# Blackswan Equities

9 October 2013

# REWARD MINERALS LTD

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# DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS

## **EVENT**

• We initiate coverage of Reward Minerals Ltd (RWD).

#### **ANALYSIS**

- Near surface brine deposit containing premium value potash. RWD is advancing the development of its 100%-owned Lake Disappointment potash project in Western Australia. The project hosts an Indicated Resource of 24.4Mt of Sulphate of Potash (SOP). This premium form of potash is low in chloride, making its use essential for high-value and specialty crops. The greatest projected demand growth for SOP is from China and India which are the largest producers of crops such as tobacco, fruits and vegetables. SOP resources are far more strategic and geologically scarce than standard potash, thus making RWD an attractive takeover target.
- Targeting low cost solar brine production with a long life.

  We estimate that Lake Disappointment could produce 400ktpa of SOP for a capital cost of \$187m and a total cash cost of \$264/t (CFR). We derive an NPV<sub>10%</sub> of \$238m for Lake Disappointment, based on a long term price forecast of \$545/t (CFR). The latest quoted price for SOP by Compass Minerals is US\$640/t (FOB). By virtue of being a brine deposit, Lake Disappointment's operating costs could be in the lowest quartile of the SOP cash cost curve and the regenerative nature of the brine means that its operating life should be long-lasting.
- Recent \$4.9m raising will fund infill drilling and engineering studies. An infill and extensional drilling program will commence this month. But more importantly, pumping trials and demonstration trenches will be carried out to determine the brine recovery. This is the most significant de-risking activity and will determine how quickly RWD can draw down the potash-containing brine. The Company is also currently finalising the process flow sheet and mass balance. All this work will culminate in the release of a Scoping Study in early 2014.

## **EARNINGS IMPACT**

A potentially high margin and long life business.
 We forecast that RWD could generate an average EBITDA of \$118m per year once Lake Disappointment is at full-scale production.

# RECOMMENDATION AND PRICE TARGET

- We initiate with a BUY and a Price Target of \$0.50/share.
- Significant value to be unlocked as Lake Disappointment is de-risked.

  Our price target is based on a P/NAV ratio of 0.5x, which reflects the fact that many of the technical parameters of the project are still being refined.

			9 Octob	er 2013
Company Information	on			
Code				RWD
Last Price				\$0.19
12 Month Price Target				\$0.50
Total Shareholder Return				163.2%
NAV				\$0.98
Shares on Issue				98.4m
Market Capitalisation				\$18.7m
Free Float				73.7%
Monthly Turnover				\$0.3m
<b>Financial Summary</b>				
	CY12a	CY13e	CY14e	CY15e
Revenue (\$m)	0.0	0.0	0.0	0.0
EBITDA (\$m)	-0.9	-0.2	-3.6	-3.6
D&A (\$m)	0.0	0.0	0.0	0.0
EBIT (\$m)	-0.9	-0.2	-3.6	-3.6
Net Interest (\$m)	0.2	0.0	0.3	-0.1
Tax (\$m)	0.0	0.0	0.0	0.0
Underlying NPAT (\$m)	-0.7	-0.2	-3.3	-3.7
Abnormals (\$m)	0.0	1.0	2.0	3.0
Reported NPAT (\$m)	-0.7	-0.2	-3.3	-3.7
EPS (¢)	-1.0	-0.2	-2.6	-1.3
EPS Growth (%)	n/a	n/a	n/a	n/a
DPS (¢)	0.0	0.0	0.0	0.0
Cash (\$m)	2.9	5.3	2.2	54.3
Debt (\$m)	0.0	0.0	0.0	56.2
Debt/Equity (%)	0.0	0.0	0.0	64.8
Interest Cover (x)	n/a	n/a	n/a	-2.3
ROE (%)	-5.3	-0.9	-13.3	-4.8
ROA (%)	-5.1	-0.9	-12.9	-2.8
NTA Per Share	18.5	18.7	19.4	26.6
P/E (x)	n/a	n/a	n/a	n/a
EV/EBITDA (x)	n/a	n/a	n/a	n/a

#### **Share Price Performance**



## **Analyst Details**

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## **INVESTMENT HIGHLIGHTS**

# . Natural brine deposit containing premium value Sulphate of Potash

Our positive long term view on potash is underpinned by the rapidly growing world population and rising living standards. Fertilisers are considered a later cycle commodity (as opposed to steel) which should experience demand growth as the industrialisation phase in a number of developing countries winds down. This was seen historically in the US where there is a clear relationship between peak steel production per capita occurring in the 1960's and the beginning of an increase in calories consumed per capita.

Global potash production is 64Mt, predominantly comprising of 55Mt of Muriate of Potash (MOP) and 6Mt of Sulphate of Potash (SOP). Lake Disappointment's natural brine characteristics mean it will produce SOP. SOP is superior to MOP because it does not contain chloride, which has a toxic impact on crops. Half of the world's SOP is produced from upgrading MOP and accordingly, SOP sells at a circa 30% premium. Since 2011 we have seen a widening in the price differential between these two products. We believe this trend could continue, given that SOP is far more strategic and geologically scarce than MOP.

# · Advanced stage asset with low capital intensity and competitive operating costs

RWD's Lake Disappointment project hosts a near-surface brine resource, containing 24.4Mt of SOP. Not only does Lake Disappointment have favourable brine chemistry, it benefits from a very hot and dry environment with excellent evaporation conditions. By virtue of being a brine deposit and using low cost solar evaporation techniques, the project's capital intensity and operating costs should be very competitive. There are a number of brine operations around the world, including Rio Tinto's Lake MacLeod salt operation in Western Australia.

RWD has completed all of the Native Title formalities for the Lake Disappointment project and the Mining Lease has been granted by the Department of Mines and Petroleum. The Company has an Indigenous Land Use Agreement in place and it was registered with the National Native Title Tribunal in December 2012.

# A strategic asset trading at a steep discount to our valuation

We derive a NAV per share of \$0.50/share for RWD, after factoring in significant equity dilution for project financing. While we currently forecast a total funding requirement of \$225m, we would expect RWD to pursue multiple avenues for project financing that do not involve this level of dilution, such as joint ventures and off-take arrangements.

