Business overview and analysis of rio tinto

Introduction: Rio Tinto is a leading international mining group, combining Rio Tinto plc, a London listed public company headquartered in the UK, and Rio Tinto Limited, which is listed on the Australian Stock Exchange, with executive offices in Melbourne. The two companies are joined in a dual listed companies (DLC) structure as a single economic entity, called the Rio Tinto Group.

1> Core business:

a. Major products or brands:

Rio Tinto is a leader in finding, mining and processing the earth’s mineral resources. The Group’s worldwide operations supply essential minerals and metals that help to meet global needs and contribute to improvements in living standards.

Rio Tinto’s activities span the world but are strongly represented in Australia and North America with significant businesses in South America, Asia, Europe and southern Africa. And, major products include: alumina, aluminium and bauxite, borates, coal, copper, diamonds, gold and silver, gypsum, iron ore, molybdenum, salt, sulphuric acid, talc, titanium dioxide, uranium and other products.

(Rio Tinto Alcan – Business overview : Home -> Who we are -> Business overview)

Spanning the globe

We are the aluminium business of Rio Tinto. We maintain large scale, long life, efficient operations. We have over 24, 000 employees and are active on

six continents and in 27 countries. This includes a significant presence in Australia, Canada and France.

Our operations

Our operations are divided into two business units: Bauxite and Alumina, and Primary Metal.

We currently own, operate or have interests in:

6 bauxite mines and deposits in 4 countries

10 alumina refineries in 5 countries

23 aluminium smelters in 10 countries

12 power generating plants including 9 hydroelectric facilities

Annually we produce approximately:

35 million tonnes of bauxite (2008)

9 million tonnes of alumina (2008)

4 million tonnes of aluminium (2008)

Our global and Primary Metal headquarters are in Montreal, Canada. Bauxite and Alumina is headquartered in Brisbane, Australia.

Our products

Our products are derived from all stages of the aluminium production process:

Mining bauxite

Refining bauxite into alumina

Smelting alumina to produce aluminium

Manufacturing a large variety of fabricated, semi-fabricated aluminium and composite products

AP smelting technology

Our AP smelting technology is the industry benchmark in energy and operating cost efficiency . We continue to invest in breakthrough technologies that drive step changes in:

Energy consumption

Environmental impact

Full economic cost)

b. Business generates the most revenue:

c. Business generates the most profit:

d. Business will drive growth in the next decade:

e. Since 2007, how successful this company has been?

2> Corporate social responsibility

Every year, we report on our sustainable development performance through a number of channels. In addition to the summary of our performance and

sustainable development highlights in our Annual report, we publish sustainable development programme information, progress against our goals and targets and performance data on these web pages and we also report under other voluntary commitments.

(Why is it CSR?

Stakeholder engagement is a key aspect of corporate social responsibility because it

enables a shared understanding of a company’s impacts with its stakeholders and

the company. For Rio Tinto, it has been a decade-long journey that demonstrates the

Group’s seriousness, through its desire to learn from different partnerships, in taking

responsible actions. Its approach goes beyond compliance and its partnerships

approach has gone from sponsorship to corporate partnerships that bring value to each

partner by harnessing positively the synergy and commonality they have. – Article 13 and CBI – CSR Case Study Series, March 2006)

(Social Responsibility

Social responsibility is expressed in actions to protect our own safety and that of our colleagues, to protect the environment, and to make an effort to improve communities where we work and live – BORAX)

3> Crisis management

4> Strategy: Rio Tinto’s objective is to maximise total shareholder return by sustainably finding, developing, mining and processing natural resources.

This company’s strategy is to invest in and operate large, long term, cost competitive mines and businesses, driven not by choice of commodity but rather by the quality of each opportunity.

A fundamental part of this is to deliver value while operating in an ethically and socially responsible manner, and remaining committed to long term sustainable development.

