

**ASX:KRE**

**Kimberley Rare Earths Limited**  
ABN 20 147 678 779

**Directors**

Ian Macpherson – Chairman & NED  
Tim Dobson – Managing Director  
Allan Trench – NED  
Jon Parker – NED

**Management**

Tim Dobson – Managing Director  
Geoff Collis – GM Exploration  
Michael Chan – GM Project Dev.  
Darren Crawte – Company Secretary

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**Website**

[www.kimberleyrareearths.com.au](http://www.kimberleyrareearths.com.au)

**Capital Structure**

126.6m shares  
6.0m 25c, 2014 unlisted options  
3.5m 30c, 2014 unlisted options  
0.75m 30c, 2015 unlisted options

**Cash at 31 March 2012**

\$12.9 million

**Market Cap at 20 April 2012**

\$10.9 million

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## Cummins Range: Concentrator flow sheet established

### KEY POINTS

- Flow sheet for Cummins Range concentration defined
- Upgrade ratio: 4.8 times
- Concentrate grade: 17% TREO (un-optimised)
- Recovery: 50%; future optimisation work will target 60 – 70%

Kimberley Rare Earths Limited (ASX:KRE) is pleased to announce that metallurgical test work on Cummins Range rare earths samples has defined a viable, relatively simple, customised process flow sheet for beneficiating rare earths ore into a mineral concentrate.

KRE Managing Director Tim Dobson said that he was very pleased with both the better than expected results and the speed (two months) at which they were achieved, especially given the cutting edge nature of the technology development.

*“This represents a significant milestone in the development of the overall process flow sheet for Cummins Range and paves the way for us to confirm an appropriate downstream separation flow sheet using existing conventional technologies,”* Mr Dobson said.



### *Process flow sheet key to rare earth project viability*

Relative to other metal commodities, the commercial viability of rare earth projects is significantly reliant on the ability to define a process flow sheet that is able to produce saleable rare earth products. This arises from a combination of geological and mineralogical diversity, i.e. rare earth deposits vary widely and mostly are unique; and the complexity of extracting and separating a range of different metal-based products.

### *Accessing Chinese specialist know-how*

Metallurgical test work and associated mineralogical study work is being carried out in Australia and China to support process flowsheet development and economic assessment. The program in China is being undertaken by a respected research institute with over 40 years' experience in specialty metals research and development.

The primary objective of the current program is to determine the potential upgradeability (into concentrate) for Cummins Range ore, and to improve understanding of the mineralogical distribution, liberation and deportment of rare earths within the mineralisation.



*Figure 1: Flotation testing of Cummins Range ore samples in China.*

***Representative sample key to test work reliability***

Cummins Range has a JORC-compliant Inferred Resource of 4.90 Mt at 1.74% TREO. However, the deposit is notable for a number of high grade intercepts at or near surface in the central core of the deposit (see ASX Announcement 19 December 2011), lending itself to the potential for a high grade starter pit. Accordingly, the composite sample for these metallurgical test work programs was prepared by systematically homogenising a series of carefully selected drill intercepts from the 2011 Cummins Range drilling campaign.

To confirm homogeneity, ten separate sub-samples were collected from the final composite and returned an average assay grade of 3.43% TREO with a standard deviation of 0.23% TREO. The grade and composition of the sample is expected to approximate material from a potential high grade stage 1 pit at Cummins Range.

A 600 kg portion of the composite has been subjected to concentration and mineralogical studies at the Chinese research institute, and a second 50kg sample is being similarly tested at the Ian Wark Research Institute in Adelaide.

***Customised froth flotation technology the key to success***

Encouraged by the success of Lynas and others in using froth flotation to achieve acceptable beneficiation results from oxidised (weathered) rare earth ore, KRE designed a test program based on this technique in collaboration with the Chinese research institute.

A unique and tailor made reagent regime for Cummins Range ore, including a custom-made collector, was rapidly identified for use in subsequent tests. Unlike the flotation technology developed for the Lynas Mt Weld operation, the Cummins Range flotation technology does not require fine grinding, steam conditioning or to be operated at elevated temperatures, significantly simplifying the flow sheet and reducing the capital and operating cost base.

***Proprietary WHIMS<sup>1</sup> technology improves final product***

In addition to the success of the flotation work, the research institute also applied its proprietary WHIMS<sup>1</sup> technology to the final flotation concentrate to achieve a superior final product grade and upgrade ratio.

