

Rare Element Resources

Bear Lodge project progresses

Rare Element Resources (REE) is developing the Bear Lodge rare earth oxide (REO) project in Wyoming, US. Over the past two months, REE has revised up expected thorium-free REO product purities to 99.999%, published the positive results of its trenching exercise and provided an update on slight delays in the permitting process. Additional funding will be needed for the planned larger-scale demonstration plant. Our reworked dividend discount-based company valuation, at a 10% discount rate, is US\$1.05/share (previously US\$1.44/share). The lower valuation is a result of additional equity dilution based on both higher short-term funding needs of US\$45-60m (as per the Q314 results) and a lower assumed equity issue price of US\$0.50 per share used in our valuation. Project risk parameters should improve with better geological and process data.

Year end	Revenue (US\$m)	PBT* (US\$m)	EPS* (c)	DPS (c)	P/E (x)	Yield (%)
12/12 (6 months)	0.0	(15.2)	(34.2)	0.0	N/A	N/A
12/13	0.0	(19.3)	(45.1)	0.0	N/A	N/A
12/14e	0.0	(13.5)	(28.7)	0.0	N/A	N/A
12/15e	0.0	(14.6)	(18.8)	0.0	N/A	N/A

Note: *PBT and EPS (GAAP) are normalised, excluding intangible amortisation, exceptional items and share-based payments. In 2012 the year end changed to December.

Large-scale demonstration plant planned

REE plans to construct and operate a larger-scale (one to three tons per day) demonstration plant. This decision follows bench-scale testing that achieved thorium-free rare earth element purities of 99.999%. A large bulk sample for the plant has already been obtained from the Bull Hill ore body trenching exercise.

Trenching programme complete

REE has conducted a trenching programme that has confirmed the geology, structure and grade of the near-surface, high-grade zone at the Bull Hill deposit. REE excavated a 1,000 ton bulk sample at an average grade of 10.1% total REO.

Permitting behind schedule

There have been delays by the US Forest Service in the preparation of the alternatives analysis of the EIS. The delays have constrained REE's ability to complete the application process for permits required from other agencies. The timing of the permitting process has been extended by three to six months and the project start date has been shifted to mid-2017.

Valuation: US\$1.05 per share

Reflecting planned capex, we have raised our short-term equity financing assumption from US\$30m to US\$60m at a notional price of US\$0.50 per share (from US\$0.65 per share). The consequent equity dilution lowers our valuation of REE to US\$1.05 per share, down from US\$1.44 per share. However, dilution may, be reduced if REE is able to obtain funding from a customer or technology partner.

Project progress update

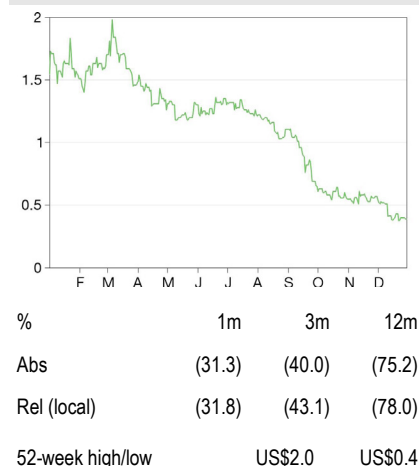
Metals & mining

5 January 2015

Price US\$0.39
Market cap US\$19m

Net cash (US\$m) at 30 September 2014	12.9
Shares in issue	47.71m
Free float	93%
Code	REE
Primary exchange	NYSE
Secondary exchange	TSX

Share price performance



Business description

Rare Element Resources is a mineral resource company currently advancing the development of the Bear Lodge rare earth oxide project in Wyoming, US.

Next event

Year-end results March 2015

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Positive process developments but permitting slippage

Financial results for the September 2014 quarter

REE reported a net loss of US\$3.6m for the quarter ended 30 September 2014, almost half the US\$6.9m loss reported during the corresponding quarter in 2013. The reduced loss was primarily due a lower exploration and evaluation expense of US\$3.3m brought about by a shift to development-related activities from exploration. Costs were well contained resulting in a US\$0.5m drop in corporate administrative expenses. As an exploration and development company, REE does not have revenue.

US\$12.9m cash at end-September 2014

REE had cash and cash equivalents of US\$12.9m at the end of September, down from US\$16.1m at the end of June. Net cash of US\$3.2m used during the quarter was spent on permitting, the preliminary feasibility study (PFS), trench work and general corporate expenses.

