of expected future cash flows for the port and rail capacity discounted at a post-tax real rate of two per cent, resulting in a post-tax onerous contract charge of US$329 million.

(g) In 2016, the closure provision for non-operating and legacy operations increased mainly due to the Gove alumina refinery in Northern Territory, Australia where operations have been curtailed since May 2014. The provision was updated based on the cost estimates from the studies. Future revisions to the closure cost estimate during the study periods (including the next stage of feasibility study) will continue to be excluded from underlying earnings as the site operating assets have been fully impaired.

(h) In 2017, Rio Tinto received the final settlement on the insurance claims related to the 2013 slide at Rio Tinto Kennecott's Bingham Canyon mine. The amounts excluded from underlying earnings are consistent with the previous excluded loses to which they relate, in line with the treatment of the 2013 and 2015 settlement payments.

(i) Tax provision includes amounts provided for specific tax matters for which the timing of resolution and potential economic outflow are uncertain. During 2016, provision was made in relation to matters under discussion with the Australian Taxation Office (ATO) in relation to the transfer pricing of certain transactions between Rio Tinto entities based in Australia and the Group's commercial centre in Singapore for the period since 2009.

(j) Deferred tax assets have been derecognised as a result of revised profit forecasts in France due to expected divestments.

(k) Other credits and charges that, individually, or in aggregate if of similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. In 2016, other exclusions included costs related to multiple transformation projects and the recuperation of capital losses against capital gains on divestment. In 2015, other exclusions included a provision relating to the incomplete divestment of Carbone Savoie within the Aluminium product group, divestment costs and an increase in provision relating to the Gove refinery.

(l) Exclusions from underlying earnings relating to equity accounted units are stated after tax and are included in the column "Pre-tax".

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continued

3 Operating segments – additional information

Consolidated sales revenue by destination [a]	2017 %	Adjusted [b] 2016 %	Adjusted [b] 2015 %	2017 US$m	Adjusted [b] 2016 US$m	Adjusted [b] 2015 US$m
China	**44.2**	43.6	42.2	**17,706**	14,742	14,701
Asia (excluding China and Japan)	**12.8**	13.9	12.9	**5,108**	4,692	4,499
United States of America	**14.3**	13.9	15.3	**5,716**	4,709	5,321
Japan	**11.7**	11.3	11.4	**4,701**	3,809	3,974
Europe (excluding UK)	**7.5**	7.6	8.4	**3,015**	2,579	2,909
Canada	**2.8**	3.0	3.8	**1,111**	1,024	1,322
Australia	**1.8**	2.0	2.4	**710**	675	830
UK	**1.1**	1.2	0.9	**449**	391	330
Other countries	**3.8**	3.5	2.7	**1,514**	1,160	943
Consolidated sales revenue	**100.0**	100.0	100.0	**40,030**	33,781	34,829

(a) Consolidated sales revenue by geographical destination is based on the ultimate country of destination of the product, if known. If the eventual destination of the product sold through traders is not known then revenue is allocated to the location of the product at the time when the risks and rewards of ownership are transferred. Rio Tinto is domiciled in both the UK and Australia.
(b) The 2016 and 2015 comparatives above have been amended to correct the allocation of revenues by region. The most significant impacts are an increase in the amounts allocated to China (2016: US$337 million; 2015: US$135 million) and Canada (2015: US$155 million) and a decrease in amounts allocated to Asia (excluding China and Japan) (2016: US$319 million; 2015: US$263 million). There is no impact on the total consolidated sales revenue.

Consolidated sales revenue by product
Consolidated sales revenues of the Group are derived from the following products sold to external customers:

	2017 US$m	2016 US$m	2015 US$m
Iron ore	**20,010**	15,855	15,239
Aluminium	**10,864**	9,342	9,904
Copper	**1,760**	1,609	1,577
Coal	**2,822**	2,567	2,703
Industrial minerals	**2,060**	1,954	2,155
Gold	**378**	608	1,063
Diamonds	**706**	613	698
Other	**1,430**	1,233	1,490
Consolidated sales revenue	**40,030**	33,781	34,829

Non-current assets other than excluded items
The total of non-current assets other than items excluded is shown by location below. This is allocated based on the location of the business units holding the assets.

Non-current assets other than excluded items [a]	2017 US$m	2016 US$m
Australia	**32,890**	30,602
Canada	**14,640**	14,362
Mongolia	**8,582**	7,743
United States of America	**4,812**	4,958
Africa	**3,781**	3,882
South America	**3,304**	3,785
Indonesia	**1,458**	1,482
Europe (excluding France and the UK)	**362**	429
UK	**66**	66
France	**276**	251
Other countries	**892**	891
	71,063	68,451
Non-current assets excluded from analysis above:		
Deferred tax assets	**3,395**	3,728
Other financial assets (including loans to equity accounted units)	**510**	822
Quasi equity loans to equity accounted units [b]	**159**	163
Tax recoverable	**30**	38
Trade and other receivables	**1,397**	975
Total non-current assets per balance sheet	**76,554**	74,177

(a) Allocation of non-current assets by country is based on the location of the business units holding the assets. It includes investments in equity accounted units totalling US$4,327 million (2016: US$4,856 million) which represents the Group's share of net assets excluding quasi equity loans shown separately within "Loans to equity accounted units" above.
(b) Loans to equity accounted units comprise quasi equity loans of US$159 million (2016: US$163 million) included in "Investments in equity accounted units" on the face of the balance sheet and non-current non-quasi equity loans of US$39 million (2016: US$39 million) shown within "Other financial assets".

4 Net operating costs (excluding items shown separately)

	Note	2017 US$m	Adjusted [a] 2016 US$m	2015 US$m
Raw materials, consumables, repairs and maintenance [a]		**9,286**	8,760	8,966
Amortisation of intangible assets	13	**177**	227	207
Depreciation of property, plant and equipment	14	**4,198**	4,567	4,438
Employment costs	5	**4,765**	4,881	5,446
Shipping and other freight costs [c]		**2,338**	1,454	2,165
(Increase)/decrease in finished goods and work in progress[a]		**(82)**	87	558
Royalties		**2,228**	1,889	1,863
Amounts charged by equity accounted units [b]		**980**	1,184	1,246
Net foreign exchange losses/(gains)		**61**	38	(263)
Other external costs [c] [d]		**3,935**	3,472	4,181
Provisions (including exchange differences on provisions)	26	**527**	1,404	731
Research and development		**58**	60	104
Costs included above qualifying for capitalisation		**(486)**	(521)	(661)
Other operating income		**(1,002)**	(703)	(1,062)
Net operating costs (excluding items shown separately) [c]		**26,983**	26,799	27,919

(a) The 2016 and 2015 comparatives have been amended to reclassify certain amounts between operating cost categories. The impact is to decrease the amount allocated to "(Increase)/decrease in finished goods and work in progress" (2016: US$304 million; 2015: US$143 million) and to increase "Raw materials, consumables, repairs and maintenance" by the same amount.

(b) Amounts charged by equity accounted units relate to toll processing and also include purchases from equity accounted units of bauxite and aluminium which are then processed by the product group or sold to third parties. Generally, purchases are in proportion to the Group's share of the equity accounted unit but in 2017, US$229 million (2016: US$383 million; 2015: US$378 million) related to purchases of the other investors' share of production.

(c) Net operating costs includes operating lease expense of US$555 million (2016: US$541 million). Costs for leases of dry bulk vessels (which include costs for crewing services) are included within "Shipping and other freight costs" and other lease costs are included within "Other external costs". The 2016 comparative has been amended to exclude certain contractual arrangements which do not qualify as leases in accordance with IAS 18.

(d) Other external costs include a financial penalty of £27.4 million (US$36.4 million) paid to the United Kingdom's Financial Conduct Authority (FCA) in relation to the timing of the impairment of the Group's former coal operations in Mozambique. Refer to note 31 for further detail.

5 Employment costs

	Note	2017 US$m	2016 US$m	2015 US$m
Total employment costs				
– Wages and salaries		**4,129**	4,235	4,670
– Social security costs		**337**	429	430
– Net post-retirement charge	44	**500**	522	439
– Share option charge	43	**91**	116	128
		5,057	5,302	5,667
Less: charged within provisions [a]	26	**(292)**	(421)	(221)
Employment costs	4	**4,765**	4,881	5,446

(a) Amounts included above in respect of provisions for pensions, post-retirement healthcare, long service leave and other employee entitlements which are included in 'Provisions (including exchange differences on provisions)' in note 4.

6 Impairment charges and reversals

	Note	Pre-tax 2017 US$m	Taxation 2017 US$m	Non-controlling interests 2017 US$m	Net amount 2017 US$m	Pre-tax amount 2016 US$m	Pre-tax amount 2015 US$m
Energy & Minerals – Roughrider		**(357)**	**100**	**-**	**(257)**	-	(229)
Energy & Minerals – Rössing		**(267)**	**7**	**83**	**(177)**	-	-
Energy & Minerals – Simandou		**-**	**-**	**91**	**91**	-	(2,039)
Energy & Minerals – Energy Resources of Australia		**-**	**-**	**-**	**-**	-	(260)
Copper & Diamonds – Argyle		**(172)**	**34**	**-**	**(138)**	(241)	-
Copper & Diamonds – Molybdenum Autoclave Process		**-**	**-**	**-**	**-**	-	(17)
Aluminium – Other		**-**	**-**	**-**	**-**	-	(179)
Other		**-**	**-**	**-**	**-**	(8)	(67)
Total impairment charge net of reversals		**(796)**	**141**	**174**	**(481)**	(249)	(2,791)
Allocated as:							
Goodwill	12	**-**				-	(116)
Intangible assets	13	**(357)**				(1)	(1,833)
Property, plant and equipment	14	**(435)**				(248)	(652)
Other assets and liabilities		**(4)**				-	(190)
Total impairment charge net of reversals		**(796)**				(249)	(2,791)
Comprising:							
Total impairment charge net of reversals in the financial information by business unit (page 206)					**(796)**	(249)	(2,791)
Taxation (including related to EAUs)					**141**	66	(57)
Non-controlling interests					**174**	-	1,046
Total impairment in the income statement					**(481)**	(183)	(1,802)

Energy & Minerals

Roughrider, Canada

Following a reassessment of planned exploration spend in the six months ended 30 June 2017, substantive expenditure to evaluate the Roughrider deposit is neither budgeted nor planned. These circumstances were identified as an impairment indicator under IFRS 6 and the recoverable amount for the evaluation and exploration assets was determined to be US$nil due to the significant uncertainty over whether commercially viable quantities of mineral resources could be identified at a future date. Accordingly an impairment charge of US$357 million was recorded in 2017 to fully write-off the mineral interests recognised on acquisition.

In 2015, a pre-tax impairment charge of US$116 million to fully write-off goodwill and a pre-tax impairment charge of US$113 million to exploration and evaluation intangible assets was recognised in relation to the Roughrider deposit. The recoverable amount for Roughrider was determined by reference to a fair value less cost of disposal (FVLCD) model in line with the accounting policy set out in note 1(i).

Rössing, Namibia

An impairment indicator was identified at the Rössing Uranium cash-generating unit as a result of structural changes in the forecast prices for uranium due to oversupply in the market. In assessing the recoverable amount of the assets, it was determined that the property, plant and equipment and certain other non-current assets were fully impaired resulting in a pre-tax impairment charge of US$267 million.

Simandou, Guinea

In 2015, a pre-tax impairment charge of US$1,655 million to exploration and evaluation intangible assets and a pre-tax impairment charge of US$194 million to property, plant and equipment were recognised to fully write-down the long-term assets of the Simandou project. In addition a pre-tax charge of US$7 million was recognised in relation to inventories and a pre-tax charge of US$183 million was also recognised as a financial liability for contractual arrangements. This liability was settled during 2017 by the Group's subsidiary Simfer Jersey Limited from the proceeds of a share issue. The non-controlling interest component of this transaction (US$91 million) has been accounted for as an impairment reversal consistent with the original accounting treatment.

Energy Resources of Australia (ERA), Australia

In 2015, a pre-tax write-down to property, plant and equipment and intangible assets of US$260 million to fully write off these long-term assets was recognised. Deferred tax assets of US$123 million were also fully written off.

Copper & Diamonds

Argyle Diamond Mine, Australia

In 2016, an impairment trigger assessment at the Argyle cash-generating unit resulted in the identification of impairment indicators as a result of lower production volumes compared with forecast and lower prices achieved for bulk diamonds. The recoverable amount for Argyle was determined to be US$191 million, resulting in a pre-tax impairment charge of US$241 million to property, plant and equipment and intangible assets.

In 2017, an impairment trigger assessment at the Argyle cash-generating unit resulted in the identification of impairment indicators because of lower production volumes compared with forecast, a smaller than expected contribution from productivity improvements and lower realised prices. In assessing the recoverable amount of the assets, it was determined that the property, plant and equipment, including an updated closure asset, was fully impaired resulting in a pre-tax impairment charge of US$172 million. The impairment charge resulted in the recognition of deferred tax assets of US$34 million; these will be recovered by other business units in the same tax group.

Molybdenum Autoclave Process, US

In 2015, previously estimated net disposal proceeds for the Molybdenum Autoclave Process project were reduced resulting in a pre-tax impairment of US$17 million recorded against property, plant and equipment.

Aluminium

Other

In 2015, a pre-tax impairment charge of US$147 million was recorded in relation to the Carbone Savoie cash-generating unit and US$32 million was recorded in relation to other aluminium businesses which were subsequently disposed of.

7 Share of profit after tax of equity accounted units

	2017 US$m	2016 US$m	2015 US$m
Sales revenue: Rio Tinto share [(a)]	**1,960**	1,727	2,149
Operating costs	**(1,400)**	(1,237)	(1,609)
Profit before finance items and taxation	**560**	490	540
Finance items	**(47)**	(33)	(37)
Share of profit after tax of equity accounted units	**17**	20	35
Profit before taxation	**530**	477	538
Taxation	**(191)**	(156)	(177)
Profit for the year (Rio Tinto share)	**339**	321	361

(a) Sales revenue of equity accounted units includes sales by equity accounted units to Group subsidiaries.

Further information relating to the Group's interests in joint ventures and associates is given in notes 35 and 36.

8 Finance income and finance costs

	Note	2017 US$m	2016 US$m	2015 US$m
Finance income from equity accounted units (Rio Tinto share)		**4**	6	8
Other finance income (including bank deposits and other financial assets)		**137**	83	44
Total finance income		**141**	89	52
Interest on:				
– Financial liabilities at amortised cost and associated derivatives		**(819)**	(895)	(972)
– Finance leases		**(3)**	(3)	(4)
Fair value movements:				
– Bonds designated as hedged items in fair value hedges		**28**	89	(17)
– Derivatives designated as hedging instruments in fair value hedges		**(22)**	(89)	(11)
Loss on early redemption of bonds [(a)]		**(256)**	(324)	-
Amounts capitalised	14	**224**	111	254
Total finance costs		**(848)**	(1,111)	(750)

(a) In 2017, loss on early redemption of bonds includes a premium charge of US$238 million; unamortised debt issuance costs and fees of US$14 million and the write-off of the fair value hedge adjustment of US$4 million (see note 30).
In 2016, loss on early redemption of bonds included a premium charge of US$441 million; unamortised debt issuance costs and fees of US$42 million partially offset by the write-off of fair value hedge adjustments of US$159 million (see note 30).

Notes to the 2017 financial statements
continued

9 Taxation

	Note	2017 US$m	2016 US$m	2015 US$m
Taxation charge				
– Current		**3,270**	2,115	1,132
– Deferred	17	**695**	(548)	(139)
		3,965	1,567	993

Prima facie tax reconciliation	2017 US$m	2016 US$m	2015 US$m
Profit/(loss) before taxation	**12,816**	6,343	(726)
Deduct: share of profit after tax of equity accounted units	**(339)**	(321)	(361)
Parent companies' and subsidiaries' profit/(loss) before tax	**12,477**	6,022	(1,087)
Prima facie tax payable/(receivable) at UK rate of 19 per cent (2016: 20 per cent; 2015: 20 per cent)	**2,371**	1,204	(217)
Higher rate of taxation on Australian underlying earnings	**1,069**	604	506
Impact of items excluded in arriving at underlying earnings [(a)]:			
– Impairment charges net of reversals	**10**	(16)	615
– Gains and losses on disposal of businesses	**(123)**	30	(11)
– Exchange and gains/losses on derivatives	**(48)**	(33)	481
– Onerous port and rail contracts	**-**	(46)	-
– Closure provision for legacy operations	**-**	(40)	-
– Tax provision [(b)]	**-**	380	-
– Adjustment to deferred tax assets relating to expected divestments [(c)]	**202**	-	(250)
– Changes in corporate tax rates in the US and France [(d)]	**439**	-	-
– Other exclusions	**14**	(48)	(17)
Impact of changes in tax rates and laws	**21**	(9)	(3)
Other tax rates applicable outside the UK and Australia on underlying earnings	**(92)**	(283)	(68)
Resource depletion and other depreciation allowances	**(33)**	(15)	(15)
Research, development and other investment allowances	**(13)**	(15)	(21)
Recognition of previously unrecognised deferred tax assets	**(40)**	(154)	(40)
Write-down of previously recognised deferred tax assets [(e)]	**160**	-	-
Unrecognised current year operating losses	**26**	25	45
Other items [(f)]	**2**	(17)	(12)
Total taxation charge [(g)]	**3,965**	1,567	993

(a) The impact for each item includes the effect of tax rates applicable outside the UK.
(b) Tax provision includes amounts provided for specific tax matters for which the timing of resolution and potential economic outflow are uncertain. During 2016 provision was made in relation to matters under discussion with the Australian Taxation Office (ATO) in relation to the transfer pricing of certain transactions between Rio Tinto entities based in Australia and the Group's commercial centre in Singapore for the period since 2009.
(c) Deferred tax assets have been derecognised as a result of revised profit forecasts in France due to expected divestments.
(d) Deferred tax assets have been re-measured to reflect lower corporate income tax rates in the US and France as a result of tax legislation changes substantively enacted in December 2017.
(e) The write-down of previously recognised deferred tax assets in 2017 primarily relates to a reduction in recognised deferred tax assets on brought forward losses in Grasberg.
(f) Other items include various adjustments to provisions for taxation of prior periods.
(g) This tax reconciliation relates to the Group's parent companies, subsidiaries and joint operations. The Group's share of profit of equity accounted units is net of tax charges of US$191 million (2016: US$156 million; 2015: US$177 million).

	2017 Total US$m	2016 Total US$m	2015 Total US$m
Tax (charge)/credit on actuarial gains and losses on post-retirement benefit plans	**(12)**	29	(175)
Adjustments to deferred tax on post-retirement benefit plans due to changes in corporate tax rates in the US and France	**(140)**	-	-
Other	**(1)**	4	(3)
Tax relating to components of other comprehensive income/(loss) for the year [(a)]	**(153)**	33	(178)

(a) This comprises a deferred tax charge of US$153 million (2016: credit of US$33 million; 2015: charge of US$174 million) and a current tax charge of US$nil (2016: US$nil; 2015: charge of US$4 million), plus a share of tax on other comprehensive income of equity accounted units shown separately (see note 17).

10 Earnings/(loss) per ordinary share

	2017 Earnings US$m	2017 Weighted average number of shares (millions)	2017 Per share amount (cents)	2016 Earnings US$m	2016 Weighted average number of shares (millions)	2016 Per share amount (cents)
Basic earnings per share attributable to ordinary shareholders of Rio Tinto [(a)]	**8,762**	**1,786.7**	**490.4**	4,617	1,797.3	256.9
Diluted earnings per share attributable to ordinary shareholders of Rio Tinto [(b)]	**8,762**	**1,799.5**	**486.9**	4,617	1,808.6	255.3

	2015 Loss US$m	2015 Weighted average number of shares (millions)	2015 Per share amount (cents)
Basic loss per share attributable to ordinary shareholders of Rio Tinto [(a)]	(866)	1,824.7	(47.5)
Diluted loss per share attributable to ordinary shareholders of Rio Tinto [(b)]	(866)	1,824.7	(47.5)

(a) The weighted average number of shares is calculated as the average number of Rio Tinto plc shares outstanding not held as treasury shares of 1,364.5 million (2016: 1,373.7 million; 2015: 1,398.1 million) plus the average number of Rio Tinto Limited shares outstanding of 422.3 million (2016: 423.6 million; 2015: 426.6 million) over the relevant period. No Rio Tinto Limited ordinary shares were held by Rio Tinto plc in any of the periods presented.

(b) For the purposes of calculating diluted earnings per share, the effect of dilutive securities of 12.8 million shares in 2017 and 11.3 million shares in 2016 is added to the weighted average number of shares described in (a) above. This effect is calculated under the treasury stock method. In accordance with IAS 33 "Earnings per share", for the purposes of calculating diluted loss per share, the effect of potentially dilutive securities has not been taken into account for the year ended 31 December 2015. The Group's only potential dilutive ordinary shares are share options for which terms and conditions are described in note 43.

11 Dividends

	2017 US$m	2016 US$m	2015 US$m
Rio Tinto plc previous year final dividend paid	**1,725**	1,443	1,642
Rio Tinto plc interim dividend paid	**1,530**	604	1,476
Rio Tinto Limited previous year final dividend paid	**523**	473	520
Rio Tinto Limited interim dividend paid	**472**	205	438
Dividends paid during the year	**4,250**	2,725	4,076
Dividends per share: paid during the year	**235.0c**	152.5c	226.5c
Dividends per share: proposed in the announcement of the results for the year	**180.0c**	125.0c	107.5c

	Dividends per share 2017	Dividends per share 2016	Dividends per share 2015
Rio Tinto plc previous year final (pence)	**100.56p**	74.21p	77.98p
Rio Tinto plc interim (pence)	**83.13p**	33.80p	68.92p
Rio Tinto Limited previous year final – fully franked at 30% (Australian cents)	**163.62c**	151.89c	152.98c
Rio Tinto Limited interim – fully franked at 30% (Australian cents)	**137.72c**	59.13c	144.91c

	Number of shares 2017 (millions)	Number of shares 2016 (millions)	Number of shares 2015 (millions)
Rio Tinto plc previous year final	**1,374.6**	1,373.9	1,412.7
Rio Tinto plc interim	**1,366.1**	1,374.4	1,395.2
Rio Tinto Limited previous year final	**424.0**	423.5	435.0
Rio Tinto Limited interim	**424.0**	424.0	423.7

The dividends paid in 2017 are based on the following US cents per share amounts: 2016 final – 125.0 cents, 2017 interim – 110.0 cents (2016 dividends paid: 2015 final – 107.5 cents, 2016 interim – 45.0 cents; 2015 dividends paid: 2014 final – 119.0 cents, 2015 interim – 107.5 cents).

The number of shares on which Rio Tinto plc dividends are based excludes those held as treasury shares and those held by employee share trusts which waived the right to dividends. Employee share trusts waived dividends on 277,946 Rio Tinto plc ordinary shares and 22,021 American Depository Receipts (ADRs) for the 2016 final dividend and on 173,297 Rio Tinto plc ordinary shares and 24,377 ADRs for the 2017 interim dividend (2016: 428,529 Rio Tinto plc ordinary shares and 13,881 ADRs for the 2015 final dividend and on 217,661 Rio Tinto plc ordinary shares and 31,604 ADRs for the 2016 interim dividend; 2015: 342,902 Rio Tinto plc ordinary shares and 24,582 ADRs for the 2014 final dividend and on 237,266 Rio Tinto plc ordinary shares and 27,050 ADRs for the 2015 interim dividend). In 2017, 2016 and 2015, no Rio Tinto Limited shares were held by Rio Tinto plc.

11 Dividends continued

The number of shares on which Rio Tinto Limited dividends are based excludes those held by shareholders who have waived the rights to dividends. Employee share trusts waived dividends on 214,278 Rio Tinto Limited ordinary shares for the 2016 final dividend and on 274,899 shares for the 2017 interim dividend (2016: 681,818 shares for the 2015 final dividend and on 152,834 shares for the 2016 interim dividend; 2015: 727,676 shares for the 2014 final dividend and on 474,665 shares for the 2015 interim dividend).

In addition, the directors of Rio Tinto announced a final dividend of 180 cents per share on 7 February 2018. This is expected to result in payments of US$3,158 million (Rio Tinto plc: US$2,416 million, Rio Tinto Limited US$742 million). The dividends will be paid on 12 April 2018 to Rio Tinto plc and Rio Tinto Limited shareholders on the register at the close of business on 2 March 2018.

The proposed Rio Tinto Limited dividends will be franked out of existing franking credits or out of franking credits arising from the payment of income tax during 2018.

The approximate amount of the Rio Tinto Limited consolidated tax group's retained profits and reserves that could be distributed as dividends and franked out of available credits that arose from net payments of income tax in respect of periods up to 31 December 2017 (after deducting franking credits expected to be utilised on the 2017 final dividend declared) is US$8,542 million.

12 Goodwill

	2017 US$m	2016 US$m
Net book value		
At 1 January	**951**	892
Adjustment on currency translation	**86**	59
At 31 December	**1,037**	951
– cost	**17,942**	17,144
– accumulated impairment	**(16,905)**	(16,193)
At 1 January		
– cost	**17,144**	17,120
– accumulated impairment	**(16,193)**	(16,228)

At 31 December, goodwill has been allocated as follows:

	2017 US$m	2016 US$m
Net book value		
Richards Bay Minerals	**552**	502
Pilbara	**389**	360
Dampier Salt	**96**	89
	1,037	951

Impairment tests for goodwill

Richards Bay Minerals

Richards Bay Minerals' annual impairment review resulted in no impairment charge for 2017 (2016: no impairment charge). The recoverable amount has been assessed by reference to FVLCD, in line with the policy set out in note 1(i) and classified as level 3 under the fair value hierarchy. FVLCD was determined by estimating cash flows until the end of the life-of-mine plan including anticipated expansions. In arriving at FVLCD, a post-tax discount rate of 8.7 per cent (2016: 9.0 per cent) has been applied to the post-tax cash flows expressed in real terms.

The key assumptions to which the calculation of FVLCD for Richards Bay Minerals is most sensitive and the corresponding decrease in FVLCD are set out below:

	US$ million
5% decrease in the titanium slag price	165
1% increase in the discount rate applied to post-tax cash flows	226
10% strengthening of the South African rand	603

Other assumptions include the long-term pig iron and zircon prices and operating costs. Future selling prices and operating costs have been estimated in line with the policy set out in note 1(i). The recoverable amount of the cash-generating unit exceeds the carrying value for each of these sensitivities applied in isolation.

Pilbara

The annual impairment review of the Pilbara cash-generating unit has been assessed by reference to FVLCD using discounted cash flows, which is in line with the policy set out in note 1(i) and is classified as level 3 under the fair value hierarchy. In arriving at FVLCD, a post-tax discount rate of 6.7 per cent (2016: 7.0 per cent) has been applied to the post-tax cash flows expressed in real terms. The recoverable amount was determined to be significantly in excess of carrying value, and there are not considered to be any reasonably possible changes in key assumptions that would cause the remaining goodwill to be impaired.

13 Intangible assets

Year ended 31 December 2017	Exploration and evaluation [(a)] US$m	Trademarks, patented and non-patented technology US$m	Contract based intangible assets [(b)] US$m	Other intangible assets US$m	Total US$m
Net book value					
At 1 January 2017	**711**	**78**	**2,103**	**387**	**3,279**
Adjustment on currency translation	**27**	**10**	**150**	**29**	**216**
Expenditure during the year	**57**	**-**	**-**	**65**	**122**
Amortisation for the year [(c)]	**-**	**(13)**	**(67)**	**(97)**	**(177)**
Impairment charges [(d)]	**(357)**	**-**	**-**	**-**	**(357)**
Disposals, transfers and other movements [(e)]	**(45)**	**-**	**2**	**79**	**36**
At 31 December 2017	**393**	**75**	**2,188**	**463**	**3,119**
– cost	**2,658**	**224**	**3,438**	**1,537**	**7,857**
– accumulated amortisation and impairment	**(2,265)**	**(149)**	**(1,250)**	**(1,074)**	**(4,738)**

Year ended 31 December 2016	Exploration and evaluation [(a)] US$m	Trademarks, patented and non-patented technology US$m	Contract based intangible assets [(b)] US$m	Other intangible assets US$m	Total US$m
Net book value					
At 1 January 2016	706	94	2,138	398	3,336
Adjustment on currency translation	14	(3)	47	-	58
Expenditure during the year	8	-	-	23	31
Amortisation for the year [(c)]	-	(13)	(87)	(127)	(227)
Impairment charges [(d)]	-	-	-	(1)	(1)
Disposals, transfers and other movements [(e)]	(17)	-	5	94	82
At 31 December 2016	711	78	2,103	387	3,279
– cost	2,588	199	3,897	1,329	8,013
– accumulated amortisation and impairment	(1,877)	(121)	(1,794)	(942)	(4,734)

(a) Exploration and evaluation assets' useful lives are not determined until transferred to property, plant and equipment.

(b) The Group benefits from certain intangible assets acquired with Alcan, including power supply contracts, customer contracts and water rights. The water rights are expected to contribute to the efficiency and cost effectiveness of operations for the foreseeable future: accordingly, these rights are considered to have indefinite lives and are not subject to amortisation but are tested annually for impairment. These water rights constitute the majority of the amounts in "Contract based intangible assets".

The remaining carrying value of the water rights (US$1,824 million) as at 31 December 2017 relates wholly to the Quebec smelters cash-generating unit. The Quebec smelters cash-generating unit was tested for impairment by reference to FVLCD using discounted cash flows, which is in line with the policy set out in note 1(i). The recoverable amount of the Quebec smelters is classified as level 3 under the fair value hierarchy. In arriving at FVLCD, post-tax cash flows expressed in real terms have been estimated over the expected useful economic lives of the underlying smelting assets and discounted using a real post-tax discount rate of 6.7 per cent (2016: 7.0 per cent).

The recoverable amounts were determined to be significantly in excess of carrying value, and there are no reasonably possible changes in key assumptions that would cause the remaining water rights to be impaired.

(c) Finite life intangible assets are amortised over their useful economic lives on a straight-line or units of production basis, as appropriate. Where amortisation is calculated on a straight-line basis, the following useful lives have been determined:

Trademarks, patented and non-patented technology
Trademarks: 14 to 20 years
Patented and non-patented technology: ten to 20 years

Contract-based intangible assets
Power contracts / water rights: two to 45 years
Other purchase and customer contracts: five to 15 years

Other intangible assets
Internally generated intangible assets and computer software: two to five years
Other intangible assets: two to 20 years

(d) Impairment charges in 2017 relate to the full write-off of the Roughrider deposit in Canada (see note 6). Impairment charges in 2016 related to the full write-off of the intangible assets of the Argyle cash-generating unit (see note 6).

(e) Disposals, transfers and other movements for Exploration and Evaluation includes US$34 million transferred to Mining Property in relation to the Kemano tunnel project following approval of the project. Disposals, transfers and other movements for exploration and evaluation in 2016 included the disposal of the Mount Pleasant thermal coal project in New South Wales, Australia.

13 Intangible assets continued

Exploration and evaluation expenditure

The charge for the year and the net amount of intangible assets capitalised during the year are as follows:

	2017 US$m	2016 US$m	2015 US$m
Net expenditure in the year (net of proceeds of US$3 million (2016: US$208 million; 2015: US$nil) on disposal of undeveloped projects)	**(493)**	(284)	(705)
Non-cash movements and non-cash proceeds on disposal of undeveloped projects	**(24)**	(177)	(15)
Amount capitalised during the year	**57**	8	152
Net charge for the year	**(460)**	(453)	(568)
Reconciliation to income statement			
Exploration and evaluation costs	**(445)**	(497)	(576)
Profit relating to interests in undeveloped projects	**(15)**	44	8
Net charge for the year	**(460)**	(453)	(568)

At 31 December 2017, a total of US$420 million had been capitalised related to projects which had not yet been approved to proceed. This comprised evaluation costs of US$393 million included above and US$27 million of early works expenditure within property, plant and equipment (31 December 2016: a total of US$726 million had been capitalised comprising: evaluation costs of US$711 million included above and US$15 million of early works expenditure within property, plant and equipment).

14 Property, plant and equipment

Year ended 31 December 2017	Note	Mining properties and leases [(a)] US$m	Land and buildings [(b)] US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2017		**10,848**	**7,316**	**35,706**	**4,985**	**58,855**
Adjustment on currency translation [(c)]		**495**	**461**	**2,242**	**183**	**3,381**
Adjustments to capitalised closure costs	26	**710**	**-**	**-**	**-**	**710**
Interest capitalised [(d)]	8	**-**	**-**	**-**	**224**	**224**
Additions		**230**	**41**	**646**	**3,834**	**4,751**
Depreciation for the year [(a) (e)]		**(673)**	**(403)**	**(3,122)**	**-**	**(4,198)**
Impairment charges, net of reversals [(f)]		**(304)**	**(2)**	**(128)**	**(1)**	**(435)**
Disposals		**-**	**(57)**	**(40)**	**(26)**	**(123)**
Subsidiaries no longer consolidated [(g)]		**(211)**	**(95)**	**(417)**	**(26)**	**(749)**
Transfers and other movements [(h)]		**393**	**115**	**1,398**	**(2,229)**	**(323)**
At 31 December 2017		**11,488**	**7,376**	**36,285**	**6,944**	**62,093**
– cost		**24,691**	**12,029**	**71,903**	**7,266**	**115,889**
– accumulated depreciation and impairment		**(13,203)**	**(4,653)**	**(35,618)**	**(322)**	**(53,796)**
Non-current assets held under finance leases [(i)]		**-**	**-**	**37**	**-**	**37**
Non-current assets pledged as security [(j)]		**3,307**	**410**	**5,308**	**3,278**	**12,303**

Year ended 31 December 2016	Note	Mining properties and leases [(a)] US$m	Land and buildings [(b)] US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2016		11,146	7,571	37,900	4,440	61,057
Adjustment on currency translation		137	62	138	16	353
Adjustments to capitalised closure costs	26	(123)	-	-	-	(123)
Interest capitalised [(d)]	8	-	-	-	111	111
Additions		237	47	537	2,307	3,128
Depreciation for the year [(a) (e)]		(760)	(429)	(3,378)	-	(4,567)
Impairment charges, net of reversals [(f)]		(130)	-	(112)	(6)	(248)
Disposals		(3)	(169)	(86)	-	(258)
Subsidiaries no longer consolidated		(40)	(88)	(217)	(14)	(359)
Transfers and other movements [(h)]		384	322	924	(1,869)	(239)
At 31 December 2016		10,848	7,316	35,706	4,985	58,855
– cost		22,989	11,444	68,030	5,374	107,837
– accumulated depreciation and impairment		(12,141)	(4,128)	(32,324)	(389)	(48,982)
Non-current assets held under finance leases [(i)]		-	-	38	-	38
Non-current assets pledged as security [(j)]		3,310	423	5,332	2,104	11,169

(a) At 31 December 2017, the net book value of capitalised production phase stripping costs totalled US$1,815 million, with US$1,374 million within Property, plant and equipment and a further US$441 million within Investments in equity accounted units (2016 total of US$1,967 million with US$1,511 million in Property, plant and equipment and a further US$456 million within Investments in equity accounted units). During the year capitalisation of US$327 million was partly offset by depreciation of US$299 million (including amounts recorded within equity accounted units). Depreciation of deferred stripping costs in respect of subsidiaries of US$194 million (2016: US$203 million; 2015: US$173 million) is included within "Depreciation for the year".
(b) At 31 December 2017, the net book value amount for land and buildings includes freehold US$7,294 million (2016: US$7,276 million) and long leasehold US$82 million (2016: US$40 million).
(c) Adjustment on currency translation represents the impact of exchange differences arising on the translation of the assets of entities with functional currencies other than the US dollar, recognised directly in the currency translation reserve. The adjustment in 2017 arose from the weakening of the US dollar against other currencies.
(d) Interest is capitalised at a rate based on the Group or relevant subsidiary's cost of borrowing or at the rate on project specific debt, where applicable. The Group's average borrowing rate used for capitalisation of interest is 4.45 per cent (2016: 4.2 per cent).
(e) Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight-line basis as follows:
Land and buildings
Land: not depreciated
Buildings: five to 50 years
Plant and equipment
Other plant and equipment: three to 50 years
Power assets: 25 to 50 years
Capital work in progress: not depreciated
(f) During 2017, impairment charges primarily related to Arygle Diamonds and Rössing Uranium (see note 6). During 2016, impairment charges primarily related to Argyle Diamonds.
(g) During 2017, "Subsidiaries no longer consolidated" relates primarily to the disposal of Coal & Allied Industries Limited which completed on 1 September 2017 (see note 37).
(h) "Transfers and other movements" includes reclassifications between categories, including transfers to assets of disposal groups held for sale.
(i) The finance leases under which these assets are held are disclosed in note 23.
(j) Excludes assets held under finance leases. Non-current assets pledged as security represent amounts pledged as collateral against US$4,677 million (2016: US$4,783 million) of loans, which are included in note 22.

