



# uarterly Report June 2011

# Highlights ARE EARTHS

## Browns Range

- 10,000m HREE (heavy rare earth elements) drilling program commenced in June
- Assay results (received 28 July) from first 11 holes at Area 5 North, confirm significant HREE mineralisation including 5m @ 3.49% TREO (0.32% dysprosium oxide) 0
- Preliminary portable XRF analyses on drill samples at Gambit prospect highly promising results over 300m strike length
- Two new potential drill targets identified through rock chip sampling, with results up to 5.1% TREO (total rare earth elements)
- Discovery of rare earth mineralisation in the southern area reinforces under-explored status of the region
- Metallurgy supports ability to produce concentrate grades of greater than 40%, with simple flow sheet

## John Galt

- Historical drilling data study completed in June confirms high concentrations of HREE (94% of TREO) Including 9.8m @ 1.58% TREO 0
- Significant exploration program underway for second half 2011, with drilling planned for Q1/Q2 2012

# **CORPORATE**

- Further sharp increases in HREE prices, driven by concerns for global security of supply
- Appointment of Dudley Kingsnorth as non-executive director

## **Company Information**

Northern Minerals Limited ABN 61 119 966 353 COMPANY DIRECTORS: Kevin Schultz Non-executive Chairman George Bauk Managing Director Adrian Griffin Non-executive Director Colin McCavana Non-executive Director Dudley Kingsnorth Non-executive Director

**Robin Wilson Exploration Manager** Simon Storm Company Secretary

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## **EXECUTIVE SUMMARY**

During the quarter, Northern Minerals has been focused on advancing its HREE exploration activities at the Browns Range project, and in June the company commenced a 10,000m RC drilling program targeting four high priority prospects identified by earlier exploration.

On July 28 (after the reporting period), the Company announced some significant initial results from the first 11 drill holes at the Area 5 North prospect. The results included some high grade intersections of HREE, including 5m @ 3.49% TREO (0.32% dysprosium oxide). Metallurgy results from the xenotime mineralisation type also support a simple, low cost processing flow sheet (crushing, grinding, magnetic separation and flotation), with the ability to produce concentrate grades greater than 40%.

The initial results also included preliminary portable XRF analyses on drill samples from Gambit prospect, which returned highly encouraging results over a strike length of approximately 300m. The company is fast-tracking laboratory assay results from Gambit, and continuing its RC drilling program at Browns Range. Exploration activities during the reporting period also identified two new targets at the southern areas of the Browns Range Project, and highlighted the under-explored status of the region.

During the quarter, Northern Minerals released results from historical drilling at John Galt, which confirmed high grade REE, with a strong emphasis on HREE (94% of TREO). A significant exploration program is underway with ground and aerial surveys completed during the period to help identify drill targets. Drilling at John Galt is now expected to commence in the first half of 2012.

A key feature of the past quarter has been the continued increase in prices for REE, and in particular, HREE. The market has been driven by concerns of security and sustainability of supply outside of China, combined with climbing demand for HREE in clean energy applications. The result has been a sharp increase in prices for HREE, with dysprosium for example, rising above US\$2,800/kg (FOB China), up from US\$400/kg since the start of 2011

# RARE EARTH ELEMENTS

## **Browns Range**

The Company commenced the 10,000m RC drilling program in June at the Area 5 / Area 5 North and the Gambit / Wolverine prospects, as part of a focused HREE exploration program. First results from the drilling program were announced on 28 July.

Assay results from the first 11 holes drilled at the Area 5 North prospect, produced significant intersections, confirming high grade xenotime mineralisation is present sub-surface. A table of results (*Table 1*) is included with the best intersections as follows:

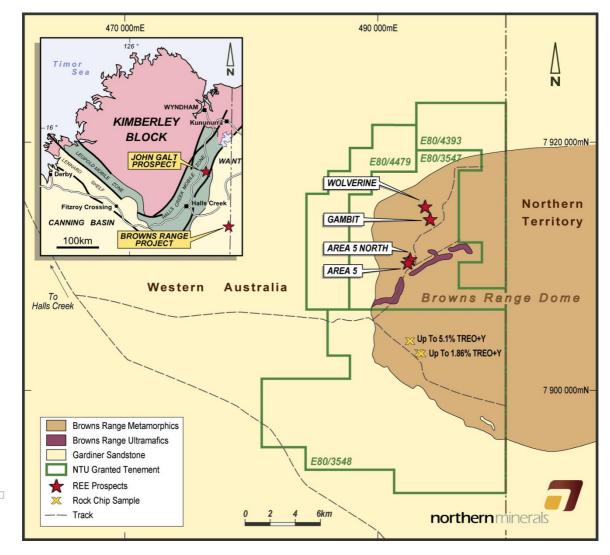
### 12m @ 1.73% TREO including 5m @ 3.49% TREO (5m @ 0.32% dysprosium oxide) 5m @ 0.96% TREO including 2m @ 2.0% TREO (2m @ 0.16% dysprosium oxide)

