26 February 2014

Wolverine Total Resource Doubled in a Major Upgrade of Browns Range HRE Mineral Resource Estimate

Highlights:

- Major upgrade in Heavy Rare Earth (HRE) resource at Browns Range Project with the global Mineral Resource now estimated at **47,997,000kg (47,997 tonnes) of total rare earth oxides (TREO) in 6.48 million tonnes @ 0.74% TREO** (classified and reported according to the guidelines of the 2012 JORC Code[1]).
- Resource remains dominated by high value dysprosium and yttrium – 84% of the TREO within the Total (Indicated and Inferred) Resource is HRE.
- Substantial upgrade to Indicated Resources with 66% of Total Resource now in the Indicated category.
- The upgrade of the mineral inventory factors an extended mine life into the Pre-feasibility Study which is well advanced and on track for mid- year delivery, targeting a mining operation to commence in 2016.

Northern Minerals (ASX: NTU) is pleased to announce a further substantial increase in its JORC compliant, HRE mineral resource estimate for its Browns Range Project in northern Australia.

The Total Mineral Resource at the Browns Range Project is now estimated at 6.48 Mt @ 0.74% TREO comprising 47,997,000kg (47,997 tonnes) contained TREO using a cut-off grade of 0.15% TREO. At the Wolverine deposit the Total Mineral Resource is now estimated at 4.46 million tonnes at 0.86% TREO comprising 38,269 tonnes TREO using a cut-off grade of 0.15% TREO, a 107% increase.

The independent Mineral Resource estimate was completed by AMC Consultants Pty Ltd (AMC), and follows further drilling at the Wolverine and Gambit West deposits in the second half of last year.

The upgrade marks a 71% increase in contained tonnes of TREO (of 19,913 tonnes TREO) from the Mineral Resource estimate at Browns Range announced in October 2013 (then 28,084 tonnes TREO). Of the Total Mineral Resource, 66% is classified as Indicated, with the remainder in the Inferred category.

The drilling programs completed in 2013 have resulted in a 350% increase (37,497t of contained TREO) to the maiden Total Mineral Resource estimate announced in December 2012 (10,500t contained TREO). A key feature of the Browns Range resource is the dominance of the high value dysprosium, terbium and yttrium elements with average grades of 0.62kg/t, 0.09kg/t and 4.13kg/t respectively within the Total (Indicated and Inferred) Resource. The Heavy Rare Earths (HRE) percentage of the Total Rare Earths is 84% (Indicated and Inferred Resource). The presence of xenotime as the dominant HRE mineral host is a major competitive advantage for Browns Range.

[1] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code 2012 Edition, Effective December 2013, Prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).

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Northern Minerals Managing Director George Bauk said the upgrade in resources marked a major milestone in the development of Browns Range.

"This is an outstanding result. It takes Browns Range to the next level and reinforces the project as one of the world's most exciting new sources of dysprosium and yttrium," Mr Bauk said.

"Our exploration results have continued to exceed our expectations. Today's resource upgrade is at the upper end of our exploration target range, and reflects the outstanding results from our major drilling programs in the second half of 2013," Mr Bauk said.

Mr Bauk said the Company had now built a significant resource for a potential mining operation at Browns Range.

"Our pre-feasibility study (PFS) is progressing well, and we will now be working to incorporate this latest resource data into our models and complete the PFS by mid-year," Mr Bauk said.

"We have now built a solid mineral inventory which we expect will provide a very robust mining operation and mine life."

"The latest resource upgrade continues our great progress in the development of Browns Range. In December 2012 we released our maiden resource of 10,500t TREO, and since then have increased this resource by some 350%, and put ourselves on the path to production by 2016," Mr Bauk said.

Browns Range Project – Global JORC compliant Mineral Resource Estimate (February 2014)

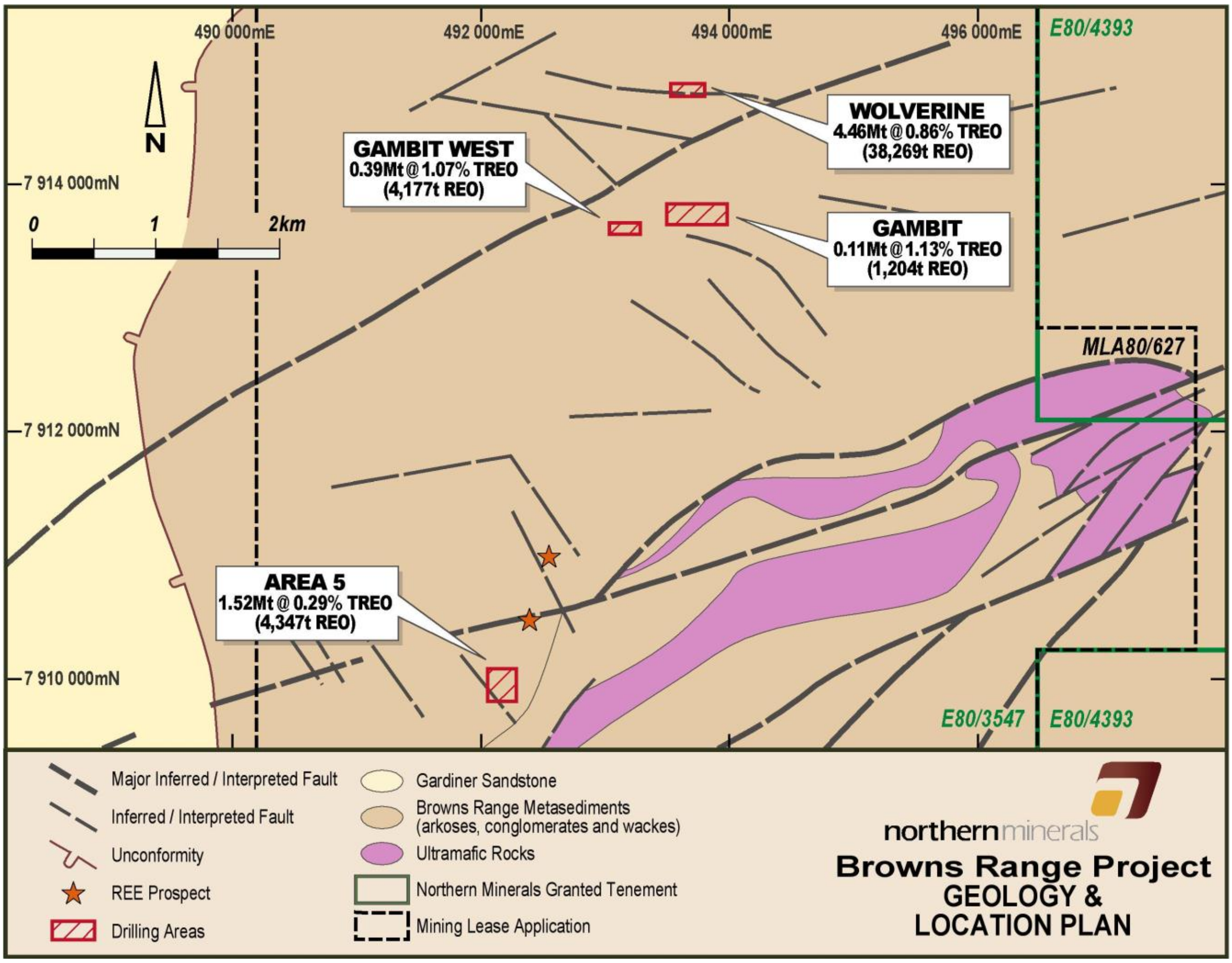
Deposit	Category	Mt	TREO %	Dy_2O_3 Kg/t	Y_2O_3 Kg/t	Tb_4O_7 Kg/t	HREO %	TREO Tonnes
Wolverine	Indicated	2.66	0.89	0.78	5.17	0.12	89	23,705
	Inferred	1.80	0.81	0.67	4.45	0.10	87	14,564
	Total[1]	4.46	0.86	0.74	4.88	0.11	88	38,269
Gambit West	Indicated	0.27	1.26	1.07	7.06	0.14	90	3,424
	Inferred	0.12	0.64	0.54	3.67	0.07	85	753
	Total[1]	0.39	1.07	0.91	6.04	0.12	89	4,177
Gambit	Indicated	0.05	1.06	0.92	6.62	0.12	97	533
	Inferred	0.06	1.20	1.01	6.80	0.15	95	671
	Total[1]	0.11	1.13	0.97	6.72	0.13	96	1,204
Area 5	Indicated	1.38	0.29	0.18	1.27	0.03	69	3,953
	Inferred	0.14	0.27	0.17	1.17	0.03	70	394
	Total[1]	1.52	0.29	0.18	1.26	0.03	69	4,347
Total[1]	**Indicated**	4.37	0.72	0.61	4.07	0.09	83	31,615
	Inferred	2.12	0.77	0.64	4.25	0.09	86	16,382
	Total[1]	6.48	0.74	0.62	4.13	0.09	84	47,997

[1] **- Rounding may cause some computational discrepancies (TREO (metal) tonnes estimated from Mt x TREO%)**

TREO = Total Rare Earth Oxides – La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3

HREO = Heavy Rare Earth Oxides – Total of Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3

Figure 1 – Browns Range Project – Location and geology of Mineral Resources



SUMMARY OF MATERIAL INFORMATION

The Browns Range Project is located in the Tanami region of Western Australia, approximately 150km southeast of the town of Halls Creek near the Northern Territory border. The Wolverine, Gambit West, Gambit and Area 5 deposits are all within the Browns Range Project area and are all located wholly within Exploration Licence E80/3547. In November 2013, Mining Lease Application MLA80/627 was submitted over an area of 12,813 hectares covering the four currently defined Mineral Resources and several other HRE prospects. The Jaru Native Title Claim is registered over the Browns Range Project area.

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

WOLVERINE DEPOSIT

Wolverine Deposit – Mineral Resource estimate (February 2014)

Category	Mt	TREO %	Dy_2O_3 Kg/t	Y_2O_3 Kg/t	Tb_4O_7 Kg/t	HREO %	U_3O_8 (ppm)	ThO_2 (ppm)	TREO Tonnes
Indicated	2.66	0.89	0.78	5.17	0.12	89	36	26	23,705
Inferred	1.80	0.81	0.67	4.45	0.10	87	36	31	14,564
Total	4.46	0.86	0.74	4.88	0.11	88	36	28	38,269

Wolverine February 2014 Mineral Resource Individual REO Proportions at 0.15% TREO Cut-off grade

REO	Indicated %	Inferred %	Total Resource %
La_2O_3	1.91	2.49	2.13
CeO_2	4.76	6.16	5.29
Pr_6O_{11}	0.68	0.85	0.74
Nd_2O_3	3.14	3.71	3.36
Sm_2O_3	2.11	2.27	2.17
Eu_2O_3	0.44	0.47	0.45
Gd_2O_3	5.70	6.08	5.85
Tb_4O_7	1.32	1.23	1.29
Dy_2O_3	8.78	8.33	8.61
Ho_2O_3	1.84	1.85	1.84
Er_2O_3	5.31	5.29	5.31
Tm_2O_3	0.74	0.73	0.74
Yb_2O_3	4.38	4.27	4.33
Y_2O_3	58.10	55.00	56.92
Lu_2O_3	0.60	0.58	0.59

Geology and Geological Interpretation

Locally at Wolverine the hosting Browns Range Metamorphics are a variable sequence of meta quartz-lithic and arkosic arenites and conglomerates with minor interbedded schists. 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.

The style of mineralisation is xenotime hydrothermal breccia. Xenotime is associated with varying degrees of veining and brecciation; from 1mm to 2mm crackle vein selvages to matrix infill in 5m wide zones of chaotic breccia. There are open spaced textures, vugs and minor cross-cutting quartz, pyrite or barite veins that are interpreted to post-date mineralisation.

Mineralogical examination shows the heavy rare earth mineralisation is xenotime (YPO_4). The Florencite ($(Nd,La,Ce)Al_3(PO_4)_2(OH)_6$) - Goyazite (Sr $Al_3(PO_4)2(OH)_5.H_2O$) series are the only other rare earth element minerals recognised to date.

Drilling Techniques
Diamond core drill holes account for 40% of the drill metres within the mineralisation and comprises NQ and HQ sized core. Reverse Circulation (RC) drilling accounts for the remainder with diameters of either 115mm or 140mm. Many of the diamond core drill holes had RC drilled pre-collars. Diamond core was orientated using the Reflex ACT orientation tool. RC drilling was completed using face sampling hammer with hole depths ranging from 12m to 324m.

Drilling has been completed on a nominal 25m in easting by 25m in northing grid spacing although this increases to broader spacing at the lateral extremities of the deposit. The spacing of down hole intercepts of the mineralisation varies from the nominal collar spacing due to deviation of drill holes, primarily associated with RC pre-collars. Prior to October 2013 resource drilling was exclusively conducted at -60 degrees to the south. From October 2013, diamond drilling was completed using casing wedges and directional drilling, resulting in variable intersection angles to the Wolverine deposit.

Sampling Techniques
Diamond core was cut in half using an electric core saw. Sample intervals were selected on the basis of lithological and structural features, together with indicative results from hand held XRF measurements. Drill core was sampled at a nominal one metre interval although constrained to within geological intervals. RC samples were collected from the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight.

Field QAQC procedures included the field insertion of certified reference materials (standards), blanks and duplicates. Earlier drilling (2011 to July 2012) did not include the insertion of standards as suitable materials were not sourced. Blanks were developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.

Determinations of bulk density were completed by a combination of core immersion techniques and downhole density surveys with values typically in the range 2.10 g/cm^3 to 3.40 g/cm^3.

Resource Classification Criteria
Classification for Wolverine is based upon continuity of geology, mineralisation and grade, using drill hole and density data spacing and quality, variography and estimation statistics (such as number of samples used, estimation pass, and slope of regression). Parts of the estimate poorly supported by drilling have not been classified as Mineral Resource.

Sample Analysis Method
Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of rare earth element suite using ICP-MS. The sample preparation techniques employed for the diamond and RC samples follow industry best practice.

Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime. The digestion solution, suitably diluted, is analysed by ICP Mass Spectroscopy (ICP-MS) for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Estimation and Modelling Techniques

Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron and a suite of 12 other rare earth elements(specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu – estimated both individually and collectively summed and estimated as SREO).

The geological interpretation was used to define the main mineralisation domains. The mineralisation domains were used as hard boundaries to select sample populations for variography and grade estimation.

Drillhole spacing is on average 25m in easting by 25m in northing. Drillhole sample data was flagged with domain codes unique to each mineralisation domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required.

Cut-off Parameters

A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Wolverine deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15% TREO has a reasonable prospect for eventual economic extraction.

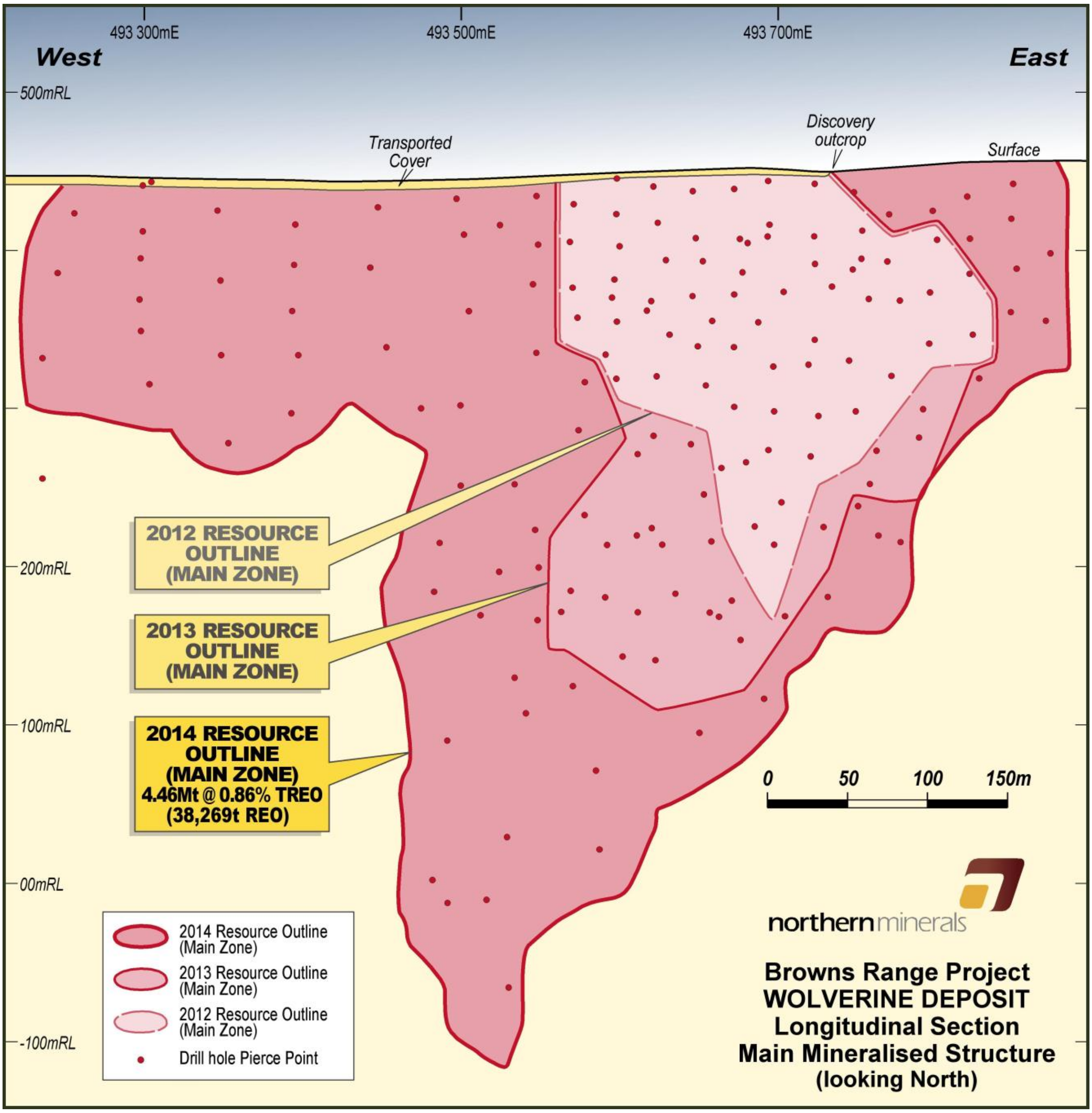
Metallurgical and Mining Assumptions

Metallurgical studies are well advanced and have delivered highly encouraging results to date. Beneficiation test work has confirmed that the Browns Range Project xenotime mineralisation can be processed using a relatively simple flowsheet consisting of crushing and grinding, followed by either: wet high gradient magnetic separation (WHGMS) combined with cleaner flotation, or by whole of ore flotation. Results to date indicate that a high grade mineral concentrate containing 20% TREO can be produced with an 80% recovery.

Preliminary hydrometallurgical test work results released in August 2012, indicated the Browns Range Project mineral concentrate is well suited to the production of a high purity mixed rare earth (RE) oxide. Based on these results, a conceptual hydrometallurgical flowsheet was developed that includes conventional unit processes of sulphation bake, water leaching, purification, oxalate precipitation and calcination. Laboratory scale confirmation test work of this flowsheet was completed at NAGROM and ALS Metallurgy in Perth, where the results from both laboratories confirmed that the mineral concentrate can successfully be processed to produce a high purity mixed RE oxide.

Mining studies were completed by AMC on the Wolverine Mineral Resource as reported in December 2012. The study concluded that the Wolverine deposit is amenable to mining methods employing a combination of open pit and underground methods.

Figure 2 – Wolverine Deposit – Long section of resource outline



GAMBIT WEST DEPOSIT

Gambit West Deposit - Mineral Resource estimate (February 2014)

Category	Mt	TREO %	Dy_2O_3 Kg/t	Y_2O_3 Kg/t	Tb_4O_7 Kg/t	HREO %	U_3O_8 (ppm)	ThO_2 (ppm)	TREO Tonnes
Indicated	0.27	1.26	1.07	7.06	0.14	90	47	34	3,424
Inferred	0.12	0.64	0.54	3.67	0.07	85	34	37	753
Total	0.39	1.07	0.91	6.04	0.12	89	43	35	4,177

Gambit West February 2014 Mineral Resource Individual REO Proportions at 0.15% TREO Cut-off grade

REO	Indicated %	Inferred %	Total Resource %
La_2O_3	1.85	2.96	2.05
CeO_2	4.57	7.04	5.02
Pr_6O_{11}	0.67	0.94	0.71
Nd_2O_3	3.14	4.05	3.31
Sm_2O_3	1.98	1.81	1.95
Eu_2O_3	0.39	0.34	0.38
Gd_2O_3	5.25	4.58	5.13
Tb_4O_7	1.14	1.12	1.13
Dy_2O_3	8.49	8.44	8.48
Ho_2O_3	2.10	1.78	2.05
Er_2O_3	6.49	5.56	6.32
Tm_2O_3	0.95	0.84	0.93
Yb_2O_3	5.73	5.17	5.63
Y_2O_3	56.19	57.14	56.36
Lu_2O_3	0.79	0.73	0.78

Geology and Geological Interpretation

The host structure is interpreted as a fault breccia characterised by the presence of sericite, hematite and silicification. The host structure, which occurs within a meta-arenite of the Browns Range Metamorphics package, strikes approximately east-west and is sub-vertical with a slight northerly dip. Mineralisation is related to the presence of hydrothermal xenotime, a rare earth phosphate mineral, and is predominantly associated with zones of hematite alteration.

Mineralogical examination shows the heavy rare earth mineralisation is xenotime (YPO_4). The Florencite ($(Nd,La,Ce)Al_3(PO_4)_2(OH)_6$) - Goyazite ($Sr\ Al_3(PO_4)_2(OH)_5.H_2O$) series are the only other rare earth element minerals recognised to date.

