NORTHERN MINERALS

QUARTERLY ACTIVITIES REPORT

For The Period Ending 31 March 2024

HIGHLIGHTS

- Continued drilling of Wolverine Mineral Resource Definition Drilling Program (Program)
- Exceptionally high-grade rare earth assays reported over wide mineralised intervals at Wolverine[1]
    - Initial assays from the ongoing Program confirmed consistent wide, high-grade mineralised intervals across strike and down plunge, with mineralisation remaining open at depth.[2]
    - This Program, targeting the Inferred Mineral Resource component of Wolverine, is designed to increase geological confidence with the intention of improving the classification of Inferred Mineral Resource[3] in subsequent Mineral Resource estimates.
    - Significantly, structural data analysis has informed the development of a new deformation intensity spatial model for the first time.
    - This new structural association model, through successful application, will inform the upcoming resource estimate, and assist with future exploration targeting across prospective tenements in WA and NT.
- Draft Definitive Feasibility Study (DFS) report completed for the Browns Range Heavy Rare Earth Project (Project) (awaiting completion of the Program and subsequent update of Mineral Resource estimate and ensuing work programs before publishing final DFS).
- SRK Consulting (Australasia) Pty Ltd progressed their review of DFS and associated project documentation as the Independent Technical Expert (ITE) for the benefit of prospective lenders.

Northern Minerals Limited (**ASX: NTU**) ("**Northern Minerals**" or the "**Company**"), is pleased to provide an overview of the Company's activities for the period ending 31 March 2024 ("**Quarter**", "**Reporting Period**") to accompany the Appendix 5B.

Commenting on the update, Northern Minerals Executive Chair Nicholas Curtis said:

"The March quarter saw significant progress in advancing the development of the Browns Range Heavy Rare Earth Project, set to supply critical rare earth elements essential for high-speed electrification, electric vehicles, and renewable energy technologies.

The recent results from the drilling program at Wolverine are extremely encouraging, in that they highlighted numerous high grade mineralised intervals which provides confidence in the ability to improve the classification of Inferred Resource to Indicated as well contributing to a better

[1] ASX Release 22 April 2024: Exceptionally high-grade Rare-Earth assays returned over wide mineralised intervals at Wolverine
[2] ASX Release 22 April 2024: Exceptionally high-grade Rare-Earth assays returned over wide mineralised intervals at Wolverine
[3] ASX Release: 10 Oct 2022: Updated Wolverine Mineral Resource estimate at Browns Range

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understanding of the structural controls of the deposit which will be very useful in planning further exploration programs.

In addition, during the quarter, the Company completed drafting of the final chapters of the DFS (including the critical mining chapter) and have provided these to the ITE and Iluka for their review. This was a significant milestone for the Company with the final DFS now just awaiting input from the results of the current resource definition drilling program, a subsequent updated Mineral Resource estimate (which will feed into updated mining and production schedules) and supplementary additional flotation test work.

The Company will continue its debt and equity discussions and diligence processes whilst the final DFS is being completed."

RESOURCE DEFINITION DRILLING

During the quarter, the Company continued the Wolverine Mineral Resource definition drilling program (Program) that commenced in November 2023. The Program aims to infill the drill spacing to a nominal 25m grid, thereby improving geological confidence in future Mineral Resource estimate updates.

The Program targets the deeper Inferred Mineral Resource, aspiring to upgrade the targeted area's geological confidence and convert to an Indicated Resource category. The Program is targeting ~1.99Mt @ 1.25% TREO for 24,900t contained TREO. If the Program is successful in converting the Inferred Mineral Resource (or part thereof) then this may allow the Indicated Resource to convert to Probable Reserves through the application of appropriate modifying factors defined under the JORC code for the reporting of Ore Reserve estimates.

The Program's initial design planned to drill 66 pierce points (at a nominal 25m grid spacing) for a total of approximately 18,000 metres. Adjustments to the design based on observations by the geological team has resulted in a revised program of 44 intersections (at a nominal 25m grid spacing), for a total of approximately 17,000m. Importantly, 6 drill intersections have been added below the previous maximum planned depth, albeit remaining within the Inferred Mineral Resource target. The program completion remains Q2 2024.

At the time of reporting, 37 drill holes were completed out of a total planned of 44, with 2 holes in progress and 5 remaining. Assays have been received for 26 intersections, with assays for 11 intersections pending.

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Figure 1: Browns Range HRE Project: Wolverine Mineral Resource Definition Drilling Program 2024

Resource Definition Drilling Results

Geochemical assays from the initial 26 intersections received have confirmed consistent wide and high-grade mineralised intervals across strike and down plunge, with mineralisation remaining open at depth at Wolverine. The drilling intersections, at a 25m nominal grid spacing, provide valuable information on the short-range variability of mineralisation, both in the focal area of mineralising fluids and towards the periphery of the economically defined mineralisation. This data is essential to improve resource estimation and provide a robust platform for further optimising mining studies.

- New diamond intersection assay results at Wolverine include[4]:
  - BRWD0079W2: **15.6m @ 9.99%** TREO, from 428.20m
  - BRWD0080W1: **36.0m @ 3.39%** TREO, from 396.00m, and
    17.0m @ 0.46% TREO, from 435.00m
  - BRWD0077W1A: **18.4m @ 2.40%** TREO, from 351.41m and
    12.0m @ 10.17% TREO, from 410.00m
  - BRWD0079W1: **15.1m @ 5.92%** TREO, from 410.58m, and
    6.8m @ 1.22% TREO, from 454.23m
  - BRWD0059W1: **20.1m @ 4.28%** TREO, from 351.90m
  - BRWD0080: **12.3m @ 6.36%** TREO, from 393.75m
  - BRWD0077: **21.9m @ 3.55%** TREO, from 399.44m, and
    17.0m @ 0.91% TREO, from 426.00m
  - BRWD0077W3: **6.2m @ 1.60%** TREO, from 403.00m, and
    40.7m @ 1.81% TREO, from 456.00m, and

[4] ASX Announcement 22 April 2024: Wolverine Resource Definition Drilling

		13.8m @ 1.56% TREO, from 527.00m
o	BRWD0080W3:	**19.3m @ 3.25%** TREO, from 448.73m, and
		36.3m @ 1.25% TREO, from 473.00
o	BRWD0080W2:	**43.3m @ 1.41%** TREO, from 429.68m
o	BRWD0061:	**25.49m @ 2.32%** TREO, from 351.41m
o	BRWD0070W1:	**18.87m @ 2.97%** TREO, from 329.27m.
		8.79m @ 4.47% TREO, from 353.21m including
		1.58m @ 22.91%, TREO, from 353.21m, and
		16.00m @ 0.59% TREO, from 382.00m, and
		17.00m @ 1.10% TREO, from 423.00m

Significant intercepts of the ICP-MS assay results are provided in Appendix 1.

In addition to the geochemical assay results themselves, the Program has enabled additional structural data analysis to be undertaken which has informed the development of a new deformation intensity spatial model for the first time. This has been developed through reviewing the previous and current geological logging captured over the development of the deposit since discovery. While additional refinements to this model are in progress, the initial results relate the intensity of structural deformation to controlling the path of mineralising fluids, and by association to grade. Data processed to date indicates that implementation of the structural domaining in the upcoming Mineral Resource estimate will provide improved control on grade interpolation and an improved Mineral Resource estimate.

In the regional exploration context, this new structural association model, will improve exploration targeting across the Browns Range Dome prospective tenements in WA and NT.

Figure 2 provides a long section of the drillhole collar locations at the Wolverine deposit and shows pierce points where assays have been received and where assays are pending, and target points yet to be drilled.