Figure 1. Equity Valuation and Price Target

Attribute	Unit	Pre-Financing	Post-Financing
Lake Disappointment NPV <sub>10%</sub>	(\$m)	238.5	238.5
Project Financing Net Cash / (Debt)	(\$m)	0.0	58.0
Exploration	(\$m)	0.0	0.0
Corporate	(\$m)	(15.4)	(15.4)
Cash	(\$m)	5.3	5.3
Debt	(\$m)	0.0	0.0
Unpaid Capital	(\$m)	0.0	0.0
NAV	(\$m)	228.4	286.5
Shares Outstanding	(m)	98.4	291.8
NAV Per Share	(\$/share)	2.32	0.98
Price Target (P/NAV: 0.5x)	(\$/share)		0.50

Source: Blackswan Equities

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**



## **POTASH INDUSTRY - DEMAND**

## Increasing middle class to provide support for a later cycle commodity

Potash demand is expected to be underpinned by a rapidly growing world population and an increasing middle class, which will drive an increase in the number of calories consumed per capita. Given that the world's arable land is declining at the same time, the agricultural sector will need to increasingly rely on the use of fertilisers in order to improve agricultural yields. Potash is a key non-replaceable ingredient in fertiliser.

The potential impact of this macro trend was on display in 2007 and 2008 when potash prices spiked sharply in response to the world food price crisis. This event was caused by droughts in grain-producing nations and rising oil prices, coupled with falling world food stockpiles at the time. Prices have since moderated and in recent years, global potash demand has been growing at a lower than expected pace despite high crop prices and favourable farmer economics.

Potash prices are strongly correlated with food prices. In principle, a weak harvest will drive food prices higher and boost the incentive of farmers to increase production for the next crop cycle. Based on quarterly prices, the correlation between food (IMF Food Price Index) and potash prices appears to be strongest with prices on a six month lag.

#### POTASH INDUSTRY - SUPPLY

#### Incentive price for new supply is likely to be higher than current prices

The issue clouding the outlook for potash prices is the significant amounts of identifiable supply to come onstream by way of underutilised capacity of existing producers and large undeveloped greenfield projects. We believe this is no different to the iron ore industry which has seen a fivefold increase in prices, but is yet to see the anticipated supply response.

Similar to iron ore, we believe long term potash prices will be supported by high barriers to entry, a concentrated market structure and a very high capital intensity for new projects. If prices remain in the forecast range of US\$300/t to US\$400/t, we believe much of the anticipated supply is unlikely to eventuate.

High barriers to entry are evident by a concentrated supply-side, both geographically and at a corporate level.



Figure 2. Key Potash Producing Jurisdictions of the World

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# POTASH INDUSTRY - TYPES OF POTASH

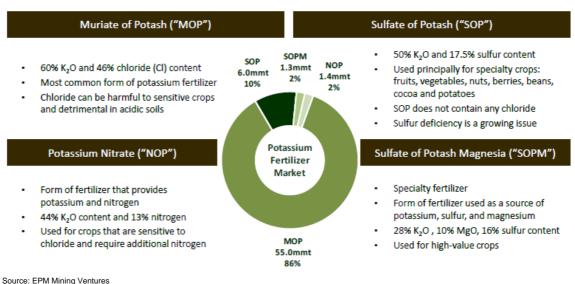
# . We believe it is important to distinguish between MOP and SOP

Fertilisers include the three primary macronutrients of nitrogen (N), phosphorus (P) and potassium (K). These nutrients represent 60%, 24% and 16% of fertiliser demand, respectively.

The K used in fertilisers is found in salt called potash, which is sold in five forms. Global potash production is approximately 64Mt, predominantly comprising of 55Mt of Muriate of Potash (MOP) and 6Mt of Sulphate of Potash (SOP).

RWD's Lake Disappointment project hosts an SOP resource, which is important to distinguish given we believe SOP will benefit from more attractive market dynamics. In short, SOP is a superior product which is more geologically scarce and will be more supply constrained than MOP.

Figure 3. Potash Market Overview



# Muriate of Potash

MOP is also referred to as KCl and contains 46% chloride. The large deposits of potash around the world contain a mineral called sylvite which provides the majority of the supply to the market. MOP is most appropriate for the commercial cultivation of the carbohydrate crops including wheat, oats, and barley.

MOP ore is typically extracted via underground mining and conveyed to the surface, where it is crushed. Using a flotation process, salt and clay particles are removed, the brine solution is evaporated, and the crystallised potash is sized by screening and then sold.

Most of the world's new MOP developments are very capital intensive, involving deep underground mines.

The marginal cost of production for MOP is circa US\$250/t, with Mosaic Company being at the top end of the industry cash cost curve.

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# · Sulphate of Potash

SOP is 17.5% sulphur and contains no chloride. It is a premium value product which is used principally for specialty crops such as vegetables, fruits, cocoa and tobacco. SOP is superior to MOP because it does not contain chloride, which has a toxic impact on many food plants, especially leafy plants.

Specialty crops generate ten times the revenue of commodity crops such as corn. For this reason, many farmers focus on this higher value segment of the market, which is supportive for SOP demand. As the largest producer of tobacco, fruits and vegetables, China represents the greatest SOP consumer globally and accounts for more than 40% of total demand.

Figure 4. Plants that Require SOP versus MOP



Source: IC Potash Corp

SOP can be produced from primary and secondary sources, with each source supplying approximately 50% of the SOP market. Primary production comes from brines in China, US and Chile, underground mines in Germany and potentially polyhalite in the UK and US. Secondary production comes from the processing of MOP with sulphuric acid, known as the Mannheim Process.

Production of SOP from the Mannheim Process has a cost of circa US\$560/t and provides cost support for SOP prices. Brine producers, such as RWD's proposed Lake Disappointment operation, have the lowest cost of production. Although aspiring polyhalite producers are touted to have a potentially lower cost, there is currently no commercial production from this source.

Only four companies produce more than 400ktpa of SOP and three of these use the expensive Mannheim Process. The table below outlines the existing producers of SOP. We believe RWD has the potential to be a key a supplier in this market if it is successful in achieving a 400ktpa production rate.