Drilling Techniques

RC drill holes account for 94% of the drill metres within the deposit area and were completed using a face sampling hammer with diameters of either 115mm or 140mm, with hole depths up to 282m. Diamond drilling accounts for the remainder of the drilling at HQ and NQ core sizes with hole depths up to 254m. Diamond core was orientated using the Reflex ACT orientation tool.

Drilling of the Gambit West deposit has been completed on a nominal spacing of 25m in easting by 25m in northing. Resource drilling has been on both southerly (180°) and northerly (000°) at an inclination of nominally -60°.

Sampling Techniques

Diamond core was cut in half using an electric core saw. Sample intervals were selected on the basis of lithological and structural features, together with indicative results from hand held XRF measurements. Drill core was sampled at a nominal one metre interval although constrained to within geological intervals. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis

RC samples were collected from the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight.

Field QAQC procedures included the field insertion of certified reference materials (standards), blanks and duplicates. Earlier drilling did not include the insertion of standards as suitable materials were not sourced. Blanks were developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.

Determinations of bulk density were completed by a combination of core immersion techniques and downhole density surveys with values typically in the range 2.10 g/cm^3 to 3.40 g/cm^3.

Resource Classification Criteria

Classification for Gambit West is based upon continuity of geology, mineralisation and grade, using drill hole and density data spacing and quality, variography and estimation statistics (such as number of samples used, estimation pass, and slope of regression). Parts of the estimate poorly supported by drilling have not been classified as Mineral Resource.

Sample Analysis Method

Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of rare earth element suite using ICP-MS. The sample preparation techniques employed for the diamond and RC samples follow industry best practice.

Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime. The digestion solution, suitably diluted, is analysed by ICP Mass Spectroscopy (ICP-MS) for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Estimation and Modelling Techniques

Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron and a suite of 12 other rare earth elements(specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu – estimated both individually and collectively summed and estimated as SREO).

The geological interpretation was used to define the mineralisation domains. The mineralisation domains were used as hard boundaries to select sample populations for variography and grade estimation.

Drillhole spacing is on average 25m in easting by 25m in northing. Drillhole sample data was flagged with domain codes unique to each mineralisation domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required.

Cut-off Parameters

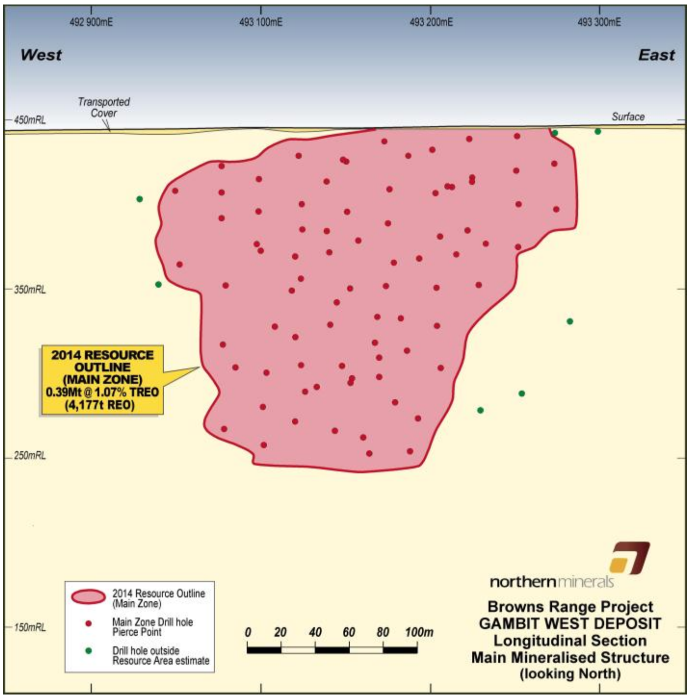
A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Gambit West deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15% TREO has a reasonable prospect for eventual economic extraction.

Metallurgical and Mining Assumptions

No metallurgical studies have been completed to date specifically on Gambit West mineralisation. However, given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralisation) between the Gambit West and Wolverine deposits, it is reasonable to expect that Gambit West mineralisation will have similar results to Wolverine mineralisation from future metallurgical test work. The beneficiation and hydrometallurgical flow sheets are currently being optimised on mineralised material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Gambit West deposit will be tested against these optimised flow sheets to determine their metallurgical performance.

To date, no externally reportable technical studies have been completed on suitable mining methods for the Gambit West deposit. Given the grade and dimensions of the Gambit West deposit, generic standard open cut and underground methods provide reasonable prospects of eventual economic extraction. No further assumptions with respect to mining methodology have been made.

Figure 3 – Gambit West Deposit -Long section of resource outline



GAMBIT DEPOSIT

Gambit Deposit - Mineral Resource estimate (February 2014)

Category	Mt	TREO %	Dy_2O_3 Kg/t	Y_2O_3 Kg/t	Tb_4O_7 Kg/t	HREO %	U_3O_8 (ppm)	ThO_2 (ppm)	TREO Tonnes
Indicated	0.05	1.06	0.92	6.62	0.12	97	33	32	533
Inferred	0.06	1.20	1.01	6.80	0.12	95	36	36	671
Total	0.11	1.13	0.97	6.72	0.15	96	35	34	1,204

Gambit February 2014 Mineral Resource Individual REO Proportions at 0.15% TREO Cut-off grade

REO	Indicated %	Inferred %	Total Resource %
La_2O_3	0.51	0.84	0.69
CeO_2	1.22	2.07	1.69
Pr_6O_{11}	0.16	0.27	0.22
Nd_2O_3	1.10	1.43	1.29
Sm_2O_3	1.70	1.66	1.68
Eu_2O_3	0.41	0.37	0.39
Gd_2O_3	5.27	5.35	5.32
Tb_4O_7	1.13	1.23	1.18
Dy_2O_3	8.66	8.44	8.54
Ho_2O_3	2.07	2.03	2.04
Er_2O_3	6.11	6.14	6.12
Tm_2O_3	0.87	0.88	0.88
Yb_2O_3	5.08	5.28	5.19
Y_2O_3	62.56	56.54	59.21
Lu_2O_3	0.68	0.73	0.70

Geology and Geological Interpretation

The prospect is contained within an east-west corridor, defined by the complex structure, alteration, variable silicification and increased fracturing. A number of mineralised 'pods' have been modelled, and are partly associated with fault breccias, within the overall east-west corridor. The main mineralised pod is interpreted to be sub-vertical, strike east-west and plunge towards the west. As at Gambit West and Wolverine, the fault breccias occur within a meta-arenite of the Browns Range Metamorphics package. Mineralisation is related to the presence of hydrothermal xenotime.

Mineralogical examination shows the heavy rare earth mineralisation is xenotime (YPO_4). The Florencite ($(Nd,La,Ce)Al_3(PO_4)_2(OH)_6$) - Goyazite ($Sr\ Al_3(PO_4)_2(OH)_5.H_2O$) series are the only other rare earth element minerals recognised to date.

Drilling Techniques

RC drill holes account for 95% of the drill metres within the deposit area and were completed with a face sampling hammer with diameters of either 115mm or 140mm. Diamond drilling accounts for the remainder at HQ and NQ core sizes with hole depths ranging from 144m to 183m. Diamond core was orientated using the Reflex ACT orientation tool.

Drilling of the Gambit deposit has been completed on a nominal grid pattern of 25m in easting by 25min northing. Resource drilling has been a combination of drilling towards the south (180°) and the north (360°) at an inclination of -60°.

Sampling Techniques
Diamond core was cut in half using an electric core saw. Sample intervals were selected on the basis of lithological and structural features, together with indicative results from hand held XRF measurements. Drill core was sampled at a nominal one metre interval although constrained to within geological intervals. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis

RC samples were collected from the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight.

Field QAQC procedures included the field insertion of certified reference materials (standards), blanks and duplicates. Earlier drilling did not include the insertion of standards as suitable materials were not sourced. Blanks were developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.

Determinations of bulk density were completed by a combination of core immersion techniques and downhole density surveys with values typically in the range 2.10 g/cm^3 to 3.40 g/cm^3.

Resource Classification Criteria
Classification for Gambit is based upon continuity of geology, mineralisation and grade, using drill hole and density data spacing and quality, variography and estimation statistics (such as number of samples used, estimation pass, and slope of regression). Parts of the estimate poorly supported by drilling have not been classified as Mineral Resource.

Sample Analysis Method
Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of rare earth element suite using ICP-MS. The sample preparation techniques employed for the diamond and RC samples follow industry best practice.

Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids.. The digestion solution, suitably diluted, is analysed by ICP Mass Spectroscopy (ICP-MS) for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Estimation and Modelling Techniques
Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron and a suite of 12 other rare earth elements(specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu – estimated both individually and collectively summed and estimated as SREO).

The geological interpretation was used to define the mineralisation domains. The mineralisation domains were used as hard boundaries to select sample populations for variography and grade estimation. At Gambit, two mineralisation domains and one background domain were estimated.

Drillhole spacing is on average 25m east by 25m north. Drillhole sample data was flagged with domain codes unique to each mineralisation domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required.

Cut-off Parameters

A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Gambit deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15% TREO has a reasonable prospect for eventual economic extraction.

Metallurgical and Mining Assumptions

Preliminary beneficiation test work on RC drill samples from the Wolverine and Gambit deposits and the Area 5 North prospect at 0.25%, 0.5% and 1.0% TREO head grades was completed at NAGROM in 2012. This test work, which included magnetic susceptibility tests, rougher wet high gradient magnetic separation (WHGMS) and rougher flotation of WHGMS magnetic concentrate, returned similar recoveries for rougher magnetics and rougher flotation across the various head grades and mineralised sample sources.

The beneficiation and hydrometallurgical flow sheets are currently being optimised on mineralised material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Gambit deposit will be tested against these optimised flow sheets to determine their metallurgical performance. Given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralisation) between the Gambit and Wolverine deposits, it is reasonable to expect that Gambit mineralisation will have similar results to Wolverine mineralisation from future metallurgical test work.

To date, no externally reportable technical studies have been completed on suitable mining methods for the Gambit deposit. There are currently studies underway to determine the most appropriate mining methods for this deposit. Given the grade and dimensions of the Gambit deposit, generic standard open cut methods provide reasonable prospects of eventual economic extraction. No further assumptions with respect to mining methodology have been made.

Figure 4 – Gambit Deposit - Plan of resource outline

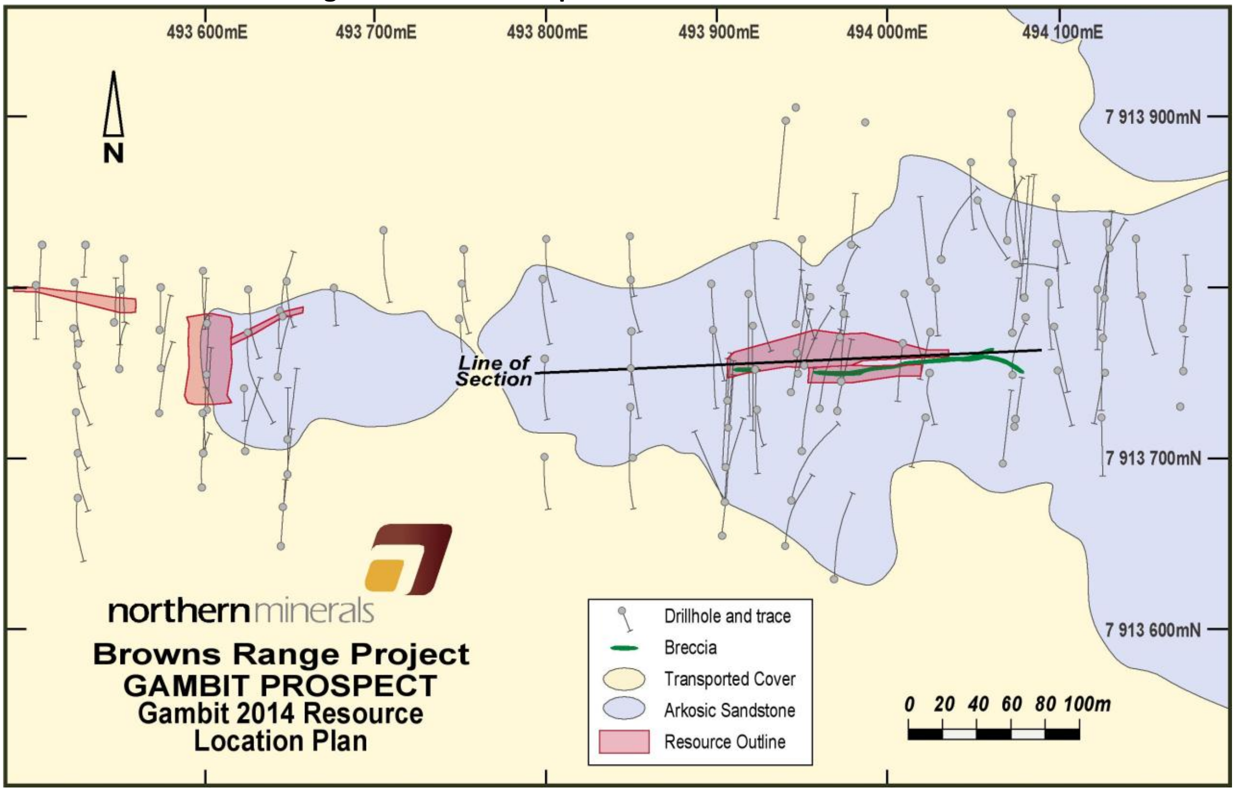
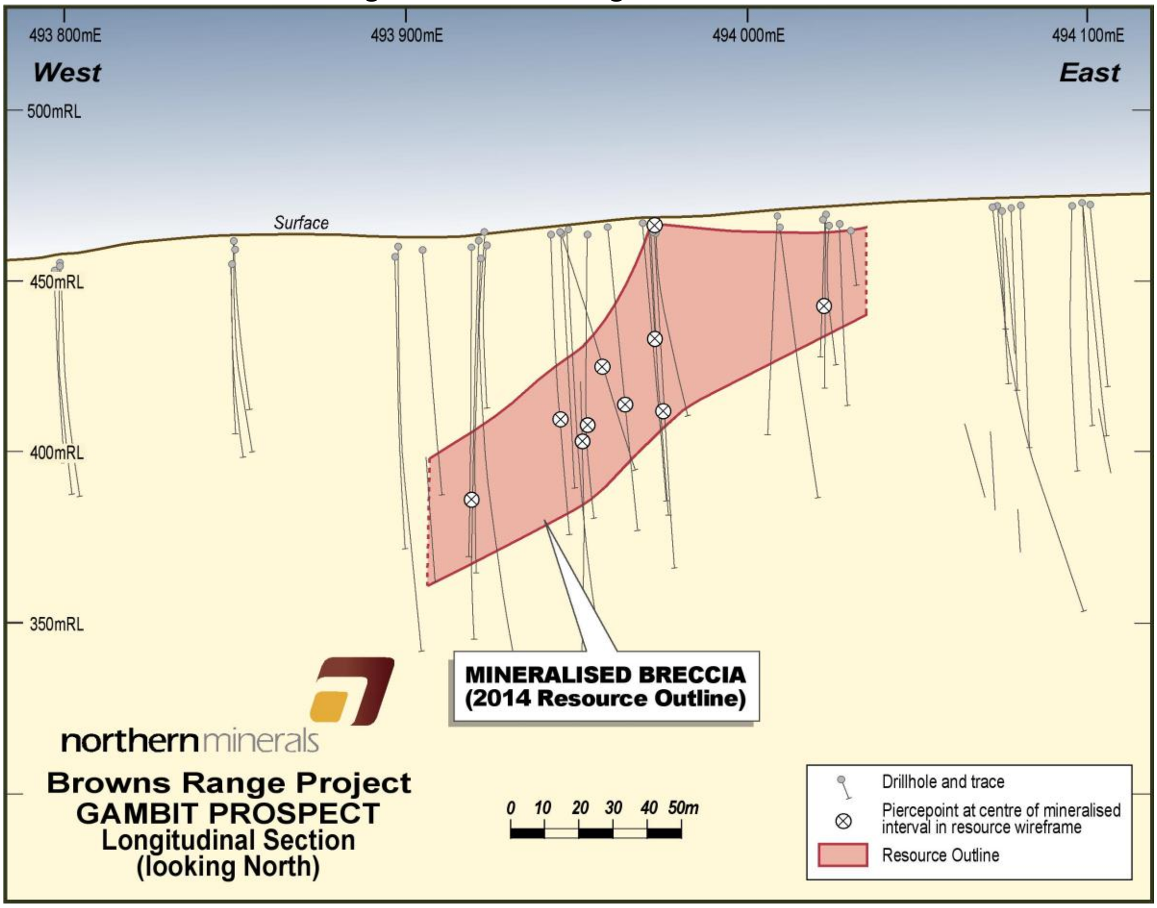


Figure 5 – Gambit Longitudinal Section



AREA 5 DEPOSIT

Area 5 Deposit - Mineral Resource estimate (February 2014)

Category	Mt	TREO %	Dy_2O_3 Kg/t	Y_2O_3 Kg/t	Tb_4O_7 Kg/t	HREO %	U_3O_8 (ppm)	ThO_2 (ppm)	TREO Tonnes
Indicated	1.38	0.29	0.18	1.27	0.03	69	25	37	3953
Inferred	0.14	0.27	0.17	1.17	0.03	70	26	37	394
Total	1.52	0.29	0.18	1.26	0.03	69	25	37	4,347

2014 Area 5 Mineral Resource Individual REO Proportions at 0.15% TREO Cut-off grade

REO	Indicated %	Inferred %	Total Resource %
La_2O_3	6.17	5.55	6.12
CeO_2	13.91	13.81	13.90
Pr_6O_{11}	1.95	1.76	1.93
Nd_2O_3	8.39	7.60	8.32
Sm_2O,	2.61	2.38	2.59
Eu_2O_3	0.39	0.36	0.39
Gd_2O_3	4.73	4.34	4.70
Tb_4O_7	0.96	0.92	0.95
Dy_2O_3	6.22	6.14	6.21
Ho_2O_3	1.43	1.41	1.43
Er_2O_3	3.97	4.00	3.98
Tm_2O_3	0.53	0.55	0.53
Yb_2O_3	2.99	3.16	3.00
Y_2O_3	44.26	42.80	44.13
Lu_2O_3	0.41	0.43	0.41

Geology and Geological Interpretation

The geology of the prospect area consists of a highly altered quartz arenite and conglomerates which are part of the Browns Range Metamorphics package. The conglomerate appears to occur in lenses, and is interpreted as a possible channel deposit. Intense bleaching and kaolinisation of the arenite unit is observed close to surface, and overlies ferruginous alteration. Foliations on rock chips were observed close to the alteration contact, indicating potential shearing along the contact. All packages have an apparent dip of 50° to the south.

The mineralisation is interpreted to be a series of stacked mineralised lodes striking approximately east-west and dipping to the south at approximately -50° steepening to approximately -60° down dip. Bounding faults have been identified trending NNW to the east and west of the mineralisation, with the western fault appearing to cut the bleached arenite. To the east, it appears that the alteration contact shifts orientation in the vicinity of the shear, running in a SE-NW direction.

Mineralogical examination shows the heavy rare earth mineralisation is xenotime (YPO_4). The Florencite ($(Nd,La,Ce)Al_3(PO_4)_2(OH)_6$) - Goyazite ($Sr\ Al_3(PO_4)_2(OH)_5.H_2O$) series are the only other rare earth element minerals recognised to date.

Drilling Techniques
RC drill holes account for 92% of the drill metres within the project area, completed with a face sampling hammer at diameters of either 115mm or 140mm. Diamond drilling accounts for the remainder at HQ and NQ core sizes with hole depths ranging from 52m to 261m. Diamond core was orientated using the Reflex ACT orientation tool.

Drilling has been completed on a nominal 25m in easting by 25m in northing grid spacing. The mineralisation is interpreted to be a series of stacked mineralised lodes striking approximately east-west and dipping to the south at approximately -50° to -60°. Resource drilling has predominantly been completed at an azimuth of 045° and inclination of -60° effectively intercepting the mineralisation obliquely. This orientation is not likely to introduce a sampling bias.

Sampling Techniques
Diamond core was cut in half using an electric core saw. Sample intervals were selected on the basis of lithological and structural features, together with indicative results from hand held XRF measurements. Drill core was sampled at a nominal one metre interval although constrained to within geological intervals. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis

RC samples were collected from the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight.

Field QAQC procedures included the field insertion of certified reference materials (standards), blanks and duplicates. Earlier drilling did not include the insertion of standards as suitable materials were not sourced. Blanks were developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.

Determinations of bulk density were completed by a combination of core immersion techniques and downhole density surveys with values typically in the range 2.10 g/cm^3 to 3.40 $g/cm^{3.}$

Resource Classification Criteria
Classification for Area 5 is based upon continuity of geology, mineralisation and grade, using drill hole and density data spacing and quality, variography and estimation statistics (such as number of samples used, estimation pass, and slope of regression). Parts of the estimate poorly supported by drilling have not been classified as Mineral Resource.

Sample Analysis Method
Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of rare earth element suite using ICP-MS. The sample preparation techniques employed for the diamond and RC samples follow industry best practice.

Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The digestion solution, suitably diluted, is analysed by ICP Mass Spectroscopy (ICP-MS) for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Estimation and Modelling Techniques

Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron and a suite of 12 other rare earth elements(specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu – estimated both individually and collectively summed and estimated as SREO).

The geological interpretation was used to define the mineralisation domains. The mineralisation domains were used as hard boundaries to select sample populations for variography and grade estimation. At Area 5, the nine lenses defined by the HREO ratio value greater than 0.5 were estimated separately along with one mineralisation envelope domain and one background domain.

Drillhole spacing is on average 25m in easting by 25m in northing. Drillhole sample data was flagged with domain codes unique to each mineralisation domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required.

