

Positive Pre-Feasibility Study confirms the value and technical strength of Browns Range Project

Highlights

- Pre-feasibility study demonstrates the potential for Browns Range to be **the first significant world producer of high value dysprosium¹** outside of China.
- \$314M pre-production capital for a 10 year operation producing **279,000kg of dysprosium¹ per annum** with ongoing exploration potential.
- Average annual operating free cash flow of \$173M post tax and royalties for a **net present value of \$446M²**.

Northern Minerals Limited (ASX: NTU) is pleased to announce the completion of its Preliminary Feasibility Study (PFS) for the Company's 100% owned Browns Range Project (Browns Range or the Project) in northern Western Australia.

The PFS has confirmed robust project economics for Browns Range, where the Company is aiming to commence production of dysprosium and other heavy rare earths (HREs) by the end of 2016.

The PFS is based on a conventional mining operation involving both open cut and underground operations, and a relatively simple processing flowsheet with all infrastructure located on site.

The Project includes a base case production rate of 279,000kg of dysprosium per annum, contained within 3,200,000kg of high purity mixed rare earth (RE) oxide.

The PFS verifies the potential for Browns Range to be the first significant world producer of high value dysprosium outside of China. Dysprosium is an essential ingredient in the production of NdFeB (neodymium-iron-boron) magnets which are used in clean energy and high technology applications. Dysprosium is in high demand and critical short supply globally.

The four deposits discovered since 2010 remain open at depth and have further exploration potential. Several additional prospects displaying similar geological characteristics to Wolverine have also been discovered at Browns Range which support the potential for further significant dysprosium discoveries.

NTU's distinctive capabilities lie in its ability to deliver a high value, high purity, dysprosium rich product to market. The high concentration achieved through the beneficiation process has resulted in a competitive pre-production cost estimate, making the Project a globally competitive dysprosium supplier.

¹ – In this report dysprosium is to be read as dysprosium oxide (Dy₂O₃) unless otherwise stated. Other elements are referred to similarly.

² – 10% discount rate, post tax and royalties.

All \$ are AUD

Powering Technology.

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Northern Minerals' Managing Director George Bauk said, "The completion of the PFS is another major milestone for Browns Range, and has confirmed the Project is robust and well positioned to become a significant global dysprosium supplier."

"In particular, the PFS has reinforced that the xenotime mineralisation at Browns Range is our key competitive advantage - its richness in dysprosium and predictable processing allow us to significantly concentrate the ore through the beneficiation process and has delivered a competitive cost estimate."

"The positive results from the PFS will support the Project's continuation to Feasibility Study (FS), as we move toward a 2016 production target."

"Once in full production, the Project will deliver \$173M average annual operating free cash flow, which will be an outstanding result for shareholders." Mr Bauk said.

An executive summary of the PFS is attached. Key highlights include:

Robust economics

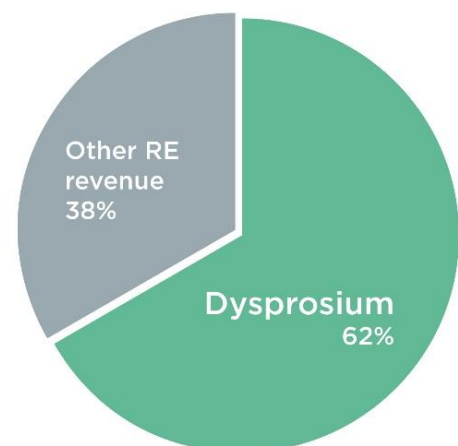
A financial evaluation of the Project was undertaken based on data from the PFS, which confirms the value and economic robustness of the Project with an after tax Net Present Value (NPV) estimated at \$446M, an Internal Rate of Return (IRR) of 33% and a 3.3 year payback from commencement of production.

Dominance of high value dysprosium

A key feature of the Browns Range resource is the dominance of high value dysprosium. Revenue from dysprosium production will account for more than 60% of total revenue from the Project, as shown in Figure 1.

Globally, dysprosium supplies are considered critical, with demand rising on the back of growth in technology and energy applications. Browns Range is well positioned to capitalise on this market opportunity.

Figure 1: Revenue Distribution



Competitive capital and production costs

The Project has a pre-production capital cost of \$314M (including contingency of \$43M), and a production cost of \$123/kg of dysprosium net of by-product revenue. The pre-production capital cost estimate is competitive largely due to the high concentration achieved in the beneficiation process, which allows for smaller and more efficient hydrometallurgical processing infrastructure.

Conventional mining and processing

Mining studies indicate the viability of operations consisting of conventional open cut mining combined with a long life underground operation. The current Mineral Resource³ supports a 10 year operation with annual product delivery rates of 279,000kg of dysprosium in 3,200,000kg of mixed RE oxide.

Mining studies were completed on behalf of NTU by AMC Mining Consultants Pty Ltd (AMC). AMC's work included PFS level mine design which has enabled estimation of a Probable Ore Reserve⁴ of 2,048,000kg of dysprosium, contained in 23,595,000kg TREO.

The Project is a 10 year operation, with the maiden Ore Reserve⁴ of 2,048,000kg of dysprosium underpinning the first six years of production. In addition to the Probable Ore Reserve, Supplemental Mining Inventory (SMI) has been identified which, if mined at current modelled grades and with the same mining methods applied for the Ore Reserve estimation, would provide the production forecast in years 7 to 10.

The Company advises that the SMI has a reduced level of confidence, compared to production derived from Ore Reserves, as it is derived from Inferred Mineral Resources³. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources, or that the production target itself will be realised from this SMI. NTU plans to mitigate these risks at an appropriate point in the future, using in-pit and underground drilling as this provides substantial cost savings over conventional surface drilling. The Company aims to upgrade the confidence and convert the SMI to Ore Reserves at that point.

The ore will be treated through onsite process plants consisting of a beneficiation plant and a downstream hydrometallurgical plant. These are based on relatively simple flowsheets, using conventional unit components. The flowsheet has been demonstrated through pilot plant operations that are commercially scalable to produce high recoveries of dysprosium and other heavy rare earth oxides (HREOs).

Marketing landscape

The key market driver for dysprosium is the growing demand for NdFeB permanent magnets. The permanent magnet sector's forecasted growth from 2014 to 2020 is expected to be 8 - 12% per annum, which could increase as secure sources of dysprosium supply such as Browns Range come on line. While current dysprosium prices are lower than in recent years, global producers are forecasting prices to steadily increase over the next six years due to this demand pressure, with Chinese production continuing to consolidate and global demand increasing for environmentally responsible HRE sources.

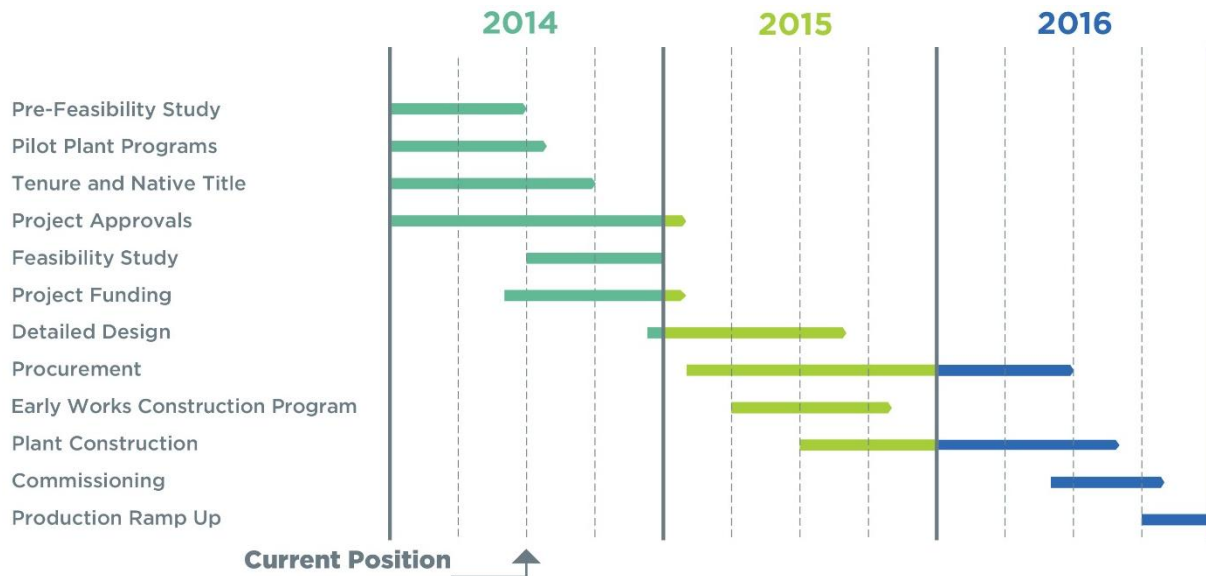
³ – "Wolverine Total Resource Doubled in a Major Upgrade of Browns Range HRE Mineral Resource Estimate" – released to ASX 26/2/2014.

⁴ – "Maiden Ore Reserve for the Browns Range Project" - released to ASX 24/6/2014

Pathway to production

Following completion of the PFS, NTU will move into Feasibility Study, which it is aiming to complete by the end of 2014. The Company is continuing to progress necessary project approvals and will be working on further funding initiatives to take the Project into production in 2016.

Figure 2: Development schedule



For more information:

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Compliance Statement

The information in the announcement that relates to Mineral Resources is extracted from the report entitled Wolverine Total Resource Doubled in a Major Upgrade of Browns Range HRE Mineral Resource Estimate created on 26 February 2014 and is available to view on the Company's website (northernminerals.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

The information in the announcement that relates to Ore Reserves is extracted from the report entitled Maiden Ore Reserve for the Browns Range Project created on 24 June 2014 and is available to view on the Company's website (northernminerals.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that

the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.



ASX: NTU

BROWNS RANGE PROJECT

Pre-Feasibility Study Executive Summary



**NORTHERN
MINERALS**



June 2014

Powering Technology.

Northern Minerals Limited (ASX: NTU) is focussed on the delivery of the heavy rare earth (HRE) element, dysprosium. NTU has a large landholding in Western Australia and the Northern Territory that is highly prospective for this element.

Through the development of its flagship project, Browns Range, Northern Minerals aims to be the first significant world producer of dysprosium outside of China.

BROWNS RANGE PROJECT

Pre-Feasibility Study Executive Summary

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Project Highlights

Browns Range is well positioned to become a significant new source of high value dysprosium.

Northern Minerals Limited (NTU or the Company) has completed a comprehensive Preliminary Feasibility Study (PFS) on the Browns Range Project (the Project or Browns Range).

Browns Range is a dysprosium² focussed, heavy rare earth (HRE) project. Dysprosium is in high demand for use in clean energy products such as hybrid cars and wind turbines, and global supplies are considered to be at critical levels. Browns Range is well positioned to become a significant new source of high value dysprosium.

The PFS has confirmed the value and economic robustness of the Project, which the Company is planning to bring into production in 2016.

The xenotime mineralisation found at Browns Range is rich in dysprosium and other high value heavy rare earth oxides (HREO) and this, in combination with the mainly silica host rock, provides a key competitive advantage for the Project.

The ore can be significantly concentrated, up to 30 times, through the beneficiation stage with excellent recovery of xenotime. This results in a more cost efficient hydrometallurgical processing plant to produce the final product.

The Company has undertaken extensive metallurgical testing to develop a relatively straightforward processing flowsheet, which will produce 279,000kg of dysprosium contained within 3,200,000kg per annum of high purity mixed rare earth (RE) oxide.

A mine planning schedule based on data from the Mineral Resource Estimate and the maiden Ore Reserve has been developed to provide a 10 year life of mine (LOM).

Comprehensive engineering studies have been completed on all aspects of the Project to provide detailed capital and operating cost estimates for the PFS, and support the economic assessment of the Project.

PROJECT ECONOMICS

(post tax and royalties)
All \$ are AUD

\$446M
net present value¹

33%
internal rate of return

3.3 YEARS
payback from commencement of operations

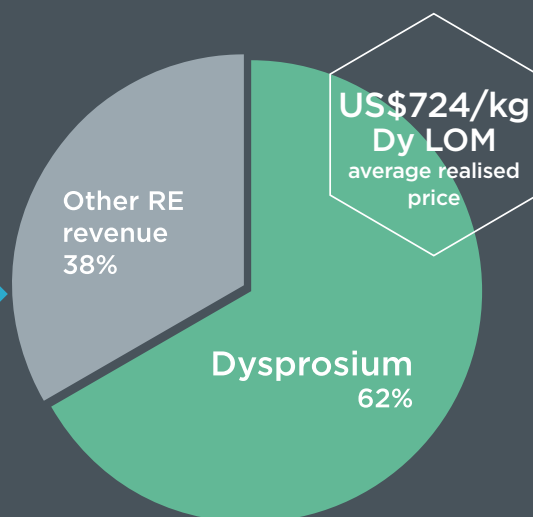
\$173M
average annual operating free cash flow during full operation

production in
2016

¹ 10% discount rate.

² In this report dysprosium is to be read as dysprosium oxide (Dy₂O₃) unless otherwise stated. Other elements are referred to similarly.

Browns Range Project Revenue Distribution



The competitive pre-production capital cost estimate is largely due to the high concentration achieved in the beneficiation process.

Low Dy Production Cost

The Company considers Browns Range primarily as a dysprosium project given the grade, value and criticality of dysprosium supply. The cost of producing dysprosium has been calculated net of revenue from the other rare earth oxides, which are considered as by-products, contained in the mixed RE oxide.

\$123/kg
Dy Net of
by-product
revenue

\$314M
pre-production
capital cost

Exploration Potential

The four deposits discovered since 2010 remain open at depth and have further exploration potential. Several additional prospects, displaying similar geological characteristics to Wolverine, have also been discovered at Browns Range which support the potential for further significant dysprosium deposit discoveries.



1 Introduction



The Company has completed a PFS for the development of its wholly owned Browns Range Project.

The Project is based on the development of a dysprosium mining and mineral processing operation approximately 160 kilometres (km) southeast of Halls Creek, Western Australia. NTU holds the mineral rights to an extensive area of mining and exploration tenements centred on the Browns Range Dome (the Dome). The Dome is a major geological structure, which straddles the Western Australian / Northern Territory border, with the Project located on the Western Australian tenements.

The significant exploration program to date has focussed on targets in Western Australia, where the Company has discovered HRE dominant xenotime mineralisation. Of the top three heavy rare earth oxide (HREO) projects outside China, the Browns Range xenotime mineralisation has the highest percentage of HREO, and more importantly, has the highest ratio of dysprosium to contained total rare earth oxide (TREO). Compared to its nearest competitors (listed in Table 1.1) the Project will only need to produce just over half the amount of TREO to produce the same amount of dysprosium.

Table 1.1 Top Three HREO Projects Outside of China

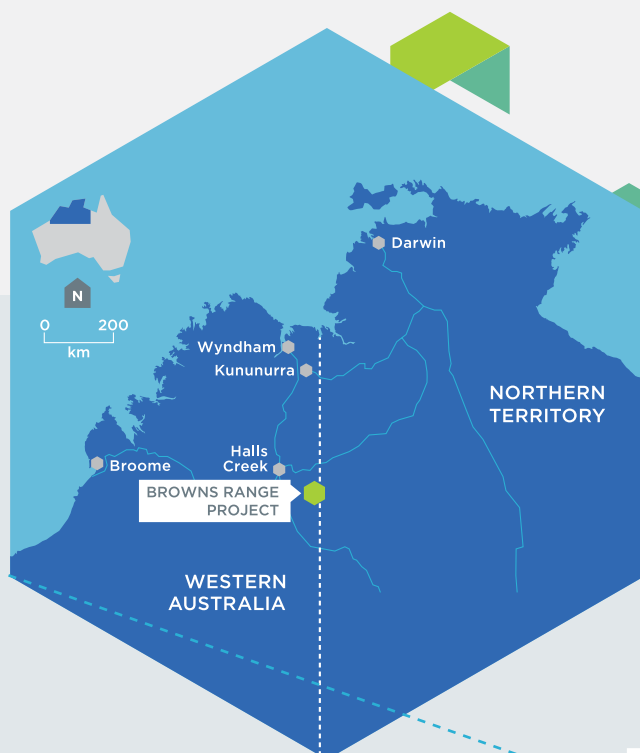
Project	TREO %	HREO %	Dy ₂ O ₃ % of TREO	Dy ₂ O ₃ % of HREO
Steenkampskraal	14.00	10.8%	1.0%	9.2%
Strange Lake Enriched	1.44	52.2%	4.6%	8.8%
Browns Range	0.74	84%	8.4%	9.7%

Source: Technology Metals Research

TREO = Total Rare Earth Oxides - Total of La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃

HREO = Heavy Rare Earth Oxides - Total of Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃

The Company intends to mine rare earth ore using a combination of open pit and underground mining methods. The ore will be treated through onsite process plants consisting of a beneficiation plant and a downstream hydrometallurgical plant. The beneficiation plant will treat up to 585,000tpa of ore to produce approximately 17,045tpa of mineral concentrate at a grade of 20% TREO. The mineral concentrate will be further treated in the hydrometallurgical plant to produce 279,000kg of dysprosium per annum, contained within 3,200,000kg per annum of high purity mixed RE oxide. The mixed RE oxide product will be packaged on site and exported to international markets.



Western Australia, ranked as the world's most attractive investment destination by the Fraser Institute Survey of Mining Companies, 2013.

Location - Australia

The Project is located within the Gordon Downs pastoral lease in the Shire of Halls Creek, Western Australia, approximately 50km southeast of the Yaruman Community at Ringer Soak, and within the registered native title claim of the Jaru People.



PFS Team

NTU's project development and exploration technical teams consist of a number of high calibre, experienced professionals, working in conjunction with several specialised consultant companies to complete studies on all major aspects of the Project to deliver the PFS.

These companies and their scope are as follows:

Consultant	Scope Area
AMC Mining Consultants	Mine design and scheduling
DRA Global	Beneficiation plant, power station, accommodation village
Hatch Pty Ltd	Hydrometallurgical plant, waste water treatment plant
Sargon Engineering	METSIM modelling
Golder Associates, Knight Piesold Consulting Engineers	Tailings management and storage
Klohn Crippen Berger	Project water supply
Intech Engineers	Airstrip
Shawmac	Access roads
Wyntac Logistics	Project logistics
NAGROM Laboratories	Beneficiation and hydrometallurgical testwork
SGS Lakefield	Beneficiation pilot plant
ANSTO Minerals	Hydrometallurgical pilot plant
ALS Ammtec	Hydrometallurgical testwork

2 Tenure and Land Access



Tenure

The Project covers an area of 1,665 square kilometres (km²), within Western Australia.

The Company owns 100% of the project tenements which consist of one mining lease M80/627, four miscellaneous licence applications L80/76 to 79, and a number of exploration licences, six granted and two under application (see Table 2.1 right).

The project operations will occur on the mining lease, and include mining, ore processing and storage of mine waste, mine accommodation village, airstrip and power generating plant. The miscellaneous licence tenements would generally be used for linear infrastructure (pipelines, roads, power transmission) and support facilities (water abstraction).

Applications for mining lease M80/627 and the miscellaneous licences L80/76-79 were lodged with the Department of Mines and Petroleum in November 2013 and January 2014 respectively.

Mining lease M80/627 was granted in June 2014.

Table 2.1: Tenements

Lease	Locality	Lease Status	Area km ²
M80/627	WA	Granted	128.6
E80/3547	WA	Granted	114.0
E80/3548	WA	Granted	227.0
E80/4393	WA	Granted	58.5
E80/4479	WA	Granted	55.3
E80/4725	WA	Granted	204.7
E80/4726	WA	Granted	562.5
E80/4782	WA	Application	126.7
E80/4806	WA	Application	169.2
L80/76	WA	Application	14.4
L80/77	WA	Application	1.8
L80/78	WA	Application	1.7
L80/79	WA	Application	0.4

Native Title

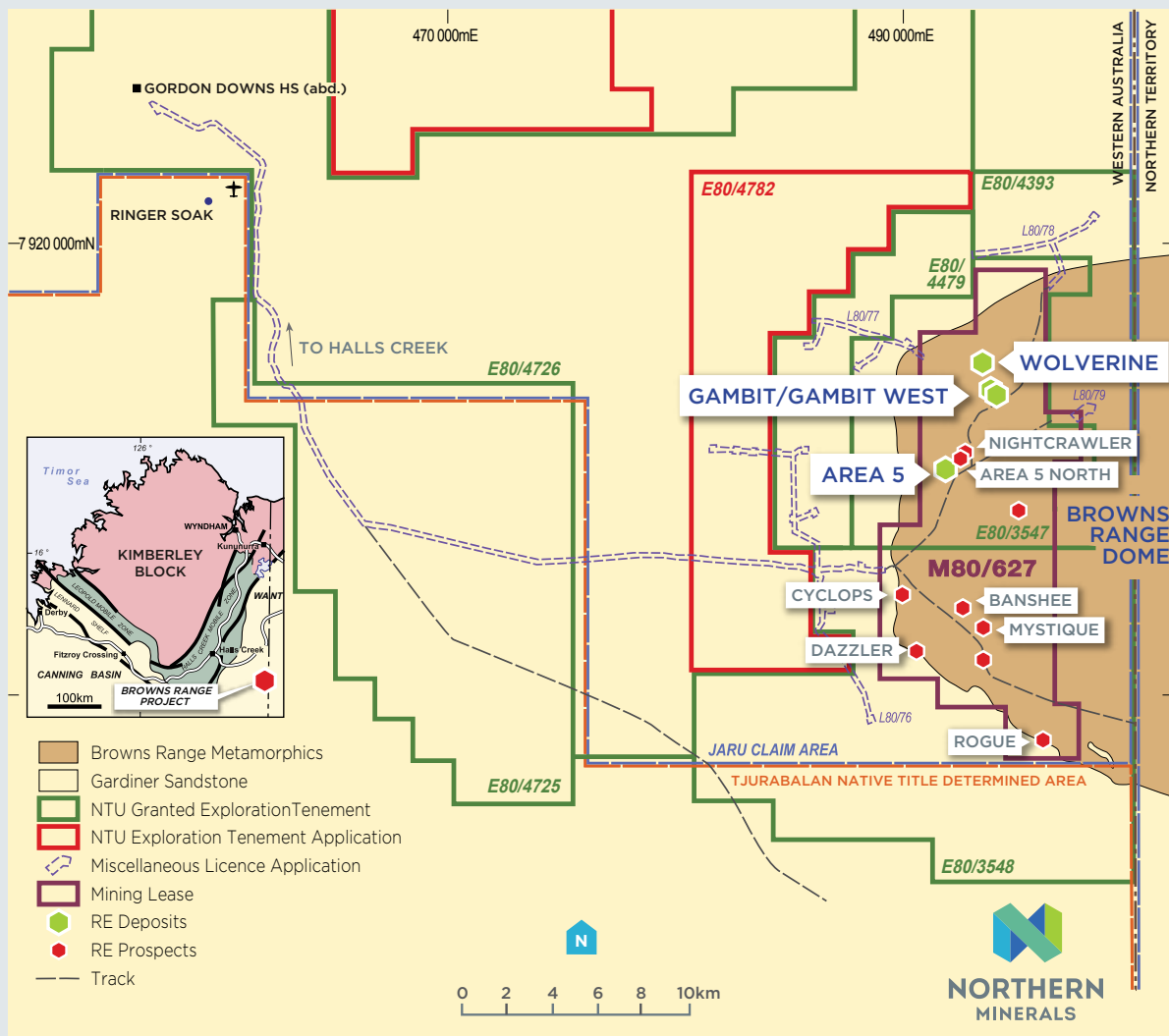
The Project lies entirely within the area of the registered native title claim on behalf of the Jaru People (WAD45/2012), with the exception of a section of the current access road on L80/76, which crosses land in respect of which the Tjurabalan People hold native title rights and interests (WAD160/1997).