Figure 5. Sources of SOP Supply and Existing Producers (EPM Mining Ventures Presentation)

	Cı	urrent Production Methods	Leading SOP Producer	rs		
ary	Processes potassium-rich brine into SOP     Uses low-cost solar evaporation	Company	Country	Process	Production Capacity (ktpa)	
Priman	Processing	Can be pumped from underground deposits or surface salt lakes	SDIC Luobupo	China	Brine	1,300
•		Efficiency is environment dependent	K+S Kali	Germany	Mannheim / Reacted Salts	1,200
			Tessenderlo Chemie	France / Belgium	Mannheim	750
	Sulfate	Converts KCl to SOP using sulfate salts	Qingshang	China	Mannheim	590
		Very rare – only a few producers worldwide	Compass Minerals USA / 0	USA / Canada	Brine / Reacted Salts	333
	Salts Reaction	Heavy reliance on raw materials with exposure to cost	Migao	China	Mannheim	320
condary	neaction	fluctuations	SQM	Chile	Brine	300
Ö			Yara	Finland	Mannheim	200
Sec		Converts MOP to SOP using sulfuric acid	Rusal	Russia	Mineral Ores	180
		Energy intensive process  AOD in primary in the driver primary of COD.	Kemira Kemi	Sweden	Mannheim	100
	Process	MOP is primary input – drives price premium of SOP     Hydrochloric acid by-product	Gansu Xinchuan Fertilizer Corp.	China	Mannheim	100
			Shijiazhuang Hehe	China	Mannheim	100

Source: EPM Mining Ventures

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## POTASH INDUSTRY - PRICES

# • Market pricing for SOP

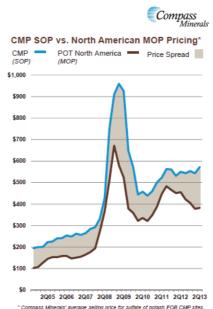
SOP historically sells at a circa 30% premium to MOP, which is underpinned by the fact that more than 50% of global SOP is actually produced by upgrading MOP using the Mannheim Process. Since 2011, there has been a divergence in price between these two products. We believe this trend could continue given that SOP supply is more constrained and suffers from geologically scarcity.

The latest quoted price for SOP by Compass Minerals is approximately US\$640/t (FOB North America).

Figure 6. SOP and MOP Price Chart (Slide from Compass Minerals' Business Update August 2013)

# The SOP Advantage

- Historically sells at ~\$100-\$150 per-ton premium to commodity muriate of potash (MOP or potassium chloride)
- Has low chloride. When applied to chloride-sensitive crops, SOP can:
  - strengthen root systems
  - increase nutrient uptake
  - increase total yield and yield quality
- Increases application flexibility
- Provides sulfur, a critically important secondary nutrient
  - Supports plant functions that can affect yield, quality and marketability
- Offers significant cost savings over alternative low-chloride options



\*Compass Minerals' average selling price for sulfate of potash FOB CMP sites, compared to the North American average net selling price of potash reported by Potash Corporation of Saskatchewan, Inc., converted to short tons.

Source: Compass Minerals

#### · Recent market manoeuvrings

For the past decade, 65% of the world's potash production has been marketed by an oligopoly, Canpotex (representing PotashCorp, Mosaic and Agrium) and Belarus Potash Company (representing Uralkali and Belaruskali). Unlike other commodities, potash producers often operate at less than full capacity. Accordingly, producer discipline had previously ensured that high margins are consistently maintained.

In July 2013, Uralkali withdrew from its marketing joint venture with Belaruskali. Uralkali, the industry's lowest cost producer with the most unused capacity, publicly stated that in future it would prioritise volume over price. This has seen potash prices weaken significantly in recent months.

However, we believe BHP's move into the industry through the advancement of its US\$14bn Jansen project (following the failed takeover of Potash Corp for US\$40 billion in 2010) was likely to see the previous oligopoly challenged in any case. BHP's aggressive pricing machinations have been witnessed in the iron ore and metallurgical coal industries.

It is important to recognise that these major potash producers sell MOP. We believe SOP prices will be impacted to a lesser extent.

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# POTASH INDUSTRY - PRODUCERS AND PEER COMPARISONS

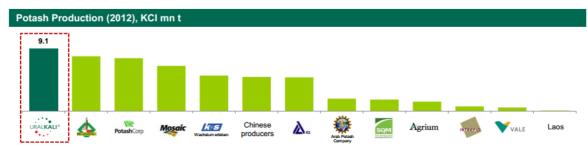
# · A highly concentrated supply side

Potash supply is highly concentrated, both geographically and at a corporate level. While this concentration will decline as new producers enter the market, supply growth is subject to significant uncertainty.

For example, BHP's Jansen project is targeting a nameplate capacity of 10Mtpa and is by far the largest project in the pipeline. However, full development of this project is still dependent on board approval and BHP finding a partner to share the massive US\$20bn capital expenditure with.

In view of the high capital cost of new MOP projects, the incentive price required to justify development is likely to be approximately US\$400/t.

Figure 7. Major Potash Producing Companies



Source: Uralkali

Figure 8. Details of Key Potash Producers

Company	Country	Production	Mining Method	Product
Uralkali (LSE-I:URKA)	Russia	13Mtpa	Underground	MOP
Potash Corp (NYSE:POT)	Canada	11Mtpa	Underground	MOP
Belaruskali (SOE)	Belarus	10Mtpa	Underground	MOP
Mosaic (NYSE:MOS)	Canada	8Mtpa	Underground	MOP
Israel Chemicals (TASE:ICL)	Israel & UK	7Mtpa	Brine & Underground	MOP
K+S AG (DAX:SDF)	Germany	6Mtpa	Underground	MOP + SOP
Arab Potash (ASE:APC)	Jordan	2Mtpa	Brine	MOP
Agrium (NYSE:AGU)	Canada	2Mtpa	Underground	MOP
SQM (NYSE:SQM)	Chile	2Mtpa	Brine	MOP + SOP
SDIC Luobupo (SOE)	China	1Mtpa	Brine	SOP
Intrepid Potash (NYSE:IPI)	Utah	1Mtpa	Brine	MOP
Vale (NYSE:VALE)	Brazil	1Mtpa	Underground	MOP

Source: Blackswan Equities

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# Potash sector suffer from lack of quality new projects

We believe investors in the potash sector have few compelling investment options on the ASX. Most have large resource bases, but require substantial capital expenditures to achieve production and have considerable sovereign risk.