A portable XRF unit was used at Area 5 North to assess samples based on yttrium measurements prior to assaying. Northern Minerals has also been undertaking yttrium measurements using the XRF unit on samples from the early stage drilling on the Gambit prospect, which have delivered highly promising yttrium indications. The anomalous yttrium values at Gambit occur along an approximate east-west trend over a strike length of approximately 300m. The Gambit results are extremely encouraging, and the Company has fast-tracked full assays which it expects to release in Q3 2011.

The drill results are particularly significant because of the nature of the mineralisation found at Browns Range and the strong global demand and prices of the contained Heavy Rare Earth Element (HREE). The host mineralisation is hydrothermal xenotime which is a REE phosphate mineral notable for having a high proportion of yttrium and HREE, the most important being dysprosium which is a critical element in terms of its use, and economic importance and current short supply.



Significantly, only two of the four prospects located in the northwest sector of the Browns Range Dome have been drilled (Area 5 North and Gambit – see Figure 1), with assay results from only the first 11 holes received to date. The Area 5 and the Wolverine prospects have yet to be drilled and additional prospects in the southwest sector of the Browns Range Dome will be outlined by soil sampling prior to drilling. The Company's mining tenements within the eastern sector, in the Northern Territory, have not yet been explored for HREE.





## Area 5 North Prospect

Drilling at the Area 5 North prospect commenced on 21 June 2011, with 33 holes (NMBRRC001-NMBRRC033) drilled for a total of 2,045m. The Area 5 North collars are 25 metres apart on sections nominally 35 metres apart. The holes are directed alternately NE and SW perpendicular to structures and the interpreted trends of the soil geochemical anomaly.

The drilling at the Area 5 North prospect has mostly intersected what is interpreted to be weathered arkose. Intense silica and hematite alteration occurs throughout the drilling area. The rare earth mineralisation is commonly associated with quartz veining and hematitic alteration. Details of the drilling completed at Area 5 North are included in Table 1 and Figure 2 below. Only assay results for samples from the first 11 holes have been received to date. Samples from the remaining 22 holes at Area 5 North have been submitted and assay results are expected in the August / September period.



Hole Id	From (m)	To (m)	Width (m)	TREO* (%)	Dy2O3 (ppm)
NMBRRC011	7	19	12	1.73	1,559
including	10	15	5	3.49	3,205
NMBRRC011	24	27	3	0.25	123
NMBRRC004	0	5	5	0.96	728
including	1	3	2	2.00	1,575
NMBRRC004	11	13	2	0.58	434
NMBRRC001	12	13	1	0.81	623
NMBRRC001	28	29	1	0.30	252
NMBRRC005	28	29	1	0.50	202
NMBRRC006	21	22	1	0.23	42
NMBRRC008	1	6	5	0.28	105
NMBRRC008	42	43	1	0.26	14
NMBRRC009	4	9	5	0.24	204
NMBRRC009	14	15	1	0.26	233
NMBRRC010	6	8	2	0.30	233

Table 1 – Area 5 North Prospect: Significant drill hole intersections (TREO > 0.2%) (NMBRRC001-011)