The application for M80/627 attracted the 'right to negotiate' procedure under the Commonwealth Native Title Act 1993 (NTA) and the Company has executed a Co-existence Agreement with the Jaru Native Title Claim group. This confidential agreement provided for the necessary documentation (i.e. a Section 31 State Deed) to be executed that enabled the grant of M80/627.

The application for the four miscellaneous licences (L80/76-79) does not attract the 'right to negotiate' procedure under Subdivision P of the NTA. The Jaru Co-existence Agreement provides for the grant of the four miscellaneous licences and a land access agreement will be required with the Tjurabalan People to facilitate the grant of miscellaneous licence application L80/76.

The settlement of Kundat Djaru (Ringer Soak) was established in the mid-1980s on land excised from the Gordon Downs pastoral station. The land on which the township lies and a parcel of land lying mainly to the south of it has been formally gazetted as Crown Reserve 37670, under the *Aboriginal Affairs Planning Authority Act 1972*.

Figure 2.1: Location, Tenure, Deposits and Prospects



3 Geology and Mineral Resource



In 2010, preliminary exploration work by NTU identified high grade xenotime rare earth mineralisation with an elevated dysprosium content.

▲ Wolverine deposit outcrop

Exploration History

Interest in the exploration potential of the area was generated by reconnaissance mapping carried out by the Bureau of Mineral Resources (BMR) in the late 1950s.

The first record of commercial exploration was in the early 1960s by New Consolidated Goldfields, with the area attracting various phases of gold, base metals and uranium exploration.

Anomalous rare earth elements in outcrop were first identified through evaluation of radiometric targets by PNC Exploration Australia Pty Ltd during their uranium exploration programs between 1987 and 1992.

In 2010, preliminary exploration work by NTU identified high grade rare earth mineralisation at the Wolverine and Gambit prospects. An inaugural drilling program was completed in 2011 at the Wolverine, Gambit, Area 5 and Area 5 North prospects. Initial drilling of the Gambit West deposit occurred in 2012 as a result of a soil geochemical anomaly.

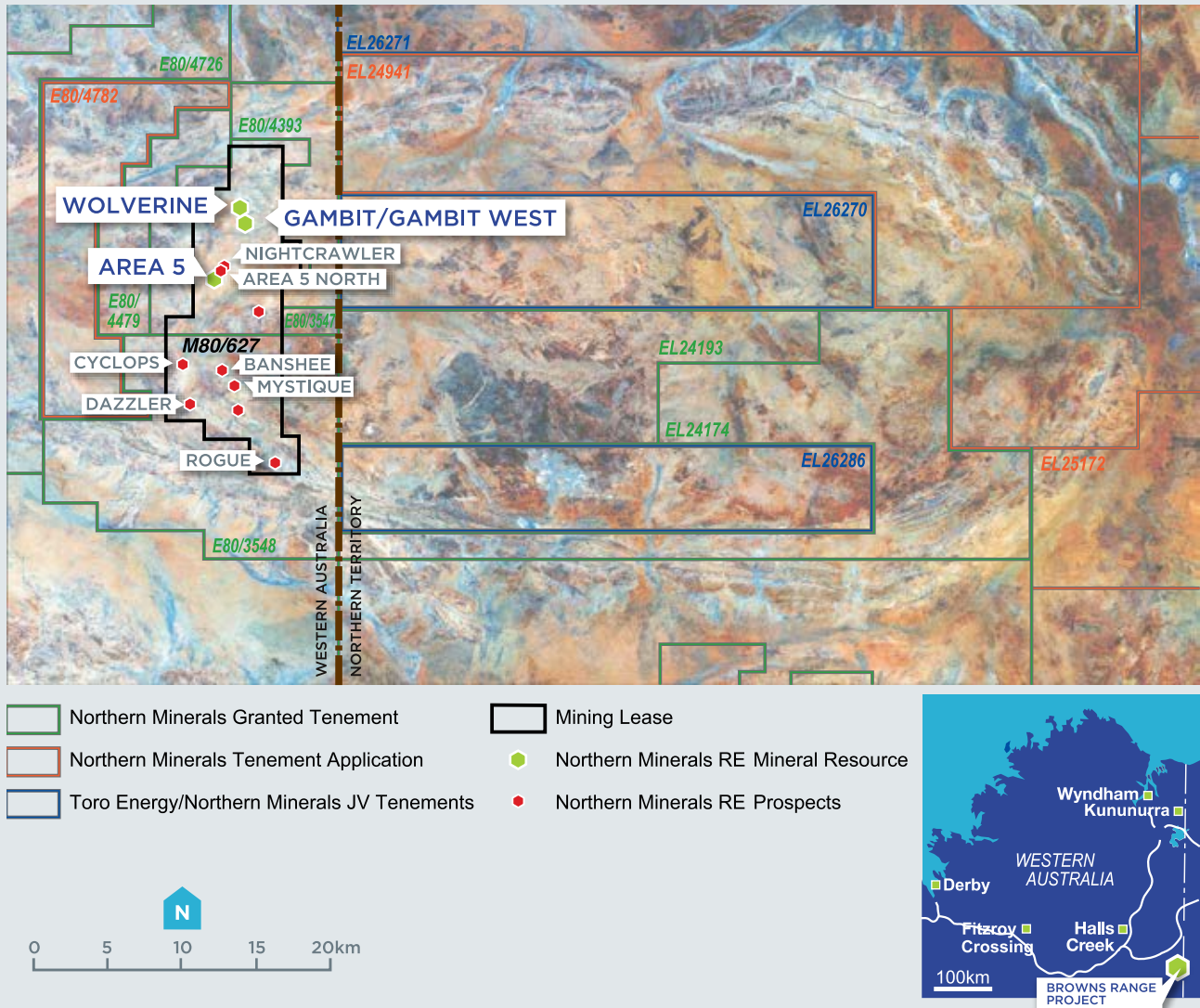
Since these initial discoveries, the Company has undertaken an extensive exploration program of the immediate area and discovered numerous additional prospects with the potential to host economic HREO deposits (Figure 3.1).

Geology and Mineralisation

The project area is located on the western side of the Browns Range Dome (the Dome), a Paleoproterozoic dome formed by a granitic core intruding the Paleoproterozoic Browns Range Metamorphics (meta-arkoses, feldspathic meta-sandstones and schists) and an Archaean-Palaeoproterozoic orthogneiss and schist unit to the south. The Dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birindudu Group).



Figure 3.1: Location of Prospects and Deposits



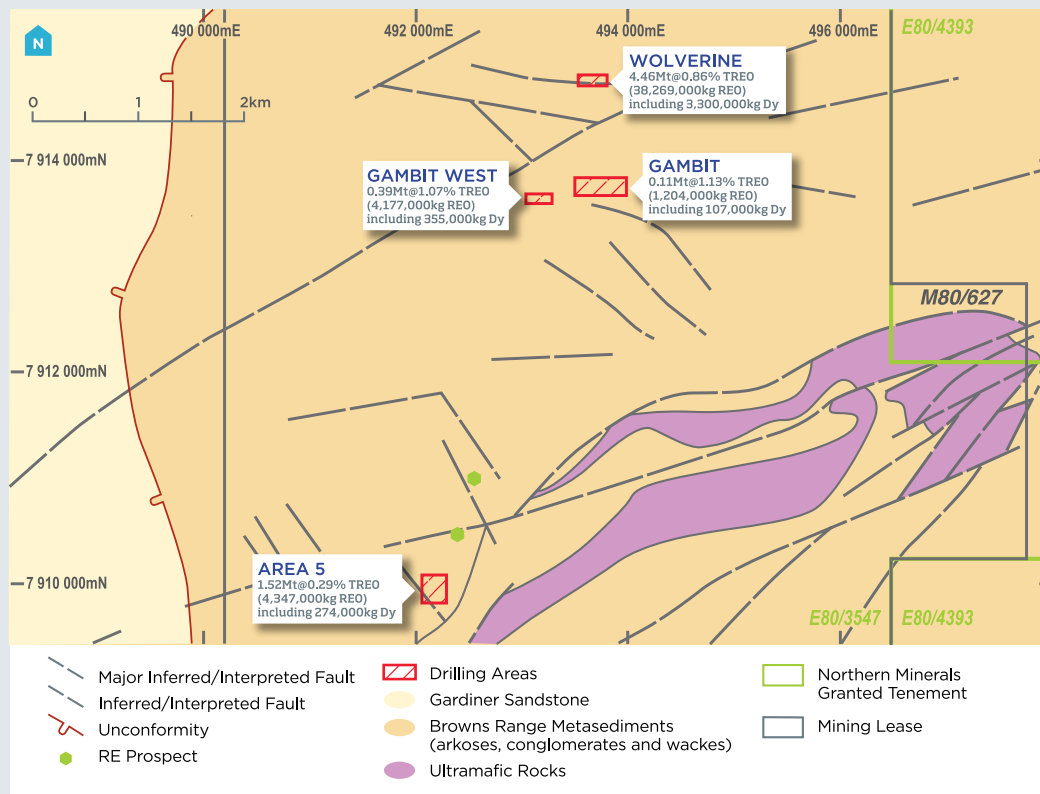
The deposits at Browns Range are characterised as breccia-hosted hydrothermal systems with the dominant mineralisation being the rare earth phosphate mineral xenotime; a rich source of dysprosium and other HREOs such as terbium and yttrium. The only other rare earth minerals recognised to date are the light rare earth florencite - goyazite series. These minerals comprise a minor component of the rare earth mineralisation relative to xenotime. Overall, the mineralisation at Browns Range has an exceptionally high HREO to TREO, as demonstrated by the Wolverine deposit's 88% TREO ratio.

At Wolverine the majority of mineralisation lies below a cover of transported clays, sand and gravels varying between 1 to 10m in thickness. Below this cover is an intensely weathered zone of mottled kaolinitic arenite, usually 1 to 5m thick. The host rocks in the mineralised

zone are silicified and brecciated along structures trending between east-west and 290 degrees, and dipping steeply to the north. Hematite and sericite alteration are associated with mineralisation. Wolverine has a known strike length of 200m, mineralised widths up to 30m and a dip/plunge length of over 300m. The Gambit West mineralisation is differentiated from the Wolverine deposit by narrower but more intensive hematite-sericite alteration.

Several rare earth deposits have been discovered by NTU since rare earth exploration commenced at the Project in 2010. Figure 3.2 shows the deposits that are material to the Project. The mineralisation strikes approximately east-west for about 220m and extends from surface down to about 230m, and mineralisation is approximately 1 to 15m in thickness.

Figure 3.2: Geology and Mineralisation



Mineral Resource

In 2012, AMC Mining Consultants (AMC) were commissioned to complete the initial resource estimate on the Project for the Wolverine deposit. A subsequent upgrade was completed in October 2013, which also included initial resource estimates for the Gambit West, Gambit and Area 5 deposits was completed and the current JORC compliant Mineral Resource was announced on 26 February 2014 ("Wolverine Total Resource Doubled in a Major Upgrade of Browns Range HRE Mineral Resource Estimate" – released to ASX 26/2/2014).

The February 2014 Mineral Resource, as released, was a significant milestone as:

- It delivered significantly more rare earth oxide endowment than the previous estimates (47,997,000kg, up from 28,084,000kg TREO).
- Geological confidence was improved, resulting in 66% of the Mineral Resource reporting as Indicated level confidence.
- The upgrade in endowment and confidence together provided a solid foundation for technical mining studies to PFS level.
- It confirmed Browns Range as a HREO dominated project with 84% of the total Mineral Resource estimated to be HREO.

The deposits were drilled using a combination of RC, diamond core from surface and diamond core tails from RC pre-collars.

Table 3.1 lists metres drilled and number of holes completed for input to the resource estimation. A total of 74,690m of drilling has contributed to the Mineral Resource Estimate.

Samples generated by the drilling were pre-screened in the field using a portable x-ray fluorescence (pXRF) device. Samples identified, using a pXRF, as likely to have significant mineralisation were then dispatched to Genalysis Perth for analysis. Quality Assurance and Quality Control procedures surrounding the sampling were in line with industry standard practice. Genalysis is NATA accredited to operate in accordance with ISO 17025 and ISO 9001.

The Mineral Resource Estimate was performed according to industry standard practice, involving:

- Numerical compositing of sampling data to 1m lengths.
- Generation of geological wireframes to constrain the sample selection and estimation.
- Variogram analysis and modelling.
- Top cutting the sampling data to reduce the risk associated with extremely high grades.
- Using Datamine software to estimate into a 3 dimensional blockmodel using the Ordinary Kriging technique.
- Reporting results by above a 0.15% TREO cut off grade.
- Assessing and reporting the geological confidence in the Mineral Resource Estimate.

Table 3.1: Metres Drilled and Number of Holes Completed for Resource Estimation

Deposit	RC Drill Holes	Diamond Drill Holes	RC with Diamond Tails Holes	Total Drill Metres
Wolverine	125	34	65	39,554
Gambit	120	3	Nil	10,210
Gambit West	113	4	2	13,713
Area 5	94	6	Nil	11,213

The total Mineral Resource available for the Browns Range PFS is 47,997,000kg of RE oxides, as detailed and tabulated below in Table 3.2. The Mineral Resource is inclusive of the Ore Reserves.

Table 3.2: Mineral Resource Estimate (26 February 2014)

Deposit	Category	Mt	TREO	Dy ₂ O ₃	Tb ₄ O ₇	Y ₂ O ₃	HREO	TREO	Dy ₂ O ₃
			%	kg/t	kg/t	kg/t	%	kg	kg
Wolverine	Indicated	2.66	0.89	0.78	0.12	5.17	89	23,705,000	2,075,000
	Inferred	1.8	0.81	0.67	0.1	4.45	87	14,564,000	1,206,000
	Total ¹	4.46	0.86	0.74	0.11	4.88	88	38,269,000	3,300,000
Gambit West	Indicated	0.27	1.26	1.07	0.14	7.06	90	3,424,000	289,000
	Inferred	0.12	0.64	0.54	0.07	3.67	85	753,000	65,000
	Total ¹	0.39	1.07	0.91	0.12	6.04	89	4,177,000	355,000
Gambit	Indicated	0.05	1.06	0.92	0.12	6.62	97	533,000	46,000
	Inferred	0.06	1.2	1.01	0.15	6.8	95	671,000	61,000
	Total ¹	0.11	1.13	0.97	0.13	6.72	96	1,204,000	107,000
Area 5	Indicated	1.38	0.29	0.18	0.03	1.27	69	3,953,000	248,000
	Inferred	0.14	0.27	0.17	0.03	1.17	70	394,000	24,000
	Total ¹	1.52	0.29	0.18	0.03	1.26	69	4,347,000	274,000
Total¹	Indicated	4.37	0.72	0.61	0.09	4.07	83	31,615,000	2,666,000
	Inferred	2.12	0.77	0.64	0.09	4.25	86	16,382,000	1,357,000
	Total¹	6.48	0.74	0.62	0.09	4.13	84	47,997,000	4,018,000

¹ Rounding may cause some computational discrepancies

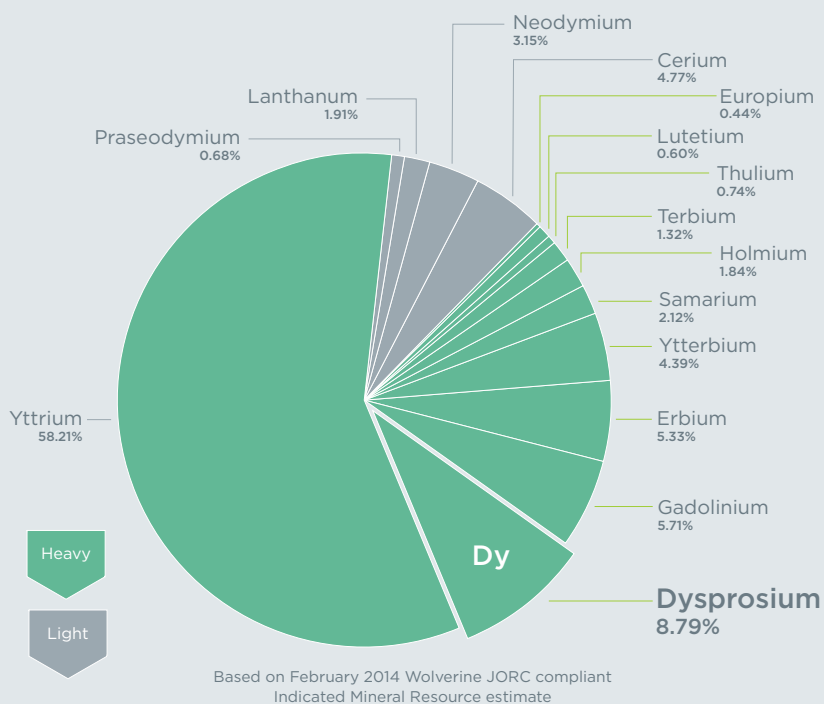
Cut off at 0.15% TREO

TREO = Total Rare Earth Oxides - Total of La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃

HREO = Heavy Rare Earth Oxides - Total of Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃



Figure 3.3: Wolverine Rare Earth Distribution



Wolverine is the standout deposit in terms of size and contribution to the Project, Figure 3.3 shows the distribution of RE oxides and the elevated levels of dysprosium at Wolverine.

Figure 3.4: Wolverine Geological Model

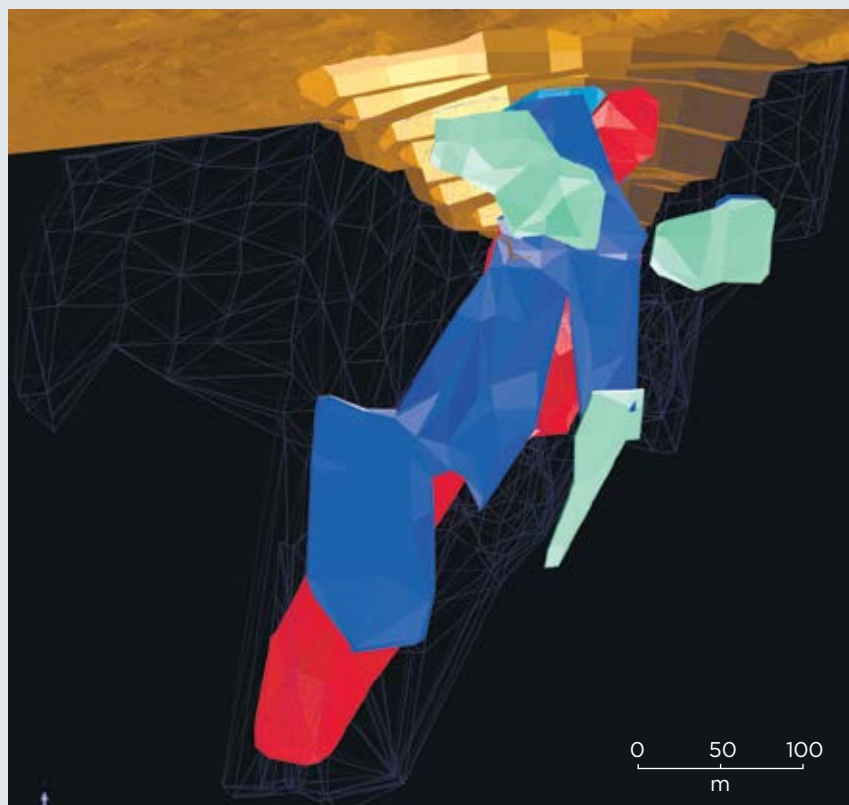


Figure 3.4 shows an oblique view looking north east of the modelled mineralised zones at the Wolverine deposit.

Figure 3.5: Pipeline of Prospects and Resources



¹ The Mineral Resource is inclusive of the Ore Reserves

Exploration

Exploration to date has defined the Wolverine, Gambit, Gambit West and Area 5 deposits to a Mineral Resource level, with NTU completing more than 74,000m of drilling, underpinning the Mineral Resource Estimate for the Project, up to November 2013.

First-pass drilling has returned significant intersections at the Area 5 North, Mystique, Banshee and Cyclops prospects. Other targeting work has also been undertaken in the project area including geochemical soil sampling, airborne and ground geophysical surveys and regional mapping. The Rogue, Dazzler and Nightcrawler prospects are all in the early stages of exploration with anomalous surface rock chips and/or soil geochemistry displaying similar geological characteristics to Wolverine. Figure 3.5 shows the steady pipeline of prospects identified at the Project which have the potential to support further increases to the Mineral Resource inventory.