Figure 9. ASX-Listed Potash Companies

Company	Country	Resource	Mining Method	Product
Elemental Minerals (ASX:ELM)	Congo	217Mt	Underground	MOP
South Boulder Mines (ASX:STB)	Eritrea	194Mt	Open pit	MOP
Red Metals (ASX:RDM)	USA	188Mt	Underground	MOP
Potash Minerals (ASX:POK)	USA	183Mt	Underground	MOP
Highfield Resources Ltd (ASX:HFR)	Spain	60Mt	Underground	MOP
Reward Minerals (ASX:RWD)	Australia	25Mt	Brine	SOP
Potash West (ASX:PWN)	Australia	7Mt	Open pit	MOP
Rum Jungle Resources (ASX:RUM)	Australia	5Mt	Brine	SOP

Source: Blackswan Equities

#### LAKE DISAPPOINTMENT - OVERVIEW

# • Natural brine deposit with rare high-sulphate chemistry

In 2005, RWD filed applications for various exploration licences covering Lake Disappointment and its associated drainage systems. The Lake Disappointment potash project encompasses a substantial area of 1,600km² and hosts large resources of potash in a form that is amenable to recovery by conventional solar evaporation and processing techniques.

The project is located 340km east of Newman and is accessed via the Talawana track. RWD has recently constructed a new 28km access road connecting the Talawana track to the northern end of the lake.

Figure 10. Location of Lake Disappointment and Aerial View



Source: Google Earth, Reward Minerals

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# LAKE DISAPPOINTMENT - RESOURCE ESTIMATE

## · Resource captures a large internal drainage basin and lies within 10m from surface

RWD released an Indicated Resource of 24.4Mt of SOP for Lake Disappointment in March 2007.

A total of 30 holes on a nominal 5km by 5km grid were drilled using a purpose built Geoprobe rig, transported over the lake by helicopter. The core retrieved from the lake was collected in sealed tubes that recover the lake sediments as well as the entrained brine for the interval. The drilling determined that the lakebed sediments are between 3m and 10m in thickness. Heavy brine flow was encountered in every hole drilled.

The resource estimate for a brine deposit requires three key parameters being the volume of the aquifer, its porosity and the grade of the elements of interest. Recoverable resources (i.e. reserves) are then based on the permeability and flow regime of the aquifer, as well as the flow regime of the aquifer's surroundings.

The Lake Disappointment aquifer volume is estimated to be 3.95km<sup>3</sup>, based on an area of 1,000km<sup>2</sup> and an average depth of 4.1m. The brine content is 30.5% of the in-situ lakebed sediments (on a weight/weight basis). Therefore, Lake Disappointment is estimated to contain 1.97km<sup>3</sup> of brine.

The brine analyses from the 2007 resource drilling program have an average K grade of 5,460 mg/L, which is equivalent to an SOP content of  $12.5 \text{kg/m}^3$  of brine.

330 APO | 230 APO | 330 AP

Figure 11. Drill Hole Locations and Cross Sections

Source: Reward Minerals

# • Drilling to begin this month

The immediate work program for Q4-2013 will include infill drilling on a 2km by 2km grid to upgrade a significant portion of the resource to the Measured and Indicated category. RWD is aiming to also marginally increase the size of the in-situ resource by drilling:

- 1) deeper to test the Lake Disappointment palaeochannel
- 2) the flanks of the lake to the northeast and west
- 3) into the underlying sandstone to see if it will provide significant brine flow

4) on adjacent tenements held by RWD

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## **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

## LAKE DISAPPOINTMENT - COMPARISON OF SOP BRINE DEPOSITS

## • Brine deposits are less well-known to investors

There are a number of brine operations around the world, but generally these types of projects are not well understood by Australian investors. The only example of such an operation in Australia is at Lake MacLeod, which hosts Rio Tinto's Dampier Salt operation.

Brine deposits are unlike hard rock deposits in that they are fluid, thus their evaluation requires different analysis. The size and grade of a brine deposit is typically much lower given that pumping and solar evaporation is a very cheap mining method.

Nevertheless, like with hard rock projects, when comparing brine projects grade is king.

## Comparison of SOP brine projects

Lake Disappointment is estimated to have an average K grade of 5,460mg/L of brine. We believe this grade compares favourably to other SOP brine projects.

The best geological analogue to RWD's Lake Disappointment project is the Great Salt Lake in Utah, where Compass Minerals (NYSE:CMP) is currently producing 330ktpa of SOP. Given Compass Minerals' diverse production portfolio there is little publicly available information on its potash operations. While the resource size is undisclosed, we believe the Great Salt Lake has an average K grade of 4,550mg/L of brine.

Grades for the other two key SOP brine operations are unknown. SDIC Luobupo is a diversified Chinese state-owned enterprise and releases no information. And SQM's Salar de Atacama brine deposit produces a range of minerals with potash contributing only 25% of its total revenue.

The only junior companies which own advanced SOP brine projects are EPM Mining Ventures (TSXV:EPK) and Rum Jungle Resources (ASX:RUM).

EPM Mining Ventures has completed a Preliminary Economic Assessment (PEA) for the Lake Sevier project, which is an extension of the Great Salt Lake in Utah. The project has a resource of 38.4Mt of SOP with an average K grade of 2,960mg/L of brine.

Rum Jungle Resources is exploring the Karinga Lakes project in the Northern Territory. The project has an Inferred Resource of 5.5Mt of SOP with an average K grade of 4,730mg/L of brine. While Karinga Lakes has a reasonable grade, we do not believe it has the required scale for development. RWD is a joint venture partner in this project with a 15% interest.