Cut-off Parameters

A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Area 5 deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15% TREO has a reasonable prospect for eventual economic extraction.

Metallurgical and Mining Assumptions

No metallurgical studies have been completed to date specifically on Area 5 mineralisation. However, given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralisation) between the Area 5 and Wolverine deposits, it is reasonable to expect that Area 5 mineralisation will have similar results to Wolverine mineralisation from future metallurgical test work. The beneficiation and hydrometallurgical flow sheets are currently being optimised on mineralised material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Area 5 deposit will be tested against these optimised flow sheets to determine their metallurgical performance.

To date, no externally reportable technical studies have been completed on suitable mining methods for the Area 5 deposit. There are currently studies underway to determine the most appropriate mining methods for this deposit. Given the grade, dimensions and depth of the Area 5 deposit, generic standard open cut methods provide reasonable prospects of eventual economic extraction. No further assumptions with respect to mining methodology have been made.

Figure 6 – Area 5 Deposit - Plan of resource outline

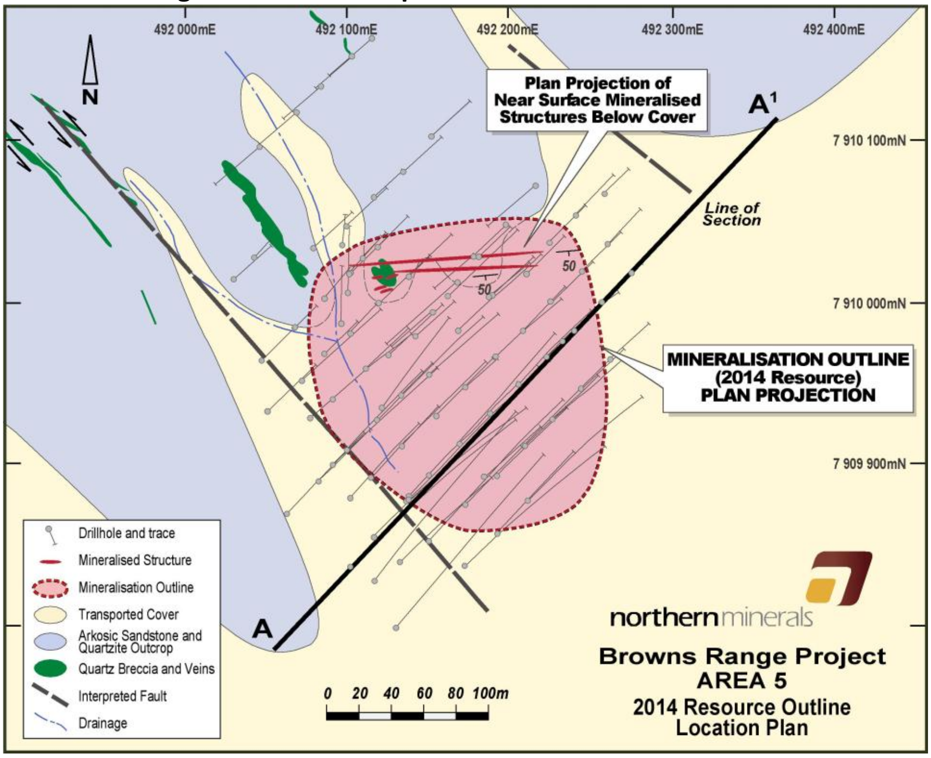
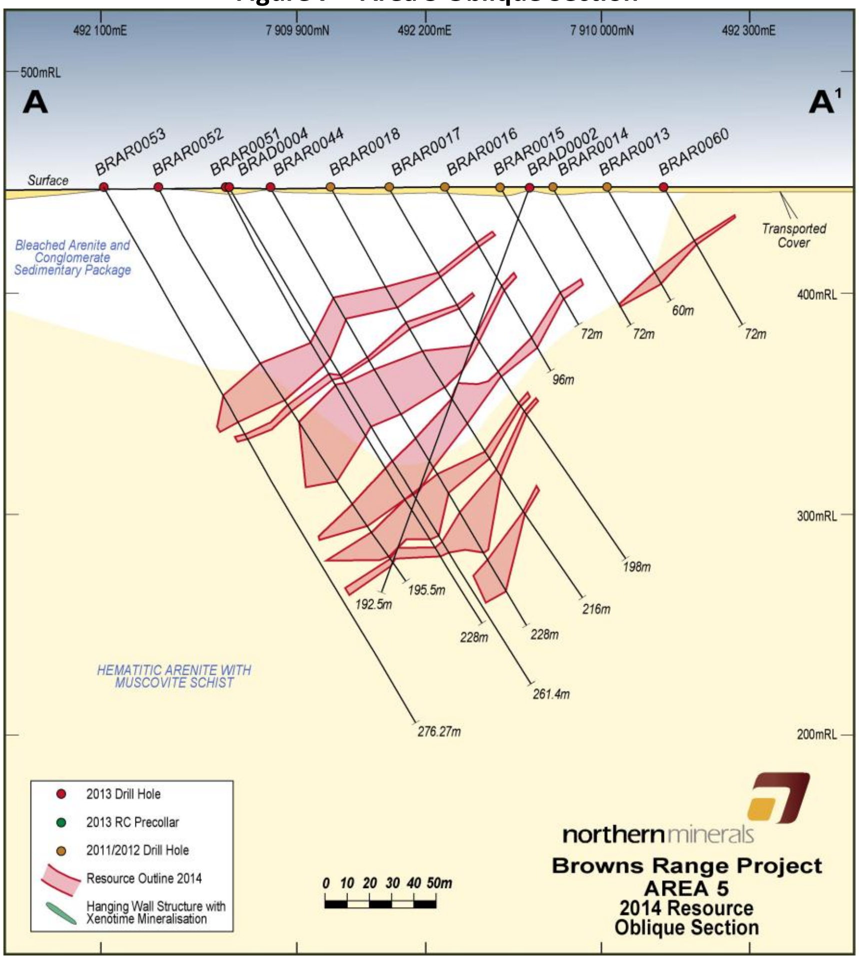


Figure 7 – Area 5 Oblique Section



Competent Persons Declaration:

The information in this report relating to Mineral Resources was compiled by Mr John Tyrrell who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Tyrrell is a full time employee of AMC and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Tyrrell consents to the inclusion of this information in the form and context in which it appears.

For more information:

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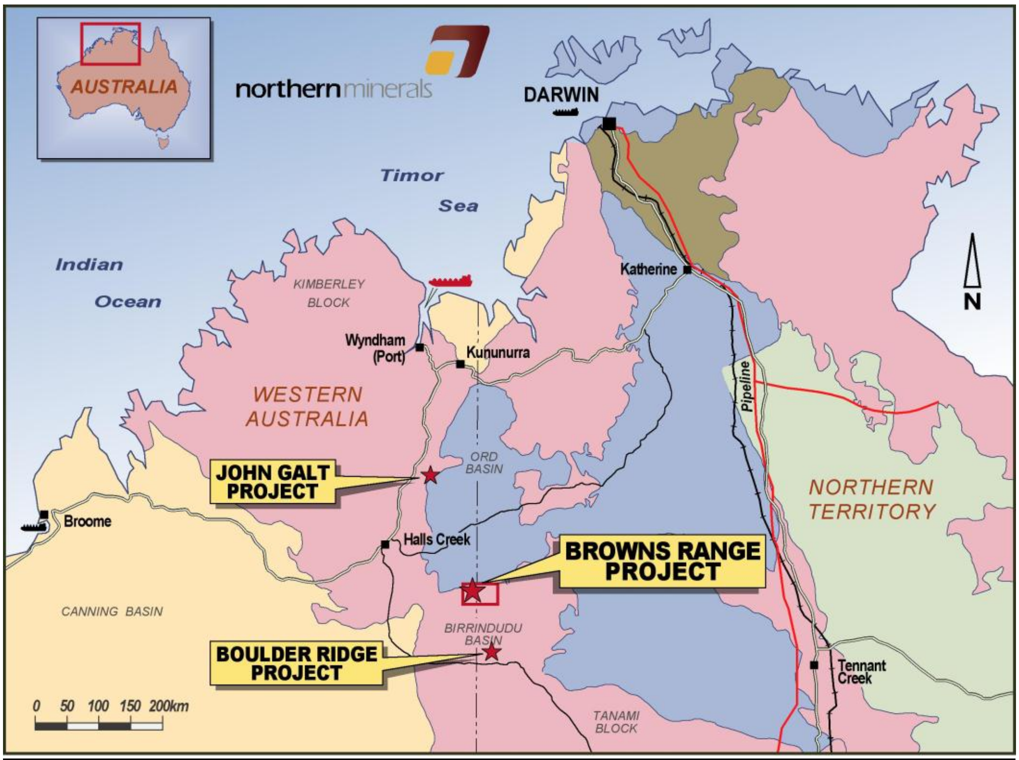
About Northern Minerals:

Northern Minerals Limited (ASX: NTU) is focused on development of rare earth elements (REE), with a large and prospective landholding in Western Australia and the Northern Territory. The Company's flagship project is Browns Range, where it has a number of projects with high value HRE in xenotime mineralisation. In particular, the mineralisation includes high levels of dysprosium and yttrium, which are in short supply globally and expected to be increasingly sought after as world economies stabilise and recent trends in urbanisation and technology diffusion, particularly in Asia, accelerate. Following outstanding results from its drilling programs the Company has delivered an expanded Mineral Resource estimate, and is advancing Browns Range toward production using a relatively simple and low cost processing flowsheet to produce a high grade mixed Rare Earth oxide. Northern Minerals also has a HRE exploration program underway at the geologically similar John Galt and Boulder Ridge Projects. For more information www.northernminerals.com.au



Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The deposit was sampled using a combination of Reverse Circulation (RC) drilling, diamond core from surface and diamond core tails. A total of 125 RC drill holes, 34 diamond holes and 65 RC holes with diamond tails were available for the resource estimate. Total metres of RC drilling were 23,240, with 16,314m of diamond drilling. Holes were almost exclusively drilled to UTM grid south at a dip of -60 degrees and were completed on a nominal 25m x 20m to 50m x 20m grid.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Drill hole collars were originally set out using hand held GPS and on completion the collars were surveyed by survey contractors using high precision GPS. Down hole surveys were completed either using single shot cameras or down hole gyro. RC drilling was typically employed for shallower levels of the resource, with diamond drilling employed to target the deeper resource areas. RC samples were collected at one metre intervals via a standard adjustable cyclone, then by riffle or cone splitter depending on the drilling contractor. Diamond core was half-core sampled at nominal one-metre intervals and constrained to geological boundaries where appropriate. Sampling was carried out under NTU protocols and employed QAQC procedures in line with industry best practice.
	Aspects of the determination of mineralization that are Material to the Public Report.	Diamond core was drilled using either double or triple tube at HQ and NQ sizes. HQ2 and HQ3 were variably employed for shallower parts of the hole depending on prevailing ground conditions, while the majority of diamond core intercepts within the mineralization are at NQ3 size and sampled at a nominal one metre interval (constrained to within geological intervals). RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight. Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of the rare earth element suite using ICP-MS.

Criteria	JORC Code explanation	Commentary
Drilling techniques	*Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	Diamond drill holes account for 40% of the drill metres and comprises NQ and HQ sized core. RC drilling accounts for the remainder with diameters of either 115mm or 140mm. Pre-collar depths range from 47.9m to 240.4m with diamond tail hole depths ranging from 10.2m to 636.6m. Diamond core was orientated using the Reflex ACT orientation tool. The quality of orientation marks are recorded in the drill hole database, with orientation lines only marked if two successive orientation marks aligned. RC drilling was completed using face sampling hammer with hole depths ranging from 12m to 324m.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was assessed by comparison of the interval of core presented in the core tray against the driller's core blocks. Analysis showed that more than 80% of core intervals had complete recoveries. Core recoveries in the upper 30m were variable and with losses associated with weathered arenites and transported cover. Recoveries in these zones ranged between 70-90%. These reduced recoveries were not associated with mineralization and as such are not considered material. RC recovery was assessed by a combination of weight of bulk sample against a nominal recovery mass, and via subjective assessment based on volume recovered. RC recoveries were observed to be generally acceptable with recoveries typically 80% or greater. RC and diamond recovery information is recorded in the geologist logs and entered into the database.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Diamond drilling utilised triple tube techniques and drilling fluids in order to assist with maximising recoveries. Diamond core is reconstructed into continuous runs on an angle iron cradle for orientation marking. Depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks. RC sample recoveries were visually checked for recovery, moisture and contamination. The cyclone and splitter were routinely cleaned ensuring no material build up.

Criteria	JORC Code explanation	Commentary
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Assessments on the effect of low recoveries were completed for the diamond and RC drilling and found that there was not likely to be any material impact or bias on the reported assay results as a result of the reduced recoveries.
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Diamond core was geologically logged using predefined lithological, mineralogical and physical characteristics (such as colour, weathering, fabric) logging codes. In addition structural measurements of major features were collected. RC logging was completed on one metre intervals at the rig by the geologist. Earlier drilling was logged onto paper and transferred to a digital form for loading into the drill hole database. More recently logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. Logging information was reviewed by the responsible geologist prior to final load into the database. Chip trays were collected for each of the RC intervals and core trays were photographed. Geotechnical logging of all diamond core consisted of recording core recovery, RQDs, number of fractures, core state (i.e. whole, broken) and hardness. In addition nine diamond holes (BRWD0026-0034) were drilled specifically for geotechnical purposes and were logged by both NTU geologists and external consultants. Samples were also selected for destructive testing.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging was generally qualitative in nature except for the determination of core recoveries and geotechnical criteria such as RQD and fracture frequency which was quantitative. Core photos were collected for all diamond drilling.
	The total length and percentage of the relevant intersections logged.	100% of all recovered intervals were geologically logged.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Diamond core was cut in half using an electric core saw. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features, together with indicative results from hand held XRF measurements. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis. Where possible, core was sampled to leave the orientation line in the core tray.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were collected from the full recovered interval at the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. Samples collected in mineralization were dry.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the diamond and RC samples follow industry best practice. Samples are oven dried at 120°C for 8 hours before processing through a Boyd jaw crusher reducing the sample to 90% passing 3mm (diamond samples only). The RC and diamond samples are then pulverised to achieve a grind size of 85% passing 75 micron using Hertzog robotic mills.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field QAQC procedures included the field insertion of certified reference materials (standards) having a range of values reflecting the general spread of values observed in the mineralization. Drilling prior to July 2012 did not include the insertion of standards, as suitable materials were not sourced. Blanks were also inserted in the field and developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralized zones.

Criteria	JORC Code explanation	Commentary
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Field duplicates from RC samples generally showed an excellent correlation between original and duplicates, however other measures of spread such as Half Absolute Relative Difference (HARD) plots suggested moderate to low repeatability. Analysis of the quarter core duplicate diamond core samples showed similar results suggesting the short scale variability of the mineralization is quite high, with mineralization being irregularly distributed within samples. This observation is reflected in the estimation parameters applied and the resource classification assigned. Detailed whole of hole duplicate analysis was completed for one RC and one diamond hole through the mineralized zones with the results comparable to those of the full data-sets.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Current industry standard sampling is used and deemed appropriate. A study on xenotime grain size and sampling is in progress. Samples have been selected, but results and subsequent analysis are pending.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The composition of the flux and the crucible used preclude the analysis of sodium, nickel, cobalt, chromium and molybdenum so these elements are not determined. The digestion solution, suitably diluted, is analysed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) for the determination of Al, Fe, P, S, Sc and S, while ICP Mass Spectroscopy (ICP-MS) is used for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Criteria	JORC Code explanation	Commentary
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	In the field a series of Niton (XL3T-950 GOLDD+) XRF hand held tools were used to assist with the identification of mineralized zones for sample collection and submission. Tools were operated in soil mode with a count time of 30 seconds, with observations taken at every 0.5m on diamond core and every metre for RC samples. Intervals for which readings returned Yttrium (Y) of 200ppm or greater were selected for analysis, as were adjacent intervals as required for mineralization continuity. Niton readings were not incorporated into analytical results for mineral resource estimation. Analysis of the XRF results for Y verses the laboratory results showed that in general the Niton value under estimated the Y concentration and, as such, use of the 200ppm Y selection criteria is conservative.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures. Umpire laboratory campaigns were initially conducted with two other laboratories in order to independently verify reported results. This has been revised to one laboratory due to the specialised nature of REE analysis. Genalysis-Perth are considered experts in their respective analytical fields and as such the submission of pulps for round robin analysis to other analytical laboratories are not likely to be as reliable (as determined from certification of standards). Results of round robin analysis completed show good precision. Certified reference materials, using values across the range of mineralization, were inserted blindly and randomly. Results highlight that sample assay values are accurate and any error is minimal.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Diamond drill core photographs have been reviewed for the recorded sample intervals. High range values are typically resubmitted for repeat analysis with results comparing within acceptable limits.
	The use of twinned holes.	Two mineralized RC drill holes from 2011 were twinned using diamond core in 2012. While the logging of the margins of the host breccia are similar, the internal assays are variable on a metre scale. The overall metal content of the intervals in the siliceous breccia wireframe show the diamond samples return up to 10% higher assays than the RC drilling. On only two twinned sample points this is not considered a significant bias.

Criteria	JORC Code explanation	Commentary
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Earlier primary data (2011) was collected using paper logs and transferred into Excel spreadsheets for transfer into the drill hole database. Since early 2012, primary data was collected into a proprietary logging package (OCRIS) with in-built validation. Details were extracted and pre-processed prior to loading. In 2011 and 2012 data was managed and stored off site using acQuire software. In 2013 Datashed was used as the database storage and management software and incorporated numerous data validation and integrity checks, using a series of defined data loading tools. Data is stored on a SQL server by Northern Minerals Ltd and electronic backups are completed three times per day.
	Discuss any adjustment to assay data.	Adjustments made to the assay data were limited to the conversion of reported elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. In all instances the original elemental data has been stored in the database and the equivalent oxide values loaded into appropriately labelled fields identifying them as calculated values. Oxide calculations are completed by the laboratory and checked by Northern Minerals. No issues were identified. The oxides were calculated from the element according to the following factors below: CeO_2 – 1.2284, Dy_2O_3 – 1.1477, Er_2O_3 – 1.1435, Eu_2O_3 – 1.1579, Gd_2O_3 – 1.1526, Ho_2O_3 – 1.1455, La_2O_3 – 1.1728, Lu_2O_3 – 1.1371, Nd_2O_3 – 1.1664, Pr_6O_{11} – 1.2082, Sm_2O_3 – 1.1596, Tb_4O_7 – 1.1421, Tm_2O_3 – 1.1421, Y_2O_3 – 1.2699, Yb_2O_3 – 1.1387 Ratios of each oxide to Total Rare Earth Oxides (TREO) are used to determine the percentages of heavy (HRE) and light (LRE) rare earth oxides. The criteria is summarised as: Rare earth oxide is the industry accepted form for reporting rare earths. The **TREO** (Total Rare Earth Oxide) is calculated from addition of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Y_2O_3, and Lu_2O_3. Note that Y_2O_3 is included in the TREO calculation. Northern Minerals reports HREO% determined by the formula: **HREO%** = [Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+ Dy_2O_3+ Ho_2O_3+ Er_2O_3+Tm_2O_3+Yb_2O_3, + Y_2O_3,+Lu_2O_3] /[La_2O_3+CeO_2+Pr_6O_{11}+Nd_2O_3+Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+ Dy_2O_3+ Ho_2O_3+ Er_2O_3+Tm_2O_3+Yb_2O_3 +Y_2O_3,+Lu_2O_3(TREO)]**x 100**

Criteria	JORC Code explanation	Commentary
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	Drill collar locations were surveyed using high accuracy GPS by a suitably qualified independent surveying contractor. Down hole surveys were completed using single shot or multi shot cameras at the time of drilling with down hole gyroscopic surveys conducted at the completion of drilling. Survey accuracy of both collars and down hole is considered acceptable.
	Specification of the grid system used.	The grid system used is MGA94 Zone 52. All reported coordinates are referenced to this grid.
	Quality and adequacy of topographic control.	Prime permanent control point, NM01 was established by satellite control and AUSPOS processing to centimetre external accuracy. Real Time Kinematic (RTK) GPS was used to establish the prime permanent control point and a secondary control station NM02 at the Wolverine prospect. Bore Hole Geophysical Services (BHGS) established three control points in 2011. A detailed topography survey was undertaken by Whelans Survey in July 2012 at Wolverine. The GPS equipment used were Trimble R6 model RTK GPS receivers. These instruments provide results accurate to around 5 to 15 mm XYZ within 1 km. All records are within a 1 km radius of the NM02 control station. Whelans resurveyed between Browns Range and Halls Creek in October 2013. The results of this allowed a minor correction of E +0.012m, N +0.011m and RL +0.142m to be made to the Browns Range survey control network, and this adjustment was applied retrospectively to all data. A LIDAR survey was flown in November 2013 by Fugro and processing was completed in December 2013. This data was checked against the preceding Whelans survey. No significant differences were noted. The LIDAR survey was considered to supersede the Whelans survey and has been adopted for this Mineral Resource Estimate.