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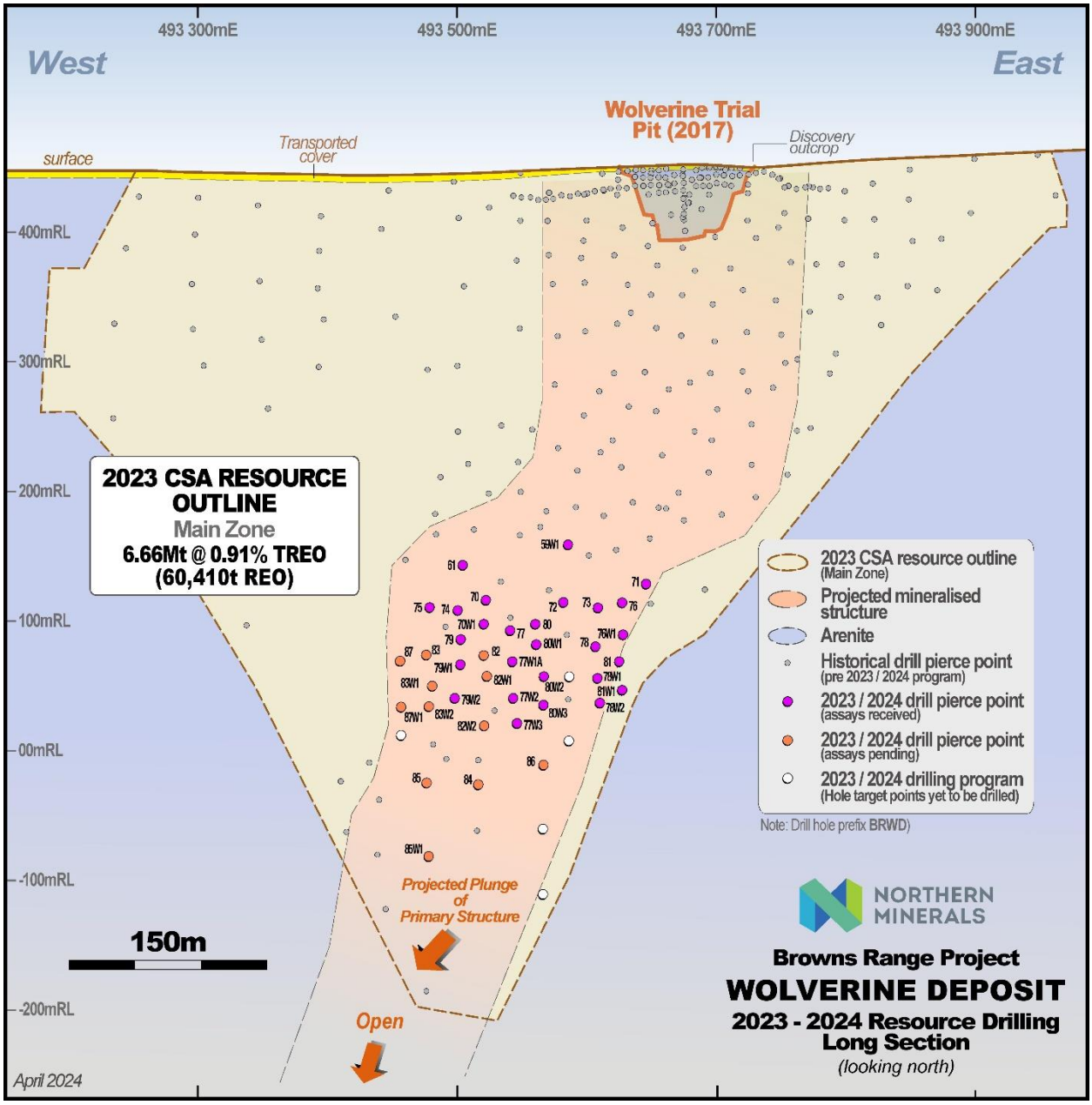

Figure 2: Drill Program Intercept Pierce Points (Long Section Looking North)

Figure 3 shows significant intercepts of BRWD0077 and daughter holes BRWD0077W1, BRWD0077W2 and BRWD0077W3.

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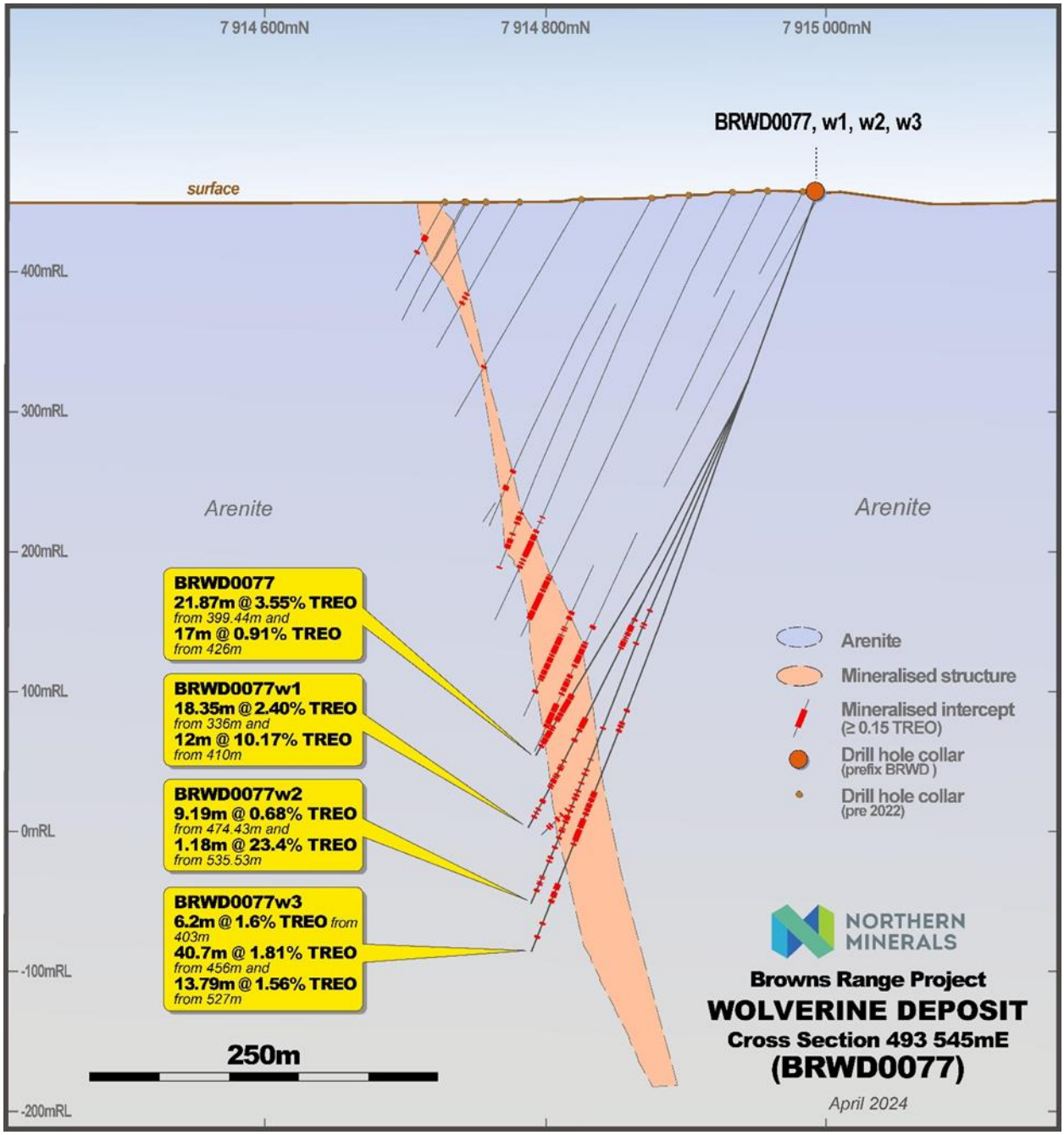

Figure 3: Significant Intercepts of BRWD0077, BRWD0077W1, BRWD0077W2 & BRWD0077W3 (Cross Section 493545 Easting - Looking West)

Expenditure on exploration and evaluation activities during the Quarter was approximately $3.3 million.

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Definitive Feasibility Study

During the Quarter, the Company completed a draft of its Definitive Feasibility Study (DFS) report for the development of its 100% owned Browns Range Heavy Rare Earth Project (Project). The DFS is in draft form as the Company resolved in Q4 2023 to defer releasing the final DFS until such time as the resource definition drilling program currently underway has been completed, the Wolverine Mineral Resource estimate (MRe) has been updated and the ensuing mining design and scheduling together with updated costing has been completed. The Company expects to be in a position to release a summary of the final DFS in Q4 2024 and is targeting FID (subject to being able to raise project debt and equity) in Q1 2025. Please refer to Appendix 2 for highlights of the Project to be included in the DFS.