Expenditure programme

The current cash balances are expected to be used to continue the EIS and to apply for permits once the EIS alternatives assessment has been completed. REE will fund continuing evaluation of the project, including further assessments of the downstream extraction technology. The product from the additional test work in the separation of rare earths will be sent to potential customers for evaluation. REE will also begin the feasibility study (if approved by the board).

Increased expenditure profile will need funding

REE anticipates it will need to raise funding of between US\$45m and US\$60m, as stated in the cash balance commentary section of REE's Q314 results announcement. This should be sufficient to advance the EIS and permitting process as well as complete the feasibility study, advanced metallurgical and detailed engineering work. REE also intends to construct a large-scale demonstration plant to provide additional data for the feasibility and design studies while providing large product samples to prospective customers. This higher funding requirement is due largely to the newly planned construction of the large-scale demonstration extraction plant, which was not included in previous pre-construction activities.

REE expects to obtain the capital through equity issues or financing from potential customers and/or strategic partners. Debt financing is less likely given the early stage of project development.

Previously, and based on guidance from management, we had expected that REE would raise US\$30m in total equity during 2014 and 2015. We have now increased our financing requirement assumption to US\$60m. For the purpose of our model, we assume that REE will raise the US\$60m in equity in two equal tranches, the first in 2015 and the second in 2016 at a notional share price of US\$0.50 per share (previously US\$0.65 per share). The increased amount and lower notional issue price results in higher equity dilution and consequently lower valuation, all else being equal. This reduces our valuation from US\$1.44 to US\$1.05 per share.

Larger-scale demonstration plant planned

REE plans to construct and operate a larger-scale (one to three tons per day) demonstration plant to obtain detailed design criteria on the extraction and separation process flow. Construction is planned for 2015 and is dependent on raising the additional required financing. REE expects to produce about 70 tons of rare earth oxide products from the demo plant.

The large-scale test work should provide robust data for the feasibility study, thereby de-risking the project to some extent. REE expects that the large-scale testing will reduce some of the start-up

problems that have befallen a number of the other players in the rare earth sector. As an additional benefit, it will provide bulk samples for evaluation by prospective customers.

Product purity 99.999% rare earths

REE has completed bench-scale testing of enhancements to its patent-pending thorium extraction technology. Successful completion of these tests was a key determinant in the decision to proceed with the large-scale demonstration plant.

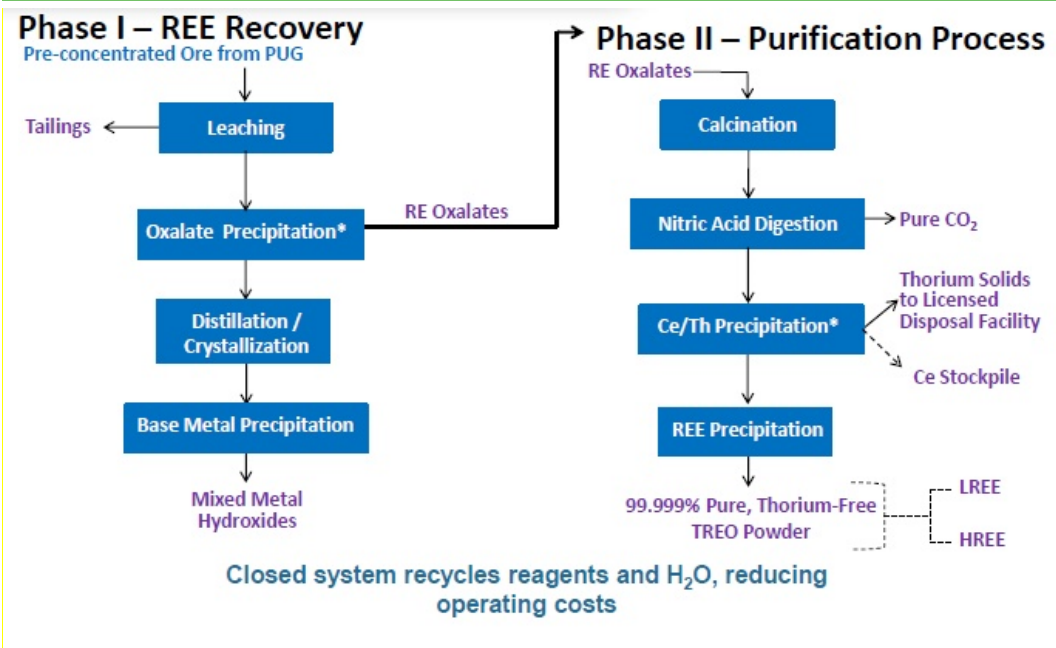
The bench testing proved successful, allowing for the selective precipitation of 100% of the contained thorium and 85% of the low value-added cerium.