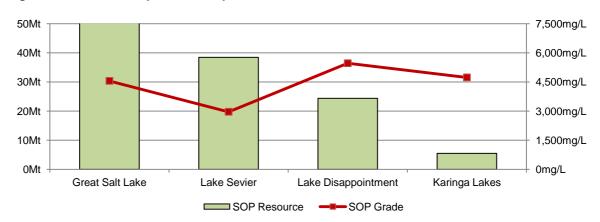


Figure 12. SOP Brine Deposits - Comparison of Size and Grade

Source: Blackswan Equities

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# LAKE DISAPPOINTMENT - CONCEPTUAL PROJECT PLAN

# Project plan uses typical solar evaporation and harvesting methods

RWD's concept is to excavate long trenches for the brine to flow into where it is pumped into evaporation ponds. The salts are precipitated out as the brine is pumped through this series of ponds.

EPM Mining Ventures released a PEA for the Lake Sevier project, which is a very similar SOP development. Accordingly, we have used this to cross-check the development parameters proposed by RWD.

RWD has a targeted production rate of 400ktpa of SOP. This will require approximately 57,000,000m<sup>3</sup> of brine to be pumped per year, which represents 3% of the project's 1.97km<sup>3</sup> brine resources. RWD's brine recovery trials planned for Q4-2013 will determine the required trench parameters to achieve and maintain this targeted production rate. These trials will also determine the brine recharge of the aquifer to ensure that enough brine will be available over the life of the operation to maintain the targeted extraction rate and to extract a large proportion of the resource.

As an example, the Lake Sevier trenches are proposed to be 6m deep. The trenches are designed to be located at least 300m outside the footprint of the evaporation ponds to reduce leakage from the ponds. To achieve a pumping rate of 150,000L/minute, Lake Sevier will involve 108km of 6m deep trenches spaced about 4.8km apart, plus 114 wells to extract deeper brine.

The quantity and size of the evaporations ponds will be determined based on solar evaporation rates. The total evaporation pond area required is estimated to be 30km<sup>2</sup>. As an example, Lake Sevier in Utah will have four pre-concentration ponds (78km<sup>2</sup>) and three production ponds (21km<sup>2</sup>). Importantly, Lake Disappointment is in a very hot and dry environment and therefore has better evaporation conditions than Utah, with a net brine evaporation of over 3m per year.

Assuming a 70% recovery from the evaporation ponds, RWD estimates that approximately 2,800,000t of salts grading approximately 8% K will be harvested per year.

The harvested salts will then be processed through a plant to produce SOP. If RWD can achieve a harvest with less than 20% NaCl it will not require a flotation circuit. The plant recovery is assumed to be 80% and the output is estimated to be 400ktpa of SOP.

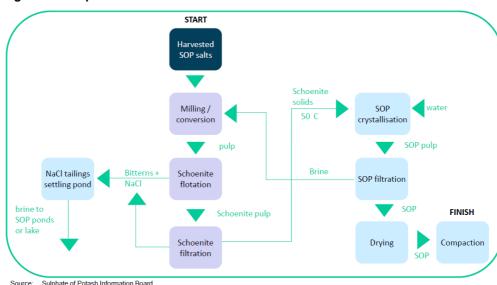


Figure 13. Simplified Flow Sheet

Source: Reward Minerals

Source:

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

# LAKE DISAPPOINTMENT - PROJECT INFRASTRUCTURE

## · Preliminary site works completed

The Lake Disappointment project will not benefit from established regional infrastructure.

RWD has upgraded the Talawana track for 75km from the Parngurr turn off and constructed a new 28km access track to the northern end of Lake Disappointment. This cost approximately \$1.6m. A small exploration camp has also been established which consists of three dongers and a workshop. This cost approximately \$250k.

It is most likely that the 400kt of SOP production will be hauled by road to Port Hedland for shipping. The total haulage distance is approximately 790km, comprising 340km from Lake Disappointment to Newman and 450km from Newman to Port Hedland. We estimate a cost of \$0.14/km/t for the haul along the unsealed Talawana track to Newman. From there, we estimate a cost of \$0.10/km/t on bitumen road to Port Hedland.

The existing Talawana track is suitable for road trains and its current sand based surface is suitable during the wet season. The track has been used for manganese production from the Nicholas Downs manganese mine. This was a 40,000t per month operation. Nicholas Downs is located near Balfour Downs, 132km north-east of Newman.

Worde Woodle Mine
(no facilities)

Noneena

Downs

Noneena

Noneena

Noneena

Downs

Noneena

Non

Figure 14. Talawana Track and Map of Roads to Lake Disappointment

Source: Reward Minerals

# Power and water

The Lake Sevier project is similar in scale but is likely to be more energy intensive than Lake Disappointment given its less favourable brine characteristics. It is estimated to require 22MW of power with an average load of 15.6MW.

RWD estimates that approximately 6t of fresh water will be required per 1t of SOP production, equating to 1,200,000m<sup>3</sup> for the target production rate of 400kt of SOP. The Company believes there are sufficient water resources located in perched water tables relating to large calcrete deposits to the north of Lake Disappointment. Also, rainfall in the region is significant (Telfer has 330mm per year).

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

# LAKE DISAPPOINTMENT - REGULATORY PROCESS

## · Red tape poses the greatest risk to development

We believe navigating through the red tape, especially in respect to Aboriginal and environmental matters, is the largest risk to Lake Disappointment's development. RWD achieved excellent progress throughout 2012 and is currently well placed to move ahead with development.

In 2007, RWD announced the maiden resource for Lake Disappointment. The Company executed a Term Sheet agreement applicable to mining of the resource with the Martu Traditional Owners in March 2008. However, execution of a Mining Lease and Indigenous Land Use Agreement (ILUA) was not executed until 2012.

RWD has now completed the Native Title formalities. The Company has a registered ILUA in place which is registered with the National Native Title Tribunal. The below milestones have been achieved.