Criteria	JORC Code explanation	Commentary
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drilling of the Wolverine deposit has been completed on a nominal 25m in easting by 25m in northing grid spacing although this increases to broader spacing at the lateral extremities of the deposit. Holes were almost exclusively collared to UTM grid south at a dip of -60 degrees. The spacing of down hole intercepts of the mineralization varies from the nominal collar spacing due to deviation of drill holes, primarily associated with RC pre-collars penetrating a variable hardness sedimentary package in the hanging wall host rocks. Since October 2013, casing wedge and directional drilling techniques were used, and hence downhole geometries became more variable.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The degree of geological and grade continuity demonstrated by the data density is sufficient to support the definition of Mineral Resources and the associated classifications applied to the Mineral Resource estimate as defined under the 2012 JORC Code.
	Whether sample compositing has been applied.	No compositing was applied to the exploration results.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The mineralization is interpreted to be a steeply dipping, roughly planar feature striking approximately east-west and dipping at 75 degrees to the north. Resource drilling is exclusively conducted at -60 degrees to the south and as such drill holes intersect the mineralization at acceptable angles. As such the orientation of drilling is not likely to introduce a sampling bias.
	If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	The orientation of drilling with respect to mineralization is not expected to introduce any sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are collected on site under supervision of a responsible geologist and stored in bulk bags on site prior to transport by company truck or utility to Halls Creek commercial transport yard. The samples were stored in a secure area until loaded and delivered to the Genalysis laboratory in Perth. Laboratory despatch sheets are completed and forwarded electronically as well as being placed within the samples transported. Despatch sheets are compared against received samples and discrepancies reported and corrected.

Criteria	JORC Code explanation	Commentary
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	A review of the sampling techniques and data was completed by AMC in the course of preparing the Mineral Resource estimate. Review of the data integrity and consistency of the drill hole database shows sufficient quality to support resource estimation.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Wolverine deposit is located wholly within Exploration Licence E80/3547. The tenement is located in the company's Browns Range Project approximately 150 kilometres south-east of Halls Creek and adjacent to the Northern Territory border in the Tanami Desert. Northern Minerals owns 100% of all mineral rights on the tenement. The Jaru Native Title Claim is registered over the Browns Range Project area and the fully determined Tjurabalan claim is located in the south of the project area.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	The tenement is in good standing and no known impediments exist.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous systematic exploration for REE mineralization has been completed at Wolverine. Regional exploration for uranium mineralization was completed in the 1980s by PNC and in the 2000s by Areva.
Geology	*Deposit type, geological setting and style of mineralization.*	The Browns Range prospects (including Wolverine) are located on the western side of the Browns Range 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 orthogneiss and schist unit to the south. The dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birrindudu Group). Locally at Wolverine the hosting Browns Range Metamorphics are a variable sequence of meta quartz-lithic and arkosic arenites and conglomerates with minor interbedded schists. The host rocks in the mineralized 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 mineralization. The style of mineralization is xenotime hydrothermal breccia. Xenotime is associated with varying degrees of veining and brecciation; from 1mm to 2mm crackle vein selvages to matrix infill in 5m wide zones of chaotic breccia. There are open spaced textures, vugs and minor cross-cutting quartz, pyrite or barite veins that are interpreted to post-date mineralization. Mineralogical examination shows the heavy rare earth elements (REE) are hosted by xenotime (YPO_4). The light REEs are also hosted by the florencite $(Nd,Ce,La)Al_3(PO_4)_2(OH)_6$ – goyazite $SrAl_3(PO_4)_2(OH)_5.H_2O$ series minerals, and are the only other REEs minerals recognised to date.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth* *hole length.*	No exploration results have been reported in this release, therefore there is no drill hole information to report. This section is not relevant to reporting Mineral Resources.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
Relationship between mineralization widths and intercept lengths	*If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.

Criteria	JORC Code explanation	Commentary
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	The decision as to the necessity for further exploration at Wolverine is pending completion of mining technical studies on the currently available resource.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The decision as to the necessity for further exploration at Wolverine is pending completion of mining technical studies on the currently available resource.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	2011 drilling was logged onto paper and transferred to a digital form for loading into the drill hole database. In an effort to cut validation time and errors, from 2012 logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. All data transfer is electronic, with no double handling of data. Sample numbers are unique. Logging and survey information was reviewed by the responsible geologist prior to final load into the database, then printed on paper and checked by two geologists to ensure no transcription or keying errors prior to the geological interpretation. The data is stored in a single database for the Browns Range project.
	Data validation procedures used.	The first validation starts at the field logging package during data entry. Data validations are routinely run prior to uploading of data to the database. Many check routines and rules are run to ensure referential integrity, such as overlapping intervals, repeat sample IDs, out of range density measurements, survey azimuth deviations >10 degrees, drill hole dip deviations >5 degrees, and missing samples have been developed firstly using AcQuire (2011-12) and then in Datashed (2013 onwards). Both internal (NTU) and external (BMGS and AMC) validations are completed when data is loaded into spatial software for geological interpretation and resource estimation. This was routinely completed for the Browns Range dataset(s). AMC checks the data for overlapping intervals, missing samples, downhole survey deviations of ±10° in azimuth and ±5° in dip when loading into CAE Studio 3 (Datamine) software. Outlier assays are routinely checked via QAQC reports automated from the database, and followed up by the responsible geologist. This is done by checking standards, blanks, and duplicate data. QAQC data was routinely checked by specialised external consultants (Exploremin and BMGS).

Criteria	JORC Code explanation	Commentary
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	AMC Senior Geologist John Tyrrell visited the Browns Range project site in late 2012 and inspected the Wolverine deposit. The geology, sampling, sample preparation and transport, data collection and storage procedures were all observed. AMC used this knowledge to aid in the preparation of a maiden Mineral Resource Estimate for the Wolverine deposit, which was reported in December 2012. No further site visits have been undertaken for the updated 2014 Mineral Resource estimate.
	If no site visits have been undertaken indicate why this is the case.	
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The Browns Range REE mineralization is one of only a few hydrothermal xenotime mineralization styles documented globally. Detailed mapping, structural, alteration and mineralization studies have been completed by NTU geologists and contracted specialists between 2011 and 2014. These data and close spaced drilling, generally <25m, has led to a good understanding of mineralization controls. The REE mineralization is hosted by approximately east-west striking structures and veins, within a coarse sedimentary package on the western side of the regionally extensive Browns Range Dome. This is a feature seen within the Browns Range resources at Wolverine, Gambit, Gambit West and Area 5 localities. Breccia and quartz vein structures are mappable, and can be followed with confidence under transported cover using geophysical techniques, geochemistry and step-out drilling. There is associated sericite-hematite-silica alteration. The observations regarding the geological model are robust. The geological work is continually being refined. Currently, spectral, dating and fluid inclusion work are underway, coordinated by GSWA.
	Nature of the data used and of any assumptions made.	No assumptions are made.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Other styles of REE mineralization were considered, however many do not have the same geological host rocks or mineralogy as Browns Range. Structurally hosted (i.e. gold) deposits, show similarity in style to the Browns Range mineralization. No alternative estimations were undertaken by AMC.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td rowspan="2"></td><td>The use of geology in guiding and controlling Mineral Resource estimation.</td><td>Geological observation has underpinned the resource estimation and geological model. Rock type, alteration style, degree of brecciation, intensity of alteration, structural measurements and geochemistry (HRE ratios) were used to define the footwall and hanging wall boundaries. The geological model was developed as an iterative process of checking against logging, photography and relogging core/rock chips as needed during interpretation.

The extents of the geological model were constrained by drilling. Geological boundaries had only minimal extrapolation beyond drilling in line with the resource classifications of indicated or inferred.

The domain coding for the Wolverine deposit is as follows:

Wolverine<table><tr><th>Domain</th><th>Numeric Code</th></tr><tr><td>High Grade Mineralisation</td><td>1000</td></tr><tr><td>Main Mineralisation (Alteration Halo)</td><td>2000</td></tr><tr><td>Hangingwall Mineralisation</td><td>3000</td></tr><tr><td>Footwall Mineralisation</td><td>4000</td></tr><tr><td>Background</td><td>9000</td></tr></table></td></tr>
<tr><td>The factors affecting continuity both of grade and geology.</td><td>Key factors that are likely to affect the continuity of grade are:
the inherent variability of brecciated rocks. The breccia rock characteristics can change rapidly from centimetre to meter scale,
the nugget effect of veined xenotime, and
since the deposit is structurally hosted, then there is also inherent disruption of continuity by faulting at different scales.</td></tr>
<tr><td>Dimensions</td><td>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</td><td>After the additional drilling in 2013-2014, and the revised high-grade mineralization zone strikes approximately east-west for about 275 m and extends from surface down dip to a depth of about 530 m. The alteration halo envelope (lower grade periphery) strikes in the same direction, extends a further 45 m or so down-dip and extends approximately 270 m further to the west and 150m further to the east. The total strike length of the alteration halo outline is approximately 680 m. Both domains dip approximately 75 degrees down to the north and vary in thickness from less than 1 m to almost 30 m.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	Grade estimation was completed using ordinary kriging (OK) for the Mineral Resource estimate. Datamine software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron, a value that is the sum of rare earth oxides other than yttrium oxide, dysprosium oxide and terbium oxide (SREO) and a suite of 12 other rare earth elements (REE), specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb and Lu. For the Wolverine deposit, the drill hole spacing is on average 25m east to west by 25m north to south. Drill hole sample data was flagged with domain codes unique to each mineralization domain, rock type, alteration type and oxidation state. Sample data was composited to dominant 1 m downhole lengths, with the resulting composite length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required. The top-cut levels for each mineralization domain were determined using a combination of grade histograms, log probability plots, and decile and percentile analysis. (see table below) Grade was estimated into four mineralization domains and one background waste domain. All domains had downhole and directional variography performed.. The hanging wall and footwall mineralization domains used the alteration halo mineralization domain variograms as there were too few data points for unique variograms in these domains. The background waste domain used its own unique variograms for the 2014 estimate. All variograms were scaled to the variance of the individual domains. Grade continuity varied from 30m to 260m in the high grade mineralization, averaging approximately 90-110m, to 25 m to 285 m in the alteration halo domain. All estimated elements in the mineralization domains had major search axis lengths of approximately 2/3 the longest variogram range, with the other search axes scaled according to their corresponding variograms. . Search parameters for the 12 individually estimated REE elements were set to those of TREO from their respective mineralization domains. The 12 REE elements were not individually estimated into the background domain.

Domain	TREO % Top Cut	Samples Cut	Metal Cut %
1000	20	2	0.3
2000	9	4	3.1
3000	2.8	1	1.9
4000	2.5	2	15
9000	1.5	17	4.8

Criteria	JORC Code explanation	Commentary
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	A Mineral Resource estimate was reported for Wolverine in December 2012 and an updated Mineral Resource was completed and reported in October 2013. These estimates were completed by AMC using OK and the 2013 resource reported a total of 2.14 Mt at 0.86% TREO, including 1.57 Mt at 0.87% TREO Indicated Resource. The procedures for the 2014 resource estimate are very similar to those used in 2012 and 2013. The increase in tonnage is primarily due to the addition of 114 drill holes at Wolverine and the associated increase in interpreted mineralized volume.
	The assumptions made regarding recovery of by-products.	No assumptions were made regarding recovery of by-products.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	Estimates were undertaken at Wolverine for U and Th as potential deleterious elements and Fe and Al for input into metallurgical studies.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	The Wolverine block model used a parent cell size of 15m in northing, 15m in easting and 10m in RL (approximately equal to half the average drill hole spacing in easting and northing). Sub-celling was allowed to occur down to 0.625 m in easting, 0.125 in northing for the mineralization domains and down to 0.01m in RL for the oxidation state boundaries and topography. This allowed for accurate volume representation of the interpretation whilst keeping the overall model size down. Grade was estimated into parent cells, with all sub-cells receiving the same grade as their relevant parent cell. Discretisation was set to 3 by 3 by 2 in X, Y and Z respectively for all domains. Search ellipse dimensions for each domain were based on variography. Three search passes were used for each estimate in each domain. The first search allowed a minimum of 10 and a maximum of 25 composites. For the second pass, the first pass search ranges were expanded by 2.5 times. A minimum of 5 composites and a maximum of 25 composites were allowed. The third pass search ellipse dimensions were extended by 4 times. A minimum of 2 composites and a maximum of 30 composites was allowed for this pass. A limit of 6 composites from a single drill hole was permitted.

Criteria	JORC Code explanation	Commentary
	Any assumptions behind modelling of selective mining units.	No selective mining units were assumed in this estimate. Model block sizes were determined primarily by drill hole spacing and statistical analysis of the effect of changing block sizes on the final estimates.
	Any assumptions about correlation between variables.	All elements within a domain used the same sample selection routine for block grade estimation. Correlation studies were performed for all variables in the input drill hole data. Generally, correlation is excellent (close to one) between the TREO values and the individual heavy and medium REEs. Uranium has a moderate to strong correlation with TREO and Th and Al have a moderate correlation (approximately 0.6).
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation is used to define the mineralization domains. All of the mineralization domains are used as hard boundaries to select sample populations for variography and grade estimation.
	Discussion of basis for using or not using grade cutting or capping.	Statistical analysis showed that the domains included outlier values that required top cut values to be applied. Top cut values are chosen based on the statistical parameters for that element in each domain and a visual check of the location of any possible outlier values. Usually the log probability plots and histogram plots are used to determine the final value used. The top cuts are generally in the 95th to 99th percentile of the data and remove less than 5% metal. In some cases, a higher percentage of metal was cut, due to a very long tail of high grade values, or an extreme high value in a relatively poorly sampled domain. Top cut values applied are listed below:

Wolverine 2014

Domain	TREO %	Y ppm	Dy ppm	U ppm	Th ppm	Fe %	Al %	SREO%	Tb ppm
1000	20	95000	15000	600	90	7	11	-	2100
2000	9	35000	6300	270	-	8	-	2.6	900
3000	2.8	11000	2200	85	80	2	-	-	310
4000	2.5	11000	1600	110	-	2.4	8	0.7	210
9000	1.5	9000	1500	85	130	15	-	1.2	300

Criteria	JORC Code explanation	Commentary
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the block model carried out a volumetric comparison of the mineralization wireframes to the block model volumes. The estimates were validated by visual comparison of estimated grades against composite grades and by comparing block model grades to the input data using swathe plots. The plots compared block model and composite grades for the key estimated variables by easting and elevation comparison for all of the four deposits. As no mining for REE has taken place at Browns Range to date, there is no reconciliation data available.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	The density was measured on air dried core in the field, with one in 20 samples checked externally by Genalysis laboratory Perth. Therefore, the tonnages are estimated on a dry basis. The moisture content in mineralization is considered low.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Wolverine deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15%TREO has a reasonable prospect for eventual economic extraction.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	Scoping level mining studies were completed by AMC Consultants on the Wolverine resource as reported in December 2012. Scenarios considered included conventional open pit only and a combination of open pit and mechanised underground mining techniques. The study concluded that the Wolverine deposit is amenable to mining methods employing a combination of open pit and underground methods.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td>Metallurgical factors or assumptions</td><td>The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</td><td>Metallurgical studies are well advanced and have delivered highly encouraging results to date. Beneficiation test work has confirmed that the Browns Range Project xenotime mineralization can be processed using a relatively simple flowsheet consisting of crushing and grinding, followed by either: wet high gradient magnetic separation (WHGMS) combined with cleaner flotation, or by whole of ore flotation. Results to date indicate that a high grade mineral concentrate containing 20% TREO can be produced with an 80% recovery.

Optimisation test work of the WHGMS circuit has been completed at NAGROM and flotation optimisation test work is continuing under the direction of Kwan Wong using PQ diamond core samples from the Wolverine deposit.

Preliminary hydrometallurgical test work results released in August 2012, indicated the Browns Range Project mineral concentrate is well suited to the production of a high purity mixed rare earth (RE) oxide. Based on these results, a conceptual hydrometallurgical flowsheet was developed that includes conventional unit processes of sulphation bake, water leaching, purification, oxalate precipitation and calcination. Laboratory scale confirmation test work of this flowsheet was completed at NAGROM and ALS Metallurgy in Perth, where the results from both laboratories confirmed that the mineral concentrate can successfully be processed to produce a high purity mixed RE oxide. The key results were:
Extraction efficiency in the acid bake and water leach step exceeded 85%
The precipitation efficiency of the oxalate precipitation step exceeded 99%
The product purity of the final calcined exceeded the target of 92% TREO in the mixed RE oxide
Preliminary optimisation test work has been completed at NAGROM and ALS Metallurgy, culminating in the successful operation of a bench scale semi-continuous run of the proposed flowsheet. Further optimisation testwork, in particular the bake/water leach step and the purification steps, is currently underway at ANSTO.

A large diameter core and trench bulk sample of circa 95 tonnes was collected from Wolverine in September/October 2013 for beneficiation pilot plant testing in late 2013 and subsequent hydrometallurgical pilot plant testing in early 2014.</td></tr>
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Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The Browns Range Project (the Project) is currently under assessment by the West Australian Environmental protection Authority (EPA). The EPA has set the level of assessment for the Project at Assessment on Proponent Information (API) – Category A. Baseline environmental surveys and studies over the Project area are largely complete and include the following: • Flora and vegetation • Terrestrial fauna • Subterranean fauna • Waste rock and tails – geochemical and physical characterisation • Atmospheric emissions and noise • Hydrogeology and hydrology • Soils • Radiation The environmental impact assessment to inform the API is currently underway.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Bulk density has been estimated from density measurements carried out on diamond core samples of variable length using the Archimedes method of dry weight versus weight in water, and downhole LAS survey data (completed by ABIMs). Field density measurements were completed as a minimum of one every two meters. This comprehensive dataset was then used to calibrate the downhole measurements (recorded every 10cm). These datasets were evaluated by BMGS and a correction factor for the downhole measurements was applied. The water immersion method, covering void spaces with clear tape, is deemed appropriate to adequately account for porosity. Porous samples were checked by an external laboratory, and were consistent with field measurements. For Wolverine there were 5,097 core and 33,674 LAS samples.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The water immersion method, covering void spaces with clear tape, is deemed appropriate to adequately account for porosity. Porous samples were checked by an external laboratory, and were consistent with field measurements.

Criteria	JORC Code explanation	Commentary
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The bulk density values applied to Wolverine are: <table><tr><th>Domain</th><th>Type</th><th>Oxide</th><th>Partial Oxide (POX)</th><th>Trans</th><th>Fresh</th></tr><tr><td>1000</td><td>High Grade Mineralisation</td><td>2.56</td><td>2.66</td><td>2.65</td><td>2.65</td></tr><tr><td>2000</td><td>Main Mineralisation</td><td>2.56</td><td>2.57</td><td>2.59</td><td>2.61</td></tr><tr><td>3000</td><td>Hangingwall Mineralisation</td><td>2.56</td><td>2.47</td><td>2.51</td><td>2.59</td></tr><tr><td>4000</td><td>Footwall Mineralisation</td><td>2.56</td><td>2.47</td><td>2.58</td><td>2.51</td></tr><tr><td>9000</td><td>Background</td><td>2.21</td><td>2.46</td><td>2.48</td><td>2.51</td></tr></table>POX = Partial Oxide; Trans = Transitional All values in t/m^3.
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	Classification for Wolverine is based upon continuity of geology, mineralization and grade, using drill hole and density data spacing and quality, variography and estimation statistics (number of samples used, estimation pass, and slope of regression).
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	At Browns Range, the cores of the modelled deposits are generally well drilled with a nominal 25 m x 25 m drill hole spacing in easting and northing directions. In general, the estimates have been classified as Indicated Resource where this spacing has been achieved or bettered and the confidence in the estimate is high. The deposits are generally classified as Inferred Resource where the spacing increases to greater than 25 m x 25 m, or in areas where there is lower confidence in the estimate.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	AMC believes that the classification appropriately reflects its confidence in and the quality of the grade estimates.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource estimate has not been audited.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The Mineral Resource classification applied to each deposit implies a confidence level and level of accuracy in the estimates.

Criteria	JORC Code explanation	Commentary
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	These ranges relate to the global estimates of grade and tonnes for the deposit.

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The deposit was sampled using a combination of Reverse Circulation (RC) drilling, diamond core from surface and diamond core tails. A total of 113 RC drill holes, 4 diamond holes and 2 RC holes with diamond tails were available for the resource estimate. Total metres of RC drilling were 12402, with 771m of diamond drilling. Gambit West is interpreted as almost vertical E-W, hence drilling has occurred both due north and due south. Drillhole dips are at nominally -60 degrees.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Drill hole collars were originally set out using hand held GPS and on completion the collars were surveyed by survey contractors using high precision GPS. Down hole surveys were completed either using single shot cameras or down hole gyro. RC drilling was predominantly used for resource drilling with the four diamond holes drilled targeting specific features of the mineralization. RC samples were collected at one metre intervals by riffle or cone splitter depending on the drilling contractor. Diamond core was half-core sampled at nominal one-metre intervals although constrained to geological boundaries where appropriate. Sampling was carried out under NTU protocols and employed QAQC procedures in line with industry best practice.
	Aspects of the determination of mineralization that are Material to the Public Report.	Diamond core was drilled using either double or triple tube at HQ and NQ sizes. HQ2 and HQ3 were variably employed for shallower parts of the hole depending on prevailing ground conditions, while the majority of diamond core intercepts within the mineralization are at NQ3 size and sampled at a nominal one metre interval (constrained to within geological intervals). RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight. Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of the rare earth element suite using ICP-MS.

Criteria	JORC Code explanation	Commentary
Drilling techniques	*Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	RC drill holes account for 94% of the drill metres within the prospect area with diameters of either 115mm or 140mm. RC drilling was completed using face sampling hammer with hole depths ranging from 6m to 282m. Diamond drilling accounts for the remainder at HQ and NQ core sizes with hole depths up to 254.4m. Diamond core was orientated using the Reflex ACT orientation tool. The quality of orientation marks are recorded in the drill hole database, with orientation lines only marked if two successive orientation marks aligned.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was assessed by comparison of the interval of core presented in the core tray against the driller's core blocks. Analysis showed that more than 80% of core intervals had complete recoveries. Core recoveries in the upper 30m were variable and with losses associated with weathered arenites and transported cover. Recoveries in these zones ranged between 70-90%. These reduced recoveries were not associated with mineralization and as such are not considered material. RC recovery was assessed by a combination of weight of bulk sample against a nominal recovery mass, and via subjective assessment based on volume recovered. RC recoveries were observed to be generally acceptable with recoveries typically 80% or greater. RC and diamond recovery information is recorded in the geologist logs and entered into the database.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Diamond drilling utilised triple tube techniques and drilling fluids in order to assist with maximising recoveries. Diamond core is reconstructed into continuous runs on an angle iron cradle for orientation marking. Depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks. RC samples were visually checked for recovery, moisture and contamination. The cyclone and splitter were routinely cleaned ensuring no material build up.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Assessments on the effect of low recoveries were completed for the diamond and RC drilling and found that there was not likely to be any material impact or bias on the reported assay results as a result of the reduced recoveries.