4 Mining

Mining studies indicate the viability of operations consisting of conventional open cut mining, combined with a long life underground mining operation.

The current Mineral Resource supports a 10 year operation with annual product delivery rates of 279,000kg of dysprosium in 3,200,000kg of mixed RE oxide.

Mining studies were completed on behalf of NTU by AMC. AMC's work included PFS level mine design which has enabled estimation of a Probable Ore Reserve of 2,048,000kg of dysprosium, contained in 23,595,000kg of TREO. The Ore Reserve underpins the first 6 years of production.



Ore Reserves

PFS level process and engineering studies have enabled estimates of modifying factors to a sufficient level of accuracy to release a JORC compliant Probable Ore Reserve as outlined in Table 4.1 and reported according to the JORC (2012) Code and Guidelines in ASX announcement "Maiden Ore Reserve for Browns Range Project – 24 June 2014".

Mine Production and Mill Feed Forecast

NTU aims to deliver ore from the mine to the mill using a stockpiling strategy to maximise value from mine deliveries, while also maintaining the ability to vary plant feed characteristics to meet product specifications, customer requirements and delivery schedules. Table 4.2 provides forecast mine production and mill feed.

Table 4.1: Probable Ore Reserve

DEPOSIT	TREO				Dy ₂ O ₃		Tb ₄ O ₇		Y ₂ O ₃	
	Classification	Ore Tonnes	kg/t	kg Contained	kg/t	kg Contained	kg/t	kg Contained	kg/t	kg Contained
OPEN PIT										
Wolverine	Probable	863,000	5.30	4,574,000	0.47	407,000	0.07	62,000	3.14	2,712,000
Gambit West	Probable	185,000	10.92	2,021,000	0.90	167,000	0.12	23,000	5.97	1,105,000
Gambit	Probable	47,000	9.94	467,000	0.85	40,000	0.11	5,000	6.11	287,000
Area 5	Probable	317,000	3.03	960,000	0.20	63,000	0.03	10,000	1.42	450,000
UNDERGROUND										
Wolverine	Probable	1,894,000	7.58	14,348,000	0.67	1,260,000	0.10	192,000	4.42	8,379,000
Gambit West	Probable	103,000	11.89	1,225,000	1.08	111,000	0.14	14,000	7.09	730,000
TOTAL	Probable	3,409,000	6.92	23,595,000	0.60	2,048,000	0.09	306,000	4.01	13,663,000



Table 4.2: Forecast Mine Production and Mill Feed

	Total LOM	Year 1	Year 2	Year 3	Year 4-6	Year 7-10
Total Mine Movements (tonnes)	26,874,000	14,193,000	7,564,000	1,903,000	1,508,000	1,706,000
Waste (tonnes)	21,838,000	13,509,000	6,718,000	1,078,000	155,000	378,000
Mined Ore (tonnes)	5,037,000	685,000	846,000	825,000	1,353,000	1,328,000
Milled Ore (tonnes)	5,037,000	512,000	584,000	585,000	1,462,000	1,894,000
TREO Grade Delivered to Mill (%)	0.73	0.69	0.69	0.69	0.81	0.71
Dy Grade Delivered to Mill (kg/t)	0.64	0.62	0.62	0.62	0.71	0.61

In addition to Probable Ore Reserves, AMC identified Inferred Mineral Resources which, if mined at current modelled grades and with the same mining methods applied for the Ore Reserve estimation, would provide additional mine life and value to the Browns Range operation. It should be noted that the mining plan relating to this Inferred Mineral Resource was not developed to PFS level. Instead production rates and operating costs were projected from those developed to support the Ore Reserve Estimate.

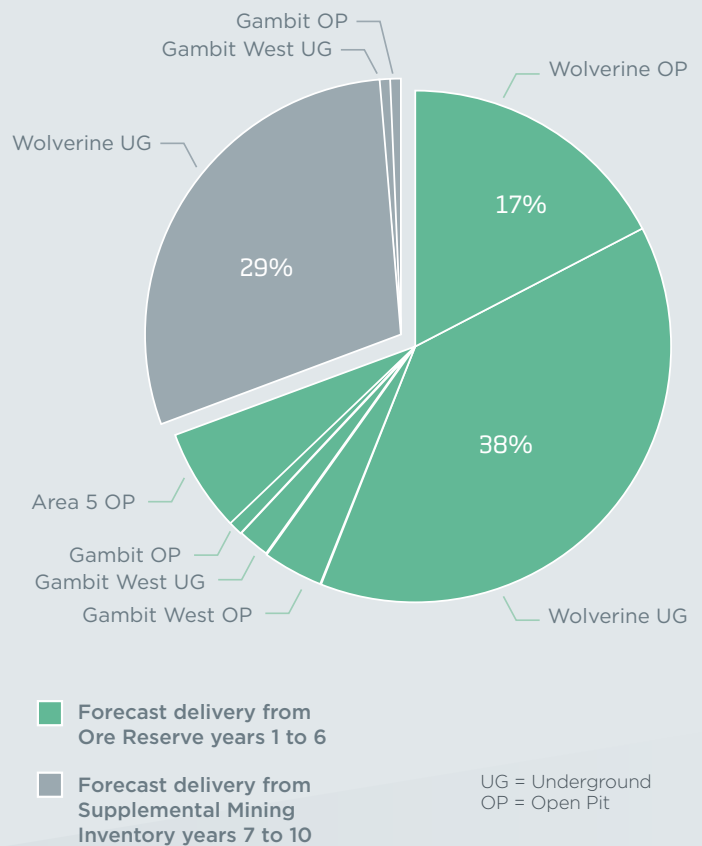
The Supplemental Mining Inventory (SMI), based on Inferred Mineral Resource is made up of:

- Small isolated amounts of material which are carried with the Ore Reserve within the PFS mine designs.
- Wolverine deposit - below 325m deep where drilling density is insufficient to demonstrate the required level of continuity and confidence for an upgrade in resource classification to support reserve conversion.

The delivery of this SMI is insignificant in years 1 to 6 of the proposed mining operation. During years 7 to 10 the production forecast is solely dependent on this SMI. Figure 4.1 shows the total forecast deliveries from each deposit and feed class.

The Company advises that the SMI has a reduced level of confidence, compared to production derived from Ore Reserves, as it is derived from Inferred Mineral Resource. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources, or that the production target itself will be realised from this SMI. NTU plans to mitigate these risks at an appropriate point in the future using in-pit and underground drilling as this provides substantial cost savings over conventional surface drilling. The Company aims to upgrade the confidence and convert the SMI to Ore Reserves at that point.

Figure 4.1: Distribution of Feed Type and Source - Tonnes of Ore Delivered to Mill



Mine Design – Open Cut

The open cut mine design is based on shells produced by AMC using GEMCOM Whittle 4X software. Several pits were generated at increasing varying revenue factors. All pit shells selected were conservative when compared against the Whittle optimum. In the case of Wolverine and Gambit West, the pit shells selected to convert to mine design were chosen when the differential costing between successive pit phases exceeded the estimate of underground mining costs. For the other pits, shells were selected where the incremental reward between successive shells was marginal.

Open cut operations have been designed to suit the proposed mining fleet, with major equipment proposed being Caterpillar 777 dump trucks with Hitachi EX1900 excavators. The mine design parameters used to convert the preliminary shells to mine designs are outlined in Figure 4.4.

The northern pits, Wolverine, Gambit and Gambit West, are planned to be mined concurrently during the first 2 years of the mining operation (Figure 4.2). The Area 5 pit (3.5 km south of the Gambit trend) will be mined as a final phase of open cut mining during year 3 (Figure 4.3). Table 4.3 details the dimension and stripping ratios of the open cuts.

Table 4.3: Dimension and Stripping Ratios of the Open Cuts

Pit Area	Strip Ratio	Ore (t)	Waste (t)	Total Rock (t)	Pit Dimensions (m)		
	Waste : Ore				Length	Width	Depth
Wolverine	16:1	862,837	13,724,553	14,587,390	400	350	145
Gambit West	12:1	185,448	2,235,683	2,421,131	285	185	70
Gambit	38:1	46,988	1,765,988	1,812,976	210	170	65
Area 5	8:1	316,926	2,627,026	2,943,952	280	210	75

Figure 4.2: Pit Layouts – Wolverine, Gambit and Gambit West

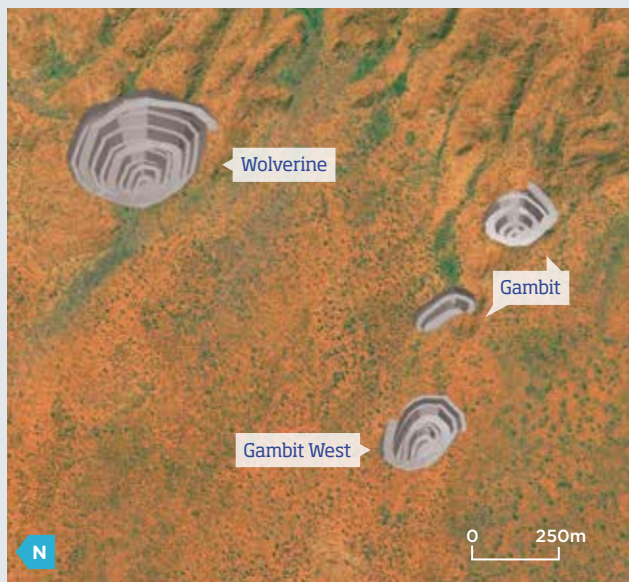


Figure 4.3: Pit Layout - Area 5

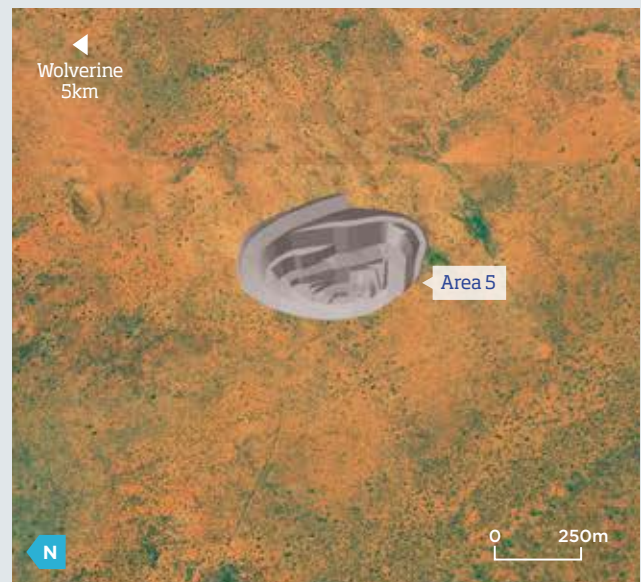
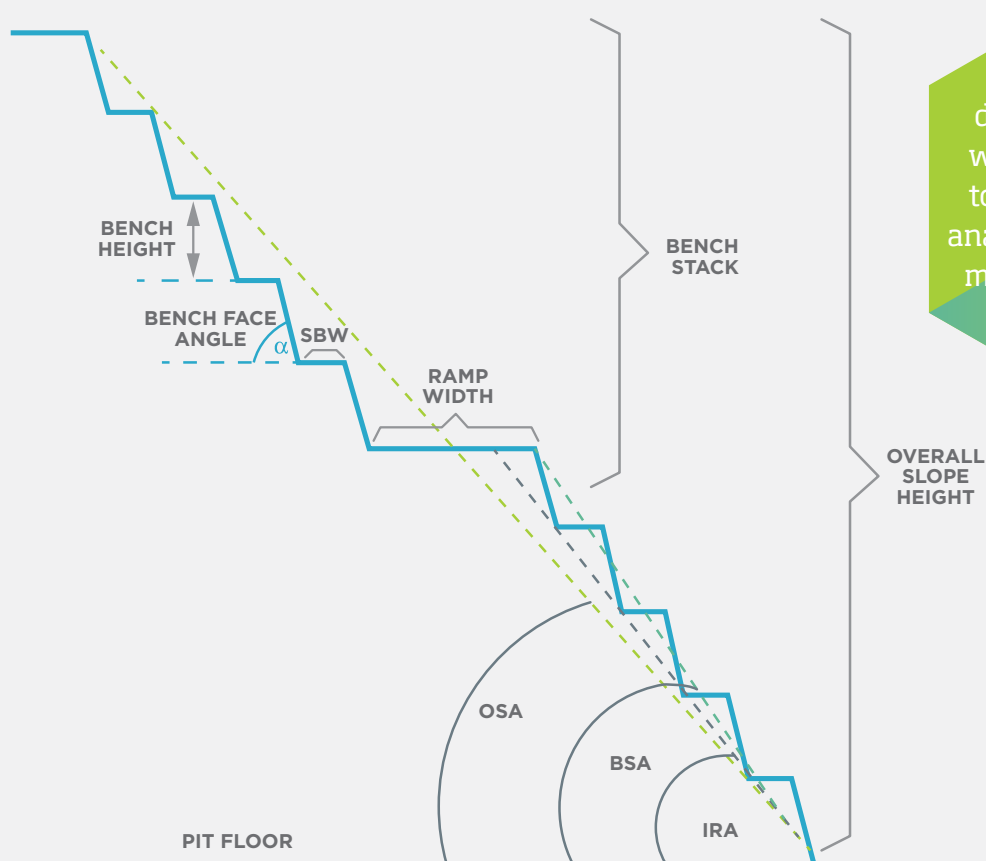


Figure 4.4: Mine Pit Design Parameters

Deposit	Material or RL	Bench Face Angle α (°)	Bench Height (m)	Berm Width (SBW) (m)	IRA (°)	IRA Height	Ramp Width (m)	OSA (°)
Area 5	Weathered Fresh	45	15	10	29.0	15	26	46.3
		65	30	10	49.0	30	26	
Gambit	Weathered Fresh	45	15	10	29.0	15	26	47.2
		70	30	10	52.4	30	26	
Gambit West	Weathered Fresh	55	10	12	27.5	10	-	41.4
		70	30	12	52.4	90	26	
Wolverine	460 to 445	45	15	10	51	15	26	48
		70	30	10	58	90	26	



9 diamond drill holes (for 1,194m) were drilled specifically to support geotechnical analysis and provide these mine design parameters for the open pit.

IRA = Inter Ramp Angle
measured from toe to toe
BSA = Bench Stack Angle,
measured from toe to crest
OSA = Overall Slope Angle
SBW = Spill Berm Width

Mine Design - Underground

Underground operations have been designed to suit a standard rubber-tyred, diesel, mobile underground fleet, proposed to be made up of the following major classes of equipment:

- Development Jumbo – Sandvik DD421 twin boom
- Production Drill – Sandvik DL331
- Trucking – Atlas Copco MT5010
- Bogging – Cat R2900G
- Other Ancillary Units

The Wolverine underground mine will be accessed from a portal and small box cut which will commence the decline from surface. The Gambit West underground mine will be accessed by a portal from near the base of the Gambit West pit.

The mining technique to be employed at the Wolverine underground mine is sub-level open stoping (SLOS) with post extraction backfill using a mixture of cement stabilised and run-of-mine waste (engineered fill, Figure 4.5). Sub-level intervals are designed at 25m floor-to-floor, with panel length along strike of 25m. The panel width varies from a minimum of 2.5m to a maximum of 36m (average 17m).

The mining technique to be employed at the Gambit West underground mine is bench and fill, with backfill using run-of-mine waste. Sub-level intervals are designed at 20m floor-to-floor, with panel length along strike of around 25m. The panel width varies from a minimum of 2m to a maximum of 6.6m, with the average being 3m.

Figure 4.5: Sub-level Open Stoping with Fill

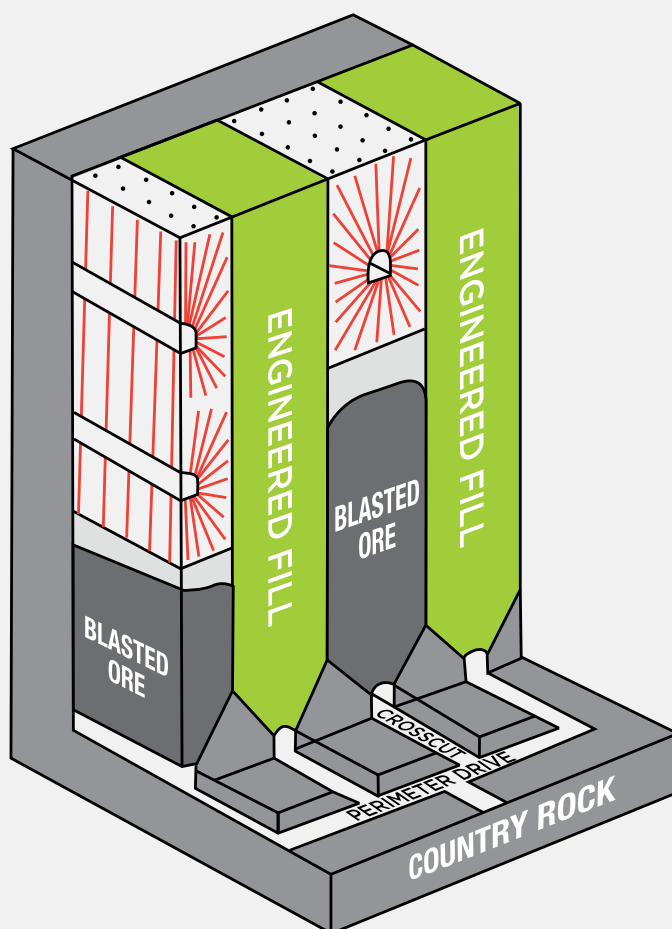
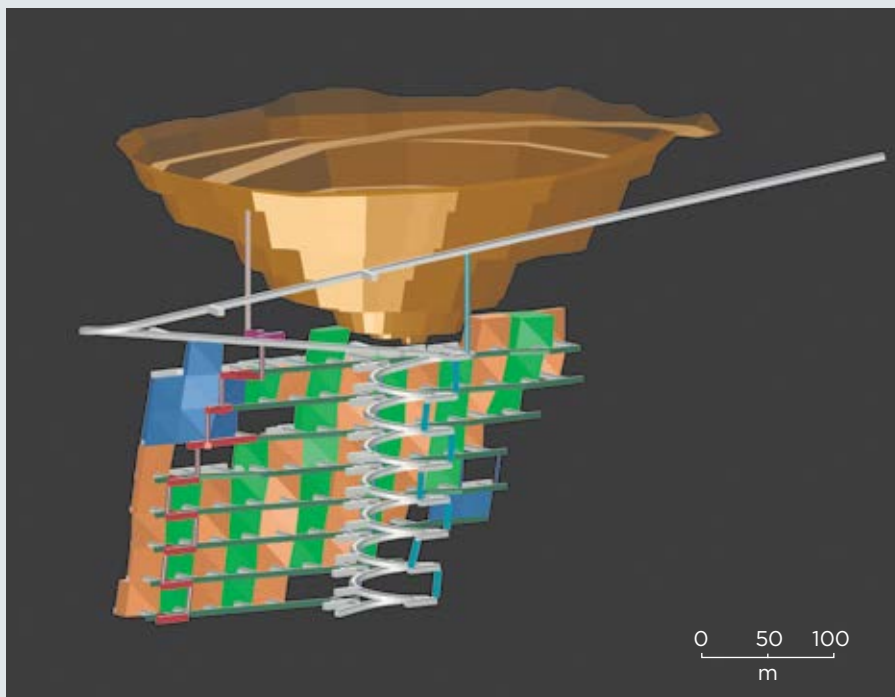
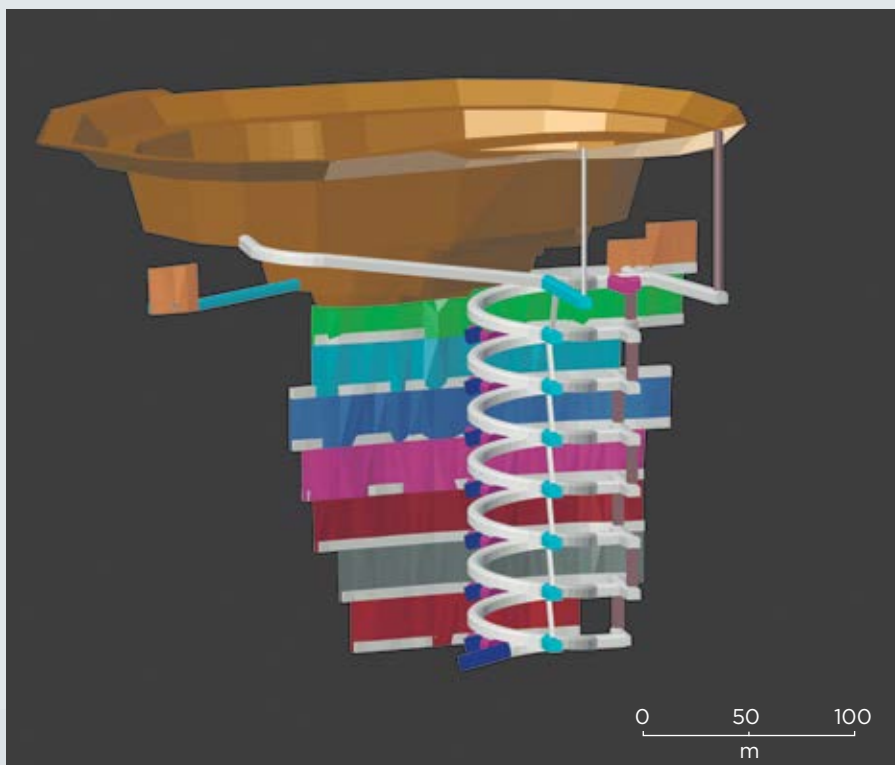


Figure 4.6: Layout for the Wolverine Underground Mine – oblique view, looking approximately north-east



The Wolverine underground mine will be accessed from a portal and a small box cut that will commence the decline from surface.