Notes to the 2017 financial statements
continued

15 Investments in equity accounted units

Summary balance sheet (Rio Tinto share)	**2017 US$m**	2016 US$m
Rio Tinto's share of assets		
– Non-current assets	**5,913**	6,686
– Current assets	**990**	832
	6,903	7,518
Rio Tinto's share of liabilities		
– Current liabilities	**(654)**	(612)
– Non-current liabilities	**(1,763)**	(1,887)
	(2,417)	(2,499)
Rio Tinto's share of net assets	**4,486**	5,019

Further details of investments in equity accounted units are set out in notes 35 and 36.

At 31 December 2017 and 2016, the Group had no investments in equity accounted units with shares listed on recognised stock exchanges.

At 31 December 2017, net debt of equity accounted units, excluding amounts due to Rio Tinto, was US$1,244 million (2016: US$1,338 million).

16 Inventories

	2017 US$m	2016 US$m
Raw materials and purchased components	**648**	470
Consumable stores	**875**	840
Work in progress	**1,082**	970
Finished goods and goods for resale	**1,027**	800
	3,632	3,080
Comprising:		
Expected to be used within one year	**3,472**	2,937
Expected to be used after more than one year	**160**	143
	3,632	3,080

During 2017, the Group recognised a net inventory write-back of US$7 million. This comprised a US$81 million write-back of amounts previously written down due to an increase in realisable values, offset by inventory write offs of US$74 million. In 2016, inventory write-downs, net of reversals, amounted to US$51 million and in 2015 US$192 million.

At 31 December 2017, US$611 million (2016: US$564 million) of inventories were pledged as security for liabilities.

17 Deferred taxation

	2017 US$m	2016 US$m
At 1 January - deferred tax asset	**(607)**	(23)
Adjustment on currency translation	**53**	58
Charged/(credited) to the income statement	**695**	(548)
Charged/(credited) to statement of comprehensive income [(a)]	**153**	(33)
Disposals	**-**	(8)
Other movements [(b)]	**(61)**	(53)
At 31 December - deferred tax liability/(asset)	**233**	(607)
Comprising:		
– deferred tax liabilities [(c) (d)]	**3,628**	3,121
– deferred tax assets [(c) (e) (f)]	**(3,395)**	(3,728)

Deferred tax balances for which there is a right of offset within the same tax jurisdiction are presented net on the face of the balance sheet as permitted by IAS 12. The closing deferred tax liabilities and assets, prior to this offsetting of balances, are shown below.

	Total 2017 US$m	Total 2016 US$m
Deferred tax liabilities arising from:		
Capital allowances	**5,208**	4,937
Unremitted earnings [(d)]	**588**	659
Capitalised interest	**391**	403
Unrealised exchange gains	**31**	40
Other temporary differences	**222**	301
	6,440	6,340
Deferred tax assets arising from:		
Tax losses [(e)]	**(2,282)**	(2,246)
Provisions	**(1,731)**	(2,040)
Capital allowances	**(579)**	(883)
Post-retirement benefits	**(616)**	(888)
Unrealised exchange losses	**(317)**	(342)
Other temporary differences	**(682)**	(548)
	(6,207)	(6,947)
Charged/(credited) to the income statement		
Unrealised exchange losses	**36**	156
Tax losses	**12**	(122)
Provisions	**451**	(279)
Capital allowances	**278**	(441)
Tax on unremitted earnings	**4**	(6)
Post-retirement benefits	**149**	(6)
Other temporary differences	**(235)**	150
	695	(548)

(a) The amounts charged directly to the Statement of comprehensive income include provisions for tax on exchange differences on intragroup loans qualifying for reporting as part of the net investment in subsidiaries, on cash flow hedges and on actuarial gains and losses on pension schemes and on post-retirement healthcare plans.

(b) "Other movements" include deferred tax relating to tax payable recognised by subsidiary holding companies on the profits of the equity accounted units to which it relates and, in 2016, amounts credited directly to the statement of changes in equity relating to the restructure of Coal & Allied Industries Limited.

(c) The deferred tax liability of US$3,628 million (2016: US$3,121 million) includes US$3,615 million (2016: US$3,109 million) due in more than one year. The deferred tax asset of US$3,395 million (2016: US$3,728 million) includes US$3,386 million (2016: US$3,721 million) receivable in more than one year. All amounts are shown as non-current on the face of the balance sheet as required by IAS 12.

(d) Deferred tax is not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$3,242 million (2016: US$2,523 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$131 million (2016: US$125 million) would be payable.

(e) There is a limited time period, the shortest of which is six years, for the recovery of US$1,679 million (2016: US$1,309 million) of tax losses and other tax assets which have been recognised as deferred tax assets in the financial statements.

(f) Recognised and unrecognised deferred tax assets are shown in the table below and totalled US$7,071 million at 31 December 2017 (2016: US$7,170 million). Of this total, US$3,395 million has been recognised as deferred tax assets (2016: US$3,728 million), leaving US$3,676 million (2016: US$3,442 million) unrecognised, as recovery is not considered probable.

17 Deferred taxation continued

The recognised amounts do not include deferred tax assets that have been netted off against deferred tax liabilities.

At 31 December	Recognised 2017 US$m	Recognised 2016 US$m	Unrecognised 2017 US$m	Unrecognised 2016 US$m
France	**-**	330	**1,163**	1,077
Canada	**546**	470	**674**	707
US	**877**	1,239	**7**	6
Australia	**1,055**	1,072	**257**	446
Mongolia [(a)]	**631**	441	**61**	-
Other [(b)]	**286**	176	**1,514**	1,206
Total	**3,395**	3,728	**3,676**	3,442

(a) Deferred tax assets in Mongolia include US$432 million (2016: US$365 million) from tax losses that expire if not recovered against taxable profits within eight years. Tax losses have been calculated in accordance with the provisions of the Oyu Tolgoi Investment Agreement and Mongolian laws. Recovery of the recognised deferred tax assets is expected to commence from 2023 based on projected cash flows in the latest life-of-mine plan, which includes delivery of the underground project. Tax law in Mongolia and its interpretation by the tax authority has been, and is expected to continue to be, subject to change. Such future changes could have a material impact on the amount and period of recovery of these deferred tax assets.
(b) US$777 million (2016: US$964 million) of the unrecognised assets relate to realised or unrealised capital losses, the recovery of which depends on the existence of capital gains in future years. There is a time limit, the shortest of which is one year, for the recovery of US$250 million of the unrecognised assets (2016: US$105 million).

18 Trade and other receivables

	Non-current 2017 US$m	Current 2017 US$m	Total 2017 US$m	Non-current 2016 US$m	Current 2016 US$m	Total 2016 US$m
Trade receivables [(a)]	**1**	**2,314**	**2,315**	-	2,283	2,283
Other receivables	**526**	**820**	**1,346**	347	880	1,227
Prepayment of tolling charges to jointly controlled entities [(b)]	**269**	**-**	**269**	267	-	267
Pension surpluses (note 44)	**871**	**-**	**871**	625	-	625
Amounts due from equity accounted units	**-**	**30**	**30**	-	31	31
Other prepayments	**57**	**279**	**336**	103	266	369
	1,724	**3,443**	**5,167**	1,342	3,460	4,802

(a) At 31 December 2017, trade and other receivables are stated net of provisions for doubtful debts of US$55 million (2016: US$66 million). Amounts of US$38 million were impaired during the year, and US$11 million of unused provision reversed.
(b) These prepayments will be charged to Group operating costs as processing takes place.

There is no material element of trade and other receivables that is interest-bearing.

The fair value of current trade and other receivables and the majority of amounts classified as non-current trade and other receivables approximates to their carrying value.

As of 31 December 2017, trade receivables of US$145 million (2016: US$230 million) were past due but not impaired. The ageing of these receivables is as follows:

	2017 US$m	2016 US$m
less than 30 days overdue	**122**	196
between 30 and 60 days overdue	**3**	4
between 60 and 90 days overdue	**17**	7
more than 90 days overdue	**3**	23
	145	230

These relate to a number of customers for whom there is no recent history of default.

With respect to trade and other receivables that are neither impaired nor past due, there are no indications as of the reporting date that the debtors will not meet their payment obligations.

19 Assets and liabilities held for sale

As at 31 December 2017, assets and liabilities held for sale includes Rio Tinto's interest in the Dunkerque aluminium smelter (US$355 million) and certain other separate assets.

At 31 December 2016, assets and liabilities held for sale included Blair Athol and certain other separate assets.

20 Other financial assets (including non-quasi equity loans to equity accounted units)

	Non-current 2017 US$m	**Current 2017 US$m**	**Total 2017 US$m**	Non-current 2016 US$m	Current 2016 US$m	Total 2016 US$m
Derivative financial instruments	**238**	**29**	**267**	508	24	532
Equity shares and quoted funds	**45**	**91**	**136**	73	83	156
Other investments, including loans [(a)]	**188**	**964**	**1,152**	202	252	454
Loans to equity accounted units	**39**	**-**	**39**	39	-	39
	510	**1,084**	**1,594**	822	359	1,181

(a) Current "Other investments, including loans" comprise US$958 million (2016: US$250 million) of highly liquid financial assets held in managed investment funds classified as held for trading.

Detailed information relating to other financial assets is given in note 30.

21 Cash and cash equivalents

	Note	**2017 US$m**	2016 US$m
Cash at bank and in hand		**1,035**	956
Money market funds and other cash equivalents		**9,515**	7,245
Balance per Group balance sheet		**10,550**	8,201
Bank overdrafts repayable on demand (unsecured)	22	**(3)**	(12)
Balance per Group cash flow statement		**10,547**	8,189

Cash and cash equivalents of US$290 million (2016: US$358 million) are held in countries where there are restrictions on remittances. Of this balance, US$158 million (2016: US$252 million) could be used to repay subsidiaries' third-party borrowings.

There are also restrictions on a further US$1,089 million (2016: US$1,051 million) of cash and cash equivalents, the majority of which is held by partially owned subsidiaries and is not available for use in the wider Group due to legal and contractual restrictions currently in place. Of this balance US$703 million (2016: US$766 million) could be used to repay subsidiaries' third-party borrowings.

Notes to the 2017 financial statements
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22 Borrowings and other financial liabilities

Borrowings at 31 December	Note	Non-current 2017 US$m	Current 2017 US$m	Total 2017 US$m	Non-current 2016 US$m	Current 2016 US$m	Total 2016 US$m
Rio Tinto Finance (USA) Limited Bonds 9.0% 2019 [(a)]		-	-	-	1,235	-	1,235
Rio Tinto Finance (USA) Limited Bonds 3.5% 2020		-	-	-	464	-	464
Rio Tinto Finance plc Euro Bonds 2.0% due 2020 [(a) (b)]		921	-	921	817	-	817
Rio Tinto Finance (USA) Limited Bonds 4.125% 2021 [(a)]		428	-	428	573	-	573
Rio Tinto Finance (USA) Limited Bonds 3.750% 2021 [(a)]		347	-	347	621	-	621
Rio Tinto Finance (USA) plc Bonds 3.5% 2022 [(a)]		227	-	227	459	-	459
Rio Tinto Finance (USA) plc Bonds 2.875% 2022 [(a)]		377	-	377	509	-	509
Rio Tinto Finance plc Euro Bonds 2.875% due 2024 [(a) (b)]		644	-	644	577	-	577
Rio Tinto Finance (USA) Limited Bonds 3.75% 2025 [(a)]		1,192	-	1,192	1,195	-	1,195
Rio Tinto Finance (USA) Limited Bonds 7.125% 2028 [(a)]		965	-	965	980	-	980
Alcan Inc. Debentures 7.25% due 2028		105	-	105	105	-	105
Rio Tinto Finance plc Sterling Bonds 4.0% due 2029 [(a) (b)]		669	-	669	609	-	609
Alcan Inc. Debentures 7.25% due 2031		422	-	422	425	-	425
Alcan Inc. Global Notes 6.125% due 2033		740	-	740	741	-	741
Alcan Inc. Global Notes 5.75% due 2035		287	-	287	287	-	287
Rio Tinto Finance (USA) Limited Bonds 5.2% 2040 [(a)]		1,102	-	1,102	1,103	-	1,103
Rio Tinto Finance (USA) plc Bonds 4.75% 2042 [(a)]		467	-	467	466	-	466
Rio Tinto Finance (USA) plc Bonds 4.125% 2042 [(a)]		691	-	691	690	-	690
Oyu Tolgoi LLC Secured Loan due 2027 [(c)]		2,262	-	2,262	2,259	-	2,259
Oyu Tolgoi LLC Secured Loan due 2028 [(c)]		255	-	255	247	-	247
Oyu Tolgoi LLC Secured Loan due 2029 [(c)]		869	-	869	866	-	866
Oyu Tolgoi LLC Secured Loan due 2030 [(c)]		761	-	761	754	-	754
Loans from equity accounting units		-	31	31	-	49	49
Other secured loans		451	79	530	530	127	657
Other unsecured loans		393	435	828	377	508	885
Finance leases	23	49	4	53	24	21	45
Bank overdrafts	21	-	3	3	-	12	12
Total borrowings including overdrafts [(d)]		**14,624**	**552**	**15,176**	16,913	717	17,630

(a) These borrowings are subject to the hedging arrangements summarised below. Fair value hedge accounting has been applied except for the Rio Tinto Finance plc Sterling Bonds 4.0% due 2029 which has cash flow hedge accounting applied.
(b) Rio Tinto has a US$10 billion (2016: US$10 billion) European Debt Issuance Programme against which the cumulative amount utilised was US$2.2 billion equivalent at 31 December 2017 (2016: US$1.9 billion). The carrying value of these bonds after hedge accounting adjustments amounted to US$2.2 billion (2016: US$ 2.0 billion) in aggregate.
(c) These borrowings relate to the Oyu Tolgoi LLC project finance facility. The project finance facility provides for interest-only payments for the first five years followed by minimum repayments according to a stepped amortisation schedule for the remaining life of the facility. The due dates stated represent the final repayment date. Further details are provided in note 30.
(d) The Group's borrowings of US$15.2 billion (2016: US$17.6 billion) include US$2.7 billion (2016: US$2.8 billion) which relates to subsidiary entity borrowings that are without recourse to the Group, and US$4.7 billion (2016: US$4.8 billion) which is subject to various financial and general covenants with which the respective borrowers were in compliance as at 31 December 2017.

Other financial liabilities	Non-current 2017 US$m	Current 2017 US$m	Total 2017 US$m	Non-current 2016 US$m	Current 2016 US$m	Total 2016 US$m
Derivative financial instruments	481	50	531	517	6	523
Other financial liabilities	43	302	345	40	199	239
Total other financial liabilities	**524**	**352**	**876**	557	205	762
Total borrowings including overdrafts (as above)	14,624	552	15,176	16,913	717	17,630
Total borrowings and other financial liabilities	**15,148**	**904**	**16,052**	17,470	922	18,392

Swap arrangements
At 31 December 2017, US$5.7 billion (2016: US$7.7 billion) US dollar notional of the fixed rate US dollar borrowings were swapped to floating US dollar rates and US$1.5 billion (2016: US$1.3 billion) US dollar notional equivalent of Euro borrowings were fully swapped to floating US dollar rates.

Hedge accounting has been applied to the full notional of items marked (a) in the above table except for: US$75 million (2016: US$75 million) of the Rio Tinto Finance (USA) Limited Bonds 7.125% due 2028. This portion is held at amortised cost.

The Rio Tinto Finance plc Sterling Bond 4.0% due 2029 at US$0.7 billion (2016: US$0.6 billion) US dollar notional equivalent of sterling was fully swapped to US dollar notional and fixed US dollar rates. Cash flow hedging was applied to the annual interest coupons and principal of this bond. The hedge was fully effective in 2017 and 2016 financial years.

The fair value of interest rate and cross currency interest rate swaps at 31 December 2017 was US$99 million (2016: US$108 million) asset and US$276 million (2016: US$516 million) liability, respectively. These are included within "Other financial assets" and "Other financial liabilities" in the balance sheet.

Details of the major interest rate and cross currency interest rate swaps are shown in note 30.

23 Capitalised finance leases

	Note	2017 US$m	2016 US$m
Present value of minimum lease payments			
Total minimum lease payments		**57**	45
Effect of discounting		**(4)**	-
	22	**53**	45
Payments under capitalised finance leases			
Due within 1 year		**4**	21
Between 1 and 3 years		**14**	8
Between 3 and 5 years		**28**	6
More than 5 years		**11**	10
		57	45

24 Consolidated net debt

	Financing liabilities [b]		Other assets			
Year ended 31 December	Borrowings (including finance leases) excluding Overdrafts [a]	Debt-related derivatives (included in Other financial assets/ liabilities)	Cash/ Overdrafts [b]	Other investments [c]	2017 Net debt US$m	2016 Net debt US$m
Analysis of changes in consolidated net debt						
Opening balance	**(17,618)**	**(408)**	**8,189**	**250**	**(9,587)**	(13,783)
Foreign exchange adjustment	**(303)**	**245**	**(12)**	**-**	**(70)**	90
Cash movements excluding exchange movements	**2,777**	**7**	**2,370**	**705**	**5,859**	3,915
Other non-cash movements	**(29)**	**(21)**	**-**	**3**	**(47)**	191
Closing balance	**(15,173)**	**(177)**	**10,547**	**958**	**(3,845)**	(9,587)

	2017 US$m	2016 US$m	2015 US$m
Exchange gains/(losses) on US dollar net debt and intragroup balances			
Exchange gains/(losses) on US dollar net debt	**554**	160	(1,578)
Exchange (losses)/gains on intragroup balances	**(1,154)**	449	(1,961)
Exchange (losses)/gains on settlement of dividends	**(1)**	2	1
(Charged)/credited to income statement	**(601)**	611	(3,538)

(a) Borrowings (including finance leases) at 31 December 2017 differ from total borrowings on the balance sheet as they exclude overdrafts of US$3 million (31 December 2016: US$12 million), other current financial liabilities of US$352 million (31 December 2016: US$205 million) and other non-current financial liabilities US$524 million (31 December 2016: US$557 million).
(b) Closing cash/overdrafts at 31 December 2017 differ from cash and cash equivalents on the balance sheet as they include overdrafts of US$3 million which have been classified as a financial liability (31 December 2016: US$12 million).
(c) Other investments comprise US$958 million (2016: US$250 million) of highly liquid financial assets held in managed investment funds classified as held for trading.

Further information relating to the currency and interest rate exposures arising from net debt and related derivatives is given in note 30.

25 Trade and other payables

	Non-current 2017 US$m	Current 2017 US$m	Total 2017 US$m	Non-current 2016 US$m	Current 2016 US$m	Total 2016 US$m
Trade payables	**-**	**3,255**	**3,255**	-	2,787	2,787
Deferred income	**246**	**246**	**492**	234	197	431
Accruals	**13**	**1,347**	**1,360**	1	973	974
Other payables	**352**	**964**	**1,316**	309	1,072	1,381
Employee entitlements	**-**	**734**	**734**	-	720	720
Royalties and mining taxes	**4**	**492**	**496**	3	516	519
Amounts owed to equity accounted units	**156**	**19**	**175**	151	92	243
Government grants deferred	**85**	**4**	**89**	91	4	95
	856	**7,061**	**7,917**	789	6,361	7,150

The fair value of trade payables and financial instruments within other payables approximates their carrying value.

26 Provisions (including post-retirement benefits)

	Note	Pensions and post-retirement healthcare [(a)] US$m	Other employee entitlements [(b)] US$m	Close-down and restoration/ environmental [(c)] US$m	Other US$m	**Total 2017 US$m**	Total 2016 US$m
At 1 January		3,167	450	8,722	1,455	**13,794**	13,066
Adjustment on currency translation		200	34	502	110	**846**	(56)
Adjustments to mining properties	14						
– changes in estimate		-	-	710	-	**710**	(123)
Charged/(credited) to profit:							
– increases to existing and new provisions		233	96	230	238	**797**	1,630
– unused amounts reversed		-	(37)	(61)	(89)	**(187)**	(239)
– exchange (gains)/losses on provisions		-	-	(40)	(43)	**(83)**	13
– amortisation of discount		-	-	348	35	**383**	338
Utilised in year		(339)	(84)	(268)	(362)	**(1,053)**	(997)
Actuarial losses recognised in equity		121	-	-	-	**121**	152
Subsidiaries no longer consolidated [(d)]		-	(69)	(102)	(451)	**(622)**	(63)
Transfers to assets held for sale		(13)	(4)	(47)	-	**(64)**	(4)
Transfers and other movements		1	3	(11)	7	**-**	77
At 31 December		3,370	389	9,983	900	**14,642**	13,794
Balance sheet analysis:							
Current		84	277	634	280	**1,275**	1,315
Non-current		3,286	112	9,349	620	**13,367**	12,479
Total		3,370	389	9,983	900	**14,642**	13,794

(a) The main assumptions used to determine the provision for pensions and post-retirement healthcare, and other information, including the expected level of future funding payments in respect of those arrangements, are given in note 44.

(b) The provision for other employee entitlements includes a provision for long service leave of US$292 million (2016: US$317 million), based on the relevant entitlements in certain Group operations and includes US$24 million (2016: US$59 million) of provision for redundancy and severance payments.

(c) The Group's policy on close-down and restoration costs is described in note 1(k) and in paragraph (iv) under "Critical accounting policies and estimates" on pages 126 and 129. Close-down and restoration costs are a normal consequence of mining, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Remaining lives of operations and infrastructure range from one to over 50 years with an average for all sites, weighted by present closure obligation, of around 20 years (2016: 16 years). Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their respective costs based on current restoration standards and techniques. Provisions of US$9,983 million (2016: US$8,722 million) for close-down and restoration costs and environmental clean-up obligations are based on risk-adjusted cash flows. These estimates have been discounted to their present value at a real risk free rate of 2 per cent per annum, based on an estimate of the long-term, risk-free, pre-tax cost of borrowing. If the risk free rate was decreased by 0.5 per cent then the provision would be US$1,102 million higher.
Non-current provisions for close-down and restoration/environmental expenditure include amounts relating to environmental clean-up of US$336 million (2016: US$366 million) expected to take place between one and five years from the balance sheet date, and US$839 million (2016: US$727 million) expected to take place later than five years after the balance sheet date. Close-down and restoration/environmental liabilities at 31 December 2017 have not been adjusted for amounts of US$75 million (2016: US$110 million) relating to insurance recoveries and other financial assets held for the purposes of meeting these obligations.

(d) "Subsidiaries no longer consolidated" relates primarily to the disposal of Coal & Allied Industries Limited, which completed on 1 September 2017 (see note 37).

27 Share capital – Rio Tinto plc

	2017 Number (million)	2016 Number (million)	2015 Number (million)	2017 US$m	2016 US$m	2015 US$m
Issued and fully paid up share capital of 10p each						
At 1 January	**1,384.520**	1,384.487	1,425.378	**224**	224	230
Ordinary shares issued [(a)] [(c)]	**0.026**	0.033	0.022	**-**	-	-
Shares purchased and cancelled [(b)]	**(32.937)**	-	(40.913)	**(4)**	-	(6)
At 31 December	**1,351.609**	1,384.520	1,384.487	**220**	224	224
Shares held by public						
At 1 January	**1,374.822**	1,374.046	1,414.147			
Shares reissued from treasury [(a)]	**0.147**	0.743	0.790			
Shares purchased and cancelled [(b)]	**(32.937)**	-	(40.913)			
Ordinary shares issued [(a)] [(c)]	**0.026**	0.033	0.022			
At 31 December	**1,342.058**	1,374.822	1,374.046			
Shares held in treasury	**9.551**	9.698	10.441			
Shares held by public	**1,342.058**	1,374.822	1,374.046			
Total share capital	**1,351.609**	1,384.520	1,384.487			
Other share classes						
Special Voting Share of 10p each [(d)]	**1 only**	1 only	1 only			
DLC Dividend Share of 10p each [(d)]	**1 only**	1 only	1 only			
Equalisation Share of 10p each [(d)]	**1 only**	1 only	1 only			

(a) 26,241 ordinary shares were issued in 2017 under the Global Employee Share Plan (GESP). 147,126 ordinary shares were reissued from treasury during the year resulting from the vesting of awards and the exercise of options under Rio Tinto plc employee share-based payment plans, with exercise prices and market values between £28.63 and £37.78 per share (2016: 33,210 ordinary shares were issued under the GESP, and 743,380 ordinary shares were reissued from treasury with exercise prices and market values between £16.53 and £32.23 per share; 2015: 21,709 ordinary shares were issued under the GESP, and 789,887 ordinary shares reissued from treasury with exercise prices and market values between £15.09 and £32.37 per share).

(b) The authority for the Company to buy back its ordinary shares was renewed at the 2017 annual general meeting. 32,937,109 shares were bought back and cancelled in 2017 under the on-market buy-back programme. No shares were bought back in 2016. 40,912,881 shares were bought back and cancelled in 2015 under the on-market buy-back programme.

(c) The aggregate consideration for new shares issued under the GESP was US$1.0 million (2016: US$0.9 million; 2015: US$0.9 million). The difference between the nominal value and the issue price of the shares issued was credited to the share premium account. The aggregate consideration received for treasury shares reissued was US$2 million (2016: US$4 million; 2015: US$13 million). No new shares were issued as a result of the exercise of options under Rio Tinto plc employee share-based payment plans in 2017, 2016 and 2015.

(d) The "Special Voting Share" was issued to facilitate the joint voting by shareholders of Rio Tinto plc and Rio Tinto Limited on Joint Decisions, following the DLC Merger. The "DLC Dividend Share" was issued to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2017, US$38.9 million of shares and ADRs (2016: US$40.1 million; 2015: US$34.1 million) were purchased by employee share ownership trusts on behalf of Rio Tinto plc to satisfy future share options and awards as they vest. At 31 December 2017, 835,062 shares and 38,849 ADRs were held in the employee share ownership trusts on behalf of Rio Tinto plc.

Information relating to share options and other share-based incentive schemes is given in note 43.

28 Share capital – Rio Tinto Limited

	2017 Number (million)	2016 Number (million)	2015 Number (million)	2017 US$m	2016 US$m	2015 US$m
Issued and fully paid up share capital						
At 1 January	**424.19**	424.19	435.76	**3,915**	3,950	4,535
Adjustment on currency translation				**310**	(35)	(503)
Ordinary shares purchased and cancelled [(a)] [(b)]	**(11.78)**	-	(11.57)	**(85)**	-	(82)
At 31 December	**412.41**	424.19	424.19	**4,140**	3,915	3,950
– Special Voting Share [(c)]	**1 only**	1 only	1 only			
– DLC Dividend Share [(c)]	**1 only**	1 only	1 only			
Total share capital	**412.41**	424.19	424.19			

(a) In November 2017, 11,778,064 Rio Tinto Limited ordinary shares were purchased at A$63.67 per share and cancelled under an off-market share buy-back programme carried out pursuant to the shareholder approval granted at Rio Tinto Limited's 2017 annual general meeting for off-market and on-market buy-backs of up to 42.4 million Rio Tinto Limited ordinary shares.

(b) In April 2015, 11,566,308 Rio Tinto Limited ordinary shares were purchased at A$48.44 per share and cancelled under an off-market share buy-back programme carried out pursuant to the shareholder approval granted at Rio Tinto Limited's 2015 annual general meeting for off-market and on-market buy-backs of up to 43.5 million Rio Tinto Limited ordinary shares.

(c) The "Special Voting Share" was issued to facilitate the joint voting by shareholders of Rio Tinto Limited and Rio Tinto plc on Joint Decisions following the DLC Merger. The "DLC Dividend Share" was issued to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2017, US$37.5 million of shares (2016: US$48.5 million; 2015: US$37.0 million) were purchased by employee share ownership trusts on behalf of Rio Tinto Limited to satisfy future share options and awards as they vest. At 31 December 2017, 757,450 shares were held in the employee share ownership trusts on behalf of Rio Tinto Limited.

Information relating to share options and other share-based incentive schemes is given in note 43.

Notes to the 2017 financial statements
continued

29 Other reserves and retained earnings

	2017 US$m	2016 US$m	2015 US$m
Capital redemption reserve [(a)]			
At 1 January	**34**	34	28
Own shares purchased and cancelled	**4**	-	6
At 31 December	**38**	34	34
Hedging reserves			
At 1 January	**32**	-	12
Parent and subsidiaries' net cash flow hedge fair value gains/(losses)	**62**	(88)	(41)
Parent and subsidiaries' net cash flow hedge (gains)/losses transferred to the income statement	**(62)**	116	32
Tax on the above	**-**	4	(3)
At 31 December	**32**	32	-
Available for sale revaluation reserves			
At 1 January	**(126)**	(139)	(130)
Gains/(losses) on available for sale securities	**19**	13	(16)
Losses on available for sale securities transferred to the income statement	**6**	-	7
Tax on the above	**(1)**	-	-
Transfers and other movements	**122**	-	-
At 31 December	**20**	(126)	(139)
Other reserves [(b)]			
At 1 January	**11,861**	11,735	11,704
Change in equity interest held by Rio Tinto	**-**	108	-
Own shares purchased from Rio Tinto Limited shareholders to satisfy share options	**(64)**	(43)	(25)
Employee share options: value of services	**31**	58	58
Deferred tax on share options	**10**	3	(2)
Companies no longer consolidated	**(124)**	-	-
At 31 December	**11,714**	11,861	11,735
Foreign currency translation reserve [(c)]			
At 1 January	**(2,585)**	(2,491)	(492)
Parent and subsidiaries currency translation and exchange adjustments	**2,942**	(204)	(1,940)
Equity accounted units currency translation adjustments	**34**	11	(57)
Currency translation reclassified on disposal	**78**	99	(2)
Transfers and other movements	**11**	-	-
At 31 December	**480**	(2,585)	(2,491)
Total other reserves per balance sheet	**12,284**	9,216	9,139

	2017 US$m	2016 US$m	2015 US$m
Retained earnings [(d)]			
At 1 January	**21,631**	19,736	26,110
Parent and subsidiaries' profit/(loss) for the year	**8,423**	4,298	(1,218)
Equity accounted units' profit after tax for the year	**339**	319	352
Actuarial gains/(losses) [(e)]	**1**	(94)	616
Tax relating to components of other comprehensive income	**(150)**	30	(173)
Total comprehensive income/(loss) for the year	**8,613**	4,553	(423)
Share buy-back programme	**(2,312)**	-	(1,946)
Dividends paid	**(4,250)**	(2,725)	(4,076)
Change in equity interest held by Rio Tinto	**43**	40	20
Companies no longer consolidated	**130**	-	-
Own shares purchased/treasury shares reissued for share options and other movements	**(18)**	(37)	(27)
Employee share options and other IFRS 2 charges taken to the income statement	**57**	64	78
Transfer and other movements	**(133)**	-	-
At 31 December	**23,761**	21,631	19,736

(a) The capital redemption reserve was set up to comply with section 733 of the UK Companies Act 2006 (previously section 170 of the UK Companies Act 1985) when shares of a company are redeemed or purchased wholly out of the company's profits. Balances reflect the amount by which the Company's issued share capital is diminished in accordance with this section.
(b) Other reserves includes US$11,936 million which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009. No share premium was recorded in the Rio Tinto plc financial statements through the operation of the merger relief provisions of the UK Companies Act 1985.
Other reserves also include the cumulative amount recognised under IFRS 2 in respect of options granted but not exercised to acquire shares in Rio Tinto Limited, less, where applicable, the cost of shares purchased to satisfy share options exercised. The cumulative amount recognised under IFRS 2 in respect of options granted but not exercised to acquire shares in Rio Tinto plc is recorded in retained earnings.
(c) Exchange differences arising on the translation of the Group's net investment in foreign controlled companies are taken to the foreign currency translation reserve, as described in note 1(d). The cumulative differences relating to an investment are transferred to the income statement when the investment is disposed of.
(d) Retained earnings and movements in reserves of subsidiaries include those arising from the Group's share of joint operations.
(e) There were no actuarial losses relating to equity accounted units in 2017, 2016 or 2015.

30 Financial instruments and risk management

Except where stated, the information given below relates to the financial instruments of the parent companies and their subsidiaries and joint operations, and excludes those of equity accounted units. The information is grouped in the following sections:

A – Financial assets and liabilities by categories

B – Derivative financial instruments

C – Fair values

A (a) Financial assets and liabilities by categories

At 31 December 2017	Note	Total US$m	Loans and receivables US$m	Available for sale securities US$m	Held at fair value US$m	Held to maturity assets/Other financial liabilities US$m
Financial assets						
Cash and cash equivalents	21	**10,550**	10,550	-	-	-
Trade and other receivables [(a)]		**2,985**	2,895	-	90	-
Equity shares and quoted funds	20	**136**	-	136	-	-
Other investments, including loans [(b)]	20	**1,152**	15	-	1,125	12
Derivatives and embedded derivatives not related to net debt: not designated as hedges [(c)]	20	**168**	-	-	168	-
Derivatives related to net debt [(c)]	20,24	**99**	-	-	99	-
Loans to equity accounted units including quasi equity loans		**198**	198	-	-	-
Total financial assets		**15,288**	**13,658**	**136**	**1,482**	**12**
Financial liabilities						
Trade and other payables [(d)]		**(5,922)**			(15)	(5,907)
Short term borrowings and bank overdrafts	22	**(552)**			-	(552)
Medium and long-term borrowings	22	**(14,624)**			-	(14,624)
Derivatives related to net debt [(c)]	22,24	**(276)**			(276)	-
Other derivatives and embedded derivatives: not designated as hedges [(c)]	22	**(255)**			(255)	-
Other financial liabilities	22	**(345)**			-	(345)
Total financial liabilities		**(21,974)**			**(546)**	**(21,428)**

At 31 December 2016	Note	Total US$m (Adjusted)[(e)(f)]	Loans and receivables US$m (Adjusted)[(e)]	Available for sale securities US$m	Held at fair value US$m	Held to maturity assets/other financial liabilities US$m (Adjusted)[(f)]
Financial assets						
Cash and cash equivalents	21	8,201	8,201	-	-	-
Trade and other receivables [(a)(e)]		3,047	2,904	-	143	-
Equity shares and quoted funds	20	156	-	156	-	-
Other investments, including loans [(b)]	20	454	14	-	431	9
Currency and commodity derivatives: designated as hedges [(c)]	20	1	-	-	1	-
Derivatives and embedded derivatives not related to net debt: not designated as hedges [(c)]	20	423	-	-	423	-
Derivatives related to net debt [(c)]	20,24	108	-	-	108	-
Loans to equity accounted units including quasi equity loans		202	202	-	-	-
Total financial assets		12,592	11,321	156	1,106	9
Financial liabilities						
Trade and other payables [(d) (f)]		(5,209)			(5)	(5,204)
Short term borrowings and bank overdrafts	22	(717)			-	(717)
Medium and long-term borrowings	22	(16,913)			-	(16,913)
Derivatives related to net debt [(c)]	22,24	(516)			(516)	-
Other derivatives and embedded derivatives: not designated as hedges [(c)]	22	(7)			(7)	-
Other financial liabilities	22	(239)			-	(239)
Total financial liabilities		(23,601)			(528)	(23,073)

(a) Trade and other receivables exclude non-financial assets such as pension surpluses, prepayment of tolling charges to joint operations and other prepayments within other receivables and will therefore differ to the amounts shown in note 18.
(b) Other investments, including loans comprise US$958 million (2016: US$250 million) of highly liquid financial assets in managed investment funds classified as held for trading.
(c) These financial assets and liabilities in aggregate agree to total derivative financial instruments disclosed in notes 20 and 22.
(d) Trade and other payables excludes non-financial liabilities such as deferred income, Government grants, royalties, mining taxes and employee entitlements within other payables and will therefore differ to the amounts shown in note 25. The trade and other payables held at fair value are valued using Level 2 inputs.
(e) The 2016 comparative of trade and other receivables has been reduced by US$385 million to remove other receivables, which were incorrectly classified as financial assets.
(f) The 2016 comparative of trade and other payables has been reduced by US$177 million to remove other payables, which were incorrectly classified as financial liabilities.

30 Financial instruments and risk management continued

A (b) Financial risk management

Funding and exposure management

The Group is exposed to a number of financial risks which are considered within the overall Group Risk management framework described on pages 19. The key financial risks are capital and liquidity, commodity price, credit, foreign exchange and interest rate which are discussed in detail below.

The Group's policies on financial risk management are clearly defined and consistently applied. The policies look to ensure that the Group has an appropriate capital structure which enables it to manage the risks faced by the organisation through the commodities cycle. The general approach to financial risks is to ensure that the business is robust enough to enable exposures to float with the market. However, the Group may choose to fix some financial exposures when it is deemed appropriate to do so.

The Group has a diverse portfolio of commodities and operates in a number of markets, which have varying responses to the economic cycle. This diversity also provides some naturally offsetting long-term positions, for example Australian and Canadian currencies tend to strengthen when commodity prices are high and vice versa.

