3.D Risk factors

Risk management

Rio Tinto is exposed to a variety of risks that can have financial, operational and compliance impacts on our business performance, reputation and licence to operate. The board recognises that creating shareholder value is the reward for taking and accepting risk. The effective management of risk is therefore critical to supporting the delivery of the Group's strategic objectives.

Risk management framework

Rio Tinto's risk management framework reflects our belief that managing risk effectively is an integral part of how the Group creates value, and fundamental to the Group's business success. The responsibility for identifying and managing risks lies with all of Rio Tinto's employees and business leaders. They operate within the Group-wide framework to manage risks within approved limits.

The framework includes clearly defined oversight responsibilities for the board and the Executive Committee, who are supported by the Risk Management Committee and central support functions including Group Risk and Group Internal Audit, to enable effective risk identification, evaluation and management across Rio Tinto.

This approach reflects a "three lines of defence" model for the management of risks and controls:

– First line of defence: ownership of risk by employees and business leaders.

– Second line of defence: control of risk framework by central support functions and the Risk Management Committee.

– Third line of defence: assurance of systems of internal control by Group Internal Audit.

The key risk management responsibilities throughout the Group are outlined below.

Risk management framework

Oversight	**Board**	– Determine the nature and extent of risk that is acceptable in pursuit of strategic objectives – Confirm that management's risk limits reflect the level of risk the board is willing to accept in pursuit of strategic objectives – Provide oversight across the risk management process
Oversight	**Board committees**	– The Audit Committee monitors and reviews at least annually the maturity and effectiveness of management processes and controls designed to identify, assess, monitor and manage risk – The Audit and Sustainability Committees review periodic reports from management: identifying the Group's material business risks within the committees' scope; and the risk management strategies and controls applied
Third line	**Group Internal Audit**	– Provide reasonable assurance that the systems of internal controls are adequate and effective
Second line	**Executive Committee**	– Set risk strategy and assess risks inherent in key investments and in strategic, business or annual plans
Second line	**Risk Management Committee**	– Oversee the risk management framework to facilitate the identification of significant risks to Group-level objectives and ensure effective risk management processes are in place
Second line	**Group Risk**	– Provide co-ordination and support of Group-level risk management activity and reporting – Embed risk management into core business processes, such as planning and capital allocation – Build risk management capability and a risk culture throughout the Group
Second line	**Other central support functions and management committees**	– Provide targeted expertise and support to risk owners – Develop and maintain specific controls, including policies, standards and procedures, to support the effective management of material Group-level risk within the agreed limits – Assure first line of defence compliance with controls
First line	**Product groups and central functions, executive/audit forums**	– Monitor material risks and track activities to manage risk within their business activities, and escalate where appropriate – Consider risk and uncertainty in strategic and business planning and capital allocation proposals
First line	**Product groups and business units**	– Identify, assess and manage risks in operations, functions and projects, utilising risk registers and our Group-wide risk data system: RioRisk
First line	**Risk managers and Risk Forum**	– Provide technical expertise and risk management for line leaders and the product group executive management teams – The Risk Forum (risk managers across the Group) supports alignment, consistency and continuous improvement of risk management

Risk appetite and tolerances; strategic objectives; accountability to manage; audit and assurance

Escalation as appropriate, transparency and formal reporting

Approach

The Group's approach to risk management, underpinned by the Risk policy and standard, is aimed at embedding a risk-aware culture in all decision-making, and a commitment to managing risk in a proactive and effective manner. This includes the early identification and evaluation of risks, the management and mitigation of risks before they materialise, and dealing with them effectively in the event they do materialise. Accountability for risk management is clear throughout the Group and is a key performance area of line managers.

To support risk understanding and management at all levels, the Group Risk function provides the necessary infrastructure to support the management and reporting of material risks within the Group, and escalates key issues through the management team and ultimately to the board where appropriate. Group Risk also supports the Risk Management Committee in its review of risk.

The process for identifying, evaluating and managing material business risks is designed to manage, rather than eliminate, risk and where appropriate accept risk to generate returns. Certain risks, for example natural disasters, cannot be managed using internal controls. Such major risks are transferred to third parties in the international insurance markets, to the extent considered appropriate or possible.

The Group has material investments in a number of jointly controlled entities. Where Rio Tinto does not have managerial control, it is not always able to ensure that management will comply with Rio Tinto standards.

