

# Mines & Money Hong Kong Presentation

20 March 2012  
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Managing Director/CEO



  
northern minerals

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Information that relates to exploration results has been compiled by the Company and is based on information provided by Robin Wilson, a employee of Northern Minerals who is a member of the Australasian Institute of Mining and Metallurgy. All information of this type is expressed in terms of the 2004 edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Robin Wilson has sufficient experience which is relevant to the style of mineralisation and 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.

All RC drill results quoted in this presentation from Browns Range have been determined using a 0.2% TREO cut off and a maximum of 1m internal dilution.  
All diamond drill results quoted in this presentation from Browns Range have been determined using a 0.15% TREO cut off and a maximum of 2m internal dilution.  
TREO = Total Rare Earth Oxides – Total of  $\text{La}_2\text{O}_3$ ,  $\text{CeO}_2$ ,  $\text{Pr}_6\text{O}_{11}$ ,  $\text{Nd}_2\text{O}_3$ ,  $\text{Sm}_2\text{O}_3$ ,  $\text{Eu}_2\text{O}_3$ ,  $\text{Gd}_2\text{O}_3$ ,  $\text{Tb}_4\text{O}_7$ ,  $\text{Dy}_2\text{O}_3$ ,  $\text{Ho}_2\text{O}_3$ ,  $\text{Er}_2\text{O}_3$ ,  $\text{Tm}_2\text{O}_3$ ,  $\text{Yb}_2\text{O}_3$ ,  $\text{Lu}_2\text{O}_3$ ,  $\text{Y}_2\text{O}_3$

# Agenda



## Company Overview

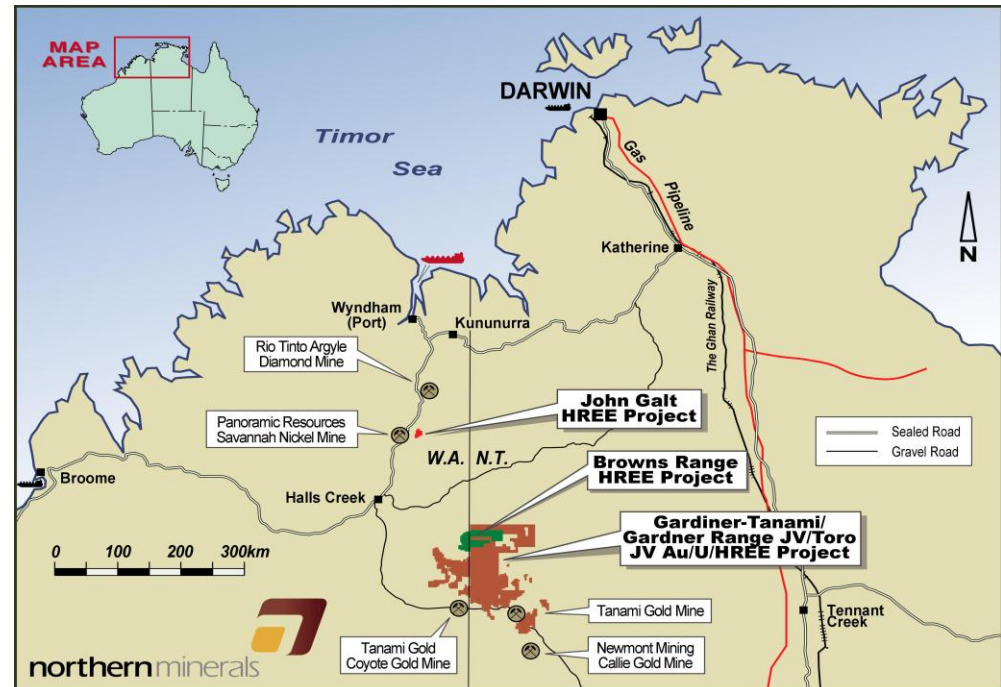
## Value Proposition

## Rare Earths

- **Market**
- **Browns Range**
  - Pathway to Production
- **John Galt**

## Gold and Uranium

## In Summary





# Capital Structure



## ASX Codes

|     |                 |         |
|-----|-----------------|---------|
| NTU | Ordinary Shares | 203.6M* |
|-----|-----------------|---------|

## Listed Options

|       |                             |      |
|-------|-----------------------------|------|
| NTUOA | \$0.20 expires 30 Sept 2012 | 8.5M |
| NTUOB | \$0.15 expires 31 Mar 2012  | 8.0M |

## Unlisted Options

|                                 |      |
|---------------------------------|------|
| Various prices and expiry dates | 8.8M |
|---------------------------------|------|

## Trading Summary

|  |               |
|--|---------------|
| Market Capitalisation (in AUD)<br>(as at 19 March 2012 @ \$0.45) | \$92M         |
| 52 week trading range (in AUD)                                   | \$0.36-\$1.07 |
| Daily Traded Volume<br>(average over 3 months)                   | 0.3M          |

## Balance Sheet

|                            |         |
|----------------------------|---------|
| Cash (9 March 2012 in AUD) | \$10.8M |
| No Debt                    |         |



## Major Shareholders

|                    |       |
|--------------------|-------|
| Conglin Yue        | 16.9% |
| Lynas Corporation  | 7.4%  |
| Board & Management | 5.9%  |

\*includes 4.1M restricted shares issued under the share plan

# Board & Management



**George Bauk**  
*Managing Director / CEO*

- 20+ years mining operation and corporate experience
- Former MD Indago Resources, CFO Arafura, WMC

**Adrian Griffin**  
*Non Executive Director*

- Specialising in mine management and production
- Managing Director Midwinter Resources
- Chairman Potash West

**Kevin Schultz**  
*Non Executive Chairman*

- Formerly Managing Director – Polaris Metals
- Global industry experience, multi commodity
- Geologist and mining engineer

**Dudley Kingsnorth**  
*Non Executive Director*

- 20+ years experience in the Rare Earth Industry
- MD of IMCOA, Past editor of Roskill REE Report
- Chairman of Amex Resources
- Metallurgist

**Colin McCavana**  
*Non Executive Director*

- Former Managing Director Haddington Resources
- Mine production and operations management experience
- Chairman Reward Minerals

**Robin Wilson**  
*Exploration Manager*

- Geologist with 20+ years exploration experience
- CRA, Woodside, Tanganyika Gold, Troy Resources



**Robert Sills**  
*Commercial Manager*

- Experience in marketing, negotiation and commercial
- Arafura Resources, Rio Tinto



## Vision

*To become the global benchmark in the production of heavy rare earth elements for the benefit of all our stakeholders*