Treasury operations

Treasury is a centralised support and service function that acts as the custodian of the Group's cash and balance sheet and its key financial risks. It performs its activities in a strong control environment, within board approved limits. It is not a profit centre. It is responsible for managing liquidity through funding and investments as well as financial risks such as commodity, financial counterparty credit, foreign exchange and interest risk. It is also responsible for managing banking relationships across the Group along with the Group's insurance and pension arrangements.

Treasury policy

Rio Tinto does not acquire or issue derivative financial instruments for trading or speculative purposes; nor does it believe that it has material exposure to such trading or speculative holdings through its investments in joint arrangements and associates. However, derivatives are used as and when required in order to manage the Group's exposure in accordance with its underlying financial risk management principles. Cash management and investment activities are managed and co-ordinated centrally by Treasury using only approved counterparties and within allocated credit limits which are reviewed and approved by the board at least annually.

(i) Capital and liquidity risk management

Policy

The Group's overriding objective when managing capital is to safeguard the business as a going concern whilst maximising returns for shareholders. In a cyclical and capital intensive industry such as the mining industry, maintaining a strong balance sheet and a sound financial risk management framework are desirable to preserve financial flexibility and generate shareholder value through the cycle. The board and senior management regularly review the capital structure and liquidity of the Group. These reviews take into account the Group's strategic priorities, economic and business conditions, and opportunities that are identified to invest through all points of the commodities cycle and focus on the dividend policy and other forms of shareholder return while also striving to maintain a strong balance sheet. In February 2016, the Group announced a change in its dividend policy, moving from a progressive dividend policy to a dividend determined by taking into account the results for the financial year, the outlook for the Group's major commodities, the board's view of the long-term growth prospects of the business and the Group's objective of maintaining a strong balance sheet. The board expects total cash returns to shareholders over the longer term to be in a range of 40 – 60 per cent of underlying earnings in aggregate throughout the cycle. Acknowledging the cyclical nature of the industry in periods of strong earnings and cash generation, it is the board's intention to supplement the ordinary dividends with additional returns to shareholders. The resulting capital structure provides the Group with a high degree of financial flexibility at a low cost of capital.

To maintain a strong balance sheet, the Group considers various financial metrics including net gearing, the overall level of borrowings and their maturity profile, liquidity levels, total capital, cash flow, EBITDA and interest cover ratios, either on a statutory reported basis or as expected to be adjusted by the credit rating agencies.

Total capital	Note	2017 US$m	2016 US$m
Equity attributable to owners of Rio Tinto (see Group balance sheet)		**44,711**	39,290
Equity attributable to non-controlling interests (see Group balance sheet)		**6,404**	6,440
Net debt	24	**3,845**	9,587
Total capital		**54,960**	55,317

Net debt is a measure used by management and the board to manage the Group's capital structure and liquidity risks. Net debt is disclosed in note 24. Net debt decreased from US$9.6 billion at 31 December 2016 to US$3.8 billion at 31 December 2017 as operating cash inflows and divestment proceeds were partly offset by capital expenditure and cash returns to shareholders. At 31 December 2017 net gearing was seven per cent (2016: 17 per cent) and interest cover was 14 times (2016: seven times).

The unified credit status of the Group is maintained through cross guarantees whereby contractual obligations of Rio Tinto plc and Rio Tinto Limited are automatically guaranteed by the other.

Capital and liquidity risk management continued

The table below summarises the credit ratings attributed to the Group by Standard and Poor's and Moody's investor services as at 31 December.

	2017	2016
Long-term rating	[(a)]A-/A3	A-/Baa1
Short-term rating	A-1/P-2	A-1/P-2
Outlook	[(a)]Positive/Stable	Stable/ Stable

(a) On 12 February 2018, Standard and Poor's upgraded the Group's credit rating to A with a stable outlook.

The Group has access to various forms of financing including its US Shelf Programme, European Debt Issuance Programme, Commercial Paper and credit facilities. The Group did not issue any listed debt in 2017 under these programmes.

During 2017, the Group redeemed US$2.5 billion (2016: US$7.5 billion), in aggregate, principal value of bonds issued by Rio Tinto Finance (USA) plc and Rio Tinto Finance (USA) Limited as part of a liability management programme. Due to early redemption costs this led to an aggregate cash outflow on those redemptions of US$2.7 billion (2016: US$7.9 billion) before fees.

During 2016, Oyu Tolgoi LLC drew down US$4.3 billion under the project finance facility signed in December 2015. The project finance facility provides for interest-only payments for the first five years followed by minimum repayments according to a stepped amortisation schedule for the remaining life of the facility. The due dates stated below represent the final repayment date. In 2017, a further US$9 million was drawn down.

The facility is provided and funded by international financial institutions and export credit agencies representing the governments of the United States, Canada and Australia, along with 15 commercial banks.

Drawdowns comprised, in aggregate, US$0.7 billion MIGA Insured Loan due 2027 (LIBOR plus 2.65% pre-completion, LIBOR plus 3.65% post-completion); US$1.6 billion commercial banks "B Loan" due 2027 (LIBOR plus 3.4% pre-completion, LIBOR plus 4.4% post-completion); US$0.3 billion Export Credit Agencies Loan due 2028 (fixed at 2.3%); US$0.9 billion Export Credit Agencies Loan due 2029 (LIBOR plus 3.65% pre-completion, LIBOR plus 4.65% post completion); and US$0.9 billion International Financial Institutions "A Loan" due 2030 (LIBOR plus 3.78% pre-completion, LIBOR plus 4.78% post-completion).

In November 2015, Rio Tinto Finance plc and Rio Tinto Finance Limited amended and extended its, in aggregate, US$7.5 billion multi-currency revolving credit facilities, originally signed in 2013, with a syndicate of banks. The facilities had two one-year extension options, the first of which was utilised in November 2016 and the second in November 2017. A US$1.9 billion facility currently matures in November 2020 and a US$5.6 billion facility (including a US$ denominated same day access swing-line facility) matures in November 2022. The funds made available under the facility agreements may be used for the general corporate purposes of the Group.

Advances under the revolving facilities bear an interest rate per annum based on LIBOR (or EURIBOR, CDOR or BBSW in relation to any euro, Canadian dollar or Australian dollar loans respectively) plus a margin (which is dependent on the Group's long-term credit rating as determined by Moody's and Standard & Poor's and the level of drawdown). The facility agreements contain no financial covenants. At 31 December 2017 the facilities were undrawn.

(ii) Commodity price risk

Policy

The Group's normal policy is to sell its products at prevailing market prices. Exceptions to this rule are subject to strict limits laid down by the board and to rigid internal controls.

The Group's products are sold to customers under contracts which vary in tenure and pricing mechanisms, including some volumes sold in the spot market. Sales revenue may be subject to adjustment if the product specification does not conform to the terms specified in the sales contract.

Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms, with a smaller proportion of iron ore volumes being sold on the spot market.

Copper and aluminium are generally sold under contracts which vary in tenure and pricing mechanisms, with some volumes sold in the spot market. The prices are determined by reference to prevailing market prices on terminal markets, such as the London Metal Exchange (LME) and the Commodities Exchange (COMEX) in New York. Prices fluctuate widely in response to changing levels of supply and demand but, in the long run, prices are related to the marginal cost of supply. Gold is also priced in an active market in which prices respond to daily changes in quantities offered and sought. Newly mined gold is only one source of supply; investment and disinvestment can be important elements of supply and demand.

Certain of the Group's products are provisionally priced at the date revenue is recognised, however, with the exception of copper, prices are generally finalised within the calendar quarter of the month of shipment. The final selling price is based on the price for the quotational period stipulated in the contract. Substantially all iron ore and aluminium sales are reflected at final prices in the results for the period. Final prices for copper concentrate are normally determined between 30 to 180 days after delivery to the customer. The change in value of the embedded pricing derivative included in the receivable is based on relevant forward market prices and is included in sales revenue.

As at 31 December 2017, the Group had 250 million pounds of copper sales (31 December 2016: 235 million pounds) that were provisionally priced at US 304 cents per pound (2016: US 250 cents per pound). The final price of these sales will be determined during the first half of 2018. A ten per cent change in the price of copper realised on the provisionally priced sales, all other factors held constant, would increase or reduce net earnings by US$41 million (2016: US$36 million).

Notes to the 2017 financial statements
continued

30 Financial instruments and risk management
continued

Hedging strategy
Rio Tinto's exposure to commodity prices is diversified by virtue of its broad commodity base and the Group does not generally consider commodity price hedging would provide a long-term benefit to shareholders. The Group may hedge certain commitments with some of its customers or suppliers. Details of commodity derivatives held at 31 December 2017 are set out in section B.

Sensitivities
The Group's commodity derivatives are impacted by changes in market prices and include those aluminium forward and option contracts embedded in electricity purchase contracts outstanding at 31 December 2017. A ten per cent increase in market prices on the embedded derivatives in the power contracts would reduce net earnings by US$221 million (2016: US$144 million), and a ten per cent decrease in prices would increase net earnings by US$212 million (2016: US$139 million).There will be an offsetting change in future Group earnings with any changes in price.

The Group's "own use contracts" are excluded from the sensitivity analysis as they are outside the scope of IAS 39. Such contracts to buy or sell non-financial items can be net settled but were entered into and continue to be held for the purpose of the receipt or delivery of the non-financial item in accordance with the business unit's expected purchase, sale or usage requirements.

(iii) Credit risk
Policy
Credit risk is the risk that a counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. The Group is exposed to credit risk from its operating activities (primarily from customer receivables) and from its financing activities, including investments in treasury and liquidity funds, deposits with banks and financial institutions, other short-term investments, interest rate and currency derivative contracts and other financial instruments.

Credit risks related to receivables
Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and controls relating to customer credit risk management. Credit limits are established for all customers based on internal or external rating criteria. Where customers are rated by an independent credit rating agency, these ratings are used to set credit limits. In circumstances where no independent credit rating exists, the credit quality of the customer is assessed based on an extensive credit rating scorecard. Outstanding customer receivables are regularly monitored and any credit concerns highlighted to senior management. Shipments to major customers are generally covered by letters of credit or other forms of credit insurance.

At 31 December 2017, the Group had approximately 115 customers (2016: 92 customers) that owed the Group more than US$5 million each and these balances accounted for approximately 78 per cent (2016: 74 per cent) of all receivables owing. There were 23 customers (2016: 24 customers) with balances greater than US$20 million accounting for just over 35 per cent (2016: 42 per cent) of total amounts receivable. Details of trade and other receivables past due but not impaired are provided in note 18.

Credit risk related to financial instruments and cash deposits
Credit risk from investments in government securities (primarily US Government), corporate and asset-backed securities or money market funds, and balances with banks and financial institutions is managed by Group Treasury in accordance with a board-approved policy. Investments of surplus funds are made only with approved investment grade (BBB- and above) counterparties who have been assigned specific credit limits. The board reviews these annually. The limits are set to minimise the concentration of credit risk and therefore mitigate the potential for financial loss through counterparty failure.

The maximum credit risk exposure of the Group's financial assets at the balance sheet date is as follows:

	Note	2017 US$m	2016 US$m (Adjusted)[(a)]
Cash and cash equivalents	21	**10,550**	8,201
Trade and other receivables [(a)]		**2,985**	3,047
Investments	20	**1,152**	454
Derivative assets	20	**267**	532
Loans to equity accounted units		**39**	39
Total		**14,993**	12,273

(a) The 2016 comparative of trade and other receivables has been reduced by US$385 million to remove other receivables, which were incorrectly classified as financial assets.

(iv) Foreign exchange risk

Policy

The Group's shareholders' equity, earnings and cash flows are influenced by a wide variety of currencies due to the geographic diversity of the Group's sales and the countries in which it operates. The US dollar is the currency in which the majority of the Group's sales are denominated. Operating costs are influenced by the currencies of those countries where the Group's mines and processing plants are located and also by those currencies in which the costs of imported equipment and services are determined. The Australian and Canadian dollars are the most important currencies (apart from the US dollar) influencing costs. In any particular year, currency fluctuations may have a significant impact on Rio Tinto's financial results. A strengthening of the US dollar against the currencies in which the Group's costs are partly denominated has a positive effect on Rio Tinto's underlying earnings. However, a strengthening of the US dollar does reduce the value of non US dollar-denominated net assets and therefore total equity.

The Group's financial statements are presented in US dollars, as it most reliably reflects the global business performance of the Group as a whole. It is also the most appropriate currency for financing the Group's operations. Borrowings and cash are predominantly denominated in US dollars, either directly or through the use of derivatives.

The majority of debt and other financial assets and liabilities including intragroup balances, are held in the functional currency of the relevant subsidiary. In a small number of instances, US dollar debt and other financial assets and liabilities, including intragroup balances, are held in currencies other than the functional currency of the relevant subsidiary. This results in an accounting exposure to exchange gains and losses as the financial assets and liabilities are translated into the functional currency of the subsidiary that holds those assets and liabilities. These exchange gains and losses are recorded in the Group's income statement except to the extent that they can be taken to equity under the Group's accounting policy which is explained in note 1(d). The Group's income statement includes realised and unrealised exchange gains/losses arising on US dollar external borrowings and intragroup balances in entities with a non US dollar functional currency. On translation to the Group's US dollar presentation currency there is a corresponding and offsetting exchange difference on translation of these balances which is recognised directly in the currency translation reserve. There is no impact on total equity. Gains and losses on US dollar net debt and on non-trading intragroup balances are excluded from underlying earnings. Other exchange gains and losses are included in underlying earnings.

See section B for the details of cross currency interest rate swaps relating to borrowings.

After taking into account relevant swap instruments, the majority of the Group's net debt is denominated in US dollars.

The table below summarises, by currency, the Group's net debt, after taking into account relevant cross currency interest rate swaps and foreign exchange contracts:

Net funds/(debt) by currency	Cash and cash equivalents US$m	Other investments US$m	Total borrowings in note 22 US$m	Derivatives related to net debt US$m	**Net funds/ (debt) 2017 US$m**	Net funds/ (debt) 2016 US$m
US dollar	9,950	958	(14,359)	(177)	**(3,628)**	(9,294)
Australian dollar	332	-	(540)	-	**(208)**	(313)
Euro	49	-	(107)	-	**(58)**	(62)
South African rand	59	-	-	-	**59**	103
Canadian dollar	18	-	(166)	-	**(148)**	(155)
Other	142	-	(4)	-	**138**	134
Total	**10,550**	**958**	**(15,176)**	**(177)**	**(3,845)**	(9,587)

Hedging strategy

Under normal market conditions, the Group does not consider that active currency hedging of transactions would provide long-term benefits to shareholders. The Group reviews its exposure on a regular basis and reserves the right to enter into hedges to maintain financial stability. Currency protection measures may be deemed appropriate in specific commercial circumstances, typically hedging of capital expenditures and other significant financial items such as acquisitions, disposals, tax and dividends, and are subject to strict limits laid down by the board. Refer to section B for the details of cross currency interest rate, currency forward and option contracts used to manage the currency risk exposures of the Group at 31 December 2017.

Sensitivities

The table below gives the estimated retranslation effect on financial assets and financial liabilities, including intragroup balances, of a ten per cent strengthening in the closing exchange rate of the US dollar against significant currencies. The sensitivity associated with a ten per cent weakening of a particular currency would be broadly equal and opposite within equity to the figures presented below. The impact is expressed in terms of the effect on net earnings and underlying earnings, assuming that each exchange rate moves in isolation. The sensitivities are based on financial assets and financial liabilities held at 31 December 2017, where balances are not denominated in the functional currency of the subsidiary or joint operation, and exclude financial assets and liabilities held by equity accounted units. These balances will not remain constant throughout 2018, and therefore the following information should be used with care.

At 31 December 2017
Gains/(losses) associated with ten per cent strengthening of the US dollar

Currency exposure	**Closing exchange rate US cents**	**Effect on net earnings US$m**	**Of which amount impacting underlying earnings US$m**
Australian dollar	**78**	**608**	**47**
Canadian dollar	**79**	**(134)**	**3**
Euro	**120**	**165**	**(2)**

30 Financial instruments and risk management continued

At 31 December 2016
Gains/(losses) associated with ten per cent strengthening of the US dollar

Currency exposure	Closing exchange rate US cents	Effect on net earnings US$m	Of which amount impacting underlying earnings US$m
Australian dollar	72	369	37
Canadian dollar	74	(159)	15
Euro	105	172	-

Ten per cent is the annual exchange rate movement that management deems to be reasonably probable (on an annual basis over the long run) for one of the Group's significant currencies and as such provides an appropriate representation.

(v) Interest rate risk

Policy

Interest rate risk refers to the risk that the value of a financial instrument or cash flows associated with the instrument will fluctuate due to changes in market interest rates. The Group's interest rate management policy is generally to borrow and invest at floating interest rates. This approach is based on a historical correlation between interest rates and commodity prices. However, in certain circumstances the Group may elect to maintain a higher proportion of fixed-rate funding.

Hedging strategy

As noted above, the Group hedges its interest rate risk by entering into interest rate derivatives to achieve its policies. The Group reviews the positions on a regular basis. During 2017, in conjunction with its liability management programme, the Group closed out interest rate swaps with a notional principal amount of US$2.0 billion, giving rise to a net cash outflow of US$5 million, including accrued interest of US$2 million. The interest rate swaps were in fair value hedge relationships prior to close out. See section B for details of currency and interest rate swaps relating to borrowings.

At the end of 2017, US$12.5 billion (2016: US$14.7 billion) of the Group's adjusted total borrowings was at floating rates after taking into account interest and currency interest rate swaps, resulting in a floating to fixed debt ratio of 82 per cent floating to 18 per cent fixed (2016: 81 per cent floating to 19 per cent fixed). On a net debt basis, the floating to fixed debt ratio was 26 per cent floating to 74 per cent fixed (2016: 65 per cent floating to 35 per cent fixed). These ratios were principally impacted by the significant level of cash generated during the year. The weighted average interest rate on total adjusted borrowings as at 31 December 2017 was approximately 4.2 per cent (2016: approximately 4.0 per cent) and the weighted average maturity was approximately ten years (2016: ten years). The weighted average maturity and weighted average effective interest rate are based on current interest rates and the carrying value of gross borrowings at the year end.

See note 22 for the details of debt outstanding at 31 December 2017.

Sensitivities

Based on the Group's net debt (refer to note 24) and other floating rate financial instruments outstanding as at 31 December 2017, the effect on net earnings of a 100 basis point increase in US dollar LIBOR interest rates, with all other variables held constant, would be a charge of US$8 million (2016: US$44 million). The Group has an exposure to interest rate volatility within shareholders' equity arising from fair value movements on derivatives in the cash flow hedge reserve. These derivatives have an underlying exposure to sterling and US dollar rates. With all factors remaining constant and based on the composition of derivatives impacting the cash flow reserve at 31 December 2017, the sensitivity of a 100 basis point increase in interest rates in each of the currencies in isolation would impact equity, before tax, by a charge of US$84 million (2016: US$84 million charge) for sterling and a credit of US$88 million (2016: US$95 million credit) for US dollar. A 100 basis point decrease would have broadly the same impact in the opposite direction. These balances will not remain constant throughout 2018, and therefore this information should be used with care.

A (c) Financial liability analysis

The table below analyses the Group's financial liabilities by relevant maturity groupings based on the remaining period from the balance sheet date to the contractual maturity date. As the amounts disclosed in the table are the contractual undiscounted cash flows, these balances will not necessarily agree with the amounts disclosed in the balance sheet.

At 31 December 2017

(Outflows) / inflows	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 3 years US$m	Between 3 and 4 years US$m	Between 4 and 5 years US$m	After 5 years US$m	**Total US$m**
Non-derivative financial liabilities							
Trade and other payables	(5,488)	(434)	-	-	-	-	**(5,922)**
Borrowings before swaps	(552)	(148)	(1,011)	(916)	(1,283)	(11,387)	**(15,297)**
Expected future interest payments [a]	(679)	(673)	(670)	(638)	(606)	(4,553)	**(7,819)**
Other financial liabilities	(302)	(43)	-	-	-	-	**(345)**
Derivative financial liabilities [b]							
Derivatives related to net debt - net settled	10	10	14	11	7	36	**88**
Derivatives related to net debt - gross settled [a]:							
– gross inflows	62	62	958	44	44	1,493	**2,663**
– gross outflows	(82)	(82)	(1,051)	(55)	(55)	(1,741)	**(3,066)**
Derivatives not related to net debt - net settled	(43)	(36)	(33)	(24)	(21)	(138)	**(295)**
Derivatives not related to net debt - gross settled:							
– gross inflows	795	-	-	-	-	-	**795**
– gross outflows	(802)	-	-	-	-	-	**(802)**
Total	(7,081)	(1,344)	(1,793)	(1,578)	(1,914)	(16,290)	**(30,000)**

At 31 December 2016

(Outflows) / inflows	Within 1 year or on demand US$m (Adjusted)[c]	Between 1 and 2 years US$m (Adjusted)[d]	Between 2 and 3 years US$m	Between 3 and 4 years US$m	Between 4 and 5 years US$m	After 5 years US$m	**Total US$m (Adjusted)[c][d]**
Non-derivative financial liabilities							
Trade and other payables [c][d]	(4,814)	(395)	-	-	-	-	**(5,209)**
Borrowings before swaps	(704)	(191)	(1,330)	(1,347)	(1,317)	(12,806)	**(17,695)**
Expected future interest payments [a]	(783)	(779)	(722)	(667)	(620)	(5,056)	**(8,627)**
Other financial liabilities	(199)	(41)	-	-	-	-	**(240)**
Derivative financial liabilities [b]							
Derivatives related to net debt - net settled	29	29	27	25	23	25	**158**
Derivatives related to net debt - gross settled [a]:							
– gross inflows	55	55	55	842	40	1,377	**2,424**
– gross outflows	(73)	(73)	(73)	(1,045)	(51)	(1,785)	**(3,100)**
Derivatives not related to net debt - net settled	(2)	-	-	-	-	-	**(2)**
Derivatives not related to net debt - gross settled:							
– gross inflows	29	-	-	-	-	-	**29**
– gross outflows	(29)	-	-	-	-	-	**(29)**
Total	(6,491)	(1,395)	(2,043)	(2,192)	(1,925)	(18,245)	**(32,291)**

(a) Interest payments have been projected using interest rates applicable at the end of the applicable financial year. Where debt is subject to variable interest rates, future interest payments are subject to change in line with market rates.
(b) The maturity grouping is based on the earliest payment date.
(c) The 2016 comparative of trade and other payables due within 1 year or on demand has been reduced by US$111 million to remove other payables, which were incorrectly classified as financial liabilities.
(d) The 2016 comparative of trade and other payables due between 1 and 2 years has been reduced by US$66 million to remove other payables, which were incorrectly classified as financial liabilities.

The maximum carrying value of borrowings repayable, after the impact of swaps, maturing in any financial year is US$1.7 billion (2016: US$1.7 billion).

Offsetting and enforceable master netting agreements

Financial assets and liabilities are offset and the net amount reported in the consolidated balance sheet when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously. There were no material amounts offset in the balance sheet and no material enforceable master netting agreements were identified.

30 Financial instruments and risk management continued

B Derivative financial instruments

The Group's derivatives, including embedded derivatives, as at 31 December 2017, are summarised below:

	Total fair value			
	2017		2016	
Derivatives designated as hedges	**Asset US$m**	**Liability US$m**	Asset US$m	Liability US$m
Interest rate swaps [(a)]	**99**	**(127)**	108	(134)
Cross currency interest rate swaps [(b)]	**-**	**(149)**	-	(382)
Currency forward contracts, options and swaps	**-**	**-**	1	-
Total derivatives designated as hedges	**99**	**(276)**	109	(516)
Derivatives not designated as hedges				
Currency forward contracts, options and swaps	**7**	**(2)**	1	-
Aluminium forward contracts [(c)]	**21**	**(9)**	6	(2)
Aluminium embedded derivatives [(d)]	**140**	**(238)**	411	(3)
Other embedded derivatives	**-**	**(5)**	5	-
Other commodity contracts	**-**	**(1)**	-	(2)
Total derivatives not designated as hedges	**168**	**(255)**	423	(7)
Total derivative instruments	**267**	**(531)**	532	(523)
Analysed by maturity:				
Less than 1 year	**29**	**(50)**	24	(6)
Between 1 and 5 years	**31**	**(233)**	110	(194)
More than 5 years	**207**	**(248)**	398	(323)
Total	**267**	**(531)**	532	(523)
Total net derivative instruments	**(264)**		9	

Reconciliation to balance sheet	Note	**2017 US$m**	2016 US$m
– non-current assets	20	**238**	508
– current assets	20	**29**	24
– current liabilities	22	**(50)**	(6)
– non-current liabilities	22	**(481)**	(517)
Total net derivatives instruments, detailed above		**(264)**	9

(a) The interest rate swaps are used to convert certain fixed rate borrowings to a floating rate. For further details, see note 22.
(b) The cross currency interest rate swaps are used to convert non US dollar denominated borrowings to either fixed or floating US dollar borrowings. For further details see note 22.
(c) The aluminium forward contracts are entered into to convert aluminium sales made at a fixed price to market price (LME cash). In 2016 and 2017 these contracts were not designated as hedges.
(d) Aluminium embedded derivatives (forward contracts and options) are contained within certain aluminium smelter electricity purchase contracts. These contracts reduce the Group's margin exposure to movements in the aluminium price.

C (a) Fair values

The carrying amounts and fair values of all of the Group's financial instruments which are not carried at an amount which approximates their fair value at 31 December 2017 and 31 December 2016 are shown in the following table. The fair values of the Group's cash equivalents and loans to equity accounted units approximate their carrying values as a result of their short maturity or because they carry floating rates of interest.

		31 December 2017		31 December 2016	
	Note	**Carrying value US$m**	**Fair value US$m**	Carrying value US$m	Fair value US$m
Short-term borrowings	22	**(552)**	**(552)**	(717)	(706)
Medium and long-term borrowings	22	**(14,624)**	**(16,385)**	(16,913)	(18,437)

Borrowings with a carrying value of US$9.6 billion (2016: US$11.9 billion) relate to listed bonds with a fair value of US$10.9 billion (2016: US$12.9 billion) and are categorised as level 1 in the fair value hierarchy. Borrowings with a carrying value of US$4.1 billion (2016: US$4.1 billion) relate to project finance draw down with a fair value of US$4.7 billion (2016: US$4.6 billion) and are categorised as level 3 in the fair value hierarchy. The 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.

C (b) Valuation hierarchy

The table below shows the financial instruments carried at fair value by valuation method at 31 December 2017:

	Note	Total US$m	Level 1[(a)] US$m	Level 2[(b)] US$m	Level 3 [(c)] US$m	Not held at fair value US$m
Assets						
Equity shares and quoted funds	20	**136**	**88**	**-**	**3**	**45**
Other investments, including loans [(d)]	20	**1,152**	**1,037**	**-**	**88**	**27**
Trade and other receivables[(e)]		**2,985**	**-**	**90**	**-**	**2,895**
		4,273	**1,125**	**90**	**91**	**2,967**
Derivatives						
Forward contracts and option contracts, not designated as hedges [(f)] (Section B)		**(87)**	**-**	**11**	**(98)**	**-**
Derivatives related to net debt (Section B) [(g)]		**(177)**	**-**	**(177)**	**-**	**-**
		4,009	**1,125**	**(76)**	**(7)**	**2,967**

The table below shows the financial instruments carried at fair value by valuation method at 31 December 2016:

	Note	Total US$m	Level 1[(a)] US$m	Level 2[(b)] US$m	Level 3[(c)] US$m	Not held at fair value US$m
Assets						
Equity shares and quoted funds	20	156	94	-	3	59
Other investments, including loans [(d)]	20	454	363	-	68	23
Trade and other receivables[(e)]		3,047	-	143	-	2,904
		3,657	457	143	71	2,986
Derivatives						
Forward contracts: designated as hedges (Section B)		1	-	1	-	-
Forward contracts and option contracts, not designated as hedges [(f)] (Section B)		416	-	8	408	-
Derivatives related to net debt (Section B) [(g)]		(408)	-	(408)	-	-
		3,666	457	(256)	479	2,986

(a) Valuation is based on unadjusted quoted prices in active markets for identical financial instruments. This category includes listed equity shares and other quoted funds.
(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 for the asset or liability that are not based on observable market data (unobservable inputs).
(d) Other investments, including loans, comprise: cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty amounts receivable. The royalty receivables are valued based on an estimate of forward sales subject to the royalty agreement.
(e) Trade receivables includes provisionally priced receivables relating to sales contracts where selling price is determined after delivery to the customer, based on the market price at the relevant quotation point stipulated in the contract. Revenue is recognised on provisionally priced sales based on the forward selling price for the period stipulated in the contract. At the end of December 2017, US$90 million (2016: US$143 million) of provisional priced receivables were recognised.
(f) Level 3 derivatives consist of derivatives embedded in electricity purchase contracts linked to the LME with terms expiring between 2018 and 2030 (2016: 2017 and 2030). The embedded derivatives are measured using discounted cash flows and option model valuation techniques. Long-term embedded derivatives with a fair value of US($98) million at 31 December 2017 (2016: US$408 million) are valued using significant unobservable inputs as the term of the derivative extends beyond the forward curve for aluminium. In valuing these derivatives, aluminium prices are flatlined beyond the market forward curve and increased by projected inflation up to the date of expiry of each contract. The range of market prices are US$2,679 per metric tonne in 2028 to US$2,848 in 2030 (2016: US$2,136 per metric tonne in 2027 to US$2,300 in 2030).
(g) Interest rate and currency interest rate swaps are valued using applicable market quoted swap yield curves adjusted for relevant basis and credit default spreads. Currency interest rate swap valuations also use market quoted foreign exchange rates. A discounted cash flow approach is applied to the cash flows derived from the inputs to determine fair value.

There were no transfers between Level 1 and Level 2, or between Level 2 and Level 3 in the year ended 31 December 2017 or the year ended 31 December 2016.

Notes to the 2017 financial statements
continued

30 Financial instruments and risk management continued

C (c) Level 3 financial assets and financial liabilities
The table below shows the summary of changes in the fair value of the Group's Level 3 financial assets and financial liabilities.

	2017 Level 3 financial assets and financial liabilities US$m	2016 Level 3 financial assets and financial liabilities US$m
Opening balance	**479**	456
Currency translation adjustments	**8**	(2)
Total realised gains/(losses) included in:		
– Consolidated sales revenue	**1**	1
– Net operating costs	**(5)**	(28)
Total unrealised (losses)/gains included in:		
- Consolidated sales revenue	**17**	-
– Net operating costs [(a)]	**(508)**	11
Additions	**-**	43
Impairment	**-**	(2)
Disposals/maturity of financial instruments	**(5)**	-
Transfers	**6**	-
Closing balance	**(7)**	479
Total (losses)/gains for the year included in the income statement for assets and liabilities held at year end	**(491)**	11

(a) (Losses)/gains on embedded commodity derivatives not qualifying for hedge accounting which are included within net operating costs.

Sensitivity analysis in respect of Level 3 derivatives
The values of forward contracts and options that are determined using unobservable inputs are calculated using appropriate discounted cash flow and option model valuation techniques. The most significant of these assumptions relate to long-term pricing wherein aluminium prices are flatlined beyond the market forward curve and increased by a projected inflation after the ten year LME curve. A ten per cent increase in long-term metal pricing assumptions would result in a US$41 million (31 December 2016: US$38 million) decrease in carrying value. A ten per cent decrease in long-term metal pricing assumptions would result in a US$22 million (31 December 2016: US$64 million) increase in carrying value.

31 Contingencies and commitments

	2017 US$m	2016 US$m
Capital commitments excluding the Group's share of joint venture capital commitments		
Within 1 year	**2,052**	1,588
Between 1 and 3 years	**531**	433
Between 3 and 5 years	**58**	194
After 5 years	**-**	15
Total	**2,641**	2,230
Group's share of joint venture capital commitments		
Within 1 year	**29**	113
Total	**29**	113

Capital commitments include open purchase orders for managed operations and expenditure on major projects authorised to date by the Rio Tinto Investment Committee for non-managed operations. On a legally enforceable basis capital commitments would be approximately US$0.5 billion (2016: US$0.6 billion) as many of the contracts relating to the Group's projects have various cancellation clauses.

Unrecognised commitments to contribute funding or resources to joint ventures
The Group has a commitment to purchase and market a portion (in excess of the Group's ownership interest) of the output of Sohar Aluminium Company L.L.C., an aluminium smelter in which the Group is a joint venturer. The Group immediately sells the purchased products to third parties.

The Group, along with the other joint venturers, has certain commitments to provide emergency funding (ie funding required to preserve the life or assets of the company or to comply with applicable laws) that may be required by Sohar Aluminium Company L.L.C., subject to approved thresholds.

At 31 December 2017, Minera Escondida Limitada held an undrawn shareholder line of credit for US$225 million (Rio Tinto share; 31 December: US$225m). This has a three-year duration.

Operating leases

The aggregate amount of minimum lease payments under non-cancellable operating leases are as follows:

	2017 US$m	Adjusted (a) 2016 US$m
Within 1 year	**397**	331
Between 1 and 3 years	**542**	463
Between 3 and 5 years	**313**	314
After 5 years	**593**	612
	1,845	1,720

Operating leases include leases of dry bulk vessels and offices as well as other property, plant and equipment. The terms of lease payments vary with a significant proportion being fixed rate and including renewal options. Leases for dry bulk vessels include costs for crewing services.

(a) The 2016 comparative has been amended to exclude net obligations of US$125 million related to contractual arrangements which do not qualify as leases in accordance with IAS 18. These amounts have instead been included as purchase obligations.

Purchase obligations

The aggregate amount of future payment commitments under purchase obligations outstanding at 31 December was:

	2017 US$m	Adjusted (a) 2016 US$m
Within 1 year	**2,818**	2,677
Between 1 and 2 years	**1,664**	1,711
Between 2 and 3 years	**1,433**	1,327
Between 3 and 4 years	**1,318**	1,207
Between 4 and 5 years	**1,062**	1,040
After 5 years	**11,494**	11,356
	19,789	19,318

(a) The 2016 comparative has been amended to include certain contractual arrangements previously categorised as operating leases (refer above).

Purchase obligations as disclosed above are agreements to purchase goods or services that are enforceable and legally binding and specify all significant terms, including: fixed or minimum quantities to be purchased or consumed; fixed, minimum or variable price provisions; and the approximate timing of the transactions.

Purchase obligations for goods primarily relate to purchases of raw materials and consumables and purchase obligations for services primarily relate to charges for use of infrastructure, commitments to purchase power and freight contracts. These goods and services are expected to be used in the business. To the extent that this changes, a provision for onerous obligations may be made as described in note 1(i).

Purchases from joint arrangements or associates are included to the extent that the quantity purchased is in excess of Rio Tinto's ownership interest in the entity. However, purchase obligations exclude contracted purchases of bauxite, alumina and aluminium from joint arrangements and associates and contracted purchases of alumina from third parties as the purchases are made for commercial reasons and the Group is, overall, a net seller of these commodities.

In addition, as explained above, the Group has a commitment to purchase and market a portion (in excess of the Group's ownership interest) of the output of Sohar Aluminium Company L.L.C.

31 Contingencies and commitments continued

	2017 US$m	2016 US$m
Contingent liabilities (subsidiaries and joint operations)		
Indemnities and other performance guarantees [(a)] [(b)]	**552**	473

(a) 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 guarantees or indemnities being called is assessed as possible rather than probable or remote.
(b) There were no material contingent liabilities arising in relation to the Group's joint ventures and associates.

Contingent liabilities
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 the previous 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 interim results in August 2012. Rio Tinto believes that the SEC case is unwarranted and that, when all the facts are considered by the court, or if necessary by a jury, the SEC's claims will be rejected. Rio Tinto will defend the allegations vigorously.

Separately, but at the same time, Rio Tinto reached a settlement with the UK's Financial Conduct Authority (FCA) in relation to the timing of the impairment of RTCM. The FCA determined that Rio Tinto should have carried out an impairment review in relation to RTCM for its 2012 interim results and, if it had done so, those results published in August 2012 would have reflected the impairment it recorded six months later. The FCA determined that Rio Tinto had breached the FCA's Disclosure and Transparency Rules and imposed a financial penalty on Rio Tinto of £27.4 million (US$36.4 million). It is important to stress that the FCA made no findings of fraud, or of any systemic or widespread failure by Rio Tinto. This separate FCA case is now closed. The Australian Securities and Investments Commission is also reviewing the RTCM impairment.

In addition, 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.

The outcomes of these matters, and associated class actions that have been commenced on behalf of securities holders, remain uncertain, but they could ultimately expose the Group to material financial cost. The board is giving these matters its full and proper attention and a dedicated board committee continues to monitor the progress of these matters.

The Group is monitoring developments in relation to EU State Aid investigations including the EU Commissions State Aid investigation into the UK's Controlled Foreign Company regime. The Group does not currently consider that any provision is required in relation to EU State Aid.