Value Engineering

Several value engineering items identified in the previous Quarter that had potential to reduce the capital cost of the Project were assessed and included in the draft DFS. The items included optimising the scope in some areas, changing to build-own-operate-transfer arrangement for the laboratory, and optimising timing or sequencing of some infrastructure items. The capital cost of the Project included in the draft DFS is consistent with previous advice and has been estimated at $617M (including $69M contingency).

Independent Technical Expert

During the Quarter, SRK Consulting (Australasia) Pty Ltd (SRK), continued their review of completed chapters of the draft DFS as Independent Technical Engineer (ITE) for the benefit of prospective lenders to the Project. By the end of the Quarter, all the chapters prepared for the draft DFS were provided to SRK who will be required to produce a Technical Due Diligence Report for the Project, including on environmental and social aspects.

SRK are an independently owned company with a global network of multidisciplinary specialists experienced in undertaking due diligence reviews of mining projects world-wide, typically for international banks, mining companies, and financial institutions.

Future DFS Work Programs

The work programs planned for completion of the final DFS (over the next 6 months) include:

- Complete the resource definition drilling program currently underway.
- Update the Wolverine Mineral Resource estimate.
- Undertake mine design and scheduling, and cave flow modelling based on the updated Wolverine MRe.
- Undertake magnetic separation and flotation testwork on additional samples from Wolverine at depth.
- Update the pricing of key contracts.

Expenditure on feasibility study activities during the Quarter was approximately $2.2 million with an additional $1.0 million in site costs.

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ENVIRONMENTAL, SOCIAL AND GOVERNANCE

Road access to the Project site has been limited during the Quarter due to consistent significantly higher average rainfall between January and March this year. There has been no disruption to critical work programs including the resource definition drilling program on site as supplies have been delivered by air.

Figure 4: Fuel Delivery by Helicopter

Northern Minerals completed an aerial assessment of the Browns Range Mine Access Road repair requirements, with repairs to commence as soon as public roads open. The Company will take these learnings into construction planning.

Figure 5: Road Repair Program Planning by Aerial Visual Inspection

Northern Minerals completed and submitted annual regulatory compliance reports during the quarter. As part of Company's environmental obligations, on-ground fauna inspections are required prior to any ground disturbing works.

Figure 6: Thorny Devil (Moloch horridus) Observed During Fauna Inspections

The traditional owners of Browns Range, the Jaru People, were involved in heritage monitoring to support a water exploration drilling program for the business.

Figure 7: Heritage Monitors Participating in Preparation for Drilling Program

Northern Minerals is committed to the obligations in its approved Browns Range Australian Industry Participation Plan and has been working with both the Broome Chamber of Commerce and Industry (BCCI) and the East Kimberley Chamber of Commerce and Industry (EKCCI) during the quarter to increase awareness of the Company in the region and build Northern Minerals local business register.

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PROJECT FUNDING

The Company continued to work with SRK in its role as Independent Technical Engineer (ITE) for the benefit of prospective lenders to the Project. The Company has now provided all Project Information to SRK for their review, and which will ultimately form the basis of the Independent Technical Engineers Report on the Project.

The Company is undertaking a similar process with its strategic partner Iluka Resources whereby it is providing Project information to assist Iluka in its due diligence process as part of the funding arrangements announced to the ASX on 26 October 2022.

The Company continued to work during the Quarter with Northern Australian Infrastructure Facility (NAIF) and Export Finance Australia (EFA) in progressing debt funding discussions.

The development of the Project will ultimately be dependent on the Company being able to raise the debt and equity required to fund the construction and commissioning of the Project through to full scale operations.

CORPORATE

2023 Annual General Meeting and Extraordinary General Meeting (EGM)

During the Quarter, the Company did not receive any indication that the Foreign Investment Review Board had concluded or otherwise ceased its investigations into the matters referred to in the Company's announcement to the ASX on 30 October 2023 **(30 October Announcement).** The Company stresses that no views have yet been formed on whether any of the matters referred to in the 30 October Announcement do, in fact, give rise to any breaches of the prohibition order made by the Treasurer of the Commonwealth of Australia against Yuxiao Fund Pte Ltd (**Yuxiao Fund**) on 15 February 2023 or of any Australian law.

Given these circumstances, during the Quarter the Company applied for twice, and ASIC granted, relief to the Company pursuant to section 250P of the Corporations Act 2001 (Cth) to further extend the period within which it must hold its 2023 AGM **(Further Extension's)**[5]:

- **First Extension**: the Company was required to hold the 2023 AGM by no later than 6 May 2024;
- **Second Extension**: the Company was required to hold the 2023 AGM by no later than 7 June 2024

In addition, during the Quarter the Company referred to its announcement dated 12 December 2023 in which it was advised that the Supreme Court of New South Wales (Court) had made orders (Orders) extending the period of time by which the Company must call and hold the extraordinary general meeting (**EGM**) requisitioned by Yuxiao Fund. Having regard to those Orders and the Further Extensions, the Company was required to hold the EGM by no later than 6 May 2024.

Subsequent to the end of the reporting period, the Company announced on 10 April 2024 the proposed date of the 2023 AGM, the closing date for director nominations and an update on the EGM.[6]

The Company intends to hold the AGM and the EGM on 6 June 2024. As at the date of this report, Notices of Meetings and Explanatory Memorandums are being prepared for these meetings and will be circulated to shareholders within the required timeframes.

Payments to Related Parties of the Entity and Their Associates

Payments made during the Quarter and included in 6.1 and 6.2 of Appendix 5B – Mining exploration entity quarterly cash flow report are detailed below:

Aggregate amount of payments to related parties and their associates included in cash flows from operating activities total $0.408 million.

This comprises of payments to Executive and Non-executive directors' remuneration from services. There were no payments to related parties and their associates included in cash flows from investing activities.

Authorised by The Board of Directors of Northern Minerals Limited

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[5] Refer ASX Announcements dated:
- 12 February 2024: Further extension of time to hold the 2023 AGM and EGM
- 21 March 2024: Further extension of time to hold the 2023 AGM

[6] Refer ASX Announcement dated 10 April 2024 date of 2023 AGM, closing date for director nominations and update on EGM

FUTURE PERFORMANCE AND FORWARD-LOOKING STATEMENTS

This Report contains certain "forward-looking statements". The words "expect", "anticipate", "estimate", "intend", "believe", "guidance", "should", "could", "may", "will", "predict", "plan" and other similar expressions are intended to identify forward-looking statements. Any indications of, and guidance on, future earnings and financial position and performance are also forward-looking statements. Forward-looking statements, opinions and estimates provided in this Report are based on assumptions and contingencies that are subject to change without notice and involve known and unknown risks and uncertainties and other factors that are beyond the control of Northern Minerals, its directors and management including any further impacts of COVID-19 on Northern Minerals' continued trading and operations. This includes statements about market and industry trends, which are based on interpretations of current market conditions.

You are strongly cautioned not to place undue reliance on forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption caused by external factors.

Forward-looking statements are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance. Actual results, performance or achievements may differ materially from those expressed or implied in such statements and any projections and assumptions on which these statements are based. These statements may assume the success of Northern Minerals' business strategies, whether the success is realised in the period for which the forward-looking statement may have been prepared or otherwise. No representation or warranty, express or implied, is made as to the accuracy, likelihood of achievement or reasonableness of any forecasts, prospects, returns or statements in relation to future matters contained in this Report. The forward-looking statements are based on information available to Northern Minerals as at the date of this Report. Except as required by law or regulation (including the ASX Listing Rules), none of Northern Minerals, its representatives or advisers undertakes any obligation to provide any additional or updated information whether as a result of a change in expectations or assumptions, new information, future events or results or otherwise.

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About Northern Minerals

Northern Minerals Limited (ASX: NTU) (Northern Minerals or the Company) owns 100% of the Browns Range Heavy Rare Earth (HRE) Project in northern Western Australia, tenements uniquely rich in the heavy rare earth elements dysprosium (Dy) and terbium (Tb).