## Strategy

- *\$90M\* concentrator built at Browns Range Project by end of 2014*
- *To produce and deliver sufficient supplies of HREE for a diverse portfolio of strategic offtakers.*

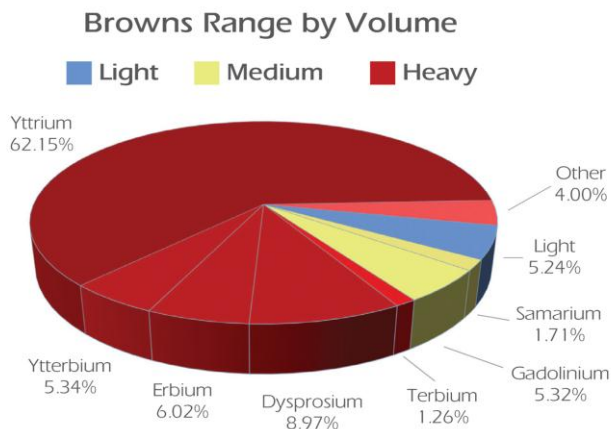
## 2012 Plan “Pathway to Production”

- *Maiden JORC Code Compliant resource*
- *Ongoing exploration to build mineral inventory*
- *Complete Pre-Feasibility Study at Browns Range Project*
- *Advance discussions with potential strategic off-take partners*

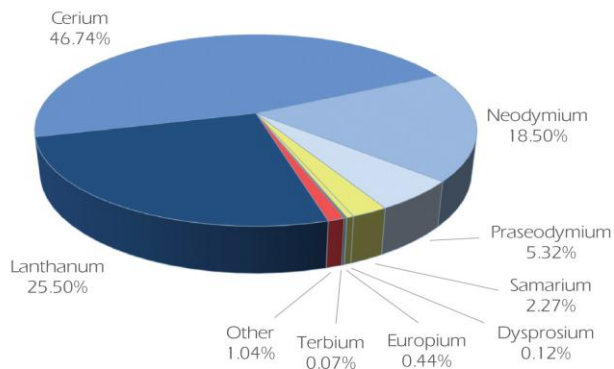
# High Value Heavy Rare Earths



## POINT OF DIFFERENCE IS THE MIX – “HEAVIES”



Mt Weld\* rare earths



\*Mt Weld REO composition data above sourced from the Lynas Corporation website.

## OUTSTANDING DRILL RESULTS

### Wolverine:

24m @ 2.18% TREO (2,072ppm  $Dy_2O_3$ ) from 96m (to EOH)  
 including 7m @ 5.35% TREO (5,151ppm  $Dy_2O_3$ ) from 112m (to EOH)  
 33m @ 1.53% TREO (1,470ppm  $Dy_2O_3$ ) from 54m  
 41m @ 1.01% TREO (881ppm  $Dy_2O_3$ ) from 24m  
 28m @ 1.77% TREO (1,619ppm  $Dy_2O_3$ ) from 114m

### Gambit:

11m @ 2.07% TREO (1,943ppm  $Dy_2O_3$ ) from 35m  
 18m @ 1.19% TREO (1,130ppm  $Dy_2O_3$ ) from 51m

### Area 5

2m @ 13.9% TREO (13,112ppm  $Dy_2O_3$ ) from 4m

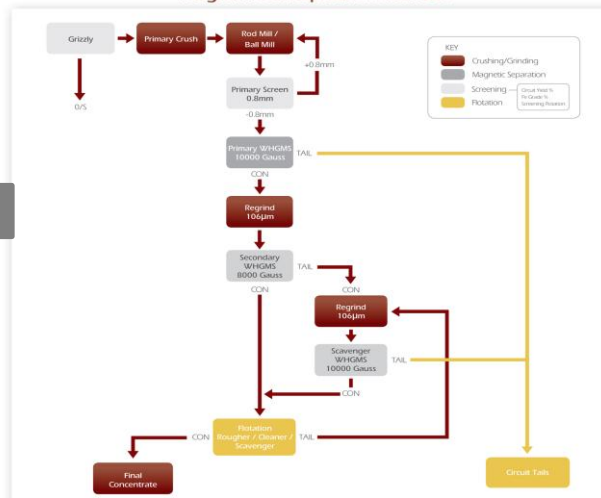
## DEMONSTRATING A CONCENTRATE OF >30%



Xenotime

## COUPLED WITH A LOW CAPITAL/OPERATING COST

Nagrom Conceptual Flowsheet







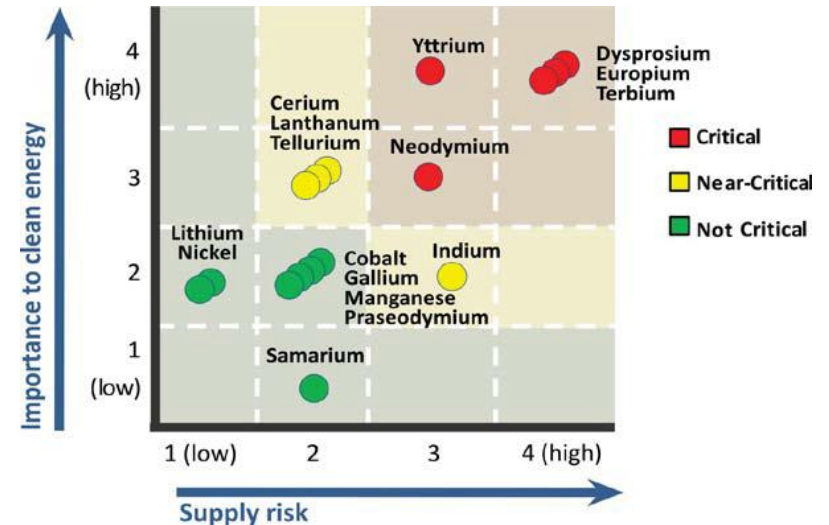
## Dysprosium

- Yttrium identified as “critical” by the US Energy Department.
- Prized for magnetic properties under high temperatures for NdPr permanent magnets
- Security of supply will stimulate more rapid development of clean energy applications. eg wind turbines and electric vehicles

## Yttrium

- Northern Minerals HREO projects attracting the attention of global lighting producers.
- Security of supply is essential for national govt's to fulfill obligations to achieve greater energy efficiency.
- Essential component in a wide range of applications:
  - Phosphors for computer and LED monitors
  - Energy efficient lighting

## Short-Term (0–5 years) Criticality Matrix



Source: US Department of Energy – Critical Materials Strategy, December 2011.