To deliver this strategy the Group concentrates on:

The discovery of Tier 1 (large, low cost) orebodies that will safeguard our future cash flow

The development of Group assets into safe and efficient large scale, long life and low cost operations to ensure the Group can operate profitably at every stage of the commodity cycle

Operating in an ethical and socially responsible manner that maintains Rio Tinto’s reputation and ensures ongoing access to people, capital and mineral resources

Putting long term sustainable development at the heart of everything the Group does

At Rio Tinto, there is always a suite of quality projects under development or appraisal, and a portfolio of global exploration projects to ensure profitable development opportunities for the future

(strategy: Our strategy

Our strategy of investing in large, long term, cost competitive mines and businesses means that we operate on extended time horizons. Some of our projects last 40 years or more from mineral discovery through to closure, representing large scale, long term investments in fixed capital, often situated in remote locations.

These long term commitments provide opportunities for us to plan, implement and deliver sustainable contributions to social wellbeing, environmental stewardship and economic prosperity, within our strong governance systems.

Our focus on sustainable development provides the framework in which our business operates. This allows us to maintain a highly regarded reputation that ensures ongoing access to people, capital and mineral resources. This in turn helps us to deliver better return for our shareholders, manage risk effectively, reduce environmental impacts, cut operating costs, attract and retain high calibre employees and provide more business development opportunities. These factors help differentiate Rio Tinto from its competitors and contribute to our goal of being the undisputed sector leader in creating value for our stakeholders.

The minerals and metals produced at our operations contribute to society’s needs, creating wealth to support community infrastructure, health care and education programmes, and delivering financial dividends for our shareholders. Our activities also provide the means and opportunity to develop new approaches to solving the world’s environmental and human development challenges, such as climate change and poverty.

We also recognise that, if not managed appropriately, some aspects of our activities have the ability to detract from sustainable development, such as options for the future use of water and land; amenity impacts on local communities; and greenhouse gas emissions from our operations and the use of our products.

We have developed and implemented a structured framework to ensure that we meet the goal of contributing to the global transition to sustainable development. This framework contains the “ must have” building blocks, which represent Rio Tinto’s high level business drivers.

Our global code of business conduct, The way we work, reinforces our commitment to integrate sustainable development thinking in the way we make decisions about finding, acquiring, developing, and operating assets around the world.

This approach begins with our corporate policies, which are supported by strategies and standards that lay down the minimum acceptable requirements for behaviour or operating conditions. Our policies are also supported by a range of leadership tools and accountabilities to ensure appropriate implementation across the Group. We monitor and report

against our performance using established indicators and metrics with a suite of Group wide goals and targets.

By communicating and raising awareness of our approach to stakeholders, we are embedding a sustainable development culture that touches every part of our organisation.

We use a global leadership competency model, Leading at Rio Tinto, to help our people understand what is expected of them. This requires seven leadership competencies to be demonstrated at each level of our organisation, including promoting sustainable development. Leading at Rio Tinto is being incorporated in our recruitment and selection, performance management and development planning processes.

Further details on our approach to sustainable development and our performance can be found in our Annual report, in these sustainable development web pages and in our business units' own sustainable development reports.)

a. Markets Rio Tinto has focused on:

We are strongly represented in Australia, North America and Europe which account for 90 per cent of our assets, and we have significant businesses in South America, Asia, and southern Africa.

b. Its score strengths:

c. Would you describe the company as innovation?

Rio Tinto's website:

Operations & financial report

Technology and Innovation group

The Technology and Innovation group (T&I) had its origin in the combination of the Operational and Technical Excellence (OTX) organisation and the Group’s Improving performance together business improvement work in the areas of mining, processing, asset management and strategic production planning.

T&I’s focus is to be a partner in value delivery with Rio Tinto businesses by:

supporting implementation of leading practice and high value projects;

developing and implementing strategic innovation technologies; and

evaluating the technical risk of major capital and growth projects.

The group comprises a core team of technology professionals and a number of technology centres that develop leading practice and drive sustainable improvement in the areas of health, safety and environment (HSE), mining, processing, asset management, strategic production planning, and project development and evaluation. Key elements are common and visible measures of operational effectiveness, the improvement of analytical tools and enhanced functional development of staff capability.