Guarantees by parent companies
Rio Tinto plc and Rio Tinto Limited have, jointly and severally, fully and unconditionally guaranteed the following securities issued by the following 100 per cent owned finance subsidiaries: US$5.8 billion (31 December 2016: US$8.3 billion) Rio Tinto Finance (USA) Limited and Rio Tinto Finance (USA) plc bonds with maturity dates up to 2042; and US$2.1 billion (31 December 2016: US$1.9 billion) on the European Debt Issuance Programme. In addition, Rio Tinto Finance plc and Rio Tinto Finance Limited have entered into facility arrangements for an aggregate amount of US$7.5 billion (31 December 2016: US$7.5 billion). The facilities are guaranteed by Rio Tinto plc and Rio Tinto Limited.

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. At 31 December 2017, US$4.3 billion of project finance debt was outstanding under this facility (2016: US$4.3 billion). Oyu Tolgoi LLC is jointly owned by Erdenes Oyu Tolgoi LLC (34 per cent), which is controlled by the Government of Mongolia, and Turquoise Hill Resources Ltd. (66 per cent, of which Rio Tinto owns 51 per cent). The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility.

The Rio Tinto guarantee applies to the extent that Turquoise Hill Resources Ltd cannot satisfy Oyu Tolgoi LLC's project finance debt servicing obligations under its own guarantee to the lenders, called the sponsor debt service undertaking (DSU). Both the CSU and DSU contain a carve-out for certain political risk events.

Contingent assets
The Group has, from time to time, various insurance claims outstanding with reinsurers. At 31 December 2016 this included a claim relating to the Manefay slide at Rio Tinto Kennecott in April 2013. Interim progress payments were received on this claim in 2013 and 2015; the final payment was received in January 2017.

32 Average number of employees

	Subsidiaries and joint operations			Equity accounted units (Rio Tinto share)			Group total		
	2017	2016	2015	**2017**	2016	2015	**2017**	2016	2015
The principal locations of employment were:									
Australia and New Zealand	**19,041**	20,489	22,125	**602**	849	863	**19,643**	21,338	22,988
Canada	**10,256**	10,239	11,113	**-**	-	-	**10,256**	10,239	11,113
UK	**309**	487	542	**-**	-	-	**309**	487	542
Europe	**1,505**	1,722	2,312	**-**	-	-	**1,505**	1,722	2,312
Africa	**3,461**	4,875	5,651	**1,269**	1,270	1,271	**4,730**	6,145	6,922
US	**3,429**	3,196	3,439	**-**	-	-	**3,429**	3,196	3,439
Mongolia	**2,861**	2,737	2,647	**-**	-	-	**2,861**	2,737	2,647
Indonesia	**1,642**	2,862	2,871	**-**	-	-	**1,642**	2,862	2,871
South America	**197**	166	192	**1,237**	1,388	1,317	**1,434**	1,554	1,509
Other countries [(a)]	**998**	749	595	**-**	-	-	**998**	749	595
	43,699	47,522	51,487	**3,108**	3,507	3,451	**46,807**	51,029	54,938

(a) "Other countries" primarily includes employees in the Middle East (excluding Oman which is included in Africa), India, Singapore and other countries in Asia which are not shown separately in the table above. For the year ended 31 December 2017, the average number of employees in Singapore was 434 (2016: 262) and the average number of employees in India was 310 (2016: 280).

Employee numbers, which represent the average for the year, include 100 per cent of employees of subsidiary companies. Employee numbers for joint operations and equity accounted units are proportional to the Group's interest under contractual agreements. Average employee numbers include a part-year effect for companies acquired or disposed of during the year.

Part-time employees are included on a full-time-equivalent basis. Temporary employees are included in employee numbers.

People employed by contractors are not included.

33 Principal subsidiaries

At 31 December 2017

Company and country of incorporation/ operation	Principal activities	Class of shares held	Proportion of class held (%)	Group interest (%)	Non-controlling interest (%)
Australia					
Argyle Diamonds Limited	Mining and processing of diamonds	Ordinary	100	100	-
Dampier Salt Limited	Salt and gypsum	Ordinary	68.36	68.36	31.64
Energy Resources of Australia Limited	Uranium mining	Ordinary	68.39	68.39	31.61
Hamersley Iron Pty Limited	Iron ore mining	Ordinary	100	100	-
North Mining Limited [a]	Iron ore mining	Ordinary	100	100	-
Queensland Coal Pty Limited [b]	Coal mining	Ordinary	100	100	-
Rio Tinto Aluminium (Holdings) Limited	Bauxite mining; alumina production; primary aluminium smelting	Ordinary	100	100	-
Robe River Mining Co Pty Ltd [a]	Iron ore mining	Class A	40	60	40
		Class B	76.36		
Brazil					
Alcan Alumina Ltda. [c]	Alumina production and bauxite mining	Quota	100	100	-
Canada					
Iron Ore Company of Canada[d]	Iron ore mining; iron ore pellets	Common	58.72	58.72	41.28
Rio Tinto Fer et Titane Inc.	Titanium dioxide feedstock; high purity iron and steel	Common	100	100	-
		Class B preference	100	100	-
		CAD 0.01 preferred	100	100	-
Rio Tinto Alcan Inc.	Bauxite mining; alumina refining; aluminium smelting	Common	100	100	-
Diavik Diamond Mines (2012) Inc. [e]	Diamond mining and processing	Common	100	100	-
Guinea					
Simfer Jersey Limited [f]	Iron ore project	Ordinary	53	53	47
Madagascar					
QIT Madagascar Minerals SA [g]	Ilmenite mining	Common	80	80	
		Investment certificates	100	100	15
		Voting certificates	80	80	20
Mongolia					
Turquoise Hill Resources Ltd (including Oyu Tolgoi LLC) [h]	Copper and gold mining	Common	50.79	50.79	49.21
Namibia					
Rössing Uranium Limited [i]	Uranium mining	B N$1	71.22	68.62	31.38
		C N10c	70.59		
South Africa					
Richards Bay Titanium (Proprietary) Limited [j]	Titanium dioxide/high purity iron production	B Ordinary	100		
		B preference	100	74	26
		Parent Preference	100		
Richards Bay Mining (Proprietary) Limited [j]	Ilmenite, rutile and zircon mining	B Ordinary	100		
		B preference	100	74	26
		Parent Preference	100		
United States of America					
Kennecott Holdings Corporation (including Kennecott Utah Copper, Kennecott Land and Kennecott Exploration)	Copper and gold mining, smelting and refining, land development and exploration activities	Common US$0.01	100	100	-
U.S. Borax Inc.	Mining, refining and marketing of borates	Common US$0.10	100	100	-

This list includes only those companies that have a more significant impact on the profit or assets of the Group. Refer to note 46 for a list of related undertakings.

The Group's principal subsidiaries are mostly held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) Robe River Mining Co Pty Ltd (which is 60 per cent owned by the Group) holds a 30 per cent interest in Robe River Iron Associates (Robe River). North Mining Ltd (which is wholly owned by the Group) holds a 35 per cent interest in Robe River. Through these companies the Group recognises a 65 per cent share of the assets, liabilities, revenues and expenses of Robe River, with a 12 per cent non-controlling interest. The Group therefore has a 53 per cent beneficial interest in Robe River
(b) Queensland Coal Pty Limited is the main legal entity that holds the Group's interests in Hail Creek (82 per cent) and Kestrel (80 per cent). These are unincorporated arrangements that are not entities; the Group recognises its share of assets, liabilities, revenues and expenses relating to these arrangements. Queensland Coal forms part of the Rio Tinto Coal Australia business unit.
(c) Alcan Alumina Ltda holds the Group's 10 per cent interest in Consórcio De Alumínio Do Maranhão, a joint operation in which the Group participates but is not a joint operator. The Group recognises its share of assets, liabilities, revenues and expenses relating to this arrangement.
(d) Iron Ore Company of Canada is incorporated in the United States of America, but operates in Canada.
(e) Diavik Diamond Mines (2012) Inc. is the legal entity that owns the Group's 60 per cent interest in the Diavik Joint Venture, an unincorporated arrangement that is not an entity. The Group recognises its share of assets, liabilities, revenue and expenses relating to this arrangement.
(f) Simfer Jersey Limited, a company incorporated in Jersey in which the Group has a 53 per cent interest, has an 85 per cent interest in Simfer S.A. the company that operates the Simandou mining project in Guinea. The Group therefore has a 45.05 per cent indirect interest in Simfer S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.
(g) The Group's shareholding in QIT Madagascar Minerals SA carries an 80 per cent economic interest and 80 per cent of the total voting rights; a further 5 per cent economic interest is held through non-voting investment certificates to give an economic interest of 85 per cent. The non-controlling interests have a 15 per cent economic interest and 20 per cent of the total voting rights.
(h) The Group has a 50.79 per cent interest in Turquoise Hill Resources Ltd, which holds a 66 per cent interest in Oyu Tolgoi LLC (OT) which is subsidiary of Turquoise Hill Resources Ltd. The Group therefore has a 33.5 per cent indirect interest in OT. Turquoise Hill Resources Ltd is incorporated in Canada but operates principally in Mongolia.
(i) The Group's shareholding in Rössing Uranium Limited entitles it to 35.57 per cent of the total voting rights; the non-controlling interests hold 64.43 per cent of the total voting rights. Rössing is consolidated by virtue of the Group's board control. The Government of Namibia has the ability to veto matters that are considered not to be in the interest of Namibia; this is considered to be a protective right. Rio Tinto therefore has control of Rössing and consolidates it as a subsidiary.
(j) Additional classes of shares issued by Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited representing non-controlling interests are not shown. The Group's total legal and beneficial interest in Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited is 74 per cent.

Summary financial information for subsidiaries that have non-controlling interests that are material to the Group

This summarised financial information is shown on a 100 per cent basis. It represents the amounts shown in the subsidiaries' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments, and before intercompany eliminations.

	Iron Ore Company of Canada 2017 US$m	Iron Ore Company of Canada 2016 US$m	**Energy Resources of Australia 2017 US$m**	Energy Resources of Australia 2016 US$m	**Turquoise Hill [(a)] 2017 US$m**	Turquoise Hill [(a)] 2016 US$m
Revenue	**1,867**	1,324	**157**	193	**940**	1,203
Profit/(loss) after tax	**377**	108	**(29)**	7	**22**	140
– attributable to non-controlling interests	**156**	44	**(9)**	2	**(49)**	37
– attributable to Rio Tinto	**221**	64	**(20)**	5	**71**	103
Other comprehensive income	**144**	56	**-**	-	**4**	2
Total comprehensive income/(loss)	**521**	164	**(29)**	7	**26**	142
Non-current assets	**2,535**	2,315	**57**	58	**9,008**	7,969
Current assets	**714**	627	**406**	383	**4,953**	5,702
Current liabilities	**(449)**	(348)	**(128)**	(96)	**(504)**	(316)
Non-current liabilities	**(838)**	(755)	**(356)**	(336)	**(4,311)**	(4,257)
Net assets/(liabilities)	**1,962**	1,839	**(21)**	9	**9,146**	9,098
– attributable to non-controlling interests	**809**	759	**(7)**	2	**3,982**	4,073
– attributable to Rio Tinto	**1,153**	1,080	**(14)**	7	**5,164**	5,025
Cash flow from operations	**840**	302	**(2)**	18	**295**	387
Dividends paid to non-controlling interests	**(162)**	(31)	**-**	-	**-**	-

(a) Turquoise Hill Resources Ltd holds controlling interests in Oyu Tolgoi.
(b) Under the terms of the project finance facility held by Oyu Tolgoi there are certain restrictions on the ability of Oyu Tolgoi to make shareholder distributions.

33 Principal subsidiaries continued

	Robe River Mining Co Pty 2017 US$m	Robe River Mining Co Pty 2016 US$m	Other companies and eliminations [c] 2017 US$m	Other companies and eliminations [c] 2016 US$m	Robe River 2017 US$m	Robe River 2016 US$m
Revenue	**1,164**	982	**1,351**	1,139	**2,515**	2,121
Profit after tax	**617**	482	**637**	517	**1,254**	999
– attributable to non-controlling interests	**242**	193	**-**	-	**242**	193
– attributable to Rio Tinto	**375**	289	**637**	517	**1,012**	806
Other comprehensive income/(loss)	**238**	(23)	**158**	(20)	**396**	(43)
Total comprehensive income/(loss)	**855**	459	**795**	497	**1,650**	956
Non-current assets	**2,927**	2,797	**4,187**	3,976	**7,114**	6,773
Current assets [d]	**1,453**	1,122	**571**	801	**2,024**	1,923
Current liabilities [d]	**(186)**	(92)	**(1,357)**	(1,350)	**(1,543)**	(1,442)
Non-current liabilities	**(752)**	(666)	**(1,666)**	(1,546)	**(2,418)**	(2,212)
Net assets	**3,442**	3,161	**1,735**	1,881	**5,177**	5,042
– attributable to non-controlling interests	**1,375**	1,263	**-**	-	**1,375**	1,263
– attributable to Rio Tinto	**2,067**	1,898	**1,735**	1,881	**3,802**	3,779
Cash flow from operations [d]	**1,048**	824	**1,207**	817	**2,255**	1,641
Dividends paid to non-controlling interests	**(230)**	(268)	**-**	-	**(230)**	(268)

(c) "Other companies and eliminations" includes North Mining Limited, a wholly owned subsidiary of the Group which accounts for its interest in Robe River and goodwill of US$389 million (2016: US$360 million) that arose on acquisition of the Group's interest in Robe River.
(d) The 2016 comparative has been adjusted to more appropriately classify certain balances.

34 Principal joint operations

Company and country of incorporation/operation	Principal activities	Group interest (%)
Australia		
Tomago Aluminium Joint Venture	Aluminium smelting	51.6
Kestrel [a]	Coal mining	80
Gladstone Power Station	Power generation	42.1
Hope Downs Joint Venture	Iron ore mining	50
Queensland Alumina Limited [b] [c]	Alumina production	80
Pilbara Iron arrangement	Infrastructure, corporate and mining services	[d]
New Zealand		
New Zealand Aluminium Smelters Limited [b] [c]	Aluminium smelting	79.36
Canada		
Aluminerie Alouette Inc.	Aluminium production	40
Indonesia		
Grasberg expansion [e]	Copper and gold mining	40
United States of America		
Pechiney Reynolds Quebec Inc [c] [f]	Aluminium smelting	50.2

This list includes only those joint operations that have a more significant impact on the profit or operating assets of the Group. Refer to note 46 for a list of related undertakings.

The Group's joint operations are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) Although the Group has an 80 per cent interest in the Kestrel Joint Venture, decisions about activities that significantly affect the returns that are generated require agreement of both parties to the Joint Venture Agreement, giving rise to joint control.
(b) Although the Group has a 79.4 per cent interest in New Zealand Aluminium Smelters Limited and an 80 per cent interest in Queensland Alumina Limited, decisions about activities that significantly affect the returns that are generated require agreement of both parties to the arrangements, giving rise to joint control.
(c) Queensland Alumina Limited, New Zealand Aluminium Smelters Limited and Pechiney Reynolds Quebec Inc. are joint arrangements that are primarily designed for the provision of output to the parties sharing joint control; this indicates that the parties have rights to substantially all the economic benefits of the assets. The liabilities of the arrangements are in substance satisfied by cash flows received from the parties; this dependence indicates that the parties in effect have obligations for the liabilities. It is these facts and circumstances that give rise to the classification of these entities as joint operations.
(d) A number of arrangements are in place between the Australian Iron Ore operations managed by Rio Tinto which allow their respective assets to be operated as a single integrated network across the Pilbara region. The arrangements are managed through two wholly owned subsidiaries: Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd. In assessing the Pilbara Iron arrangements it has been concluded that they collectively constitute a joint operation on the basis that decisions about relevant activities require unanimous consent, the resulting efficiencies are shared between Rio Tinto and Robe River Iron Associates (Robe River), and the parties fund all of the cash flow requirements of Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.
(e) Under the terms of a contractual agreement, Rio Tinto is entitled to 40 per cent of production above specified levels until the end of 2021 and 40 per cent of all production thereafter under the Participation Agreement. This date is subject to extension under certain conditions.
(f) Pechiney Reynolds Quebec Inc. has a 50.1 per cent interest in the Aluminerie de Bécancour, Inc. aluminium smelter, which is located in Canada.

35 Principal joint ventures

At 31 December 2017

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Chile					
Minera Escondida Limitada [(a)]	Copper mining and refining	-	-	30	30
Oman					
Sohar Aluminium Co. L.L.C. [(b)]	Aluminium smelting/power generation	37,500	Ordinary	20	20

This list includes only those joint ventures that have a more significant impact on the profit or operating assets of the Group. Refer to note 46 for a list of related undertakings.

The Group's principal joint ventures are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) Although the Group has a 30 per cent interest in Minera Escondida Limitada, participant and management agreements provide for an Owners' Council whereby significant commercial and operational decisions about the relevant activities that significantly affect the returns that are generated in effect require the joint approval of both Rio Tinto and BHP Billiton (holders of a 57.5 per cent interest). It is therefore determined that Rio Tinto has joint control.
The year-end of Minera Escondida Limitada is 30 June. The amounts included in the consolidated financial statements of Rio Tinto are, however, based on accounts of Minera Escondida Limitada that are coterminous with those of the Group.
(b) Although the Group holds a 20 per cent interest in Sohar Aluminium Co. L.L.C., decisions about relevant activities that significantly affect the returns that are generated require agreement of all parties to the arrangement. It is therefore determined that Rio Tinto has joint control.

Summary information for joint ventures that are material to the Group
This summarised financial information is shown on a 100 per cent basis. It represents the amounts shown in the joint ventures' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Minera Escondida Limitada [(a)] 2017 US$m	Minera Escondida Limitada [(a)] 2016 US$m	**Sohar Aluminium Company LLC [(b)] 2017 US$m**	Sohar Aluminium Company LLC [(b)] 2016 US$m
Revenue	**6,037**	4,883	**460**	610
Depreciation and amortisation	**(1,690)**	(1,213)	**(145)**	(130)
Other operating costs	**(2,617)**	(2,199)	**(205)**	(425)
Operating profit	**1,730**	1,471	**110**	55
Finance expense	**(120)**	(47)	**(35)**	(25)
Income tax	**(627)**	(517)	**-**	-
Profit after tax	**983**	907	**75**	30
Total comprehensive income	**983**	907	**75**	30
Non-current assets	**13,814**	14,947	**3,230**	3,275
Current assets	**2,760**	2,257	**305**	255
Current liabilities	**(1,727)**	(1,403)	**(205)**	(45)
Non-current liabilities	**(4,617)**	(4,112)	**(1,270)**	(1,505)
Net assets	**10,230**	11,689	**2,060**	1,980
Assets and liabilities above include:				
Cash and cash equivalents	**460**	443	**95**	20
Current financial liabilities [(c)]	**(330)**	(467)	**(130)**	(100)
Non-current financial liabilities [(c)]	**(2,840)**	(2,643)	**(1,120)**	(1,230)
Dividends received from joint venture (Rio Tinto share) [(c)]	**780**	210	**-**	-

Reconciliation of the above amounts to the investment recognised in the Consolidated Statement of Financial Position

Group interest	**30%**	30%	**20%**	20%
Net assets	**10,230**	11,689	**2,060**	1,980
Group's ownership interest	**3,069**	3,507	**412**	396
Other adjustments	**4**	(3)	**(3)**	(2)
Carrying value of Group's interest	**3,073**	3,504	**409**	394

(a) In addition to its "Investment in equity accounted units", the Group recognises deferred tax liabilities of US$500 million (2016: US$579 million) relating to tax on unremitted earnings of equity accounted units.
(b) Under covenants stipulated in the agreement to Sohar Aluminium's secured loan facilities, Sohar Aluminium is currently restricted from making any shareholder distributions until 2021 unless a specified amount of the loan facilities is funded.
(c) The 2016 comparative has been adjusted to more appropriately classify certain balances.

36 Principal associates

At 31 December 2017

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Australia					
Boyne Smelters Limited [(a)]	Aluminium smelting	153,679,560	Ordinary	59.4	59.4
Brazil					
Mineração Rio do Norte S.A. [(b)]	Bauxite mining	25,000,000,000 47,000,000,000	Ordinary Preferred	12.5 11.75	12
United States of America					
Halco (Mining) Inc	(c)	4,500	Common	45	45

This list includes only those associates that have a more significant impact on the profit or operating assets of the Group. Refer to note 46 for a list of related undertakings.

The Group's principal associates are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) The parties that collectively control Boyne Smelters Limited do so through decisions that are determined on an aggregate voting interest that can be achieved by several combinations of the parties. Although each combination requires Rio Tinto's approval, this is not joint control as defined under IFRS 11. Rio Tinto is therefore determined to have significant influence over this company.
(b) Although the Group holds only 12 per cent of Mineração Rio do Norte S.A., it has representation on its board of directors and a consequent ability to participate in the financial and operating policy decisions. It is therefore determined that Rio Tinto has significant influence.
(c) Halco (Mining) Inc has a 51 per cent indirect interest in Compagnie des Bauxites de Guinée, a bauxite mine, the core assets of which are located in Guinea.

Summary information for associates that are material to the Group
This summarised financial information is shown on a 100 per cent basis. It represents the amounts shown in the associate's financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Boyne Smelters Limited [(a)] 2017 US$m	Boyne Smelters Limited [(a)] 2016 US$m
Revenue	**-**	-
Profit after tax	**5**	12
Other comprehensive income/(loss) [(b)]	**56**	(4)
Total comprehensive income	**61**	8
Non-current assets	**1,468**	1,465
Current assets	**88**	66
Current liabilities	**(99)**	(121)
Non-current liabilities	**(996)**	(987)
Net assets	**461**	423

(a) Boyne Smelters Limited is a tolling operation; as such it is dependent on its participants for funding which is provided through cash calls. Rio Tinto Aluminium has made certain prepayments to Boyne for toll processing of alumina. These are charged to Group operating costs as processing takes place.
(b) "Other comprehensive income/(loss)" is net of amounts recognised by subsidiaries in relation to quasi equity loans.

Group interest	**59.4%**	59.4%
Net assets	**461**	423
Group's ownership interest	**274**	251
Loans to equity accounted units	**159**	163
Carrying value of Group's interest	**433**	414

Summary information for joint ventures and associates that are not individually material to the Group

	Joint ventures 2017 US$m	Joint ventures 2016 US$m	**Associates 2017 US$m**	Associates 2016 US$m
Carrying value of Group's interest	**-**	-	**571**	707
Profit after tax	**-**	-	**25**	36
Other comprehensive income/(loss)	**-**	-	**14**	13
Total comprehensive income	**-**	-	**39**	49

37 Purchases and sales of subsidiaries, joint ventures, associates and other interests in businesses

Acquisitions
There were no material acquisitions during the years ended 31 December 2017, 2016 and 2015.

In May 2017, the Group's subsidiary, Simfer Jersey Limited (Rio Tinto share: 53 per cent) purchased a 4.25 per cent interest in Simfer SA from International Finance Corporation (IFC) for US$194 million in accordance with a put option exercised by IFC. Consequently, the Group's share of Simfer SA increased from 42.80 per cent to 45.05 per cent.

2017 disposals
On 1 September 2017, Rio Tinto disposed of its 100 per cent shareholding in Coal & Allied Industries Limited to Yancoal Australia Limited for total consideration of US$2.69 billion (before working capital adjustments). The US$2.69 billion comprises US$2.45 billion in cash paid on the closing date and a further US$240 million of unconditional guaranteed royalty payments. During 2017, US$110 million has been received; total net cash proceeds received in 2017, net of working capital adjustments, transaction costs and cash transferred, were US$2.54 billion. Rio Tinto expects to receive the remaining US$130 million of unconditional guaranteed royalty payments between 2018 and 2021.

2016 disposals
On 1 March 2016, Rio Tinto disposed of its 40 per cent interest in the Bengalla Joint Venture to New Hope Corporation Limited for US$616.7 million (before finalisation of net debt and working capital adjustments).

On 31 March 2016, Rio Tinto disposed of its 100 per cent interest in Carbone Savoie to Alandia Industries.

Rio Tinto transferred its 53.83 per cent shareholding in Bougainville Copper Limited ("BCL") to Equity Trustees Limited (independent trustee) on 30 June 2016 for nil consideration. Equity Trustees Limited subsequently distributed the shares in accordance with the trust deed to nominees of each of the Autonomous Bougainville Government (36.4 per cent) and the Independent State of Papua New Guinea (17.4 per cent) such that each party now controls an equal share of BCL (36.4 per cent). The Group did not previously consolidate BCL as it was determined that in accordance with IFRS, as defined in note 1, that the Group does not control the relevant activities, being the mining of copper at the Panguna mine, which was brought to a halt by militant activity in 1989. The carrying value had previously been fully impaired and therefore the transfer resulted in no financial impact for the year ended 31 December 2016.

On 20 July 2016, a tranche of 7.5 per cent non-contributory shares in Simfer S.A. was transferred free of charge to the Government of Guinea as per the terms of the Simandou project agreement signed in 2014, further diluting the ownership percentage of Rio Tinto and its partners in the project. Under the agreement, a second tranche comprising 10 per cent Ordinary Contributory Shares may be acquired at any time for a pro rata share of historical mining cost. The remaining two tranches of 5 per cent ordinary contributing shares may be acquired by the Government of Guinea at market value at any time after 22 April 2026 and 22 April 2031 respectively.

On 2 September 2016, Rio Tinto disposed of its interest in Zululand Anthracite Colliery.

On 23 November 2016, Rio Tinto disposed of its 100 per cent interest in Lochaber to SIMEC for US$410 million (before finalisation of closing adjustments and transaction costs) of which US$224 million was received in December 2016. The second and final instalment of funds was received during April 2017.

2015 disposals
On 23 April 2015, Turquoise Hill Resources Ltd completed the block sale of 48.7 million common shares in SouthGobi Resources Ltd and with further divestments has reduced its interest to below 20 per cent. As at 31 December 2015 Turquoise Hill Resources Ltd's interest in SouthGobi Resources Ltd was no longer consolidated as a subsidiary and had been classified as an available for sale investment.

On 17 June 2015, Rio Tinto disposed of its 77.8 per cent interest in Murowa Diamonds and 50 per cent interest in Sengwa Colliery Ltd (Sengwa) to RZ Murowa Holdings Limited.

Rio Tinto completed the sale of ECL to Fives on 9 July 2015 and the sale of Alesa to Groupe Reel on 24 November 2015.

38 Directors' and key management remuneration

Aggregate remuneration, calculated in accordance with the UK Companies Act 2006, of the directors of the parent companies was as follows:

	2017 US$'000	2016 US$'000	2015 US$'000
Emoluments	**8,339**	9,186	10,590
Long-term incentive plans	**4,685**	3,071	2,118
	13,024	12,257	12,708
Pension contributions: defined contribution plans	**135**	69	52
Gains made on exercise of share options	**-**	-	1

The Group defines key management personnel as the directors and members of the Executive Committee. The Executive Committee comprises the executive directors, product group chief executive officers and Group executives.

The aggregate remuneration incurred by Rio Tinto plc in respect of its directors was US$12,624,000 (2016: US$10,630,000; 2015: US$6,385,000). The aggregate pension contribution to defined contribution plans was US$135,000 (2016: US$69,000; 2015: US$52,000). The aggregate remuneration, including pension contributions and other retirement benefits, incurred by Rio Tinto Limited in respect of its directors was US$535,000 (2016: US$1,696,000; 2015: US$6,375,000). The aggregate pension contribution to defined contribution plans was US$nil (2016: US$nil; 2015: US$nil).
During 2017, no director (2016: one; 2015: one) accrued retirement benefits under defined benefit arrangements, and two directors (2016: two; 2015: one) accrued retirement benefits under defined contribution arrangements.

Emoluments included in the table above have been translated from local currency at the average exchange rate for the year with the exception of bonus payments which, together with amounts payable under long-term incentive plans, have been translated at the year-end rate.

Detailed information concerning directors' remuneration, shareholdings and options is shown in the Remuneration Report, including tables 1 to 3, on pages 70 to 105.

38 Directors' and key management remuneration continued

Aggregate compensation, representing the expense recognised under IFRS, as defined in note 1, of the Group's key management, including directors, was as follows:

	2017 US$'000	2016 US$'000	2015 US$'000
Short-term employee benefits and costs	**23,095**	22,269	25,616
Post-employment benefits	**415**	3,461	1,049
Employment termination benefits	**-**	2,682	-
Share-based payments	**8,033**	15,806	17,566
	31,543	44,218	44,231

The figures shown above include employment costs which comprise social security and accident premiums in Canada, the UK and US and payroll taxes in Australia paid by the employer as a direct additional cost of hire. In total, they amount to US$2,122,000 (2016: US$2,295,000; 2015: US$2,320,000) and although disclosed here, are not included in table 1 of the Remuneration Report.

More detailed information concerning the remuneration of key management is shown in the Remuneration report, including tables 1 to 3 on pages 70 to 105.

39 Auditors' remuneration

	2017 US$m	2016 US$m	2015 US$m
Group Auditors' remuneration [(a)]			
Audit of the company	**6.2**	4.5	4.3
Audit of subsidiaries	**8.1**	9.0	10.1
Total audit	**14.3**	13.5	14.4
Audit related assurance service	**1.0**	0.9	0.9
Other assurance services [(b)]	**2.3**	0.6	0.9
Total assurance services	**3.3**	1.5	1.8
Tax compliance [(c)]	**0.3**	0.5	0.5
Tax advisory services [(c)]	**0.2**	0.1	0.4
Services related to corporate finance transactions not covered above			
– services in connection with bond issues/capital raising	**-**	-	0.2
Other non-audit services not covered above	**0.7**	1.8	1.1
Total non-audit services	**4.5**	3.9	4.0
Total Group Auditors' remuneration	**18.8**	17.4	18.4
Audit fees payable to other accounting firms			
Audit of the financial statements of the Group's subsidiaries	**2.0**	2.1	1.9
Fees in respect of pension scheme audits	**0.5**	0.3	0.2
Total audit fees payable to other accounting firms	**2.5**	2.4	2.1

(a) The remuneration payable to PwC, the Group Auditors, is approved by the Audit committee. The committee sets the policy for the award of non-audit work to the auditors and approves the nature and extent of such work, and the amount of the related fees, to ensure that independence is maintained. The fees disclosed above consolidate all payments made to member firms of PwC by the Companies and their subsidiaries, together with the Group's share of the payments made by joint operations. Non-audit services arise largely from assurance and/or regulation related work.
(b) Other assurance services are mainly related to carve-out financial statements and sustainability assurance.
(c) "Taxation services" includes tax compliance and advisory services. Tax compliance involves the review of returns for corporation, income, sales and excise taxes. Tax advisory services include advice on non-recurring acquisitions and disposals, advice on transfer pricing and advice on employee global mobility.

40 Related-party transactions

Information about material related-party transactions of the Rio Tinto Group is set out below:

Subsidiary companies and joint operations
Details of investments in principal subsidiary companies are disclosed in note 33. Information relating to joint operations can be found in note 34.

Equity accounted units
Transactions and balances with equity accounted units are summarised below. Purchases, trade and other receivables, and trade and other payables relate largely to amounts charged by equity accounted units for toll processing of alumina and purchasing of bauxite and aluminium. Sales relate largely to sales of alumina to equity accounted units for smelting into aluminium.

Income statement items	Note	2017 US$m	2016 US$m	2015 US$m
Purchases from equity accounted units		**(993)**	(1,216)	(1,249)
Sales to equity accounted units		**210**	248	307
Cash flow statement items		**US$m**	US$m	US$m
Dividends from equity accounted units		**817**	253	210
Net funding of equity accounted units		**(3)**	(12)	11
Balance sheet items		**US$m**	US$m	US$m
Investments in equity accounted units [(a)]	15	**4,486**	5,019	4,941
Loans to equity accounted units	20	**39**	39	42
Loans from equity accounted units	22	**(31)**	(49)	(37)
Trade and other receivables: amounts due from equity accounted units [(b)]	18	**299**	298	315
Trade and other payables: amounts due to equity accounted units	25	**(175)**	(243)	(231)

(a) Investments in equity accounted units include quasi equity loans. Further information about investments in equity accounted units is set out in notes 35 and 36.
(b) This includes prepayments of tolling charges.

Pension funds
Information relating to pension fund arrangements is set out in note 44.

Directors and key management
Details of directors' and key management remuneration are set out in note 38 and in the Remuneration Report on pages 70 to 105.

41 Exchange rates in US$

The principal exchange rates used in the preparation of the 2017 financial statements were:

	Full-year average			Year-end		
	2017	2016	2015	**2017**	2016	2015
Sterling	**1.29**	1.36	1.53	**1.34**	1.22	1.48
Australian dollar	**0.77**	0.74	0.75	**0.78**	0.72	0.73
Canadian dollar	**0.77**	0.76	0.78	**0.79**	0.74	0.72
Euro	**1.13**	1.11	1.11	**1.20**	1.05	1.09
South African rand	**0.075**	0.068	0.079	**0.081**	0.073	0.064

42 Events after the balance sheet date

On 10 January 2018, the Group announced it had received a binding offer from Liberty House to acquire the Group's Aluminium Dunkerque smelter in northern France for US$500 million, subject to final adjustments. In accordance with French law, the Group will launch a consultation process with employees, relevant European works councils and other stakeholders in relation to the bid. Subject to satisfactory completion of these consultations, the Group expects to complete the sale of Aluminium Dunkerque in the second quarter of 2018. As at 31 December 2017 Rio Tinto's interest in the Aluminium Dunkerque smelter was classified as held for sale.

On 7 February 2018, the Group announced an on-market share buy-back programme of US$1.0 billion Rio Tinto plc shares; this is in addition to US$1.925 billion under the US$2.5 billion programme announced on 21 September 2017, which started on 27 December 2017. Rio Tinto plc shares that have been bought back under these programmes during 2018 have been cancelled and announcements have been made to the relevant stock exchanges.

On 26 February 2018, the Group announced it had received a binding offer from Hydro to acquire its aluminium assets in Northern Europe for US$345 million, subject to final adjustments. The transaction includes the Group's ISAL smelter in Iceland, its 53.3 per cent share in the Aluchemie anode plant in the Netherlands and its 50 per cent share in the Alufluor aluminium fluoride plant in Sweden. In accordance with the applicable laws, the Group will launch a consultation process with employees, relevant European works councils and other stakeholders. Subject to satisfactory completion of these consultations and certain other conditions, the Group expects to conclude the sale in the second quarter of 2018.

Except as disclosed above, no significant events were identified after the balance sheet date.

43 Share-based payments

Rio Tinto plc and Rio Tinto Limited have a number of share-based incentive plans, which are described in detail in the Remuneration Report. These plans have been accounted for in accordance with the fair value recognition provisions of IFRS 2 "Share-based Payment".

The charge that has been recognised in the income statement for Rio Tinto's share-based incentive plans, and the related liability (for cash-settled plans), is set out in the table below.

	Charge recognised for the year			Liability at the end of the year	
	2017 US$m	2016 US$m	2015 US$m	**2017 US$m**	2016 US$m
Equity-settled plans	**88**	116	128	**-**	-
Cash-settled plans	**3**	-	-	**15**	1
Total	**91**	116	128	**15**	1

The main Rio Tinto plc and Rio Tinto Limited plans are as follows:

Share Savings Plans
Awards under these plans are settled in equity and accounted for accordingly. The fair value of each award on the day of grant was estimated using a lattice-based option valuation model, including allowance for the exercise price being at a discount to market price.

Awards are no longer granted under the Share Savings Plans as these plans were replaced by the Global Employee Share Plans in 2012. All charges have been incurred as the remaining unvested awards vested during 2017. No outstanding awards remain under these plans.

Share Option Plans
Awards are no longer granted under the Share Option Plans and all charges have been incurred as the remaining awards all vested before 2017, although there remain outstanding vested options under these plans.

UK Share Plan (formerly the Share Ownership Plan)
The fair values of Matching and Free Shares made by Rio Tinto plc are taken to be the market value of the shares on the date of purchase. These awards are settled in equity.

Performance Share Plans
Participants are generally assigned shares in settlement of their awards on vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions, including the dividends accumulated from date of award to vesting.

For the parts of awards with Total Shareholder Return (TSR) performance conditions, the fair value of the awards was calculated using a Monte Carlo simulation model taking into account the TSR performance conditions. One-third of the awards granted since 2013 are subject to an earnings performance target relative to ten global mining comparators. As this is a non-market related performance condition, under IFRS 2, the fair value recognised is reviewed at each accounting date based on the directors' expectations for the proportion vesting. Forfeitures prior to vesting are assumed at five per cent per annum of outstanding awards (2016: five per cent per annum).

Management Share Plans
The Management Share Plans were introduced in 2007 (and re-adopted in 2017) to provide conditional share-based awards to management. The vesting of these awards is dependent on service conditions being met. In general, the awards will be settled in equity, including the dividends accumulated from date of award to vesting. The awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions.