Criteria	JORC Code explanation	Commentary
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Diamond core was geologically logged using predefined lithological, mineralogical and physical characteristic (such as colour, weathering, fabric) logging codes. In addition structural measurements of major features were collected. RC logging was completed on one metre intervals at the rig by the geologist. Earlier drilling was logged onto paper and transferred to a digital form for loading into the drill hole database. More recently logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. Logging information was reviewed by the responsible geologist prior to final load into the database. Chip trays were collected for each of the RC intervals and core trays were photographed. Geotechnical logging of all diamond core consisted of recording core recovery, RQDs, number of fractures, core state (i.e. whole, broken) and hardness. Initial geotechnical studies are underway by AMC. Specific geotechnical drilling is pending this analysis.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging was generally qualitative in nature except for the determination of core recoveries and geotechnical criteria such as RQD and fracture frequency which was quantitative. Core photos were collected for all diamond drilling.
	The total length and percentage of the relevant intersections logged.	100% of all recovered intervals were geologically logged.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Diamond core was cut in half using an electric core saw. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features, together with indicative results from hand held XRF measurements. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis. Where possible core was sampled to leave the orientation line in the core tray.

Criteria	JORC Code explanation	Commentary
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were collected from the full recovered interval at the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. Samples collected in mineralization were dry.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the diamond and RC samples follow industry best practice. Samples are oven dried at 120°C for 8 hours before processing through a Boyd jaw crusher reducing the sample to 90% passing 3mm (diamond samples only). The RC and diamond samples are then pulverised to achieve a grind size of 85% passing 75 micron using Hertzog robotic mills.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field QAQC procedures included the field insertion of certified reference materials (standards) having a range of values reflecting the general spread of values observed in the mineralization. Drilling prior to July 2012 did not include the insertion of standards as suitable materials were not sourced. Blanks were also inserted in the field and developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralized zones.
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Field duplicates from RC samples generally showed an excellent correlation between original and duplicates, however other measures of spread such as Half Absolute Relative Difference (HARD) plots suggested moderate to low repeatability. Analysis of the quarter core duplicate diamond core samples showed similar results suggesting the short scale variability of the mineralization is quite high, with mineralization being irregularly distributed within samples. This observation is reflected in the estimation parameters applied and the resource classification assigned.

Criteria	JORC Code explanation	Commentary
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Current industry standard sampling is used and deemed appropriate. A study on xenotime grain size and sampling is in progress. Samples have been selected, but results and subsequent analysis are pending.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The composition of the flux and the crucible used preclude the analysis of sodium, nickel, cobalt, chromium and molybdenum so these elements are not determined. The digestion solution, suitably diluted, is analysed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) for the determination of Al, Fe, P, S, Sc and S, while ICP Mass Spectroscopy (ICP-MS) is used for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	In the field a series of Niton (XL3T-950 GOLDD+) XRF hand held tools were used to assist with the identification of mineralized zones for sample collection and submission. Tools were operated in soil mode with a count time of 30 seconds, with observations taken at every 0.5m on diamond core and every metre for RC samples. Intervals for which readings returned Yttrium (Y) of 200ppm or greater were selected for analysis, as were adjacent intervals as required for mineralization continuity. Niton readings were not incorporated into analytical results for mineral resource estimation. Analysis of the XRF results for Y verses the laboratory results showed that in general the Niton value under estimated the Y concentration and, as such, use of the 200ppm Y selection criteria is conservative.

Criteria	JORC Code explanation	Commentary
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures. Umpire laboratory campaigns were initially conducted with two other laboratories in order to independently verify reported results. This has been revised to one laboratory due to the specialised nature of REE analysis. Genalysis-Perth are considered experts in their respective analytical fields and as such the submission of pulps for round robin analysis to other analytical laboratories are not likely to be as reliable (as determined from certification of standards). Results of round robin analysis completed show good precision. Certified reference materials, using values across the range of mineralization, were inserted blindly and randomly. Results highlight that sample assay values are accurate and any error is minimal.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Diamond drill core photographs have been reviewed for the recorded sample intervals. High range values are typically resubmitted for repeat analysis with results comparing within acceptable limits.
	The use of twinned holes.	Two (2012) RC drill holes were twinned with diamond core in 2013. The results of this twinning showed consistency in lithology although there is some variability between the average intercept grades observed. Variability is also greater between RC and diamond core for the narrower mineralization than for the twinned holes in the centre of the widest breccia mineralization. This variability is in line with the short scale variability observed in duplicate sample analysis.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Earlier primary data (2011) was collected using paper logs and transferred into Excel spreadsheets for transfer into the drill hole database. Since early 2012, primary data was collected into a proprietary logging package (OCRIS) with in-built validation. Details were extracted and pre-processed prior to loading. In 2011 and 2012 data was managed and stored off site using AcQuire software. In 2013 Datashed was used as the database storage and management software and incorporated numerous data validation and integrity checks, using a series of defined data loading tools. Data is stored on a SQL server by Northern Minerals Ltd and electronic backups are completed three times per day.

Criteria	JORC Code explanation	Commentary
	Discuss any adjustment to assay data.	Adjustments made to the assay data were limited to the conversion of reported elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. In all instances the original elemental data has been stored in the database and the equivalent oxide values loaded into appropriately labelled fields identifying them as calculated values. Oxide calculations are completed by the laboratory and checked by Northern Minerals. No issues were identified. Ratios of each oxide to Total Rare Earth Oxides (TREO) are used to determine the percentages of heavy (HRE) and light (LRE) rare earth oxides. The criteria is summarised as: Rare earth oxide is the industry accepted form for reporting rare earths. The **TREO** (Total Rare Earth Oxide) is calculated from addition of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Y_2O_3, and Lu_2O_3. Note that Y_2O_3 is included in the TREO calculation. Northern Minerals reports HREO% determined by the formula: **HREO%** = $[Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+Dy_2O_3+Ho_2O_3+Er_2O_3+Tm_2O_3+Yb_2O_3+Y_2O_3+Lu_2O_3]$ $/[La_2O_3+CeO_2+Pr_6O_{11}+Nd_2O_3+Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+Dy_2O_3+Ho_2O_3+Er_2O_3+Tm_2O_3+Yb_2O_3+Y_2O_3+Lu_2O_3$(TREO)]**x 100**
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	Drill collar locations were surveyed using high accuracy GPS by a suitably qualified independent surveying contractor. Down hole surveys were completed using single shot or multi shot cameras at the time of drilling with down hole gyroscopic surveys conducted at the completion of drilling. Survey accuracy of both collars and down hole is considered acceptable.
	Specification of the grid system used.	The grid system used is MGA94 Zone 52. All reported coordinates are referenced to this grid.

Criteria	JORC Code explanation	Commentary
	Quality and adequacy of topographic control.	Prime permanent control point, NM01 was established by satellite control and AUSPOS processing to centimetre external accuracy. Real Time Kinematic (RTK) GPS was used to establish the prime permanent control point and a secondary control station NM02 at the Wolverine prospect. Bore Hole Geophysical Services (BHGS) established three control points in 2011. A detailed topography survey was undertaken by Whelans Survey in July 2013. The GPS equipment used were Trimble R6 model RTK GPS receivers. These instruments provide results accurate to around 5 to 15 mm XYZ within 1 km. Whelans resurveyed between Browns Range and Halls Creek in October 2013. The results of this allowed a minor correction of E +0.012m, N +0.011m and RL +0.142m to be made to the Browns Range survey control network, and this adjustment was applied retrospectively to all data. A LIDAR survey was flown in November 2013 by Fugro and processing was completed in December 2013. This data was checked against the preceding Whelans survey. No significant differences were noted. The LIDAR survey was considered to supersede the Whelans survey and has been adopted for this Mineral Resource Estimate.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drilling of the Gambit West deposit has been completed on a nominal 25m in easting by 25m in northing grid spacing, with infill between 3 drill lines to 12.5m by 12.5m. The spacing of down hole intercepts of the mineralization varies from the nominal collar spacing due to deviation of drill holes, primarily associated with RC pre-collars penetrating a variable hardness sedimentary package in the hanging wall host rocks. The deviation at Gambit West was not as extensive as at Wolverine.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The degree of geological and grade continuity demonstrated by the data density is sufficient to support the definition of Mineral Resources and the associated classifications applied to the Mineral Resource estimate as defined under the 2012 JORC Code.
	Whether sample compositing has been applied.	No compositing was performed on the samples prior to laboratory analysis.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The mineralization is interpreted to be a subvertical structure, roughly planar feature striking approximately east-west, with some variation in dip between 70 degrees north, and 70 degrees south. Resource drilling is conducted at -60 degrees to the south or to the north to intersect the mineralization at or close to perpendicular. Minor drilling (8 holes) were completed at -50 degree dip near surface. As such the orientation of drilling is not likely to introduce a sampling bias.
	If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	The orientation of drilling with respect to mineralization is not expected to introduce any sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are collected on site under supervision of a responsible geologist and stored in bulk bags on site prior to transport by company truck or utility to Halls Creek commercial transport yard. The samples were stored in a secure area until loaded and delivered to the Genalysis laboratory in Perth. Laboratory despatch sheets are completed and forwarded electronically as well as being placed within the samples transported. Despatch sheets are compared against received samples and discrepancies reported and corrected.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	A review of the sampling techniques and data was completed by AMC in the course of preparing the 2014 Mineral Resource estimate. Review of the data integrity and consistency of the drill hole database shows sufficient quality to support resource estimation.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Gambit West prospect is located wholly within Exploration Licence E80/3547. The tenement is located in the company's Browns Range Project approximately 150 kilometres south-east of Halls Creek and adjacent to the Northern Territory border in the Tanami Desert. Northern Minerals owns 100% of all mineral rights on the tenement. The Jaru Native Title Claim is registered over the Browns Range Project area and the fully determined Tjurabalan claim is located in the south of the project area.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	The tenement is in good standing and no known impediments exist.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous systematic exploration for REE mineralization has been completed at Gambit West. Regional exploration for uranium mineralization was completed in the 1980s by PNC and in the 2000s by Areva.
Geology	*Deposit type, geological setting and style of mineralization.*	The Browns Range prospects (including Gambit West) are located on the western side of the Browns Range Dome, a Paleoproterozoic dome formed by a granitic core intruding the Paleoproterozoic Browns Range Metamorphics (meta-arkoses, feldspathic metasandstones and schists) and an Archaean orthogneiss and schist unit to the south. The dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birrindudu Group). The prospect area is relatively flat, dominated by shallow colluvium and rare low lying outcrops. A small outcrop is present directly south of the mineralization which contains approximately east-west trending thin hematite veins, with mineralization observed in one location where the veins dilate. The host structure is characterised by the presence of sericite and hematite, variably brecciated, striking approximately east-west and sub-vertical with a slight northerly dip. The silicified breccia is not always mineralized but is a controlling influence on mineralization. Locally, the structure separates predominantly arenite to the north and arkosic sandstones to the south. Mineralogical examination shows the heavy rare earth elements (REE) are hosted by xenotime (YPO_4). The light REEs are also hosted by florencite $(Nd,Ce,La)Al_3(PO_4)_2(OH)_6$ which is the only other REE mineral recognised to date. The style of mineralization is interpreted as structurally controlled hydrothermal xenotime.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth* *hole length.*	No exploration results have been reported in this release, therefore there is no drill hole information to report. This section is not relevant to reporting Mineral Resources.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
Relationship between mineralization widths and intercept lengths	*If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.

Criteria	JORC Code explanation	Commentary
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	The decision as to the necessity for further exploration at Gambit West is pending completion of mining technical studies on the currently available resource.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The decision as to the necessity for further exploration at Gambit West is pending completion of mining technical studies on the currently available resource.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	In an effort to cut validation time and errors, from 2012 logging has been completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. All data transfer is electronic, with no double handling of data. Sample numbers are unique. Logging and survey information was reviewed by the responsible geologist prior to final load into the database, then printed on paper and checked by two geologists to ensure no transcription or keying errors prior to the geological interpretation. The data is stored in a single database for the Browns Range project.
	Data validation procedures used.	The first validation starts at the field logging package during data entry. Data validations are routinely run prior to uploading of data to the database. Many check routines and rules are run to ensure referential integrity, such as overlapping intervals, repeat sample IDs, out of range density measurements, survey azimuth deviations >10 degrees, drill hole dip deviations >5 degrees, and missing samples have been developed firstly using AcQuire (2011-12) and then in Datashed (from 2013). Both internal (NTU) and external (BMGS and AMC) validations are completed when data is loaded into spatial software for geological interpretation and resource estimation. This was routinely completed for the Browns Range dataset(s). AMC checks the data for overlapping intervals, missing samples, downhole survey deviations of ±10° in azimuth and ±5° in dip when loading into CAE Studio 3 (Datamine) software. Outlier assays are routinely checked via QAQC reports automated from the database, and followed up by the responsible geologist. This is done by checking standards, blanks, and duplicate data. QAQC data was routinely checked by specialised external consultants (Exploremin and BMGS)

Criteria	JORC Code explanation	Commentary
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	AMC Senior Geologist John Tyrrell visited the Browns Range project site in late 2012 and inspected the Gambit West deposit. The geology, sampling, sample preparation and transport, data collection and storage procedures were all observed. AMC used this knowledge to aid in the preparation of a maiden Mineral Resource Estimate for the Gambit West deposit, which was reported in October 2013. No further site visits were made for the 2014 Mineral Resource estimate. NTU competent person, Robin Wilson, is a full-time employee and visits the Brown Range site regularly (2010-2013)
	If no site visits have been undertaken indicate why this is the case.	
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The Browns Range REE mineralization is one of only a few hydrothermal xenotime mineralization styles documented globally. Detailed mapping, structural, alteration and mineralization studies have been completed by NTU geologists and contracted specialists between 2011 and 2014. These data and close spaced drilling, generally <25m, has led to a good understanding of mineralization controls. The REE mineralization is hosted by approximately east-west striking structures and veins, within a coarse sedimentary package on the western side of the regionally extensive Browns Range Dome. This is a feature seen within the Browns Range resources at Wolverine, Gambit, Gambit West and Area 5 localities. The Gambit West mineralization is differentiated from the main Wolverine deposit by more extensive hematite-sericite faulting. The mineralization is generally peripheral to silicified breccia and quartz veining. Breccia and quartz vein structures are mappable, and can be followed with confidence under transported cover using geophysical techniques, geochemistry and step-out drilling. The observations regarding the geological model are robust. The geological work is continually being refined. Currently, spectral, dating and fluid inclusion work are underway, coordinated by GSWA.
	Nature of the data used and of any assumptions made.	No assumptions are made.

Criteria	JORC Code explanation	Commentary
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Other styles of REE mineralization were considered, however many do not have the same geological host rocks or mineralogy as Browns Range. Structurally hosted (i.e. gold) deposits, show similarity in style to the Browns Range mineralization.
	The use of geology in guiding and controlling Mineral Resource estimation.	Geological observation has underpinned the resource estimation and geological model. Rock type, alteration style, degree of brecciation, intensity of alteration, structural measurements and geochemistry (HRE ratios) were used to define the footwall and hanging wall boundaries. The geological model was developed as an iterative process of checking against logging, photography and relogging core/rock chips as needed during interpretation. The extents of the geological model were constrained by drilling. Geological boundaries had only minimal extrapolation beyond drilling in line with the resource classifications of indicated or inferred. The domain coding for Gambit West in 2014is as follows: **Gambit West** **Domain** – **Numeric Code** High Grade Core Mineralisation – 1000 Main Mineralisation (Core Halo) – 2000 Outer Mineralisation (Non Cored) – 3000 Upper FW Domain – 2030 Lower FW Domain – 2040 Background – 9000
	The factors affecting continuity both of grade and geology.	Key factors that are likely to affect the continuity of grade are: • the inherent variability of brecciated rocks. The breccia rock characteristics can change rapidly from centimetre to meter scale, • the nugget effect of veined xenotime, and • since the deposit is structurally hosted, then there is also inherent disruption of continuity by faulting at different scales.

Gambit West

Domain	Numeric Code
High Grade Core Mineralisation	1000
Main Mineralisation (Core Halo)	2000
Outer Mineralisation (Non Cored)	3000
Upper FW Domain	2030
Lower FW Domain	2040
Background	9000

Criteria	JORC Code explanation	Commentary
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The high-grade, main and outer zones of mineralization strike approximately east-west for about 250 m and extend from surface down to about 200 m below surface. The high-grade mineralization envelope is completely contained within the main mineralization and extends about 100 m less in depth and 85zx m less along strike. The main and outer mineralization are approximately 1 m to 20 m in thickness and the high-grade from 0.5 m to 10 m in width. The high grade mineralization domain is generally 1 m to 2 m in width. The mineralization package dips sub-vertically to the south.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron, a value that is the sum of rare earth oxides other than yttrium oxide, dysprosium oxide and terbium oxide (SREO) and a suite of 12 other rare earth elements (REE), specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu. Drill hole spacing is on average 25m in easting by 25m in northing. Drill hole sample data was flagged with domain codes unique to each mineralization domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required. The top-cut levels for each mineralization domain were determined using a combination of grade histograms, log probability plots, and decile and percentile analysis. FW domains 2030 and 2040 were grouped with domain 3000 for grade cutting.

Domain	TREO % Top Cut	Samples Cut	Metal Cut %
1000	-	0	0
2000	3	3	1.9
3000	20	5	7.1
9000	2	13	9.3

Criteria	JORC Code explanation	Commentary
		Grade was estimated into five mineralization domains and one background waste domain. All domains had downhole and directional variography performed. Variography was performed for TREO, SREO, Y, Dy, Tb, Th, U, Fe and Al. Grade continuity varied from 15 m to over 100m m for most variables, except for Fe and Tb, which had major axis ranges of over 130 m and Dy and Y with major axis ranges up to 220m. Background domain ranges were generally over 130m for the major and semi-major axes. Search ellipse primary axis length was set to 2/3 the length of the major variography axis, with the lesser axes being scaled appropriately from the variography ranges. Search parameters for the 12 individually estimated REE elements were set to those of TREO from their corresponding mineralization domain. The 12 REE elements were not individually estimated into the background domain.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	A Mineral Resource estimate was completed and reported in 2013 for Gambit West. No previous mining activity has taken place in this area.
	The assumptions made regarding recovery of by-products.	No assumptions were made regarding recovery of by-products.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	Estimates were undertaken at Gambit West for U and Th as potential deleterious elements and Fe and Al for input into metallurgical studies.

Criteria	JORC Code explanation	Commentary
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	The Gambit West block model parent cell size was set to 15m in easting, 15m in northing and 10m in RL (approximately equal to half the average drill hole spacing in easting and northing). Sub-celling was allowed to occur down to 5m in easting and 0.5m in northing for the mineralization domains and down to 0.5m in RL for the oxidation state boundaries and topography. This allowed for accurate volume representation of the interpretation, without creating unnecessary extra sub-cells. Grade was estimated into parent cells, with all sub-cells receiving the same grade as their relevant parent cell. Discretisation was set to 5 by 5 by 2 in X, Y and Z respectively for all domains. Search ellipse dimensions for each domain were based on variography. Three search passes were used for each estimate in each domain. The first search allowed a minimum of 10 composites and a maximum of 25 composites. For the second pass, the first pass search ranges were expanded by 2.5 times. A minimum of 5 composites and a maximum of 25 composites were allowed. The third pass search ellipse dimensions were extended by 4 times. A minimum of 2 composites and a maximum of 30 composites were allowed for this pass. A limit of 6 composites from a single drill hole was permitted.
	Any assumptions behind modelling of selective mining units.	No selective mining units were assumed in this estimate. Model block sizes were determined primarily by drill hole spacing and statistical analysis of the effect of changing block sizes on the final estimates.
	Any assumptions about correlation between variables.	All elements within a domain used the same sample selection routine for block grade estimation. Correlation studies were performed for all variables in the input drill hole data. Generally, correlation is excellent (close to one) between the TREO values and the individual heavy and medium REEs. Uranium has a moderate to strong correlation with TREO and Th and Al have a moderate correlation (approximately 0.6).
	Description of how the geological interpretation was used to control the resource estimates.	Mineralization domains (nominally 0.15% TREO and 1% TREO) have been interpreted following the strike and dip characteristics of the interpreted geological zones. These mineralization domains have then been used as hard boundaries to select sample populations for variography and grade estimation.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>Discussion of basis for using or not using grade cutting or capping.</td><td>Statistical analysis showed that the domains included outlier values that required top cut values to be applied. Top cut values are chosen based on the statistical parameters for that element in each domain and a visual check of the location of any possible outlier values. Usually the log probability plots and histogram plots are used to determine the final value used. The top cuts are generally in the 95th to 99th percentile of the data and remove less than 5% metal. In some cases, a higher percentage of metal was cut, due to a very long tail of high grade values, or an extreme high value in a relatively poorly sampled domain.