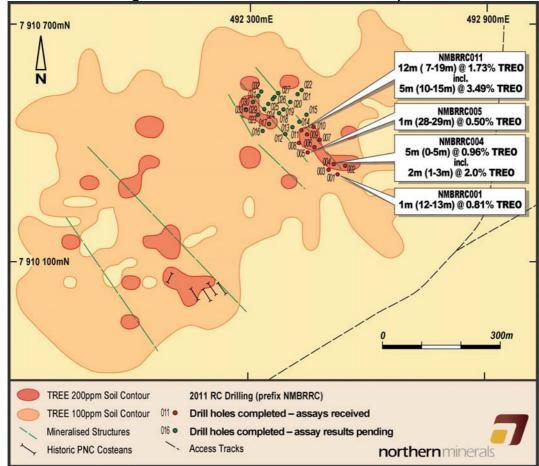


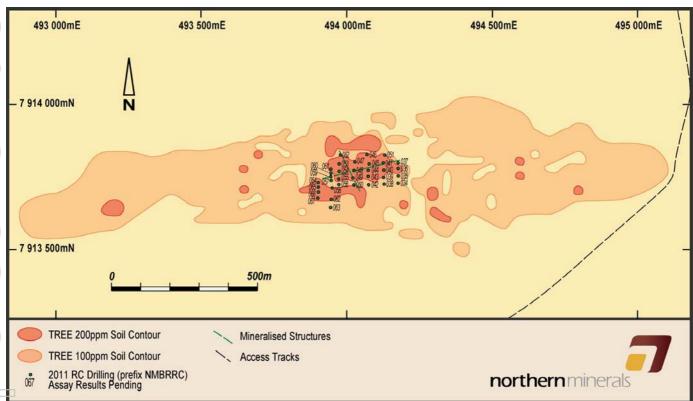
Figure 2 – Area 5 North – Drill hole location plan



## **Gambit Prospect**

At Area 5 North, analysis of the correlation between yttrium values measured by the portable XRF unit and the recently received yttrium assay results have demonstrated the portable XRF yttrium measurements to be relatively reliable. Initial portable XRF analysis on drill samples at the Gambit Prospect has returned numerous significant yttrium readings. The anomalous yttrium occurs along an approximate east-west trend over a strike length of 300m.

To date, a total of 37 drill holes (NMBRRC034 – 070) have been completed at the Gambit prospect, with holes on approximate 50m x 25m centres. Samples from 16 of the completed drill holes have been submitted to the assay laboratory for analysis, and results are expected in September.



## Figure 3 – Gambit Prospect – Drill hole collar location plan

## New targets identified

During the quarter, reconnaissance rock chip sampling in the southern part of the Browns Range project area, identified two new potential drill target areas located approximately 6km south of Area 5 (*these are included on Figure 1 above*). The discovery of additional rare earth mineralization in the southern half of the project area highlights the under-explored status of the region, and the potential for further rare earth discoveries within the project area.

Samples of quartz veined arkose returned assays up to 5.1% (see table 2 below). Early exploration on the new target areas will include geological mapping, further rock chip sampling and soil sampling, which is planned for Q3, ahead of a proposed Phase 2 drilling program.



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Sample Id	Northing	Easting	TREO(%)	THREO(%)	Dy <sub>2</sub> O <sub>3</sub> (ppm)	Y <sub>2</sub> O <sub>3</sub> (ppm)
BRRK069	7000057	402422	1.66	1 50	1 406	10 19 1
DIVINOUS	7903057	493433	1.66	1.50	1,496	10,184
BRRK070	7904074	492589	2.21	1.64	2,014	14,516
BRRK071	7904068	492581	5.12	3.41	3,957	29,309
BRRK072	7904041	492579	0.72	0.48	502	3,493
BRRK073	7903074	493294	1.86	1.51	1,572	10,855

#### Table 2 – Summary of rock chip sample results

 $\label{eq:NB-TREO: Total Rare Earth Elements - Total of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3$ 

## Metallurgical Testing

Previous testing has confirmed the dominance of xenotime mineralisation at Browns Range. Metallurgical work is ongoing, with preliminary results from test work on samples from the Gambit and Wolverine prospects, indicating the ability to produce concentrate grades of greater than 40%. This reinforces the early indications that the ore is amenable to a relatively simple flow sheet, incorporating crushing, grinding, magnetic separation and flotation.

Metallurgy is often a challenge for a developing REE project, and the ability to produce a quick, relatively low cost concentrate is a significant hurdle that the Company has cleared at a relatively early stage in the evaluation of the project. A key focus for Northern Minerals' exploration and development program will be ongoing metallurgical testing on drill core samples from Browns Range.

## John Galt

Northern Minerals has identified a number of exciting early stage HREE targets at the John Galt project, which lies to the north west of Browns Range.