The fair value of each award on the day of grant is equal to the share price on the day of grant less a small adjustment for the timing of dividends. For awards granted in 2017 this adjustment is negligible and therefore the fair value of each award is equal to the share price on the day of grant. Forfeitures prior to vesting are assumed at seven per cent per annum of outstanding awards (2016: seven per cent per annum).

Bonus Deferral Plans
The Bonus Deferral Plans were introduced in 2009 for the mandatory deferral of 50 per cent of the bonuses for executive directors and product group executives and 25 per cent of the bonuses for other executives.

The vesting of these awards is dependent only on service conditions being met. In general, the awards will be settled in equity including the dividends accumulated from date of award to vesting. The awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions. The fair value of each award on the day of grant is equal to the share price on the day of grant less a small adjustment for the timing of dividends. For awards granted in 2017 this adjustment is negligible and therefore the fair value of each award is equal to the share price on the day of grant. Forfeitures prior to vesting are assumed at three per cent per annum of outstanding awards (2016: three per cent per annum).

Global Employee Share Plans
The Global Employee Share Plans were introduced in 2012. The Companies provide matching shares for each investment share purchased by a participant. The vesting of these matching awards is dependent on service conditions being met. These awards are settled in equity including the dividends accumulated from date of award to vesting. The fair value of each matching share on the day of grant is equal to the share price on the date of purchase less a deduction of 15 per cent for cancellations (caused by employees electing to withdraw their investment shares before vesting of their matching shares). Forfeitures prior to vesting are assumed at five per cent per annum of outstanding awards (2016: five per cent per annum).

Summary of options outstanding and exercisable

A summary of the status of the Companies' equity-settled share option plans at 31 December 2017 is presented below.

Options outstanding and exercisable at 31 December 2017	Number	Weighted average exercise price per option £/A$	Weighted average remaining contractual life Years	Aggregate intrinsic value 2017 US$m
Rio Tinto plc Share Option Plan (exercise price £16 - £43)	164,119	32	2.56	2
Rio Tinto Limited Share Option Plan (exercise price A $33)	24,647	33	1.21	1
	188,766			3

As at 31 December 2017 there were no options outstanding under either the Rio Tinto plc or the Rio Tinto Limited Share Savings Plans.

As at 31 December 2016 there were 567,598 options outstanding with an aggregate intrinsic value of US$3 million.

The Management Share Plans, Performance Share Plans, Bonus Deferral Plans, Global Employee Share Plans and UK Share Plan together represent 100 per cent (2016: 100 per cent) of the total IFRS 2 charge for Rio Tinto plc and Rio Tinto Limited plans in 2017.

Performance Share Plans

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2017 Number	**Weighted average fair value at grant date 2017 £**	2016 Number	Weighted average fair value at grant date 2016 £	**2017 Number**	**Weighted average fair value at grant date 2017 A$**	2016 Number	Weighted average fair value at grant date 2016 A$
Non-vested shares at 1 January	**2,883,053**	**18.27**	2,988,454	21.29	**1,590,957**	**37.52**	2,048,823	41.13
Awarded	**1,198,677**	**24.64**	1,085,974	12.81	**529,776**	**45.84**	535,418	28.66
Forfeited	**(199,435)**	**16.28**	(603,871)	17.22	**(36,716)**	**36.59**	(526,212)	36.18
Failed performance conditions	**(161,966)**	**16.25**	(203,491)	24.61	**(113,857)**	**30.89**	(161,937)	44.71
Vested	**(165,055)**	**21.51**	(384,013)	24.61	**(84,284)**	**40.79**	(305,135)	44.71
Transfers from equity to cash-settled[a]	**-**	**-**	-	-	**(276,722)**	**40.11**	-	-
Non-vested shares at 31 December	**3,555,274**	**20.47**	2,883,053	18.27	**1,609,154**	**40.13**	1,590,957	37.52

	2017 Number	**Weighted average share price 2017 £**	2016 Number	Weighted average share price 2016 £	**2017 Number**	**Weighted average share price 2017 A$**	2016 Number	Weighted average share price 2016 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting)	**188,383**	**31.04**	368,623	19.08	**73,311**	**63.09**	284,507	42.99
Vested awards settled in cash during the year (including dividend shares applied on vesting)	**-**	**-**	486	19.00	**5,010**	**62.81**	847	43.47

(a) In 2017, an agreement was reached between the Group and a former director to settle any of their future vested awards in cash rather than equity.

In addition to the equity-settled awards shown above, there were 26,590 Rio Tinto plc and 276,722 Rio Tinto Limited cash-settled awards outstanding at 31 December 2017 (2016: 22,010 Rio Tinto plc cash-settled awards outstanding). The total liability for these awards at 31 December 2017 was US$9 million (2016: less than US$1 million).

Notes to the 2017 financial statements
continued

43 Share-based payments continued

Management Share Plans, Bonus Deferral Plans, Global Employee Share Plans and UK Share Plan (combined)

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2017 Number	**Weighted average fair value at grant date 2017 £**	2016 Number	Weighted average fair value at grant date 2016 £	**2017 Number**	**Weighted average fair value at grant date 2017 A$**	2016 Number	Weighted average fair value at grant date 2016 A$
Non-vested awards at 1 January	**3,305,966**	**26.00**	3,211,727	29.70	**2,986,080**	**53.32**	2,993,396	58.09
Awarded	**1,499,374**	**32.50**	1,673,017	20.62	**1,156,078**	**61.05**	1,405,348	45.27
Forfeited	**(159,669)**	**29.46**	(246,806)	23.02	**(127,905)**	**53.61**	(164,020)	54.48
Cancelled	**(51,773)**	**25.82**	-	-	**(95,203)**	**51.18**	-	-
Vested	**(1,120,806)**	**30.41**	(1,331,972)	28.72	**(985,813)**	**60.06**	(1,248,644)	55.54
Non-vested shares at 31 December	**3,473,092**	**27.23**	3,305,966	26.00	**2,933,237**	**54.15**	2,986,080	53.32
Comprising:								
– Management Share Plan	**1,897,318**	**27.99**	1,668,590	25.79	**1,617,838**	**55.42**	1,530,814	53.88
– Bonus Deferral Plan	**281,994**	**25.53**	312,767	23.24	**153,966**	**52.83**	148,158	50.25
– Global Employee Share Plan	**1,196,937**	**26.42**	1,223,144	26.90	**1,161,433**	**52.54**	1,307,108	53.03
– UK Share Plan	**96,843**	**27.14**	101,465	27.00	**-**	**-**		

	2017 Number	**Weighted average fair value at grant date 2017 £**	2016 Number	Weighted average fair value at grant date 2016 £	**2017 Number**	**Weighted average fair value at grant date 2017 A$**	2016 Number	Weighted average fair value at grant date 2016 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting)								
– Management Share Plan	**653,776**	**35.33**	758,776	20.07	**577,083**	**67.93**	701,965	43.93
– Bonus Deferral Plan	**170,036**	**34.44**	112,623	30.36	**88,644**	**69.98**	113,407	56.78
– Global Employee Share Plan	**382,585**	**33.56**	344,072	24.33	**466,308**	**65.10**	332,010	48.69
– UK Share Plan	**11,120**	**34.56**	21,082	21.92	**-**	**-**	-	-

(a) Awards of Rio Tinto American Depository Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables

In addition to the equity-settled awards shown above, there were 33,443 Rio Tinto plc and 87,019 Rio Tinto Limited cash-settled awards outstanding at 31 December 2017 (2016: 34,517 Rio Tinto plc and 15,239 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2017 was US$6 million (2016: less than US$1 million).

44 Post-retirement benefits

Description of plans

The Group operates a number of pension and post-retirement healthcare plans around the world. Some of these plans are defined contribution and some are defined benefit, with assets held in separate trusts, foundations and similar entities.
Defined benefit pension and post-retirement healthcare plans expose the Group to a number of risks:

Uncertainty in benefit payments	The value of the Group's liabilities for post-retirement benefits will ultimately depend on the amount of benefits paid out. This in turn will depend on the level of future pay increases, the level of inflation (for those benefits that are subject to some form of inflation protection) and how long individuals live.
Volatility in asset values	The Group is exposed to future movements in the values of assets held in pension plans to meet future benefit payments.
Uncertainty in cash funding	Movements in the values of the obligations or assets may result in the Group being required to provide higher levels of cash funding, although changes in the level of cash required can often be spread over a number of years. In some countries control over the rate of cash funding or over the investment policy for pension assets might rest to some extent with a trustee body or other body that is not under the Group's direct control. In addition the Group is also exposed to adverse changes in pension regulation.

For these reasons the Group has a policy of moving away from defined benefit pension provision and towards defined contribution arrangements instead. The defined benefit pension plans for salaried employees are closed to new entrants in almost all countries. For unionised employees, some plans remain open.

The Group does not usually participate in multi-employer plans in which the risks are shared with other companies using those plans. The Group's participation in such plans is immaterial and consequently no detailed disclosures are provided in this note.

Pension plans

The majority of the Group's defined benefit pension obligations are in Canada, the UK, the US, Switzerland and the Eurozone.

In Canada the benefits for salaried staff are generally linked to final average pay and are closed to new entrants. Benefits for bargaining employees are reviewed in negotiation with unions and are typically either linked to final average pay or to a flat monetary amount per year of service. Most of these plans have been closed to new entrants. New employees join arrangements which are defined contribution from the

Group's perspective, with any required additional funding being provided by employees. The plans are subject to the regulatory requirements that apply to Canadian pension plans in the relevant provinces and territories (predominantly Quebec). Pension Committees are responsible for ensuring that the plans operate in a manner that is compliant with the relevant regulations. The Pension Committees generally have a number of members appointed by the sponsor and a number appointed by the plan participants. In some cases there is also an independent Committee member.

The defined benefit sections of the UK arrangements are linked to final pay and are closed to new members. New employees are admitted to defined contribution sections. The plans are subject to the regulatory requirements that apply to UK pension plans. Trustees are responsible for ensuring that the plans operate in a manner that is compliant with UK regulations. The trustee board governing the main UK plans has a number of directors appointed by the sponsor, a number appointed by the plan participants and an independent trustee director.

A number of defined benefit pension plans are sponsored by the US entities. Benefits for salaried staff are generally linked to final average pay and closed to new entrants, while benefits for bargaining employees are reviewed in negotiation with unions and are typically a flat monetary amount per year of service and are closed to new entrants. New employees are admitted to defined contribution plans. A Benefits Governance Committee is responsible for ensuring that the plans are compliant with US regulations. Members of that Committee are appointed by the sponsor.

In Europe, there are defined benefit plans in Switzerland, Germany and France. The largest single plan is in Switzerland and provides benefits linked to final average pay. The Swiss plan is overseen by a foundation board which is responsible for ensuring that the plan complies with Swiss regulations. Foundation board members are appointed by the plan sponsor, by employees and by retirees.

In Australia, the main arrangements are principally defined contribution in nature but there are sections providing defined benefits linked to final pay, typically paid in lump sum form. The defined benefit sections are closed to new entrants.

The Group also operates a number of unfunded defined benefit plans, which are included in the figures below.

Post-retirement healthcare plans

Certain subsidiaries of the Group, mainly in the US and Canada, provide health and life insurance benefits to retired employees and in some cases to their beneficiaries and covered dependants. Eligibility for cover is dependent upon certain age and service criteria. These arrangements are generally unfunded, and are included in the figures below.

Plan assets

The assets of the pension plans are invested predominantly in a diversified range of equities, bonds and property. Consequently, the funding level of the pension plans is affected by movements in the level of equity markets and also by movements in interest rates. The Group monitors its exposure to changes in interest rates and equity markets and also measures its balance sheet pension risk using a value at risk approach. These measures are considered when deciding whether significant changes in investment strategy are required. Asset-liability studies are conducted on a periodic basis for the main pension plans to determine the optimal investment mix bearing in mind the Group's tolerance for risk, the risk tolerance of the local sponsor companies and the views of the pension committees and trustee boards who are legally responsible for the investments of the plans. In Canada, the UK and Switzerland, the Group works with the trustees to ensure that the investment policy adopted is consistent with the Group's tolerance for risk. In the US the Group has direct control over the investment policy, subject to local investment regulations.

The proportions of the total fair value of assets in the pension plans for each asset class at the balance sheet date were:

	2017		2016	
Equities	**32.4%**		36.8%	
– Quoted		**28.6%**		32.5%
– Private		**3.8%**		4.3%
Bonds	**53.2%**		47.9%	
– Government fixed income		**14.3%**		11.3%
– Government inflation-linked		**13.1%**		12.0%
– Corporate and other publicly quoted		**23.5%**		22.3%
– Private		**2.3%**		2.3%
Property	**11.2%**		11.0%	
– Quoted property funds		**5.8%**		5.8%
– Unquoted property funds		**5.4%**		5.2%
Qualifying insurance policies	**0.2%**		0.6%	
Cash & other	**3.0%**		3.7%	
	100.0%		100.0%	

The assets of the plans are managed on a day-to-day basis by external specialist fund managers. These managers may invest in the Group's securities subject to limits imposed by the relevant fiduciary committees and local legislation. The approximate total holding of Group securities within the plans is US$13 million (2016: US$16 million).

The holdings of quoted equities are invested either in pooled funds or segregated accounts held in the name of the relevant pension funds. These equity portfolios are well diversified in terms of the geographic distribution and market sectors.

The holdings of government bonds are generally invested in the debt of the country in which a pension plan is situated. Corporate and other quoted bonds are usually of investment grade. Private debt is mainly in North America.

The quoted property funds are invested in a diversified range of properties.

The holdings of cash & other are predominantly cash and short-term money market instruments.

Investments in private equity, private debt, and property are less liquid than the other investment classes listed above and therefore the Group's investment in those asset classes is restricted to a level that does not endanger the liquidity of the pension plans.

The Group does not currently utilise derivatives to manage risk in its pension plans. However, fund managers may use derivatives to hedge currency movements within their portfolios and, in the case of bond managers, to take positions that could be taken using direct holdings of bonds but more efficiently.

44 Post-retirement benefits continued

Maturity of defined benefit obligations

An approximate analysis of the maturity of the obligations is given in the table below:

	Pension benefits	Other benefits	**2017 Total %**	2016 Total %	2015 Total %
Proportion relating to current employees	20%	16%	**20%**	21%	22%
Proportion relating to former employees not yet retired	12%	1%	**11%**	12%	11%
Proportion relating to retirees	68%	83%	**69%**	67%	67%
Total	100%	100%	**100%**	100%	100%
Average duration of obligations (years)	14.0	12.7	**13.9**	14.3	13.4

Geographical distribution of defined benefit obligations

An approximate analysis of the geographic distribution of the obligations is given in the table below:

	Pension benefits	Other benefits	**2017 Total %**	2016 Total %	2015 Total %
Canada	49%	41%	**49%**	46%	44%
UK	29%	2%	**27%**	27%	29%
US	12%	54%	**14%**	16%	15%
Switzerland	5%	0%	**5%**	5%	6%
Eurozone	3%	0%	**3%**	4%	4%
Other	2%	3%	**2%**	2%	2%
Total	100%	100%	**100%**	100%	100%

Total expense recognised in the income statement

	Pension benefits	Other benefits	**2017 Total %**	2016 Total US$m	2015 Total US$m
Current employer service cost for defined benefit plans	(146)	(9)	**(155)**	(158)	(184)
Past service income	1	3	**4**	-	144
Curtailment gains	1	-	**1**	5	13
Settlement gains	1	-	**1**	-	11
Net interest on net defined benefit liability	(45)	(34)	**(79)**	(90)	(113)
Non-investment expenses paid from the plans	(17)	-	**(17)**	(22)	(21)
Total defined benefit expense	(205)	(40)	**(245)**	(265)	(150)
Current employer service cost for defined contribution and industry-wide plans	(253)	(2)	**(255)**	(257)	(289)
Total expense recognised in the income statement	(458)	(42)	**(500)**	(522)	(439)

The above expense amounts are included as an employee cost within net operating costs. No amounts have been excluded from underlying earnings in 2017, 2016 or 2015.

The curtailments shown in the table above relate primarily to headcount reductions at various operations. The settlement gains in 2015 relate mainly to an exercise in the US in which deferred vested participants were offered a one-time lump sum payment in place of their future pension payments. The past service income in 2015 relates to design changes in Canada and to changes to post-retirement medical plans in the US.

Total amount recognised in other comprehensive income before tax

	2017 US$m	2016 US$m	2015 US$m
Actuarial (losses)/gains	**(855)**	(1,120)	548
Return on assets (net of interest on assets)	**894**	1,031	79
Loss on application of asset ceiling	**(33)**	(1)	(8)
Total gain/(loss) recognised in other comprehensive income	**6**	(90)	619

Amounts recognised in the balance sheet

The following amounts were measured in accordance with IAS 19 at 31 December:

	Pension benefits	Other benefits	**2017 Total US$m**	2016 Total US$m
Total fair value of plan assets	15,257	-	**15,257**	13,749
Present value of obligations – funded	(16,199)	-	**(16,199)**	(14,504)
Present value of obligations – unfunded	(448)	(998)	**(1,446)**	(1,724)
Present value of obligations – total	(16,647)	(998)	**(17,645)**	(16,228)
Effect of asset ceiling	(111)	-	**(111)**	(63)
Net deficit to be shown in the balance sheet	(1,501)	(998)	**(2,499)**	(2,542)
Comprising:				
– Deficits	(2,372)	(998)	**(3,370)**	(3,167)
– Surpluses	871	-	**871**	625
Net deficits on pension plans	(1,501)	-	**(1,501)**	(1,616)
Unfunded post-retirement healthcare obligation	-	(998)	**(998)**	(926)

The surplus amounts shown above are included in the balance sheet as Trade and other receivables. See note 18.

Deficits are shown in the balance sheet within Provisions (including post-retirement benefits). See note 26.

Funding policy and contributions to plans
The Group reviews the funding position of its major pension plans on a regular basis and considers whether to provide funding above the minimum level required in each country. In Canada and the US the minimum level is prescribed by legislation. In the UK and Switzerland the minimum is negotiated with the local trustee or foundation in accordance with the funding guidance issued by the local regulators. In deciding whether to provide funding above the minimum level the Group takes into account other possible uses of cash within the Group, the tax situation of the local sponsoring entity and any strategic advantage that the Group might obtain by accelerating contributions. The Group does not generally pre-fund post-retirement healthcare arrangements.

	Pension benefits	Other benefits	**2017 Total US$m**	2016 Total US$m	2015 Total US$m
Contributions to defined benefit plans	349	55	**404**	464	328
Contributions to defined contribution plans	241	2	**243**	240	272
Contributions to industry-wide plans	12	-	**12**	17	17
Total	602	57	**659**	721	617

Contributions to defined benefit pension plans are kept under regular review and actual contributions will be determined in line with the Group's wider financing strategy, taking into account relevant minimum funding requirements. As contributions to many plans are reviewed on at least an annual basis, the contributions for 2018 and subsequent years cannot be determined precisely in advance. Most of the Group's largest pension funds are fully funded on their local funding basis and do not require long-term funding commitments at present. Contributions to defined benefit pension plans for 2018 are estimated to be around US$210 million but may be higher or lower than this depending on the evolution of financial markets and voluntary funding decisions taken by the Group. Contributions for subsequent years are expected to be at similar levels. Healthcare plans are generally unfunded and contributions for future years will be equal to benefit payments net of participant contributions. The Group's contributions in 2018 are expected to be similar to the amounts paid in 2017.

Movements in the net defined benefit liability
A summary of the movement in the net defined benefit liability is shown in the first table below. The subsequent tables provide a more detailed analysis of the movements in the present value of the obligations, the fair value of assets and the effect of the asset ceiling.

The amounts shown below include, where appropriate, 100 per cent of the costs, contributions, gains and losses in respect of employees who participate in the plans and who are employed in associates and joint arrangements. Consequently, the costs, contributions, gains and losses may not correspond directly to the amounts disclosed above in respect of the Group. Defined contribution plans and industry-wide plans are excluded from the movements below.

Notes to the 2017 financial statements
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44 Post-retirement benefits continued

	Pension benefits	Other benefits	2017 Total US$m	2016 Total US$m
Change in the net defined benefit liability				
Net defined benefit liability at the start of the year	(1,616)	(926)	**(2,542)**	(2,530)
Amounts recognised in Income	(205)	(40)	**(245)**	(265)
Amounts recognised in Other comprehensive income	62	(56)	**6**	(90)
Employer contributions	349	55	**404**	464
Arrangements divested	13	-	**13**	(8)
Currency exchange rate loss	(104)	(31)	**(135)**	(113)
Net defined benefit liability at the end of the year	(1,501)	(998)	**(2,499)**	(2,542)

	Pension benefits	Other benefits	2017 Total US$m	2016 Total US$m
Change in present value of obligation				
Present value of obligation at the start of the year	(15,302)	(926)	**(16,228)**	(16,123)
Current employer service costs	(146)	(9)	**(155)**	(158)
Past service income	1	3	**4**	-
Curtailments	1	-	**1**	5
Settlements	307	-	**307**	-
Interest on obligation	(498)	(34)	**(532)**	(577)
Contributions by plan participants	(23)	-	**(23)**	(23)
Benefits paid	894	55	**949**	967
Experience (loss)/gain	(2)	9	**7**	139
Changes in financial assumptions loss	(678)	(40)	**(718)**	(1,187)
Changes in demographic assumptions loss	(119)	(25)	**(144)**	(72)
Arrangements divested	13	-	**13**	86
Currency exchange rate (loss)/gain	(1,095)	(31)	**(1,126)**	715
Present value of obligation at the end of the year	(16,647)	(998)	**(17,645)**	(16,228)

	Pension benefits	Other benefits	2017 Total US$m	2016 Total US$m
Change in plan assets				
Fair value of plan assets at the start of the year	13,749	-	**13,749**	13,642
Settlements	(306)	-	**(306)**	-
Interest on assets	459	-	**459**	492
Contributions by plan participants	23	-	**23**	23
Contributions by employer	349	55	**404**	464
Benefits paid	(894)	(55)	**(949)**	(967)
Non-investment expenses	(17)	-	**(17)**	(22)
Return on plan assets (net of interest on assets)	894	-	**894**	1,031
Arrangements divested	-	-	**-**	(94)
Currency exchange rate gain/(loss)	1,000	-	**1,000**	(820)
Fair value of plan assets at the end of the year	15,257	-	**15,257**	13,749

	Pension benefits	Other benefits	2017 Total US$m	2016 Total US$m
Change in the effect of the asset ceiling				
Effect of the asset ceiling at the start of the year	(63)	-	(63)	(49)
Interest on the effect of the asset ceiling	(6)	-	(6)	(5)
Movement in the effect of the asset ceiling	(33)	-	(33)	(1)
Currency exchange rate loss	(9)	-	(9)	(8)
Effect of the asset ceiling at the end of the year	(111)	-	(111)	(63)

Most of the settlement amounts shown above relate to the US, where assets and obligations for some pensions in payment were transferred to an insurance company.

In determining the extent to which the asset ceiling has an effect, the Group considers the funding legislation in each country and the rules specific to each pension plan. The calculation takes into account any minimum funding requirements that may be applicable to the plan, whether any reduction in future Group contributions is available, and whether a refund of surplus may be available. In considering whether any refund of surplus is available the Group considers the powers of trustee boards and similar bodies to augment benefits or wind up a plan. Where such powers are unilateral, the Group does not consider a refund to be available at the end of the life of a plan. Where the plan rules and legislation both permit the employer to take a refund of surplus, the asset ceiling may have no effect, although it may be the case that a refund will only be available many years in the future.

Main assumptions (rates per annum)
The main assumptions for the valuations of the plans under IAS 19 are set out below.

	Canada	UK	US	Switzerland	Eurozone
At 31 December 2017					
Discount rate	3.4%	2.3%	3.5%	0.5%	1.5%
Inflation [(a)]	1.8%	3.2%	2.1%	1.2%	1.7%
Rate of increase in pensions	0.5%	2.8%	0.0%	0.4%	1.7%
Rate of increase in salaries	3.1%	3.6%	3.6%	2.2%	1.9%
At 31 December 2016					
Discount rate	3.8%	2.6%	3.9%	0.6%	1.4%
Inflation [(a)]	1.9%	3.3%	2.1%	1.0%	1.6%
Rate of increase in pensions	0.4%	2.9%	0.0%	0.0%	1.4%
Rate of increase in salaries	3.2%	3.7%	3.6%	2.0%	2.4%

(a) The inflation assumption shown for the UK is for the Retail Price Index. The assumption for the Consumer Price Index at 31 December 2017 was 2.1 per cent (2016: 2.2 per cent).

The main financial assumptions used for the healthcare plans, which are predominantly in the US and Canada, were: discount rate: 3.6 per cent (2016: 3.9 per cent); medical trend rate: 9.8 per cent reducing to 4.7 per cent by the year 2026 broadly on a straight-line basis (2016: 9.1 per cent, reducing to 5.1 per cent by the year 2025); claims costs based on individual company experience.

For both the pension and healthcare arrangements the post-retirement mortality assumptions allow for future improvements in longevity. The mortality tables used imply that a man aged 60 at the balance sheet date has a weighted average expected future lifetime of 27 years (2016: 26 years) and that a man aged 60 in 2037 would have a weighted average expected future lifetime of 28 years (2016: 28 years).

Sensitivity
The values reported for the defined benefit obligations are sensitive to the actuarial assumptions used for projecting future benefit payments and discounting those payments. In order to estimate the sensitivity of the obligations to changes in assumptions, we calculate what the obligations would be if we were to make small changes to each of the key assumptions in isolation. The difference between this figure and the figure calculated using our stated assumptions is an indication of the sensitivity to changes in each assumption. The results of this sensitivity analysis are summarised in the table below. Note that this approach is valid for small changes in the assumptions but will be less accurate for larger changes in the assumptions. The sensitivity to inflation includes the impact on pension increases, which are generally linked to inflation where they are granted.

		2017		2016	
		Approximate (increase)/decrease in obligations		Approximate (increase)/decrease in obligations	
Assumption	**Change in assumption**	**Pensions US$m**	**Other US$m**	Pensions US$m	Other US$m
Discount rate	Increase of 0.5 percentage points	**1,091**	**59**	1,031	57
	Decrease of 0.5 percentage points	**(1,169)**	**(63)**	(1,107)	(61)
Inflation	Increase of 0.5 percentage points	**(579)**	**(20)**	(536)	(19)
	Decrease of 0.5 percentage points	**550**	**18**	507	17
Salary increases	Increase of 0.5 percentage points	**(74)**	**(1)**	(77)	(3)
	Decrease of 0.5 percentage points	**72**	**1**	75	2
Demographic – allowance for future improvements in longevity	Participants assumed to have the mortality rates of individuals who are one year older	**509**	**20**	481	20
	Participants assumed to have the mortality rates of individuals who are one year younger	**(509)**	**(20)**	(481)	(20)
Medical costs trend rates	Increase of 1.0 percentage points	**-**	**(38)**	-	(37)
	Decrease of 1.0 percentage points	**-**	**33**	-	31

Notes to the 2017 financial statements
continued

45 Rio Tinto Limited parent company disclosures

As at 31 December	2017 A$m	2016 A$m
Assets		
Current assets	**11,914**	8,041
Non-current assets	**7,954**	10,758
Total assets	**19,868**	18,799
Liabilities		
Current liabilities	**(7,448)**	(1,268)
Non-current liabilities	**(35)**	(4,814)
Total liabilities	**(7,483)**	(6,082)
Net assets	**12,385**	12,717
Shareholders' equity		
Share capital	**3,893**	4,004
Other reserves	**420**	413
Retained earnings	**8,072**	8,300
Total equity	**12,385**	12,717
Profit of the parent company	**9,688**	4,452
Total comprehensive income of the parent company	**9,688**	4,452

Prepared under Australian Accounting Standards (AAS). In relation to Rio Tinto Limited there are no significant measurement differences between AAS and IFRS as defined in note 1.

Rio Tinto Limited guarantees
Rio Tinto Limited provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled A$10.2 billion at 31 December 2017 (31 December 2016: A$14.1 billion); in addition these entities also jointly guarantee the Group's undrawn credit facility which was A$9.6 billion at 31 December 2017 (31 December 2016: A$10.4 billion).

Rio Tinto Limited has guaranteed other external debt held by Rio Tinto Group entities which totalled A$0.1 billion at 31 December 2017 (31 December 2016: A$0.1 billion) and provided guarantees in respect of certain derivative contracts which were in a liability position of A$48 million at 31 December 2017 (31 December 2016: A$1 million).

In addition, Rio Tinto Limited has provided a guarantee of all obligations, including contingent obligations, of Rio Tinto Finance Limited, a wholly owned subsidiary.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

46 Related undertakings

In accordance with section 409 of the Companies Act 2006, disclosed below is a full list of related undertakings of the Group. Related undertakings include "subsidiaries", "associated undertakings", and "significant holdings in undertakings other than subsidiary companies". The registered office address, country of incorporation, classes of shares and the effective percentage of equity owned by the Group calculated by reference to voting rights, is disclosed as at 31 December 2017.

The definition of a subsidiary undertaking in accordance with the Companies Act 2006 is different from the definition under IFRS. As a result, the related undertakings included within this list may not be the same as the related undertakings consolidated in the Group IFRS financial statements. Unless otherwise disclosed, all undertakings with an effective equity holding of greater than 50% are considered subsidiary undertakings for the purpose of this note.

Refer to notes 33-36 for further information on accounting policies, basis of consolidation, principal subsidiaries, joint operations, joint ventures and associates.

An explanation of the dual listed companies structure of Rio Tinto plc and Rio Tinto Limited can be found on pages 250 to 251. For completeness, the effective ownership by the Group relates to effective holdings by both entities either together or individually.

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
10029734 Canada Inc.; Canada	CAD$1.00 Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD$1.00 Preferred shares	100		
1043802 Ontario Ltd; Canada	CAD Ordinary shares	100	100	66 Wellington Street West, Suite 4700, Toronto Dominion Bank Tower, Toronto ON M5K 1E6, Canada
1109723 B.C. Ltd.	CAD Common shares	100	100	1800 - 510 West Georgia Street, Vancouver BC V6B 0M3, Canada
46106 YUKON INC.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
46117 YUKON INC.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
535630 YUKON INC.; Canada	CAD Common shares	100	100	c/o Macdonald & Company, 200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
7999674 CANADA INC.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
9230556 CANADA INC.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Preferred shares	100		
9539549 CANADA INC.; Canada	US$ Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan Alumina Ltda.; Brazil	BRL1.00 Quota shares	100	100	Avenida Engenheiro Emiliano Macieira, 1—km 18, Pedrinhas, Sao Luis, MA, 65095-603, Brazil
Alcan Asia Limited; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Alcan Betriebs- und Verwaltungsgesellschaft GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Chemicals Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Composites Brasil Ltda; Brazil	BRL0.01 Ordinary shares	100	100	Avenida das Nações Unidas, 10.989, 14th floor, Suite 141, São Paulo, 04578-000, Brazil
Alcan Corporation; United States	US$ 0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Farms Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Finances USA LLC; United States	US$1,000.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Alcan Gove Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Gove Pty Limited; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Class B shares	100		
Alcan Gove Superannuation Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alcan Holdings Australia Pty Limited; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100	100	
Alcan Holdings Europe B.V.; Netherlands	€455.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, Netherlands
Alcan Holdings Europe B.V.; Netherlands	€455.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, Netherlands
Alcan Holdings Nederland B.V.; Netherlands	€4,555.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, Netherlands
Alcan Holdings Switzerland AG (SA/Ltd.); Switzerland	CHF0.01 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Alcan International Network U.S.A. Inc.; United States	US$ Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
Alcan Lebensmittelverpackungen GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Management Services (Shanghai) Co., Ltd.; China	US$1.00 Ordinary shares	100	100	Unit E, 40F Wheelock Square, No. 1717 West Nanjing Road, Jing'an District, Shanghai, 200040, China
Alcan Management Services Canada Limited/Societe de Services de Gestion Alcan Canada Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan Northern Territory Alumina Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Packaging Canada Limited; Canada	CAD Ordinary shares	100	100	McCarthy Tetrault LLP, c/o Joanne Pierucci, Suite 5300 Toronto Dominion Bank Tower, Toronto ON M5K 1E6, Canada
Alcan Packaging Mühltal Gmbh & Co. KG; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Primary Metal Australia Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Primary Products Company LLC; United States	US$ Units shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Alcan Primary Products Corporation; United States	US$0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Realty Limited/Societe Immobiliere Alcan Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Alcan South Pacific Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Trading AG (SA/Ltd.); Switzerland	CHF1000 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Aluminium Dunkerque; France	€16.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Aluminium Pechiney; France	€16.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France
Aluminum Company of Canada Limited/Aluminium du Canada Limitee; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
AML Properties Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Anglesey Aluminium Limited (Dissolved); United Kingdom[e]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Anglesey Aluminium Metal Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
AP Service; France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France
Argyle Diamond Mines Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds (2013) Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds Limited; Australia[a]	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class B shares	100		