President Obama, 13 March 2012

*“...rare earth materials, which are used by American manufacturers to make high-tech products like advanced batteries that power everything from hybrid cars to cell phones.*

*We want our companies building those products right here in America. But to do that, American manufacturers need to have access to rare earth materials -- which China supplies. Now, if China would simply let the market work on its own, we'd have no objections. But their policies currently are preventing that from happening. And they go against the very rules that China agreed to follow.*

*Being able to manufacture advanced batteries and hybrid cars in America is too important for us to stand by and do nothing. We've got to take control of our energy future, and we can't let that energy industry take root in some other country because they were allowed to break the rules.”*



# HREE – ROW on its own



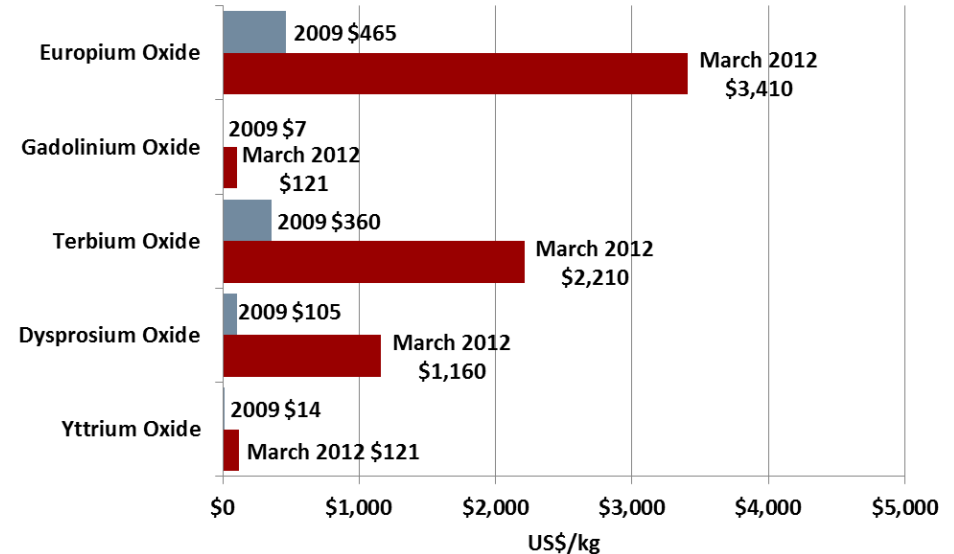
## Strong Demand

- Demand driven by high-tech applications in energy generation and efficiency applications
- Strong demand but where's the supply?
- 2012 China export quotas create HREO supply issues with the introduction of 85:15 LREO:HREO split in export quotas

## Sustainable Prices

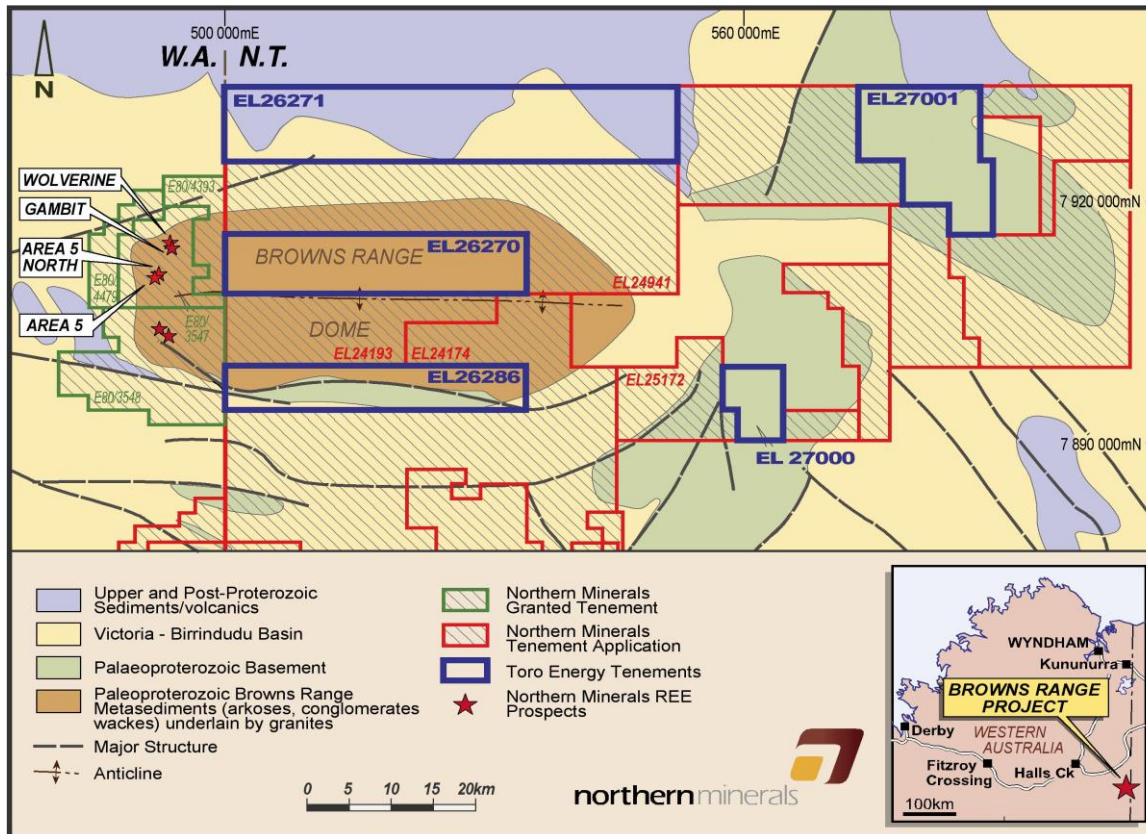
- Despite 2011/12 retreat in LREO prices, HREO prices have remained strong.
  - Strong demand
  - No supply sources outside China
  - Exclusively hi-tech applications.
  - Few substitutes
- Price premium is anticipated due to unique HRE supply/demand dynamics for product in tight supply