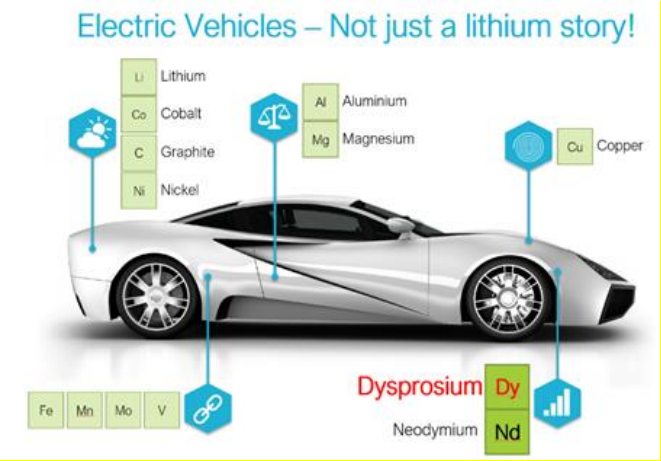
Dysprosium and terbium are critical in the production of dysprosium neodymium iron-boron (DyNdFeB) magnets used in clean energy, military, and high technology solutions. Dysprosium and terbium are prized because their unique properties improve the durability of magnets by increasing their resistance to demagnetisation.

The Project's flagship deposit is Wolverine, which is thought to be the highest-grade dysprosium and terbium orebody in Australia. The Company is preparing to bring Wolverine into production with the objective of providing a reliable alternative source of dysprosium and terbium to production sourced from China. Northern Minerals is one of only a few companies outside of China to have produced these heavy rare earth elements.

To further its strategic objective, Northern Minerals is undertaking a Definitive Feasibility Study for a commercial scale mining and process plant at Browns Range to process Wolverine ore.

Apart from Wolverine, Northern Minerals and has several additional deposits and prospects within the Browns Range Project that contain dysprosium and other heavy rare earth elements, hosted in xenotime mineralisation.

For more information: *northernminerals.com.au*.



TENEMENT REPORT

Details of mining tenements as at the quarter ended 31 March 2024 (ASX Listing Rule 5.3.3).

.Project	Location	Tenement ID	State	Status	Holder Application	Interest
Browns Range WA	Browns Range	E80/4479	WA	Granted	Northern Minerals	100%
	Browns Range	E80/4782	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5040	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5041	WA	Granted	Northern Minerals	100%
	Browns Range	M80/627	WA	Granted	Northern Minerals	100%
	Browns Range	M80/649	WA	Application	Northern Minerals	100%
	Browns Range	L80/76	WA	Granted	Northern Minerals	100%
	Browns Range	L80/77	WA	Granted	Northern Minerals	100%
	Browns Range	L80/78	WA	Granted	Northern Minerals	100%
	Browns Range	L80/79	WA	Granted	Northern Minerals	100%
	Browns Range	L80/107	WA	Application	Northern Minerals	100%
	Browns Range	L80/0109	WA	Application	Northern Minerals	100%
	Browns Range	L80/0110	WA	Application	Northern Minerals	100%
	Browns Range	L80/0111	WA	Application	Northern Minerals	100%
	Browns Range	L80/0113	WA	Application	Northern Minerals	100%
	Browns Range	E80/5260	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5261	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5367	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5368	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5369	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5370	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5418	WA	Granted	Northern Minerals	100%
	Browns Range	EL24193	NT	Granted	Northern Minerals	100%

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.Project	Location	Tenement ID	State	Status	Holder Application	Interest
Browns Range NT	Browns Range	EL24174	NT	Granted	Northern Star Resources	REE rights only
	Browns Range	EL26270	NT	Granted	Northern Minerals	100%
	Browns Range	EL26286	NT	Granted	Northern Minerals	100%
	Browns Range	ELA32161	NT	Application	Northern Minerals	100%
	Browns Range	ELA32162	NT	Application	Northern Minerals	100%
John Galt	John Galt	E80/4298	WA	Granted	Northern Minerals	100%
	John Galt	E80/4967	WA	Granted	Northern Minerals	100%
	John Galt	E80/5070	WA	Granted	Northern Minerals	100%
	John Galt	E80/5230	WA	Granted	Northern Minerals	100%
Boulder Ridge	Boulder Ridge	EL29594	NT	Granted	Northern Minerals	100%
	Boulder Ridge	ELA24849	NT	Application	Northern Minerals	100% (excluding gold rights)
	Boulder Ridge	ELA24935	NT	Application	Northern Minerals	100% (excluding gold rights)
	Boulder Ridge	EL24177	NT	Granted	Northern Minerals	100%
	Boulder Ridge	EL25171	NT	Granted	Northern Star Resources	REE rights only
	Boulder Ridge	ELA28868	NT	Application	Northern Star Resources	REE rights only
	Boulder Ridge	EL27590	NT	Granted	Northern Star Resources	REE rights only
Gardiner-Tanami NT	Tanami	EL23932	NT	Granted	Northern Star Resources	REE rights only
	Tanami	EL25009	NT	Granted	Northern Star Resources	REE rights only
	Ware Range	EL26498	NT	Granted	Northern Minerals	100%
	Ware Range	EL26541	NT	Granted	Northern Minerals	100%
	Pargee	EL27367	NT	Granted	Northern Minerals	100%
	Tanami	EL29592	NT	Granted	Northern Star Resources	REE rights only

.Project	Location	Tenement ID	State	Status	Holder Application	Interest
	Tanami	EL29593	NT	Granted	Northern Star Resources	REE rights only
	Tanami	EL29595	NT	Granted	Northern Minerals	100%
	Tanami	ELA29619	NT	Application	Northern Star Resources	REE rights only
	Tanami	EL26635	NT	Granted	Northern Star Resources	REE rights only
	Tanami	ELA32163	NT	Application	Northern Star Resources	REE rights only
	Tanami	ELA32164	NT	Application	Northern Star Resources	REE rights only
Rabbit Flats	Rabbit Flats	ELA25159	NT	Application	Northern Star Resources	REE rights only
	Rabbit Flats	ELA25160	NT	Application	Northern Star Resources	REE rights only

The Company neither had granted nor relinquished any mining tenements in the Quarter. No farm-in or farm-out agreements were entered into during the Quarter.

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Appendix 1

Significant intercepts of the ICP-MS assay results from the Wolverine Mineral Resource Definition Drilling Program[7] [8]

HoleID	From	To	Interval	TREO (%)	Dy2O3 (ppm)	Tb4O7 (ppm)	Y2O3 (ppm)
BRWD0061	351.41	376.9	25.49	2.32	1965	304	13853
BRWD0070	338	339	1	1.90	1677	268	11345
BRWD0070	355.06	365	9.94	1.40	1272	189	8649
BRWD0070	367.55	370.59	3.04	0.30	240	35	1549
BRWD0070	375.05	379.62	4.57	0.34	263	42	1804
BRWD0070	385.94	386.98	1.04	2.18	1774	267	12563
BRWD0070	388.51	396.66	8.15	1.53	1296	199	8899
BRWD0070	399.09	399.87	0.78	1.60	1153	188	7910
BRWD0071	310	311	1	1.54	1442	191	9880
BRWD0071	375.66	385.57	9.91	0.66	522	77	3501
BRWD0071	391	394	3	3.80	3637	471	24036
BRWD0070W1	329.27	348.14	18.87	2.97	2819	413	18756
BRWD0070W1	353.21	362	8.79	4.47	4004	505	27220
incl	*353.21*	*354.79*	*1.58*	*22.91*	*21371*	*2696*	*145285*
BRWD0070W1	371	379	8	0.24	180	27	1191
BRWD0070W1	382	398	16	0.59	473	72	3197
BRWD0070W1	401	402	1	0.85	727	111	4897
BRWD0070W1	416	419.95	3.95	0.38	309	47	2081
BRWD0070W1	423	440	17	1.10	970		6563
BRWD0072	348.3	349.1	0.8	0.94	475	66	3267
BRWD0072	352	356	4	2.12	1831	234	13018
BRWD0072	369	369.8	0.8	0.88	664	98	4574
BRWD0072	372.4	396	23.6	0.98	804	125	5565
BRWD0059W1	351.9	372	20.1	4.28	3907	576	27180
BRWD0073	317	318	1	0.84	695	93.9	4792
BRWD0073	353.8	355	1.2	1.02	557.45	81.4	3714
BRWD0073	398	402.5	4.5	0.81	574.33	83.27	3733.74
BRWD0074	337.67	339.13	1.46	0.66	611.75	92.04	4032.04
BRWD0074	360.25	362.26	2.01	0.39	178.18	27.31	1199.55
BRWD0074	366	374	8	1.3	1085.07	163.45	7266.17
BRWD0074	396.23	406.95	10.72	0.42	331.47	51.31	2250.59
BRWD0075	351.67	352.87	1.2	0.37	127.8	19	833
BRWD0075	356.32	359.94	3.62	0.17	81.57	12.54	533.25
BRWD0075	373.5	379.13	5.63	0.27	225.96	31.46	1529.87
BRWD0075	389.83	398.42	8.59	0.96	849.27	114.51	5731.5
BRWD0076	317	319.68	2.68	0.21	197.27	25.05	1326.13
BRWD0076	382.96	385	2.04	0.23	157.9	22.04	1081.39
BRWD0076	438	440	2	0.18	101.55	14.25	678.5
BRWD0076	446.7	449	2.3	0.25	124.4	19.97	811.52
BRWD0076W1	370	373	3	0.77	676.07	93.17	4416.00
BRWD0076W1	425	428	3	0.20	141.93	20.07	914.00
BRWD0077	364	368	4	0.21	137.94	18.93	948

[7] Significant intercepts (>=2m @ 0.15% TREO or equivalent, with a maximum of 2m continuous internal dilution. No top-cut has been applied by NTU; all widths are downhole lengths.)

