# **Investor Presentation**

November 2011 George Bauk Managing Director/CEO



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## Agenda



### Company Overview

### Value Proposition

### **Rare Earths**

- Market
- Metallurgy
- Browns Range
- John Galt

### Uranium and Gold

Achievements / Plan

### In Summary



# **Capital Structure**



ASX Codes		
NTU	Ordinary Shares	175.5M*
	Listed Options	
NTUOA	\$0.20 expires 30 Sept 2012	8.5M
NTUOB	\$0.15 expires 31 Mar 2012	12.3M
	Unlisted Options	
	Various prices and expiry dates	8.7M
	Trading Summary	
	Market Capitalisation (in AUD) (as at 8 November 2011 @ \$0.44)	\$77M
	52 week trading range (in AUD)	\$0.28-\$1.07
	Daily Traded Volume (average over 3 months)	0.7M
	Balance Sheet	
	Cash (30 September 2011 in AUD)	\$5.1M
	No Debt	



Ma	or Shareholders	8

Conglin Yue	19.5%
Lynas Corporation	7.6%
Geiger Counter	6.8%
Board & Management	6.1%

\*includes 3.45M restricted shares issued under the share plan

# **Board & Management**





#### George Bauk Managing Director

- 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





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

## Value Proposition



### 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 3,000 tpa HREO in concentrate in 2015

### 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





HREE – New Technology/New Energy

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### Dysprosium

- Assessed as "critical" by US Energy Dept.
- Prized for magnetic properties under high temperatures for NdPr permanent magnets
- Plays a crucial role in clean energy eg wind turbines and electric vehicles

### Yttrium

- Key component in a wide range of applications:
  - Phosphors for computer and LED monitors
  - Energy efficient lighting



This chart has been produced with in-situ values only and does not imply full recovery. Its purpose is primarily for comparison purposes between rare earth projects.

> Lack of significant volumes of dysprosium and yttrium evident in the in-situ value of emerging REE producers.

# HREE – serious supply shortfalls



### Strong Demand

- Demand driven by high-tech applications in energy generation and efficiency applications
- HREE demand growing faster than
  new supply sources coming online
- Consensus among analysts of impending supply/demand shortfall for HREE's

#### Sustainable Prices

- Strong prices underpinned by stable demand and very few HREO supply sources
- Despite 2011 retreat in LREE prices, HREO prices have remained strong
- Forecast supply shortfall assures sustainable strong HREO prices into the future

#### Dysprosium Oxide Supply and Demand Forecasts



#### **Comparison of selected average HREO Prices**



# **Simple Flowsheet**



Paramagnetic properties of xenotime allows utilisation of magnetic separation process

Browns Range metallurgical results completed by NAGROM have reported yttrium recovery up to 89.5% and a concentrate in excess of 30%

Bateman Engineering have been engaged to coordinate metallurgical studies and complete scoping capital and operating cost estimates

\$90M capital expenditure estimate based on this flowsheet assuming 0.75Mtpa plant, producing 3,000 tonnes HREO in concentrate

#### Nagrom Conceptual Flowsheet



# **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

# **Browns Range - Wolverine**



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

Significant widths (up to 20m true width) of HREE mineralisation identified over a strike length of 200m

Best drill intercepts to date:

- **33m @ 1.53%** TREO (1,470ppm Dy<sub>2</sub>O<sub>3</sub>) from 54m
- 11m @ 1.89% TREO
  - $(1,806ppm Dy_2O_3)$  from 50m
- **41m @ 1.01%** TREO (881ppm Dy<sub>2</sub>O<sub>3</sub>) from 24m

## **Browns Range - Wolverine**



Structurally controlled hydrothermal mineralisation

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

Mineralisation open at depth – diamond drilling to commence in November 2011 to test depth extensions

Metallurgical test work on bulk RC drill samples commenced in November 2011

# **Browns Range – Gambit**



Image looks south

# John Galt HREE Project





Northern Minerals has option to acquire 100% of the project

Similar mineralisation as Browns Range – high value HREE in xenotime

Xenotime-hosted mineralisation at three different zones

Historical drilling results at only zone drilled:

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

### Gardiner-Tanami Project – Gold/Uranium

![](_page_15_Picture_1.jpeg)

![](_page_15_Figure_2.jpeg)

#### 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 drilling postponed to 2012 due to unfavourable weather conditions in late 2011

### Uranium

Focussed on high grade unconformity-related uranium targets

# 2010/11 Achievements

![](_page_16_Picture_1.jpeg)

### Technical

- Discovered significant HREE at all 4 prospects through RC drilling
- Intersected significant HREE mineralisation at Wolverine over 200 metres including;
  - 33m @ 1.53% TREO (1,470ppm Dy<sub>2</sub>O<sub>3</sub>) from 54m
  - 11m @ 1.89% TREO (1,806ppm Dy<sub>2</sub>O<sub>3</sub>) from 50m
  - 41m @ 1.01% TREO (881ppm Dy<sub>2</sub>O<sub>3</sub>) from 24m
- Developed a simple flowsheet identifying low capital costs \$90M and a high concentrate grade of >30%

### Corporate

- Raised \$11.7M through rights issue and option conversions
- Expanded Browns Range / Gardiner-Tanami portfolio through;
  - Acquisition of all mineral rights from Ferrum Crescent
  - Acquisition of all pre-emptive marketing rights (excluding uranium) from Areva

## Pathway to Production

![](_page_17_Picture_1.jpeg)

Browns Range Project	2011	2012	2013	2014	2015
Stakeholder Engagement		:	:		
Exploration				· · · · · · · · · · · · · · · · · · ·	
JORC Resource Drilling					
Scoping Study (incl. desktop capex study)					
Metallurgy Testwork				•	
Environmental Studies and EIS			<u>.</u>		
Strategic Alliance Partner Engagement					
Pre Feasibility Study					
Sales Contracts					
Metallurgy Pilot Plant					
Feasibility Study					
Project Funding and Approvals					
Concentrator Design and Construction					
Establish Mining Operation					
Project Commissioning					
Production					

# In Summary

![](_page_18_Picture_1.jpeg)

### Strategy

To produce and deliver 3,000 tpa HREO in 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 capex)
- Superior HREO concentrate grade >30%
- Strong demand and pricing for HREO

![](_page_18_Picture_14.jpeg)