Figure 4.7: Layout for the Gambit West Underground Mine – oblique view, looking approximately south



The Gambit West underground mine will be accessed by a portal from near the base of the Gambit West pit.

5 Process Flowsheet Development



▲ Loading of Wolverine bulk sample

A comprehensive metallurgical testwork program commencing in December 2010 has culminated in successful pilot plant campaigns in 2014.

The metallurgical testwork programme commenced in December 2010 at NAGROM laboratories on a range of mineralised samples. The purpose of this testwork was to test the amenability of the Browns Range material to simple physical separation, including gravity, dense media separation and flotation techniques. The subsequent extensive testwork programme culminated in a 90t beneficiation pilot plant demonstration at SGS Lakefield in Perth (SGS), followed by a hydrometallurgical pilot plant demonstration at ANSTO in Sydney. This testwork has shown that the Browns Range mineralisation exhibits a predictable and uncomplicated behaviour with respect to mineral processing. This is primarily due to:

- coarse xenotime mineralisation;
- favourable mineralogy in a simple mineral system consisting of xenotime and predominantly 80-90% quartz, with accessory mica and iron oxide gangue; and
- strong paramagnetic response of xenotime relative to diamagnetic quartz.

This has facilitated the development of a relatively simple process flowsheet consisting of the following circuits:

- Beneficiation circuit – comminution, physical magnetic separation followed by cleaner flotation.
- Hydrometallurgical circuit – sulphation bake, water leach, purification, rare earth oxalate precipitation and calcination.

Mineralogy

The simple mineral system displays a predominance of the heavy rare earth mineral xenotime, a large amount of quartz and mica, and minor amounts of iron oxide, and the light rare earth mineral florencite. The xenotime exists within quartz infill fractures.

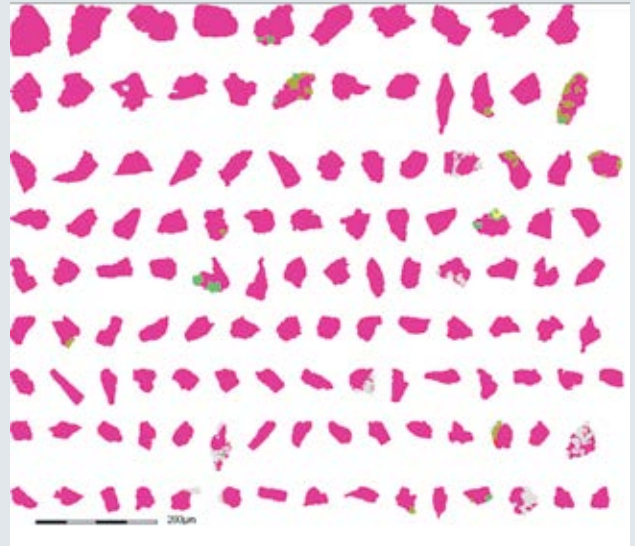
The photomicrographs in Figure 5.1 show an increase in mineral liberation from grinding from 106µm down to 63µm, which has translated in a recovery improvement of approximately 6% in the beneficiation circuit to 90% dysprosium and 88% TREO recovery for a 20% TREO mineral concentrate.



Figure 5.1: Photomicrographs of Xenotime Mineralisation



-106µm + 63µm Size Fraction



-63µm + 20µm Size Fraction

■ Florencite	■ Monazite	■ Xenotime
■ Pyrite	■ Cu-sulphides	■ Oxides
■ Phosphates-Sup	■ Phyllosilicates	■ Quartz
■ Other-Silicates	■ Others	■ Steel

NTU has successfully demonstrated a robust metallurgical flowsheet to process xenotime mineralisation through to a high purity, dysprosium rich mixed RE oxide.



Xenotime Mineralisation found at Browns Range

Beneficiation Flowsheet

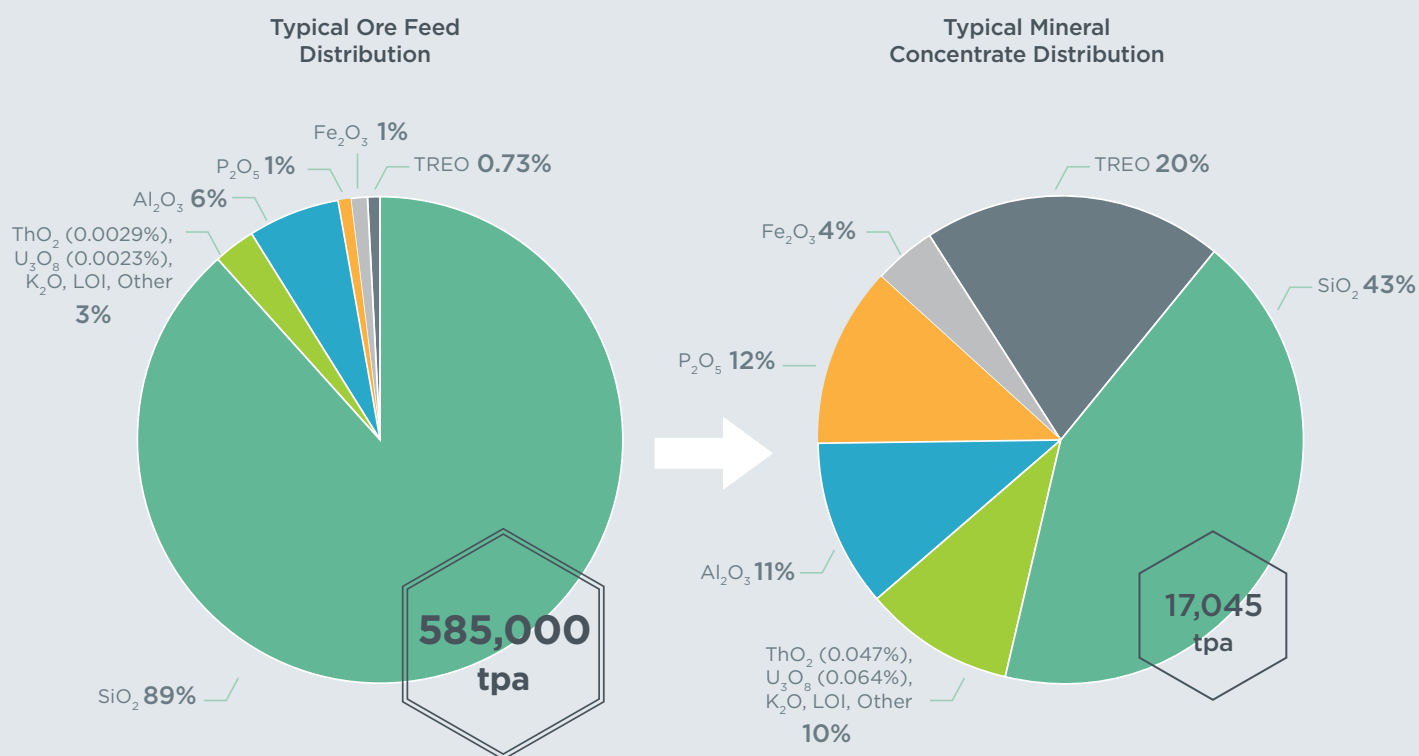
NTU, in partnership with NAGROM and SGS laboratories in Perth, has developed and demonstrated a simple beneficiation process utilising wet magnetic separation and flotation.

A wet high gradient magnetic separation process produces a xenotime magnetic concentrate that rejects 75-80% of the mass, while recovering 95% dysprosium and 93.8% TREO (based on Wolverine drill core pilot results). The magnetic concentrate containing xenotime, together with iron oxides, is sent to a simple flotation circuit whereby further rejection of entrained silica, mica and iron oxides takes place, and the xenotime and florencite concentrates to 20% TREO in the mineral concentrate.

The flotation circuit recovers 94.4% dysprosium and 93.5% TREO in the magnetic concentrate, returning an overall beneficiation circuit recovery of 89.6% dysprosium and 87.7% TREO at 20% TREO mineral concentrate grade. This combined magnetic separation and flotation circuit (hybrid circuit) upgrades the ore more than 30 times, from 0.66% to 20% TREO. The ability to efficiently beneficiate the ore through 97% mass rejection to a high grade mineral concentrate provides significant cost advantages, by reducing the size of the downstream hydrometallurgical plant and the amount of sulphuric acid, and other reagents required.

The non-magnetic tailings and flotation tailings are thickened together to 50% solids and commingled with the hydrometallurgical tailings before being pumped to the Tailings Storage Facility (TSF).

Figure 5.2: Beneficiation Upgrade



Beneficiation Pilot Plant Demonstration

In late 2013, a 98.3t bulk sample was collected from Browns Range which was composited into three discrete master composite samples as detailed in Table 5.1.

The sample processed through the pilot facility at SGS consisted of 90.2t, with the remaining 8.1t of sample retained for potential additional testwork.

Table 5.1 Bulk Sample Composition

	Weight	%TREO
Wolverine Trench	82.8t	1.00%
Wolverine Drill Core	8.6t	1.57%
Gambit West Drill Core	6.9t	1.03%

The pilot plant program was run from January through to May 2014, including an intensive 3 week trial in January at SGS, with the plant running continuously 24 hours a day. The program tested the two preferred beneficiation flowsheet options:

- magnetic separation followed by cleaner flotation circuit – hybrid circuit (Figure 5.3) ; and
- whole ore flotation circuit (Figure 5.4).

The pilot trial initially commenced on the hybrid circuit and was run at 125kg/hr. Both the hybrid and whole ore flotation circuits were then run in parallel at between 25-125kg/hr and 175-300kg/hr, with commercial scale up ratios of 600-2900:1 and 200-400:1 respectively, which are comparable to similar style operations. The pilot plant campaign produced 2,300kg of mineral concentrate on specification at 20% TREO.

During the pilot run, testwork was also undertaken by external suppliers on thickening, filtration, viscosity and material handling. This data is being used to develop the scale up requirements for industrial equipment.

Bulk Sample in Containers at SGS



Flotation at SGS

0.66% ► 20%
through magnetic
separation & flotation
circuit

89.6%
Dy
overall beneficiation
circuit recovery

The hybrid circuit is the preferred circuit due to lower operating cost, higher recovery, superior operability and maintainability.

Figure 5.3 Hybrid Flowsheet

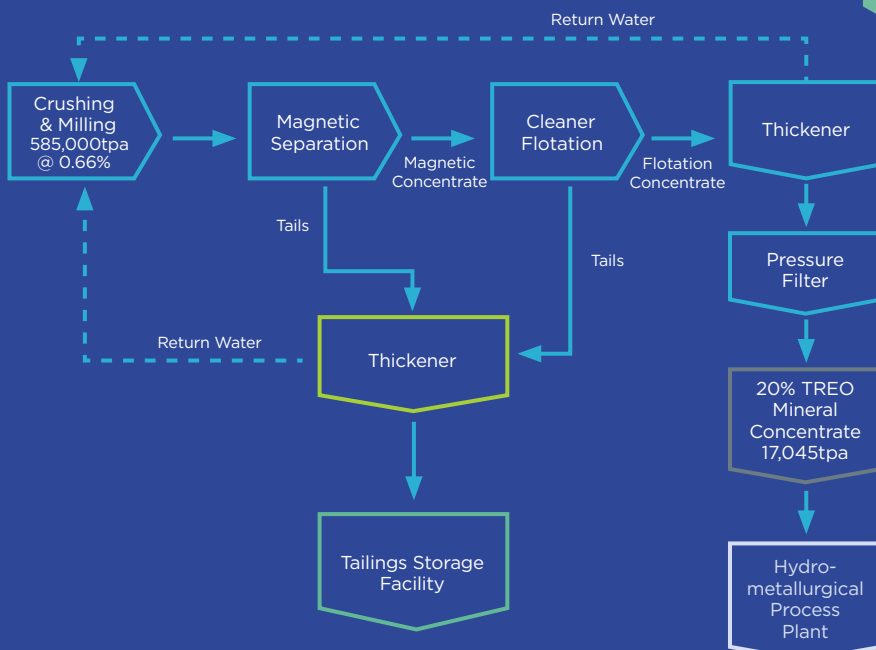


Figure 5.4 Whole Ore Flotation Flowsheet

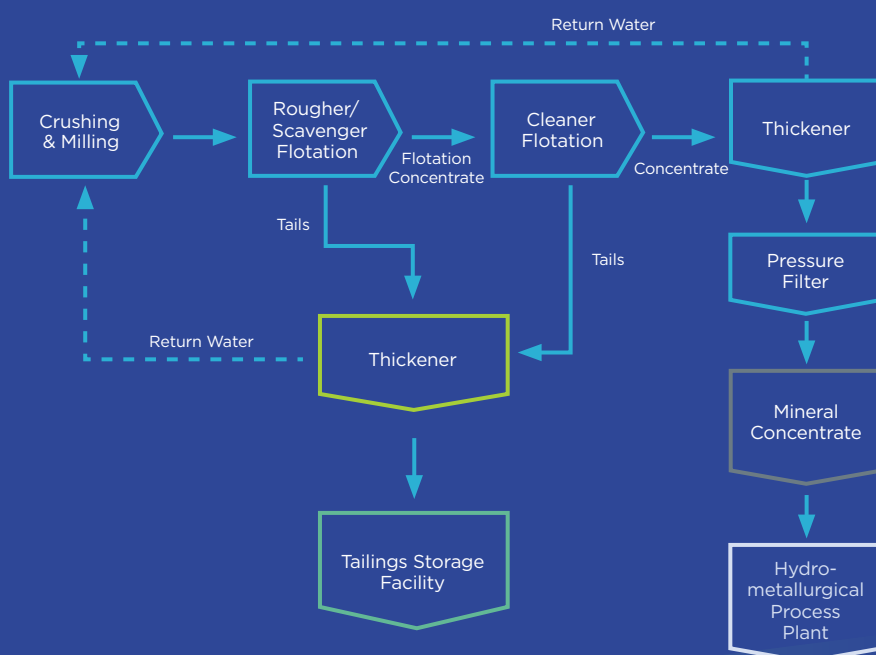


Table 5.2 provides a summary of the best Whole of Ore (WOF) and Hybrid circuit pilot plant recoveries for each of the ore types tested, to achieve the target 20% TREO mineral concentrate grade.

Table 5.2: Summary of WOF and Hybrid Circuit Pilot Plant Recoveries

Material Source	WOF Flotation Recovery		Hybrid Circuit Recovery	
	Dy ₂ O ₃	TREO	Dy ₂ O ₃	TREO
Wolverine Trench	89.2%	87.5%	90.6%	89.4%
Wolverine Drill Core	75.2%	72.9%	89.6%	87.7%
Gambit West Drill Core	73.1%	70.2%	90.3% ¹	87.5% ¹

¹ No pilot flotation work conducted on this sample yet, bench flotation recovery used instead



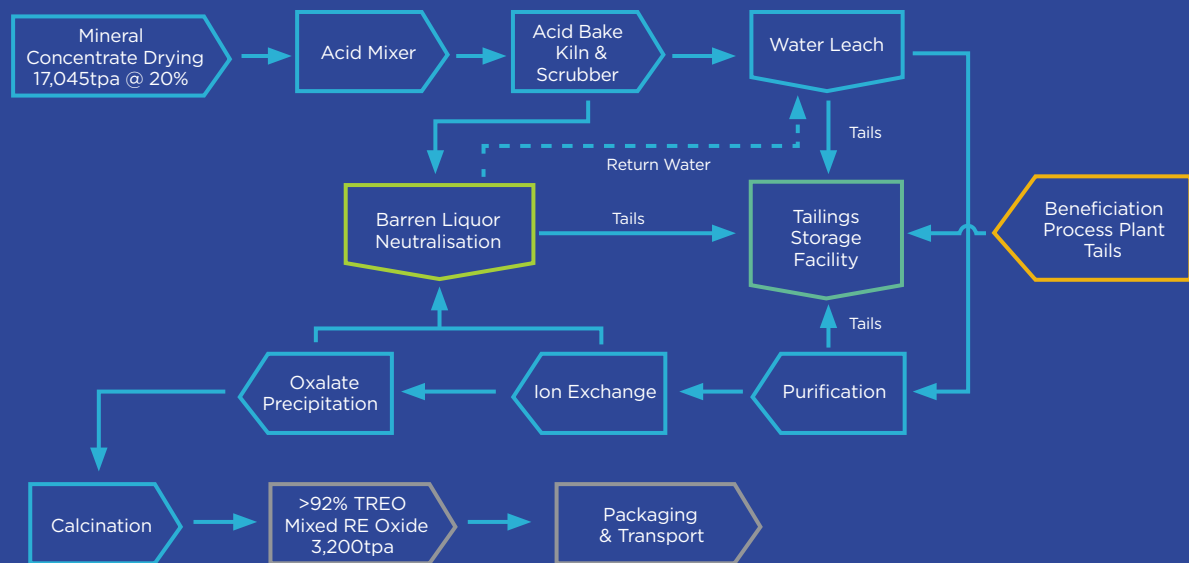
SLON Magnetic Separator at SGS



Ball Mill at SGS

The pilot plant campaign produced 2,300kg of mineral concentrate on specification at 20% TREO.

Figure 5.5 Hydrometallurgical Plant Flowsheet



Hydrometallurgical Flowsheet

NTU has demonstrated a relatively simple hydrometallurgical process to recover the rare earth oxides from a 20% TREO mineral concentrate and deliver a high purity, dysprosium rich product.

The initial flowsheet development testwork was undertaken at ALS Ammtec and NAGROM in Perth, using a 20% TREO mineral concentrate sample generated from the Wolverine ore, originating from various PQ diamond drill holes. The aim of the testwork was to develop a robust hydrometallurgical flowsheet, while maximising the rare earth recoveries.

The flowsheet was subsequently optimised and improved by ANSTO Minerals (ANSTO), with respect to impurity rejection and production of a high purity mixed RE oxide that satisfies the requirements for further downstream processing.

The traditional process of sulphation bake followed by water leach is used to extract the rare earths into solution. In this step, silica and other impurities do not leach fully and are therefore rejected as residues. The resulting filtered rare earth solution is further purified via pH adjustment to reject the majority of iron, phosphate and thorium. Although some uranium is rejected to the solid residue stream during the water leach, uranium ion exchange is utilised to remove any uranium remaining in the rare earth rich solution. The rare earths are then precipitated as oxalates, and in this step, the final rejection of impurities such as aluminium, calcium, magnesium and iron is achieved. The rare earth oxalate concentrate is thoroughly washed and subsequently calcined to produce a high purity mixed RE oxide of >92% TREO containing on average 9% dysprosium. The hydrometallurgical plant flowsheet is shown in Figure 5.5.

Hydrometallurgical Pilot Plant Demonstration

The bench testwork at ANSTO showed hydrometallurgical recoveries of 96% dysprosium and 94% TREO, in upgrading the 20% TREO mineral concentrate to a 99%¹ TREO mixed RE oxide.

In March and April 2014, two 5 day continuous pilot plant campaigns were performed using 825kg of the 20% TREO mineral concentrate produced during the beneficiation pilot plant at SGS. The kiln was operated at 4kg/hr of dry solids with a commercial scale up ratio of 550:1, which is comparable to similar style operations. The robustness and the simplicity of the flowsheet were confirmed under the continuous pilot plant conditions, achieving a 90% dysprosium and an overall 88% TREO recovery. The grade of mixed RE oxalate produced typically contained 46% TREO and the resulting mixed RE oxide contained 99%¹ TREO on dry basis.

The oxalate concentrate produced during the pilot plant assayed 5ppm thorium and <2ppm uranium. The concentration of other deleterious elements was also very low, (e.g. Fe-0.01%, Al-0.01%, Ca-0.26%, Mg-0.01%) making the Browns Range product suitable for downstream processing.

Another key advantage of the flowsheet, which has been demonstrated by the pilot campaign to date, is the simple and robust acid concentrate mixing and kiln operation, which has displayed none of the apparent material handling issues that have been problematic for other rare earth monazite, bastnaesite and apatite concentrates. This is primarily because mixing of acid and dry concentrate does not result in any appreciable exothermic reaction. The process downstream of the kiln was also robust without any operational issues.

The final third 5 day continuous pilot plant run is scheduled to commence in late June 2014. This will aim to improve the overall recoveries in line with what has been observed on the bench, especially for dysprosium and the other HREOs. The pilot run will also incorporate recycling of the neutralised barren liquors back to the water leach to confirm the bench data results, that indicate no adverse impact of the water recycle on the impurities and recoveries.

¹ PFS process design criteria (PDC) is based on achieving 92% TREO in mixed RE oxide. Hydrometallurgical bench and pilot results in relation to product purity were reported post finalisation of the PDC for the PFS.

Radionuclide Department

The Browns Range ore contains naturally occurring radioactive material (NORM) consisting on average of 20ppm uranium (U) and 25ppm thorium (Th). These concentrations of U and Th are below the threshold for classification as a radioactive material according to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the International Atomic Energy Agency (IAEA).

ANSTO has conducted a radionuclide department assessment and found that during processing of the ore, radionuclides in the U and Th decay chains concentrate in various process streams, including the beneficiation mineral concentrate and some hydrometallurgical liquor streams, including the hydrometallurgical residues. All waste streams are combined and disposed of as tailings which contains radionuclides in approximately the same concentrations as the ore. The tailings are therefore not classified as a radioactive material according to ARPANSA and the IAEA. The final product will either be a mixed RE oxide or oxalate that will have no special transport requirements.

To ensure the health and safety of employees, the Company will update the existing Radiation Management Plan and will instigate radiation protection controls in the processing plant to ensure that potential doses to workers remain very low.

NTU has demonstrated a relatively simple hydrometallurgical process to recover the rare earth oxides from a 20% TREO mineral concentrate and deliver a high purity, dysprosium rich product.



Indirect Fired Rotary Kiln at ANSTO



Purification Circuit at ANSTO

6 Processing Facilities

NTU has designed the process plant to produce approximately 279,000kg of dysprosium, in 3,200,000kg of mixed RE oxides product per annum.