[8] (TREO – Total Rare Earth Oxides = Sum of La2O3, CeO2, Pr6O11, Nd2O3, Sm2O3, Eu2O3, Gd2O3, Tb4O7, Dy2O3, Ho2O3, Er2O3, Tm2O3, Yb2O3, Lu2O3, Y2O3)

BRWD0077	399.44	421.31	21.87	3.55	3160.6	467.63	21985.53
BRWD0077	426	443	17	0.91	786.17	107.45	5419.71
BRWD0077W1A	331	332	1	0.53	412.7	60.7	2927
BRWD0077W1A	336	354.35	18.35	2.4	2145.33	279.52	14362.26
BRWD0077W1A	410	422	12	10.17	8864.79	1179.44	64564.74
BRWD0077W1A	427	428.78	1.78	0.3	225.4	37.88	1671.71
BRWD0077W1A	448	451	3	0.64	509.14	79.55	3595.73
BRWD0077W1A	455	465	10	0.27	216.07	30.85	1486.58
BRWD0077W1A	476	479	3	0.72	548.3	78.1	3704.33
BRWD0077W2	330.8	334.4	3.6	0.75	604.94	90.03	3881.35
BRWD0077W2	453	454	1	0.45	309.8	53.2	2098
BRWD0077W2	459	460	1	0.33	244.6	37.8	1740
BRWD0077W2	462.17	466	3.83	0.39	283.1	44.44	1951.14
BRWD0077W2	474.43	483.62	9.19	0.68	549.45	78.48	3714.98
BRWD0077W2	488.17	491	2.83	0.23	164.89	21.31	1106.93
BRWD0077W2	510.16	514.06	3.9	0.96	879.28	105.28	5736.08
BRWD0077W2	525.46	526.78	1.32	1.33	1254.94	177.96	8095.1
BRWD0077W2	529.6	531.58	1.98	0.69	605.51	76.14	3943.05
BRWD0077W2	535.53	536.71	1.18	23.4	23538.03	3111.04	149864.1
BRWD0077W3	403	409.2	6.2	1.6	1474.06	200.65	9434.77
BRWD0077W3	456	496.7	40.7	1.81	1525.64	227.13	10387
BRWD0077W3	527	540.79	13.79	1.56	1283.9	173.88	9088.42
BRWD0078	289.25	290.25	1	0.46	452.3	58.9	2845
BRWD0078	434	441	7	1.37	1165.23	171.99	7763.71
BRWD0078	448	451	3	2.42	2229.57	290.1	14779.33
BRWD0078	457	459	2	0.26	195.9	23.8	1331.5
BRWD0078W1	411.87	413.19	1.32	2.1	1414.25	225.55	9569.96
BRWD0078W1	432	437	5	0.35	303.51	42.88	1948
BRWD0078W1	440.08	450.2	10.12	2.81	2702.93	355.24	17460.02
BRWD0078W1	452.91	461.62	8.71	0.42	273.45	39.24	1959.24
BRWD0078W2	437.8	440.04	2.24	2.44	2072.3	274.69	14180.03
BRWD0078W2	444.05	478.15	34.1	1.01	908.61	112.6	6210.81
BRWD0079	398.42	415	16.58	0.3	219.5	32.56	1429.84
BRWD0079	420	428	8	0.14	112.99	16.99	716.13
BRWD0079	441.72	443.44	1.72	2.33	1950.76	282.14	12966.13
BRWD0079W1	223	224	1	0.59	204.2	26.9	1341
BRWD0079W1	410.58	425.69	15.11	5.92	5619.84	808.56	37211.57
BRWD0079W1	441.82	445.25	3.43	0.41	328.07	50.63	2176.01
BRWD0079W1	448.16	451.73	3.57	0.28	256.53	35.95	1688.64
BRWD0079W1	454.23	461	6.77	1.22	1167.79	161.91	7671.65
BRWD0079W2	233.75	236.06	2.31	0.32	48.93	7.32	286.45
BRWD0079W2	428.2	443.8	15.6	9.99	8988.69	1282.53	59772.33
BRWD0079W2	446	447	1	0.35	285.2	42.5	1977
BRWD0079W2	467	472	5	0.45	375.92	56.34	2500.8

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BRWD0079W2	479	484.92	5.92	0.39	330.68	46.16	2176.52
BRWD0079W2	491.66	493.3	1.64	1.62	1429.87	182.29	9906.52
BRWD0080	393.75	406	12.25	6.36	5800.1	848.93	39380.14
BRWD0080	413	418	5	1.14	965.76	144.8	6455.6
BRWD0080	421	432	11	0.4	293.02	43.1	1969.05
BRWD0080W1	370	371	1	0.65	636.3	85.5	4258
BRWD0080W1	381	382.11	1.11	0.19	180.6	23.2	1171
BRWD0080W1	388	389.12	1.12	0.22	198	25.3	1367
BRWD0080W1	392	393	1	0.44	419.7	55.6	2794
BRWD0080W1	396	432	36	3.39	2991.38	402.63	21009.98
BRWD0080W1	435	452	17	0.46	389.99	54.42	2782.06
BRWD0080W2	429.68	473	43.32	1.41	1219.69	182.43	8244.56
BRWD0080W3	448.73	468	19.27	3.25	3077.37	453.55	20077.63
BRWD0080W3	473	509.29	36.29	1.25	1104.94	146.91	7304.71
BRWD0080W3	515	516.01	1.01	3.01	2881.6	353.7	18438
BRWD0080W3	518.62	524	5.38	0.67	627.28	85.15	4148.62
BRWD0081	447	450	3	0.18	109.53	14.67	701.67
BRWD0081W1	417.1	419	1.9	0.54	337.88	52.05	2226.89
BRWD0081W1	457	458	1	0.22	157	20.4	1087
BRWD0081W1	462	470	8	0.46	334.42	46.06	2256.87

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Appendix 2

DFS Highlights

The proposed Project comprises the development of a dysprosium (Dy) and terbium (Tb)-rich heavy rare earth oxide (HREO) mining and mineral processing operation approximately 160 km south-east of Halls Creek, Western Australia (WA). The Company holds secure tenure over the Project area and also the mineral rights to an extensive area of exploration tenements surrounding the Project, both within WA and the Northern Territory (NT).

The Project is located on the WA tenements located over the Browns Range Dome (the Dome), a major geological structure that spans 60 km x 30 km (1500 km2) across the WA and NT border. The Dome is largely underexplored and is highly prospective for the xenotime mineralisation which hosts high grade HREO.