Comparison of selected average HREO Prices



Source: Metal Pages China FOB REO prices

# Browns Range Project



Northern Minerals 100% ownership and marketing rights

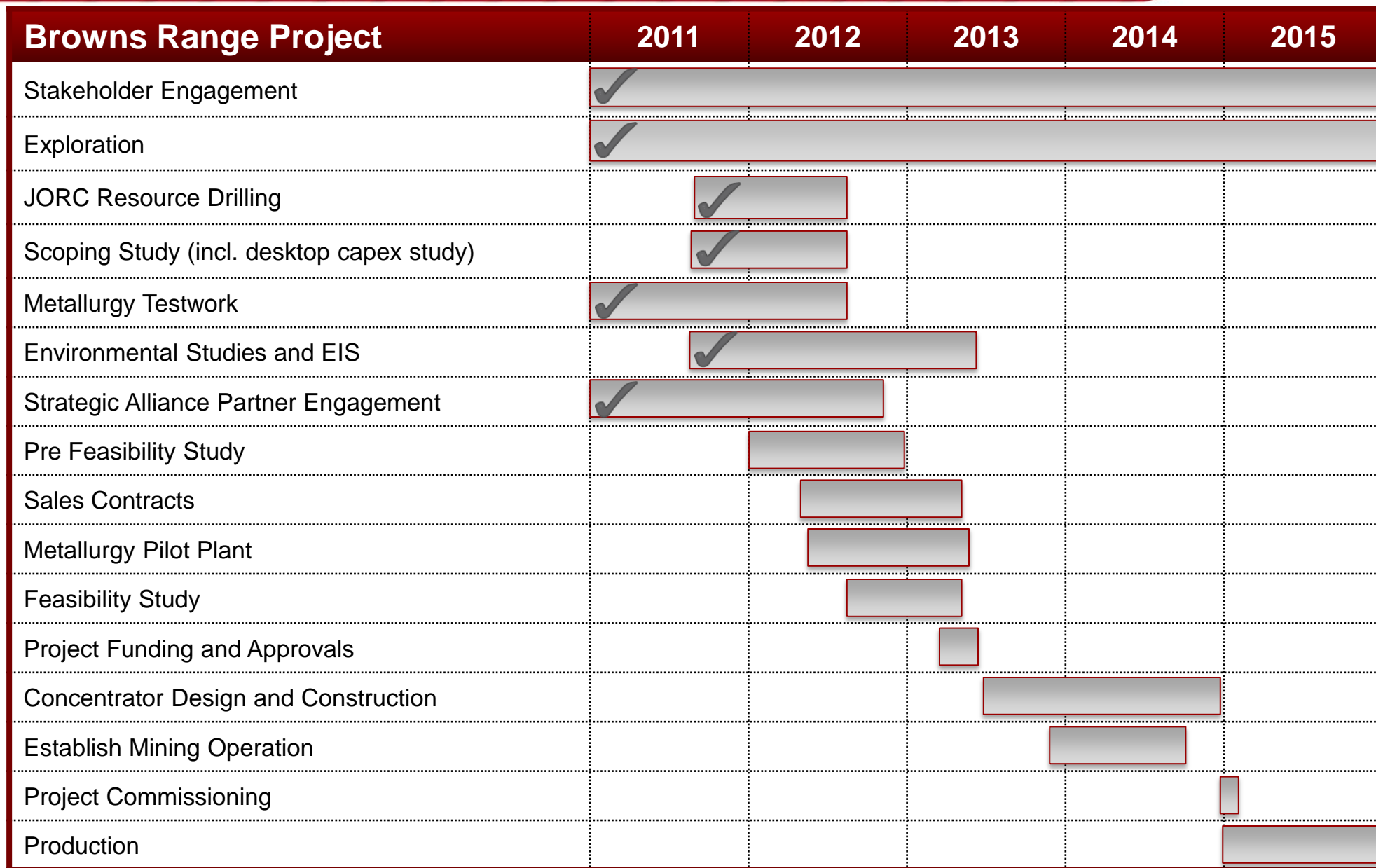
Significant new HREE discoveries in 2009 & 2010

Focus to date on the Western Australian tenements, awaiting Northern Territory approval to begin exploration in the eastern portion of Browns Range Dome

Exploration to continue to build mineral inventory

Good infrastructure in the region including roads and port at Wyndham

# Pathway to Production







## Stakeholders Engagement

- Aboriginal Heritage survey complete – diamond drilling
- Met with the KLC (Kimberley Land Council) and CLC (Central Land Council) to provide an update of project status
- Met with KRED (Kimberley Regional Economic Development)

## Environmental Studies and EIS

- Outback Ecology engaged to provide environmental consulting services
- Study commenced on 11 January
  - Short Range (SRE) invertebrate fauna survey