Processing Plant

The process flowsheet comprises the following:

- A comminution circuit utilising primary crushing followed by SAG and ball milling.
- Magnetic separation followed by flotation to concentrate the xenotime (hybrid circuit).
- Sulphation bake followed by water leach to extract the rare earths from the cracked xenotime mineral.
- Purification of the rare earth solution to precipitate undesirable impurities.
- Mixed RE oxalate precipitation and calcination to produce a high purity, mixed RE oxide.
- Waste water neutralisation circuit.

All of the above activities as shown in the combined process flowsheet in Figure 6.1 will be located at the project site.

Beneficiation Plant

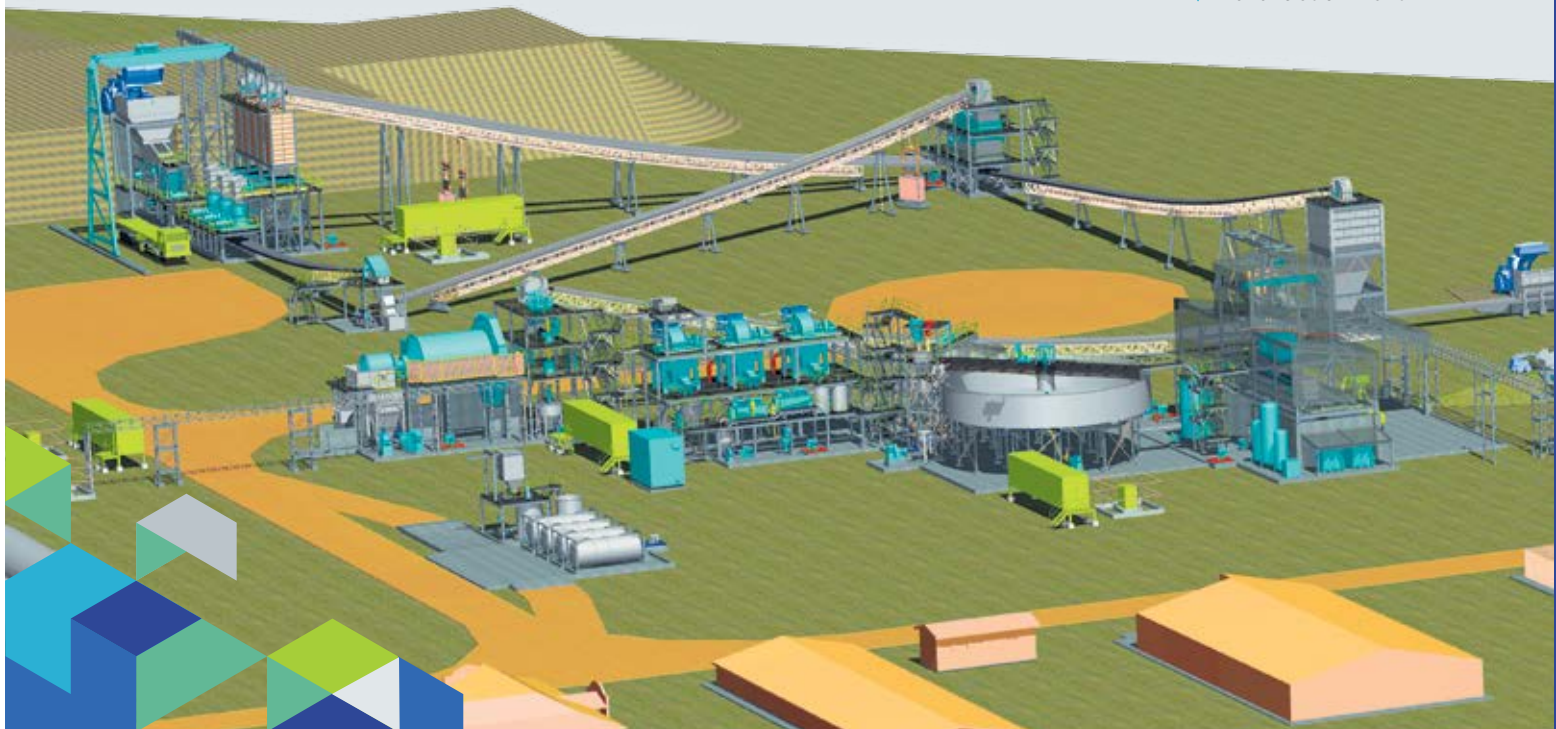
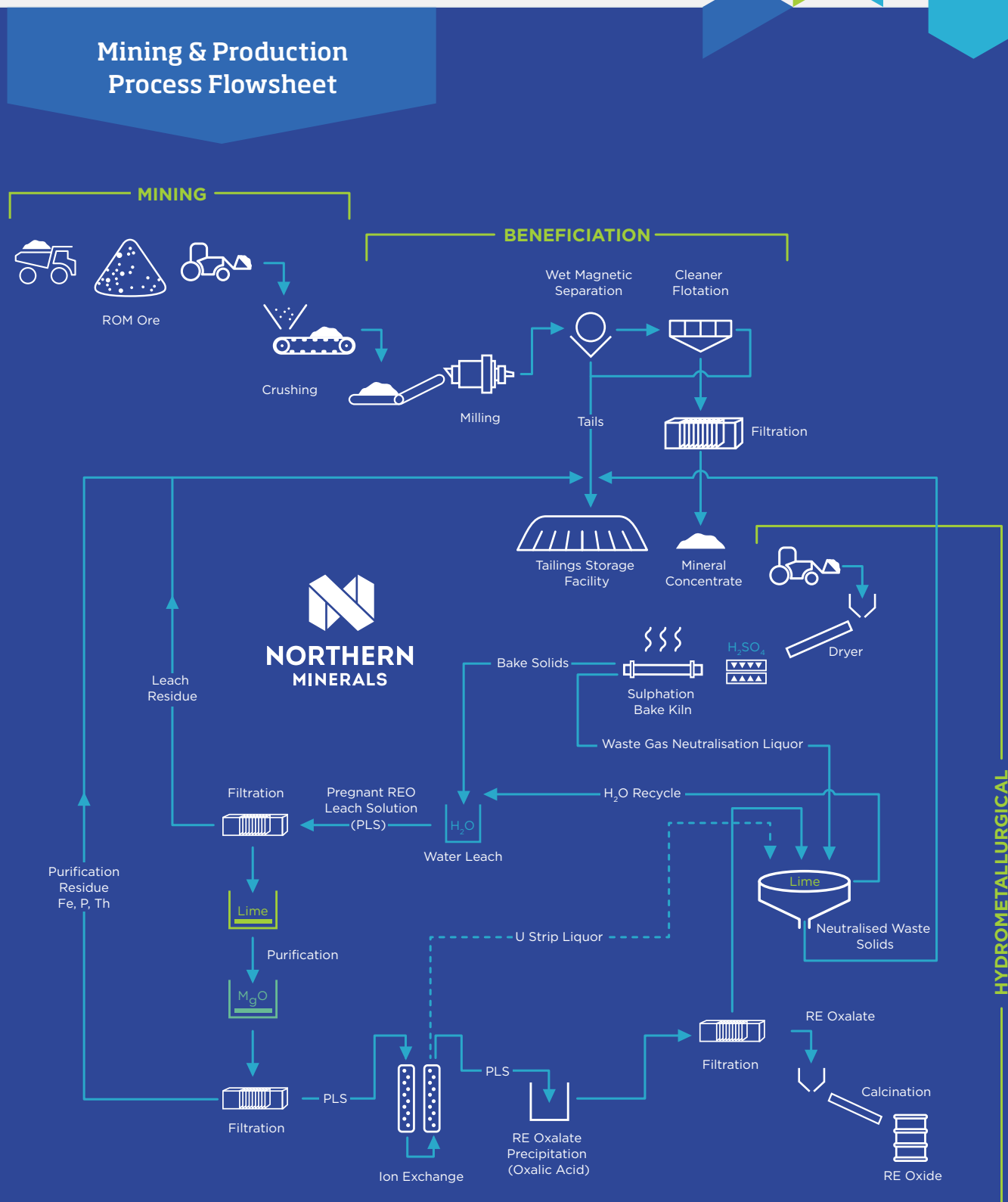


Figure 6.1: Process Flowsheet



The PFS process design criteria are shown in Table 6.1:

Table 6.1: PFS Key Design Parameters

Mill throughput per annum	585,000t
ROM grade %TREO	0.66%
Mineral concentrate per annum	17,045t
Mineral concentrate grade TREO	20%
Dysprosium beneficiation recovery	92.5%
Dysprosium hydrometallurgical recovery	90%
Dysprosium overall recovery	83%
Annual production of dysprosium	279,000kg
TREO beneficiation recovery	89%
TREO hydrometallurgical recovery	88%
TREO overall process recovery	78%
Annual production of mixed RE oxide @ 92% TREO	3,200,000kg

Beneficiation Plant

The proposed mining fleet will transport the run of mine (ROM) ore to the ROM pad where the ore will be stockpiled and blended to the desired grade. The ore is then reclaimed from the stockpiles by a front end loader and transferred into the ROM bin.

The crushing circuit consists of a primary jaw crusher, followed by a 750kW 4.8m diameter x 2.4m SAG mill and then a 1700kW 4.2m diameter x 6.2m ball mill that grinds the ore down to a size of 80% passing 63µm.

The ground ore is fed to a wet high gradient magnetic separator (WHGMS) that produces two products, a magnetic concentrate rich in xenotime and iron oxide, and a non-magnetic stream containing largely silica and mica which is rejected as tailings. The magnetic concentrate

is then fed to a flotation circuit where selective reagents are used to collect the xenotime material in the froth and reject unwanted gangue material in the tailings. The flotation tailings are combined with the WHGMS circuit tailings and thickened before being comingled with the hydrometallurgical tails and pumped to the TSF. The 20% TREO flotation concentrate is thickened, filtered and stored in bunkers prior to being fed into the hydrometallurgical plant.

Hydrometallurgical Plant

The 20% TREO mineral concentrate is reclaimed from bunkers with a bobcat, fed into a live bottom bin and screw conveyed into a dryer. The dry concentrate is fed into an acid mixer and then the kiln. The sulphation bake is performed at 275 -300 degrees celsius which cracks the xenotime mineral and the rare earths are readily leached in water. Following the water leach step, the leach residue is washed, filtered and separated from the pregnant leach solution (PLS).

The PLS undergoes a series of purification steps where the pH of the solution is steadily increased with lime and magnesia to reject impurities such as phosphate, iron, aluminium, thorium and uranium. The purification residue is separated from the PLS by thickening and filtering, and the PLS is passed through an ion exchange column to remove any residual uranium. The purification residue is repulped and mixed with the repulped water leach residue before being comingled with the beneficiation tailings and pumped out to the TSF.

Following purification and ion exchange, the PLS is contacted with oxalic acid which selectively precipitates the rare earths. The mixed RE oxalate is thickened, filtered and washed before being calcined to a high purity, mixed RE oxide.

Reagents

The following reagents used in the processing plants will be delivered to site as dry solids in lined sea containers and dispensed to day storage silos via a container tipper and pneumatic transfer system:

- Oxalic acid
- Quick lime
- Magnesia
- Ferric sulphate

Crushed limestone is received and stockpiled onsite and caustic soda is delivered in 1t bulk bags that are discharged into a mixing tank when required. Flocculant will be provided in 25kg bags.

Bulk liquid deliveries in 21m³ isotainers will occur for sodium silicate and flotation collector. Approximately 18,000tpa of concentrated sulphuric acid will be delivered to site via bulk road tanker and discharged into a dedicated bulk storage tank.

Effluent and Tailings Treatment

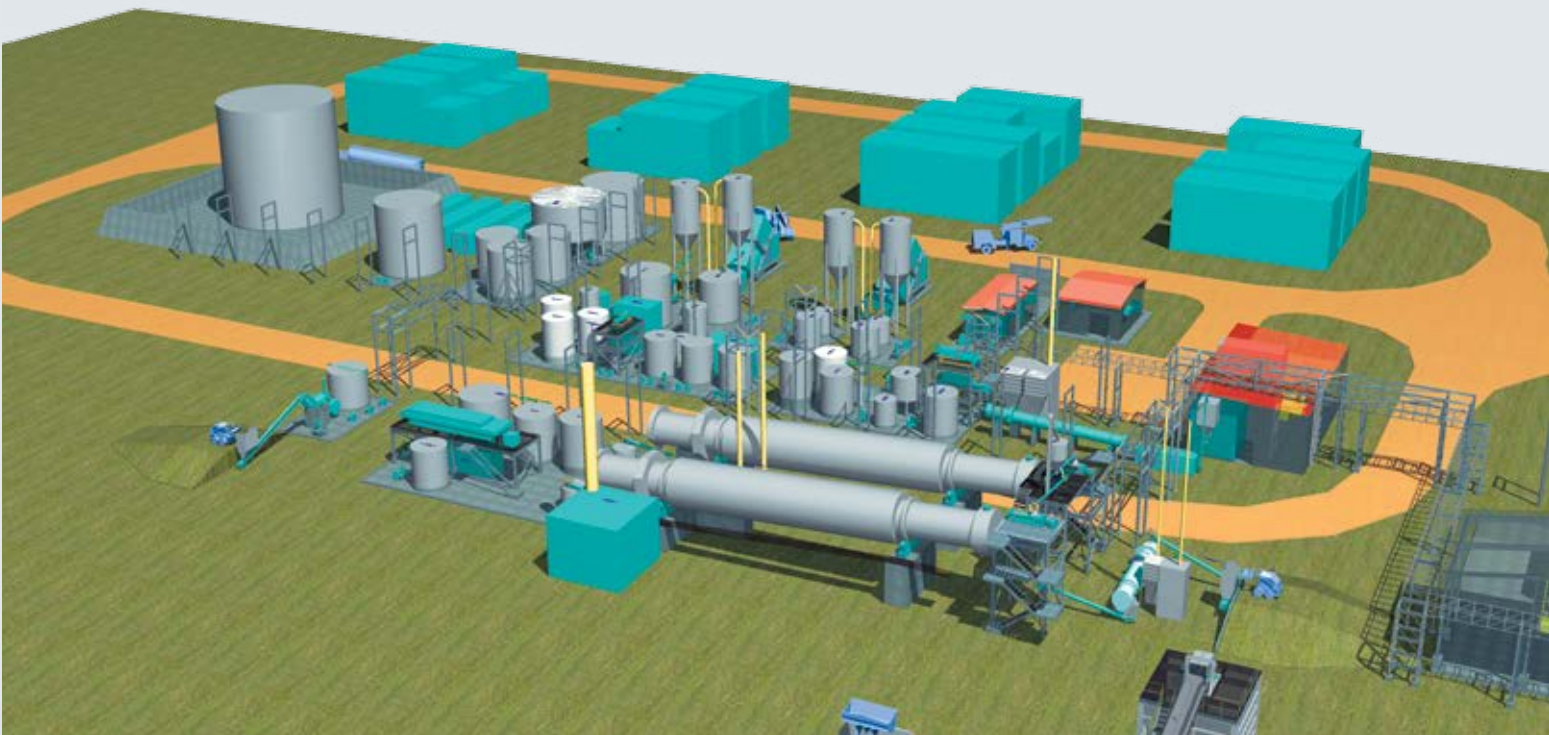
All acidic waste water streams from the hydrometallurgical plant are neutralised with lime and caustic soda to precipitate metals, and to clarify the solution prior to recycling the water back into the water leach circuit. The hydrometallurgical streams that undergo treatment are:

- Waste gas scrubbing liquor.
- Ion exchange raffinate liquor.
- Rare earth oxalate precipitation liquor.

These precipitates together with the purification and water leach residues from the hydrometallurgical plant will be commingled with the beneficiation tails for storage in a purpose designed and constructed, above ground TSF.

The rare earth oxalate is thickened, filtered and washed before being calcined to a high purity, dysprosium rich mixed RE oxide.

▼ Hydrometallurgical Plant



7 Infrastructure and Logistics



The Project will develop access roads, an airstrip, accommodation village, as well as power and water supply facilities.

Road access

Road transport will be used to import diesel, reagents and consumables, and export product between the Project and port. The existing State road network is suitable for all road transport between port and the town of Halls Creek. Between Halls Creek and the Project, the Duncan and Gordon Downs local Shire roads (approximately 156km) provide access to within 57km of the Project. From this point, the existing site access track will be upgraded to support the Project's road access needs. The access road route is depicted in Figure 7.1.

Based on engineering assessments of the access road network, the road upgrades and contribution to ongoing maintenance have been costed and allowed for in the PFS. Estimates have been made to upgrade sections of the Duncan and Gordon Downs roads to improve safety and serviceability (\$22.9M), and also to upgrade the existing 57km access track to the Project (\$5.5M). A total of \$28.4M has been estimated for the entire access road construction works.

Airstrip

An airstrip will be constructed at the Project to support the fly-in fly-out (FIFO) workforce for construction and operation. The airstrip will be 1.8km long and will include refuelling and basic check in facilities.

The airstrip construction has been fully costed based on an engineered design and tendered rates at \$6.7M. Operational flight costs have been based on flight costs provided by suitable FIFO service providers.

Accommodation Village

While the Company will be looking to source employees locally wherever possible, a 100% rostered FIFO or bus-in bus-out workforce will be employed due to the remoteness of the site. To house both the construction and operations' workforce an accommodation village will be constructed, which is expected to accommodate up to 325 people at its peak

Accommodation standards will be typical of mine accommodation in Western Australia with each room containing air conditioning, shower/bathroom facilities, mini fridge, internet (wi-fi) and television. The village will include full supporting facilities such as reception/administration, first aid rooms, kitchen/dining (dry messing), gymnasium, wet mess, multi-purpose sports court and a recreation internet room.

Prices have been sourced from a full tender process and ongoing accommodation management has also been tendered with rates applied to operating cost estimates.

Capital costs of \$20.7M have been estimated for the accommodation village. However, numerous opportunities exist to purchase existing second hand accommodation facilities located in the region.



Figure 7.1: Access Road Route



Power Supply and Fuel Storage

An onsite purpose built diesel power station will supply power to the Project. The power station is sized for a total power demand of 9.6 megawatt to supply the process plant and other site facilities. 12 x 800 kilowatt generators have been selected to provide the best balance between availability, optimum loading and maintenance costs. The direct costs of the power station have been estimated at \$9.1M.

On site fuel storage capacity will be 3.8 million litres, which is sufficient to account for possible supply interruptions of up to 2 months during the wet season.

Water Supply and Treatment

Total project water demand is estimated at 1.32 gegalitres (GL) per annum. This is to be supplied by groundwater sourced from the Gardiner Sandstone Aquifer located approximately 10km to the southwest of the mine and process plant area. Water exploration drilling, pump testing and groundwater modelling work completed by Klohn Crippen Berger (KCB) has concluded that this aquifer will provide sufficient long term supply, with extraction having negligible environmental impact. The water is good quality, will not require treatment for the process plant, and only minimal treatment for potable water uses.

A preliminary borefield and water supply pipeline design was completed by KCB for the PFS. A direct cost estimate of \$6.0M is included in the capital estimate for the development of the borefield, power supply, and associated pipelines to the mine, process plant and accommodation village areas.

Wet Season Access

This is a significant consideration for the Project due to its location in northern Western Australia. In the summer wet season, road access can be primarily impacted by the rising of the Sturt Creek which crosses the Gordon Downs Road.

Road upgrades at Sturt Creek, along with other minor drainage improvements along the access roads, have been included in the PFS to reduce the average impact of wet season on road access outage to around 19 days per year, and a worst case scenario of 2 months.

The wet season will have negligible impacts on day-to-day mine operations, however road transport for reagents and fuel could be impacted. To mitigate this, storage facilities on site have been designed and costed to accommodate a maximum 2 month road outage.

Proposed Project Layout

Processing plants and associated infrastructure located in close proximity to mining operations.





Logistics

Project logistics incorporates the shipping and road transport requirements, including transport of construction phase materials and equipment, operational phase reagents, and other materials, and product export.

Construction Phase

During the construction phase, the Port of Wyndham will be the main inbound port as it is the closest and provides the most economical option for break bulk cargo such as steel and machinery. The Port of Wyndham has adequate hardstand laydown areas suitable for the discharge and consolidation of equipment and materials, and a number of shed options providing for temporary undercover storage if required.

Transport of materials and equipment from Wyndham Port to site will be via the existing 590km road network. A construction phase transport envelope study was also conducted on the proposed road route to ensure that any height and width restrictions would not prevent large equipment movements from reaching site. The survey highlighted that cargo equipment items exceeding 5.5m will need to be transported to site via the Duncan Road (east of Lake Argyle), which is accessed from the Victoria Highway 57km east of Kununurra.