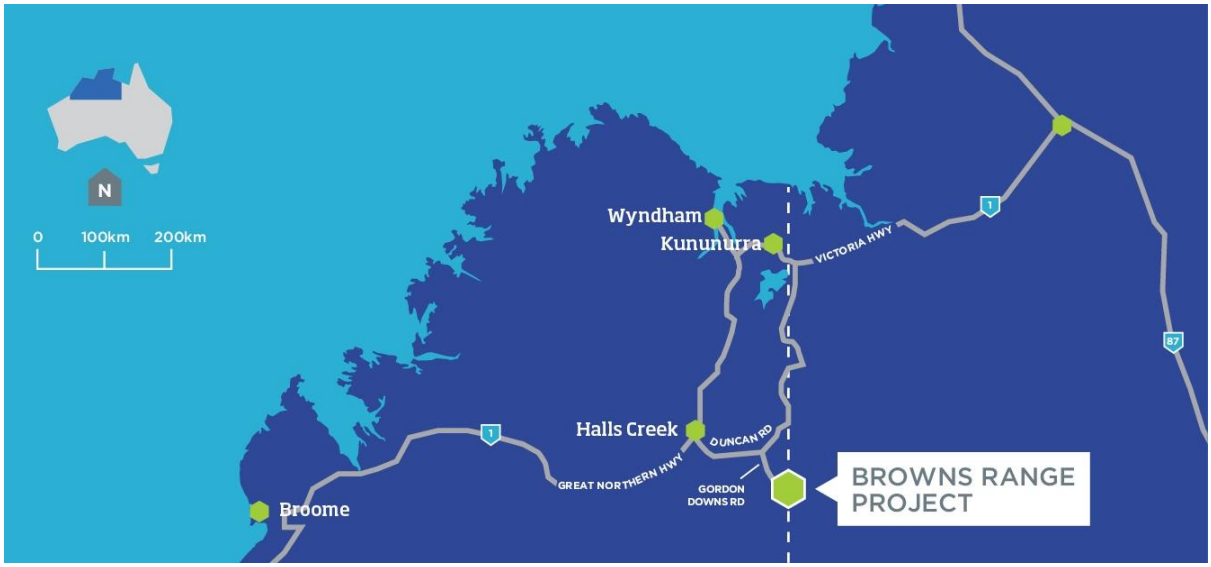

Figure 1: Project Location

The Project will initially be developed by mining and processing the Wolverine deposit located on mining lease M80/627, however significant exploration potential exists for other deposits and prospects to extend the life of the Project.

A key feature of the Project is the dominance of xenotime mineralisation, which is rich in Dy and Tb, and other HREOs. Dy and Tb are the key value drivers of the Project accounting for about 70% of the concentrate rare earth oxide (REO) assemblage by value. Dy and Tb are significant constituents in the rare earth permanent magnet sector, which is the single largest end-use for REOs, accounting for over 95% of total global TREO consumption by value and 48% by volume, and is expected to grow at a compound annual growth rate (CAGR) of 7.5% from 2023 through 2040.[9]

In October 2022, the Company signed a xenotime concentrate sale and purchase agreement which represents a long-term offtake agreement between Northern Minerals and Iluka Resources Limited (Iluka) for xenotime concentrate produced from the Project.

The DFS was conducted using a combination of internal and external technical, commercial and legal resources with coordination of the overall study management performed by the DFS Project team

[9] Source Adamas Intelligence, 2023

consisting of Northern Minerals and Neuplan personnel. The key contributors to the draft DFS are listed in Table 1.

Table 1: List of Primary Study Contributors

Consultant	Scope Area
Neuplan	Study and project management services, controls and procurement, integration of site wide designs, capital and operating cost estimates
CSA Global	Mineral Resource estimate, structural geology
Entech	Mine design, scheduling, and costing, mining geotechnical
Beck Engineering	Underground sublevel cave material flow modelling
Total Earth Sciences	Ore sorting testwork, model development for ore sorting and mine planning, and waste rock assessment.
BBE Consultants	Mine ventilation
Knight Piésold Consulting Engineers	Tailings management and storage, airstrip design and geotechnical studies
WSP	Surface water management and water balance
Klohn Crippen Berger	Project water supply, mine dewatering and ground water modelling
Engineered Efficiency	Basis engineering design of raw water supply
EPCM Solutions	Electrical, instrumentation and communications engineering
Carrick Consulting	Wolverine pit surface water management
RAV DG Services	Fuel storage design and estimate
Trading Matters	Fuel supply cost forecast
Shawmac	Access roads, site wide earthworks
Regional Aerodrome Management Services	Peer review of airstrip design
JEB Logistics	Project logistics
Preston Consulting	Environment and approvals
CAD Resources	GIS and CAD services
Outline Imagery	Site survey data
WA Power & Gas Consulting	Power Purchase Agreement
MARC Technologies	Laboratory design
Nerida Miller Architecture	Accommodation village
MBS Environmental	Environmental studies
Mattiske	Flora and vegetation surveys
Minter Ellison	Legal
Model Answer	Financial model development
Adamas Intelligence	Market analysis

Mining

During the Quarter, the mining and geotechnical studies for the draft DFS were completed. The work entailed finalising the mine dewatering study, the cave flow modelling for the underground operation and the integrated mining schedule and mining cost model for both the open pit and underground operations.

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The Wolverine deposit is steeply dipping to the north and strikes approximately east-west, with mineralised widths up to 30 m. Mineralisation occurs near surface and extends to a depth of over 550 m below surface.

The proposed mining operation at Wolverine will consist of open pit mining followed by underground longitudinal sub-level caving (SLC).

Open pit

The Wolverine pit is planned to be mined as a two-stage cutback to the existing trial pit. Open pit mining will utilise drilling and blasting for material fragmentation and excavator and truck methods for material loading and hauling, and be supported by the required ancillary equipment.

Using an in-pit ramp system, waste material is hauled to surface and stockpiled or used on-site in construction activities (e.g., haul roads), while ore material is hauled separately to designated surface stockpiling areas.

These methods are well understood and were successfully employed at the Project during trial pit mining and are well understood.

Figure 2 illustrates the proposed final open pit design to a depth of approximately 125m below surface, and the existing Wolverine trial pit that was mined to approximately 50m below surface.

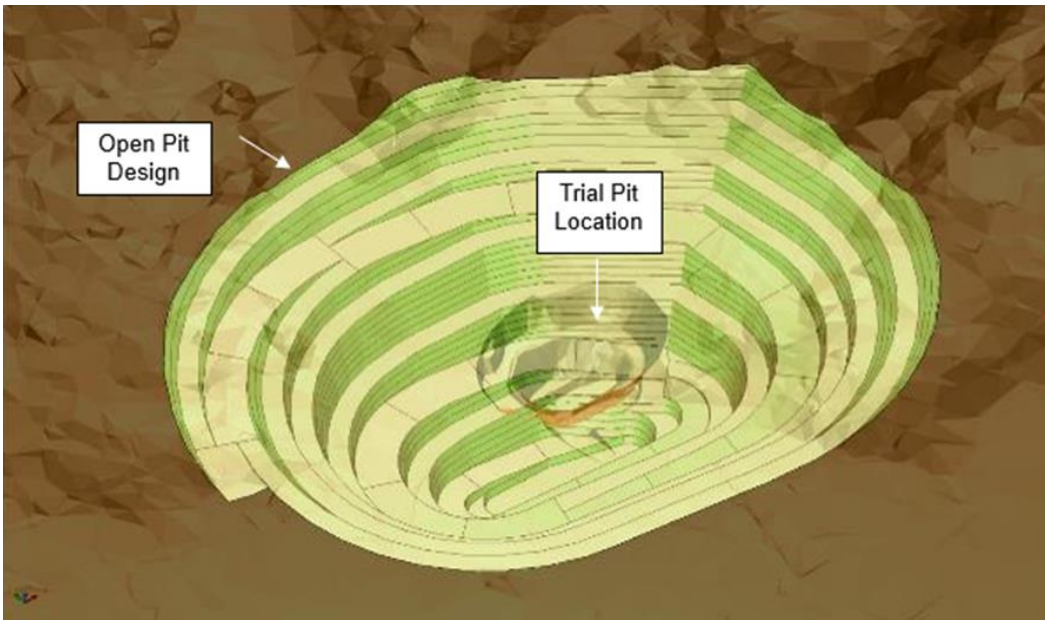

Figure 2: Proposed Wolverine Open Pit Design Isometric View

Underground

The proposed Wolverine underground mine has been designed as end-on longitudinal SLC, a top-down method in which ore is fragmented by blasting, and the overlying rock mass fractures and caves to fill the void created by extraction of the ore.

The selected mining method is suited to the geometry of the deposit, geotechnical and geometallurgical aspects (including ore sorting).

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Proposed underground access is via a boxcut portal arrangement and haulage decline, with mined material transported by underground trucks to designated surface stockpiling areas. Sublevel intervals were selected considering the geotechnical and operational requirements of the mining method. Development and production excavations have been designed to enable mining utilising standard high-capacity mobile underground mining equipment.