In early June, the Company released collated historical drilling results which confirmed high concentrations of HREE in xenotime mineralisation. The results were from a partial exploration program at the John Galt Main Zone in 1973 with nine diamond drill holes for a total of 503m. The results returned intercepts of up to 17.9% TREO, with HREE constituting 94% of TREO of which 67% is Yttrium and 9% is Dysprosium

Full results for the historical drilling were included in the announcement on 5 April, and also in the previous quarterly report. The best historic drilling results include:

2.05m @ 5.98% TREO\* from 6.50m in DH1, 3.90m @ 6.30% TREO\* from 9.10m in DH2, 3.48m @ 3.48% TREO\* from 102.60m in DH8 and 9.80m @ 1.58% TREO\* from 6.35m in DH9

The historical exploration has provided important insights into the potential for HREE mineralisation within the John Galt project area. However, much of the area remains essentially untested. The drilling results are from only one of three mineralised zones, and the next step is to undertake further exploration to define the extent of mineralisation at all three known zones.

<sup>\*</sup>TREO – Total Rare Earth Oxide as calculated by the previous explorer using what was termed the "Yttrium Ratio Method". In the original work on samples of John Galt Main Zone mineralisation it was found that after assaying for a suite of REE a consistent ratio existed between the total rare earth content and the yttrium content. By assaying the yttrium (Y) content of each sample using XRF techniques it is possible to estimate the total rare earth content, based upon that consistent ratio between Y and TREO. It should be noted that it was estimated that the accuracies range from +/- 15% for high concentrations and +/- 20% for low concentrations.



### **Exploration and drilling program**

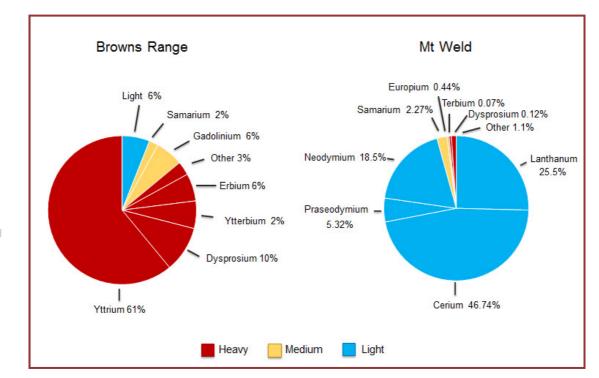
During the quarter the Company completed a high resolution airborne magnetics and radiometric survey, as well as reconnaissance geological investigations at John Galt. Extreme wet weather conditions during early 2011 severely impacted the region, and in particular the local community at Warmun, where many of the Aboriginal traditional owners of the land around John Galt are located, and with whom Northern Minerals will meet as part of its Aboriginal Heritage Surveys. As a result, these meetings have now been delayed until mid-September.

During the second half of 2011 Northern Minerals will conduct detailed structural mapping and a systematic program including rock chip and soil sampling, as well as on ground radiometric surveys, to help determine and rank drill targets. The drilling program which had initially been planned for Q4 2011 is now expected to be undertaken during the first or second quarters in 2012, depending upon climatic conditions.

## The REE Market

The REE market, and the HREE market in particular, continues to be characterised by increasing prices, driven by concerns of security and sustainability of supply outside of China. Earlier this year China (which currently produces 99% of global HREE supply) set the production quota for rare earths at 93,800 tonnes REO for 2011, which is significantly less than 2010 demand of 125,000 tonnes REO. More recently, China has continued to constrain the supply of rare earths through industry consolidation and increasing the scope of export quotas.

The impact of constrained supply has been most evident in the values for HREE such as dysprosium, which has increased to US\$2,840 per kilogram (FOB China), up from US\$400/kg since the start of 2011 – almost doubling in the past month alone. Over the same period, yttrium has increased from US\$90/kg to US\$179/kg.



The comparison above shows the distribution of REO identified in Browns Range from the four prospects, Area 5, Area 5 North, Gambit and Wolverine. The Mt Weld REO composition data above sourced from the Lynas Corporation website.



As announced on July 28, the HREE prices of particular relevance to Northern Minerals, based on drill results above, are;

, m US\$2,840/kg US\$179/kg US\$4,510/kg US\$100/kg m US\$200/kg

Dysprosium is an important additive in neodymium-iron-boron magnets, which are increasingly used in clean energy applications. Demand for dysprosium is expected to increase significantly with only negligible forecast increases in ROW (rest of world) supply. Similarly yttrium is found in minimal quantities outside China, and is used to make phosphors for use in fluorescent lighting, television displays and computer monitors as well as in yttria stabilized zirconia, (an important wear resistant ceramic).

