

Exploration



Copper exploration in Chile.

The Group has had a sustained commitment to exploration since 1946 and considers exploration to be one of its core competencies. Mature Group operations, such as Weipa, the Pilbara and Rössing, were Tier 1 greenfield discoveries by Rio Tinto. The value of these discoveries is still being realised by both mine production and successful brownfield exploration after more than 40 years.

Continuing this legacy, since 2000, the Exploration group has identified two of the largest copper opportunities in the world at Resolution in Arizona, US and La Granja in Peru. Exploration has also delivered the world's largest known undeveloped high grade iron ore resource, at Simandou in Guinea, as well as the Caliwingina channel iron deposits in the Pilbara, Australia. Exploration identified the Potasio Rio Colorado potash deposit in Argentina which Rio Tinto has sold to Vale, the largest potash discovery in South America, and in 2008 handed over to the product groups for further evaluation the Sulawesi nickel deposit in Indonesia and the Mutamba and Chilubane ilmenite deposits in Mozambique.

A significant proportion of exploration expenditure is returned to Rio Tinto through the sale of Tier 2 discoveries. Over the nine

year period 2000 to 2008, divestment of Exploration group projects has returned US\$977 million for a net pre tax exploration spend of approximately US\$226 million. Over the period this translates to an average Tier 1 discovery cost of just over US\$28 million per deposit.

The following table shows the Exploration group's Tier 1 discoveries since 2000:

Year	Discovery	Commodity	Location
2000	Potasio		
	Rio Colorado	Potash	Argentina
2002	Resolution	Copper	US
2004	Simandou	Iron ore	Guinea
2005	La Granja	Copper	Peru
2005	Caliwingina	Iron ore	Australia
2007	Caliwingina		
	North	Iron ore	Australia
2008	Sulawesi	Nickel	Indonesia
2008	Mutamba/ Chilubane	Titanium	Mozambique

The Exploration group is organised geographically into regional multi-commodity teams. This provides a local presence, an in-depth understanding of the operating environment and in-country

proximity to opportunities. At the same time, programmes are prioritised on a global basis so that only the most attractive opportunities are pursued.

At the end of 2008, the Exploration group was actively exploring in 26 countries, and assessing opportunities in a further 15, for a broad range of commodities including bauxite, copper, coking coal, iron ore, industrial minerals, diamonds, nickel and uranium. The number of employees and contractors was 625 and 115 respectively resulting in a full time equivalent headcount of 694.

STRATEGY

The purpose of exploration is to add value to the Group by discovering or acquiring resources that can increase future cash flows.

A fundamental element of the Group's business strategy is a clear focus on finding and mining only the largest, lowest cost, resources that are profitable at all parts of the natural price cycle and that deliver a sustainable competitive advantage. These are described as Tier 1 resources.

Greenfield exploration, which aims to establish completely new operating business units, involves geographic or commodity

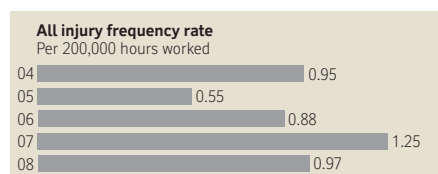
Exploration continued

diversification away from existing Group operations. The greenfield portfolio comprises primarily opportunities in bauxite, copper, iron ore, energy and minerals (coal and uranium).

Brownfield exploration is directed at sustaining or growing the existing Group business units. The brownfield environment provides the easiest opportunity for creating value through exploration as the Group controls highly prospective title around its existing operations where the likelihood of finding additional resources is strong. With processing infrastructure already in place, this means capital expenditure requirements for developing additional orebodies are usually lower than in a greenfield setting.

SAFETY

The exploration all injury frequency rate has fallen from 1.25 at the end of 2007 to 0.97 at the end of 2008. This reduction has come from a focused effort to reduce drilling related injuries – primarily through improved supervision of drill contractors and increased training for drill supervisors.



FINANCIAL PERFORMANCE

“Exploration” expenditures reported by Rio Tinto include exploration and evaluation spends in both the greenfield and brownfield environments. Evaluation includes all pre-feasibility and feasibility study work.

Expenditure on evaluation projects reported separately by each of the Rio Tinto product groups is included in this summary.

2008 compared with 2007

Gross cash expenditure on exploration and evaluation in 2008 was US\$1,134 million, an increase of US\$560 million over 2007 gross expenditure. This primarily reflects the progression of high quality advanced projects within the exploration and evaluation pipeline. Gross expenditures are offset by US\$489 million cash proceeds from the sale of the Kintyre and Corani properties, Wafi and Hidden Valley royalties, and various other interests, which is net of the impairment of shares during 2008. The pre-tax charge to underlying earnings of US\$645 million is net of the US\$489 million of total proceeds from the divestments mentioned above.

2007 compared with 2006

Gross cash expenditure on exploration and evaluation in 2007 was US\$574 million, a US\$229 million increase over 2006, reflecting an increase in the number of high quality projects in the exploration and evaluation pipeline. Gross expenditures are offset by US\$253 million cash proceeds from the divestment of the Peñasquito royalty, shares in Anatolia Minerals, the Southdown iron ore deposit and various other interests. The pre tax charge to underlying earnings in 2007 was US\$321 million net of the US\$253 million of total proceeds from divestments mentioned above.