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Ashton Canada Pty Limited; Australia	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Ashton Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Ashton Nominees Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Australian Coal Holdings Pty. Limited; Australia[a]	AUD A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100		
Australian Mining & Smelting Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Beasley River Management Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Beasley River Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Borax España, S.A.; Spain	€150.00 Ordinary shares	100	100	CN 340, Km 954, 12520 NULES, Castellon, Spain
Borax Europe Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Borax Francais; France	€2.75 Ordinary shares	100	100	89 Route de Bourbourg, 59210, Coudekerque-Branche, France
Borax Malaysia Sdn Bhd; Malaysia	MYR1.00 Ordinary shares	100	100	Level 7, Menara Milenium, Jalan Damanlela, Pusat Bandar Damansara, Damansara Heights 50490 Kuala Lumpur, Malaysia
Borax Rotterdam N.V.; Netherlands	€453.78 Ordinary shares	100	100	Welplaatweg 104, 3197KS, ROTTERDAM –BOTLEK, Netherlands
British Alcan Aluminium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Canning Resources Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Capricorn Diamonds Investments Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Cathjoh Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Champlain Reinsurance Company Ltd.; Switzerland	CHF1.23 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Channar Management Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Channar Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
CIA. Inmobiliaria e Inversiones Cosmos S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Av. Santa Maria No. 110 Urb. Miraflores – MIRAFLORES – LIMA, Peru
Compagnie Générale D'électrolyse Du Palais; France	€0.94 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Compania de Transmision Sierraoriente S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Av. Santa Maria No. 110 Urb. Miraflores – MIRAFLORES – LIMA, Peru
CRA Exploration (India) Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
CRA Investments Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
CRA Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Daybreak Development LLC; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Daybreak Property Holdings LLC; United States[c]	—	—	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Daybreak Secondary Water Distribution Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Daybreak Water Holding LLC; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
DB Medical I LLC; United States	US$ Units shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
DBVC1 LLC; United States[c]	—	—	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Diavik Diamond Mines (2012) Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
East Kalimantan Coal Pte. Ltd; Singapore[(a)]	SGD1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	US$1.00 Ordinary shares	100		
Eastland Management Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Electric Power Generation Limited; New Zealand[(a)]	NZD1 Ordinary shares	100	100	Tiwai Road , Southland via Intercargill, New Zealand
Empresa de Mineracao Finesa Ltda.; Brazil	BRL Quotas shares	100	100	SIA, Trecho 2, Lotes 710/720, Brasilia DF, Brazil
Falcon Insurance Ltd; Malta[(a)]	US$1.00 Class “A” ordinary shares	100	100	No 7, 4th Floor, Block C, Skyway Offices, 179 Marina Street, Pieta , PTA 9042, Malta
	US$1.00 Class “B” shares	100		
Flambeau Mining Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Fundsprops Pty. Limited; Australia[(a)]	AUD A Class ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Gladstone Infrastructure Pty Ltd; Australia	AUD Class G Redeemable Preference shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD A Class ordinary shares	100		
Gove Aluminium Ltd; Australia	AUD A Non redeemable preference shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD A Redeemable preference shares	100		
	AUD Ordinary shares	100		
GPS Energy Pty Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
GPS Nominee Pty Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
GPS Power Pty. Limited; Australia	AUD ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Hail Creek Coal Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Hamersley Exploration Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley HMS Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Holdings Limited; Australia[(a)]	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Iron – Yandi Pty Limited; Australia[(a)]	AUD Class B shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class C shares	100		
	AUD Ordinary shares	100		
Hamersley Iron Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Resources Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Z Class ordinary shares	100		
Hamersley WA Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Henlopen Manufacturing Co., Inc.; United States	US$100.00 Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
High Purity Iron Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Hlsmelt Corporation Pty Limited; Australia[(a)]	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Hunter Valley Resources Pty Ltd; Australia	AUD A Class shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD B Class shares	100		
IEA Coal Research Limited; United Kingdom	£1.00 Ordinary shares	100	100	Apsley House, Third Floor, 176 Upper Richmond Road, London, SW15 2SH, United Kingdom
IEA Environmental Projects Limited; United Kingdom	£1.00 Ordinary shares	100	100	IEAGHG, Pure Offices Cheltenham Office Park, Hatherley Lane, Cheltenham, GL51 6SH, United Kingdom
Industrias Metalicas Castello S.A.; Spain	€6.01 Ordinary shares	100	100	Calle Tuset 10, 08006, Barcelona, Catalogna, Spain
Integrity Land and Cattle LLC; United States	US$ Units shares	100	100	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Itallumina Srl; Italy[(d)]	€1.00 Quotas shares	100	100	Viale Castro Pretorio 122, 00185, Roma, Italy
Johcath Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Juna Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Kalimantan Gold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Kalteng Pty. Ltd; Australia[(a)]	AUD A Class ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
	AUD1.00 Class B (Fully paid $1.00 13/01/2003)	100		
	AUD1.00 Class B (Paid to $0.12 02/09/2005)	100		
	AUD Ordinary shares	100		
Kelian Investment Limited; British Virgin Islands[(c)(e)]	—	—	100	Woodbourne Hall, Road Town, Tortola, British Virgin Islands
Kelian Pty. Limited; Australia[(a)]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Kembla Coal & Coke Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kennecott Barneys Canyon Mining Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Exploration Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Exploration Mexico, S.A. de C.V.; Mexico	MXN1,000.00 Ordinary shares	100	100	Felix Berenguer 125 – 4,Col.Lomas Virreyes, Distrito Federal, 11000, Mexico
Kennecott Holdings Corporation; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Land Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Land Investment Company LLC; United States[(c)]	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Molybdenum Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Nevada Copper Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Ridgeway Mining Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Royalty Company; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Services Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Uranium Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kennecott Utah Copper LLC; United States	US$ Units shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Kennecott Water Distribution LLC; United States	US$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Kestrel Coal Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kestrel Coal Sales Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kutaibar Holdings Pty Ltd; Australia[(a)]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Lawson Mardon Flexible Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Lawson Mardon Smith Brothers Ltd.; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Metallwerke Refonda AG; Switzerland	CHF125 Bearer shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zürich, Switzerland
Metals & Minerals Insurance Pte. Limited; Singapore	SGD Redeemable preference shares	100	100	2 Shenton Way, #2601, SGX Centre 1, Singapore 068804, Singapore
	SGD Ordinary shares	100		
Mineracao Tabuleiro Ltda; Brazil	BRL Quotas shares	100	100	SIA, Trecho 2, Lotes 690/720, Brasilia DF, Brazil
Minera Kennecott, S.A.de C.V.; Mexico	MXN1 Series "B" shares	100	100	Florencia 57,Piso 3,Col.Juarez, Delegacion Cuauhtemoc, Mexico, D.F., 06600, Mexico
Mitchell Plateau Bauxite Co. Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Mount Bruce Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Mount Pleasant Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Mutamba Mineral Sands S.A.; Mozambique	MZN100.00 Ordinary shares	100	100	Avenida 24 de Julho, no. 3412, Bairro da Polana Cimento, Maputo City, Mozambique
NBH Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Nhulunbuy Corporation Limited; Australia[(c)]	—	—	100	19 Westal Street, Nhulunbuy NT 0880, Australia
Norgold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	Redeemable Preference	100		
North Gold (W.A.) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable preference shares	100		
North Insurances Pty. Ltd.; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
North IOC (Bermuda) Holdings Limited; Bermuda	US$1.00 Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
North IOC (Bermuda) Limited; Bermuda	US$143.64 Class A ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
	US$100,000.00 Preferred shares	100		
	US$1.00 Ordinary shares	100		
North IOC Holdings Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
North Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
North Mining Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable preference shares	100		
Pacific Aluminium (New Zealand) Limited; New Zealand	NZD1 Ordinary shares	100	100	Level 6, 109 Featherston Street, Wellington, 6011, New Zealand
Pacific Aluminium Bell Bay Sales Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Pacific Aluminium Pty. Limited; Australia[(a)]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Pacific Aluminium Services Pty Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, 123 Albert Street, Brisbane QLD 4000, Australia
Pacific Coast Mines, Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Aviatube Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Pechiney Bâtiment; France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38341 Voreppe Cedex, France

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Pechiney Bécancour, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Cast Plate, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Consolidated Australia Pty Limited; Australia	US$1.00 Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	US$1.00 Preference shares	100		
Pechiney Dis Ticaret Limited Sirketi; Turkey(d)	TRY25.00 Ordinary shares	100	100	Karakoy Haci Mimi Mah. Vekil Harc Sok. 10 Kat 4, Beyoglu, Istanbul, Turkey
Pechiney Holdings, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Metals LLC; United States(c)	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Plastic Packaging, Inc.; United States	US$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Pechiney Sales Corporation; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Peko Exploration Pty Ltd.; Australia	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Peko-Wallsend Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Company (Services) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Port d'Ehoala S.A.; Madagascar	US$100.00 Ordinary shares	100	100	Immeuble ASSIST, Ivandry , Lot N°35, 5ème étage, 101 Antananarivo , Antananarivo, Madagascar
Project Generation Group Pty Ltd; Australia(a)	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
PSZ Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
PT Alcan Packaging Flexipack; Indonesia(d)	IDR1,000,000.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Consultants; Indonesia(d)	US$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Exploration; Indonesia(d)	US$1.00 Ordinary shares	100	100	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
PT Rio Tinto Indonesia; Indonesia	US$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Rio Tinto Irja; Indonesia(d)	US$1.00 Ordinay shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
QIT Madagascar Minerals Ltd; Bermuda	US$1.00 Ordinay shares	100	100	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda
Queensland Coal Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Química e Metalúrgica Mequital Ltda.; Brazil	BRL Ordinary shares	100	100	Av. das Nacoes Unida, 12551 19o, andar, CJ 1911, 04578-000, Sao Paulo, SP, Brazil
Ranges Management Company Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Ranges Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Resolution Copper Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Richards Bay Mining Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
Richards Bay Titanium Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio de Contas Desenvolvimentos Minerais Ltda; Brazil	BRL Quota shares	100	100	Rua Coronel Durval Matos, S/N. Centro, Municipio de Jaguaquara, Estado da Bahia, CEP45345-000, Brazil
Rio Santa Rita Empreenimentos e-Particiacoes Ltda	BRL Quota shares	100	100	SIA, Trecho 2, Lotes 690/720, Brasilia, DF, Brazil
Rio Sava Exploration DOO; Serbia[c]	—	—	100	Resavska 23, 11000 Beograd, Beograd, 11000, Serbia
Rio Tinto (Commercial Paper) Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto (Hong Kong) Ltd; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Rio Tinto (Mauritius) Pty Limited; Mauritius[d]	US$1.00 Ordinary shares	100	100	6th Floor, Tower A, 1 Cybercity, Ebene, Mauritius
Rio Tinto Advisory Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Alcan Fund Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan International Ltd. / Rio Tinto Alcan International Ltee; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Alcan Middle East DMCC; United Arab Emirates	AED1,000 Ordinary shares	100	100	Gold Tower, Jlt Cluster I, 8th Floor, Unit E, Dubai, PO BOX 340801, United Arab Emirates
Rio Tinto Alcan Technology Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Almazpoisk LLC; Russian Federation[c][d]	—	—	100	3, Aleksandra Lukyanova, 105066, Moscow, Russian Federation
Rio Tinto Aluminium (Bell Bay) Limited; Australia	AUD 7.5% Cumulative preference shares	100	100	Pacific Aluminium, Level 3, 500 Queen Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100		
Rio Tinto Aluminium (Holdings) Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto America Holdings Inc.; United States	US$0.01 Class A common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	US$100.00 Series A preferred stock	100		
Rio Tinto America Inc.; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Asia Ltd; Hong Kong	HKD Ordinary shares	100	100	Suite 2802, 28/F, Lippo Centre Tower 2, 89 Queensway, Admiralty, Hong Kong
Rio Tinto Asia Pty. Limited.; Australia[a]	AUD Class A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Rio Tinto AuM Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Australian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Bahia Holdings Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Base Metals Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Brazilian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Brazilian Investments Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Canada Diamond Operation Management Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada
Rio Tinto Canada Inc; Canada	CAD Class B shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Class C shares	100		
	CAD Class D shares	100		
	CAD Class J Shares	100		
	Class K Shares	100		

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Canada Management Inc./ Rio Tinto Gestion Canada Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Preferred shares	100		
Rio Tinto Canada Uranium Corporation; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Coal (Clermont) Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Australia Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Investments Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal NSW Holdings Limited; Australia[a]	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Desenvolvimentos Minerais LTDA.; Brazil	BRL Quotas shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edificio Capital Financial Center, Brasilia, CEP 70610-440, Brazil
Rio Tinto Diamonds and Minerals Canada Holding Inc.; Canada	CAD Class A (dividend rights)	100	100	300-5201 50th Avenue, PO Box 2498, Yellowknife NT X1A 2P8, Canada
	CAD Class B shares	100		
	CAD Class C (voting rights) shares	100		
	CAD Class P1 preferred shares	100		
Rio Tinto Diamonds Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Diamonds Netherlands B.V.; Netherlands	€500.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, The Netherlands, Netherlands
Rio Tinto Diamonds NV; Belgium	€ Ordinary shares	100	100	Hoveniersstraat 53, 2018 Antwerp, Belgium
Rio Tinto Eastern Investments B.V.; Netherlands	€13,418,899,730 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Energy America Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Energy Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Escondida Limited; Bermuda	US$1.00 Ordinary shares	100	100	22 Canon's Court, Victoria Street, Hamilton, HM 12, Bermuda
Rio Tinto European Holdings Limited; United Kingdom[b]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Exploration (Asia) Holdings Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Exploration (PNG) Limited; Papua New Guinea[a]	PGK1.00 Ordinary shares	100	100	c/o BDO Accountants, Section 15, Lot 15, Bernal Street, National Capital District, Papua New Guinea
Rio Tinto Exploration and Mining (India) Private Limited; India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No.5, Tower A, DLF Cyber City, Phase –III, Gurgaon, Haryana, 122002, India
Rio Tinto Exploration Canada Inc.; Canada	CAD Class A shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD Class B shares	100		
	CAD Class C shares	100		
	CAD Class D shares	100		
	CAD Class E preferred shares	100		
Rio Tinto Exploration Gabon SA; Gabon[d]	XAF10,000 Ordinary shares	100	100	C/O NEW ACE Baker Tilly, Quartier Louis – Quaben,Libreville,B.P :3981 ,Gabon
Rio Tinto Exploration India Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
Rio Tinto Exploration Kazakhstan LLP; Kazakhstan[c]	—	—	100	Dostyk 310/G, Almaty, 050020, Kazakhstan
Rio Tinto Exploration Pty Limited; Australia[a]	AUD Class B shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
	AUD Class C shares	100		
	AUD Ordinary shares	100		
Rio Tinto Exploration Zambia Limited; Zambia	ZMW1.00 Ordinary shares	100	100	Plot 3827, Parliament Road, Olympia, Lusaka,Zambia

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Fer et Titane inc.; Canada	CAD Class B preference shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
	CAD Common shares	100		
	CAD$0.01 Preferred shares	100		
Rio Tinto FH Limited; United Kingdom[d]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Finance (USA) Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance (USA) plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto PACE Canada Inc./Gestion Rio Tinto PACE Canada Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Finance Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000,Australia
Rio Tinto Finance plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto France S.A.S.; France	€15.25 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400,Courbevoie, France
Rio Tinto Global Employment Company Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Guinée S.A.; Guinea	GNF100,000.00 Ordinary shares	100	100	Route de la Corniche Nord, Cité Ministérielle—Rue DI 256 Quartier Landréah, Commune de Dixinn—BP 99,Conakry, Guinea
Rio Tinto Holdings LLC; Mongolia	MNT20,000.00 Ordinary shares	100	100	Monnis Tower 13th floor, Chinggis Avenue-15, SBD, Ulaanbaatar-14240, Mongolia
Rio Tinto Hydrogen Energy Australia Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000,Australia
Rio Tinto Hydrogen Energy LLC; United States[c]	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Iceland Ltd.; Iceland	ISK1.00 Registered shares	100	100	P.O. Box 244, IS-222, Hafnarfjördur, Iceland
Rio Tinto India Private Limited; India	INR10.00 Ordinary shares	100	100	Apartment No.100 A/5, Ground Floor, The Capital Court, Olof Palme Marg, Munirka, NEW DELHI 110067, India
Rio Tinto Indonesian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto International Holdings Limited; United Kingdom[b]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto International Trading (Shanghai) Co Ltd; China[d]	US$1.00 Ordinary shares	100	100	Room 1615-3, No. 1 Jilong Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, 200031, China
Rio Tinto Investments One Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Investments Two Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Iron & Titanium (Suzhou) Co., Ltd; China	US$1.00 Ordinary shares	100	100	418 Nanshi Street, Suzhou Industrial Park, Suzhou,215021, China
Rio Tinto Iron & Titanium GmbH; Germany[c]	—	—	100	Mergenthalerallee 77, D-65760, Eschborn, (Frankfurt am Main), Germany
Rio Tinto Iron & Titanium Holdings GmbH; Germany[c]	—	—	100	Mergenthalerallee 77, D-65760, Eschborn, (Frankfurt am Main), Germany
Rio Tinto Iron & Titanium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron and Titanium Canada Inc./Rio Tinto Fer et Titane Canada Inc.; Canada	CAD Common shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
Rio Tinto Iron Ore Asia Pte Ltd; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Iron Ore Atlantic Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron Ore Europe S.A.S.; France	€100.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400,Courbevoie, France

Wholly owned subsidiary undertakings				
Name of undertaking and country of incorporation	**Share class**	**% of share class held by Group companies**	**Effective Group % ownership**	**Registered office address**
Rio Tinto Iron Ore Trading China Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Japan Ltd; Japan	JPY500 Ordinary shares	100	100	8th Floor, Kojimachi Diamond Building, 1 Kojimachi 4-chome, Chiyoda-ku, Tokyo 102-0083, Japan
Rio Tinto Jersey Holdings 2010 Limited; Jersey	US$ Ordinary shares	100	100	22 Grenville Street, St Helier, JE4 8PX, Jersey
Rio Tinto Korea Ltd; Republic of Korea	KRW10,000.00 Ordinary shares	100	100	2nd Floor, JS Tower, 6 Teheran-ro 79-gil,Gangnam-Gu, Seoul, 135-877, Republic of Korea
Rio Tinto Logistic Services Pty Ltd; Australia[(a)(g)]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000,Australia
Rio Tinto London Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Management Services South Africa (Proprietary) Ltd; South Africa	ZAR2.00 Ordinary shares	100	100	1 Harries Road, Illovo, Sandton, 2196, Sandton,South Africa, 2196, South Africa
Rio Tinto Marketing Pte. Ltd.; Singapore	SGD$1.00 Ordinary shares US$1.00 Ordinary shares	100 100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Marketing Services Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Medical Plan Trustees Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Metals Limited; United Kingdom	£1.00 Ordinary shares US$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Minera Peru Limitada SAC; Peru	PEN100.00 Ordinary shares	100	100	Av. La Paz 1049, Oficina 501, Lima 18, Peru
Rio Tinto Mineracao do Brasil Ltda; Brazil	BRL1 Quotas shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109,Edificio Capital Financial Center, Brasilia, Brasilia,CEP 70610-440, Brazil
Rio Tinto Minerals Asia Pte Ltd; Singapore	SGD$1.00 Ordinary shares US$1.00 Ordinary shares	100 100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Minerals Development Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Minerals Exploration (Beijing) Co., Ltd; China	US$ 1.00 Ordinary shares	100	100	Units 15 - 16, 18/F, China World Office Building 2, No. 1 Jianguomenwai Dajie, Chaoyang District, Beijing, China
Rio Tinto Minerals Inc.; United States	US$0.01 Common shares	100	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Rio Tinto Mining and Exploration Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Mining and Exploration Limited; United Kingdom	£1.00 Ordinary shares US$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Mining and Exploration S.A.C.; Peru	PEN0.5 Ordinary shares	100	100	Calle General Borgono N 1034, Miraflores, Lima 18, Peru
Rio Tinto Namibian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Nickel Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Nominees Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto OT Management Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Overseas Holdings Limited; United Kingdom	£1.00 Ordinary shares US$1.00 Ordinary shares	100 100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Pension Investments Limited; United Kingdom[(b)]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Peru Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Potash Management Inc./Rio Tinto Potasse Management Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Procurement (Singapore) Pte Ltd; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Pte Ltd; Singapore	SGD$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	SGD$1.00 Preference shares	100		
Rio Tinto Saskatchewan Management Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Rio Tinto Saskatchewan Potash Holdings General Partner Inc.; Canada	CAD Common shares	100	100	McCarthy Tetrault LLP, Suite 5300, TD Bank Tower 66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Saskatchewan Potash Holdings Limited Partnership; Canada[c]	—	—	100	McCarthy Tetrault LLP, Suite 5300, TD Bank Tower 66 Wellington Street West, Toronto ON M5K Canada 1E6, Canada
Rio Tinto Secretariat Limited	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Services Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Services Limited; Australia[a]	AUD Class Z shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Rio Tinto Shared Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Shipping (Asia) Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
Rio Tinto Shipping Pty. Limited.; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Simfer UK Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Singapore Holdings Pte Ltd; Singapore	SGD$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	US$ Ordinary shares	100		
Rio Tinto South East Asia Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Staff Fund Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Sulawesi Holdings Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Technological Resources Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Rio Tinto Technological Resources UK Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Trading (Shanghai) Co., Ltd.; China	US$1.00 Ordinary shares	100	100	41/F Wheelock Square, No. 1717 West Nanjing Road, Jing' an District, Shanghai, 200040, China
Rio Tinto Uranium Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Vostok Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Western Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Riversdale Connections (Proprietary) Ltd; South Africa	ZAR1.00 Ordinary shares	100	100	Ground Floor – Cypress Place North, Woodmead Business Park140/142 Western Service Road, Woodmead, 2191, South Africa
Robe River Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rocklea Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
RTA AAL Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Boyne Limited; Australia	AUD Ordinary shares	100	100	Pacific Aluminium, Level 3, 500 Queen Street, Brisbane QLD 4000, Australia
RTA Holdco 1 Limited; United Kingdom	US$ 0.0001 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
RTA Holdco 4 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$0.73 Ordinary shares	100		
RTA Holdco 7 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$ Class A preference shares	100		
RTA Holdco 8 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$ Class A preference shares	100		
RTA Holdco Australia 1 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 3 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 5 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 6 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco France 2017 S.A.S.; France	€ 10.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
RTA Pacific Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Sales Pty Ltd; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Class B shares	100		
RTA Smelter Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Weipa Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Yarwun Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTAlcan 1 LLC; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
	US$ Class A preferred shares	100		
RTAlcan 2 LLC; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
RTAlcan 3 LLC; United States	US$ Common shares	100	100	CSC, 2711 Centerville Road, Suite 400, Wilmington DE 19808
RTLDS Aus Pty. Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
RTLDS UK Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTMDC LLC; Mongolia	MNT1,240.00 Common shares	100	100	7 floor, Seoul Business Centre, Zaluuchuud avenue – 26, 1st khoroo, Bayanzurkh district, Ulaanbaatar, 13381, Mongolia
RTPDS Aus Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Savoie Services Y.K.; Japan	JPY50,000 Ordinary shares	100	100	Harumi, 3 Nagahama-cho, Ozu-city, Ehime-ken, 799-3412, Japan
Scheuch Unterstuetzungskasse GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Skeleton Coast Diamonds Limited; Namibia	NAD2.00 Ordinary shares	100	100	360 Sam Nujoma Drive, Klein Windhoek, Windhoek, Namibia
Skymont Corporation; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Société De Financement Des Risques Industriels; Luxembourg	€ Ordinary shares	100	100	534, rue de Neudorf, B.P. 593, Luxembourg, L-2015, Luxembourg
Société D'entreprises, Carriéres Et Mines De L'Esterel; France	€9.33 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Société Générale de Recherches et d'exploitations Minières; France	€0.22 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Société Immobilière Alpes Provence; France	€15.00 Ordinary shares	100	100	17 Place des Reflets, La Defense 2, 92400, Courbevoie, France
Sohio Western Mining Company; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA

46 Related undertakings continued

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Southern Copper Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B shares	100		
	AUD Non cumulative redeemable preference shares	100		
	AUD Ordinary shares	100		
Swift Current Land & Cattle LLC; United States[c]	—	—	100	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Swiss Aluminium Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Stock Unit A shares	100		
	AUD Stock Unit B shares	100		
	AUD Stock Unit C shares	100		
TBAC Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Technological Resources Pty. Limited; Australia[a]	AUD A Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD B Ordinary shares	100		
The Barrier Corporation (Vic.) Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
The Kelian Community and Forest Protection Trust; Singapore[c]	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
The Pyrites Company, Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
The Roberval and Saguenay Railway Company/La Compagnie du Chemin de Fer Roberval Saguenay; Canada	CAD$100.00 Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
	CAD$100.00 Preference shares 6% non-cumulative	100		
The Zinc Corporation Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Z Class ordinary shares	100		
Thos. W. Ward Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Three Crowns Insurance Company Limited; Bermuda	£1.00 Common shares	100	100	Canon's Court, 22 Victoria Street, Hamilton, HM 12, Bermuda
Tinto Holdings Australia Pty. Limited; Australia	AUD A shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Trans Territory Pipeline Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
U.S. Borax Inc.; United States	US$0.10 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Union Générale Industrielle Africaine; Morocco	MAD100.00 Ordinary shares	100	100	52 bld Zerktouni – 1er étage – Appartement N° 3–, Espace Erreda—Casablanca–Maroc, Maroc, Morocco
Victoria Technology Inc.; United States[a]	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
Waste Solutions and Recycling LLC; United States	US$ Units shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
West Kutai Foundation Limited; Singapore[c]	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
Wimmera Industrial Minerals Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 33, 120 Collins Street, Melbourne VIC 3000, Australia
Winchester South Development Company Proprietary Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Wyoming Coal Resources Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
201 Logistics Center, LLC; United States[c]	—	—	50	CSC, 251 Little Falls Drive, Wilmington DE 19808, USA
AGM Holding Company Pte Ltd; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alufluor AB; Sweden	SEK1,000.00 Ordinary shares	50	50	Industrigatan 70, Box 902, S-25109, Helsingborg, Sweden
Aluminerie Alouette Inc; Canada	CAD Ordinary shares	40	40	400, Chemin de la Pointe-Noire, C.P. 1650, Sept-Îles Québec G4R 5M9, Canada
Aluminerie De Bécancour, Inc.; Canada	CAD1.00 Ordinary shares	50.1	25.2	5555 Pierre Thibault Street, PO 30, Becancour, Quebec G0X 1B, Canada
Aluminium & Chemie Rotterdam B.V.; Netherlands	€4,555 Ordinary shares	65.8	65.8	Oude Maasweg 80, NL-3197 KJ, Botlek, Rotterdam, The Netherlands
Asia Gold Mongolia LLC; Mongolia	MNT1,250.00 Common shares	100	50.7	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Asia Naran Bulag LLC; Mongolia	MNT1,000.00 Common shares	100	50.7	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Balkhash Saryshagan LLP; Kazakhstan[(c)]	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Beasley River Marketing Pty Ltd; Australia	AUD A Class Shares	100	53	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUS B Shares	100		
Bektau B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, The Netherlands, Netherlands
Blair Athol Coal Pty. Ltd.; Australia	AUD Ordinary shares	57.2	71.2	123 Albert Street, Brisbane QLD 4000, Australia
Boyne Smelters Limited; Australia	AUD A1 Class shares	100	59.4	123 Albert Street, Brisbane QLD 4000, Australia
	AUD A2 Class shares	100		
	AUD B1 Class shares	100		
CanPacific Potash Inc.; Canada[(c)]	—	—	32	c/o McKercher LLP, 374 Third Avenue South, Saskatoon SK S7K1M5, Canada
Carol Lake Company Ltd.; Canada	CAD$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Chinalco Rio Tinto Exploration Co. Ltd (in liquidation); China[(d)]	CNY1.00 Capital Contribution (Ordinary shares	49	49	Unit 402, China Resources Building, No. 8 Jianguomenbei Avenue, Dong Cheng District, Beijing, 100005 P.R., China
Chlor Alkali Unit Pte Ltd; Singapore	SGD$1.00 Ordinary (SGD) shares	100	68.4	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, Singapore, 018982, Singapore
	US$1.00 Ordinary (USD) shares	68.4		
Corporation De Pêche Ste-Marguerite Inc.; Canada	CAD$10.00 Ordinary shares	96.8	96.8	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Dalrymple Bay Coal Terminal Pty Ltd; Australia	AUD Ordinary shares	32.1	22.8	Martin Armstrong Drive, Hay Point via Mackay QLD 4740, Australia
Dampier Salt Limited; Australia	AUD Ordinary ($1.00257)shares	68.4	68.4	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Ordinary ($1.88 on 31/01/2013) shares	68.4		
Enarotali Gold Project Limited; Jersey	£0.001 Ordinary shares	25	25	13 Castle Street, St Helier, Jersey JE4 5UT, Jersey
Energy Resources of Australia Ltd; Australia	AUD A Class ordinary shares	68.4	68.4	C/- Mallesons Stephen Jacques, 60 Marcus Clarke Street, Canberra ACT, Australia
Fabrica De Plasticos Mycsa, S.A.; Bolivarian Republic of Venezuela[(d)]	VEF1.00 Common shares	49	49	Urbanización Industrial San Ignacio, parcela 2-A, vía San Pedro, Los Teques, Estado Miranda, Venezuela
Global Hubco BV; Netherlands	€1.00 Ordinary shares	33.3	33.3	c/o TMF Netherlands B.V., Luna Arena, Herikerbergweg 238, 1101, CM Amsterdam Zuidoost, Netherlands
Gulf Power Company/La Compagnie Gulf Power; Canada	CAD$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Hail Creek Marketing Pty Ltd; Australia	AUD Ordinary shares	82	82	123 Albert Street, Brisbane QLD 4000, Australia
Halco (Mining) Inc.; United States	US$100.00 Ordinary shares	45	45	The Prentice-Hall Corporation System, Inc., 2711 Centerville Road, Suite 400, Willmington DE 19808, United States
Half-Tide Marine Pty Ltd; Australia	AUD Ordinary shares	48.6	34.6	DBCT MS F283, Martin Armstrong Drive, Hay Point, QLD 4740, Australia
Heruga Exploration LLC; Mongolia	MNT 12,500 Common Shares	100	50.8	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Hope Downs Marketing Company Pty Ltd; Australia	AUD A Class shares	100	50	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hydrogen Energy International LLC; United States[(c)]	—	—	50	1209 Orange Street, Wilmington, New Castle, Delaware, U.S.A.
IAL Holdings Singapore Pte Ltd; Singapore	US$ Ordinary shares	100	57.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Iron Ore Company of Canada; United States	US$1,000.00 Series B shares	91.4	58.7	1209 Orange Street, Wilmington, Delaware 19801, U.S.A.
	US$1,000.00 Series G shares	100		
	US$1,000.00 Series F shares	100		

46 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Korgantas LLP; Kazakhstan[c]	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Lao Sanxai Minerals Company Limited; Lao People's Democratic Republic	US$1.00 Ordinary shares	70	70	5th Floor, ANZ Bank Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital, Lao People's Democratic Republic
Leichhardt Coal Pty Limited; Australia	AUD Ordinary shares	44.7	44.7	123 Albert Street, Brisbane QLD 4000, Australia
Magma Arizona Railroad Company; United States	US$100.00 Common shares	99.9	54.9	CSC, 2338 W. Royal Palm Road, Suite J, Phoenix AZ 85021
Minera Escondida Ltda; Chile[c]	—	—	30	Av.Cerro Plomo, Piso 18,Las Condes, Santiago, 7580154, Chile
Movele; Luxembourg	US$ Ordinary shares	100	50.8	22 rue Jean-Pierre Brasseur, L-1258, Luxembourg
	US$ Preference shares	100		
New Zealand Aluminium Smelters Ltd; New Zealand	NZD1.00 Class A Ordinary shares	79.4	79.4	Tiwai Road , Southland via Intercargill, New Zealand
Northern Land Company Ltd; Canada	CAD1.00 Ordinary shares	50	58.7	235 Water Street, Ste 1000 Scotia Ctr, St-John's Newfoundland A1C 1B6
Nozalela Mineral Sands (Pty) Ltd; South Africa	ZAR 1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
NZAS Retirement Fund Trustee Limited; New Zealand	NZD Ordinary shares	100	79.4	Mercer (NZ) Limiited, Level 8, 113-119 The Terrace, Wellington, 6140, New Zealand
Orian Holding Corp; British Virgin Islands[e]	US$ Common shares	100	50.8	Midocean Cambers-Management and Trust Services (BVI) Limited, PO Box 805, Pelican Drive, Road Town, Tortola,VG 110, British Virgin Islands
Oyu Tolgoi LLC; Mongolia[f]	MNT10,000.00 Common shares	66	33.5	Level 12 Monnis Tower, Chinggis Avenue-15, 1st khoroo, Sukhbaatar District, Ulaanbaatar, 14240, Mongolia
Oyu Tolgoi Netherlands BV; Netherlands	€100.00 Ordinary shares	100	50.8	Prins Bernhardplein 200 , Amsterdam, 1097 JB, The Netherlands
Pechiney Philippines Inc.; Philippines	PHP10.00 Ordinary shares	99.9	99.9	Room 306, ITC Building, 337 Sen Gil Puyat Avenue, Markati, Metro Manila, Philippines
Pechiney Reynolds Quebec, Inc.; United States	US$10.00 Common shares	50	50.2	CSC, 233 South 13th Street, Suite 1900, Lincoln NE 68508, U.S.A.
	US$100.00 Preferred shares	100		
Procivis Savoie; France	€19.00 Ordinary shares	22.1	22.1	116 Quai Charles Roissard, 73000, Chambéry, France
PT Hutan Lindung Kelian Lestari; Indonesia	IDR9,803.00 Ordinary shares	99	99	Kelian Mine Site, West Kutai, East Kalimantan, Indonesia
PT Kelian Equatorial Mining; Indonesia	IDR1,080.00 Ordinary shares	90	90	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
PT Mitra Sumbawa Minerals; Indonesia	US$1.00 Ordinary shares	90	90	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
PT Rikit Alas Minerals; Indonesia	US$1.00 Ordinary shares	90	90	15th Floor, Menara Anugrah, Kantor Taman E3.3, Jalan DR. Ide Anak Agung Gde Agung Lot 8.6-8.7, Jakarta, 12950, Indonesia
QIT Madagascar Minerals SA; Madagascar	US$10.00 Certicats d'investissemant	100	80	Immeuble ASSIST, Ivandry , Lot N°35, 5ème étage, 101 Antananarivo , Antananarivo, Madagascar
	US$10.00 Common shares	80		
Quebec North Shore and Labrador Railway Company/ Compagnie de Chemin de Fer du Littoral Nord de Quebec et du Labrador Inc.; Canada	CAD$27.59 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal Québec H3B 0E3, Canada
Queensland Alumina Limited; Australia	AUD Class B shares	100	80	Plant Operations Building, Parsons Point, Gladstone QLD 4680, Australia
	AUD Class C shares	100		
	AUD CLASS D shares	100		
Resolution Copper Mining LLC; United States[c]	—	—	55	CSC, 251 Little Falls Drive, Wilmington DE 19808, U.S.A.

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Richards Bay Mining (Proprietary) Limited; South Africa	ZAR0.01 B Ordinary shares	99.9	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR0.01 B Preference shares	100		
	ZAR 0.01 BHP Billiton Preference share	100		
Richards Bay Prefco (Pty) Ltd; South Africa	ZAR0.01 Preference shares	100	99.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
Richards Bay Titanium (Proprietary) Limited; South Africa	ZAR0.01 B Preference shares	100	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR0.01 BHP Billiton Preference shares	100		
	ZAR0.01 B Ordinary shares	100		
Rightship Pty Ltd; Australia	AUD Ordinary shares	33.3	33.3	Level 20, 500 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Orissa Mining Private Ltd; India	INR100.00 Ordinary shares	51	51	N-3 / 356, IRC Village, Nayapalli, Bhubaneswar, Orissa, 751015, India
Rio Tinto Sohar Logistics LLC; Oman	OMR1.00 Ordinary shares	70	70	P.O. Box 686, Ruwi, 112, Oman
Riversdale Anthracite Colliery (Proprietary) Ltd; South Africa	ZAR2.00 Ordinary shares	74	74	Ground Floor – Cypress Place North, Woodmead Business Park, 140-142 Western Service Road, Woodmead, 2151, South Africa
Robe River Mining Co. Pty. Ltd.; Australia	AUD Class A shares	40	73.6	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class B shares	76.4		
Robe River Ore Sales Pty. Ltd.; Australia	AUD Ordinary	65	57.1	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rössing Uranium Limited; Namibia(f)	NAD1 "B" Shares shares	71.2	35.6	360 Sam Nujoma Drive, Klein Windhoek, Windhoek, Namibia
	NAD0.1 "C" Shares	70.6		
Saryarka B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS , Botlek-Rotterdam, The Netherlands, Netherlands
SGLS LLC; Mongolia	MNT10,000 Common shares	100	50.8	Suite 1302, F13, Monnis Tower, Chingis Avenue-15, 1st Khoroo, Sukhbaatar district, Ulaanbaatar, 14240, Mongolia
Simfer Jersey Finance 1 Ltd; Jersey	US$ Ordinary shares	100	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Finance 2 Ltd; Jersey	US$ Ordinary shares	53	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Limited; Jersey	US$ Ordinary shares	53	53	22 Grenville Street, St Helier, JE4 8PX, Jersey
Simfer Jersey Nominee Limited; United Kingdom	£1.00 Ordinary shares	100	53	6 St James's Square, London, SW1Y 4AD, United Kingdom
SIMFER S.A.; Guinea(f)	GNF100,000 Ordinary shares	85	45	Résidence Dolphine1 – Coleah Corniche Sud, Commune de Matam, BP 848, Conakry, BP 848, Guinea
Singapore Metals Pte. Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Société Minière Et De Participations Guinée-Alusuisse; Guinea(c)	—	—	50	Tougue, Guinea
Sohar Aluminium Co. L.L.C.; Oman	OMR1.00 Ordinary shares	20	20	Sohar Industrial Estate, P.O. Box 80, PC 327, Sohar, Sultanate of Oman
THR Aruba Holdings LLC A.V.V.; Aruba	US$1.00 Common shares	100	50.8	IMC International Management Trust Company N.V.,L.G.Smith Blvd. 62, Miramar Building, Oranjestad, Aruba
THR Delaware Holdings, LLC; United States(c)	—	—	50.8	National Corporate Research, Ltd., 850 New Burton Road, Suite 201, Dover DE 19904, United States
THR Kharmagtai Pte Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
THR MINES (BC) LTD.; Canada	CAD Common shares	100	50.8	354-200 Granville Street, Vancouver BC V6C 1S4, Canada
	US$ Common shares	100		

46 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
THR Mines Services Co. Ltd.; Canada	CAD Common shares	100	50.8	Lackowicz Shier & Hoffman Barristers & Solicitors, 300-204 Black Street, Whitehorse YT Y1A 2M9, Canada
THR OYU TOLGOI LTD.; British Virgin Islands	US$1.00 Ordinary shares	100	50.8	Midocean Chambers, Road Town, Tortola, Virgin Islands, British
THR Ulaan Pte. Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Tisand (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
	ZAR1,000.00 Cumulative preference shares	100		
Tomago Aluminium Company Pty Limited; Australia	AUD Ordinary shares	100	51.6	638 Tomago Road, Tomago, NSW 2322, Australia
Turquoise Hill (Beijing) Services Company Ltd; China(c)	—	—	50.8	Room 2913, Cameo Center, No.16 GuangShun South Street, WangJing ChaoYang District, Beijing China. 100102
Turquoise Hill Netherlands Cooperatief U.A.; Netherlands	US$ COOP shares	100	50.8	Prins Bernhardplein 200, 1097 JB Amsterdam, The Netherlands
Turquoise Hill Resources Ltd.; Canada	CAD Common shares	50.8	50.8	300-204 Black Street, Whitehorse Yukon Territories Y1A 2M9, Canada
Turquoise Hill Resources Philippines Inc.; Philippines(d)	PHP100.00 Common shares	99.9	50.8	Romulo Mabanta Buenaventura Sayoc & De Los Angeles, 21st Floor, Philamlife Tower, 8767 Paswode Roxas, Makati City, 1226, Philippines
Turquoise Hill Resources Singapore Pte Ltd.; Singapore	SGD1.00 Common shares	100	50.8	1A International Business Park, 609933, Singapore
Twin Falls Power Corporation Ltd; Canada	CAD Class B shares	74.4	34.253	Hydro Place, P.O. Box 12500, St-John's Newfoundand and Labrador A1B 3T5, Canada
Yalleen Pastoral Co Pty Ltd; Australia	AUD Ordinary shares	63.7	56	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Zululand Titanium (Pty) Ltd; South Africa	ZAR1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa

In addition, the Group participates in the following unincorporated arrangements:

Name of undertaking and country of incorporation	Address or principal place of business	Interest % owned by the Group
Bao-HI Ranges Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	54
Blair Athol Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	71.2
Cape Bougainville Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	53.8
Channar Mining Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	60
Diavik Joint Venture; Canada	300-5201 50th Avenue, Yellowknife NT X1A 2P9, Canada	60
Gladstone Power Station Joint Venture; Australia	NRG Gladstone Operating Service, Gladstone Power Station, Gladstone QLD 4680, Australia	42.1
Grasberg joint operation; Indonesia	JI Mandala Raya Selatan, No. 1 Kuala Kencana, Timika, Irian Jaya, 98663, Indonesia	40
Green Mountain Mining Venture; United States	4700 Daybreak Parkway, South Jordan UT 84009, United States	100
Hail Creek Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	82
Hope Downs Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	50
Kestrel Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	80
Mitchell Plateau Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	52.3
Rhodes Ridge Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	50
Robe River Iron Associates Joint Venture; Australia	Level 27,Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	57.1
Tomago Aluminium Joint Venture; Australia	638 Tomago Road, NSW 2322, Tomago, Australia	51.6
Winchester South Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	75
Winter Road Joint Venture; Canada	300-5201 50th Avenue, Yellowknife NT X1A 2P9, Canada	33.3

(a) Directly held by Rio Tinto Limited.
(b) Directly held by Rio Tinto plc.
(c) Group ownership is held through an interest in capital. The entity has no classes of shares.
(d) In liquidation or application for dissolution filed.
(e) Dissolved after 31 December 2017.
(f) Classed as a subsidiary in accordance with section 1162(4)(a) of the Companies Act 2006 on the grounds of dominant influence.
(g) This company changed its name to Rio Tinto PACE Australia Pty Limited with effect from 12 January 2018.