Ore drives are mined parallel to the strike of the deposit and individual production rings are fired on retreat to generate ore. Production rings in the upper levels of the underground workings will break through into the base of the open pit. Backfill will be placed in the base of the pit prior to break through to provide an initial waste blanket until caving occurs. At Wolverine, hanging wall caving will propagate up into the western wall of the pit and result in progressive failure and flattening of the pit wall.

The proposed underground production area is illustrated in Figure 3 (Orange and Blue).

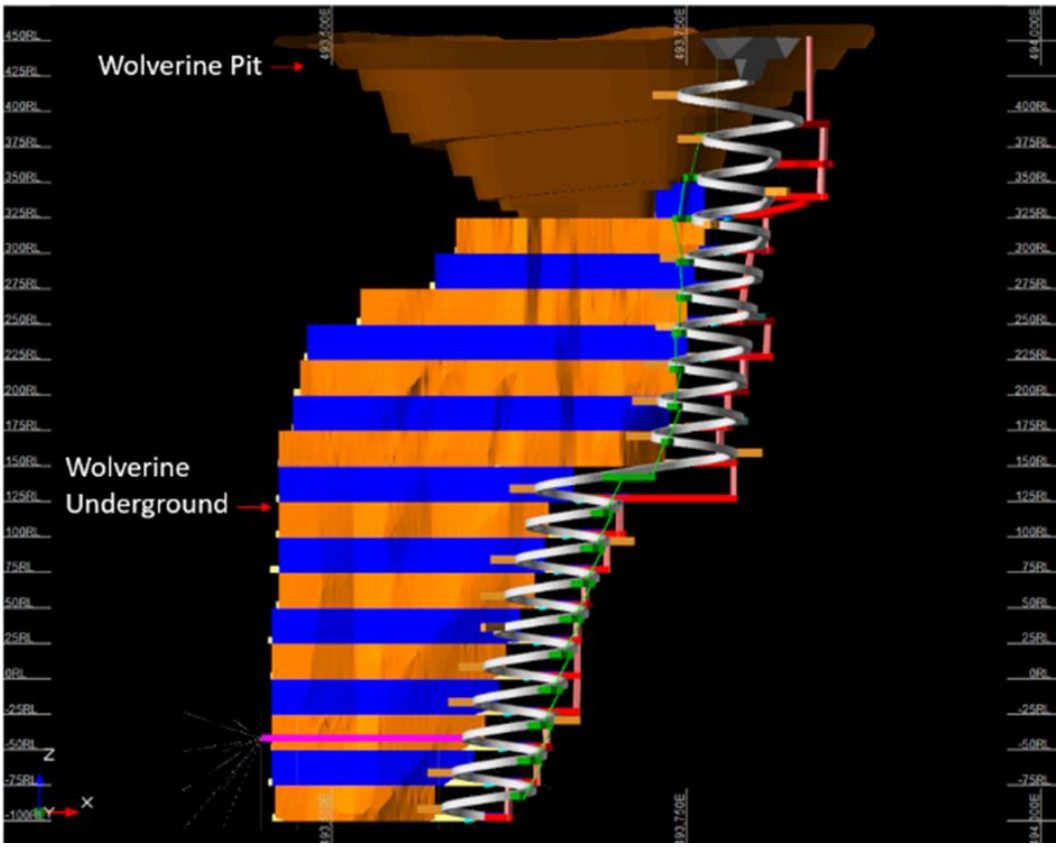

Figure 3: Proposed Wolverine Open Pit and Underground Design (Looking North)

Processing

The design criteria for the draft DFS has been developed building on the 2015 DFS and the operation of the large (1/10th) scale Browns Range Pilot Plant (BRPP) from 2018 to 2022, ensuring that material opportunities and lessons learned are included. The 2015 DFS and BRPP flowsheets included production of an intermediate xenotime concentrate followed by a hydrometallurgical circuit to deliver a mixed rare earth (RE) carbonate product. The strategic partnership entered into with Iluka in October 2022 includes a concentrate supply agreement for the supply of xenotime concentrate to Iluka's Eneabba Rare Earth Refinery, and this negates the need for a hydrometallurgical circuit to produce RE carbonate. The flowsheet for this DFS therefore includes only circuits for production of xenotime concentrate as shown in Figure 4.

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The process plant has been designed to treat up to 908,000 tpa of ore via a combination of crushing, ore sorting, magnetic separation, and flotation to produce approximately 18,200 tpa of xenotime concentrate at a grade of 25% total rare earth oxide (TREO). The xenotime concentrate will be dried and packaged on site then transported off site for further downstream processing at Iluka's Eneabba Refinery.

The processing flowsheet involves the following key circuits:

- ROM ore is fed to a primary crusher, primary crushed ore undergoes scrubbing and screening with fines pumped directly to the grinding circuit and oversize fed to a secondary crusher and returned to the scrubber.
- Two intermediate scrubber product size fractions are fed to two X-Ray transmission ore sorters, one for each size fraction, where select ore is directed to a select ore bin for further processing, and the reject material to a bin for trucking to a long-term stockpile.
- Further comminution of scrubber fines and select ore by semi-autogenous mill grinding.
- Three stages of wet high gradient magnetic separation (WHGMS) produce a magnetic concentrate of approximately 4% TREO.
- Several stages of flotation upgrade the magnetic concentrate by rejection of entrained silica, mica and iron oxides to produce a final concentrate slurry of 25% TREO.
- The concentrate is dewatered via a plate and frame pressure filter to produce a filter cake which is dried in a spiral flash dryer and bagged using a semi-automated bagging system in 1.5 t bulka bags ready for transport.

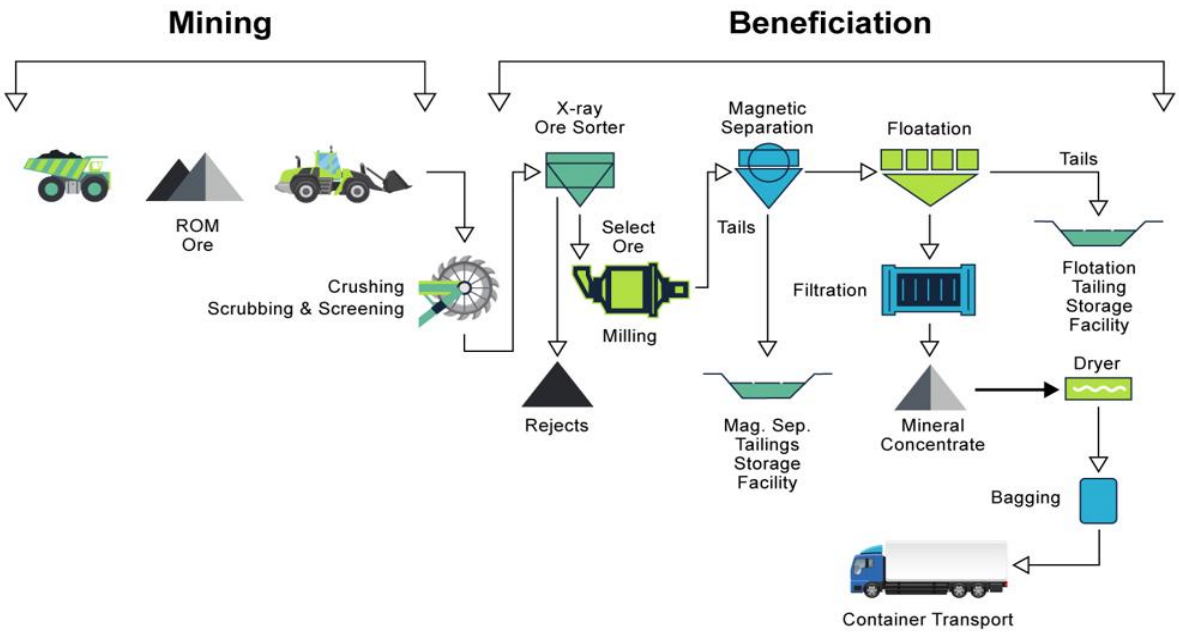

Figure 4: Process Flowsheet Schematic

The proposed delivery method in the draft DFS for the process plant is by a lumpsum Engineering Procurement and Construction (EPC) contract. During the quarter, the clarification of the technical and commercial aspects of the tenders received from GR Engineering Services Ltd (GRES) and

MACA Interquip (MIQ) for the EPC contract were advanced to a stage suitable for inclusion in the draft DFS.