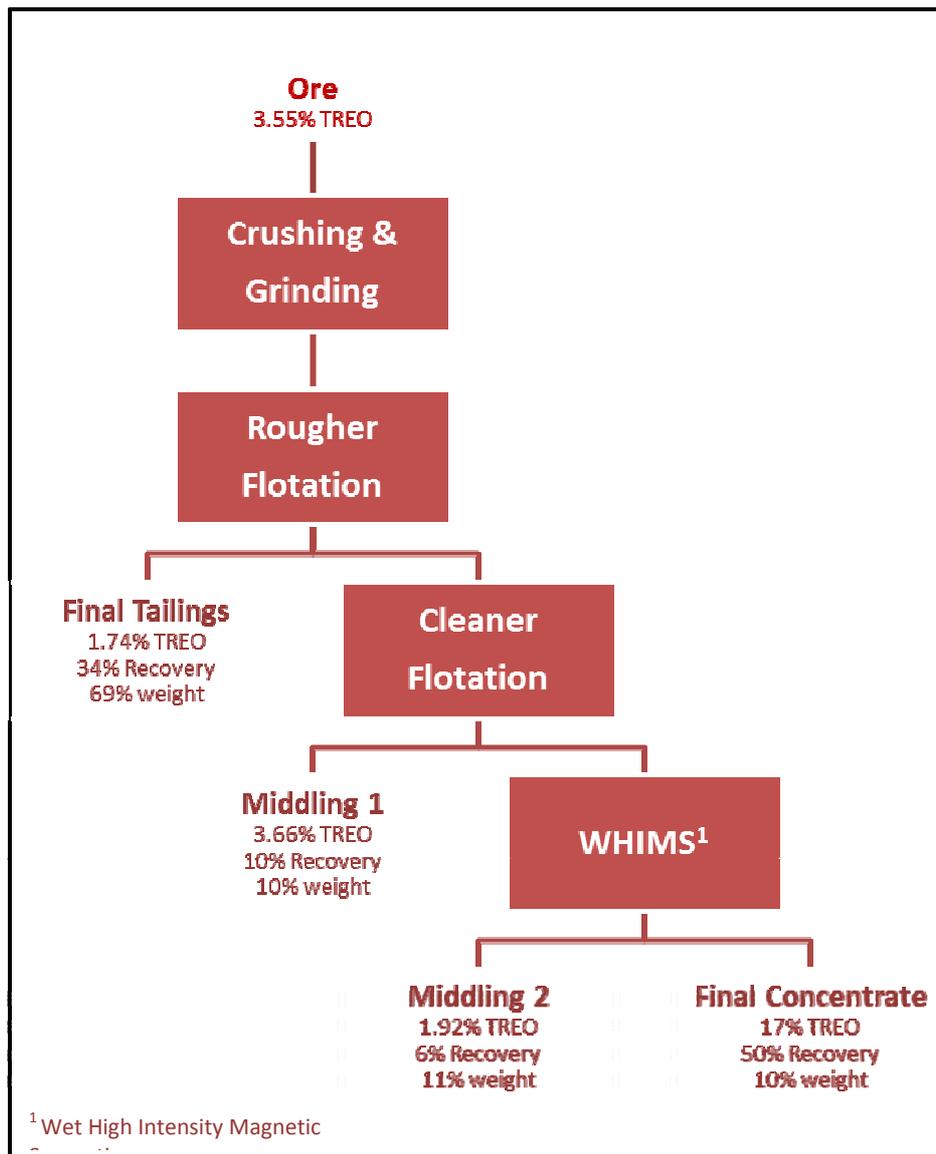
***Final concentrate upgrade ratio of 4.8 achieved***

The net result of this initial work, which has not been optimised or subjected to any locked-cycle testing, is the achievement of concentrate with a grade of 17% TREO, representing a 4.8 times upgrade from the sub-sample feed grade of 3.55% TREO, and representing a recovery of 50% of the feed TREO.

The successful beneficiation test work flow sheet is represented in Figure 2.

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<sup>1</sup> WHIMS - Wet High Intensity Magnetic Separation



*Figure 2: Cummins Range beneficiation test work flow sheet and results.*

### **Results to inform scoping study**

The results achieved from this stage 1 metallurgical test program will be used to inform various components of the scoping study currently being prepared for Cummins Range, such as reagent consumption rates, process mass balance, capital costs, and operating costs. Results from the mineralogical assessment component of the stage 1 test program have not yet been received and will be announced in due course.

### **Next stage of test work to optimise beneficiation and test separation**

Pending the outcome of the scoping study, stage 2 metallurgical testing will aim to improve metallurgical recovery in beneficiation to 60% - 70% without significant loss in concentrate grade or upgrade ratio. Additionally, the application of conventional downstream mineral-cracking and separation technologies will be tested on Cummins Range concentrate to confirm the separation of the material into separated rare earth products.