Operational Phase

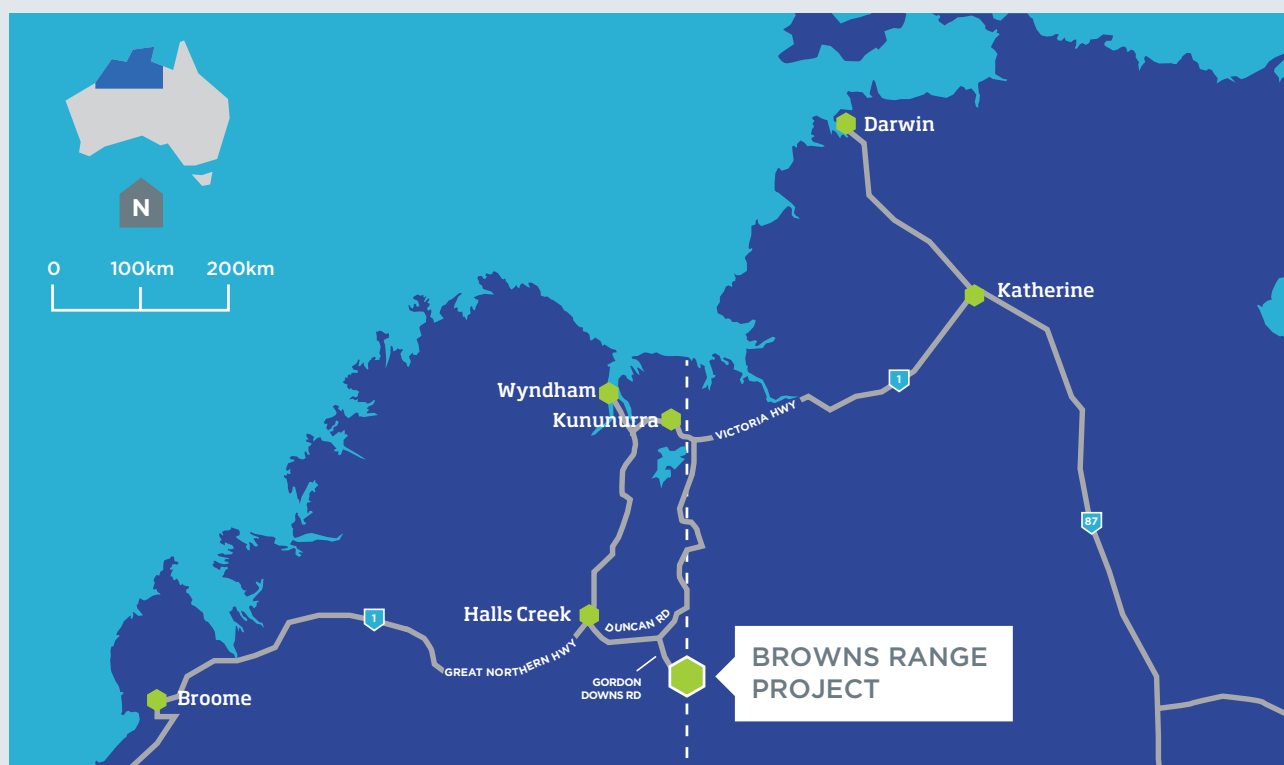
In the operational phase the Company plans to use the Port of Darwin as the primary import/export port as it has weekly to fortnightly shipping services, and all of the necessary port facilities. However, a potential new shipping service into Wyndham Port may provide an opportunity to re-assess the preferred import/export port. This opportunity will be investigated further during the Feasibility Study (FS). The road access from each port to the Project is shown in Figure 7.2.

Road trains will be used to transport reagents and consumables from Darwin to the Project, a distance of approximately 1,400km.

All dry reagents for the operational phase of the Project will likely be imported through the Port of Darwin in standard 20 foot (ft) shipping containers. The Company plans to utilise a combination of carrier-owned and shipper-owned containers to facilitate reagent movements into site and the also for on-site storage. Reagents such as sulphuric acid and limestone, and consumables such as diesel will be transported to site in bulk using side tippers and road tankers.

The mixed RE oxide product will be packaged in 1t bulka bags and loaded into 20ft shipping containers for back loading to the Port of Darwin and export to customers.

Figure 7.2: Road Transport Routes from Darwin and Wyndham Ports to the Project



8 Environmental and Social



Figure 8.1: Typical Landscape in Project Area

Environment

Regulatory Context

Western Australian State Government

The Project is currently being assessed by the Western Australian Environmental Protection Authority (EPA) under the “Assessment on Proponent Information” (API – category A) framework. This level of assessment is typically applied to projects considered by the EPA to raise a limited number of key environmental factors that can be readily managed and for which there is an established condition-setting framework, and where the proponent has appropriately and effectively consulted with the stakeholders during proposal preparation. Once a proposal assessed by the EPA is approved by the Minister for the Environment, then other subordinate State Government assessments and permitting processes can proceed.

Commonwealth Government

Baseline environmental studies have identified the project area contains habitat that could support some fauna that are protected under Commonwealth environmental legislation *Environment Protection and Biodiversity Conservation Act 1999* (EPBC). Targeted field-based surveys have not detected any of the EPBC-listed fauna. Nonetheless, for certainty, the Company will refer the Project to the Commonwealth for a determination of whether or not a Commonwealth environmental assessment is required, in addition to the State environmental impact assessment.





Permitting Status and Schedule

Primary Approvals

Following the decision by the EPA on 22 May 2013 to assess the Project under the API process, a scoping document outlining the environmental impact assessment requirements for the Project was prepared by the EPA and issued on 26 July 2013.

Figure 8.2 provides a simplified schedule of the studies carried out as part of the Project's environmental impact assessment to address the "preliminary key factors" identified by the EPA.

NTU lodged a draft API report with the EPA on 4 April 2014. The EPA provided feedback on this draft report and the Company submitted an updated API report to the EPA on 16 June 2014, targeting formal assessment of the Project in July 2014.

Subordinate Approvals

Once the final API report is submitted to the EPA, NTU will complete applications for a range of subordinate approvals, including necessary approvals under the *Mining Act 1978*, the *Rights in Water and Irrigation Act 1914* and the *Environmental Protection Act 1986*. Parallel processing of these applications

is possible, however no licences or permits will be issued until a Ministerial decision is published in relation to the primary EPA assessment and the relevant tenure is in place for certain subordinate approvals.

Environmental Context

Physiography and Land Use

The project area is located in the semi-arid south-eastern Kimberley region, at the northern edge of the Tanami Desert. The topography across the project site is generally subdued, with some rocky outcrops and ridges to a maximum elevation of about 490m RL (or about 25m to 30m above the surrounding plain). Figure 8.1 depicts the typical landscape in the project area.

The Project lies within the Gordon Downs pastoral lease with customary Aboriginal and pastoral land uses being the dominant land uses. The closest Department of Parks and Wildlife (DPaW) managed lands to the project area include the Ord River Regeneration Reserve, located approximately 100km north west of the Project and the Wolfe Creek Meteorite Crater National Park located approximately 120km to the west-south west.

Figure 8.2: Environmental Studies Programme

Supporting Studies

Preliminary Key Environmental Factors

Inland Waters (surface water)

- Surface hydrology
- Pit lake water quality model

Inland Waters (groundwater)

- Browns Range hydrogeology
- Water supply modelling

Flora and Vegetation

- Baseline surveys and impact assessment

Terrestrial Fauna

- Vertebrate fauna - baseline surveys
- Vertebrate fauna - targeted surveys
- Vertebrate fauna - impact assessment
- Short-range endemic invertebrates - baseline survey
- Short-range endemic invertebrates - impact assessment

Subterranean Fauna

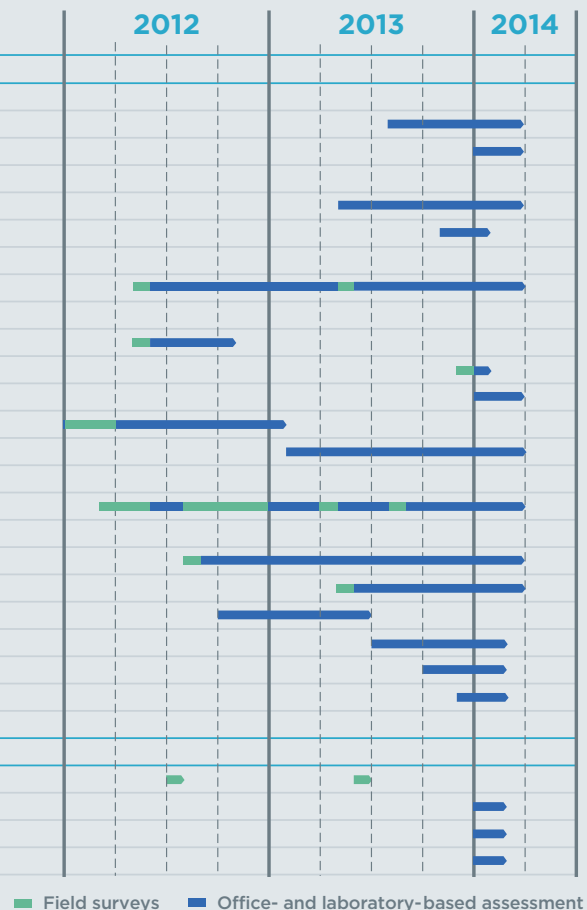
- Baseline surveys and impact assessment

Rehabilitation and Closure

- Baseline soil and landform assessment
- Analogue slopes: soil and vegetation assessment
- Preliminary geochemical assessment
- Waste rock geochemical characterisation
- Preliminary geochemical assessment of tailings
- Preliminary engineering design for TSF

Other Environmental Factors

- Aboriginal heritage
- Air quality
- Energy and greenhouse gases
- Noise



Hydrology

The project site is situated in the upper reaches of the Sturt Creek drainage catchment. Runoff from the 55,000km² Sturt Creek system ultimately flows into Lake Gregory (Paruku), located some 220km downstream of the mine area. All watercourses in the catchment are ephemeral and only flow following larger storm events or prolonged periods of rainfall (typically between January and March). Several relatively small ephemeral watercourses drain the project area in a westerly direction, joining the Sturt Creek some 140km upstream of Lake Gregory.

Baseline studies have identified three water-bearing stratigraphic units in the project area. These comprise two fractured rock aquifers and a localised unconfined alluvial aquifer. The depth to groundwater in the project area is variable, ranging from about 7m to more than 25m below ground surface, and reflects (in a subdued way) surface topography of the area. Groundwater quality in the project area is generally fresh to brackish and with the exceptions of localised areas where the groundwater is naturally saline, the water is suitable for watering of livestock.

Preliminary hydrogeological studies have identified that while dewatering will be required at each of the proposed open pits, the water abstracted will be insufficient to meet project water demands. It is proposed to source water from an array of shallow production bores at a newly constructed borefield to be located approximately 10km to the west of the mining lease. Hydrogeological modelling for the proposed borefield and pit dewatering has concluded that neither the proposed borefield nor mine dewatering will have an impact on existing registered groundwater bores, springs, wetlands or groundwater dependent vegetation in the vicinity of the Project.



In Stream Water Sampling at Browns Range

Geochemistry of Mine Waste Rock

The geochemical characterisation of the project waste rock has shown that the majority (>99%) of the waste rock contains negligible sulphur (<0.1 wt% S). Accordingly, there is a very low likelihood of acid mine drainage arising at the Project.

Leachable trace metal concentrations of the waste rock samples (including samples taken from the ore zone) were generally low and often below detection limits. Overall, the geochemical testing has shown that only a small proportion of the trace elements present in project waste rock occurs in forms that are readily leachable. Neither acidic nor saline seepage is expected to occur at the waste rock landforms, as the waste rocks stored there are non-saline and have low acid-generating capacity.

Flora and Fauna

Vegetation in the project area was recorded as largely in excellent condition. Some populations of weed species occur near existing roads and tracks, and in disturbed areas associated with mineral exploration activities. The drainage lines in the project area support characteristic vegetation assemblages, but no obligate groundwater dependent species or communities have been identified in the project area.

Most vegetation associations within the proposed project development footprint are well represented across the region and will not be significantly affected by clearing. No endangered plant species protected under State or Commonwealth environmental legislation were recorded during surveys. Overall, the impacts on native flora and vegetation arising from the implementation of the Project are modest.

The fauna assemblages in the project area are consistent with those known to occur in the surrounding landscape. No vertebrate fauna assemblages are believed to be restricted to the project area. Seven conservation-significant fauna species are known from public records to occur or have occurred in the general project locality, however field surveys at Browns Range have not found any evidence to suggest that important populations of the protected fauna are present in the project area. Overall, the baseline fauna impact assessment has concluded that implementation of the Project is unlikely to result in significant adverse impacts on vertebrate fauna or their habitats, including endangered fauna or other fauna of conservation significance.

The Project is not expected to have any significant impact on subterranean fauna or short range endemic invertebrate fauna.



Community and Stakeholder Relations

NTU is committed to responsible and ethical business practices and the Company recognises that maintaining its social licence to operate is a core aspect of the Project's development.

Since 2008, the Company has been working proactively with the local community. From this early interaction a strong relationship has formed between NTU and the community which has created a positive foundation for the Project's development by providing a platform for the community's involvement.

The Company is committed to being a good neighbour and working with the community to ensure benefits are received as part of the Project's development. Through community consultation forums, regular on the ground consultation, completion of a social and economic impact assessment, and ongoing engagement with the local Shire and government service providers, the Company ensures that the local social and economic landscape is understood, and that the community concerns are heard and addressed.

A key part of NTU's community engagement activities is to actively participate in and support community development initiatives that improve the well-being of the local community. These activities include sponsorship of local events, arts centre, school and football team.

To support the regulatory and approvals process, and remain abreast of legislative and policy changes that may impact operations, NTU has developed and implemented a government relations strategy. This strategy is bi-partisan and reviewed regularly to ensure its relevance in relation to project requirements, and the current political landscape. The strategy includes ongoing engagement and regular dialogue with State, Federal and Local governments, and Members of Parliament. The Company is an active member of the Western Australian resources industry and actively participates in matters relating to the industry, and the Kimberley region through memberships with key industry associations.

Indigenous Culture and Heritage

The Company respects the rights and cultural links Traditional Owners have with country, and encourages an environment of cross cultural appreciation and sharing. Since 2008, NTU has been working with the Traditional Owners in relation to project activities, and recognises that only by working in partnership can joint benefits and success be achieved.

The Project is located within the Jaru Native Title Claim. Prior to undertaking any on ground work Northern Minerals and the Jaru People have undertaken Heritage Impact Assessments (HIAs) to ensure that any cultural and heritage sites are identified and not impacted by project activities. HIA's will continue throughout the Project's lifecycle as necessary.

To improve knowledge and appreciation of Jaru values and culture, the Company provides cross cultural awareness training for employees. This training assists in fostering an inclusive workplace built on mutual respect and understanding which is an integral part to delivering on the Company's commitments. In June 2014, the Company and the Jaru People achieved a major milestone through the finalisation of their Co-Existence Agreement. This agreement provides Northern Minerals access to country to develop and operate the Project, while at the same time ensuring the Jaru People benefit, both socially and economically, from the Project's development. These benefits include trust contributions, ongoing employment, training and support for community initiatives.

The agreement also sets a framework for regular consultation and dialogue. This framework will support the agreement's implementation, provide a forum for decision making and allow for communication of the Project's activities, ensuring both parties' respective interests are protected.



Signing of the
Co-Existence
Agreement June 2014

NTU is committed
to responsible and ethical
business practices and the
Company recognises that
maintaining its social licence
to operate is a core aspect of
the Project's development.



9 Project Development



Following the positive outcomes of the PFS and the successful testwork, and piloting programs completed to date, NTU is well positioned to continue the development of the Project through to the targeted plant start-up in Q4 2016.

Figure 9.1 details the project development schedule through to start-up. The following activities and work programs are the key milestones as the Project moves forward.



Pilot Plant Programs

Metallurgical pilot plant programs are well underway. The 90t beneficiation plant pilot program completed in March 2014 at SGS and the hydrometallurgical plant pilot program commenced at ANSTO, and is planned for completion in June 2014. The results and learnings from both these programs underpin the Feasibility Study (FS) designs and also provide product sample for potential offtake partners to evaluate.

Tenure and Native Title

The Company has executed a Co-existence Agreement with the Jaru People and mining lease M80/627 has been granted.

The Company has applied for the necessary miscellaneous licences L80/76-79 which are expected to be granted by the end of Q3 2014.

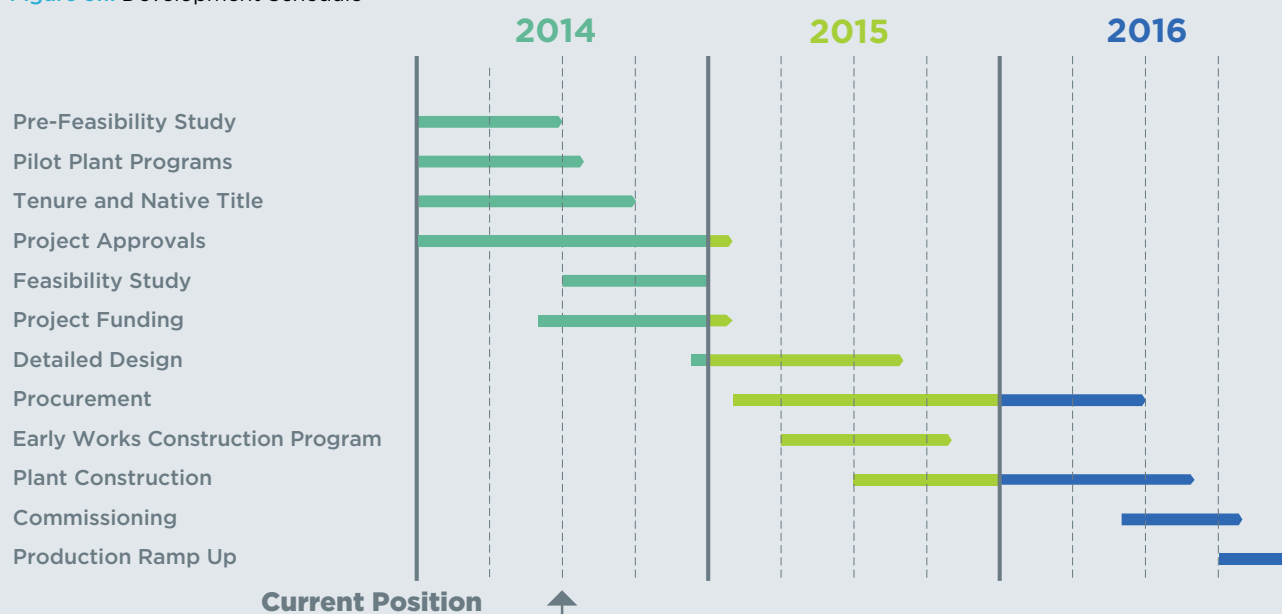
Project Approvals

The Project's primary environmental approval through the EPA is well advanced with the Company submitting the updated API report to the EPA in June 2014 for assessment. The Company is targeting formal EPA assessment in July 2014.

In parallel with the EPA assessment, the Company will be developing the secondary approvals for submission to relevant regulators.



Figure 9.1: Development Schedule



Feasibility Study

Having finalised the PFS for the Project, the next study milestone will be the completion of the FS, which will further develop the technical design of the mining operation, processing plant and associated infrastructure. A study engineer will be appointed in Q3 2014 and the FS will draw on the optimised project design developed through the PFS, and the results from the pilot plant programs that have demonstrated the robustness of the process flowsheet.

Project Funding

The Company has initiated a project funding strategy and expects to have this in place by early Q1 2015.

Detailed Design and Procurement

On completion of the FS and project funding arrangements, detailed design for the mine and process plant facilities will commence to finalise the project designs, develop and award packages for construction and to procure equipment and materials.

Early Works Construction Program

Immediately following commencement of detailed design, an early works construction program will be initiated, focussing on the implementation and upgrading of key project infrastructure to support the primary process plant construction effort. Early works programs will include access road upgrades, construction of the airstrip, installation of the construction village and development of a water supply.

Project Construction

The primary process plant construction is scheduled to commence in mid 2015. The initial focus will be on completing bulk site earthworks and the majority of the concrete works prior to the 2015 / 2016 wet season to facilitate continued construction during this period. In 2016 the construction of the process plant and associated services and infrastructure will be completed, with mechanical completion targeted for Q3 2016.

Commissioning

Commissioning of the process plant and associated facilities will be a staged process. The power station will be the first major item to be commissioned in order to supply power to the plant itself. The beneficiation plant will then be commissioned in order to develop a stockpile of mineral concentrate for commissioning of the hydrometallurgical plant.

Production Ramp up

On successful commissioning of both the beneficiation and hydrometallurgical plants, the Operations team will gradually begin the process of ramping up the facilities to nameplate capacity. This process is expected to take in the order of 6 months for the beneficiation plant and between 6 to 12 months for the hydrometallurgical plant.

10 Capital Cost

The total pre-production capital required to build and develop the Project has been estimated at \$314M (including contingency of \$43M), based on a processing facility capable of treating 585,000tpa at an average mill feed grade of 0.66%. The plant will have the capacity to produce 279,000kg of dysprosium per year included within the 3,200,000kg of high purity mixed RE oxide produced annually.

Estimate Basis

The overall project pre-production and sustaining capital estimate has been compiled by the NTU Project team based on inputs from various experienced consultants who developed and costed specific areas of the Project. The contributing consultants are listed in Table 10.1.

Capital costs relate to the entire project and include all scope areas that have been defined in the PFS. The overall estimate is considered to be a Class 3 estimate according to the American Association of Cost Estimators International (AACEI) based on the level of engineering and design completed to date. The estimate is judged to have an accuracy of between $\pm 20\%$ to $\pm 25\%$.

All costs are estimated in Australian dollars.

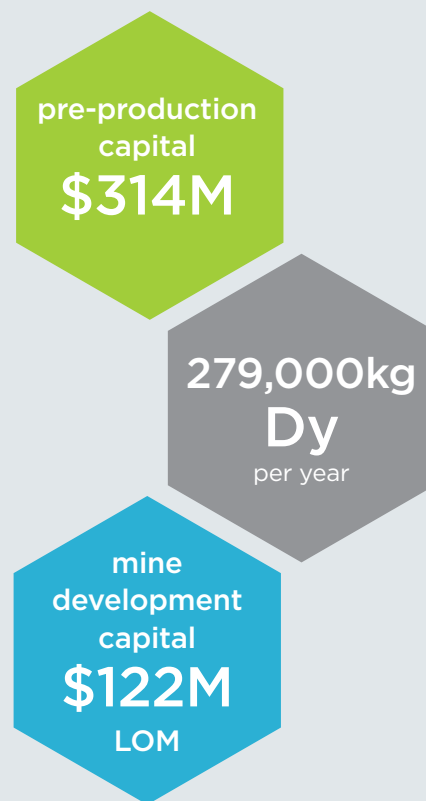


Table 10.1: PFS Capital Estimate Contributors

Consultant	Scope Area
AMC Mining Consultants	Resource Estimate, Mine Design and Scheduling;
DRA Global	Beneficiation Plant, Power Station, Accommodation Village;
Hatch Pty Ltd	Hydrometallurgical Plant, waste water treatment plant;
Golders Associates, Knight Piesold Consulting Engineers	Tailings Management and Storage;
Klohn Crippen Berger	Water Supply and Mine Dewatering;
Intech Engineers	Airstrip;
Shawmac	Access Roads;
Wyntac Logistics	Project Logistics;



Estimate Methodology

The capital estimate was prepared on an area by area basis according to the Project Work Breakdown Structure (WBS) with individual estimates prepared for each area. The delineation of pre-production capital costs and sustaining capital costs has been defined as the point at which mechanical completion and wet commissioning of the process plant installations has been completed.