Exhibit 1: Rare earth element distribution by weight in situ	
Critical rare earth elements (CREO)	Distribution by weight (%)
Neodymium	17.9
Europium	0.7
Dysprosium	0.5
Terbium	0.1
Yttrium	1.3
Praseodymium	4.9
Subtotal CREO	25.4
Cerium	43.0
Lanthanum	26.8
Gadolinium	1.6
Samarium	3.0
Other REEs	0.2
Total rare earth oxide	100.0

Source: Rare Element Resources

As a result, the concentrate mass requiring further processing has been reduced considerably, which should lead to a higher value-added product. The product should contain nearly 40% by weight of critical rare earth oxides (CREO) and 99.999% pure rare earth oxides. The process effectively doubles the grade of the critical rare earth elements. In addition, processing and capital costs should be lower as the reduced mass to the solvent extraction plant will require smaller facilities.

After cerium removal, a second-stage process is used to separate the contained rare earths into heavy rare earths (HREE) and light rare earths (LREE). This second stage involves a solvent extraction process and should add further value to REE's product by simplifying the separation process and reducing costs further. The low cerium LREE fraction will contain 93-98% lanthanum, praseodymium and neodymium. REE will therefore be able to produce pure lanthanum and didymium products. The HREE fraction includes 97% of all elements from dysprosium to lutetium with 88% terbium. Bench-scale work is continuing to evaluate the further separation of the LREE or HREE fractions into individual rare earth elements. REE should therefore be able to tailor its product suite and consequently focus on the most attractive and saleable end products.

Exhibit 2: Updated process flow chart


Source: Rare Element Resources

The thorium may be removed from the cerium/thorium stream using a separate solvent extraction circuit leaving potentially saleable cerium. This additional process step will depend on the economic viability of extracting cerium, but has the additional benefit of improved management of radioactive material.

Provisional US patents filed

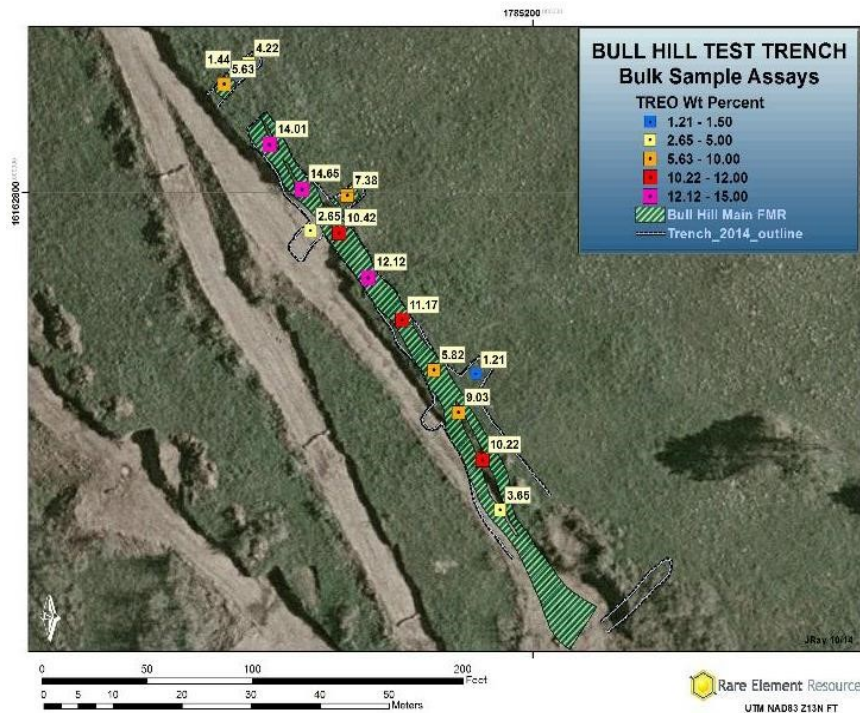
REE has filed a patent application for a provisional US patent on its selective precipitation and solvent extraction technology. It has also filed a patent covering the low-temperature, counter-current leach configuration, which allows for the selective digestion of rare earths over base metals. This process results in lower reagent use, reduced costs of effluent neutralisation and lower energy consumption. Capital costs should be reduced and product quality improved.