Top cut values applied are listed below:

Gambit West
<table>
<tr><th>Domain</th><th>TREO %</th><th>Y ppm</th><th>Dy ppm</th><th>U ppm</th><th>Th ppm</th><th>Fe %</th><th>Al %</th><th>Nd ppm</th><th>SREO%</th><th>Tb ppm</th></tr>
<tr><td>1000</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>2000</td><td>3</td><td>17000</td><td>2500</td><td>130</td><td>100</td><td>-</td><td>11</td><td>-</td><td>1</td><td>300</td></tr>
<tr><td>3000</td><td>20</td><td>90000</td><td>15000</td><td>500</td><td>85</td><td>-</td><td>-</td><td>-</td><td>5</td><td>2000</td></tr>
<tr><td>2030</td><td>20</td><td>90000</td><td>15000</td><td>500</td><td>85</td><td>-</td><td>-</td><td>-</td><td>5</td><td>2000</td></tr>
<tr><td>2040</td><td>20</td><td>90000</td><td>15000</td><td>500</td><td>85</td><td>-</td><td>-</td><td>-</td><td>5</td><td>2000</td></tr>
<tr><td>9000</td><td>2</td><td>9000</td><td>1500</td><td>150</td><td>130</td><td>5</td><td>-</td><td>-</td><td>0.6</td><td>200</td></tr>
</table></td></tr>
<tr><td></td><td>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</td><td>Validation of the block model carried out a volumetric comparison of the mineralization wireframes to the block model volumes. The estimates were validated by visual comparison of estimated grades against composite grades and by comparing block model grades to the input data using swathe plots. The plots compared block model and composite grades for the key estimated variables by easting and elevation comparison for all of the four deposits.

As no mining for REE has taken place at Browns Range to date, there is no reconciliation data available.</td></tr>
<tr><td>Moisture</td><td>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</td><td>The density was measured on air dried core in the field, with one in 20 samples checked externally by Genalysis laboratory Perth. Therefore, the tonnages are estimated on a dry basis. The moisture content in mineralization is considered low.</td></tr>
<tr><td>Cut-off parameters</td><td>The basis of the adopted cut-off grade(s) or quality parameters applied.</td><td>A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Gambit deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15%TREO has a reasonable prospect for eventual economic extraction.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	To date, no technical studies have been completed (to a reportable standard) on suitable mining methods for the Gambit West deposit at the Browns Range Project. Given the grade and near surface location, it is assumed that the Gambit West deposit will be mineable using generic open cut and underground methods.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	No metallurgical test work has been undertaken (to a reportable standard) on samples of mineralized material from Gambit West. The beneficiation and hydrometallurgical flow sheets are currently being optimised on mineralized material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Gambit West deposit will be tested against these optimised flow sheets to determine their metallurgical performance. However, given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralization) between the Gambit West and Wolverine deposits, it is reasonable to expect that Gambit West mineralization will have similar results to Wolverine mineralization from future metallurgical test work.

Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The Browns Range Project (the Project) is currently under assessment by the West Australian Environmental protection Authority (EPA). The EPA has set the level of assessment for the Project at Assessment on Proponent Information (API) – Category A. Baseline environmental surveys and studies over the Project area are largely complete and include the following: • Flora and vegetation • Terrestrial fauna • Subterranean fauna • Waste rock and tails – geochemical and physical characterisation • Atmospheric emissions and noise • Hydrogeology and hydrology • Soils • Radiation The environmental impact assessment to inform the API is currently underway.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Bulk density has been estimated from density measurements carried out on diamond core samples of variable length using the Archimedes method of dry weight versus weight in water, and downhole LAS survey data (completed by ABIMs). Field density measurements were completed as a minimum of one every two meters. This comprehensive dataset was then used to calibrate the downhole measurements (recorded every 10cm). These datasets were evaluated by BMGS and a correction factor for the downhole measurements was applied.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The water immersion method, covering void spaces with clear tape, is deemed appropriate to adequately account for porosity. Porous samples were checked by an external laboratory, and were consistent with field measurements. The number of density measurements for each deposit varies. For Gambit West there were 290 Core and 31,159 LAS measurements

Criteria	JORC Code explanation	Commentary
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The bulk density values applied to the Gambit deposit are as follows: **Gambit West:** Background Oxide 2.28 t/m^3, Background Fresh 2.51 t/m^3, Mineralization Oxide 2.45 t/m^3, High Grade Mineralization Fresh 2.58 t/m^3, Main, outer and FW domain Mineralization Fresh 2.47 t/m^3
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	Classification for all deposits is based upon continuity of geology, mineralization and grade, using drill hole and density data spacing and quality, variography and estimation statistics (number of samples used, estimation pass, and slope of regression).
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	At Browns Range, the cores of the modelled deposits are generally well drilled with a nominal 25 m x 25 m drill hole spacing in easting and northing directions. In general, the estimates have been classified as Indicated Resource where this spacing has been achieved or bettered and the confidence in the estimate is high. The deposits are generally classified as Inferred Resource where the spacing increases to greater than 25 m x 25 m, or in areas where there is lower confidence in the estimate.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	AMC believes that the classification appropriately reflects its confidence in and the quality of the grade estimate.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource estimate has not been audited.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The Mineral Resource classification applied to each deposit implies a confidence level and level of accuracy in the estimates.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	These ranges relate to the global estimates of grade and tonnes for the deposit.

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The deposit was sampled using a combination of Reverse Circulation drilling (RC) and diamond core from surface. A total of 120 RC holes and three diamond holes for 9,720m and 490m respectively were completed in the Gambit prospect. Most of the drilling was orientated to the south at a dip of -60 degrees including 66 RC holes and two diamond holes. The majority of the remaining holes were drilled at -60 degrees to the north (33 RC and one diamond) while five RC holes were drilled vertically. Drilling was completed on a nominal 25m in easting x 25m in northing grid. Infill on 12.5m x 12.5m was completed to determine and sample the plunge component of mineralization.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Drill hole collars were originally set out using hand held GPS and on completion the collars were surveyed by survey contractors using high precision GPS. Down hole surveys were completed either using single shot cameras or down hole gyro. RC drilling was typically employed for shallower levels of the resource, with diamond drilling employed to target the deeper resource areas. RC samples were collected at one metre intervals via a standard adjustable cyclone, then by riffle or cone splitter depending on the drilling contractor. Diamond core was half-core sampled at nominal one-metre intervals and constrained to geological boundaries where appropriate. Sampling was carried out under NTU protocols and employed QAQC procedures in line with industry best practice.

Criteria	JORC Code explanation	Commentary
	Aspects of the determination of mineralization that are Material to the Public Report.	Diamond core was drilled using either double or triple tube at HQ and NQ sizes. HQ2 and HQ3 were variably employed for shallower parts of the hole depending on prevailing ground conditions, while the majority of diamond core intercepts within the mineralization are at NQ3 size and sampled at a nominal one metre interval (constrained to within geological intervals). RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight. Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of the rare earth element suite using ICP-MS.
Drilling techniques	*Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	RC drill holes account for 95% of the drill metres within the prospect area with diameters of either 115mm or 140mm. RC drilling was completed using face sampling hammer with hole depths ranging from 40m to 154m. Diamond drilling accounts for the remainder at HQ and NQ core sizes with hole depths ranging from 144m to 183m. Diamond core was orientated using the Reflex ACT orientation tool. The quality of orientation marks are recorded in the drill hole database, with orientation lines only marked if two successive orientation marks aligned.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was assessed by comparison of the interval of core presented in the core tray against the driller's core blocks. Analysis showed that more than 96% of core intervals had complete recoveries. Core recoveries in the upper 30m were variable and with losses associated with weathered arenites. These reduced recoveries were not associated with mineralization and as such are not considered material. RC recovery was assessed by a combination of weight of bulk sample against a nominal recovery mass, and via subjective assessment based on volume recovered. RC recoveries were observed to be generally acceptable with recoveries typically 80% or greater. RC and diamond recovery information is recorded in the geologist logs and entered into the database.

Criteria	JORC Code explanation	Commentary
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Diamond drilling utilised triple tube techniques and drilling fluids in order to assist with maximising recoveries. Diamond core is reconstructed into continuous runs on an angle iron cradle for orientation marking. Depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks. RC sample recoveries were visually checked for recovery, moisture and contamination. The cyclone and splitter were routinely cleaned ensuring no material build up.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Assessments on the effect of low recoveries were completed for the diamond and RC drilling and found that there was not likely to be any material impact or bias on the reported assay results as a result of the reduced recoveries.
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Diamond core was geologically logged using predefined lithological, mineralogical and physical characteristic (colour, weathering etc) logging codes. In addition structural measurements of major features were collected. RC logging was completed on one metre intervals at the rig by the geologist. Earlier drilling (2011) was logged onto paper and transferred to a digital form for loading into the drill hole database. More recently (2012 onwards) logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. Logging information was reviewed by the responsible geologist prior to final load into the database. Chip trays were collected for each of the RC intervals and core trays were photographed. Geotechnical logging of all diamond core consisted of recording core recovery, RQDs, number of fractures, core state (i.e. whole, broken) and hardness.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging was generally qualitative in nature except for the determination of core recoveries and geotechnical criteria such as RQD and fracture frequency which was quantitative. Core photos were collected for all diamond drilling.
	The total length and percentage of the relevant intersections logged.	100% of all recovered intervals were geologically logged.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Diamond core was cut in half using an electric core saw. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features, together with indicative results from hand held XRF measurements. Core selected for duplicate analysis had the initial half core cut into quarter core with both quarters submitted individually for analysis. Where possible core was sampled to leave the orientation line in the core tray (on the remaining half core).
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were collected from the full recovered interval at the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. Samples collected in mineralization were dry.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the diamond and RC samples follow industry best practice. Samples are oven dried at 120°C for 8 hours before processing through a Boyd jaw crusher reducing the sample to 90% passing 3mm (diamond samples only). The RC and diamond samples are then pulverised to achieve a grind size of 85% passing 75 micron using Hertzog robotic mills.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field QAQC procedures included the field insertion of certified reference materials (standards) having a range of values reflecting the general spread of values observed in the mineralization. Earlier drilling (2011 to July 2012) did not include the insertion of standards as suitable materials were not sourced. Blanks were also inserted in the field and developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in mineralized zones.

Criteria	JORC Code explanation	Commentary
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Field duplicates from RC samples generally showed an excellent correlation between original and duplicates, however other measures of spread such as Half Absolute Relative Difference (HARD) plots suggested moderate to low repeatability. Analysis of the quarter core duplicate diamond core samples showed similar results suggesting the short scale variability of the mineralization is quite high, with mineralization being irregularly distributed within samples. This observation is reflected in the estimation parameters applied and the resource classification assigned.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Current industry standard sampling is used and deemed appropriate. A study on xenotime grain size and sampling is in progress. Samples have been selected, but results and subsequent analysis are pending.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The composition of the flux and the crucible used preclude the analysis of sodium, nickel, cobalt, chromium and molybdenum so these elements are not determined. The digestion solution, suitably diluted, is analysed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) for the determination of Al, Fe, P, S, Sc and S, while ICP Mass Spectroscopy (ICP-MS) is used for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.

Criteria	JORC Code explanation	Commentary
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	In the field a series of Niton (XL3T-950 GOLDD+) XRF hand held tools were used to assist with the identification of mineralized zones for subsequent sample collection and submission. Tools were operated in soil mode with a count time of 30 seconds, with observations taken at every 0.5m on diamond core and every metre for RC samples. Intervals for which readings returned a Yttrium (Y) value of 200ppm or greater were selected for analysis, as were adjacent intervals as required for mineralization continuity. There was no sample preparation for the Nition analyses. Niton readings were not incorporated into analytical results for mineral resource estimation. Analysis of the XRF results for Y vs. the laboratory results showed that in general the Niton value under estimated the Y concentration and as such use of the 200ppm Y selection criteria is conservative.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures. Umpire laboratory campaigns were initially conducted with two other laboratories in order to independently verify reported results. This has been revised to one laboratory. Due to the specialised nature of REE analysis, Genalysis are considered experts in their respective analytical fields and as such the submission of pulps for round robin analysis to other analytical laboratories are not likely to be as reliable. Results of round robin analysis completed show good precision. Certified reference materials, using values across the range of mineralization, were inserted blindly and randomly. Results highlight that sample assay values are accurate and any error is minimal. Secondary laboratory ALS Brisbane was used to as an external laboratory check for pulp samples once it was determined drilling results were to be used for resource estimation.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Diamond drill core photographs were reviewed for the recorded sample intervals. High range values are typically resubmitted for repeat analysis with results comparing within acceptable limits.
	The use of twinned holes.	No drill holes have been completed for the purposes of twinning.

Criteria	JORC Code explanation	Commentary
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Earlier primary data (2011) was collected using paper logs and transferred into Excel spreadsheets for transfer into the drill hole database. Since 2012 primary data was collected into a proprietary logging package with in-built validation. Details were extracted and pre-processed prior to loading. In 2011 and 2012 data was managed and stored off site using acQuire software. Since 2013 Datashed is used as the database storage and management software and incorporates numerous data validation and integrity checks using a series of defined data loading tools. Data is stored on a SQL server by Northern Minerals Ltd and electronic backups are completed three times per day.
	Discuss any adjustment to assay data.	Adjustments made to the assay data were limited to the conversion of reported elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. In all instances the original elemental data has been stored in the database and the equivalent oxide values loaded into appropriately labelled fields identifying them as calculated values. Selected checks on these calculated fields did not identify any issues. The oxides were calculated from the element according to the following factors below: CeO_2 – 1.2284, Dy_2O_3 – 1.1477, Er_2O_3 – 1.1435, Eu_2O_3 – 1.1579, Gd_2O_3 – 1.1526, Ho_2O_3 – 1.1455, La_2O_3 – 1.1728, Lu_2O_3 – 1.1371, Nd_2O_3 – 1.1664, Pr_6O_{11} – 1.2082, Sm_2O_3 – 1.1596, Tb_4O_7 – 1.1421, Tm_2O_3 – 1.1421, Y_2O_3 – 1.2699, Yb_2O_3 – 1.1387 Ratios of each oxide to Total Rare Earth Oxides (TREO) are used to determine the percentages of heavy (HRE) and light (LRE) rare earth oxides. The criteria is summarised as: Rare earth oxide is the industry accepted form for reporting rare earths. The **TREO** (Total Rare Earth Oxide) is calculated from addition of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Y_2O_3, and Lu_2O_3. Note that Y_2O_3 is included in the TREO calculation. Northern Minerals reports HREO% determined by the formula: **HREO%** = $[Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+Dy_2O_3+Ho_2O_3+Er_2O_3+Tm_2O_3+Yb_2O_3+Y_2O_3+Lu_2O_3]$ / $[La_2O_3+CeO_2+Pr_6O_{11}+Nd_2O_3+Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+Dy_2O_3+Ho_2O_3+Er_2O_3+Tm_2O_3+Yb_2O_3+Y_2O_3+Lu_2O_3$(TREO)]**x 100**

Criteria	JORC Code explanation	Commentary
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	Drill collar locations were surveyed using high accuracy GPS by a suitably qualified surveying contractor. Down hole surveys were completed using single shot or multi shot cameras at the time of drilling with down hole gyroscopic surveys completed at the completion of drilling. Survey accuracy of both collars and down hole is considered acceptable.
	Specification of the grid system used.	The grid system used is MGA94 Zone 52. All reported coordinates are referenced to this grid.
	Quality and adequacy of topographic control.	Prime permanent control point, NM01 was established by satellite control and AUSPOS processing to centimetre external accuracy. Real Time Kinematic (RTK) GPS was used to establish the prime permanent control point and a secondary control station NM02 at the Wolverine prospect. Bore Hole Geophysical Services (BHGS) established three control points in 2011. A detailed topography survey was undertaken by Whelans Survey in July 2013. The GPS equipment used were Trimble R6 model RTK GPS receivers. These instruments provide results accurate to around 5 to 15 mm XYZ within 1 km. All records are within a 1 km radius of the NM02 control station. Whelans resurveyed between Browns Range and Halls Creek in October 2013. The results of this allowed a minor correction of E +0.012m, N +0.011m and RL +0.142m to be made to the Browns Range survey control network, and this adjustment was applied retrospectively to all data. A LIDAR survey was flown in November 2013 by Fugro and processing was completed in December 2013. This data was checked against the preceding Whelans survey. No significant differences were noted. The LIDAR survey was considered to supersede the Whelans survey and has been adopted for this Mineral Resource Estimate.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drilling of the Gambit deposit has been completed on a nominal 25m in easting by 25m in northing spacing.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The degree of geological and grade continuity demonstrated by the data density is sufficient to support the definition of Mineral Resources and the associated classifications applied to the Mineral Resource estimate as defined under the 2012 JORC Code.

Criteria	JORC Code explanation	Commentary
	Whether sample compositing has been applied.	No compositing was performed on the samples prior to laboratory analysis.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The prospect is contained within an east-west corridor, defined by a complex structure, alteration, variable silicification and increased fracturing. A number of mineralized 'pods' have been modelled along with logged breccias within the overall east-west corridor. The main mineralized pod is interpreted to be sub-vertical, strike east-west and plunge towards the west. Resource drilling is predominantly completed at azimuth 180 or 360 and dipping -60° effectively intercepting the mineralization obliquely. This orientation is not likely to introduce a sampling bias.
	If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	The orientation of drilling with respect to mineralization is not expected to introduce any sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are collected on site under supervision of a responsible geologist and stored in bulk bags on site prior to transport by company truck or utility to Halls Creek commercial transport yard. The samples were stored in a secure area until loaded and delivered to the Genalysis laboratory in Perth. Laboratory dispatch sheets are completed and forwarded electronically as well as being placed within the samples transported. Dispatch sheets are compared against received samples and discrepancies reported and corrected.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	A review of the sampling techniques and data was completed by AMC in the course of preparing the 2014 Mineral Resource estimate. Review of the data integrity and consistency of the drill hole database shows sufficient quality to support resource estimation.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Gambit prospect is located wholly within Exploration Licence E80/3547. The tenement is located in the company's Browns Range Project approximately 150 kilometres south-east of Halls Creek and adjacent to the Northern Territory border in the Tanami Desert. Northern Minerals owns 100% of all mineral rights on the tenement. The Jaru Native Title Claim is registered over the Browns Range Project area and the fully determined Tjurabalan claim is located in the south of the project area.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	The tenement is in good standing and no known impediments exist.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous systematic exploration for REE mineralization has been completed at Gambit. Regional exploration for uranium mineralization was completed in the 1980s by PNC and in the 2000s by Areva but without success.
Geology	*Deposit type, geological setting and style of mineralization.*	The Browns Range prospects (including Gambit) are located on the western side of the Browns Range Dome, a Paleoproterozoic dome formed by a granitic core intruding the Paleoproterozoic Browns Range Metamorphics (meta-arkoses, feldspathic metasandstones and schists) and an Archaean orthogneiss and schist unit to the south. The dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birrindudu Group). The prospect is contained within an east-west corridor, defined by the complex structure, alteration, variable silicification and increased fracturing. A number of mineralized 'pods' have been modelled, and are partly associated with fault breccias, within the overall east-west corridor. The main mineralized pod is interpreted to be sub-vertical, strike east-west and plunge towards the west. As at Gambit West and Wolverine, the fault breccias occur within a meta-arenite of the Browns Range Metamorphics package. Mineralization is related to the presence of hydrothermal xenotime. Mineralogical examination shows the heavy rare earth mineralization is xenotime (YPO_4). The Florencite ($(Nd,La,Ce)Al_3(PO_4)_2(OH)_6$) - Goyazite ($Sr Al_3(PO_4)_2(OH)_5.H_2O$) series are the only other rare earth element minerals recognised to date.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth* *hole length.*	No exploration results have been reported in this release, therefore there is no drill hole information to report. This section is not relevant to reporting Mineral Resources.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
Relationship between mineralization widths and intercept lengths	*If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	No exploration results have been reported in this release, therefore no exploration diagrams have been produced.

Criteria	JORC Code explanation	Commentary
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	The decision as to the necessity for further exploration work at Gambit is pending successful completion of mining technical studies on the currently available resource.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The decision as to the necessity for further exploration work at Gambit is pending successful completion of mining technical studies on the currently available resource.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	2011 drilling was logged onto paper and transferred to a digital form for loading into the drill hole database. In an effort to cut validation time and errors, in 2012 logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. All data transfer is electronic, with no double handling of data. Sample numbers are unique. Logging and survey information were reviewed by the responsible geologist prior to final load into the database, then printed on paper and checked by two geologists to ensure no transcription or keying errors prior to the geological interpretation. The data is stored in a single database for the Browns Range project.
	Data validation procedures used.	The first validation starts at the field logging package during data entry. Data validations are routinely run prior to uploading of data to the database. Many check routines and rules are run to ensure referential integrity, such as overlapping intervals, repeat sample IDs, out of range density measurements, survey azimuth deviations >10 degrees, drill hole dip deviations >5 degrees, and missing samples have been developed firstly using AcQuire (2011-12) and then in Datashed (2013). Both internal (NTU) and external (BMGS and AMC) validations are completed when data is loaded into spatial software for geological interpretation and resource estimation. This was routinely completed for the Browns Range dataset(s). AMC checks the data for overlapping intervals, missing samples, downhole survey deviations of ±10° in azimuth and ±5° in dip when loading into CAE Studio 3 (Datamine) software. Outlier assays are routinely checked via QAQC reports automated from the database, and followed up by the responsible geologist. This is done by checking standards, blanks, and duplicate data. QAQC data was routinely checked by specialised external consultants (Exploremin and BMGS)

Criteria	JORC Code explanation	Commentary
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	AMC Senior Geologist John Tyrrell visited the Browns Range project site in late 2012 and inspected the Gambit deposit. The geology, sampling, sample preparation and transport, data collection and storage procedures were all observed. AMC used this knowledge to aid in the preparation of a maiden Mineral Resource Estimate for the Gambit deposit, which was reported in October 2013. No further site visits were made for the 2014 Mineral Resource estimate.
	If no site visits have been undertaken indicate why this is the case.	
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The Browns Range REE mineralization is one of only a few hydrothermal xenotime mineralization styles documented globally. Detailed mapping, structural, alteration and mineralization studies have been completed by NTU geologists and contracted specialists between 2011 and 2013. These data and close spaced drilling, generally <25m, has led to a good understanding of mineralization controls. The REE mineralization is hosted by approximately east-west striking structures and veins, within a coarse sedimentary package on the western side of the regionally extensive Browns Range Dome. This is a feature seen within the Browns Range resources at Wolverine, Gambit, Gambit West and Area 5 localities. Breccia and quartz vein structures are mappable, and can be followed with confidence under transported cover using geophysical techniques, geochemistry and step-out drilling. There is associated sericite-hematite-silica alteration. The observations regarding the geological model are robust. The geological work is continually being refined. Currently, spectral, dating and fluid inclusion work are underway, coordinated by GSWA and the Helmholtz-Institute, Freiberg, Germany.
	Nature of the data used and of any assumptions made.	No assumptions are made.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>The effect, if any, of alternative interpretations on Mineral Resource estimation.</td><td>Other styles of REE mineralization were considered, however many do not have the same geological host rocks or mineralogy as Browns Range. Structurally hosted (i.e. gold) deposits, show similarity in style to the Browns Range mineralization. No alternative estimations were undertaken by AMC.</td></tr>
<tr><td></td><td>The use of geology in guiding and controlling Mineral Resource estimation.</td><td>Geological observation has underpinned the resource estimation and geological model. Rock type, alteration style, degree of brecciation, intensity of alteration, structural measurements and geochemistry (HRE ratios) were used to define the footwall and hanging wall boundaries. The geological model was developed as an iterative process of checking against logging, photography and relogging core/rock chips as needed during interpretation.