The capital estimate has been developed using a combination of methodologies which are outlined in Table 10.2.

Table 10.2: Level of Engineering Development and Cost Estimating Method

Discipline	Level of Designs	Cost Estimation Method
Earthworks	Material Take Off (MTO) from sketches	Budget pricing, database and benchmark costs
Concrete Works	Sketches and preliminary models. MTO by experienced Civil and Structural Engineer	Budget pricing based on the MTO Preliminary all-in rates
Major Mechanical Equipment (nominally packages over \$150k)	Equipment sized and reflected on Mechanical Equipment List (MEL) Data sheet produced	Budget quote from vendors
Minor Mechanical Equipment (nominally packages under \$150k)	Normalised by experienced Process Engineer	In-house database of costs for recently completed projects
Structural Steel Supply (incl. hand railing and grating)	Preliminary layout drawings/models MTO by experienced Structural Engineer	Budget pricing based on MTO
Plate Work	MTO from equipment list and masses by experienced Structural Engineer	Budget pricing based on MTO
Piping	MTOs of critical pipe lines accounted for in layout	MTOs or factored capital costs based on database of similar projects
Electrical Control and Instrumentation Supply	Major equipment sized, MTO based on MEL and Process Flow Diagrams marked up	Database and budget pricing, factorised costs based on database/benchmarked information
Freight	Estimated freight movements	Based on benchmarked freight rates
Construction Costs	Installation man-hours based on tonnes of steel, plate and developed estimates per type of equipment	Rates from budget pricing received for the study or rate build ups from first principles by consultant
Buildings	MTOs based on similar steel structures from benchmarked data	Budget pricing, database and benchmark costs
Project Indirect Costs		Combination of factored from direct costs or adopted from similar in-house benchmarked data

Estimate Structure

The capital cost estimate has been divided into the following major cost areas:

- Direct Costs
- Indirect Costs
- Project Contingency

Direct Costs

Project direct costs are those expenditures that are directly attributable to the project scope items and include the supply of equipment and materials, freight to site and construction labour. The direct costs for the Project have been structured according to the Project WBS code as follows:

Mining – mining contractor capitalised items.

Beneficiation Plant – ROM wall, comminution, wet high gradient magnetic separation, flotation, concentrate thickening and dewatering, concentrate storage and reagents.

Hydrometallurgical Plant – Sulphation bake, water leach, purification, ion exchange, oxalate precipitation and calcination, product handling and storage and reagents.

Plant Infrastructure – Plant services such as water, air and fuel, pipe racks, electrical equipment, site earthworks, roads, buildings, communications, waste water treatment plant, tailings treatment plant and storage facility and water management ponds.

Offsite Infrastructure – Offsite water pipelines, access roads, power station and offsite power distribution, water bore network, accommodation village and airstrip.

Indirect Costs

Indirect costs include costs that are not directly proportional to the quantity of permanent work to be performed, are not readily allocated directly to individual cost items and are typically time-based driven by the project schedule. Indirect costs have been factored from the direct cost estimate using industry norms and benchmarked factors from other similar projects. The indirect costs are itemised as follows:

Temporary Construction Facilities - Items such as temporary buildings, temporary utilities and services, construction plant such as signs, barricades, scaffolding and temporary construction camp facilities and operations. Temporary construction facilities have been factored from total direct costs.

Owners Costs - Owners labour and expenses during the Project execution up to mechanical completion and includes corporate personnel assigned to the project, metallurgical testwork, 3rd party consultants, owners site office, legal costs, insurances, overheads, permits, landowner payments, development approvals, equity costs, bankers independent engineers fees, bankers expenses, royalties and fees, funding establishment costs. Owner's costs have been factored from total direct costs.

First Fills - The cost of reagents and consumables that will be required to achieve the inventory levels necessary to commence operations. First fills have been estimated based on quantities determined by consultants.

Equipment Spares - The costs of initial spares, capital spares and insurance spares. Based on 3% of total project mechanical equipment.

Heavy Lift Cranes - The costs of cranes over 100t lifting capacity and have been estimated based on the estimated requirements on site during the construction phase.

EPCM - the costs of detailed engineering design, procurement activities and construction management of the Project by the engineer. EPCM has been factored from the project direct costs on an area by area basis depending on the technical complexity of the scope and the proportion of large packaged equipment within the area.

Commissioning - The period from mechanical completion to when first product out is achieved. Operations will lead this phase supported by the implementation contractor and the NTU's team. The commissioning allowance covers the costs of these resources. Commissioning costs have been factored from total direct costs.

Project Contingency

Contingency is a provision made to cover unforeseen items of work that will have to be performed or items of cost that will be incurred within the defined scope of work of the estimate but cannot explicitly be foreseen or accounted for at the time of preparing the estimate due to the level of project definition. Contingency has been factored from the direct costs on an area by area basis depending on the level of confidence and definition of the area as a result of the work completed to date. The contingency for each area was then summed to provide an overall project contingency figure equating to 14% of the total project cost.

Capital Cost Summary

The pre-production capital cost estimate for the project is presented in summary in Table 10.3. The capital required has been estimated at \$314M which includes \$43.3M for project contingency.

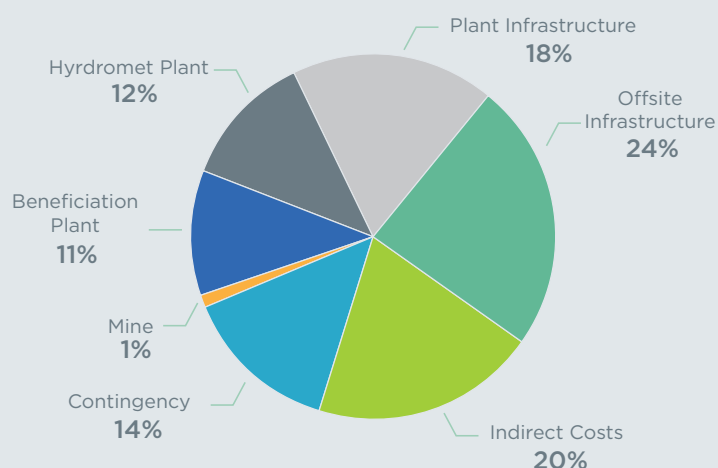
Table 10.3: Pre-production Capital Cost Estimate

WBS	Cost Area	A\$M
	Direct Costs	
200	Mine	
210	Mine Infrastructure	\$3.1
	Mine Sub-Total	\$3.1
400	Concentrator	
410	Rom Pad	\$0.4
420	Crushing	\$14.2
430	Milling	\$7.9
440	Magnetic Separation	\$4.3
450	Flotation	\$3.0
460	Concentrate De-Watering & Storage	\$4.4
490	Reagents	\$1.4
	Beneficiation Plant Sub-Total	\$35.6
500 - 600	Hydrometallurgical Plant	
510	Acid Bake	\$16.7
520	Water Leach	\$3.0
530	Conditioning	\$2.2
540	Ion Exchange	\$1.0
550	Precipitation	\$4.8
680	Product Handling	\$1.4
690	Reagents	\$8.7
	Hydrometallurgical Plant Sub-Total	\$37.8
700	Plant Infrastructure	
710	Services	\$9.4
720	General Infrastructure	\$20.3
730	Buildings Infrastructure	\$7.8
740	Communications/IT Infrastructure	\$4.7
750	Waste Water Treatment Plant	\$2.6
760	Tailings Treatment Plant	\$2.3
770	Tailings Storage Facility	\$4.3
780	Water Ponds	\$5.2
	Plant Infrastructure Sub-Total	\$56.6

WBS	Cost Area	A\$M
800	Offsite Infrastructure	
810	Pipelines	\$5.8
820	Roads	\$28.4
830	Power Distribution	\$1.5
840	Water Bores	\$1.6
850	Accommodation Village	\$20.7
860	Airstrip	\$6.7
870	Power Station	\$9.1
	Offsite Infrastructure Sub-Total	\$73.8
	Direct Costs Sub-Total	\$206.9
100	Indirect Costs	
110	Construction Indirects	\$23.4
120	Owners Costs	\$8.3
130	First Fill Consumables	\$1.0
140	Equipment Spares	\$2.0
150	Heavy Lift Cranes	\$0.5
160	EPCM	\$24.2
170	Commissioning	\$4.1
	Indirect Costs Sub-Total	\$63.5
	Contingency	\$43.3
	Total Project Pre-Production Capital	\$313.7



Figure 10.1: Distribution of Pre-Production Capital Costs



Sustaining Capital and Mine Development

Sustaining capital is the annual costs required to sustain the operation and includes TSF embankment lifts and closure, replacing equipment and components that have served their useful life, and mine rehabilitation and closure.

AMC have estimated \$121.6M for mining development capital costs over the LOM.

Plant and infrastructure sustaining capital has been factored from the project capital costs on an area by area basis, resulting in an annual allowance of \$3.7M per annum.

The TSF embankment lifts and final TSF closure costs have been estimated by Knight Piesold at \$26.8M over the LOM. An allowance of \$15M has been made to provide for mine closure and rehabilitation costs at the end of the mine life.

The annual sustaining capital and mine development costs have been incorporated into the financial model as project capital items. The sustaining capital schedule for the Project is shown in Table 10.4.

Table 10.4: Sustaining Capital and Mine Development Costs

Sustaining Capital Item	Sustaining Capital per Operating Year (A\$M)											Total (A\$M)
	1	2	3	4	5	6	7	8	9	10	11	
Mining	41.6	25.6	24.2	22.9	7.3							121.6
TSF Lifts & Closure		6.0			5.3			5.1		4.4	6.0	26.8
Plant and Infrastructure		3.7	3.7	3.7	3.7	3.7	3.7	3.7	0.9			26.8
Mine Closure											15.0	15.0
Total	41.6	35.3	27.9	26.6	16.3	3.7	3.7	8.8	0.9	4.4	21.0	190.2



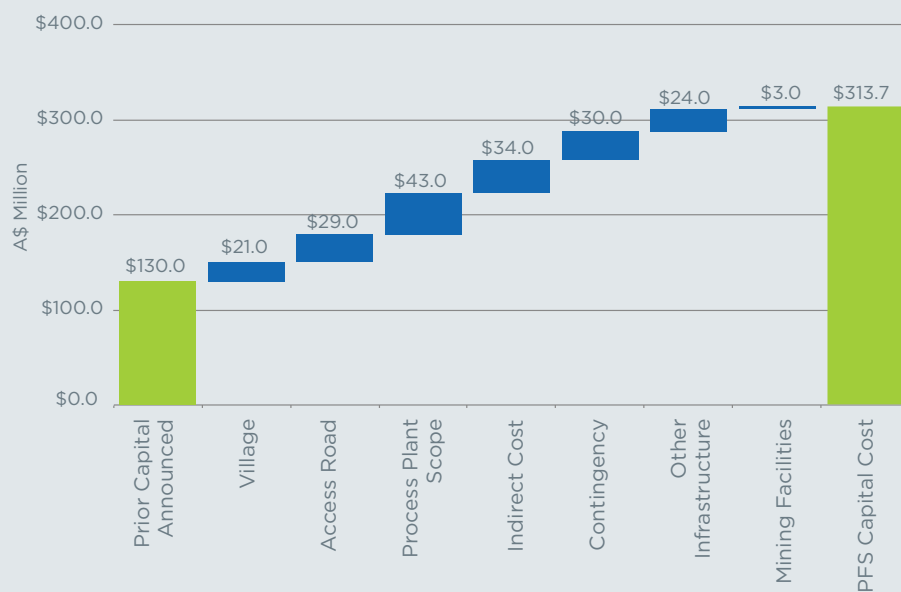
Previous Capital Comparison

Figure 10.2 provides a high level summary of the evolution of the capital cost estimate for the Project since the initial basic capital estimates in 2012. The increase broadly relates to areas not included in the initial estimates, increases in scope, flowsheet changes and improvements due to metallurgical testwork programs and level of accuracy changes.

- Indirect Cost includes construction indirect, NTU's costs, first fill consumables, equipment spares, EPCM and commissioning.
- Other Infrastructure includes TSF, water supply, airstrip, building and other infrastructure
- Prior Capital Announced includes beneficiation and hydrometallurgical plant costs previously announced
- Project Plant Scope includes additions and improvements to the process plant flowsheets.



Figure 10.2: Previous Capital Comparison



11 Operating Cost

Operating costs have been estimated for the Project and are representative of costs for a full production year at a plant nameplate of 585,000tpa and a head grade of 0.66% TREO.



Operating costs have been grouped into the following primary expense areas:

- Mining – contractor costs for both above ground and underground mining
- Labour – including maintenance personnel and employee mining personnel
- Operating Consumables – including reagents
- Power
- Maintenance
- General and Administration
- Product Transport

Operating costs associated with mining activities have been taken as an average over the LOM as these costs vary over the mine life.

Total annual operating costs are expressed in Australian dollars and presented in Table 11.1.

Table 11.1: Operating Costs by Expense Area (585,000tpa plant throughput)

Average Annual Operating Cost By Expense Area Over LOM	A\$/a	A\$/kg Dy	%
Mining (Average over LOM)	\$33.3	\$119	27.2%
Labour	\$19.4	\$70	15.9%
Power	\$14.3	\$51	11.6%
Reagents & Consumables	\$39.2	\$140	32.0%
Maintenance	\$6.1	\$22	5.0%
General & Administration	\$9.7	\$35	7.9%
Product Transport	\$0.5	\$2	0.4%
Total Annual Operating Costs	\$122.5	\$439	100.0%
By-product Revenue	\$102.8	\$368	
Operating Cost Excluding Royalties (Net by-product revenue)	\$19.7	\$71	

¹Excludes royalty cost and is net of by-product revenue.

Figures 11.1 and 11.2 show graphically the distribution of cost by expense area and plant area.

Figure 11.1: Operating Costs by Expense Area

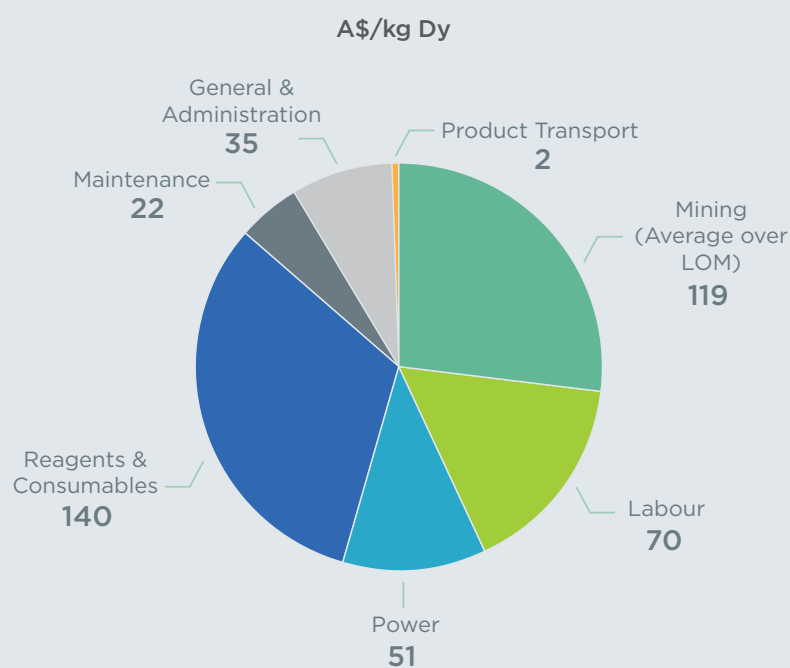
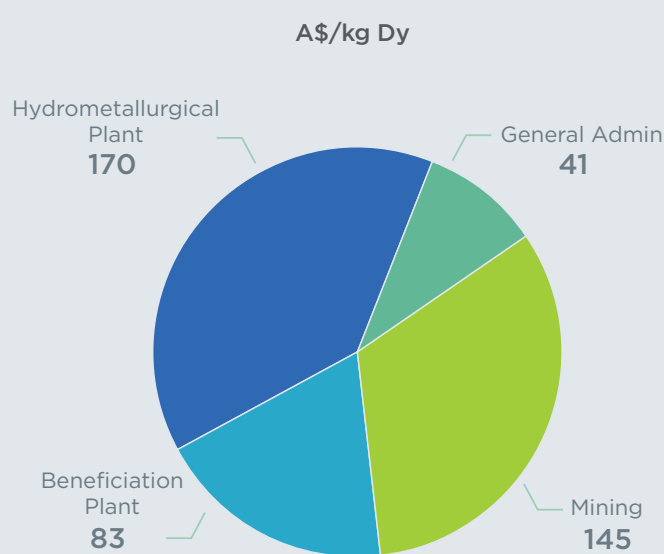


Figure 11.2: Operating Costs by Plant Area (average over LOM)





Mining

NTU engaged AMC to develop a mining schedule and associated mining operating costs for the PFS based on a contract mining strategy. The mining costs estimated are inclusive of mining fleet lease, drilling and blasting, load and haul, mining fleet fuel, power, grade control, mining workshops and contract labour and margin.

The mining operating costs over the LOM have been estimated at \$329.9M with an average annual cost of \$33.3M. The average cost per tonne of ore, over the LOM, was calculated to be \$65.60/t ore.

Mining contract personnel peaks at 121 when the open pit and underground operations are operating concurrently and reduces to 40 once open pit operations cease.

Labour

The average annual employee costs (excluding mining contract personnel) over the LOM are estimated at \$19.4M. This figure includes all direct salary payments together with superannuation and statutory overheads such as workers' compensation, insurance and payroll tax. An organisational chart was developed for the planned operations and personnel numbers have been established to meet the planned production levels, and benchmarked against similar sized projects.

Proposed employee numbers and associated costs are outlined in Table 11.2.

In determining the average annual mining employee labour cost, the mining employee profile over the LOM has been developed and an average annual cost has been calculated from this profile.

Table 11.2: NTU Employee Levels and Labour Costs

Position	Employee Numbers	Staff Costs (A\$/a)
Mining Employee (average over LOM)	26	\$3.4
Metallurgy Department	8	\$1.4
Process Plant Operations	47	\$6.4
Process Plant Maintenance	25	\$4.3
Laboratory	8	\$1.1
HSE & Training	10	\$1.4
Administration	9	\$1.4
Total	133	\$19.4

Excludes mining contract personnel.

Reagents and Consumables

A summary of the process plant reagent and consumable costs is shown in Figure 11.3 for a typical operating year at full production.

Reagent consumptions are based on the METSIM process model and mass balance developed in house in conjunction with Sargon Engineering, and refined by DRA Pacific and Hatch Associates Pty Ltd.

Reagent costs are based on budget prices received from suppliers through a formal enquiry process and include shipping, and road transport costs through to site. The overall annual cost of process reagents is estimated at \$28.6M per annum.

Consumable costs covering fuel, mill balls and liners, grinding media, filter cloths, product packaging, water treatment chemical etc. has been estimated at \$10.6M per annum. Consumable costs have been developed by consultants based on information provided by vendors.

Power

The Project will have its own power generating facilities to service the mine, processing facilities and all associated site infrastructure. Power requirements for the Project were determined from mechanical equipment lists developed for each area of the Project by the relevant consultant.

The unit cost of power is based on diesel generator sets with a supply cost of 28c/kWh and a diesel price of \$1.12 per litre delivered to site net of diesel fuel rebate.

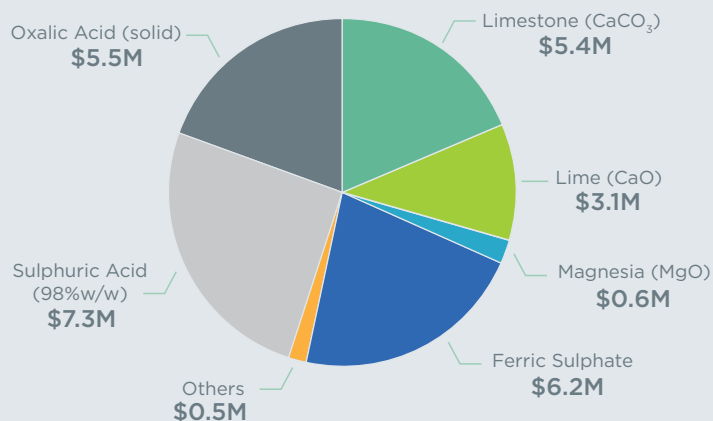
Preliminary power requirements and costs are based on the unit costs and are outlined in Table 11.3.

Table 11.3: Power Costs

Project Area	Demand Power (kW)	Cost (A\$/a)
Mining (average over LOM)	970	*
Beneficiation Plant	3,770	\$8.2
Hydrometallurgical Plant	890	\$1.9
Plant Infrastructure	1,570	\$3.4
Offsite Infrastructure	250	\$0.8

*Included in mining operating costs

Figure 11.3: Annual Reagent Costs



Maintenance

Maintenance expenses cover costs associated with the consumption of equipment spares and other supplies utilised in carrying out the maintenance on plant and infrastructure during operations. Maintenance costs have been estimated as a percentage of the direct capital costs of installed plant equipment. Maintenance costs are estimated at \$6.1M per annum which has been developed by consultants and based on factors and industry norms.

Maintenance on mining equipment and facilities are included as part of the mining contractor costs.


General and Administration

An estimate of \$9.7M has been developed for general items and administration to cover items such as site accommodation costs, flight costs, insurances, stationery, tenement fees and communications.

Product Transport

Product transport costs from the Project to the Port of Darwin have been developed by consultants based on back loading of empty containers. Shipping costs have also been developed from Darwin to a port in Asia. Total annual product transport costs are estimated at \$0.5M per annum.

12 Marketing



NTU's distinctive capabilities lie in its ability to deliver a high value, high purity, dysprosium rich product.