Principal risks and uncertainties

The principal risks and uncertainties outlined in this section reflect the inherent risks that could materially affect Rio Tinto or its ability to meet its strategic objectives, either directly or by triggering a succession of events that in aggregate become material to the Group.

Effects on the Group in the following respects may be positive or negative:

Business model

The basis on which the Group generates or preserves value over the longer term, given its market positioning as a global diversified mining and processing business.

Future performance

The Group’s ability to deliver its financial plan in the short to medium term.

Solvency

The Group’s ability to maintain an appropriate capital structure to meet its financial liabilities in full.

Liquidity

The Group’s ability to meet its financial liabilities as they fall due.

Health, safety, environment and communities (HSEC)

The Group’s ability to send our employees and contractors home safe and healthy every day and to work with our communities and partners to achieve our sustainable development goals.

Group reputation

The Group’s ability to maintain investor confidence and licence to operate.

Rio Tinto’s business units and functions assess the potential economic and non-economic consequences of their respective risks using the framework defined by the Group’s Risk standard. Once identified, each principal risk or uncertainty is reviewed and monitored by the relevant internal experts and by the Risk Management Committee, the relevant board committees and the board.

There may be additional risks unknown to Rio Tinto and other risks currently not believed to be material which could turn out to be material. A number of them, particularly those with longer-term potential impacts, are referred to in the sustainable development section of the Annual Report 2016 on pages 24 to 30.

2016 movements

As illustrated in the summary table below, the Group’s exposure to a number of principal risks and uncertainties has changed through 2016. Market uncertainties were greater than planned, with greater upside movement in commodity prices and demand than forecast. With greater than planned cash flow, our balance sheet strengthened, decreasing our liquidity risk. Geopolitical uncertainty increased, as did the threat of greater rent-seeking and resource nationalism. Uncertainty regarding the performance and outlook of our joint venture operations also increased. Further detail on movements and monitoring of these exposures is provided in the relevant section of the Strategic report, including the Market environment, Group strategy, product group overviews, the Directors’ report and the Notes to the 2016 financial statements.

Principal risks and uncertainties exposure at a glance (2016 trend)

	External	Internal	Internal and external
Increasing risk or uncertainty	**Commodity prices** **China development pathway** **Strategic partnerships** **Jurisdictional risk**		**Regulation and regulatory intervention**
No change in risk or uncertainty		**Attracting and retaining talent** **Execution of acquisitions and divestments** **Capital project development** **HSEC**	**Exploration and resources** **Operational excellence**
Decreasing risk or uncertainty			**Liquidity**

Principal risks and uncertainties

The principal risks and uncertainties in this section have been categorised into Financial risks (Market, Financial and Strategic); Operational risks (HSEC, Resources, Operations, Projects and People); and Compliance risks (Stakeholder, Governance).

The principal risks and uncertainties should be considered in connection with any forward-looking statements in the Annual Report 2016 and the cautionary statement on the inside front cover.

Financial risks

Inherent risk and uncertainty	Potential downside impact (threats)
Market risks	
Commodity prices, driven by demand and supply for the Group's products, vary outside of expectations over time. Exchange rate variations and geopolitical issues may offset or exacerbate this risk. Anticipating and responding to market movements ("commercial excellence") is inherently uncertain and outcomes may vary.	Falling commodity prices, or adverse exchange rate movements, reduce cash flow, limiting profitability and dividend payments. These may trigger impairments and/or impact rating agency metrics. Extended subdued prices may reflect a longer-term fall in demand for the Group's products, and consequent reduced revenue streams may limit investment opportunities. Failure to deliver planned returns from commercial excellence activities would negatively impact cash flows for the Group.
China's development pathway could impact demand for the Group's products outside of expectations.	An economic slowdown in China, and/or a material change in policy, results in a slowdown in demand and reduced investment opportunities.
Financial risks	
External events and internal discipline may impact Group liquidity.	The Group's ability to raise sufficient funds for planned expenditure, such as capital growth and/or mergers and acquisitions, as well as the ability to weather a major economic downturn could be compromised by a weak balance sheet and/or inadequate access to liquidity.