# Browns Range – Gambit

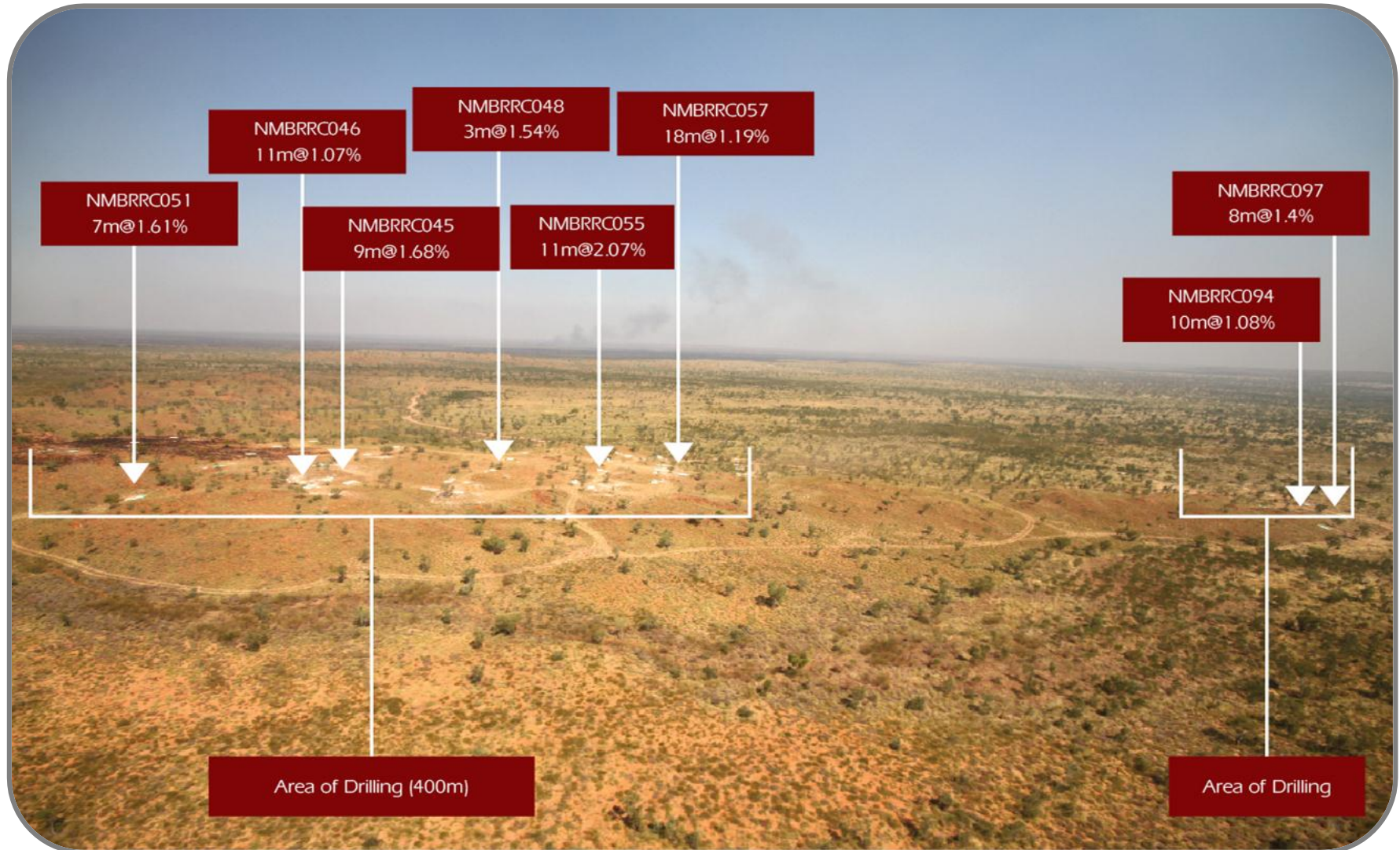
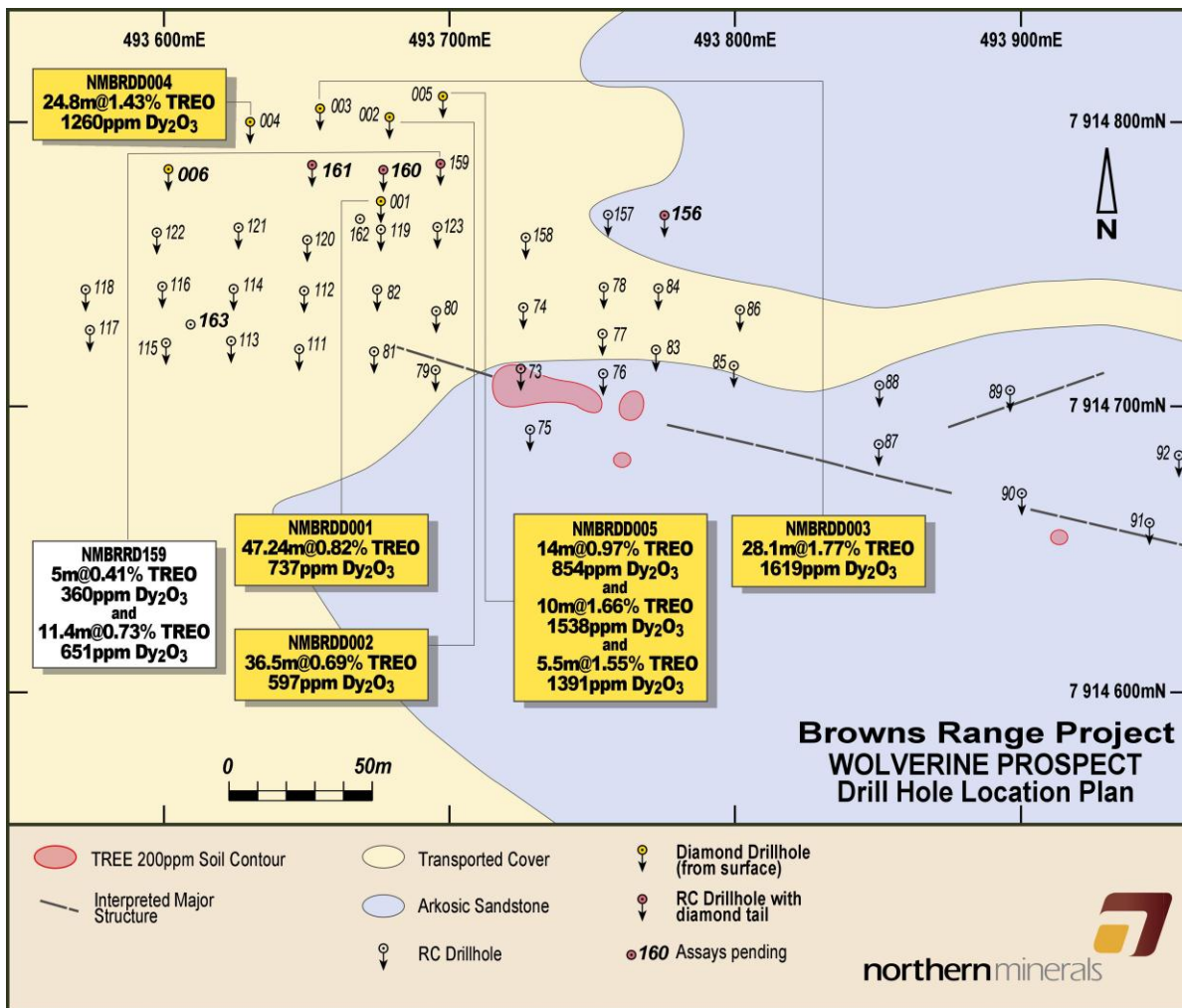


Image looks south

Area of Drilling (400m)

Area of Drilling

# Browns Range – Wolverine



41 RC drill holes and 11 diamond drill holes completed to date – east-west trending mineralised zone encountered on western end of geochemical soil anomaly