A further centre focuses on step change innovation to confer competitive advantage in development of orebodies likely to be available to Rio Tinto in the future.

The total staff in T&I at year end was 387, compared with 368 at year end 2006. The increase was due to the higher level of growth activity characterising the resource sector.

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23 August 2010

Rio Tinto and step-change innovation

Speaker: John McGagh, Head of Innovation

Location: Sydney Convention and Exhibition Centre, Australia

Presentation slides are available at the bottom of the page

I would like to thank the organizers of the ASEG conference for providing the opportunity to speak to you today. I must say that it is daunting for Chemical Engineer to be standing in front of so many geophysicists.

Today I will cover three concepts. Firstly I will set out the view that Rio Tinto as a miner has developed in confronting the challenges that lay ahead for our industry in the face of the unprecedented demand for minerals driven by emerging economies. Secondly, I will frame the rationale behind Rio Tinto’s ongoing efforts to become the technical leaders in our sector and explain why we believe this provides a way for us to capture competitive advantage. Thirdly, towards the end of the presentation, I will deliver a report to the conference on the latest developments regarding the VK1TM (*) instrument and make a number of milestone announcements.

As we can see from the slide large surface tier #1 Ore Bodies continue to play their part in supporting the global demand for minerals, however, entropy is a one-way street and these ore bodies are depleted over time. Whilst we husband mineral resources with ever improving efficiency and effectiveness, clearly, in the face of current demand we have to find replacements for the middle-aged ore bodies and also turn our minds to the creation of new resource from material we had previously considered to be waste. The members of the exploration community have a critical part to play in finding new resources. Before moving on from this slide I would like to leave you with a mental construct as we look at the visual images of these mid- to late-life ore bodies. In the period from the start of the Industrial Revolution to today the mineral industry has played its part in providing the raw materials to what we now call developed nations, this allows approximately 1. 3 to 1. 5 billion people to reach a developed standard of living; for the purposes of this presentation I define a developed standard of living as being any economy above US$15, 000p. a per capita GDP. Give or take a few years the elapsed time from the start of the Industrial Revolution to today is around 230 years. I will leave you with this thought and will pick up this thread a little bit later in the presentation.

Looking at the slide on the screen we return to the problem of finding replacement tier #1 ore bodies, the slide shows the relative size, date of discovery and depth of discoveries for copper. As we see from around the 1950s/1960s through to today we observe a deepening trend in large discoveries. I would like to point out the Resolution Copper discovery which shows at ~1500m and is open at depth, this is a joint venture between Rio

Tinto and BHP Billiton. Whilst Resolution Copper is a significant resource it is very deep, the technical challenges to build a mine feeding greater than 100, 000 tonnes/day from a depth of approximately 1. 5 to 2. 0 km with ambient rock temperatures of around 85°c is significant. We will need new technology to develop the super mines of the future, also, we will need new technology to operate the super mines of the future if we are going to cater for developing nations copper demands. Rio Tinto's mine-of-the-futureTM program is, amongst other activates, pursuing a range of technologies that will help bring these deep massive underground block cave operations into economic production.

I draw your attention to the slide on the screen. Here we depict in no order or preference a snapshot of faces from the developing nations of the world. These people aspire to the standard of living that we are familiar with, they wish to develop their economies and in doing so enrich their lives; to do this they will require minerals. It is quite possible that the mineral industry will have to provide similar quantities of minerals to around 1. 3 to 1. 5 billion people in the newly developing nations in the next 25 to 30 years to the quantities provided to today's developed nations over the last 230 years. These are rough approximations designed to illustrate the magnitude of the challenge in front of us, the numbers are realistic and do paint a picture. Over the next 25 to 30 years approximately 1. 3 to 1. 5 billion people will move beyond $5, 000 GDP per annum to $15, 000 GDP per annum and in doing so they will build cities, build infrastructure, build new places of learning, build new homes and factories and also build places for

relaxation. Without minerals this will not be possible, therefore, our industry does have a challenge ahead of it.