The extents of the geological model were constrained by drilling. Geological boundaries had only minimal extrapolation beyond drilling in line with the resource classifications of Indicated or Inferred Resource

The domain coding for Gambit is as follows:

<table><tr><th>Domain</th><th>Numeric Code</th></tr><tr><td>Mineralization Lens 1</td><td>1000</td></tr><tr><td>Mineralization Lens 2</td><td>2000</td></tr><tr><td>Mineralization Lens 3</td><td>3000</td></tr><tr><td>Mineralization Lens 4</td><td>4000</td></tr><tr><td>Mineralization Lens 5</td><td>5000</td></tr><tr><td>Background</td><td>9000</td></tr></table></td></tr>
</table>

Criteria	JORC Code explanation	Commentary
	The factors affecting continuity both of grade and geology.	Key factors that are likely to affect the continuity of grade are: • the inherent variability of brecciated rocks. The breccia rock characteristics can change rapidly from centimetre to meter scale, • the nugget effect of veined xenotime, and • since the deposit is structurally hosted, then there is also inherent disruption of continuity by faulting at different scales.
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The main eastern zone of mineralization extends from surface to an approximate depth of 105m, has an approximate strike length of 130m, plunges to the west and is between one and 12 m thick. Discrete lenses of mineralization in the west extend from surface to an approximate depth of 65 m, strike length ranges between 22 and 70 m and is between one and 5m thick. The western and eastern mineralization is separated by a distance of 240m.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron, a value that is the sum of rare earth oxides other than yttrium oxide, dysprosium oxide and terbium oxide (SREO) and a suite of 12 other rare earth elements (REE), specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu. The Dy, Tb, and SREO were additions from the October 2013 estimate. Drill hole spacing is on average 25m east by 25m north. Drill hole sample data was flagged with domain codes unique to each mineralization domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required. The top-cut levels for each mineralization domain were determined using a combination of grade histograms, log probability plots, and decile and percentile analysis.

Criteria	JORC Code explanation	Commentary

Domain	Field	Top Cut (ppm)	Number of Composites Cut	Metal Cut (%)
1000 Series	TREO	–	–	–
	Y	–	–	–
	Dy	4,000	6	8.1
	Tb	600	5	6.1
	U	–	–	–
	Th	–	–	–
	Fe	7	2-	10.7
	Al	–	–	–
	SREO	–	–	–
2000	TREO	–	–	–
	Y	–	–	–
	Dy	–	–	–
	Tb	–	–	–
	U	–	–	–
	Th	–	–	–
	Fe	–	–	–
	Al	–	–	–
	SREO	–	–	–
9000	TREO	5.0	3	1.2
	Y	10,000	24	11.3
	Dy	1,100	48	18.0
	Tb	270	15	7.7
	U	130	4	1.2
	Th	–	–	–
	Fe	–	–	–
	Al	–	–	–
	SREO	1.3	1	0.7

For the Gambit deposit five mineralization domains and one background domain were estimated. Where possible, for all domains, directional variograms were modelled using traditional variograms. Where search directions were not achievable, an omnidirectional variogram was modelled. Domains with a small number of data used the variography of a geologically similar domain. Grade continuity was variable depending on the element and ranged between 13 and 80m in the major direction. Estimation searches for the 12 REE elements were set to the ranges of the TREO variogram for the two mineralization domains. The 14 individual REE elements were not estimated into the background domain.

Criteria	JORC Code explanation	Commentary
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	A Mineral Resource estimate for Gambit was reported in October 2013. No previous mining activity has taken place in this area.
	The assumptions made regarding recovery of by-products.	No assumptions were made regarding recovery of by-products.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	Estimates were undertaken for U and Th as potential deleterious elements and Fe and Al for input into metallurgical studies.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	**Gambit:** A block model was constructed using a parent cell size of 15m in easting by 15m in northing by 10m in RL, with sub-celling to 5m by 1m by 2.5m in easting, northing and RL respectively, to optimise domain volume resolution. The October 2013 estimate used a parent cell size of 25mE by 25mN by 5mRL with a sub-cell of 0.78m by 0.78m by 1.25m. Grades were estimated into parent cells, with all sub-cells receiving the same grade as their parent cells. Discretisation was set to 2 by 2 by 2 for all domains. Search ellipse dimensions for each domain were based on the variography for each element. Three search passes were used for each domain. The first search allowed a minimum of 10 composites and a maximum of 25 composites. For the second pass, search ranges were expanded by 2.5 times the first pass search dimensions. A minimum of 5 composites was permitted. A maximum of 25 composites was maintained. The third pass search ellipse was extended to 4 times the first pass search dimensions. A minimum of 2 composites and a maximum of 30 composites was applied. A maximum of 6 composites from a single drill hole was permitted. For most domains, the majority of blocks were estimated in the first and second passes. Non-estimated blocks (outside the range of the third pass) were assigned the median of the drill hole data and were assigned lower resource confidence classifications. Hard boundaries were applied between all estimation domain
	Any assumptions behind modelling of selective mining units.	No selective mining units were assumed in this estimate. Model block sizes were determined primarily by drill hole spacing and statistical analysis of the effect of changing block sizes on the final estimates.

Criteria	JORC Code explanation	Commentary
	Any assumptions about correlation between variables.	All elements within a domain used the same sample selection routine for block grade estimation. Correlation studies were performed for all variables in the input drill hole data. Generally, correlation is excellent (close to one) between the TREO values and the individual heavy and medium REEs. Uranium has a moderate to strong correlation with TREO and Th and Al have a moderate correlation (approximately 0.6).
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation is used to define the mineralization domains. All of the mineralization domains are used as hard boundaries to select sample populations for variography and grade estimation. The topographic survey was used to trim the surface limit of the block model.
	Discussion of basis for using or not using grade cutting or capping.	Statistical analysis showed that the domains included outlier values that required top cut values to be applied. Top cut values are chosen based on the statistical parameters for that element in each domain and a visual check of the location of any possible outlier values. Usually the log probability plots and histogram plots are used to determine the final value used. The top cuts are generally in the 95th to 99th percentile of the data and remove less than 5% metal. In some cases, a higher percentage of metal was cut, due to a very long tail of high grade values, or an extreme high value in a relatively poorly sampled domain. Top cut values applied are listed below: (see table below) One drill hole was removed from Gambit in the high grade domain (1000), as excessive top cutting would be required to bring the grade of this drill hole into line with the rest of the domain. Further validation work is required to understand this anomalous drill hole, BRGD0001.

Domain	TREO %	Y ppm	Dy ppm	U ppm	Th ppm	Tb ppm	Fe %	Al %	SREO %-
1000	-	-	4000	-	-	600	7	-	-
2000	-	-	-	-	-	-	-	-	-
3000	-	-	4000	-	-	600	7	-	-
4000	-	-	4000	-	-	600	7	-	-
5000	-	-	4000	-	-	600	7	-	-
9000	5	10000	1100	130	-	270	-	-	1.3

Criteria	JORC Code explanation	Commentary
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the block model carried out a volumetric comparison of the mineralization wireframes to the block model volumes. The estimates were validated by visual comparison of estimated grades against composite grades and by comparing block model grades to the input data using swathe plots. The plots compared block model and composite grades for the key estimated variables by easting and elevation comparison for all of the four deposits. As no mining for REE has taken place at Browns Range to date, there is no reconciliation data available.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	The density was measured on air dried core in the field, with one in 20 samples checked externally by Genalysis laboratory Perth. Therefore, the tonnages are estimated on a dry basis. The moisture content in mineralization is considered low.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Gambit deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15%TREO has a reasonable prospect for eventual economic extraction.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	To date, no technical studies have been completed (to a reportable standard) on suitable mining methods for the Gambit deposit at the Browns Range Project. Given the grade and near surface location, it is assumed that the Gambit deposit will be mineable using generic open cut methods.

Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Preliminary beneficiation test work on RC drill samples from the Wolverine and Gambit deposits and the Area 5 North prospect at 0.25%, 0.5% and 1.0% TREO head grades was completed at NAGROM. This test work, which included magnetic susceptibility tests, rougher wet high gradient magnetic separation (WHGMS) and rougher flotation of WHGMS magnetic concentrate, returned similar recoveries for rougher magnetics and rougher flotation across the various head grades and mineralized sample sources. The beneficiation and hydrometallurgical flow sheets are currently being optimised on mineralized material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Gambit deposit will be tested against these optimised flow sheets to determine their metallurgical performance. However, given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralization) between the Gambit and Wolverine deposits, it is reasonable to expect that Gambit mineralization will have similar results to Wolverine mineralization from future metallurgical test work.
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The Browns Range Project (the Project) is currently under assessment by the West Australian Environmental protection Authority (EPA). The EPA has set the level of assessment for the Project at Assessment on Proponent Information (API) – Category A. Baseline environmental surveys and studies over the Project area are largely complete and include the following: • Flora and vegetation • Terrestrial fauna • Subterranean fauna • Waste rock and tails – geochemical and physical characterisation • Atmospheric emissions, noise and light • Hydrogeology and hydrology • Soils • Radiation The environmental impact assessment to inform the API is currently underway.

Criteria	JORC Code explanation	Commentary
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Bulk density has been estimated from density measurements carried out on diamond core samples of variable length using the Archimedes method of dry weight versus weight in water, and downhole LAS survey data (completed by ABIMs). Field density measurements were completed as a minimum of one every two meters. This comprehensive dataset was then used to calibrate the downhole measurements (recorded every 10cm). These datasets were evaluated by BMGS and a correction factor for the downhole measurements was applied. The number of density measurements for each deposit varies. There are 273 core measurements for Gambit. These were compared with the larger Gambit West data set.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The water immersion method, covering void spaces with clear tape, is deemed appropriate to adequately account for porosity. Porous samples were checked by an external laboratory, and were consistent with field measurements.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The bulk density values applied to the Gambit deposit are as follows: Gambit: Background Oxide 2.45 t/m^3, Background Fresh 2.49 t/m^3, Mineralization Oxide 2.45 t/m^3, Mineralization Fresh 2.61 t/m^3
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	Classification for Gambit is based upon continuity of geology, mineralization and grade, using drill hole and density data spacing and quality, variography and estimation statistics (number of samples used, estimation pass, and slope of regression).
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	At Browns Range, the cores of the modelled deposits are generally well drilled with a nominal 25 m x 25 m drill hole spacing in easting and northing directions. In general, the estimates have been classified as Indicated Resource where this spacing has been achieved or bettered and the confidence in the estimate is high. The deposits are generally classified as Inferred Resource where the spacing increases to greater than 25 m x 25 m, or in areas where there is lower confidence in the estimate.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	AMC believes that the classification appropriately reflects its confidence in and the quality of the grade estimate.

Criteria	JORC Code explanation	Commentary
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource estimate has not been audited.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The Mineral Resource classification applied to each deposit implies a confidence level and level of accuracy in the estimates.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	These ranges relate to the global estimates of grade and tonnes for the deposit.

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The deposit was sampled using a combination of Reverse Circulation (RC) drilling and diamond core from surface. A total of 93 RC holes and six diamond holes for 10,148m and 865m respectively were completed in the Area 5 prospect. Holes were predominantly drilled towards the northeast (045 degrees) at a dip of -60 degrees and were completed on a nominal 25m x 25m grid (in easting and northing).
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Drill hole collars were originally set out using hand held GPS and on completion the collars were surveyed by survey contractors using high precision GPS. Down hole surveys were completed either using single shot cameras or down hole gyro. RC drilling was predominantly used for resource drilling with six diamond holes drilled targeting specific features of the mineralization. RC samples were collected at one metre intervals by riffle or cone splitter depending on the drilling contractor. Diamond core was half-core sampled at nominal one-metre intervals although constrained to geological boundaries where appropriate. Sampling was carried out under NTU protocols and employed QAQC procedures in line with industry best practice.
	Aspects of the determination of mineralization that are Material to the Public Report.	Diamond core was drilled using triple tube techniques at HQ and NQ sizes. HQ3 was variably employed for shallower parts of the hole depending on prevailing ground conditions, while the majority of diamond core intercepts within the mineralization are at NQ3 size and sampled at a nominal one metre interval although constrained to within geological intervals. RC drill holes were sampled at one metre intervals exclusively and split at the rig to achieve a target 2-5 kilogram sample weight. Diamond and RC samples were dried, crushed, split and pulverised by Genalysis Laboratories in Perth prior to analysis of rare earth element suite using ICP-MS.

Criteria	JORC Code explanation	Commentary
Drilling techniques	*Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	RC drill holes account for 92% of the drill metres within the project area with diameters of either 115mm or 140mm. RC drilling was completed using face sampling hammer with hole depths ranging from 30m to 282m. Diamond drilling accounts for the remainder at HQ and NQ core sizes with hole depths ranging from 52m to 261m. Diamond core was orientated using the Reflex ACT orientation tool. The quality of orientation marks are recorded in the drill hole database, with orientation lines only marked if two successive orientation marks aligned.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was assessed by comparison of the interval of core presented in the core tray against the driller's core blocks. Analysis showed that approximately 90% of core intervals had recoveries >80%. Core loss was most often associated with zones of extremely altered conglomerate in the upper levels of the prospect. These reduced recoveries are not considered material. RC recovery was assessed by a combination of weight of bulk sample against a nominal recovery mass, and via subjective assessment based on volume recovered. RC recoveries were observed to be generally acceptable with recoveries typically 75% or greater. RC and diamond recovery information is recorded in the geologist logs and entered into the database.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Diamond drilling utilised triple tube techniques and drilling fluids in order to assist with maximising recoveries. Diamond core is reconstructed into continuous runs on an angle iron cradle for orientation marking. Depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks. RC samples were visually checked for recovery, moisture and contamination. The cyclone and splitter were routinely cleaned ensuring no material build up.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Assessments on the effect of low recoveries were completed for the diamond and RC drilling and found that there was not likely to be any material impact on the reported assay results as a result of the reduced recoveries.

Criteria	JORC Code explanation	Commentary
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Diamond core was geologically logged using predefined lithological, mineralogical and physical characteristics (colour, weathering etc) logging codes. In addition structural measurements of major features were collected. RC logging was completed on one metre intervals at the rig by the geologist. Earlier drilling (2011) was logged onto paper and transferred to a digital form for loading into the drill hole database. More recently (2012 onwards) logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. Logging information was reviewed by the responsible geologist prior to final load into the database. Chip trays were collected for each of the RC intervals and core trays were photographed. Geotechnical logging of all diamond core consisted of recording core recovery, RQDs, number of fractures, core state (i.e. whole, broken) and hardness.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging was generally qualitative in nature except for the determination of core recoveries and geotechnical criteria such as RQD and fracture frequency which was quantitative. Core photos were collected for all diamond drilling.
	The total length and percentage of the relevant intersections logged.	100% of all recovered intervals were geologically logged.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Diamond core was cut in half using an electric core saw. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features, together with indicative results from hand held XRF measurements. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted individually for analysis. Where possible core was sampled to leave the orientation line in the core tray.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were collected from the full recovered interval at the drill rig by either riffle splitting or using a static cone splitter. All samples were collected dry with a minor number being moist due to ground conditions or excessive dust suppression. Samples collected in mineralization were dry.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the diamond and RC samples follow industry best practice. Samples are oven dried at 120°C for 8 hours before processing through a Boyd jaw crusher reducing the sample to 90% passing 3mm (diamond samples only). The RC and diamond samples are then pulverised to achieve a grind size of 85% passing 75 micron using Hertzog robotic mills

Criteria	JORC Code explanation	Commentary
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field QAQC procedures included the field insertion of certified reference materials (standards) having a range of values reflecting the general spread of values observed in the mineralization. Drilling prior to July 2012 did not include the insertion of standards as suitable materials were not sourced. Blanks were also inserted in the field and developed from local host rock following chemical analysis. Field duplicates were collected by either a second sample off the splitter (RC) or by quarter core samples of the original half core sample (diamond) and separate submission and analysis at the laboratory. Insertion rates averaged 1:20 for duplicates, blanks and standards, with increased frequency in Mineralized zones.
	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	Field duplicates from RC samples generally showed an excellent correlation between original and duplicates, however other measures of spread such as Half Absolute Relative Difference (HARD) plots suggested moderate to low repeatability. Analysis of the quarter core duplicate diamond core samples showed similar results suggesting the short scale variability of the mineralization is quite high, with mineralization being irregularly distributed within samples. This observation is reflected in the estimation parameters applied and the resource classification assigned.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Current industry standard sampling is used and deemed appropriate. A study on xenotime grain size and sampling is in progress. Samples have been selected, but results and subsequent analysis are pending.

Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The composition of the flux and the crucible used preclude the analysis of sodium, nickel, cobalt, chromium and molybdenum so these elements are not determined. The digestion solution, suitably diluted, is analysed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) for the determination of Al, Fe, P, S, Sc and S, while ICP Mass Spectroscopy (ICP-MS) is used for the determination of the REE (La – Lu) plus Y, Th, U, Sr, W and As.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	In the field a series of Niton (XL3T-950 GOLDD+) XRF hand held tools were used to assist with the identification of Mineralized zones for subsequent sample collection and submission. Tools were operated in soil mode with a count time of 30 seconds, with observations taken at every 0.5m on diamond core and every metre for RC samples. Intervals for which readings returned a Yttrium (Y) value of 200ppm or greater were selected for analysis, as were adjacent intervals as required for mineralization continuity. There was no sample preparation for the Niton analyses. Niton readings were not incorporated into analytical results for mineral resource estimation. Analysis of the XRF results for Y vs. the laboratory results showed that in general the Niton value under estimated the Y concentration and as such use of the 200ppm Y selection criteria is conservative.

Criteria	JORC Code explanation	Commentary
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in house procedures. Umpire laboratory campaigns were initially conducted with two other laboratories in order to independently verify reported results. This has been revised to one laboratory as due to the specialised nature of REE analysis Genalysis are considered experts in their respective analytical fields and as such the submission of pulps for round robin analysis to other analytical laboratories are not likely to be as reliable. Results of round robin analysis completed show good precision. Certified reference materials, using values across the range of mineralization, were inserted blindly and randomly. Results highlight that sample assay values are accurate and any error is minimal. Secondary laboratory ALS Brisbane was used to as an external laboratory check for pulp samples once it was determined drilling results were to be used for resource estimation
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Diamond drill core photographs have been reviewed for the recorded sample intervals. High range values are typically resubmitted for repeat analysis with results comparing within acceptable limits.
	The use of twinned holes.	One Mineralized RC drill hole from 2012 was twinned using a diamond drill hole in 2013. The geological boundaries, and differentiation between high grade and low grade were comparable, however, internally the individual intervals had variation in REE results.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Earlier primary data (2011) was collected using paper logs and transferred into Excel spreadsheets for transfer into the drill hole database. Since early 2012 primary data was collected into a proprietary logging package with in-built validation. Details were extracted and pre-processed prior to loading. In 2011 and 2012 data was managed and stored off site using acQuire software. In 2013 Datashed is used as the database storage and management software and incorporates numerous data validation and integrity checks using a series of defined data loading tools. Data is stored on a SQL server by Northern Minerals Ltd and electronic backups completed three times per day.

Criteria	JORC Code explanation	Commentary
	Discuss any adjustment to assay data.	Adjustments made to the assay data were limited to the conversion of reported elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. In all instances the original elemental data has been stored in the database and the equivalent oxide values loaded into appropriately labelled fields identifying them as calculated values. Oxide calculations are completed by the laboratory and checked by Northern Minerals. No issues were identified. The oxides were calculated from the element according to the following factors below: CeO_2 – 1.2284, Dy_2O_3 – 1.1477, Er_2O_3 – 1.1435, Eu_2O_3 – 1.1579, Gd_2O_3 – 1.1526, Ho_2O_3 – 1.1455, La_2O_3 – 1.1728, Lu_2O_3 – 1.1371, Nd_2O_3 – 1.1664, Pr_6O_{11} – 1.2082, Sm_2O_3 – 1.1596, Tb_4O_7 – 1.1421, Tm_2O_3 – 1.1421, Y_2O_3 – 1.2699, Yb_2O_3 – 1.1387 Ratios of each oxide to Total Rare Earth Oxides (TREO) are used to determine the percentages of heavy (HRE) and light (LRE) rare earth oxides. The criteria is summarised as: Rare earth oxide is the industry accepted form for reporting rare earths. The **TREO** (Total Rare Earth Oxide) is calculated from addition of La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Y_2O_3, and Lu_2O_3. Note that Y_2O_3 is included in the TREO calculation. Northern Minerals reports HREO% determined by the formula: **HREO%** = [Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+ Dy_2O_3+ Ho_2O_3+ Er_2O_3+Tm_2O_3+Yb_2O_3, + Y_2O_3,+Lu_2O_3] /[La_2O_3+CeO_2+Pr_6O_{11}+Nd_2O_3+Sm_2O_3+Eu_2O_3+Gd_2O_3+Tb_4O_7+ Dy_2O_3+ Ho_2O_3+ Er_2O_3+Tm_2O_3+Yb_2O_3 +Y_2O_3,+Lu_2O_3(TREO)]**x 100**
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	Drill collar locations were surveyed using high accuracy GPS by a suitably qualified surveying contractor. Down hole surveys were completed using single shot or multi shot cameras at the time of drilling with down hole gyroscopic surveys completed at the completion of drilling. Survey accuracy of both collars and down hole is considered acceptable.
	Specification of the grid system used.	The grid system used is MGA94 Zone 52. All reported coordinates are referenced to this grid.