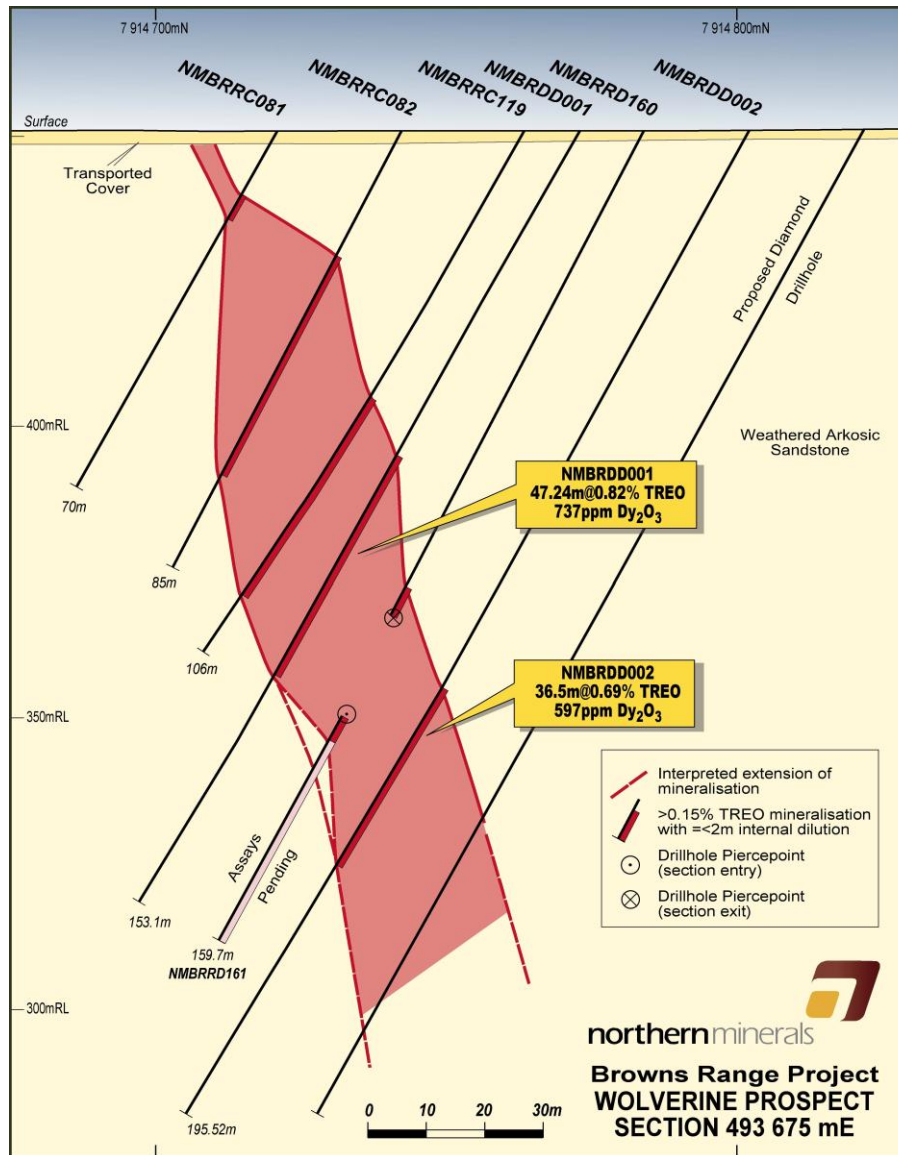
Significant widths of HREE mineralisation identified over a strike length of 200m

Best drill intercepts to date:

- **24m @ 2.18% TREO**  
(2,072ppm Dy<sub>2</sub>O<sub>3</sub>) from 96m (to EOH)  
including **7m @ 5.35% TREO**  
(5,151ppm Dy<sub>2</sub>O<sub>3</sub>) from 112m (to EOH)
- **33m @ 1.53% TREO**  
(1,470ppm Dy<sub>2</sub>O<sub>3</sub>) from 54m
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# Browns Range – Wolverine



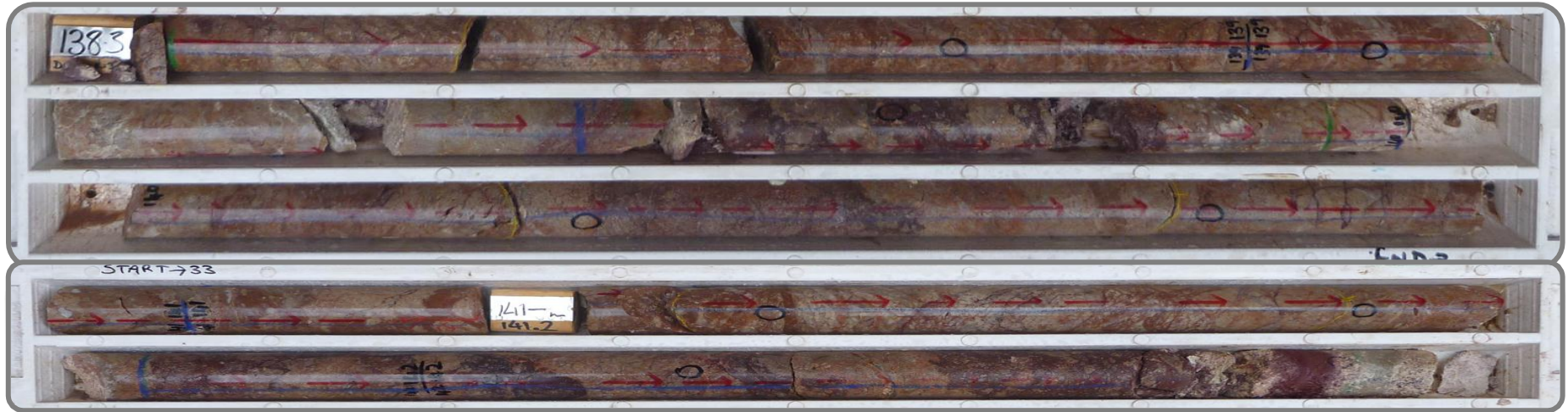
Structurally controlled hydrothermal mineralisation

Xenotime mineralisation in quartz veined, brecciated, silicified and hematitic arkosic sandstones

Mineralisation open at depth – tested down to 120m vertical

Metallurgical test work on bulk RC drill samples completed – successful results at feed grades of 0.25%, 0.5% & 1% TREO

# JORC Resource drilling – Wolverine



Diamond drilling completed at Wolverine – 11 holes for 1,357m completed in February 2012

First six diamond drill holes feature significant intersections of xenotime mineralisation, including 28m @ 1.77% TREO and 47m @ 0.82% TREO

Indicates depth extent of mineralisation down to 120m vertical and open at depth

Assay results from final five diamond drill holes expected in April

Further drilling planned to commence at Wolverine and Gambit in May.



# Scoping Study



Bateman Engineering have completed a desktop capital study based on this flowsheet assuming 0.75Mtpa plant.

|                 |       |
|-----------------|-------|
| Process Plant   | \$51M |
| Infrastructure  | \$12M |
| EPCM            | \$10M |
| Contingency     | \$13M |
| Working Capital | \$ 3M |