Rio Tinto plc

Company balance sheet

As at 31 December	Note	2017 US$m	2016 US$m
Non-current assets			
Investments	B	**36,093**	36,050
Trade and other receivables		**396**	392
		36,489	36,442
Current assets			
Trade and other receivables	C	**9,242**	6,070
Cash at bank and in hand		**5**	4
		9,247	6,074
Total assets		**45,736**	42,516
Current liabilities			
Trade and other payables	D	**(12,388)**	(12,223)
Dividends payable		**(18)**	(16)
Other financial liabilities	G	**(347)**	(23)
		(12,753)	(12,262)
Non-current liabilities			
Other financial liabilities	G	**(341)**	(392)
Total liabilities		**(13,094)**	(12,654)
Net assets		**32,642**	29,862
Capital and reserves			
Share capital	E	**220**	224
Share premium account		**4,306**	4,304
Other reserves	F	**11,992**	11,988
Retained earnings		**16,124**	13,346
Total equity		**32,642**	29,862

The Rio Tinto plc company balance sheet has been prepared in accordance with Financial Reporting Standard 101 "Reduced Disclosure Framework" (FRS 101). Note A explains the principal accounting policies.

Profit after tax and total comprehensive income for the year amounted to US$7,816 million (2016: US$6,875 million). As permitted by section 408 of the UK Companies Act 2006, no statement of comprehensive income for the Rio Tinto plc parent company is shown.

The Rio Tinto plc company balance sheet, statement of comprehensive income and the related notes were approved by the directors on 28 February 2018 and the balance sheet is signed on their behalf by

Jan du Plessis
Chairman

Jean-Sébastien Jacques
Chief executive

Chris Lynch
Chief financial officer

Rio Tinto plc

Registered number: 719885

Rio Tinto plc (the "Company") is incorporated in the United Kingdom, registered in England and Wales, and domiciled in the United Kingdom

Company statement of changes in equity

Year ended 31 December 2017	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	**224**	**4,304**	**11,988**	**13,346**	**29,862**
Profit for the financial year (comprehensive income)	**-**	**-**	**-**	**7,816**	**7,816**
Dividends	**-**	**-**	**-**	**(3,255)**	**(3,255)**
Proceeds from issue of shares	**-**	**2**	**-**	**-**	**2**
Share buy back	**(4)**	**-**	**4**	**(1,828)**	**(1,828)**
Share based payments	**-**	**-**	**-**	**45**	**45**
Total	**220**	**4,306**	**11,992**	**16,124**	**32,642**

Year ended 31 December 2016	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	224	4,300	11,988	8,458	24,970
Profit for the financial year (comprehensive income)	-	-	-	6,875	6,875
Dividends	-	-	-	(2,046)	(2,046)
Proceeds from issue of shares	-	4	-	1	5
Share based payments	-	-	-	58	58
Total	224	4,304	11,988	13,346	29,862

A Principal accounting policies

a. Basis of preparation
The Rio Tinto plc company financial statements have been prepared using the historical cost convention, as modified by the revaluation of certain financial liabilities and in accordance with the UK Companies Act 2006 and FRS 101. The financial statements have been prepared on a going concern basis.

The accounting policies set out below have been applied consistently to all periods presented in these financial statements. The following exemptions available under FRS 101 have been applied:

- Paragraphs 45(b) and 46 to 52 of IFRS 2, "Share-based payment" (details of the number and weighted average exercise prices of share options and how the fair value of goods and services received was determined).
- Paragraphs 91-99 of IFRS 13 "Fair value measurement" (disclosure of valuation techniques and inputs used for fair value measurement of assets and liabilities).
- IFRS 7 "Financial Instruments: Disclosures".
- Paragraph 38 of IAS 1 "Presentation of financial statements", comparative information requirements in respect of Paragraph 79(a)(iv) of IAS 1.
- The following paragraphs of IAS 1 "Presentation of financial statements":
  - 10 (d) (statement of cash flows);
  - 16 (statement of compliance with all IFRS);
  - 38A (requirement for minimum of two primary statements, including cash flow statements);
  - 38B-D (additional comparative information);
  - 111 (cash flow statement information); and
  - 134-136 (capital management disclosures).
- IAS 7 "Statement of cash flows".
- Paragraph 30 and 31 of IAS 8 "Accounting policies, changes in accounting estimates and errors" (requirement for the disclosure of information when an entity has not applied a new IFRS that has been issued and is not yet effective).
- Paragraph 17 of IAS 24 "Related party disclosures" (key management compensation).
- The requirements of IAS 24, "Related party disclosures" to disclose related-party transactions entered into between two or more members of a group.

b. Judgments in applying accounting policies and key sources of estimation uncertainty
The preparation of the financial statements requires management to make assumptions, judgments and estimates and to use judgment in applying accounting policies and making critical accounting estimates. These judgments, estimates and assumptions are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements.

The key area of judgment that has the most significant effect on the amounts recognised in the financial statements is the review for impairment of investment carrying values.

c. Currency translation
Items included in the financial statements are measured using the currency of the primary economic environment in which the Company operates (the functional currency). The financial statements are presented in US dollars, which is the Company's functional and presentation currency. Transactions denominated in other currencies, including the issue of shares, are translated into the functional currency using the exchange rates prevailing at the date of the transaction.

Foreign exchange gains and losses resulting from the settlement of such transactions, and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies, are recognised in the profit and loss account.

Exchange rates used are consistent with the rates used by the Group as disclosed in the consolidated financial statements (note 41).

d. Investments
Investments in Group companies are valued at cost less accumulated impairment losses. Investments are reviewed for impairment if events or changes in circumstances indicate that the carrying amount may not be recoverable.

e. Financial guarantees
Financial guarantees are recognised initially at fair value. Subsequently, the liability is measured at the higher of the best estimate of the expenditure required to settle the present obligation and the amount initially recognised less cumulative amortisation.

f. Share-based payments
The Company operates a number of share-based payment plans for Group employees, the details of which are included in the consolidated financial statements (note 43). The fair value of the Company's share plans is recognised as an addition to the cost of the investment in the subsidiary in which the relevant employees work over the expected vesting period, with a corresponding entry to retained earnings. Payments received from the Company's subsidiaries in respect of these share-based payments are recognised as a reduction in the cost of the investment. The Company uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model. The fair value of the share plans is determined at the date of grant, taking into account any market-based vesting conditions attached to the award.

Non-market based vesting conditions (eg relative EBIT margin performance targets) are taken into account in estimating the number of awards likely to vest. The estimate of the number of awards likely to vest is reviewed at each balance sheet date up to the vesting date, at which point the estimate is adjusted to reflect the actual awards issued. No adjustment is made after the vesting date even if the awards are forfeited or not exercised.

g. Dividend income
Dividend income is recognised when the right to receive payment is established.

h. Treasury shares
The consideration paid for shares repurchased by the Company and held as treasury shares is recognised as a reduction in shareholders' funds through retained earnings.

B Investments

	2017 US$m	2016 US$m
Investments in Group companies:		
At 1 January	**36,050**	36,180
Additions	**45**	58
Disposals	**-**	(160)
Other adjustments	**(2)**	(28)
At 31 December	**36,093**	36,050

At 31 December 2017 the Company had the following principal subsidiaries:

Company	Principal activity	Country of incorporation	Percentage shareholding
Rio Tinto International Holdings Limited	Holding company	UK	100
Rio Tinto European Holdings Limited	Holding company	UK	100

In accordance with Section 409 of the UK Companies Act 2006, a full list of related undertakings is disclosed in the consolidated financial statements (note 46).

C Trade and other receivables

Trade and other receivables includes US$9,114 million (31 December 2016: US$6,007 million), which is subject to interest based on LIBOR, is unsecured and repayable on demand.

D Trade and other payables

Trade and other payables include US$12,265 million (31 December 2016: US$12,079 million) which is subject to interest rates based on LIBOR, is unsecured and repayable on demand.

E Share capital

	2017 US$m	2016 US$m
Issued and fully paid up share capital of 10p each [(a)]		
At 1 January	**224**	224
Ordinary shares purchased and cancelled [(b)]	**(4)**	-
At 31 December	**220**	224

(a) 26,241 new shares (2016: 33,210 new shares) were issued during the year and 147,126 shares (2016: 743,380 shares) were reissued from treasury pursuant to share plans.
(b) During the year 32,937,109 shares (2016: nil shares) were purchased and immediately cancelled.

F Other reserves

Other reserves include US$11,936 million (2016: US$11,936 million) which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009.

G Rio Tinto plc guarantees

Rio Tinto plc provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled US$7.9 billion at 31 December 2017 (31 December 2016: US$10.2 billion). In addition, these entities also jointly guarantee the Group's undrawn credit facility which was US$7.5 billion at 31 December 2017 (31 December 2016: US$7.5 billion). Rio Tinto plc has provided guarantees in respect of certain derivative contracts that are in a liability position of US$231 million at 31 December 2017 (31 December 2016: US$458 million).

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. At 31 December 2017 US$4.3 billion of project finance debt was outstanding under this facility (31 December 2016: US$4.3 billion). Oyu Tolgoi LLC is owned by Erdenes Oyu Tolgoi LLC (34 per cent), which is controlled by the Government of Mongolia, and Turquoise Hill Resources Ltd (66 per cent, of which Rio Tinto owns 51 per cent). The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility.

The Rio Tinto guarantee applies to the extent that Turquoise Hill Resources Ltd cannot satisfy Oyu Tolgoi LLC's project finance debt servicing obligations under its own guarantee to the lenders, called the sponsor debt service undertaking (DSU). Both the CSU and DSU contain a carve-out for certain political risk events.

During 2017, fees of US$44 million (2016: US$13 million) were received from Oyu Tolgoi LLC and Turquoise Hill Resources Ltd as consideration for provision of the CSU with an additional balance of US$12 million (31 December 2016: US$13 million) due and included within Current Assets - Trade and other receivables.

Rio Tinto plc has provided a number of guarantees in relation to various pension funds. Subject to certain conditions, Rio Tinto plc would pay any contributions due from Group companies participating in these funds in the event that the companies fail to meet their contribution requirements. The guarantees were not called upon in 2017. The aggregate of company contributions to these plans in 2017 was US$51 million (2016: US$94 million).

Other guarantees issued by Rio Tinto plc in relation to Rio Tinto Group entities as at 31 December 2017 amount to US$338 million (31 December 2016: US$337 million). Included within this balance is US$60 million (31 December 2016: US$60 million) in relation to non-wholly owned subsidiaries.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

The liability recognised for financial guarantees is US$389 million (31 December 2016: US$415 million).

H Contingent Liabilities

Details of contingent liabilities are included in note 31 to the Group Financial Statements.

I Events after the balance sheet date

On 7 February 2018, the Group announced an on-market share buy-back programme of US$1.0 billion Rio Tinto plc shares; this is in addition to US$1.925 billion under the US$2.5 billion programme announced on 21 September 2017 which started on 27 December 2017. Rio Tinto plc shares that have been bought back under these programmes during 2018 have been cancelled and announcements have been made to the relevant stock exchanges.

Rio Tinto financial information by business unit

	Rio Tinto interest %	Gross revenue [a] for the year ended 31 December 2017 US$m	2016 US$m	2015 US$m	EBITDA [b] for the year ended 31 December 2017 US$m	2016 US$m	2015 US$m	Net earnings [c] for the year ended 31 December 2017 US$m	2016 US$m	2015 US$m
Iron Ore										
Pilbara	(d)	18,143	14,530	13,886	11,383	8,558	7,730	6,576	4,662	4,013
Evaluation projects/other		108	75	66	137	(32)	(55)	116	(51)	(73)
Total Iron Ore		18,251	14,605	13,952	11,520	8,526	7,675	6,692	4,611	3,940
Aluminium	(e)									
Bauxite		2,019	1,913	2,057	804	848	937	463	493	542
Alumina		2,661	2,118	2,145	454	27	(47)	180	(121)	(187)
Intrasegment		(790)	(786)	(849)	(25)	-	-	(17)	-	-
Bauxite & Alumina		3,890	3,245	3,353	1,233	875	890	626	372	355
Primary Metal		5,808	4,913	4,931	1,762	1,258	1,245	778	402	446
Pacific Aluminium		2,305	1,971	2,254	453	264	408	176	62	147
Intersegment & Other		(2,321)	(1,822)	(1,876)	(19)	(50)	132	(12)	(13)	92
Integrated Operations		9,682	8,307	8,662	3,429	2,347	2,675	1,568	823	1,040
Other Product Group Items		1,214	1,075	1,374	(132)	(42)	(76)	(100)	(30)	(50)
Product group operations		10,896	9,382	10,036	3,297	2,305	2,599	1,468	793	990
Evaluation projects/other		109	76	81	126	167	143	115	154	128
Total Aluminium		11,005	9,458	10,117	3,423	2,472	2,742	1,583	947	1,118
Copper & Diamonds										
Rio Tinto Kennecott	100.0	1,352	1,243	1,403	539	126	437	78	(228)	44
Escondida	30.0	1,811	1,465	1,855	1,030	793	760	325	270	281
Grasberg joint venture	(f)	33	-	-	(3)	(17)	(17)	(169)	(64)	(34)
Oyu Tolgoi & Turquoise Hill	(g)	940	1,203	1,636	256	436	501	36	52	57
Diamonds	(h)	706	613	698	287	239	293	92	47	79
Product group operations		4,842	4,524	5,592	2,109	1,577	1,974	362	77	427
Evaluation projects/other		-	-	-	(205)	(190)	(141)	(99)	(95)	(57)
Total Copper & Diamonds		4,842	4,524	5,592	1,904	1,387	1,833	263	(18)	370
Energy & Minerals										
Rio Tinto Coal Australia	(i)	2,829	2,634	2,757	1,223	893	497	716	382	48
Iron Ore Company of Canada	58.7	1,867	1,324	1,353	770	335	197	235	64	12
Rio Tinto Iron & Titanium	(j)	1,763	1,419	1,571	546	370	435	201	86	116
Rio Tinto Borates	100.0	630	620	624	244	213	178	126	117	103
Dampier Salt	68.4	215	259	306	27	74	71	3	25	24
Uranium	(k)	417	456	474	15	54	1	(26)	10	(42)
Product group operations		7,721	6,712	7,085	2,825	1,939	1,379	1,255	684	261
Simandou iron ore project	(l)	-	-	-	(13)	(102)	(87)	(6)	(47)	(41)
Evaluation projects/other		43	22	55	(9)	(31)	(55)	(7)	(25)	(43)
Total Energy & Minerals		7,764	6,734	7,140	2,803	1,806	1,237	1,242	612	177
Other Operations	(m)	10	8	18	(116)	(95)	(83)	(138)	(88)	(90)
Intersegment transactions		(15)	(11)	(34)	-	-	-	-	-	-
Product group Total		41,857	35,318	36,785	19,534	14,096	13,404	9,642	6,064	5,515
Other items	(n)				(736)	(411)	(546)	(483)	(241)	(375)
Exploration and evaluation					(218)	(175)	(237)	(178)	(147)	(211)
Net interest								(354)	(576)	(389)
Underlying EBITDA/earnings					18,580	13,510	12,621	8,627	5,100	4,540
Items excluded from underlying EBITDA/earnings		10	18	(1)	1,912	(687)	(563)	135	(483)	(5,406)
EBITDA/net earnings					20,492	12,823	12,058	8,762	4,617	(866)
Reconciliation to Group income statement										
Share of equity accounted unit sales and intra-subsidiary/equity accounted units sales		(1,837)	(1,555)	(1,955)						
Depreciation & amortisation in subsidiaries excluding capitalised depreciation					(4,302)	(4,691)	(4,553)			
Impairment charges, net of reversals					(796)	(249)	(2,791)			
Depreciation & amortisation in equity accounted units					(648)	(526)	(462)			
Taxation and finance items in equity accounted units					(272)	(241)	(276)			
Consolidated sales revenue/profit on ordinary activities before finance items and tax		40,030	33,781	34,829	14,474	7,116	3,976			

	Rio Tinto interest	Capital expenditure [o] for the year ended 31 December			Depreciation & amortisation for the year ended 31 December			Operating assets [p] as at for the year ended 31 December			Employees for the year ended 31 December		
	%	**2017 US$m**	2016 US$m	2015 US$m	**2017 US$m**	2016 US$m	2015 US$m	**2017 US$m**	2016 US$m	2015 US$m	**2017 Number**	2016 Number	2015 Number
Iron Ore													
Pilbara	(d)	**1,201**	868	1,608	**1,645**	1,645	1,744	**16,535**	16,357	16,870	**10,159**	10,424	11,097
Evaluation projects/other		**-**	-	-	**-**	-	-	**2**	2	2	**-**	-	-
Total Iron Ore		**1,201**	868	1,608	**1,645**	1,645	1,744	**16,537**	16,359	16,872	**10,159**	10,424	11,097
Aluminium	(e)												
Bauxite		**825**	343	159	**123**	110	112	**1,897**	1,278	1,050	**2,534**	2,592	2,603
Alumina		**108**	87	158	**209**	206	207	**2,733**	2,588	2,698	**2,012**	2,139	2,287
Intrasegment		**-**			**-**			**(18)**					
Bauxite & Alumina		**933**	430	317	**332**	316	319	**4,612**	3,866	3,748	**4,546**	4,731	4,890
Primary Metal		**389**	394	1,249	**665**	716	629	**9,946**	10,701	10,326	**6,404**	6,799	7,980
Pacific Aluminium		**109**	91	126	**196**	193	212	**1,016**	1,044	1,198	**2,173**	2,276	2,339
Intersegment and Other		**5**	1	(10)	**6**	25	12	**772**	171	677	**222**	231	210
Total Aluminium		**1,436**	916	1,682	**1,199**	1,250	1,172	**16,346**	15,782	15,949	**13,345**	14,037	15,419
Copper & Diamonds													
Rio Tinto Kennecott	100.0	**249**	333	408	**422**	530	344	**1,936**	2,189	2,441	**1,734**	1,638	1,793
Escondida	30.0	**248**	517	770	**507**	364	293	**3,369**	3,565	3,485	**1,079**	1,230	1,159
Grasberg joint venture	(f)	**138**	174	179	**42**	89	43	**1,137**	1,151	1,016	**1,642**	2,859	2,868
Oyu Tolgoi & Turquoise Hill	(g)	**901**	322	92	**344**	450	416	**4,725**	3,804	3,597	**2,835**	2,728	2,798
Diamonds	(h)	**85**	97	124	**132**	164	159	**441**	655	857	**922**	907	1,118
Product group operations		**1,621**	1,443	1,573	**1,447**	1,597	1,255	**11,608**	11,364	11,396	**8,212**	9,362	9,736
Evaluation projects/other		**1**	(2)	3	**5**	4	6	**135**	166	155	**142**	127	160
Total Copper & Diamonds		**1,622**	1,441	1,576	**1,452**	1,601	1,261	**11,743**	11,530	11,551	**8,354**	9,489	9,896
Energy & Minerals													
Rio Tinto Coal Australia	(i)/(q)	**84**	(107)	108	**152**	297	336	**1,040**	1,807	2,137	**1,924**	3,049	3,157
Iron Ore Company of Canada	58.7	**202**	75	118	**157**	151	162	**988**	1,018	1,152	**2,382**	2,308	2,316
Rio Tinto Iron & Titanium	(j)	**119**	97	150	**219**	189	194	**3,881**	3,662	3,554	**4,048**	4,094	4,507
Rio Tinto Borates	100.0	**28**	31	28	**65**	53	45	**523**	508	585	**936**	984	987
Dampier Salt	68.4	**13**	11	14	**22**	23	22	**150**	146	140	**232**	317	394
Uranium	(k)	**21**	30	39	**37**	25	65	**(327)**	(143)	(216)	**1,307**	1,303	1,329
Product group operations		**467**	137	457	**652**	738	824	**6,255**	6,998	7,352	**10,829**	12,055	12,690
Simandou iron ore project	(l)	**-**	-	91	**-**	-	1	**17**	13	(10)	**10**	635	912
Evaluation projects/other		**-**	4	4	**-**	1	5	**41**	38	39	**25**	763	855
Total Energy & Minerals		**467**	141	552	**652**	739	830	**6,313**	7,049	7,381	**10,864**	13,453	14,457
Other Operations	(m)	**(35)**	(11)	(36)	**32**	34	32	**(328)**	203	(33)	**203**	249	299
Product group Total		**4,691**	3,355	5,382	**4,980**	5,269	5,039	**50,611**	50,923	51,720	**42,925**	47,652	51,168
Intersegment transactions								**206**	142	242			
Net assets/(liabilities) of disposal groups held for sale	(r)							**370**	(7)	182			
Other items	(n)	**70**	(46)	65	**42**	51	68	**(2,631)**	(2,181)	(1,012)	**3,882**	3,377	3,770
Less: equity accounted units		**(417)**	(651)	(859)	**(647)**	(526)	(462)		-	-		-	-
Total		**4,344**	2,658	4,588	**4,375**	4,794	4,645	**48,556**	48,877	51,132	**46,807**	51,029	54,938
Add back: Proceeds from disposal of property, plant and equipment		**138**	354	97									
Total capital expenditure per cash flow statement		**4,482**	3,012	4,685									
Less: Net debt								**(3,845)**	(9,587)	(13,783)			
Less: EAU funded balances excluded from net debt								**-**	-	-			
Equity attributable to owners of Rio Tinto								**44,711**	39,290	37,349			

Notes to financial information by business unit

Business units are classified according to the Group's management structure. Certain comparative amounts have been reallocated to appropriately represent changes in management responsibility.

a) Gross sales revenue includes the sales revenue of equity accounted units on a proportionately consolidated basis (after adjusting for sales to subsidiaries) in addition to consolidated sales. Consolidated sales revenue includes subsidiary sales to equity accounted units which are not included in gross sales revenue.

b) EBITDA of subsidiaries and the Group's share of EBITDA relating to equity accounted units represents profit before: tax, net finance items, depreciation and amortisation charged to the income statement in the period. Underlying EBITDA excludes the same items that are excluded from underlying earnings.

c) Represents profit after tax for the period attributable to the owners of the Rio Tinto Group. Business unit earnings are stated before finance items but after the amortisation of discount related to provisions. Earnings attributed to business units do not include amounts that are excluded in arriving at underlying earnings.

d) Pilbara represents the Group's 100 per cent holding in Hamersley, 50 per cent holding of Hope Downs Joint Venture and 65 per cent holding of Robe River Iron Associates. The Group's net beneficial interest in Robe River Iron Associates is 53 per cent as 30 per cent is held through a 60 per cent owned subsidiary and 35 per cent is held through a 100 per cent owned subsidiary.

e) Presented on an integrated operations basis splitting activities between Bauxite & Alumina, Primary Metal, Pacific Aluminium and Other integrated operations (which in total reflect the results of the integrated production of aluminium) and Other product group items which relate to other commercial activities.

f) Through a joint venture agreement with Freeport-McMoRan Inc. (Freeport), Rio Tinto is entitled to 40 per cent of material mined above an agreed threshold as a consequence of expansions and developments of the Grasberg facilities since 1998.

g) Rio Tinto's interest in Oyu Tolgoi is held indirectly through its 50.8 per cent investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset is its 66 per cent investment in Oyu Tolgoi LLC, which owns the Oyu Tolgoi copper-gold mine.

h) Includes Rio Tinto's interests in Argyle (100 per cent) and Diavik (60 per cent).

i) On 1 September, 2017, Rio Tinto disposed of its 100 per cent shareholding in Coal & Allied Industries Limited to Yancoal Australia Limited.

   As at 31 December 2016, this included Rio Tinto's 100 per cent shareholding in Coal & Allied Industries Limited and its wholly-owned subsidiaries. Rio Tinto as a 100 per cent owner of Coal & Allied held a 67.6 per cent, 80 per cent and 55.6 per cent respectively, with management rights, in Hunter Valley Operations, Mount Thorley and Warkworth. On 1 March 2016, Coal & Allied disposed of its 40 per cent interest in Bengalla Joint Venture and on 5 August 2016, Coal & Allied disposed of its 100 per cent interest in the Mount Pleasant project. Both were included up until their respective disposal dates.

j) Includes Rio Tinto's interests in Rio Tinto Fer et Titane (100 per cent), QIT Madagascar Minerals (QMM, 80 per cent) and Richards Bay Minerals (attributable interest of 74 per cent).

k) Includes Rio Tinto's interests in Energy Resources of Australia (68.4 per cent) and Rössing Uranium Limited (68.6 per cent).

l) Simfer Jersey Limited, a company incorporated in Jersey in which the Group has a 53 per cent interest, has an 85 per cent interest in Simfer S.A., the company that manages the Simandou project in Guinea. The Group therefore has a 45.05 per cent indirect interest in Simfer S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.

m) Other Operations include Rio Tinto's 100 per cent interest in the curtailed Gove alumina refinery and Rio Tinto Marine.

n) Central office costs, central Growth & Innovation costs and other central items are reported in Other items. The loss in Other items includes restructuring, project and other one off costs of US$177 million (pre-tax) in 2017. The increased loss also reflects an increase in Information Systems & Technology spend and further investment in the Commercial Centre in Singapore and capability to support the Group's Mine to Market Productivity programme.

o) Capital expenditure comprises the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100 per cent of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.

p) Operating assets of subsidiaries comprise net assets excluding post-retirement assets and liabilities, net of tax, and are before deducting net debt. Operating assets are stated after deduction of non-controlling interests, which are calculated by reference to the net assets of the relevant companies (ie inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).

q) Capital expenditure in 2016 for Rio Tinto Coal Australia includes net proceeds of US$192 million for the disposal of 100 per cent interest in the Mount Pleasant thermal coal project to MACH Energy Australia Pty Ltd on 5 August 2016.

r) Assets and liabilities held for sale at 31 December 2017 comprise of Rio Tinto's interest in the Dunkerque aluminium smelter and certain other separate assets.

   Assets and liabilities held for sale at 31 December 2016 comprise Rio Tinto's interests in the Blair Athol coal project and certain separate assets.

   Assets and liabilities held for sale at 31 December 2015 comprised Rio Tinto's interests in the Blair Athol coal project, Carbone Savoie (disposed of on 31 March 2016), Bengalla (disposed of on 1 March 2016), and certain other separate assets.

Australian Corporations Act – summary of ASIC relief

Pursuant to section 340 of the Corporations Act 2001 (Corporations Act), the Australian Securities and Investments Commission issued an order dated 14 December 2015 that granted relief to Rio Tinto Limited from certain requirements of the Corporations Act in relation to the Company's financial statements and associated reports. The order essentially continues the relief that has applied to Rio Tinto Limited since the formation of the Group's dual listed companies (DLC) structure in 1995. The order applies to Rio Tinto Limited's financial reporting obligations for the financial years and half-years ending between 31 December 2015 and 30 June 2020 inclusive.

In essence, instead of being required under the Corporations Act to prepare consolidated financial statements covering only itself and its controlled entities, the order allows Rio Tinto Limited to prepare consolidated financial statements in which it, Rio Tinto plc and their respective controlled entities are treated as a single economic entity. In addition, those consolidated financial statements are to be prepared:

– in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the European Union (EU IFRS) rather than the Australian Accounting Standards (AAS) (except for one limited instance in the case of any concise report), and in accordance with UK financial reporting obligations generally;

– on the basis that the transitional provisions of International Financial Reporting Standard 1, First-time Adoption of International Financial Reporting Standards, should be applied using the combined financial statements previously prepared for Rio Tinto Limited, Rio Tinto plc and their respective controlled entities under Generally Accepted Accounting Principles in the United Kingdom, under which the DLC Merger between Rio Tinto Limited and Rio Tinto plc was accounted for using "merger", rather than "acquisition", accounting (reflecting that neither Rio Tinto Limited nor Rio Tinto plc was acquired by, or is controlled by, the other; and meaning that the existing carrying amounts, rather than fair values, of assets and liabilities at the time of the DLC Merger were used to measure those assets and liabilities at formation);

– on the basis that Rio Tinto Limited and Rio Tinto plc are a single company (with their respective shareholders being the shareholders in that single company); and

– with a reconciliation, from EU IFRS to AAS, of the following amounts: consolidated loss/profit for the financial year, total consolidated comprehensive loss/income for the financial year and total consolidated equity at the end of the financial year (see page 117).

Those consolidated financial statements must also be audited in relation to their compliance with relevant Australian and UK requirements. Rio Tinto Limited must also prepare a Directors' report which satisfies the content requirements of the Corporations Act (applied on the basis that for these purposes the consolidated entity is the Group, and the consolidated financial statements cover the Group). This includes a Remuneration Report (see pages 70 to 105) prepared in accordance with the requirements of the Corporations Act.

Rio Tinto Limited is also required to comply generally with the lodgement and distribution requirements of the Corporations Act (including timing requirements) in relation to those consolidated financial statements (including any concise financial statements), the Auditors' report and the Directors' report. The Corporations Act also requires that a non-binding resolution to adopt the Remuneration Report be voted on by shareholders at the Company's annual general meeting.

Rio Tinto Limited is not required to prepare separate consolidated financial statements solely for it and its controlled entities. Rio Tinto Limited is also not required to prepare and lodge parent entity financial statements for itself in respect of each relevant financial year.

Rio Tinto Limited must, however, in accordance with the Corporations Act include in the consolidated financial statements for the Group, as a note, various parent entity information regarding Rio Tinto Limited (including in relation to assets, liabilities, shareholders' equity, profit and loss, income, guarantees, contingent liabilities, and contractual commitments) prepared in accordance with AAS (see page 182).

Directors' declaration

Directors' statement of responsibilities in relation to the Group financial statements, Rio Tinto plc financial statements and Rio Tinto Limited financial statements

The directors are responsible for preparing the Annual report, the Remuneration Report and the financial statements in accordance with applicable law and regulations.

UK and Australian company law requires the directors to prepare financial statements for each financial year. Under UK law the directors have elected to prepare the Group financial statements in accordance with International Financial Reporting Standards (IFRSs) as adopted by the European Union and the Rio Tinto plc financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law), including FRS 101 "Reduced disclosure framework".

Under Australian law, the directors are also required to prepare certain Rio Tinto Limited parent company financial statements in accordance with Australian Accounting Standards (AAS). In preparing the Group financial statements, the directors have also elected to comply with IFRSs, issued by the International Accounting Standards Board (IASB).

Under UK and Australian company law the directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the companies as at the end of the financial year, and of the profit or loss of the companies and Group for the period (as applicable).

In preparing these financial statements, the directors are required to:

- select suitable accounting policies and apply them consistently;
- make judgments and estimates that are reasonable and prudent;
- state whether IFRSs as adopted by the European Union, applicable UK Accounting Standards and AAS have been followed, subject to any material departures disclosed and explained in the Group and parent company financial statements respectively; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Group and the companies will continue in business.

The directors are responsible for keeping adequate accounting records that are sufficient to show and explain the transactions of the companies and the Group and disclose with reasonable accuracy at any time the financial position of the companies and the Group and enable them to ensure that:

- the Group financial statements comply with the UK Companies Act 2006, the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 14 December 2015 and Article 4 of the IAS Regulation;
- the Rio Tinto plc financial statements comply with the UK Companies Act 2006;
- the Rio Tinto Limited parent company disclosures comply with the Corporations Act as amended by the Australian Securities and Investments Commission Order dated 14 December 2015; and
- the Remuneration Report complies with the UK Companies Act 2006 and the Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 14 December 2015.

The directors are also responsible for safeguarding the assets of the Companies and the Group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The directors are responsible for the maintenance and integrity of the Group's website. Legislation governing the preparation and dissemination of financial statements may differ between jurisdictions in which the Group reports.

Each of the current directors, whose names and function are listed on pages 52 to 54 in the Governance section, confirm that, to the best of their knowledge:

- the Rio Tinto Group financial statements and notes, which have been prepared in accordance with IFRS as adopted by the EU, the Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 14 December 2015, the UK Companies Act 2006 and Article 4 of the IAS Regulation, give a true and fair view of the assets, liabilities, financial position and profit of the Group;
- the Rio Tinto plc financial statements and notes, which have been prepared in accordance with United Kingdom Generally Accepted Accounting Practice give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Rio Tinto Limited parent company disclosures, which have been prepared in accordance with Australian Accounting Standards (AAS) and Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 14 December 2015 give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Strategic report section of the Annual report include a fair review of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties that it faces; and
- there are reasonable grounds to believe that each of the Rio Tinto Group, Rio Tinto plc and Rio Tinto Limited will be able to pay its debts as and when they become due and payable.

The directors have been given the declarations by the chief executive and chief financial officer required by section 295A of the Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 14 December 2015.

Disclosure of information to auditors

The directors in office at the date of this report have each confirmed that:

- so far as he or she is aware, there is no relevant audit information of which the Group's auditors are unaware; and
- he or she has taken all the steps that he or she ought to have taken as a director to make himself or herself aware of any relevant audit information and to establish that the Group's auditors are aware of that information.

This declaration is made in accordance with a resolution of the board.

Jan du Plessis
Chairman

Jean-Sébastien Jacques
Chief executive

Chris Lynch
Chief financial officer

Auditor's independence declaration

As lead auditor for the audit of Rio Tinto Limited for the year ended 31 December 2017, I declare that to the best of my knowledge and belief, there have been:

(a) no contraventions of the auditor independence requirements of the *Corporations Act 2001* in relation to the audit; and
(b) no contraventions of any applicable code of professional conduct in relation to the audit.

This declaration is in respect of Rio Tinto Limited and the entities it controlled during the period.

Debbie Smith
Partner
PricewaterhouseCoopers
Brisbane
28 February 2018

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Independent auditors' report

of PricewaterhouseCoopers LLP to the members of Rio Tinto plc and of PricewaterhouseCoopers to the members of Rio Tinto Limited

For the purpose of this report, the terms "we" and "our" denote PricewaterhouseCoopers LLP in relation to UK legal, professional and regulatory responsibilities and reporting obligations to the members of Rio Tinto plc and PricewaterhouseCoopers in relation to Australian legal, professional and regulatory responsibilities and reporting obligations to the members of Rio Tinto Limited. For the purposes of the table on pages 214 to 216 that sets out the key audit matters and how our audit addressed the key audit matters, the terms "we" and "our" refer to PricewaterhouseCoopers LLP and/or PricewaterhouseCoopers and/or our component teams. The Group financial statements, as defined below, consolidate the accounts of Rio Tinto plc and Rio Tinto Limited and their respective subsidiaries (the "Group") and include the Group's share of joint arrangements and associates. The Parent Companies are defined as Rio Tinto plc and Rio Tinto Limited.

The relevant legislation governing the Parent companies is the United Kingdom Companies Act 2006 ("Companies Act 2006") for Rio Tinto plc and the Australian Corporations Act 2001 ("Corporations Act 2001") as amended by the ASIC order dated 14 December 2015 (the "ASIC Order") for Rio Tinto Limited.

Report on the audit of the financial statements and the financial report

Opinion

Opinion of PricewaterhouseCoopers LLP on the financial statements to the members of Rio Tinto plc

In our opinion:

- the financial statements, defined below, give a true and fair view of the state of the Group's and of Rio Tinto plc's affairs as at 31 December 2017 and of the Group's profit and cash flows for the year then ended;
- the Group financial statements have been properly prepared in accordance with International Financial Reporting Standards ("IFRSs") as adopted by the European Union;
- the Rio Tinto plc financial statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 101 "Reduced Disclosure Framework", and applicable law); and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards the Group financial statements, Article 4 of the IAS Regulation.