2008 OPERATING PERFORMANCE

Two Tier 1 greenfield discoveries, the Sulawesi nickel deposit in Indonesia and the

ilmenite rich Mutamba and Chilubane heavy mineral sand deposits in Mozambique, as well as the Tier 2 Bunder diamond deposit in India, were transferred to product group evaluation teams. The Jadar lithium borate project in Serbia, thought to be the largest lithium deposit outside South America, was identified as a valuable but non core asset and is being prepared for divestment.

Order of magnitude studies commenced at the Regina potash property in Saskatchewan, Canada which Rio Tinto has sold to Vale, the Tamarack nickel-copper prospect in Minnesota, US, and at the Altai Nuurs coking coal property in Mongolia. These projects, as well as earlier stage opportunities at Amargosa in Brazil (bauxite) and Crowsnest in British Columbia, Canada (coking coal) are expected to provide the Group with the next crop of potential discoveries.

At the Simandou (iron ore, Guinea), La Granja (copper, Peru) and Resolution (copper, US) greenfield evaluation projects, inferred resources were published in the first half of 2008. Subsequent drilling at all three properties continues to return additional significant mineralisation.

In the brownfield exploration environment, drilling at the Bingham Canyon mine delineated additional copper resources and a zone of molybdenum-dominated mineralisation beneath the current open pit.

At Energy Resources of Australia, the exploration programme focused on defining the Ranger 3 Deeps deposit located east of the current open pit. A similar near mine programme is now under way on the Rössing mine property in Namibia.

Significant exploration results during 2008

Greenfield projects	JORC Category	
Simandou	Inferred	2.25 billion tonnes @ 66 per cent iron
La Granja	Inferred	2.77 billion tonnes @ 0.51 per cent copper
Resolution	Inferred	1.34 billion tonnes @ 1.51 per cent copper
Eagle East	Exploration Target	2 – 3 million tonnes @ 0.8 – 0.9 per cent nickel
Sulawesi	Inferred	162 million tonnes @ 1.62 per cent nickel
Mozambique mineral sands	Exploration Target	7 – 12 billion tonnes @ 3 – 4.5 per cent Total Heavy Mineral
Bunder	Inferred	37 million tonnes @ 0.74 carats per tonne
Jadar	Inferred	114 million tonnes @ 1.8 per cent Li ₂ O and 13.1 per cent B ₂ O ₃
Tamarack South	Exploration Target	5 – 11 million tonnes @ 1.0 – 1.1 per cent nickel and 0.6 – 0.7 per cent copper
Brownfield sites		
Bingham Canyon	Indicated and Inferred	640 million tonnes @ 0.46 per cent copper
Bingham Canyon	Exploration Target	500 – 600 million tonnes @ 0.1 – 0.15 per cent molybdenum
Corumbá	Exploration Target	8 – 10 billion tonnes @ 52 – 55 per cent iron
Ranger 3	Exploration Target	15 – 20 million tonnes containing 30,000 - 40,000 tonnes of uranium oxide

OUTLOOK

In 2009, the scope of exploration programmes will be reduced significantly as part of the Group's cost saving measures. The Exploration group will explore for a narrower range of commodities in a total of 14 countries. The global number of employees in 2009 will be reduced to 300 people.

Focus in 2009 will shift from cost

intensive drilling of advanced projects to the re-ignoration of early stage activities. Reactivation of major drilling programmes will await an improvement in the market environment.

Divestment of Tier 2 assets will continue where real value can be realised, with a target of 100 per cent of the annual greenfield exploration budget being returned to the Group.

The next crop of potential discoveries

Project	Commodity	Country	Stage
Tamarack	nickel/copper	US	Order of Magnitude
Crowsnest	coking coal	Canada	Project of Merit
Amargosa	bauxite	Brazil	Project of Merit
Altai Nuurs	coking coal	Mongolia	Order of Magnitude

Progress of a project

The evolution of a project from target testing to commissioning can take ten to 20 years involving a series of study stages to reach investment approval and implementation.

The early stages represent a progressive increase in confidence in the technical and economic parameters used to decide whether the project meets Rio Tinto's investment criteria. Early stages of project evolution are broadly termed Exploration. These stages of work are the responsibility of the Exploration group.

Target generation and testing involves the progression from concept to proof of mineralisation at the prospect.

A Project of Merit is defined where mineralisation has been identified through

drilling to be of a grade and quantity sufficient to be potentially economic when compared to peer deposits currently in production.

Projects which attract the interest of the relevant Rio Tinto product group are progressed to Order of Magnitude Study. Order of Magnitude is an assessment of all possible options to establish if there could be a viable project, and whether its potential value is sufficient to justify committing significant sums of money to a detailed investigation programme. Any potential "showstoppers" are identified during this stage.

A successful Order of Magnitude Study results in the declaration of a discovery and the transfer of project management from the Exploration group to the relevant

Rio Tinto product group. Further work on these projects is broadly defined as Evaluation.

The two main evaluation study phases are Pre-feasibility and Feasibility studies. Pre-feasibility involves an evaluation of project options. This results in a much clearer understanding of the preferred project concept and the key issues. The Feasibility study sees the focus switch to optimisation and engineering of a single scenario identified through the Pre-feasibility study. This finally freezes and fully defines the scope in order to tie the project down with a high degree of certainty as to the specifications of what will be constructed.

Opportunities are tested and screened by several different stages of work