Financial risks continued

Inherent risk and uncertainty	Potential downside impact (threats)
Strategic risks	
Rio Tinto’s ability to secure planned value by successfully executing divestments and acquisitions may vary.	Divestment and acquisition activity incurs transaction costs that cannot be recouped, or result in value destruction by realising less than planned value for divestments or paying more than fair value for acquisitions. This could result in unforeseen pressure on the Group’s cash position or reduce the Group’s ability to expand operations. The Group may also be liable for the past acts, omissions or liabilities of assets it has acquired that were unforeseen or greater than anticipated at the time of acquisition. The Group may also face liabilities for divested entities if the buyer fails to honour commitments or the Group agrees to retain certain liabilities.
The Group’s ability to develop new projects successfully may vary.	A delay or overrun in the project schedule could negatively impact the Group’s profitability, cash flows, asset carrying values, growth aspirations and relationships with key stakeholders.

Operational risks

Inherent risk and uncertainty	Potential downside impact (threats)
HSEC risks	
Our operations and projects are inherently hazardous with the potential to cause illness or injury, damage to the environment, disruption to a community or a threat to personal security.	Failure to manage our health, safety, environment or community risks, could result in a catastrophic event or other long-term damage which could in turn harm the Group’s financial performance and licence to operate. Recognised hazards include, among others, underground operations, aviation, pit slope instability, tailings facilities, vector-borne and pandemic disease, chemicals, gases, vehicles and machinery, extreme natural environments, endangered flora or fauna, areas of cultural heritage significance, water supply stress and climate change.
Resources risks	
The success of the Group’s exploration activity may vary. In addition, estimates of ore reserves are based on uncertain assumptions that, if changed, could result in the need to restate ore reserves and mine plans.	A failure to discover new viable orebodies could undermine future growth prospects. The risk that new information comes to light or operating conditions change means that the economic viability of some ore reserves and mine plans can be restated downwards. As a result, projects may be less successful and of shorter duration than initially anticipated, and/or the asset value may be impaired.

Operational risks continued

Inherent risk and uncertainty	Potential downside impact (threats)
Operations, projects and people risks	
Operational excellence is derived from high operational and human productivity. Productivity which is driven by optimisation of the balance of people, process and systems may vary.	Business interruption may arise from a number of circumstances, including: – Operational difficulties such as extended industrial dispute, delayed development, bottlenecks or interruptions to infrastructure for power, water and transportation, throughout the value chain. – Operational failure such as a process safety incident, major pit slope, dump or tailings/water impoundment failure, underground incident. – Cyber breach/incident. – Natural disasters such as earthquakes, subsidence, drought, flood, fire, storm and climate change can impact mines, smelters, refineries and infrastructure installations. Any of these events could result in a significant HSEC incident, an interruption to operations, or the inability to deliver products and a commercial loss.
Attracting and retaining talent as the company and industry evolves presents a constant challenge.	The inability to attract or retain key talent will constrain the Group’s ability to reach its goals within planned timeframes.

Compliance risks

Inherent risk and uncertainty	Potential downside impact (threats)
Stakeholder risks	
Strategic partnerships and third parties influence the Group’s supply, operations and reputation. The Group’s ability to control the actions of these parties varies.	Joint venture partners may hinder growth by not agreeing to support investment decisions. For non-managed operations, controlling partners may take action contrary to the Group’s interests or standards and policies, resulting in adverse impact to health and safety, performance, cyber integrity, reputation or legal liability.
The Group’s operations are located across a number of jurisdictions, which exposes the Group to a wide range of economic, political, societal and regulatory environments.	Adverse actions by governments and others can result in operational/project delays or loss of licence to operate. Other potential actions can include expropriation, changes in taxation, and export or foreign investment restrictions, which may threaten the investment proposition. Legal frameworks with respect to policies such as energy, climate change and mineral law may also change in a way that increases costs.
Governance risks	
The Group’s reputation and regulatory licences are dependent upon appropriate business conduct and are threatened by a public allegation or regulatory investigation.	Fines may be imposed against Group companies for breaching antitrust rules, anti-corruption legislation, sanctions or human rights violations or other inappropriate business conduct. A serious allegation or formal investigation by increasingly connected regulatory authorities (regardless of ultimate decision) could result in a loss in share price value, and/or loss of business. Other consequences could include the criminal prosecution of individuals, imprisonment and/or personal fines, and reputational damage to the Group. There may also be considerable cost and disruption in responding to allegations or investigations and taking remedial action.