PricewaterhouseCoopers LLP's opinion is consistent with our reporting to the Audit Committee.

Separate opinion of PricewaterhouseCoopers LLP in relation to financial statements prepared in accordance with IFRSs as issued by the International Accounting Standards Board ("IASB")

As explained in note 1 to the financial statements, the Group, in addition to applying IFRSs as adopted by the European Union, has also applied IFRSs as issued by the IASB.

In our opinion, the Group financial statements have been properly prepared in accordance with IFRSs as issued by the IASB.

Opinion of PricewaterhouseCoopers on the financial report to the members of Rio Tinto Limited

In our opinion:
The accompanying financial report, defined below, is in accordance with the Corporations Act 2001 as amended by the ASIC Order, including:

- giving a true and fair view of the Group's financial position as at 31 December 2017 and of its financial performance for the year then ended; and
- complying with Australian Accounting Standards and the Corporations Regulations 2001.

What we have audited

The Group financial statements (as defined below) and the Rio Tinto plc financial statements (as defined below) are referred to in this report as the "financial statements". The Group financial statements, note 45 "Rio Tinto Limited parent company disclosures" and the Directors' declaration on page 210 are collectively referred to in this report as the "financial report".

PricewaterhouseCoopers LLP has audited the financial statements for the year ended 31 December 2017.

PricewaterhouseCoopers has audited the Reconciliation with Australian Accounting Standards, the Directors' Remuneration Report included in the Directors' report and the financial report for the year ended 31 December 2017.

The Group financial statements, included within the Annual report and Accounts (the "Annual report"), comprise: the Group balance sheet as at 31 December 2017; the Group income statement and Group statement of comprehensive income for the year then ended; the Group cash flow statement for the year then ended; the Group statement of changes in equity for the year then ended; notes 1 – 44 and 46 to the Group financial statements, which include a description of the significant accounting policies and other explanatory information; the outline of dual listed companies structure and basis of financial statements; and the Rio Tinto financial information by business unit.

The Rio Tinto plc financial statements, included within the Annual report, comprise: the Rio Tinto plc Company balance sheet as at 31 December 2017; the Rio Tinto plc Company statement of changes in equity for the year then ended; and notes A-I to the Rio Tinto plc financial statements, which include a description of the significant accounting policies and other explanatory information.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)"), Australian Auditing Standards ("ASAs") and applicable law. Our responsibilities under those standards are further described in the *Auditors' responsibilities for the audit of the financial statements and financial report* section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence
PricewaterhouseCoopers LLP remained independent of the Group in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, which includes the FRC's Ethical Standard, as applicable to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements. To the best of our knowledge and belief, we declare that non-audit services prohibited by the FRC's Ethical Standard were not provided to the Group or Rio Tinto plc. Other than those disclosed in note 39 to the financial statements, we have provided no non-audit services to the Group or Rio Tinto plc in the period from 1 January 2017 to 31 December 2017.

PricewaterhouseCoopers remained independent of the Group in accordance with the auditor independence requirements of the Corporations Act 2001 and the ethical requirements of the Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants ("APES 110") that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with APES 110.

Our audit approach

The Group's principal activities are minerals and metals exploration, development, production and processing. The Group operates through four product groups which are supported by the Growth & Innovation group and other centralised functions. Together these comprise 49 business units containing multiple reporting units.

Overview

Materiality	Overall Group materiality: US$350 million (2016: US$275 million). Overall Rio Tinto plc materiality: US$325 million (2016: US$250 million)
Scope	We identified the Pilbara business unit as a significant component which required an audit of its complete financial information due to its financial significance to the Group. Aside from the Pilbara, we obtained full scope reporting from a further 21 reporting units (2016: 21). Specific audit procedures on certain balances and transactions were performed at a further 16 reporting units (2016: 12), which comprised ten (2016: seven) operating reporting units and six (2016: five) central reporting units, such as treasury entities.
Key audit matters	We assessed the risks of material misstatement in the financial statements and the financial report and determined the following key audit matters for 2017: – impairment assessments (including indicators of impairment and impairment reversal), with a particular focus on exploration and evaluation assets (Roughrider) and property, plant and equipment (at Oyu Tolgoi, Argyle, Grasberg and Rössing) and indefinite-lived intangible assets in Rio Tinto Aluminium; – provisions for close-down, restoration and environmental obligations; and – provisions for uncertain tax positions, with a particular focus on transfer pricing of certain transactions with the Group's commercial centre in Singapore. Compared with last year, based on our assessment of the risks of material misstatement, we did not consider defined benefit pension plan surpluses and deficits to be a key audit matter, as we have not identified material misstatements or had to communicate significant matters to the Audit Committee in recent years and there were no new risk factors this year.

The scope of our audit and our key audit matters
As part of designing our audit we determined materiality and assessed the risks of material misstatement in the financial statements and the financial report. In particular, we looked at where the directors made subjective judgements, for example in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain. We gained an understanding of the legal and regulatory framework applicable to the Group and the industry in which it operates, and considered the risk of acts by the Group that were contrary to applicable laws and regulations, including fraud. We designed audit procedures to respond to the risk, recognising that the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery or intentional misrepresentations, or through collusion. We designed audit procedures that focused on the risk that non-compliance with the Companies Act 2006, the Corporations Act 2001, the UK Listing Rules and/or the Listing Rules of the Australian Stock Exchange, gives rise to a material misstatement in the financial statements. In assessing compliance with laws and regulations, our tests included checking the financial statement disclosures to underlying supporting documentation, assessment of certain component auditors' work, enquiries with management and enquiries of legal counsel.

As in all of our audits, we also addressed the risk of management override of internal controls, including evaluating whether there was evidence of bias by the directors that represented a risk of material misstatement due to fraud.

Key audit matters are those matters that, in the auditors' professional judgement, were of most significance in the audit of the financial statements and financial report of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by the auditors, including those which had the greatest effect on: the overall audit strategy; the allocation of resources in the audit; and directing the efforts of the engagement team. These matters, and any comments we make on the results of our procedures thereon, were addressed in the context of our audit of the financial statements and the financial report as a whole, and in forming our opinions thereon, and we do not provide a separate opinion on these matters. This is not a complete list of all risks identified by our audit. We note that there are no key audit matters specifically applicable to Rio Tinto plc.

Independent auditors' report

of PricewaterhouseCoopers LLP to the members of Rio Tinto plc and of PricewaterhouseCoopers to the members of Rio Tinto Limited *continued*

Key audit matter	How our audit addressed the key audit matter
Impairment/reversal of impairment assessment The Group has goodwill of US$1,037 million, indefinite-lived intangible assets of US$1,824 million, finite-lived intangible assets of US$1,295 million (including exploration and evaluation assets of US$393 million) and property, plant and equipment of US$62,093 million as at 31 December 2017. Impairment charges to each of these asset categories have been recognised in previous years. All cash generating units ("CGUs") containing goodwill and indefinite-lived intangible assets must be tested for impairment annually. Management must also determine the recoverable amount for other assets including finite-lived intangible assets, property, plant and equipment and exploration and evaluation assets when impairment indicators or indicators of impairment reversal are identified. The determination of recoverable amount, being the higher of value-in-use ("VIU") and fair value less costs of disposal ("FVLCD"), requires judgement on the part of management in identifying and then estimating the recoverable amount for the relevant CGUs. Recoverable amounts are based on management's view of key internal value driver inputs and external market conditions such as future commodity prices, the timing and approval of future capital and operating expenditure, and the most appropriate discount rate. Specific CGUs where we focussed our procedures included the following: *Oyu Tolgoi* The development of the underground mine has progressed as planned during 2017. The operating assets of the Oyu Tolgoi CGU as at 31 December 2017 were US$8.3 billion. *Argyle* As a result of lower production volumes compared with forecast, a smaller than expected contribution from productivity improvements and lower prices achieved for bulk diamonds, an impairment trigger was identified for the Argyle CGU. Management increased its closure cost estimates during the year based on the findings to date from its latest ongoing technical studies. Management determined that the projected cash-flows from the business did not support retaining a carrying value for the long term assets. A total pre-tax impairment charge of US$172 million was recorded in relation to Argyle. *Grasberg* New regulations affecting aspects of the Contract of Works agreement between Freeport and the Government of Indonesia were issued in 2017, impacting PT Freeport Indonesia's operating rights and negatively impacting production forecasts. These new developments in the legal and political environment impacting the economics of the operation were identified by management as an impairment trigger. Management performed an impairment test predicated on estimated cash flows under the Participation Agreement, which supported the carrying value of the CGU. *Uranium assets* An impairment indicator was identified for the Roughrider uranium deposit as a result of reduced planned exploration expenditure. An impairment indicator was also identified for Rössing as a result of structural changes in forecast uranium prices.	For material property, plant and equipment, finite-lived intangible assets and exploration and evaluation assets we undertook the following to assess for indicators of impairment/impairment reversal: – satisfied ourselves as to the appropriateness of management's identification of the Group's CGUs and the continued satisfactory operation of the Group's controls over the impairment assessment process; – evaluated management's assessment of impairment indicators, as well as indicators of impairment reversal, including the conclusions reached; and – where applicable, understood the progress of any capital development programs against planned expenditure. In addition, specifically for the Oyu Tolgoi project, we: – understood the impact of the latest life of mine assumptions and assessed management's competence and objectivity in preparing the latest mine plans; and – considered the current project status and the length of time remaining to complete the underground mine and the associated complexity of doing so, and thereby satisfied ourselves that developments in 2017 did not give rise to an impairment or impairment reversal trigger for the Oyu Tolgoi CGU. In instances where an impairment trigger was identified, or where an annual impairment test was required by accounting standards, such as for goodwill balances and indefinite-lived intangible assets, including water rights in Rio Tinto Aluminium, we: – assessed whether the underlying impairment model has been prepared in accordance with the Group's impairment methodology; – ensured that the forecasts and life of mine plans in the impairment assessment are consistent with the most up-to-date budgets, mine plan, production assumptions or other supporting documentation that has been formally approved by management; – agreed the principal economic assumptions underpinning the impairment model to supporting evidence or data assessed by our valuation experts; – performed sensitivity analysis over the key assumptions in the valuation model; and – checked the mathematical accuracy of management's valuation models and relevant data. In addition to our overall response to impairment described above, we performed additional procedures on certain projects or reporting units where an impairment trigger was identified: *Argyle* – agreed the revised closure provision cash flows to management's model, and ensured the impact of this revision is included in the recoverable amount assessment. *Grasberg* – assessed management's conclusions in relation to the impact of the Government of Indonesia's new mining regulations, including the effect on production forecasts; and – assessed whether the mine operating and capital assumptions in the cash flow model were consistent with the underlying joint operation agreement.

Key audit matter continued	**How our audit addressed the key audit matter** continued
Uranium assets continued Management has assessed the recoverable amount of the assets, and determined that the exploration and evaluation assets for Roughrider and property, plant and equipment and intangible assets for Rössing were fully impaired, resulting in pre-tax impairment charges of US$357 million and US$267 million respectively. Refer to note 6 for management's conclusions and the Audit Committee's views set out on page 64.	*Uranium assets* – agreed management's uranium price forecasts and other relevant economic assumptions with reference to independent broker and analyst reports; and – confirmed that there is no further substantive expenditure budgeted or planned to evaluate the Roughrider deposit. We considered the appropriateness of the related disclosures in note 6 to the financial statements. Based on the procedures performed, we noted no material issues from our work.
Provisions for close-down, restoration and environmental obligations The Group has provisions for close-down, restoration and environmental obligations of US$9,983 million as at 31 December 2017. The calculation of these provisions requires management judgement in estimating the quantum and timing of future costs, particularly given the unique nature of each site, the long timescales involved and the potential associated obligations. These calculations also require management to determine an appropriate rate to discount future costs to their net present value. The judgement required to estimate such costs is compounded by the fact that there has been limited restoration and rehabilitation activity and historical precedent against which to benchmark estimates of future costs. Management reviews the close-down, restoration and environmental obligations on an annual basis, using experts to provide support in its assessment where appropriate. This review incorporates the effects of any changes in local regulations and management's anticipated approach to restoration and rehabilitation. As at 31 December 2017, the total provision held on the balance sheet has increased from US$8,722 million to US$9,983 million. Refer to notes 2 and 26, and the Audit Committee's views set out on page 64.	We assessed management's process for the review of closure provisions, and performed detailed testing for 8 reporting units that had a movement in their closure provision in the year or a closure provision as at 31 December 2017 that was above the respective individual component's materiality level (2016: 10 reporting units). As part of our detailed testing of the cost estimates prepared by management for the 8 reporting units selected, we established the existence of legal and/or constructive obligations with respect to the closure provision and considered the intended method of restoration and rehabilitation and associated cost estimate. We also considered the competence and objectivity of management's experts, whether internal or external to the Group, who produced the cost estimates and, where appropriate, engaged our own internal expert to assess the work performed by management's experts. We checked the mathematical accuracy of management's calculations and assessed the appropriateness of the discount rate using our valuations experts. In addition to the overall response to the risk described above, we performed additional procedures in respect of the largest increase in obligations during the year: – read the latest available technical studies and assessed the appropriateness of the scope of work performed by management and the various third party experts; and – considered whether the updates in provision reflect changes to previous estimates or the correction of prior period errors. For the in scope reporting units that did not have a movement in the year, or a closure provision as at 31 December 2017, that was above the respective individual component's materiality level, we considered whether the provision relating to close-down, restoration and environmental obligations was consistent with our understanding of the obligations associated with the operation and the remediation plans. We considered the appropriateness of the related disclosures in notes 2 and 26 to the financial statements. Based on the procedures performed, we noted no material issues from our work.

Key audit matter continued	**How our audit addressed the key audit matter** continued
Provisions for uncertain tax positions The Group operates across a large number of jurisdictions and is subject to periodic challenges by local tax authorities on a range of tax matters during the normal course of business, including transfer pricing, indirect taxes and transaction related tax matters. As at 31 December 2017, the Group has current and non-current taxes payable of US$2,248 million. Where the amount of tax payable is uncertain, the Group establishes provisions based on management's best estimate of the most likely outcome. In relation to specific uncertain tax positions, we focussed on matters relating to the transfer pricing of certain transactions between the Group's entities based in Australia and the Group's commercial centre in Singapore. Over the past financial year, the Group has been in continued discussions with the Australian Taxation Office on these matters. Refer to notes 2 and 9, and the Audit Committee's views set out on page 64.	We assessed management's process for identifying uncertain tax positions and the related accounting policy of providing for tax exposures. We engaged our tax specialists to understand the current status of tax assessments and investigations and to monitor developments in ongoing disputes. We read recent rulings and correspondence with local tax authorities, as well as external advice received by the Group where relevant, to satisfy ourselves that the tax provisions had been appropriately recorded or adjusted to reflect the latest external developments. In addition to our overall response to the risk described above, we performed additional procedures in respect of the Group's Singapore commercial centre as follows: – read the latest available correspondence between management and the relevant tax authorities and expert reports to assess the continued appropriateness of the provision recognised by management; – checked the mathematical accuracy of management's provision calculations and agreed relevant input data to supporting records; – engaged our experts in the field of transfer pricing to evaluate the basis on which the provision has been determined; and – tested payments to the tax authorities, where applicable. Based on the procedures performed, we determined the provision reflects management's current best estimate of the expected economic outflow. We considered the appropriateness of the related disclosures in notes 2 and 9 to the financial statements. Based on the procedures performed, we noted no material issues arising from our work.

How we tailored the audit scope

As the Group engagement team, we tailored the scope of our audit to ensure that we performed enough work to be able to give opinions on the financial statements and the financial report as a whole, taking into account the geographical structure of the Group, the accounting processes and controls, and the industry in which the Group operates.

The Group is organised into four product groups - Aluminium, Copper & Diamonds, Energy & Minerals and Iron Ore, all of which are supported by the Growth & Innovation group and other centralised functions. Each product group is made up of a number of operating businesses which represent separate business units. Each business unit is comprised of individual reporting units which align to discrete operations. The Group financial statements are a consolidation of reporting units, comprising the Group's operating businesses and centralised functions. We determined the appropriate reporting units to perform work on based on factors such as the size of the balances, the key audit matters as noted above and known accounting matters, and to include unpredictability in our audit procedures.

In establishing the overall approach to the Group audit, we determined the type of work that needed to be performed at reporting units by us, as the Group engagement team, or component auditors from either other PwC network firms or non-PwC firms operating under our instruction.

We identified the Pilbara reporting unit as a significant component (as defined within ISAs (UK) and ASAs) which, in our view, required an audit of its complete financial information, due to its financial significance to the Group. Outside of the Pilbara reporting unit, we obtained full scope reporting from a further 21 reporting units (2016: 21). Specific audit procedures on certain balances and transactions were performed at a further 16 reporting units (2016: 12), which comprised ten (2016: seven) operating reporting units and six (2016: five) central reporting units, such as treasury entities, primarily to ensure appropriate audit coverage.

As we seek to vary our audit procedures each year to ensure an element of unpredictability, two different smaller reporting units (2016: two) were included in our Group audit scope for 2017. We also performed work centrally on IT general controls, journals, taxation and pensions.

Where work was performed by component auditors, we determined the level of involvement we needed to have in the audit work at those reporting units to be able to conclude whether sufficient appropriate audit evidence had been obtained as a basis for our opinions on the Group financial statements and financial report as a whole.

We issued formal written instructions to all component auditors setting out the audit work to be performed by each of them and maintained regular communication with the component auditors throughout the audit cycle. These interactions included attending certain component clearance meetings and holding regular conference calls, as well as reviewing and assessing any matters reported. The Group engagement team also reviewed selected audit working papers for certain component teams.

In addition, senior members of the Group engagement team visited component teams across all four product groups in Canada, Australia, Indonesia, Mongolia, Singapore, South Africa and the United States of America. These visits included meetings with local management and with the component auditors, and typically operating site tours.

Materiality

The scope of our audit was influenced by our application of materiality. We set certain quantitative thresholds for materiality. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures on the individual financial statement line items and disclosures and to evaluate the effect of misstatements, both individually and in aggregate, on the financial statements and the financial report as a whole.

Based on our professional judgement, we determined materiality for the financial statements and the financial report as a whole as follows:

Overall materiality	Overall Group materiality US$350 million (2016: US$275 million). Overall Rio Tinto plc materiality: US$325 million (2016: US$250 million).
How we determined it	For overall Group materiality we used an average of underlying earnings before tax (as defined in note 2 to the financial statements) of the current and previous three years (2016: average underlying earnings before tax of the current year and previous three years). For overall Rio Tinto plc materiality we used total assets.
Rationale for benchmark applied	For overall Group materiality, we chose to use an adjusted underlying earnings measure as the benchmark because an adjusted measure removes the impact of material items which do not recur from year to year or otherwise significantly affect the underlying trend of performance from continuing operations. This is the metric against which the performance of the Group is most commonly assessed by management and reported to members. Our approach to determine materiality is based on a four year average of profit before tax adjusted for items excluded from underlying earnings. The adoption of a multi-year average benchmark for materiality will respond to longer-term trends in commodity markets and will reduce volatility in the measure year-on-year. Using our professional judgement, we determined materiality for this year at US$350 million, which equates to approximately 2.9% of the current year's underlying earnings before tax. For overall Rio Tinto plc materiality we determined our materiality based on total assets, which is more applicable than a performance-related measure as the company is an investment holding company for the Group. Using our professional judgement, we determined materiality for this year at US$325 million, which equates to approximately 0.7% of the current year's total assets.
Component materiality	For each reporting unit ("component") in our audit scope, we allocated a materiality that was less than our overall Group materiality. The materiality allocated to each component was between US$15 million and US$320 million.

We agreed with the Audit Committee that we would report to them misstatements identified during our audit above US$25 million (2016: US$25 million) as well as misstatements below those amounts that, in our view, warranted reporting for qualitative reasons.

Going concern

Reporting obligation

In accordance with ISAs (UK) we report as follows:

We are required to report to you if we have anything material to add or to draw attention to in respect of the directors' statement about whether they considered it appropriate to adopt the going concern basis of accounting in preparing the financial statements and the directors' identification of any material uncertainties to the Group's and Rio Tinto plc's ability to continue as a going concern over a period of at least twelve months from the date of the approval of the financial statements. We have nothing material to add or draw attention to. However, because not all future events or conditions can be predicted, this statement is not a guarantee as to the Group's and Rio Tinto plc's ability to continue as a going concern.

We are also required to report if the directors' statement relating to Going Concern in accordance with Listing Rule 9.8.6R(3) is materially inconsistent with our knowledge obtained in the audit. We have nothing to report.

In accordance with ASAs:

We are required to conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial report or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

Independent auditors' report

of PricewaterhouseCoopers LLP to the members of Rio Tinto plc and of PricewaterhouseCoopers to the members of Rio Tinto Limited *continued*

Reporting on other information – PricewaterhouseCoopers LLP

The other information comprises all of the information in the Annual report other than the financial statements and our auditors' report thereon. The directors are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except to the extent otherwise explicitly stated in this report, any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

With respect to the Strategic Report and the Directors' Report, we also considered whether the disclosures required by the Companies Act 2006 have been included.

Based on the responsibilities described above and our work undertaken in the course of the audit, the Companies Act 2006 (CA06), ISAs (UK) and the Listing Rules of the Financial Conduct Authority (FCA) require us also to report certain opinions and matters as described below (required by ISAs (UK) unless otherwise stated).

Strategic Report and Directors' Report

In our opinion, based on the work undertaken in the course of the audit, the information given in the Strategic Report and the Directors' Report for the year ended 31 December 2017 is consistent with the financial statements and has been prepared in accordance with applicable legal requirements. (CA06)

In light of the knowledge and understanding of the Group and Rio Tinto plc and their environment obtained in the course of the audit, we did not identify any material misstatement in the Strategic Report and Directors' Report. (CA06)

The directors' assessment of the prospects of the Group and of the principal risks that would threaten the solvency or liquidity of the Group

We have nothing material to add or draw attention to regarding:

- The directors' confirmation on page 18 of the Annual report that they have carried out a robust assessment of the principal risks facing the Group, including those that would threaten its business model, future performance, solvency or liquidity.
- The disclosures in the Annual report that describe those risks and explain how they are being managed or mitigated.
- The directors' explanation on page 18 of the Annual report as to how they have assessed the prospects of the Group, over what period they have done so and why they consider that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We have nothing to report having performed a review of the directors' statement that they have carried out a robust assessment of the principal risks facing the Group and statement in relation to the longer-term viability of the Group. Our review was substantially less in scope than an audit and only consisted of making inquiries and considering the directors' process supporting their statements; checking that the statements are in alignment with the relevant provisions of the UK Corporate Governance Code (the "Code"); and considering whether the statements are consistent with the knowledge and understanding of the Group and Rio Tinto plc and their environment obtained in the course of the audit. (Listing Rules)

Other Code Provisions

We have nothing to report in respect of our responsibility to report when:

- The statement given by the directors, on page 109, that they consider the Annual report taken as a whole to be fair, balanced and understandable, and provides the information necessary for members to assess the Group's and Rio Tinto plc's position and performance, business model and strategy, is materially inconsistent with our knowledge of the Group and Rio Tinto plc acquired in the course of performing our audit.
- The section of the Annual report on page 64 describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee.
- The directors' statement relating to Rio Tinto plc's compliance with the Code does not properly disclose a departure from a relevant provision of the Code specified, under the Listing Rules, for review by the auditors.

Directors' remuneration
In our opinion, the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006. (CA06)

Reporting on other information – PricewaterhouseCoopers

The directors are responsible for the other information. The other information comprises the information included in the Annual report for the year ended 31 December 2017, other than the financial report and our auditor's report thereon.

Our opinion on the financial report does not cover the other information and accordingly we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial report, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial report or our knowledge obtained in the audit, or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Directors' remuneration
Directors' Remuneration Report – Corporations Act 2001 opinion
Under the Corporations Act 2001 (in respect of Rio Tinto Limited) we are required to express an opinion on the Directors' Remuneration Report based on our audit conducted in accordance with ASAs.

Opinion on the Remuneration Report
We have audited the Remuneration Report included on pages 70 to 105 of the Directors' report for the year ended 31 December 2017.

In our opinion, the Remuneration Report of Rio Tinto Limited complies with the requirements of section 300A of the Corporations Act 2001 as amended by the ASIC Order.

Responsibilities
The directors of Rio Tinto Limited are responsible for the preparation and presentation of the Remuneration Report in accordance with section 300A of the Corporations Act 2001 as amended by the ASIC Order.

Our responsibility is to express an opinion on the Remuneration Report, based on our audit conducted in accordance with ASAs.

Responsibilities for the financial statements, the financial report and the audit

Responsibilities of the directors for the financial statements and financial report
As explained more fully in the Directors' statement of responsibilities set out on page 210, the directors are responsible for the preparation of the financial statements and the financial report in accordance with the applicable financial reporting frameworks and for being satisfied that they give a true and fair view. The directors are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements and the financial report that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements and financial report, the directors are responsible for assessing the Group's and Parent Companies' 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 the Parent Companies or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements and financial report
Our objectives are to obtain reasonable assurance about whether the financial statements and financial report as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) and ASAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements or financial report.

A further description of PricewaterhouseCoopers LLP's responsibilities for the audit of the financial statements is located on the FRC's website at: www.frc.org.uk/auditors. A further description of PricewaterhouseCoopers' responsibilities for the audit of the financial report is located on the Auditing and Assurance Standards Board website at: http://www.auasb.gov.au/auditors_responsibilities/ar1.pdf. The descriptions on these websites form part of the auditors' report for PricewaterhouseCoopers LLP and PricewaterhouseCoopers respectively.

Use of this report
This report, including the opinions, has been prepared for and only for the members of Rio Tinto plc and Rio Tinto Limited as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006 (in respect of Rio Tinto plc) and the Corporations Act 2001 as amended by the ASIC Order (in respect of Rio Tinto Limited) and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Other required reporting – PricewaterhouseCoopers LLP

Companies Act 2006 exception reporting
Under the Companies Act 2006 we are required to report to you if, in our opinion:

- we have not received all the information and explanations we require for our audit;
- adequate accounting records have not been kept by Rio Tinto plc, or returns adequate for our audit have not been received from branches not visited by us; or
- certain disclosures of directors' remuneration specified by law are not made; or
- the Rio Tinto plc financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns.

We have no exceptions to report arising from this responsibility.

Appointment – PricewaterhouseCoopers LLP and PricewaterhouseCoopers

PricewaterhouseCoopers LLP and PricewaterhouseCoopers have acted as auditors of Rio Tinto since its formation under a dual listed company structure in 1995.

A predecessor firm of PricewaterhouseCoopers LLP was appointed by the members of a predecessor company of Rio Tinto plc on 8 May 1958 to audit the financial statements for the year ended 31 May 1958 and subsequent financial periods. The period of total uninterrupted engagement is 60 years, covering the years ended 31 May 1958 to 31 December 2017.

A predecessor firm of PricewaterhouseCoopers was appointed by the members of a predecessor company of Rio Tinto Limited on 31 December 1959 to audit the financial statements for the year ended 31 December 1959 and subsequent financial periods. The period of total uninterrupted engagement is 59 years, covering the years ended 31 December 1959 to 31 December 2017.

Paul Barkus
Senior Statutory Auditor
for and on behalf of
PricewaterhouseCoopers LLP
Chartered Accountants and
Statutory Auditors
London, United Kingdom

28 February 2018

Debbie Smith,
Partner
for and on behalf of
PricewaterhouseCoopers

Brisbane, Australia

28 February 2018

Financial summary 2008-2017

US$m	2008	2009	2010	2011	2012	2013	2014	2015	2016	**2017**
Gross sales revenue [(a)]	56,905	42,734	59,008	65,298	55,597	54,575	50,041	36,784	35,336	**41,867**
Share of equity accounted units' sales revenue and items excluded from underlying earnings	(4,044)	(2,472)	(3,837)	(4,769)	(4,655)	(3,404)	(2,377)	(1,955)	(1,555)	**(1,837)**
Consolidated sales revenue	52,861	40,262	55,171	60,529	50,942	51,171	47,664	34,829	33,781	**40,030**
Underlying profit before interest and tax (PBIT)	17,683	9,843	21,128	23,662	13,467	16,039	13,851	7,310	8,053	**13,363**
Finance costs [(b)]	(1,706)	(1,058)	(909)	(759)	(616)	(794)	(967)	(1,076)	(1,360)	**(1,090)**
Exchange differences and derivatives [(c)]	(322)	528	529	2	695	(3,362)	(2,021)	(3,458)	622	**(1,078)**
Other exclusions from underlying earnings	(6,477)	(1,453)	(257)	(9,633)	(15,977)	(8,378)	(1,311)	(3,502)	(972)	**1,621**
Profit/(loss) before tax (PBT)	9,178	7,860	20,491	13,272	(2,431)	3,505	9,552	(726)	6,343	**12,816**
Tax on exclusions	988	(91)	42	135	2,896	2,642	423	567	(155)	**(596)**
Tax on underlying PBT	(4,730)	(1,985)	(5,338)	(6,607)	(3,485)	(5,068)	(3,476)	(1,560)	(1,412)	**(3,369)**
Loss after tax from discontinued operations	(827)	(449)	(97)	(10)	(7)	-	-	-	-	**-**
Attributable to non-controlling interests	(933)	(463)	(860)	(955)	(1)	2,586	28	853	(159)	**(89)**
Net earnings/(loss) [(d)]	3,676	4,872	14,238	5,835	(3,028)	3,665	6,527	(866)	4,617	**8,762**
Underlying earnings	10,303	6,298	13,987	15,572	9,269	10,217	9,305	4,540	5,100	**8,627**
Earnings/(loss) per share (basic) - continuing operations [(e)]	286.8c	301.7c	731.0c	303.9c	(163.4)c	198.4c	353.1c	(47.5)c	256.9c	**490.4c**
Underlying earnings per share (basic) - continuing operations [(e)]	656.2c	357.1c	713.3c	809.7c	501.3c	553.1c	503.4c	248.8c	283.8c	**482.8c**
Dividends per share: declared for year [(f)]										
Rio Tinto shareholders (US cents)	111.22c	45.00c	108.00c	145.00c	167.00c	192.00c	215.00c	215.00c	170.00c	**290.00c**
Rio Tinto plc (pence)	67.49p	28.84p	67.35p	90.47p	106.77p	120.10p	134.88p	143.13p	134.36p	**212.56p**
Rio Tinto Limited (Aus. cents)	146.22c	51.56c	111.21c	134.01c	160.18c	213.14c	256.07c	296.80c	222.75c	**366.25c**
Net assets										
Fixed assets [(g)]	67,651	72,706	83,895	91,529	90,580	81,554	80,669	70,226	68,104	**70,735**
Other assets less liabilities	8,469	10,078	4,394	1,632	8,478	8,224	4,596	4,037	4,128	**2,495**
Provisions (including deferred tax liabilities)	(14,987)	(17,998)	(19,706)	(25,935)	(22,126)	(18,221)	(18,176)	(16,352)	(16,915)	**(18,270)**
Net debt	(38,672)	(18,861)	(4,071)	(8,342)	(19,192)	(18,055)	(12,495)	(13,783)	(9,587)	**(3,845)**
Non-controlling interests	(1,823)	(2,094)	(6,265)	(6,685)	(11,187)	(7,616)	(8,309)	(6,779)	(6,440)	**(6,404)**
Equity attributable to owners of Rio Tinto	20,638	43,831	58,247	52,199	46,553	45,886	46,285	37,349	39,290	**44,711**
Capital expenditure [(h)]	(8,574)	(5,388)	(4,591)	(12,573)	(17,615)	(13,001)	(8,162)	(4,685)	(3,012)	**(4,482)**
Acquisitions	(9)	(396)	(907)	(4,156)	(1,335)	4	-	(3)	-	**-**
Disposals	2,572	2,424	3,800	386	251	1,896	887	(38)	761	**2,675**
Net cash generated from operating activities [(i)]	14,883	9,212	18,277	20,235	9,430	15,078	14,286	9,383	8,465	**13,884**
Cash flows before financing activities [(j)]	8,702	5,855	16,566	3,245	(8,813)	4,132	7,783	4,783	6,361	**11,511**
Ratios										
Operating margin [(k)]	32%	24%	37%	37%	25%	30%	28%	20%	23%	**32%**
Net debt to total capital [(l)]	63%	29%	6%	12%	25%	25%	19%	24%	17%	**7%**
Underlying earnings: owners' equity [(m)]	45%	20%	27%	28%	19%	22%	20%	11%	13%	**21%**
Interest cover [(n)]	10	9	27	27	13	13	13	7	7	**14**

(a) Gross sales revenue includes 100 per cent of subsidiaries' sales revenue and the Group's share of the sales revenue of equity accounted units (after adjusting for sales to subsidiaries).
(b) Finance costs include net interest and amortisation of discount.
(c) Under IFRS, as defined in note 1, certain gains and losses on currency exchange and on revaluation of derivatives are included in the Group's net earnings/(loss). These items are excluded from underlying earnings.
(d) Underlying earnings is an additional measure of earnings, which is reported by Rio Tinto with its IFRS (as defined in note 1) results to provide greater understanding of the underlying business performance of its operations. It is defined in note 2 to the financial statements. Underlying profit before interest and tax (PBIT) is similar to underlying earnings except that it is stated before interest and tax.
(e) 2009 earnings per share from continuing operations and underlying earnings per share have been calculated using a number of shares which reflects the discounted price of the July 2009 rights issues (the bonus factor). 2008 comparatives have been restated accordingly.
(f) Dividends per share are the amounts declared in respect of each financial year. These usually include an interim dividend paid in the year, and a final dividend paid after the end of the year. 2008 ordinary dividends per share have been restated using a number of shares which reflects the discounted price of the July 2009 rights issues (the bonus factor).
(g) Fixed assets include property, plant and equipment, intangible assets, goodwill, and investments in, and long-term loans to, equity accounted units.
(h) Capital expenditure is presented gross, before taking into account any disposals of property, plant and equipment or intangible assets.
(i) Net cash generated from operating activities represents the cash generated by the Group's consolidated operations, after payment of interest, taxes, and dividends to non-controlling interests in subsidiaries.
(j) Cash flow before financing activities is stated before deducting dividends payable to owners of Rio Tinto.
(k) Operating margin is the percentage of underlying PBIT, after excluding tax on equity accounted units, to gross sales revenue.
(l) Total capital comprises equity attributable to owners of Rio Tinto plus net debt and non-controlling interests.
(m) Underlying earnings: owners' equity represents underlying earnings expressed as a percentage of the mean of opening and closing equity attributable to owners of Rio Tinto.
(n) Interest cover represents the number of times interest payable less receivable (excluding the amortisation of discount but including capitalised interest) is covered by underlying operating profit, less amortisation of discount, plus dividends from equity accounted units. Underlying operating profit is similar to underlying earnings but is stated before tax, interest and share of profit after tax of equity accounted units.

Summary financial data in Australian dollars, sterling and US dollars

2017 A$m	2016 A$m	2017 £m	2016 £m		2017 US$m	2016 US$m
54,373	47,467	**32,455**	26,043	Gross sales revenue	**41,867**	35,336
51,987	45,401	**31,031**	24,909	Consolidated sales revenue	**40,030**	33,781
16,644	8,525	**9,935**	4,677	Profit before tax from continuing operations	**12,816**	6,343
11,495	6,419	**6,861**	3,522	Profit for the year from continuing operations	**8,851**	4,776
11,379	6,205	**6,792**	3,404	Net earnings attributable to Rio Tinto shareholders	**8,762**	4,617
11,204	6,854	**6,688**	3,761	Underlying earnings (a)	**8,627**	5,100
636.9c	345.2c	**380.2p**	189.4p	Basic earnings per ordinary share (b)	**490.4c**	256.9c
627.1c	381.4c	**374.3p**	209.2p	Basic underlying earnings per ordinary share (a) (b)	**482.8c**	283.8c
				Dividends per share to Rio Tinto shareholders (c)		
301.34c	211.02c	**183.69p**	108.01p	- paid	**235.0c**	152.5c
228.53c	163.62c	**129.43p**	100.56p	- proposed	**180.0c**	125.0c
14,949	8,549	**8,923**	4,690	Cash flow before financing activities	**11,511**	6,361
(4,929)	(13,281)	**(2,869)**	(7,836)	Net debt	**(3,845)**	(9,587)
57,322	54,428	**33,366**	32,116	Equity attributable to Rio Tinto shareholders	**44,711**	39,290

(a) Underlying earnings exclude net impairment and other charges of US$135 million (2016: charges of US$483 million), which are analysed on page 133.
(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.

The financial data above has been extracted from the financial information set out on pages 111 to 201.