Trenching programme complete

The feedstock for the large demonstration plant has been obtained from REE's 2014 trenching programme. REE excavated 1,000 tons of ore to confirm the geology, structure and grade of the high-grade zone of the Bull Hill deposit. This ore has been stockpiled for use in the large-scale demonstration plant. The trenched area is likely to be the site of initial mining.

The trench yielded nine 120-ton bulk samples collected on a 25ft spacing (7.6 metres). The bulk samples returned an average assay grade of 10.1% total rare earth oxide over a length of 225ft (69 metres). The assays ranged from 3.65-14.65% TREO. The trenching exercise has confirmed the orientation, continuity and grade of the high-grade portion of the ore body. The main Bull Hill high-grade zone consists of a highly oxidised carbonatite dike as well as parallel dikes, splays and stockwork mineralisation. The total high-grade mineralised zone extends at least 300ft (91.4 metres) along strike with widths of up to 40ft (12.2 metres). Initial plans proposed the exploitation of the high-grade zone during the initial phases of mine development. The trenching data support this proposal.

Exhibit 3: Bull Hill test trench plan



Source: Rare Element Resources

The results of the trenching, especially material handling parameters and consequent construction equipment selection, will be incorporated into the feasibility study. Detailed mineralogical studies are also underway based on two ton sub-samples collected from each bulk sample block. All these studies are intended to de-risk the project and avoid some of the start-up difficulties often associated with the development of rare earth projects. The trench has been reclaimed in accordance with the US Forest Service and Wyoming Department of Environmental Quality standards.

Permitting update

There have been some delays by the US Forest Service in the preparation of the alternatives analysis of the EIS. The identification of alternatives has not yet been finalised and the impact analysis has not begun. Applications for some of the state and federal permits depend on the project changes that may be determined from the EIS alternatives analysis. The US Forest Service has stated that it intends to make up some of the lost time, but the delays have constrained REE's ability to complete the application process for permits required from other agencies. The project development timeline required these applications to be made in Q414, but they will now be made in Q115. The delay is likely to affect the project schedule by three to six months as a result of delays related to other applications. Permitting is on the critical path and variations in the EIS timeline have therefore affected the assumed project start date. As a result, the project start date has been shifted to mid-2017. Meanwhile, REE plans to build the large-scale demonstration plant and process its bulk sample through the facility. At present, the impact of the delay on the project appears minimal.

Valuation update

We have updated our valuation to take into account the increased expenditure profile and consequent higher funding requirement announced by REE. The company intends to build a large-scale demonstration plant to confirm the extraction and separation process flow. REE anticipates, as stated in the cash balance commentary of the Q314 results, that it will need to raise US\$45-60m

over the next two years. Although there is the possibility that REE could obtain financing from a technology partner or from customers, we have assumed that REE will raise US\$60m in equity in two equal tranches, one in 2015 and the second in 2016. We have assumed REE will spend a total of c US\$35m on its project (including the large-scale demonstration plant as well as other project development expenditure) during 2015 with a further c US\$25m in 2016.

Exhibit 4: REE valuation per share			
Asset	Valuation basis	Valuation US\$m	Valuation %
Bear Lodge DDPV	Dividend discount present value	294	61
Other assets	Book value	332	69
Debt		(147)	(31)
Net asset value		479	100
Shares in issue diluted (m)		458	
NAV US\$ per share (diluted)		1.05	

Source: Edison Investment Research

We have reduced our valuation from US\$1.44 per share to US\$1.05 per share as a result of increasing equity dilution. We have made no other changes to our model input assumptions. Dilution has increased for two reasons. The first relates to the change in the capital requirement assumption. Previously we assumed that REE would raise US\$30m over two years. We now assume that REE will raise US\$60m over the same period. Secondly, we have reduced our notional issue price assumption from US\$0.65 per share to US\$0.50 per share to reflect more closely the current share price. The net effect of the higher dilution is to reduce our valuation to US\$1.05 per share from US\$1.44 per share.