Marketing Strategy

NTU's distinctive capabilities lie in its ability to deliver a high value, high purity, dysprosium rich product. The Company's marketing strategy is focussed on becoming a long term and reliable supplier of dysprosium and other critical HREOs to global markets in the near, and long term.

By delivering a stable new supply of dysprosium, combined with a complementary suite of other HREOs, the Company also aims to reinstate global supplier confidence, driving further dysprosium demand and ultimately further innovation in clean energy, and high end technology solutions.

NTU has actively engaged with global participants in the rare earth industry for a number of years. This has included hosting site tours and visits to the Company's pilot plant campaigns, and the supply of sample product generated by these campaigns. These efforts have enabled NTU to advance potential offtake discussions and position the Company as the next global dysprosium producer.

In 2012, the Company achieved a key milestone when it entered into a non-binding Memorandum of Understanding with Sumitomo Corporation (Sumitomo) for the potential of 50% offtake of the annual Project's production. Sumitomo is a leading global metallurgical processor, commodity trader and a participant in the rare earth industry. Commercial agreement discussions are advancing with offtake partners.

The Company is continuing to work with potential offtake partners to finalise product specifications and ensure it is positioned to deliver dysprosium, and other critical HREOs to market at the optimum time.



Table 12.1: Forecast Global Demand and Supply for Selected Rare Earths in 2020 ($\pm 20\%$)

Rare Earth Oxide	Global		ROW			Browns Range
	Demand kg	Supply kg Excl. NTU	Demand kg	Supply kg Excl. NTU	Deficit kg	Supply kg
Dysprosium	1,150,000	1,175,000	375,000	70,000	305,000	291,000
Neodymium & Praseodymium	49,000,000	49,000,000	16,000,000	15,000,000	1,000,000	93,000
Europium	425,000	500,000	150,000	5,000	145,000	14,000
Terbium	625,000	250,000	200,000	25,000	175,000	43,000
Yttrium	10,000,000	8,000,000	3,500,000	650,000	2,850,000	1,872,000

Source: Curtin-IMCOA May 2014 and NTU

Dysprosium – Enhancing the Performance of NdFeB Permanent Magnets

Extensive evaluation of the market and the entire rare earth supply chain has identified that the growing demand for NdFeB (neodymium-iron-boron) permanent magnets will be the key rare earth market driver for the foreseeable future. These magnets are used in applications such as hybrid electric vehicles, wind turbines and high tech applications such as mobile phones. Dysprosium is an essential component in the production of these magnets, as it improves the magnet's high temperature performance and resistance to demagnetisation.

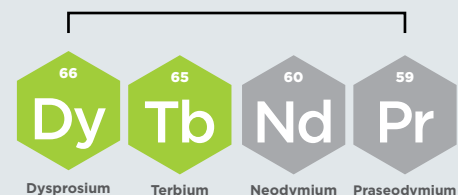
The uncertainty of dysprosium supply during the past few years has resulted in efforts to develop substitutes and new technologies that optimise the amount of dysprosium applied to NdFeB permanent magnets. However, while this work is progressing, the removal of dysprosium completely has not been successful, resulting in continued strength of dysprosium demand. The permanent magnet sector's forecasted growth from 2014 to 2020 is expected to be 8 to 12% per annum, which could increase markedly if more reliable long term dysprosium supplies are made available at competitive prices.

NTU is aiming to produce on average 279,000kg of dysprosium (in a mixed RE oxide) per annum over 10 years and is positioned to become a secure new, non-China source of dysprosium. The Industrial Minerals Company of Australia's (IMCOA's) forecast global supply and demand in 2020 (Table 12.1) indicates that the Project's production will meet most of the non-China, or Rest of World (ROW), demand for dysprosium and yttrium.

Rare Earths Essential for Hybrid & Electric Vehicles Toyota Prius ~11kg of rare earths



Magnets



The rare earth marketing landscape



HRE suppliers reporting upward pressure in demand



Chinese government stockpiling HRE while prices are relatively low



Producers forecasting increased HRE prices in 2016



Shortcomings of illegal mining becoming apparent - glut of unmarketable product in Europe



Lynas and Molycorp shifting to production phase



Industry consolidation ongoing in China, creating import market for non-integrated producers



LRE supply resolved focus shifting to HRE



Increasing demand for environmentally responsible sources of rare earths

Rare Earth Industry

Rare earths are essential in today's modern world. They enable modern technology to be smaller, more efficient and are a key ingredient in the manufacture of clean energy and high end technology solutions. The key role rare earths play in manufacturing industries has resulted in several countries looking to secure long term supply to sustain local manufacturing operations.

The Rare Earth Technology Alliance reports that in North America, the rare earth industry not only contributed some US\$795M¹ (in 2013) directly to the economy, but also provided significant economic flow on effects. In 2013, U.S. industries such as health care, clean energy, automotive and communication that rely on downstream end-market products and technologies containing rare earths generated US\$298.6Billion¹ and employed more than 500,000¹ people, creating a combined payroll of US\$33.4Billion¹.

The rare earth market landscape is currently dominated by China, which is responsible for producing more than 82%² of global demand and consuming 65%² of global supply in 2013. Realising the significant economic benefits and the interdependence of a diverse range of downstream industries reliant on rare earth supply, the Chinese Government has implemented several measures to secure local supply, such as reducing rare earth export quotas and increasing tariffs, consolidation of the local industry and stockpiling of supplies. These measures have focussed mainly on dysprosium, in addition to other heavy rare earths.

In 2011, as a result of these actions, demand vastly exceeded supply which led to unsustainably high prices. Today, as the rare earth industry tries to find equilibrium between supply, price and location of production, significant effort and funding is being focussed on substitution and recycling of key rare earth elements, including dysprosium. This is clearly demonstrated by countries such as Japan, which rely heavily on rare earth imports, budgeting US\$1.2Billion¹ (in 2011) on replacing, reducing and recycling rare earths. This amount was three times the cost of the previous years' rare earth imports.

The uncertainty of supply coupled with the significant economic benefits of the rare earth industry presents numerous challenges for many of the industrialised nations who rely on rare earths. These challenges are gaining significant attention from governments globally and signal that the demand for rare earths will continue to grow as technology advances and security of supply improves.

¹ Rare Earth Technology Alliance, American Chemistry Council.

² Curtin-IMCOA May 2014



NTU Competitive Advantage

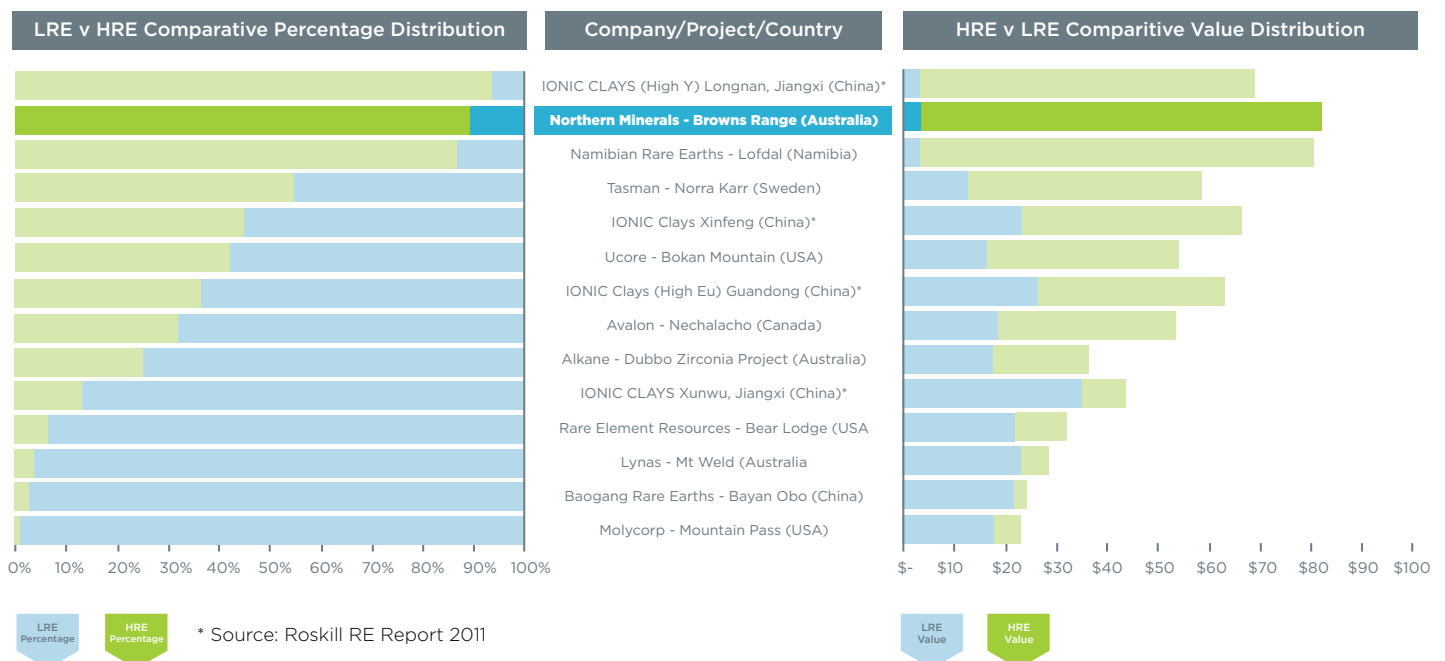
With the Project scheduled for production in 2016, NTU is poised to take advantage of global demand and deliver dysprosium at the optimum time.

A major benefit of the Project is its location in Western Australia, in a State and country with a world renowned mining industry, a stable geopolitical environment and an appetite for multinational investment. In 2013, Western Australia was ranked as the world's most attractive investment destination by the Fraser Institute Survey of Mining Companies.

The Project's main competitive advantage lies in the xenotime mineralisation which contains a high proportion of HREOs in a mainly silica host rock. This combination of xenotime and silica host rock allows a simple and cost effective beneficiation process to significantly upgrade the ore 30 times to a 20% TREO mineral concentrate, resulting in a relatively small and robust hydrometallurgical process flow sheet to produce a high purity, dysprosium rich mixed RE oxide. The high ratio of HREOs is consistent throughout Wolverine and the other surrounding deposits that form part of the 10 year mining schedule.



Competitor Comparison





The Project is a new discovery and NTU's significant portfolio of deposits, prospects and exploration tenements has the potential for stable and long term of supply of dysprosium. The four deposits discovered since 2010 remain open at depth and along strike. Several additional prospects displaying similar geological characteristics to Wolverine have also been discovered at the Project which supports the potential for further significant dysprosium deposit discoveries.

While the production profile has been based on a conservative level of dysprosium supply to expected levels of annual demand, the Project has the flexibility to increase its annual production as demand grows.

Pricing and Production Profile

There is no internationally accepted reference for rare earths pricing, which poses particular challenges for the rare earth industry. The recent establishment of the Baotou rare earth trading platform is not a reliable basis for forecasting due to the volatility of prices. Metal Pages and Asian Metal are the most widely accepted reference for rare earths' pricing, however they still lack transparency on volume sold and terms of sale.

In consultation with industry stakeholders, potential customers and internationally recognised market consultants, NTU has estimated future sales prices for its product. The project production forecast together with the TREO basket price and the by-product basket price are provided in Table 12.2.



Table 12.2: Production and pricing forecast

Rare Earth Oxide	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7-10	Total
Dysprosium	kg	263,000	303,000	301,000	276,000	292,000	300,000	965,000	2,696,000
Lanthanum	kg	36,000	39,000	39,000	39,000	41,000	41,000	137,000	369,000
Cerium	kg	97,000	105,000	104,000	104,000	109,000	108,000	368,000	992,000
Praseodymium	kg	15,000	16,000	16,000	16,000	17,000	17,000	56,000	151,000
Neodymium	kg	69,000	75,000	74,000	74,000	77,000	77,000	262,000	707,000
Samarium	kg	58,000	63,000	62,000	62,000	65,000	65,000	218,000	589,000
Europium	kg	13,000	14,000	14,000	14,000	14,000	14,000	48,000	129,000
Gadolinium	kg	160,000	173,000	170,000	171,000	178,000	178,000	604,000	1,632,000
Terbium	kg	38,000	43,000	42,000	41,000	43,000	43,000	138,000	385,000
Holmium	kg	56,000	60,000	59,000	60,000	62,000	62,000	209,000	565,000
Erbium	kg	151,000	164,000	161,000	162,000	169,000	169,000	572,000	1,544,000
Thulium	kg	23,000	25,000	25,000	25,000	26,000	26,000	87,000	235,000
Ytterbium	kg	124,000	135,000	133,000	134,000	139,000	139,000	471,000	1,271,000
Lutetium	kg	18,000	19,000	19,000	19,000	20,000	20,000	66,000	179,000
Yttrium	kg	1,652,000	1,927,000	1,945,000	1,831,000	1,872,000	1,917,000	6,371,000	17,511,000
Total TREO Produced	kg	2,767,000	3,156,000	3,157,000	3,022,000	3,117,000	3,169,000	10,565,000	28,950,000
TREO Basket Price	A\$/kg TREO	98	103	111	120	128	128	125	119
By-Product Basket Price	A\$/kg TREO	27	28	31	36	38	37	37	34

Figures may not add due to rounding

Based on LOM of 9.67 years.

TREO = Total Rare Earth Oxides - Total of Dy₂O₃, La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃

By-product Oxides - Total of La₂O₃, CeO₂, Pr₆O₁₁, Nd₂O₃, Sm₂O₃, Eu₂O₃, Gd₂O₃, Tb₄O₇, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, Lu₂O₃, Y₂O₃

13 Financial Evaluation

NTU has completed a financial evaluation of the Project based on data from the PFS. The financial assessment confirms the value and economic robustness of the Project with an after tax Net Present Value (NPV) estimated at \$446M and an Internal Rate of Return (IRR) of 33%.

The dysprosium price realised over the LOM is US\$724/kg Dy. The production cost including royalties of high value dysprosium net of by-product is US\$98/kg Dy.

Financial modelling is based on a 10% discount rate and a AUD:USD exchange rate of 0.80. A corporate tax rate of 30% has been applied.

The Project financial assessment has been modelled based on the PFS mining schedule with an average process plant feed rate of 520,000tpa at a grade of 0.73% TREO. Key input parameters and findings of the financial assessment are outlined in Tables 13.1 and 13.2.

NPV
\$446M

IRR
33%

Table 13.1: Key Physical Parameters

Physicals	
Ore processed LOM	5.0Mt
Average LOM head grade LOM	0.73%
Average annual plant throughput	520,000tpa
LOM	9.67yrs
Beneficiation plant Dy recovery	92%
Hydrometallurgical plant Dy recovery	90%
Total Dy recovery	83%
Annual average Dy production	279,000kg
Beneficiation plant TREO recovery	89%
Hydrometallurgical plant TREO recovery	88%
Total TREO recovery	78%
Annual average TREO production	3,000,000kg

Table 13.2: Key Financial Parameters

Financials	A\$M	
NPV (post tax, including royalties)	\$446	
IRR (post tax, including royalties)	33%	
Payback from plant start-up	3.3yrs	
Pre-production capital	\$313.7M	
TREO	A\$	US\$
TREO basket price	\$119/kg TREO	\$95/kg TREO
Total LOM revenue	\$3,434M	\$2,747M
Total LOM operating cost (excluding royalties)	\$1,163M	\$930M
Dysprosium	A\$	US\$
Realised price	\$905/kg Dy	\$724/kg Dy
Operating cost including royalty net of by-product revenue	\$123/kg Dy	\$98/kg Dy
LOM revenue	\$2,439M	\$1,951M

Costs per kg are averaged over the LOM.



Figure 13.1: Revenue Distribution

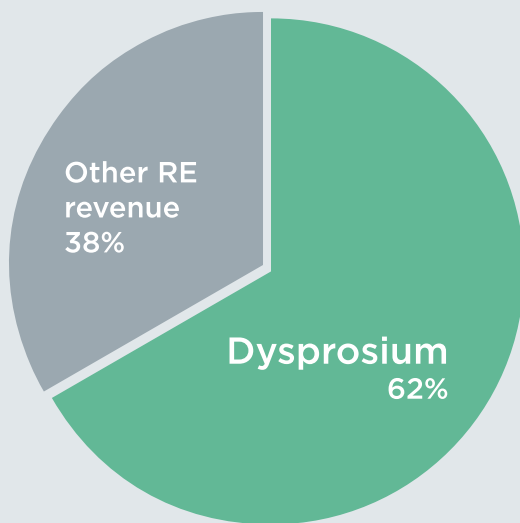


Figure 13.1 highlights the contribution that dysprosium makes to the Project's revenue and consolidates NTU's view that the Browns Range Project is a dysprosium Project, with the other rare earth oxides considered as by-products.

By-product revenue is the kilograms produced from all the other rare earth oxides, other than dysprosium, multiplied by their respective assumed selling prices. This by-product revenue is then offset against the total cost of production.

Figure 13.2 provides the revenue and net cash flow position of the Project over time and indicates the maximum cumulative negative net cash flow to be A\$314M and the payback of 3.3 years.

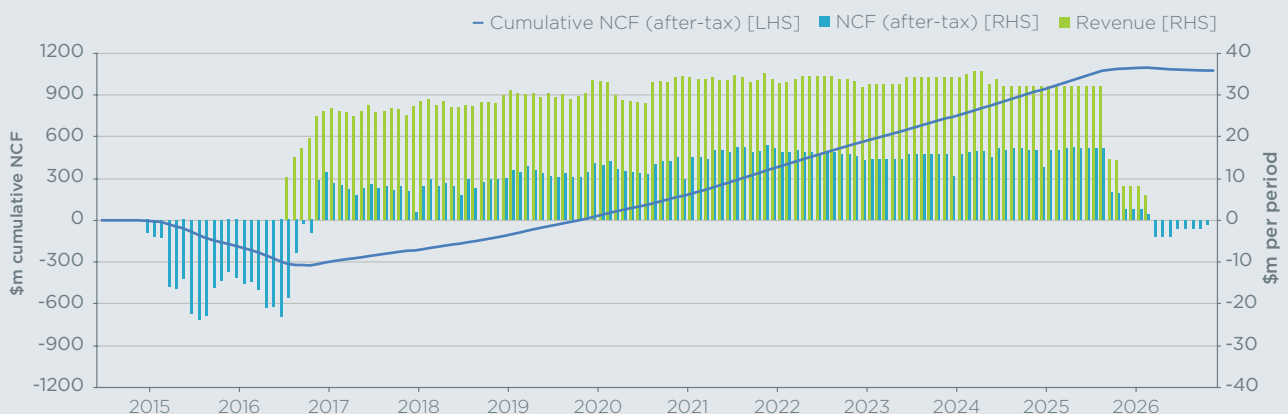
Royalties and Other Costs

Royalties and other annual payments have been incorporated into the financial evaluation of the Project to cover State royalty, land access payments and mine rehabilitation fund costs. Royalties have been determined based on a percentage of revenue. Other costs were developed based on a fixed annual fee.

Table 13.3: Royalty and Other Costs (LOM)

Royalties	A\$	US\$
Royalty and other costs	\$60/kg Dy	\$48/kg Dy
(based on Dy)		
Total royalty and other costs	\$162M	\$130M

Figure 13.2: Cash Flows Over LOM

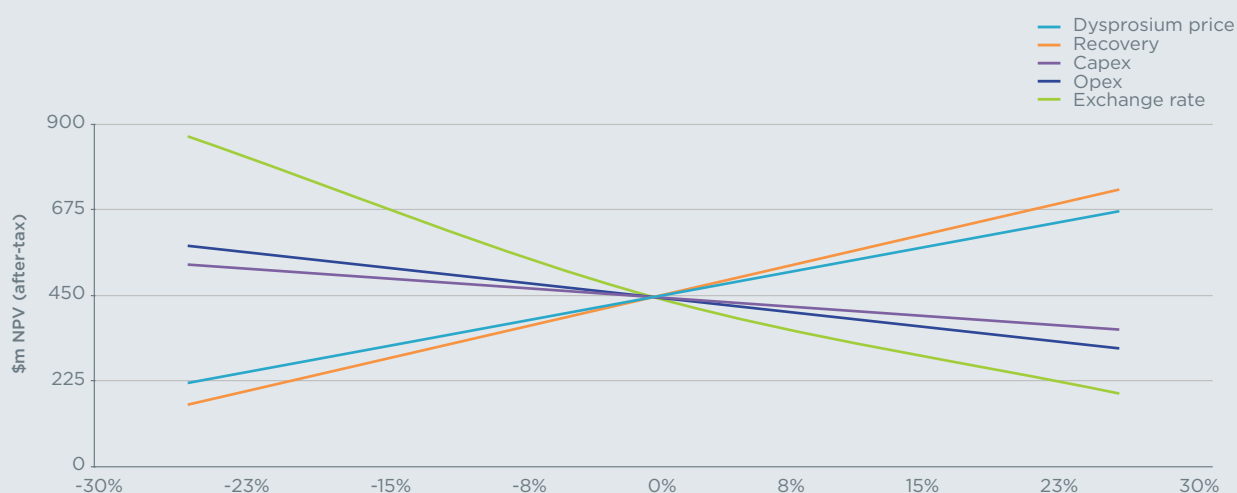


Financial Sensitivities

A financial sensitivity analysis was undertaken to evaluate the potential impact on the Project economics by varying the key project parameters of recovery, capital costs, operating costs, AUD:USD exchange rate and the price of dysprosium. The results of the analysis are shown in Figure 13.3.

The chart highlights the Project's higher sensitivity to the US\$ exchange rate, process plant recoveries and the dysprosium price, while being less sensitive to capital and operating costs.

Figure 13.3: Financial Sensitivity Analysis




Compliance Statement

The information in the announcement that relates to Mineral Resources is extracted from the report entitled Wolverine Total Resource Doubled in a Major Upgrade of Browns Range HRE Mineral Resource Estimate created on 26 February 2014 and is available to view on the Company's website (northernminerals.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

The information in the announcement that relates to Ore Reserves is extracted from the report entitled Maiden Ore Reserve for the Browns Range Project created on 24 June 2014 and is available to view on the Company's website (northernminerals.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.





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