Figure 15. Permitting Milestones

Date	Activity
January 2012	Reached agreement with WDLAC and Martu people on the terms of the ILUA
March 2012	Completed a Heritage Clearance Survey
May 2012	Clearance Area Survey Report approved by the Board of WDLAC
September 2012	Department of Environmental and Conservation (DEC) issued a permit to Clear Native Vegetation
September 2012	Executed a State Deed between WDLAC, RWD and the State of WA
October 2012	Mining Lease 45/1227 was granted by the Department of Mines and Petroleum
December 2012	Project Mining and ILUA was registered with the National Native Title Tribunal
January 2013	Section 18 approval from the Minister of Indigenous Affairs to undertake Phase 1 works

Source: Blackswan Equities

A section 18 approval is required each time a registered aboriginal site is disturbed. Effectively the entire Lake Disappointment project area is a registered site. The Section 18 approval for RWD's planned exploration program for the second half of 2013 has been obtained. Obtaining further approvals is not expected to be a difficult or timely process.

Going forward the largest regulatory hurdle will be completing the Environmental Impact Statement and obtaining the environmental approval. RWD has so far completed the first phase of the baseline studies. The Indigenous community and Environmental Protection Authority (EPA) approvals are crucial to this project.

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

# LAKE DISAPPOINTMENT - FINANCIAL MODELLING

## Scoping Study will provide improved confidence cost estimates

The inputs to our DCF model for Lake Disappointment are based on our internal scoping-level estimates. EPM Mining Ventures released a PEA for the Lake Sevier project in November 2012, which we have used for the purposes of deriving benchmark costs.

We believe this approach will prove conservative given Lake Disappointment's superior grade of 12.5kg/m³, compared to Lake Sevier's grade of 6.6kg/m³. Additionally, Lake Disappointment has more favourable brine characteristics and better evaporation conditions than Lake Sevier.

We forecast 400kt per year of SOP being produced over a 17 year mine life at an average all-in sustaining cash cost of A\$348/t (FOB).

\$750/t
400kt
300kt
200kt
100kt
0kt
SOP Produced (kt)

SOP Produced (kt)

\$750/t
\$600/t
\$450/t
\$300/t
\$300/t
\$300/t
\$300/t
\$300/t
\$300/t

Figure 16. Lake Disappointment - Production Profile

Source: Blackswan Equities

For modelling purposes we have used a recoverable resource of 12.3Mt of SOP, representing a 50% recovery of the existing Indicated Resource.

Figure 17. Lake Disappointment - Operating Assumptions

Variable	Input
Recoverable resource	12,300,000t SOP
SOP grade	12.55kg/m <sup>3</sup>
Brine pumped to evaporation ponds (annually)	57,000,000 m <sup>3</sup>
Recovery from evaporation ponds	70.00%
Harvested K grade	8.00%
Recovery in process plant	80.00%
Annual SOP production	400,000t
Mine life	17 years

Source: Blackswan Equities

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

# Near surface resources support a low capital intensity

We estimate Lake Disappointment will have a capital cost of circa \$187m. The construction of evaporation ponds and trenches will take approximately two years and the process plant will take one year to build.

For comparison, Lake Sevier is estimated to have a capital cost of US\$235m, which includes US\$42m for infrastructure, US\$36m for the evaporation ponds and trenches and US\$70m for the process plant.

Figure 18. Lake Disappointment - Capital Cost Assumptions

Variable	Input (A\$)
Feasibility studies	\$10.0m
Infrastructure	\$50.0m
Evaporation ponds and trenches	\$40.0m
Process plant	\$70.0m
Contingency (+10%)	\$17.0m
Total capex	\$187.0m
Sustaining capex (including road maintenance)	\$23.0m/year

Source: Blackswan Equities

# Cheap brine extraction and solar evaporation to underpin low operating costs

We estimate Lake Disappointment will have a total cash cost of circa \$264/t of SOP.

Lake Sevier has an estimated site cash cost of US\$155/t of SOP, which includes US\$6.10/t of salt harvested, US\$12.50/t of salt processed and US\$7m per year for G&A.

It is expected that SOP production from Lake Disappointment will be hauled by road to Port Hedland for export. The total haulage is approximately 790km and we estimate this will cost circa \$93.10/t. This comprises 340km haul along the unsealed Talawana track from Lake Disappointment to Newman for a cost of \$0.14/km/t. From there, a 450km haul along the bitumen road to Port Hedland for a cost of \$0.10/km/t.

Figure 19. Lake Disappointment - Operating Cost Assumptions

Variable	Input (A\$)	Cost of Production (A\$)
Mining costs (pumping and harvesting)	\$8.00/t harvested	
Processing costs	\$10.00/t harvested	
G&A costs	\$5.00/t harvested	
Site cash costs		\$161.00/t SOP
Haulage costs to Port Hedland	\$93.10/t SOP	
Shipping costs to SE Asia	\$10.00/t SOP	
Total cash costs (CFR)		\$264.00/t SOP
Royalties	5.00%	
Company tax rate	30.00%	
Sustaining capex (including road maintenance)	\$23.0m/year	
All-in sustaining cash costs (CFR)		\$348.00/t SOP

Source: Blackswan Equities

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

## LAKE DISAPPOINTMENT - VALUATION

# DCF valuation is compelling

We derive an NPV $_{10\%}$  of \$238m for 100% of the Lake Disappointment project. Our model is based on a long term price assumption of A\$545/t landed in SE Asia. The latest quoted price for SOP by Compass Minerals is US\$640/t (FOB North America).

Figure 20. Lake Disappointment - Price Assumptions

Variable	Input
Standard MOP price (FOB North America)	US\$350/t
Shipping costs - panamax vessel (Port Hedland to SE Asia)	US\$10/t
SOP premium	30%
USD/AUD exchange rate	0.85
SOP price received (CFR)	A\$545.00/t

Source: Blackswan Equities

## NAV per share

We derive a NAV per share of \$0.50/share for RWD, after factoring in project financing.

We estimate a total funding requirement of \$225m, which we forecast being funded with 75% debt and 25% equity raised at a share price of \$0.30/share. Accordingly, we forecast RWD increasing its shares on issue to 292m after factoring in our project financing assumptions.

We would expect RWD to pursue multiple avenues for project financing that do not involve this level of shareholder dilution, such as joint ventures and off-take arrangements.