Exhibit 5: Financial summary

	US\$000s	2011	2012 (6mths)	2013	2014e	2015e	2016e
Year end 31 December		US GAAP	US GAAP	US GAAP	US GAAP	US GAAP	US GAAP
PROFIT & LOSS							
Revenue		0	0	0	0	0	0
Cost of Sales		0	0	0	0	0	0
Gross Profit		0	0	0	0	0	0
EBITDA		(10,569)	(15,454)	(19,364)	(13,336)	(14,386)	(15,534)
Operating Profit (before amort. and except.)		(10,607)	(15,544)	(19,561)	(13,554)	(14,604)	(15,751)
Intangible Amortisation		0	0	0	0	0	0
Exceptionals		3,077	1,457	0	0	0	0
Share-based payments		(7,414)	(1,643)	(1,378)	(996)	(996)	(996)
Other		(2,345)	(1)	(1,539)	(245)	0	0
Operating Profit		(17,289)	(15,731)	(22,478)	(14,794)	(15,599)	(16,747)
Net Interest		632	301	232	98	31	3
Profit Before Tax (norm)		(12,320)	(15,243)	(19,329)	(13,456)	(14,573)	(15,749)
Profit Before Tax (FRS 3)		(16,657)	(15,430)	(22,246)	(14,697)	(15,568)	(16,744)
Tax		0	0	0	0	0	0
Profit After Tax (norm)		(12,320)	(15,244)	(20,868)	(13,701)	(14,573)	(15,748)
Profit After Tax (FRS 3)		(16,657)	(15,430)	(22,246)	(14,697)	(15,568)	(16,744)
Average Number of Shares Outstanding (m)		38.6	44.6	46.3	47.7	77.7	137.7
EPS - normalised (c)		(31.9)	(34.2)	(45.1)	(28.7)	(18.8)	(11.4)
EPS - normalised and fully diluted (c)		(29.4)	(31.1)	(40.9)	(26.2)	(17.7)	(11.1)
EPS - (IFRS) (c)		(43.2)	(34.6)	(48.0)	(30.8)	(20.0)	(12.2)
Dividend per share (c)		0.0	0.0	0.0	0.0	0.0	0.0
Gross Margin (%)		N/A	N/A	N/A	N/A	N/A	N/A
EBITDA Margin (%)		N/A	N/A	N/A	N/A	N/A	N/A
Operating Margin (before GW and except.) (%)		N/A	N/A	N/A	N/A	N/A	N/A
BALANCE SHEET							
Fixed Assets		2,490	15,694	1,528	1,355	26,159	40,942
Intangible Assets		0	0	0	0	0	0
Tangible Assets		1,814	544	1,528	1,355	26,159	40,942
Investments		676	15,150	0	0	0	0
Current Assets		72,993	25,490	24,337	10,492	1,170	697
Stocks		0	0	0	0	0	0
Debtors		44	17	29	22	22	22
Cash		72,312	24,985	23,902	10,069	747	274
Other		637	488	406	401	401	401
Current Liabilities		(1,093)	(3,599)	(1,732)	(1,259)	(1,311)	(1,367)
Creditors		(1,093)	(3,599)	(1,732)	(1,259)	(1,311)	(1,367)
Short term borrowings		0	0	0	0	0	0
Long Term Liabilities		(297)	(238)	(211)	(228)	(231)	(234)
Long term borrowings		0	0	0	0	0	0
Other long term liabilities		(297)	(238)	(211)	(228)	(231)	(234)
Net Assets		74,093	37,347	23,922	10,360	25,787	40,039
CASH FLOW							
		18m					
Operating Cash Flow		(6,680)	(12,698)	(22,688)	(14,025)	(14,331)	(15,476)
Net Interest		0	301	232	98	31	3
Tax		0	0	0	0	0	0
Capex		(143)	(11)	(201)	(44)	(25,022)	(15,000)
Acquisitions/disposals		(521)	(27)	14,174	0	0	0
Financing		68,196	390	7,400	139	30,000**	30,000**
Dividends		0	0	0	0	0	0
Net Cash Flow		60,852	(12,045)	(1,083)	(13,833)	(9,322)	(473)
Net Cash Flow calendar 2012*			(35,282)				
Opening net debt/(cash)		(11,460)	(72,312)	(24,985)	(23,902)	(10,069)	(747)
HP finance leases initiated		0	0	0	0	0	0
Other		0	0	0	0	0	0
Closing net debt/(cash)		(72,312)	(24,985)	(23,902)	(10,069)	(747)	(274)

Source: Rare Element Resources data, Edison Investment Research. Note: Reflecting year-end change to December, for 2012 we show P&L for six months to December, cash flow for 18 months to December and balance sheet at 31 December 2012. *2012 cash flows include the net cash flows for 12 months to June 2012. **We have assumed an equity raise of US\$ 30m in each of 2015 and 2016 at a notional price of US\$0.50 per share.

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