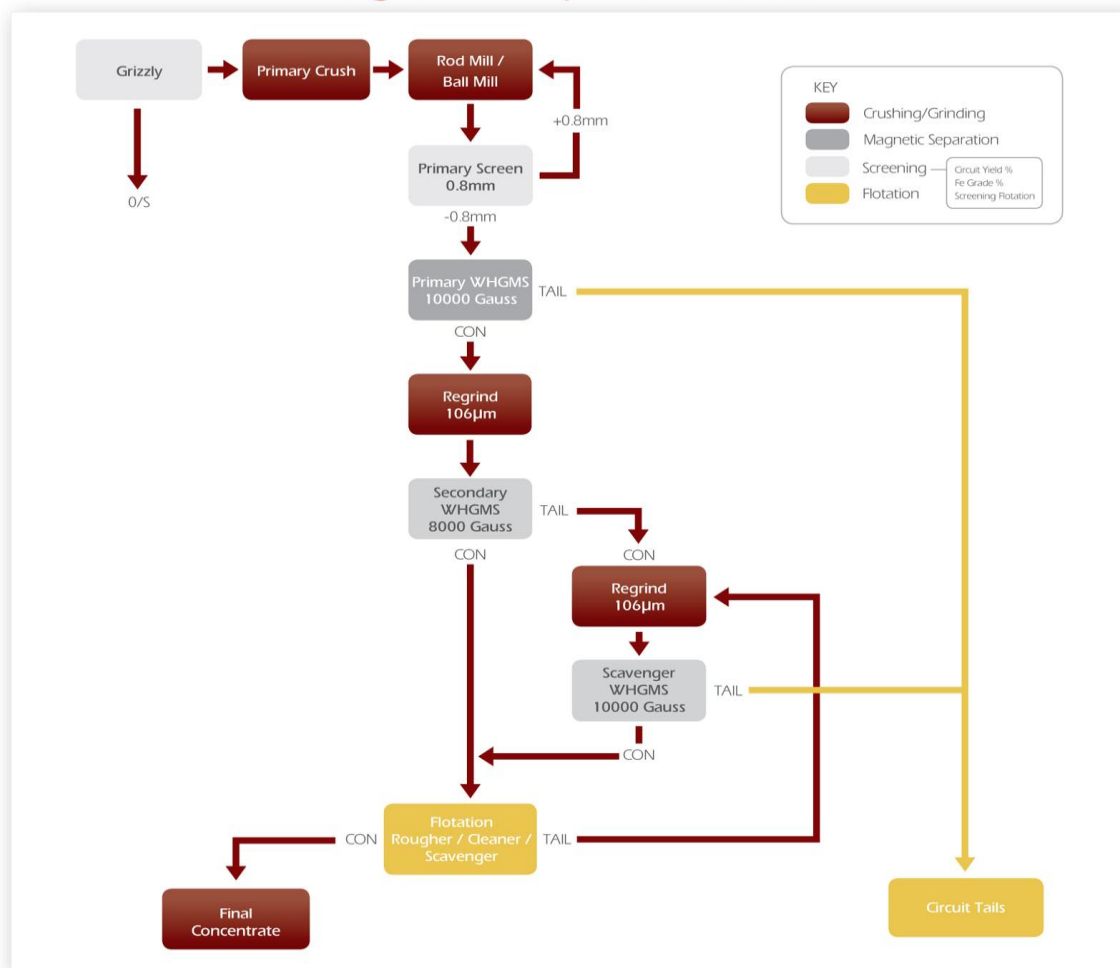
Total AUD\$89M

Operating Cost estimates have been compiled under review

## Milling costs

| Production target         | \$/t of ore |
|---------------------------|-------------|
| 1,500,000 tpa @ 0.25%TREO | 25          |
| 750,000 tpa @ 0.5%TREO    | 32          |
| 375,000 tpa @ 1%TREO      | 50          |

## Nagrom Conceptual Flowsheet



NOTE :The desktop capital study was conducted by Bateman following ongoing JORC resource drilling and metallurgical studies, to produce a conceptual flowsheet. At this stage the company has not yet estimated a JORC resource. Accordingly inferences to production should not be used as a basis for investment decisions about shares in the company.