Figure 21. Equity Valuation and Price Target

Attribute	Unit	Pre-Financing	Post-Financing
Lake Disappointment NPV <sub>10%</sub>	(\$m)	238.5	238.5
Project Financing Net Cash / (Debt)	(\$m)	0.0	58.0
Exploration	(\$m)	0.0	0.0
Corporate	(\$m)	(15.4)	(15.4)
Cash	(\$m)	5.3	5.3
Debt	(\$m)	0.0	0.0
Unpaid Capital	(\$m)	0.0	0.0
NAV	(\$m)	228.4	286.5
Shares Outstanding	(m)	98.4	291.8
NAV Per Share	(\$/share)	2.32	0.98
Price Target (P/NAV: 0.5x)	(\$/share)		0.50

Source: Blackswan Equities

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# **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

## LAKE DISAPPOINTMENT - FUTURE WORK PROGRAM

## Exploration activities are beginning to ramp up

The immediate work program for Q4-2013 will include infill drilling on a 2km by 2km grid to upgrade a significant portion of the resource to the Measured and Indicated category. RWD is aiming to also marginally increase the size of the in-situ resource by drilling:

- 5) deeper to test the Lake Disappointment palaeochannel
- 6) the flanks of the lake to the northeast and west
- 7) into the underlying sandstone to see if it will provide significant brine flow
- 8) on adjacent tenements held by RWD

Additionally, geotechnical drilling will be completed at the north end of the lake where the evaporation ponds are expected to be located.

Pumping trials and demonstration trenches will be carried out to determine the brine recovery parameters. This will entail several trenches up to 200m long and a series of 5m monitor bore holes to test the flow and recharge rates. This is the most significant de-risking activity and will demonstrate how quickly RWD can draw down the brine hence determining the length of trenches needed to produce the annual of brine feed targeted.

A pilot scale evaporation trial of 10,000L of brine was completed in April 2013. RWD harvested 983kg of potash mixed salts which are currently undergoing laboratory test work. RWD is also finalising the process flow sheet and mass balance. The test work indicates the potential to eliminate the flotation step from the plant and greatly simplify the overall process route. The key to this is achieving a NaCl content of less than 20% in the harvested salts.

All the results of the current work program will be incorporated into a Scoping Study which is due for completion by early 2014.

Figure 22. Development Timetable

Activity	<b>Expected Completion Date</b>
Evaporation and processing trials	Q4-2013
Demonstration trenches and brine recovery trials	Q4-2013
Resource update	Q1-2014
Scoping Study	Q1-2014
Environmental Approvals	Q1-2015
Definitive Feasibility Study (DFS)	Q1-2015
Project financing	Q1-2015
Start construction	Q2-2015
First production	Q1-2017

Source: Blackswan Equities

# • Exploration budget funded by current capital raising

The Company has recently completed a \$4.9m capital raising to fund its upcoming drilling program and engineering studies. We believe this is sufficient to fund the activities planned for the next six months.

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## **DEVELOPING A STRATEGIC ASSET WHILE RIDING MACRO TRENDS**

# **REWARD MINERALS - CORPORATE BACKGROUND**

## · Purely focused on potash

In 2004, the Company acquired of a portfolio of gold and base metal exploration tenements and changed its name to Reward Minerals Ltd (ASX:RWD) from Asia Multi-Foods & Oils (Australia) Ltd. Also in 2004, Dr Michael Ruane joined the Board of the Company.

In 2006, the Company acquired an additional package of exploration tenements prospective for potash mineralisation. RWD announced the discovery of a 24.4Mt potash resource at Lake Disappointment in 2007.

In 2008, RWD divested its non-potash prospects to subsidiary company, Jinka Minerals Ltd, which was subsequently taken over by Kentor Gold Ltd in 2011.

The Company continues to progress its Lake Disappointment potash project towards development.

Figure 23. Capital Structure

Class	Number
Ordinary Shares	98,411,994
Listed Options	14,301,499
Unlisted Options	12,150,000
Diluted Shares on Issue	124,863,493

Source: Reward Minerals

Figure 24. Substantial Shareholders

Shareholder	Shares Held	Interest
Tyson Resources Ltd (Dr Ruane)	14,280,076	11.4%
Kesli Chemicals Ltd (Dr Ruane)	10,943,549	8.8%
Intermin Resources Ltd (ASX-listed)	7,629,257	6.1%

Source: Reward Minerals

Figure 25. Board of Directors

Name	Position	Profile
Colin McCavana	Non Executive Chairman	Mr McCavana was appointed in 2010. He has over 30 years experience in mining and earthmoving industries, including the development of projects in Australia. He has also been a director of Northern Minerals Ltd since 2006.
Michael Ruane	Managing Director	Dr Ruane was appointed in 2004. He holds a PhD in Chemistry and has over 30 years experience as a Technical Consultant in the chemical and metallurgical fields. He has also been a director of Intermin Resources Ltd since 1998 and Metaliko Resources Ltd since 2012.
Rod Della Vedova	Non Executive Director	Mr Della Vedova was appointed in 2013. He holds a post graduate degree in Chemical Engineering and has over 30 years experience in large scale commercial production of salt by solar evaporation techniques.

Source: Reward Minerals

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Reward Minerals Ltd	(RWD)	١
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Shares on Issue 98.4m **Market Capitalisation** \$18.7m Year End 31-Dec

# **Equity Valuation, Price Target, 12 Month Return**

Equity Valuation (\$Am)		
	Pre-Financing:	Post-Financing:
Lake Disappointment NPV(10%)	238.5	238.5
Project Financing Net Cash/(Debt)	0.0	58.0
Exploration	0.0	0.0
Corporate	(15.4)	(15.4)
Cash	5.3	5.3
Debt	0.0	0.0
Unpaid Capital	0.0	0.0
Total NAV	\$228.4m	\$286.5m
Fully Diluted Shares Outstanding	98.4m	291.8m
NAV Per Share	\$2.32/sh	\$0.98/sh
12 Month Price Target (A\$)		
P/NAV Ratio: 0.5x		\$0.50/sh
12 Month Return		
Capital Return		163.2%
Dividend Yield		0.0%
12 Month Total Return		163.2%