The slide on the screen graphically illustrates what happens when developing nations rapidly develop. Shenzhen, as we see on the screen, radically transformed itself in approximately 25 years. This picture tells a story that is likely to be replicated around the developing world in years to come. This infrastructure demands minerals and we have to rise to this challenge.

We can observe the effect that the current level that mostly Chinese industrialization has had on our industry over the last decade or so, I will use Rio Tinto Iron Ore as a graphic example. We are rapidly developing in Western Australia a complex of mines that are required in order to service the demand from developing nations. As you can see it took around 35 years for Rio Tinto Iron Ore to reach the 100 million tons per annum level of shipments from their operations. It took only seven years to add the next 100 million tons of capacity. We are today planning to take this operation to 320 million tonnes per year capacity and possibly beyond. These levels have not been achieved by just expanding one or two operations, as you see we have opened multiple operations and currently have 12 mines producing on the Iron Ore network. It is quite possible that we will be opening a mine every two years in order to react to the demand that we anticipate. This level of expansion brings a wide range of technical challenges. We have to manage multiple deposits all with a differing and unique geology/chemical composition; we have to extract product very efficiently; we have to embrace ever increasing standards of safety and environmental

performance, we have to be highly selective in how we mine/blend and then move this material through a complex web of processing plants and rail connections to arrive at a port infrastructure that can be up to 300 km away from the mine in order to deliver a blended quality that customers wish to buy. In tackling these technical challenges we are using our internal resources and those of our technical partners to bring innovation into our industry, we do this because it is simply good business. By way of example, the whole of the Iron Ore network is now controlled from one single building in Perth, Western Australia; this control centre is situated approximately 1300 km away from the closest mine. The use of high technology, advanced communications, advanced computing systems, state-of-the-art visualization systems to aid in planning in combination with remote operations and remote control provides Rio Tinto Iron Ore with a competitive advantage today. This is just the start, we in Rio Tinto can see competitive advantages being delivered through this and other technological advances for decades to come.

Some technical developments take a long time and we will talk about VK1TM later, but, I wish to stress that when we see competitive advantage we can apply the technical expertise and management focus to implement developments in a rapid manner. We moved from original idea through to switching all of our Iron Ore Operational control to the purpose built proprietary Perth operations control centre in just over three years, when we see value we can and do move very quickly. We believe that demands we are facing as an industry means we do have to react quickly. We believe that the days when major mining houses can sit back and rely upon the

suppliers to use their balance sheet and their resources to provide technical solutions that the mining houses may just possibly buy are gone. Our traditional, indeed new, suppliers have an important part to play in helping us create the mine-of-the-futureTM, but, Rio Tinto recognizes that it must take a much greater role in shaping the technologies required for the the mine-of-the-futureTM and in doing so we must be prepared to take on additional, but controllable, risk and in recognition we expect higher rewards for our shareholders.

If we now look at the next slide in the pack this is the copper story. At the macro level we see the same trend as we see demonstrated in our Iron Ore business. It is quite possible that over the next 25 to 30 years the global economy will consume about the same amount of copper that it is consumed over all of human history to date. Think about the Resolution Copper example, this demand brings with it the challenge of new technologies to provide new levels of mineral recovery. We vision the mine-of-the-futureTM today because it ensures we will be both effective and efficient as we thrive tomorrow.

The slide summarizes, in bite-size chunks, a range of challenges that Rio Tinto envisions occurring in the not too distant future. New technologies will provide new opportunities to tackle these challenges, this bodes well for what we believe will be an exciting technological future for both our industry and for the people want to work in our industry in the years to come.