The development of alternative sources of rare earths supply to China remains the focus of the ROW consumers. While the ROW will be able to meet 60-80% of its light rare earths needs in 2015, it will remain seriously deficient in the supply of heavy rare earths. Given the time required to bring a new rare earths project on line, the Industrial Minerals Company of Australia (IMCOA) believes that ROW will be able to meet only 10% (at best) of its heavy rare earths needs in 2015.

## **URANIUM** and **GOLD**

## Gardiner Range JV and Gardiner Tanami Project

The Gardner Range JV covers an area of 550km<sup>2</sup> and is contiguous with Northern Minerals' Gardiner-Tanami Project. Collectively, the projects cover more than 10,000km<sup>2</sup> and are the focus of the Company's uranium exploration activities.

Gardner Range has been the focus of Northern Minerals' uranium development program, and the Company has identified a number of priority targets for high grade unconformity-related uranium. It has an exploration program planned for 2011 at Gardner Range, with a 5,000 meter drilling program planned for the third quarter of 2011 following the completion of aboriginal heritage surveys.

The drilling will primarily focus on the Soma Prospect, as well as including Mt.Mansbridge North, Mt.Mansbridge South and Deva Prospects. This follows encouraging results from Soma late last year, where drilling intersected the Gardiner Sandstone / Killi Killi Formation unconformity, and identified an 8km target that has only been lightly tested to date.

In addition, a comprehensive review of historical gold exploration data from the area is underway. This will lead to the development of gold exploration targets and a gold-focused exploration program, which will include followup of the gold mineralisation intersected in drilling at The Don prospect in 2010. The drilling program will also focus on gold targets at the historical Whites Beach and Venus gold prospects in 2011.

# CORPORATE

## Appointment of Dudley Kingsnorth

As announced on April 8 (included in the previous quarterly report), Northern Minerals has appointed Mr Dudley Kingsnorth as a Non-Executive Director. Mr Kingsnorth is an international leader in REE, with more than 20 years experience in the development, evaluation and marketing of REE projects. Mr Kingsnorth has also been involved at a Board and management level with a number of ASX-listed resource exploration and development companies, and is currently non-executive Chairman of iron sands developer Amex Resources.

He has previously been consulting to Northern Minerals on the development of its REE projects in northern Australia and has a contract covering these specialist services until the end of November 2012. The appointment is a further boost to the Company's REE credentials, and the Board regards the appointment as a strong endorsement of its REE assets and its exploration and development strategy.



### **Option Conversion**

During the quarter, \$0.88m was received from the conversion of both listed and unlisted options.

# September Quarter – Key Activities

The key activities planned for the September Quarter include:

### **Browns Range**

- Completion of the 10,000m RC drilling program
- · Continual release of assay results from the RC drilling program throughout the quarter
- Design and organize the diamond drilling program planned for Q4
- Soil sampling and geological mapping at the two new targets identified south east of Area 5
- Ongoing metallurgical test work

#### John Galt

- Aboriginal Heritage Survey
- Commence detailed structural mapping and systematic rock chip and soil sampling

#### Gardner Tanami

- 5,000m RC drilling program for uranium/gold
- Complete soil sample program on gold targets.

## About Northern Minerals

Northern Minerals Limited (ASX: NTU) is focused on exploration and development of rare earth elements (REE) and uranium, with a large and prospective landholding in Western Australia and the Northern Territory.

The Company has identified high value, heavy rare earth elements (HREE) at its Browns Range project. The discovery is particularly significant due to the nature of the mineralisation (xenotime), and the strong global demand and price for the HREE it contains. Northern Minerals currently has fully funded HREE exploration programs underway at Browns Range and the geologically similar John Galt project.

Northern Mineral's uranium program is focused on the Gardiner-Tanami project and Gardner Range JV, which comprise 10,500km<sup>2</sup> on the WA-NT border. Exploration is focused on high grade unconformity-related uranium targets. The area is compared favorably to the Alligator Rivers region in the NT which hosts the Ranger mine (Australia's largest operating uranium mine), and the Athabasca Basin in Canada, host to the world's highest-grade unconformity-related uranium deposits.

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#### Competent Person Declaration

The information in this report accurately reflects information prepared by competent persons (as defined by the Australasian Code for Reporting of Mineral Resources and Ore Reserves). It is compiled by Mr R Wilson, an employee of the Company who is a Member of The Australasian Institute of Mining and Metallurgy with the requisite experience in the field of activity in which he is reporting. Mr Wilson has sufficient experience which is relevant to the style of mineralisation and the type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent person as defined in the 2004 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Wilson consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.