**About Kimberley Rare Earths**

*Kimberley Rare Earths Limited listed on the Australian Securities Exchange (ASX:KRE) on 18 May 2011, having raised \$18.2m under an oversubscribed Initial Public Offering.*

*KRE is a specialist rare earths company and holds a 25% interest in the Cummins Range Project in Western Australia. KRE has the right to earn up to 80% of the project by funding exploration and development through to delivery of a bankable feasibility study. KRE's first target is to spend \$10m within four years to increase its interest to 55%. The Cummins Range project comprises 1 granted exploration license (80/2232) in the East Kimberley within which is contained a JORC compliant Inferred Resource of 4.90 Mt at 1.74% TREO (total rare earth oxide), 11.2% P2O5 and 145 ppm U3O8 (using a 1% TREO cut off). The Cummins Range project is one of only a few Australian rare earths projects with a Resource reported under the JORC Code.*

*KRE has also entered an agreement to earn up to a 90% interest in a pegmatite-hosted rare earth project in Mozambique with significant exploration potential, including for xenotime-hosted yttrium, dysprosium and erbium.*

**Competent Person Statement**

*Information in this ASX release that relates to exploration or exploration results is based on information compiled by Mr. Geoff Collis, who is a member of the Australasian Institute of Mining and Metallurgy and has sufficient exploration experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activities which are being undertaken to qualify as a Competent Person as defined in the 2004 Edition of the "Australian Code for Reporting of Mineral Resources and Ore Reserves". Mr Collis consents to the inclusion of these estimates in the form and context in which they appear.*

*Information in this ASX release that relates to Mineral Resources is based on a resource estimate at Cummins Range performed by Dr Phillip Hellman FAIG, who is a Director of Hellman and Schofield Pty Ltd and who has had sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activities which are being undertaken to qualify as a Competent Person as defined in the 2004 Edition of the "Australian Code for Reporting of Mineral Resources and Ore Reserves". Dr Phillip Hellman consents to the inclusion of these estimates in the form and context in which they appear.*

### Glossary

<b>Aeromagnetic</b>	Airborne geophysical technique where the intensity of the earth's magnetic field is measured in a systematic way.
<b>Alluvium</b>	Loose unconsolidated soil or sediment eroded and deposited by water.
<b>Amazonite</b>	A bright green mineral of limited occurrence that can be cut and used as a gemstone.
<b>ASTER</b>	Advanced Spaceborne Thermal Emission and Reflection Radiometer – a remote sensory device on board the Terra satellite, launched by NASA in 1999, that provides high-resolution images of the planet Earth in 15 different electromagnetic spectrum bands ranging from visible to thermal infrared light
<b>Carbonatites</b>	Intrusive igneous rocks with a composition of greater than 50% carbonate minerals.
<b>Diamond Drilling</b>	(or <b>Core Drilling</b> ) A drilling technique which uses a diamond-set drill bit to produce a cylindrical core of rock.
<b>Eluvium</b>	Loose unconsolidated soil or sediment deposited under gravitational weathering and accumulation processes.
<b>Flotation</b>	Or froth flotation. A mineral processing technique used to separate chemically different particles (ground and suspended in a water-based slurry) by selectively floating particles into a surface froth (concentrate), leaving other particles in the slurry (tailing).
<b>Gemstones</b>	In the Heads of Agreement signed with GWM covering farm-in rights to the Malilongue heavy rare earths project in Mozambique, gemstones is defined as topaz, aqua-marine and amazonite.
<b>HREO</b>	Heavy rare earth oxides. The oxides of the 9 heavy rare earth elements Europium (Eu), Gadolinium (Gd), Terbium (Tb), Dysprosium (Dy), Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb), Lutetium (Lu) plus Yttrium (Y).
<b>LREO</b>	Light rare earth oxides. The oxides of the 5 light rare earth elements; Lanthanum (La), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), Samarium (Sm). Note, excludes Promethium (Pm) due to its transient (radioactive) nature.
<b>Pegmatite</b>	A very coarse grained igneous intrusive rock composed predominantly of quartz, feldspar and mica.
<b>Pipe</b>	Cylindrical intrusion of younger igneous rocks into an older geological terrain.
<b>ppm</b>	Parts per million by weight (10,000ppm equals 1.00%).
<b>Pyroxenite</b>	Ultramafic igneous rock comprising predominantly minerals of the pyroxene group.
<b>RAB</b>	Rotary air blast, a cost-effective drilling technique used to sample weathered rock.
<b>RC</b>	Reverse circulation, a drilling technique that is used to return uncontaminated pulverised rock samples through a central annulus inside the drill pipes. RC samples can be used in industry-standard Mineral Resource statements.
<b>REO</b>	The oxides of the 14 rare earth elements; Lanthanum (La), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), Samarium (Sm), Europium (Eu), Gadolinium (Gd), Terbium (Tb), Dysprosium (Dy), Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb), Lutetium (Lu) plus Yttrium (Y) but excluding Promethium (Pm).
<b>Thermal Mapper (TM7)</b>	Remote sensory device on board the LANDSAT-7 satellite, launched by NASA in 1999, that provides imagery of the planet Earth with high image resolution, sharp spectral separation and geometric fidelity, and strong radiometric accuracy and resolution.
<b>TREO</b>	The sum total of the 14 rare earth oxides, Lanthanum to Lutetium plus Yttrium as defined above under REO.
<b>WHIMS</b>	Wet High Intensity Magnetic Separation. A mineral processing technology used to separate weakly magnetic particles from non-magnetic particles.
<b>Xenotime</b>	A rare earth phosphate mineral comprising predominantly yttrium phosphate (YPO <sub>4</sub> ). Dysprosium, erbium and terbium can substitute for yttrium.