# **Production & Commodity Prices (Real Terms)**

Key Assumptions				
	CY12a	CY13e	CY14e	CY15e
MOP Price (US\$/t)	425	400	375	350
SOP Price (US\$/t)	550	520	488	455
USD/AUD Rate (USc)	1.03	1.03	0.90	0.88
Ave. Realised Price (A\$/t)	0	0	0	0
Lake Disappointment Production	n Summa	ry (100%)		
	CY12a	CY13e	CY14e	CY15e
SOP Produced (kt)	0	0	0	0
Total Cash Cost (A\$/t)	0	0	0	0
All-In Sustaining Cash Cost (A\$/	0	0	0	0

# **Financial Ratios** Earnings & Cash Flow Multiples

EPS	(\$0.01)	(\$0.00)	(\$0.03)	(\$0.01)
EPS Growth	n/a	n/a	n/a	n/a
P/E	n/a	n/a	n/a	n/a
EV/EBIT	n/a	n/a	n/a	n/a
EV/EBITDA	n/a	n/a	n/a	n/a
P/FCF	n/a	n/a	n/a	n/a
Balance Sheet Ratios				
	CY12a	CY13e	CY14e	CY15e
Fully Paid Ord. Shares	73.8	98.4	129.4	291.8
Gearing (Debt/Equity)	0.0%	0.0%	0.0%	64.8%
EBIT Interest Cover	n/a	n/a	n/a	-2.3x
ROE	-5.3%	-0.9%	-13.3%	-4.8%
ROA	-5.1%	-0.9%	-12.9%	-2.8%
NTA Per Share	\$0.19	\$0.19	\$0.19	\$0.27
Dividends				
	CY12a	CY13e	CY14e	CY15e

CY12a

CY13e CY14e

CY15e

# **Recommendation: BUY**

Date 9 October 2013 **Share Price** \$0.19/share 12 Month Target Price \$0.50/share

#### **Income Statement**

Full Year Summary (A\$m)				
	CY12a	CY13e	CY14e	CY15e
Revenue	0.0	0.0	0.0	0.0
Cost of Sales	0.0	0.0	0.0	0.0
Corporate Overheads	(0.9)	(0.2)	(1.6)	(1.6)
Exploration & Tenement Mainter	(0.0)	(0.0)	(2.0)	(2.0)
EBITDA	(0.9)	(0.2)	(3.6)	(3.6)
Depreciation	(0.0)	(0.0)	0.0	0.0
EBIT	(0.9)	(0.2)	(3.6)	(3.6)
Interest Income	0.2	0.1	0.3	1.5
Interest Expense	0.0	(0.0)	0.0	(1.6)
Profit Before Tax	(0.7)	(0.2)	(3.3)	(3.7)
Income Tax	0.0	0.0	0.0	0.0
Net Profit After Tax	(0.7)	(0.2)	(3.3)	(3.7)

# **Cash Flow Statement**

Full Year Summary (A\$m)				
	CY12a	CY13e	CY14e	CY15e
EBITDA	(0.9)	(0.2)	(3.6)	(3.6)
Working Capital	0.0	0.0	0.0	0.0
Other Adjustments	0.1	(0.1)	2.0	2.0
Operating Cash Flows	(0.8)	(0.3)	(1.6)	(1.6)
Capital Expenditures	(0.2)	(1.0)	(9.8)	(56.6)
Exploration	(8.0)	(1.1)	(2.0)	(2.0)
Interest Received	0.2	0.1	0.3	1.5
Other	0.0	(0.1)	0.0	0.0
Investing Cash Flows	(0.8)	(2.2)	(11.5)	(57.1)
Free Cash Flow	(1.6)	(2.5)	(13.1)	(58.7)
Debt Drawdown	0.0	1.0	0.0	56.2
Debt Repayments	0.0	(1.0)	0.0	0.0
Interest Paid	0.0	0.0	0.0	(1.6)
Equity Raised	0.4	4.9	10.0	56.2
Dividends Paid	0.0	0.0	0.0	0.0
Financing Cash Flows	0.4	4.9	10.0	110.8
Movement in Cash	(1.2)	2.4	(3.1)	52.1
Exchange Rate Adjustments	0.0	0.0	0.0	0.0

## **Balance Sheet**

Balance Sheet Ratios					Full Year Summary (A\$m)				
	CY12a	CY13e	CY14e	CY15e		CY12a	CY13e	CY14e	CY15e
Fully Paid Ord. Shares	73.8	98.4	129.4	291.8	Cash	2.9	5.3	2.2	54.3
Gearing (Debt/Equity)	0.0%	0.0%	0.0%	64.8%	Exploration	10.9	12.2	12.2	12.2
EBIT Interest Cover	n/a	n/a	n/a	-2.3x	Mine Development	0.2	1.2	11.0	67.6
ROE	-5.3%	-0.9%	-13.3%	-4.8%	Other	0.1	0.3	0.3	0.3
ROA	-5.1%	-0.9%	-12.9%	-2.8%	Total Assets	14.1	19.0	25.7	134.4
NTA Per Share	\$0.19	\$0.19	\$0.19	\$0.27					
					Debt	0.0	0.0	0.0	56.2
Dividends					Other	0.4	0.7	0.7	0.7
	CY12a	CY13e	CY14e	CY15e	Total Liabilities	0.4	0.7	0.7	56.9
Dividend Per Share	\$0.00	\$0.00	\$0.00	\$0.00					
Dividend Yield	0.0%	0.0%	0.0%	0.0%	Net Assets	13.7	18.4	25.1	77.5
Dividend Franking	0.0%	0.0%	0.0%	0.0%					
Dividend Payout Ratio	0.0%	0.0%	0.0%	0.0%	Shareholders' Equity	15.6	20.5	30.5	86.7
					Reserves	10.1	10.1	10.1	10.1
					Retained Profits	(12.0)	(12.1)	(15.5)	(19.2)
					Total Shareholders' Equity	13.7	18.4	25.1	77.5
Analyst: Mark Savich, CFA   +	61 8 9346 032	0   msavic	h@blacksv	vanequities.	com.au				

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