I get asked to explain what we actually do in Rio Tinto Innovation? In reply I use the very simple construct that sits on the screen behind me now. Put

simply, Rio Tinto innovation exists to enable Rio Tinto’s business units to do tomorrow what they cannot do today. When we look at our industry through these eyes we see a never-ending set of technical challenges that offer true value adding and shareholder wealth generating opportunities. Rio Tinto Innovation does not pursue technology for technology’s sake, we pursue technology because it is a good business investment and it provides our company with competitive advantage.

We will move on to illustrate some of the technologies residing within Rio Tinto under the Innovation banner. I will run for you a six minute video, the first and last minute contains important corporate positioning, the central four minutes depict a number of the technologies that we are working on and can talk about. These comprise autonomous surface mining in many forms, rapid underground development that will allow us to bring on the Resolution copper’s of the future into production in an efficient and effective manner, exciting developments in the advanced recovery of minerals from what was considered to be waste streams, we also touch upon the fantastic science behind VK1TM and we discuss a number of exciting flotation related developments. We currently have in excess of 65 opportunities in our Innovation portfolio of which we can show you handful today. As I said before, given the exciting future of our industry we have many areas in which step change technology can be applied in order to create the mine-of-the-futureTM. We should now run the video.

I could not present at this conference without directly touching upon VK1TM. I will give you some time to digest the slide on the screen as I reflect on some of the background behind this project. It is my honour to know Dr.

Fank Van Kann, Frank is the inventor and brains behind this technology. Frank explained to me that some 31 years ago during a meeting with the then Anaconda Copper Company he had put the pieces of a new gravity exploration technology together and became convinced that he could build a better gravity gradiometer. You probably know that Frank is a physicist from Australia, completing his PhD in Western Australia and his post-doctorate at Stanford. Frank has lived with the VK1TM dream for 31 years. Rio Tinto became co-travellers in this technology some 21 years ago when Rio Tinto purchased BP Minerals. Many things have happened in the intervening period, material sciences got better, cryogenic systems have gotten much better, high precision micro manufacturing processes have gotten much better and the power of computing systems has increased beyond all recognition. Now is the time for the VK1TM instrument and I am pleased to announce that we are the end of the beginning of what has been a 31 year journey.

I will now run a short two minute video that takes you inside the laboratory as the team was assembling and pre-flight testing the instrument, the video will show you the instrument on the hexapod during the ground testing phase. I am delighted to be able to announce that on Saturday, 21 August 2010 a fully configured cryogenically cooled operational VK1TM instrument took to the air in Western Australia. The instrument provided data. Rio Tinto is now firmly on the path that it set out for itself 21 years ago which is to achieve 1Eo sensitivity at 1Hz. This is a very exciting time for Rio Tinto and I would like to offer my personal congratulations to VK1TM development team.

I trust you enjoyed the video. I’m also pleased to announce that we have commenced construction of the second, improved, instrument we have designated VK1BTM. We do have a pathway to the next evolution the technology which is designated VK2TM, but that story is for a later date.

I would like to now wrap up this conversation with you by reflecting on and summarizing what we have covered in the presentation. Rio Tinto takes a long-term view on research and development and given the exciting future ahead for this industry we believe that innovation is key to unlocking future value. Rio Tinto has positioned itself to be the technology leader in the sector and we do this with full knowledge and deliberate planning. Over the last 5 to 6 years Rio Tinto has increased its funding in innovation by over an order of magnitude, I hope that this presentation has set out the rationale for doing this; the rationale is simply to improve business value and deliver competitive advantage.

We did not abandon our innovation investment during the global financial crisis as some of our competitors did. The investments that we make in Innovation are proportional to the shareholder value that we are targeting to capture through the introduction of the step change technologies; this is the driving rationale behind our mine-of-the-futureTM program.

VK1TM is exciting for Rio Tinto as we now have a path to 1Eo at 1Hz sensitivity, the value we see is considerable and the shareholder potential is also considerable, therefore, VK1TM will be appropriately resourced to capture this value. We also believe in leveraging synergies, not 7km from this venue sits the Rio Tinto Centre for Surface Mine Automation. The Centre

of excellence is run by Prof. Hugh Durant-Whyte and comprises a collection of arguably the best civilian robotics brains. At the heart of our surface mine autonomy aspiration sits data fusion, here lies the synergy opportunity; combining the gravity gradiometer signals available from VK1TM with other fused data across a wide range of exploration data-sets provides an exciting pathway for new avenues of exploration that will be pursued by my colleagues in Rio Tinto Exploration.