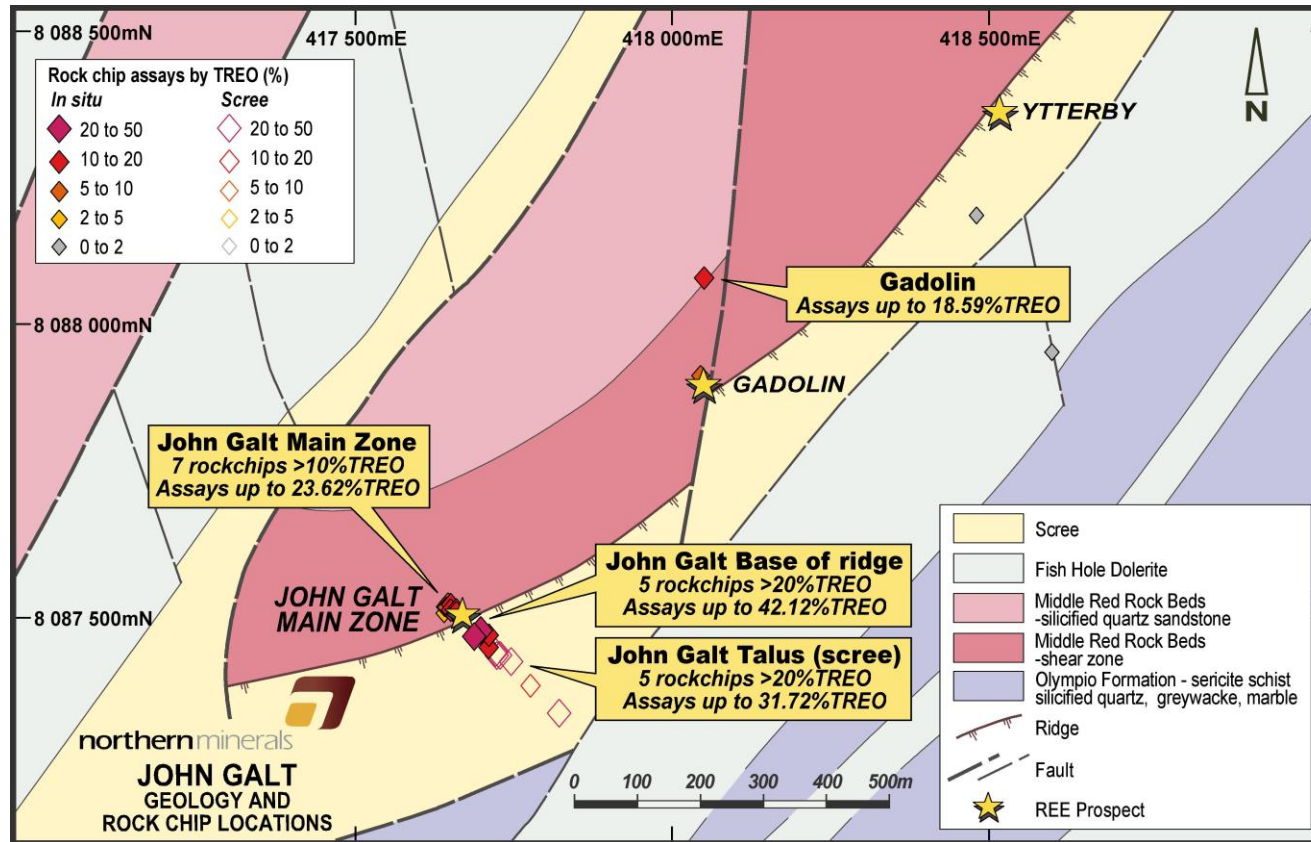
# Metallurgical Testwork / Offtake



- Successful testwork by Nagrom of approx 3 tonne of RC drill chips from 3 Browns Range prospects at cut off grades of ~0.25%, ~.50%, 1.0%
- Testwork indicates excellent recovery (>80%) across all cut-off grades
- Results prove that metallurgy is simple and understood, using low cost magnetic separation
- 10kg Mineral Concentrate sample produced to be distributed amongst potential strategic offtake partners for downstream evaluation
- Nagrom Metallurgical Process video available on Northern Minerals website.



# John Galt HREE Project



Northern Minerals has option to acquire 100% of the project

Similar mineralisation to Browns Range – high value HREE in xenotime

Xenotime-hosted mineralisation identified at three different zones by previous explorers

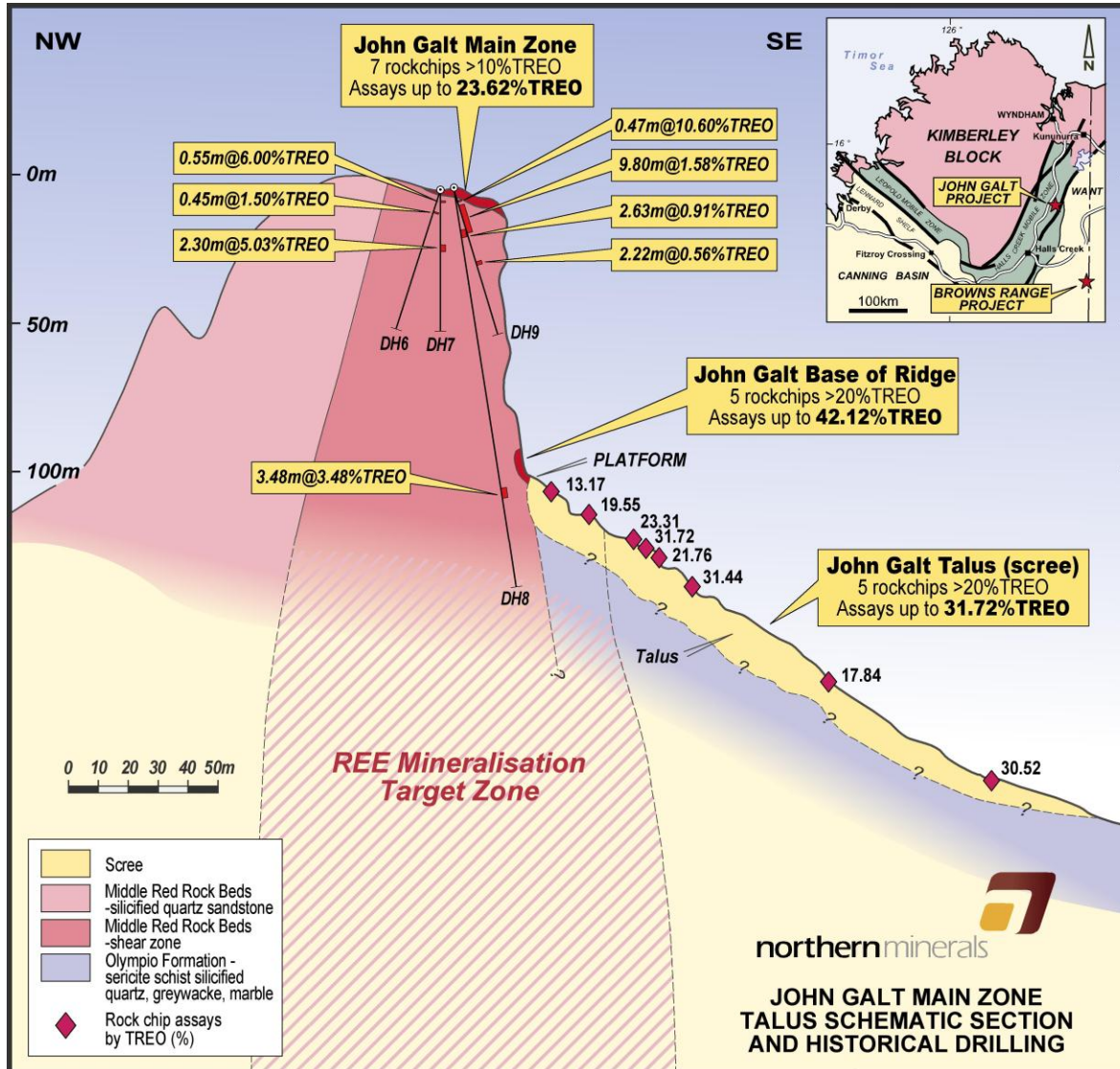
Historical drilling results<sup>#</sup> at only zone drilled (Main Zone):

- 9.80m @ 1.58% TREO
- 3.48m @ 3.48% TREO

<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.



# John Galt HREE Project



Rock chip samples up to 42% TREO with approximately 95% Heavy REO

Preliminary metallurgical tests indicate excellent recovery rates (>90%) with potential for concentrate grades >40%

High grade mineralisation in talus (scree) material - a new exploration target

Work to commence in Q1 2011 on assessing the potential volume of mineralised talus.



# Gardiner-Tanami Project – Gold/Uranium



## Gold

Project located within Tanami Arunta region – a world-class gold province, with several plus million ounce deposits (Callie, Granites, Tanami)

Gold geochemical soil anomalies defined in the Don-Venus prospect area

Follow-up RC drilling planned for 2012 at Don-Venus prospect

## Uranium

Focused on high grade unconformity-related uranium targets

# In Summary



## Strategy

To produce and deliver HREO concentrate in 2015

## 2012 “Pathway to Production”

- Deliver JORC resource at Browns Range
- Ongoing exploration to build mineral inventory
- Complete Pre-Feasibility Study
- Advance HREO strategic off-take partner discussions

## Our Advantage

- HREE distribution
- Simple flowsheet (\$90M total capital)
- Superior HREO concentrate grade >30%
- Strong demand and pricing for HREO

**Marketable Concentrate TREO Distribution  
(33% TREO Mineral Concentrate)**