Criteria	JORC Code explanation	Commentary
	Quality and adequacy of topographic control.	Prime permanent control point, NM01 was established by satellite control and AUSPOS processing to centimetre external accuracy. Real Time Kinematic (RTK) GPS was used to establish the prime permanent control point and a secondary control station NM02 at the Wolverine prospect. Bore Hole Geophysical Services (BHGS) established three control points in 2011. A detailed topography survey was undertaken by Whelans Survey in July 2013 at Area 5. The GPS equipment used were Trimble R6 model RTK GPS receivers. These instruments provide results accurate to around 5 to 15 mm XYZ within 1 km. Whelans resurveyed between Browns Range and Halls Creek in October 2013. The results of this allowed a minor correction of E +0.012m, N +0.011m and RL +0.142m to be made to the Browns Range survey control network, and this adjustment was applied retrospectively to all data. A LIDAR survey was flown in November 2013 by Fugro and processing was completed in December 2013. This data was checked against the preceding Whelans survey. No significant differences were noted. The LIDAR survey was considered to supersede the Whelans survey and has been adopted for this Mineral Resource Estimate.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drilling of the Area 5 deposit has been completed on a nominal 25m in easting by 25m in northing grid spacing.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	The degree of geological and grade continuity demonstrated by the data density is sufficient to support the definition of Mineral Resources and the associated classifications applied to the Mineral Resource estimate as defined under the 2012 JORC Code.
	Whether sample compositing has been applied.	No compositing was performed on the samples prior to laboratory analysis.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The mineralization is interpreted to be a series of stacked Mineralized lodes striking approximately east-west and dipping to the south at approximately -50 degrees steepening to approximately -60 degrees down dip. Resource drilling is predominantly completed at azimuth 045 and dipping -60 degrees effectively intercepting the mineralization obliquely. The drill grid is perpendicular to the regional structure rather than the Mineralized structure. This was noted in the geological interpretation and is not likely to introduce a sampling bias.
	If the relationship between the drilling orientation and the orientation of key Mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	The orientation of drilling with respect to mineralization is not expected to introduce any sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are collected on site under supervision of a responsible geologist and stored in bulk bags on site prior to transport by company truck or utility to Halls Creek commercial transport yard. The samples were stored in a secure area until loaded and delivered to the Genalysis laboratory in Perth. Laboratory despatch sheets are completed and forwarded electronically as well as being placed within the samples transported. Despatch sheets are compared against received samples and discrepancies reported and corrected.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	A review of the sampling techniques and data was completed by AMC in the course of preparing the 2014 Mineral Resource estimate. Review of the data integrity and consistency of the drill hole database shows sufficient quality to support resource estimation.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The Area 5 prospect is located wholly within Exploration Licence E80/3547. The tenement is located in the company's Browns Range Project approximately 150 kilometres south-east of Halls Creek and adjacent to the Northern Territory border in the Tanami Desert. Northern Minerals owns 100% of all mineral rights on the tenement. The Jaru Native Title Claim is registered over the Browns Range Project area and the fully determined Tjurabalan claim is located in the south of the project area.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	The tenement is in good standing and no known impediments exist.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous systematic exploration for REE mineralization has been completed at Area 5. PNC did complete a limited number of shallow drill holes at Area 5 in the 1980s. Regional exploration for uranium mineralization was completed in the 1980s by PNC and in the 2000s by Areva.
Geology	*Deposit type, geological setting and style of mineralization.*	The Browns Range prospects (including Area 5) are located on the western side of the Browns Range Dome, a Paleoproterozoic dome formed by a granitic core intruding the Paleoproterozoic Browns Range Metamorphics (meta-arkoses, feldspathic metasandstones and schists) and an Archaean orthogneiss and schist unit to the south. The dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birrindudu Group). The geology of the prospect area consists of a highly altered quartz arenite and conglomerates which are part of the Browns Range Metamorphics package. The conglomerate appears to occur in lenses, and is interpreted as a possible channel deposit. Intense bleaching and kaolinisation of the arenite unit is observed close to surface, and overlies ferruginous alteration. Foliations on rock chips were observed close to the alteration contact, indicating potential shearing along the contact. All packages have an apparent dip of 50° to the south. The mineralization is interpreted to be a series of stacked Mineralized lodes striking approximately east-west and dipping to the south at approximately -50° steepening to approximately -60° down dip. Bounding faults have been identified trending NNW to the east and west of the mineralization, with the western fault appearing to cut the bleached arenite. Mineralogical examination shows the heavy rare earth elements (REE) are hosted by xenotime (YPO_4). The light REEs are also hosted by the florencite $(Nd,Ce,La)Al_3(PO_4)_2(OH)_6$ – goyazite $SrAl_3(PO_4)_2(OH)_5.H_2O$ series minerals, and are the only other REEs minerals recognised to date.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth* *hole length.*	No exploration results have been reported in this release, therefore there is no drill hole information to report. This section is not relevant to reporting Mineral Resources.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No exploration results have been reported in this release, therefore there is no drill hole intercepts to report. This section is not relevant to reporting Mineral Resources.
Relationship between mineralization widths and intercept lengths	*If the geometry of the mineralization with respect to the drill hole angle is known, its nature should be reported.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	No exploration results have been reported in this release, therefore no exploration diagrams have been produced.
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.

Criteria	JORC Code explanation	Commentary
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	No exploration results have been reported in this release. This section is not relevant to reporting Mineral Resources.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	The decision as to the necessity for further exploration at Area 5 is pending completion of mining technical studies on the currently available resource.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The decision as to the necessity for further exploration at Area 5 is pending completion of mining technical studies on the currently available resource.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	2011 drilling was logged onto paper and transferred to a digital form for loading into the drill hole database. In an effort to cut validation time and errors, in 2012 logging was completed directly onto a laptop in the field using a proprietary geological logging package with in-built validation. All data transfer is electronic, with no double handling of data. Sample numbers are unique. Logging and survey information was reviewed by the responsible geologist prior to final load into the database, then printed on paper and checked by two geologists to ensure no transcription or keying errors prior to the geological interpretation. The data is stored in a single database for the Browns Range project.
	Data validation procedures used.	The first validation starts at the field logging package during data entry. Data validations are routinely run prior to uploading of data to the database. Many check routines and rules are run to ensure referential integrity, such as overlapping intervals, repeat sample IDs, out of range density measurements, survey azimuth deviations >10 degrees, drill hole dip deviations >5 degrees, and missing samples have been developed firstly using acQuire (2011-12) and then in Datashed (2013). Both internal (NTU) and external (BMGS and AMC) validations are completed when data is loaded into spatial software for geological interpretation and resource estimation. This was routinely completed for the Browns Range dataset(s). AMC checks the data for overlapping intervals, missing samples, downhole survey deviations of ±10° in azimuth and ±5° in dip when loading into CAE Studio 3 (Datamine) software. Outlier assays are routinely checked via QAQC reports automated from the database, and followed up by the responsible geologist. This is done by checking standards, blanks, and duplicate data. QAQC data was routinely checked by specialised external consultants (Exploremin and BMGS)

Criteria	JORC Code explanation	Commentary
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	AMC Senior Geologist John Tyrrell visited the Browns Range project site in late 2012 and inspected the Area 5 deposit. The geology, sampling, sample preparation and transport, data collection and storage procedures were all observed. AMC used this knowledge to aid in the preparation of a maiden Mineral Resource Estimate for the Area 5 deposit, which was reported in October 2013. No further site visits were made for the 2014 Mineral Resource estimate.
	If no site visits have been undertaken indicate why this is the case.	
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The Browns Range REE mineralization is one of only a few hydrothermal xenotime mineralization styles documented globally. Detailed mapping, structural, alteration and mineralization studies have been completed by NTU geologists and contracted specialists between 2011 and 2013. These data and close spaced drilling, generally <25m, has led to a good understanding of mineralization controls. The REE mineralization is hosted by approximately east-west striking structures and veins, within a coarse sedimentary package on the western side of the regionally extensive Browns Range Dome. This is a feature seen within the Browns Range resources at Wolverine, Gambit, Gambit West and Area 5 localities. Breccia and quartz vein structures are mappable, and can be followed with confidence under transported cover using geophysical techniques, geochemistry and step-out drilling. There is associated sericite-hematite-silica alteration. The observations regarding the geological model are robust. The geological work is continually being refined. Currently, spectral, dating and fluid inclusion work are underway, coordinated by GSWA and the Helmholtz-Institute, Freiberg, Germany.
	Nature of the data used and of any assumptions made.	No assumptions are made.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>The effect, if any, of alternative interpretations on Mineral Resource estimation.</td><td>Other styles of REE mineralization were considered, however many do not have the same geological host rocks or mineralogy as Browns Range. Structurally hosted (i.e. gold) deposits, show similarity in style to the Browns Range mineralization. No alternative estimations were undertaken by AMC.</td></tr>
<tr><td></td><td>The use of geology in guiding and controlling Mineral Resource estimation.</td><td> Geological observation has underpinned the resource estimation and geological model. Rock type, alteration style, degree of brecciation, intensity of alteration, structural measurements and geochemistry (HRE ratios) were used to define the footwall and hanging wall boundaries. The geological model was developed as an iterative process of checking against logging, photography and relogging core/rock chips as needed during interpretation.
The extents of the geological model were constrained by drilling. Geological boundaries had only minimal extrapolation beyond drilling in line with the resource classifications of Indicated or Inferred Resource.
The domain coding for Area 5 is as follows:
<table>
<tr><td>Domain</td><td>Numeric Code</td></tr>
<tr><td>Mineralization Lens 1</td><td>1010</td></tr>
<tr><td>Mineralization Lens 2</td><td>1020</td></tr>
<tr><td>Mineralization Lens 3</td><td>1030</td></tr>
<tr><td>Mineralization Lens 4</td><td>1040</td></tr>
<tr><td>Mineralization Lens 5</td><td>1050</td></tr>
<tr><td>Mineralization Lens 6</td><td>1060</td></tr>
<tr><td>Mineralization Lens 7</td><td>1070</td></tr>
<tr><td>Mineralization Lens 8</td><td>1080</td></tr>
<tr><td>Mineralization Lens 9</td><td>1090</td></tr>
<tr><td>TREO Envelope</td><td>2000</td></tr>
<tr><td>Background</td><td>9000</td></tr>
</table></td></tr>
</table>

Criteria	JORC Code explanation	Commentary
	The factors affecting continuity both of grade and geology.	Key factors that are likely to affect the continuity of grade are: • the inherent variability of brecciated rocks. The breccia rock characteristics can change rapidly from centimetre to meter scale, • the nugget effect of veined xenotime, and • since the deposit is structurally hosted, then there is also inherent disruption of continuity by faulting at different scales.
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	Nine stacked lenses of mineralization have been modelled that extend from surface to a vertical depth of approximately 250m below surface. The stacked mineralization wireframes were modified to reflect the medium + heavy rare earth to total rare earth content (MHREO ratio) at a lower cut off value of 0.5. The lenses have an approximate strike length of 220 m and have a combined thickness of up to 130 m thick (excluding intercalated sub-grade intervals outside the modelled wireframes)
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	Grade estimation using Ordinary Kriging (OK) was completed for the Mineral Resource. CAE Studio 3 software was used to estimate total rare earth oxide content (TREO), thorium, uranium, yttrium, dysprosium, terbium, aluminium, iron, a value that is the sum of rare earth oxides other than yttrium oxide, dysprosium oxide and terbium oxide (SREO), and a suite of 12 other rare earth elements (REE), specifically La, Ce, Pr, Nd, Sm, Eu, Gd, Ho, Er, Tm, Yb, and Lu. The Dy, Tb and SREO were additions from the October 2013 estimate. Drill hole spacing is on average 25m east by 25m north. Drill hole sample data was flagged with domain codes unique to each mineralization domain, rock type, alteration type and oxidation state. Sample data was composited to dominant one metre downhole lengths, with the resulting sample length adjusted to retain residuals. The influence of extreme sample outliers was reduced by top cutting where required. The top-cut levels for each mineralization domain were determined using a combination of grade histograms, log probability plots, and decile and percentile analysis.

Criteria	JORC Code explanation	Commentary
		Area 5 Domain | TREO % Top Cut | Samples Cut | Metal Cut % 1000 Series | 5 | 4 | 5.76 2000 | - | - | - 9000 | - | - | - The nine lenses defined by the MHREO ratio value greater than 0.5 were estimated separately along with one mineralization envelope domain and one background domain were estimated. Where possible, for all domains, directional variograms were modelled using traditional variograms. The nine lenses were combined to form one mineralization domain to ensure sufficient data for variography. Where search directions were not achievable, an omindirectional variogram was modelled. Grade continuity was variable depending on the element and ranged between 30 and 100 m in the major direction. Estimation searches for the 12 REE elements were not estimated into the background.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	A Mineral Resource estimate for Area 5 was reported in October 2013. No previous mining activity has taken place in this area.
	The assumptions made regarding recovery of by-products.	No assumptions were made regarding recovery of by-products.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	Estimates were undertaken for U and Th as potential deleterious elements and Fe and Al for input into metallurgical studies.

Criteria	JORC Code explanation	Commentary
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	A block model was constructed using a parent block size of 15m in easting by 15m in northing by 10m in RL. It allowed for sub- celling down to 5m by 1m by 2.5m in easting, northing and RL respectively, to optimise domain volume resolution. The October 2013 estimate used a parent cell size of 25mE by 25mN by 5mRL, with a sub-cell of 1.56m by 1.56m by 1.25m. Grades were estimated into parent cells, with all sub-cells receiving the same grade as their parent cells. Discretisation was set to 2 by 2 by 2 for all domains. Search ellipse dimensions for each domain were based on the variography for each element. Three search passes were used for each domain. The first search generally allowed a minimum of 10 and a maximum of 25 samples. For lenses with fewer data a minimum number of 5 samples was permitted. For the second pass, search ranges were expanded by 2.5 times the first pass search dimensions. A minimum of 5 samples was permitted. A maximum of 25 samples was maintained. The third pass search ellipse was extended to 4 times the first pass search dimensions. A minimum of 2 and a maximum of 30 samples was applied. In general a maximum of 6 samples from a single drill hole was permitted. For most domains, the majority of blocks were estimated in the first and second passes. Non-estimated blocks (outside the range of the third pass) were assigned the median of the drill hole data and were assigned lower resource confidence classifications. Hard boundaries were applied between all estimation domains.
	Any assumptions behind modelling of selective mining units.	No selective mining units were assumed in this estimate. Model block sizes were determined primarily by drill hole spacing and statistical analysis of the effect of changing block sizes on the final estimates.
	Any assumptions about correlation between variables.	All elements within a domain used the same sample selection routine for block grade estimation. Correlation studies were performed for all variables in the input drill hole data. Generally, correlation is excellent (close to one) between the TREO values and the individual heavy and medium REEs. Uranium has a moderate to strong correlation with TREO and Th and Al have a moderate correlation (approximately 0.6).

Criteria	JORC Code explanation	Commentary
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation is used to define the mineralization domains. All of the mineralization domains are used as hard boundaries to select sample populations for variography and grade estimation. The topographic survey was used to trim the surface limit of the block model.
	Discussion of basis for using or not using grade cutting or capping.	Statistical analysis showed that the domains included outlier values that required top cut values to be applied. Top cut values are chosen based on the statistical parameters for that element in each domain and a visual check of the location of any possible outlier values. Usually the log probability plots and histogram plots are used to determine the final value used. The top cuts are generally in the 95th to 99th percentile of the data and remove less than 5% metal. In some cases, a higher percentage of metal was cut, due to a very long tail of high grade values, or an extreme high value in a relatively poorly sampled domain. Top cut values applied are listed below:
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the block model carried out a volumetric comparison of the mineralization wireframes to the block model volumes. The estimates were validated by visual comparison of estimated grades against composite grades and by comparing block model grades to the input data using swathe plots. The plots compared block model and composite grades for the key estimated variables by easting and elevation comparison for all of the four deposits. As no mining for REE has taken place at Browns Range to date, there is no reconciliation data available.

Top cut values:

Domain	TREO %	Y ppm	Dy ppm	U ppm	Th ppm	Tb ppm	Nd ppm	Fe %	Al %	SREO %-
1010	-	10000	1300	200	-	200	1500			2.6
1020	5	10000	1300	200	-	200	1500			-
1030	-	10000	1300	200	-	200	1500			-
1040	-	10000	1300	-	-	200	1500			-
1050	-	-	-	-	-	-	-			-
1060	5	10000	1300	200	-	200	1500			2.6
2000	-	4500	720	-	-	125	-			-
9000	-	2000	240	250	-	37	-			-

Criteria	JORC Code explanation	Commentary
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	The density was measured on air dried core in the field, with one in 20 samples checked externally by Genalysis laboratory Perth. Therefore, the tonnages are estimated on a dry basis. The moisture content in mineralization is considered low.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	A nominal grade cut off at 0.15% TREO has been used to report the Mineral Resource at the Area 5 deposit. Consideration of mining, metallurgical and pricing assumptions, while not rigorous, suggest that material exceeding 0.15%TREO has a reasonable prospect for eventual economic extraction.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	To date, no technical studies have been completed (to a reportable standard) on suitable mining methods for the Area 5 deposit at the Browns Range Project. Given the grade and near surface location, it is assumed that the Area5 deposit will be mineable using generic open cut methods.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Preliminary beneficiation test work on RC drill samples from the Wolverine and Gambit deposits and the Area 5 North prospect at 0.25%, 0.5% and 1.0% TREO head grades was completed at NAGROM. This test work, which included magnetic susceptibility tests, rougher wet high gradient magnetic separation (WHGMS) and rougher flotation of WHGMS magnetic concentrate, returned similar recoveries for rougher magnetics and rougher flotation across the various head grades and Mineralized sample sources. The beneficiation and hydrometallurgical flow sheets are currently being optimised on Mineralized material from the Wolverine deposit as it is the largest Resource for the Browns Range Project. Samples from the Gambit deposit will be tested against these optimised flow sheets to determine their metallurgical performance. However, given the geological and particularly the mineralogical similarities (i.e. the dominance of xenotime mineralization) between the Area 5 and Wolverine deposits, it is reasonable to expect that Area 5 mineralization will have similar results to Wolverine mineralization from future metallurgical test work.

Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	The Browns Range Project (the Project) is currently under assessment by the West Australian Environmental protection Authority (EPA). The EPA has set the level of assessment for the Project at Assessment on Proponent Information (API) – Category A. Baseline environmental surveys and studies over the Project area are largely complete and include the following: • Flora and vegetation • Terrestrial fauna • Subterranean fauna • Waste rock and tails – geochemical and physical characterisation • Atmospheric emissions and noise • Hydrogeology and hydrology • Soils • Radiation The environmental impact assessment to inform the API is currently underway.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Bulk density has been estimated from density measurements carried out on diamond core samples of variable length using the Archimedes method of dry weight versus weight in water, and downhole LAS survey data (completed by ABIMs). Field density measurements were completed as a minimum of one every two meters. This comprehensive dataset was then used to calibrate the downhole measurements (recorded every 10cm). These datasets were evaluated by BMGS and a correction factor for the downhole measurements was applied. The number of density measurements for each deposit varies. For Area 5 there were 230 core and 38,060 LAS samples.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The water immersion method, covering void spaces with clear tape, is deemed appropriate to adequately account for porosity. Porous samples were checked by an external laboratory, and were consistent with field measurements.

Criteria	JORC Code explanation	Commentary
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The bulk density values applied to the Area 5 deposit are as follows: Area 5: Background Oxide 2.27 t/m^3, Background Fresh 2.40 t/m^3, Mineralized Envelope Oxide 2.36 t/m^3, Mineralized Envelope Fresh 2.45 t/m^3, High MHREO ratio Oxide 2.36 t/m^3, High MHREO ratio Fresh 2.46 t/m^3
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	Classification for Area 5 is based upon continuity of geology, mineralization and grade, using drill hole and density data spacing and quality, variography and estimation statistics (number of samples used, estimation pass, and slope of regression).
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	At Browns Range, the cores of the modelled deposits are generally well drilled with a nominal 25 m x 25 m drill hole spacing in easting and northing directions. In general, the estimates have been classified as Indicated Resource where this spacing has been achieved or bettered and the confidence in the estimate is high. The deposits are generally classified as Inferred Resource where the spacing increases to greater than 25 m x 25 m, or in areas where there is lower confidence in the estimate.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	AMC believes that the classification appropriately reflects its confidence in and the quality of the grade estimate.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource estimate has not been audited.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The Mineral Resource classification applied to each deposit implies a confidence level and level of accuracy in the estimates.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	These levels of confidence and accuracy relate to the global estimates of grade and tonnes for the deposit.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	These ranges relate to the global estimates of grade and tonnes for the deposit.