This story will evolve over time and I'm sure that some representative of Rio Tinto will keep this prestigious gathering suitably appraised of progress.

Before I complete my presentation I would like to personally offer my thanks, and Rio Tinto's thanks, to the Geological Survey of Western Australia and Geosciences Australia making available the Karring test site in Western Australia that will be used as a test bed for VK1TM. This is an excellent facility and a true national resource for Australia, we do thank both organizations for their vision in creating the facility.

This completes my presentation. I would like to personally thank everyone in the audience for taking the time to listen to my story and I wish you well for the remainder of your conference.

Please note; VK1 is a trademark of Rio Tinto, registered in Australia

5> Vission, mission, goals:

a. Vission: Rio Tinto's vision of being the global mining leader means maintaining or achieving sector leadership, including operational excellence, sustainable development, exploration and innovation.

The global reach of our operations and projects gives us the ability to respond to rising demand for metals and minerals from developed and emerging economies. Our diverse portfolio, high quality assets, and expertise in technology and marketing give us the capability to supply a wide spectrum of customers and markets. Effective supply chain integration with our operations and Rio Tinto Marine ensures that we meet customer needs and create value for ourselves by supplying the right products and services at the right time to the right place.

Rio Tinto has a strong reputation for operational excellence and sustainable development. This reputation gives us our licence to operate, and it is essential that we uphold it and build upon it.

Our assets and reputation give us the capabilities to operate and grow our business on a global scale. And as we do so, we also have the scope and expertise to bring long term benefits to our local communities and host countries.

b. Mission:

Rio Tinto’s mission is to be the resources company of choice. The way in which it operates is outlined in its statement of business practice The way we work. It summarises the Group’s principles and policies for all employees. Underpinning the standards are corporate policies that cover communities, employment, environment,

human rights, land access, occupational health, political involvement, safety and sustainable development. The Group sets global standards applicable

across all itsoperations, so there is a consistent approach regardless of the locality. This aspect is important to Rio Tinto as it recognises that a local issue can influence its global reputation

(Mission

Rio Tinto Borax will maximize its long-term value by remaining the global borate supplier of choice. – RORAX)

c. Goals:

Rio Tinto’s objective is to maximise total shareholder return by sustainably finding, developing, mining and processing natural resources.

Goals & targets

We believe it is important to set targets across a range of key sustainable development metrics so that we can continually drive performance improvement and manage risk.

Our targets are designed using the following principles:

They focus on internal performance, while considering external drivers.

They must be relevant to the nature of our business.

They need to be measurable and transparent, consistent with other Rio Tinto objectives.

They must include a degree of stretch, while being realistically achievable with appropriate management.

Our board endorses our sustainable development targets and receives regular updates on our progress and the key issues affecting performance.

We set new Group targets across a range of sustainable development metrics during 2009

Environmental stewardship

Target or goal

Result

Comment

A 6% decrease in total greenhouse gas emissions per unit of commodity production by 2013 (from 2008). We are also targeting a further 4% reduction by 2015, to deliver an overall 10% decrease

Positive trend

A 7. 5% decrease in total greenhouse gas emissions per unit of commodity production in 2009

A 6% reduction in freshwater used per tonne of product by 2013 (from 2008)

Negative trend

A 4% increase in fresh water used per tonne of product in 2009

Social wellbeing

Target or goal

Result

Comment

A goal of zero injuries and zero fatalities

Positive trend

Four people were fatally injured while working at Rio Tinto managed operations during 2009. We achieved a 16% improvement in our all injury frequency rate (AIFR) which we use to monitor progress toward our goal of zero in