Tailings Management

The Browns Range site has an existing single cell tailings storage facility (TSF) constructed as part of the BRPP. The TSF footprint will be expanded as part of the Project to a three-cell TSF to store the mine tailings.

The TSF, located to the west of the process plant as shown in Figure 5 will consist of three adjacent closed paddock cells formed by earth fill embankments. The TSF embankment will be constructed in four stages to suit storage requirements and the availability of suitable mine waste for construction. Figure 5 shows the final stage 4 TSF design. Monitoring instrumentation has been incorporated into the design to ensure effective tailings management during operations.

Tailings and tailings water management for the Project will have the following components:

- Tailings from the process plant will be separated into two tailings streams to be treated separately and stored in separate cells:
  - flotation tailings will be stored in cell 1.
  - magnetic separation (magsep) tailings will be stored in cells 2 and 3.
- Tailings water from cells 2 and 3 will be recycled back to the process plant for re-use in the processing circuit.
- Tailings water from cell 1 will be evaporated within the cell.

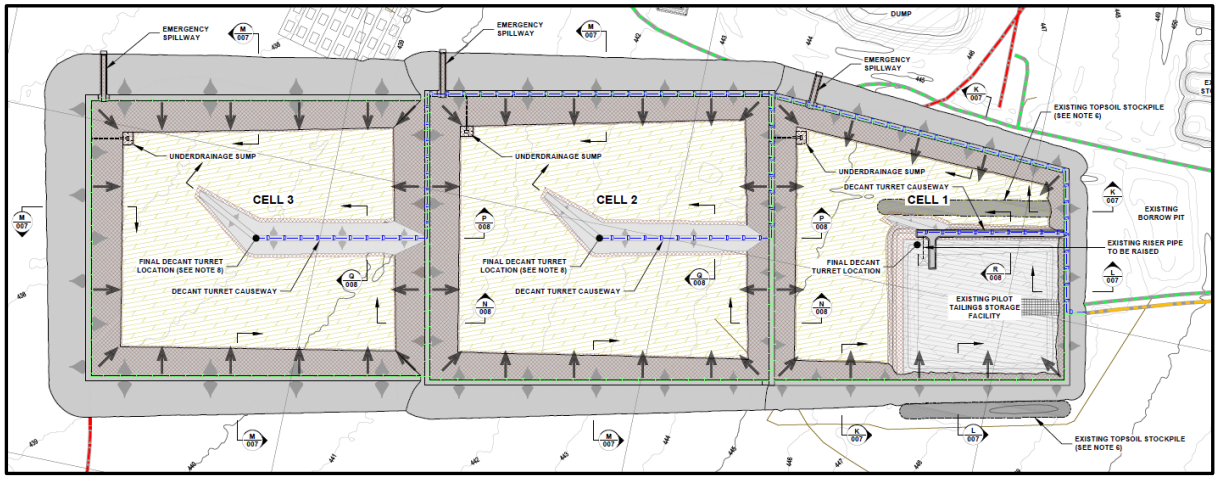

Figure 5: Stage 4 TSF General Arrangement

Non-Process Infrastructure (NPI)

The Browns Range site has existing non-process infrastructure which was constructed as part of the BRPP in 2018. The infrastructure includes an existing access road from Ringer Soak, camp with up to 80 useable rooms, water supply from the Gardiner Sandstone aquifer, potable water treatment plant, sewage system, airstrip suitable for aircraft up to 5700 kg take-off weight, radio repeater system, satellite communication link, offices, training room, emergency response and medical centre. Figure 6 shows the existing pilot plant and associated infrastructure.

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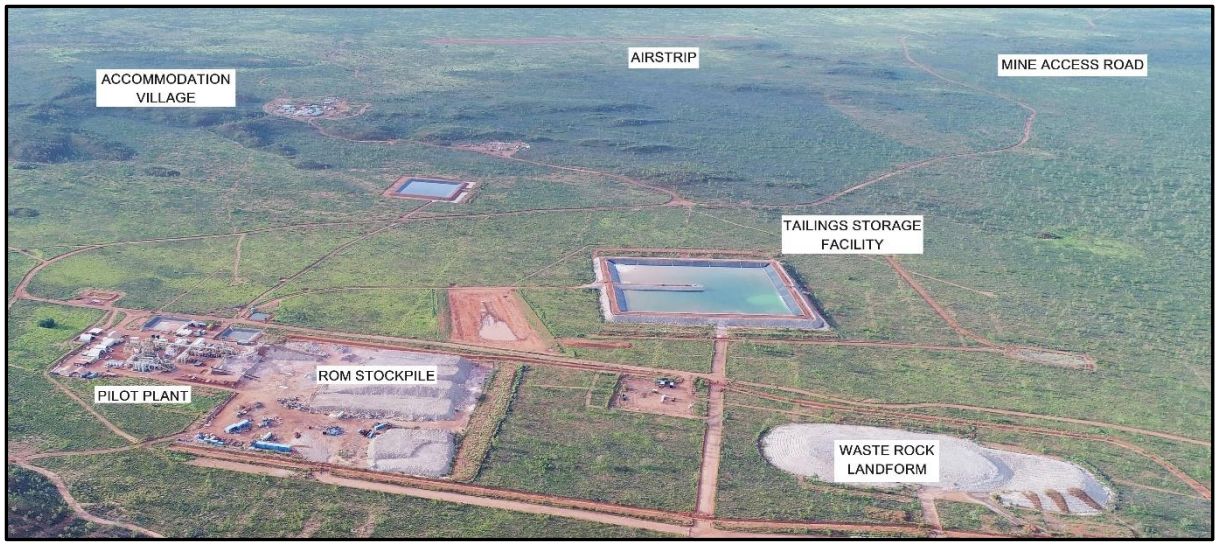

Figure 6: Aerial Photo of Existing Infrastructure at Browns Range

The existing infrastructure will be used to support the commencement of the full-scale project and enable project construction ramp up, where it will be retained and expanded where possible to minimise project cost, risk, and construction duration. Figure 8 shows the proposed Project layout.

Road Access

Site road access is required for transport of plant, equipment, materials and personnel to site during the construction phase, transport of reagents, consumables and supplies to site during the operational phase and transport of product off-site to Iluka's Eneabba Rare Earth Refinery.

The main access route into site is along the Western Australia State highway network to the town of Halls Creek and then on to the Duncan and Gordon Downs local Shire roads (approximately 156 km), past Ringer Soak and onto the existing Browns Range Mine Access Road (MAR). The MAR intersects Gordon Downs Road and will be upgraded to support the Project's road access needs, including a bypass to divert mine site traffic around the Ringer Soak Community. The MAR has been designed for Restricted Access Vehicle (RAV) 9 vehicles and the public roads from Halls Creek to the MAR is currently classified for RAV 9 use. The access road route from Halls Creek is depicted in Figure 7.

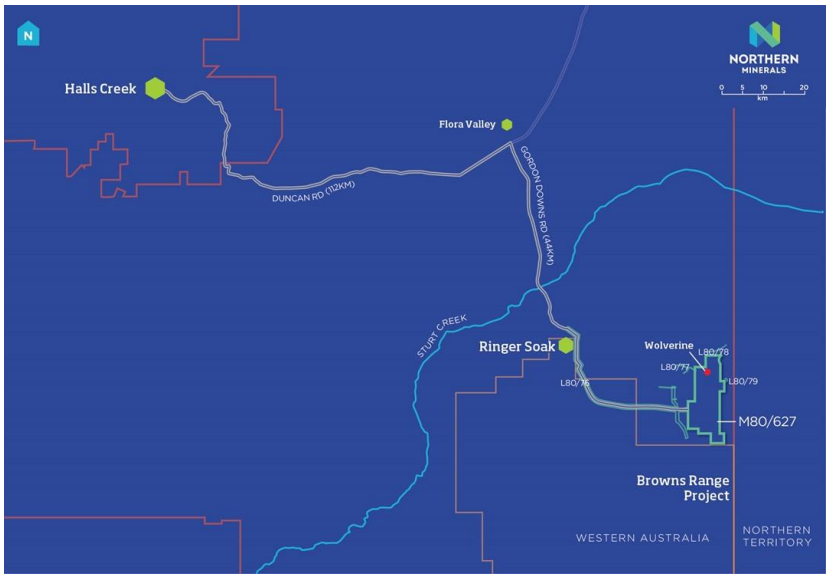

Figure 7: Access Road Route from Halls Creek

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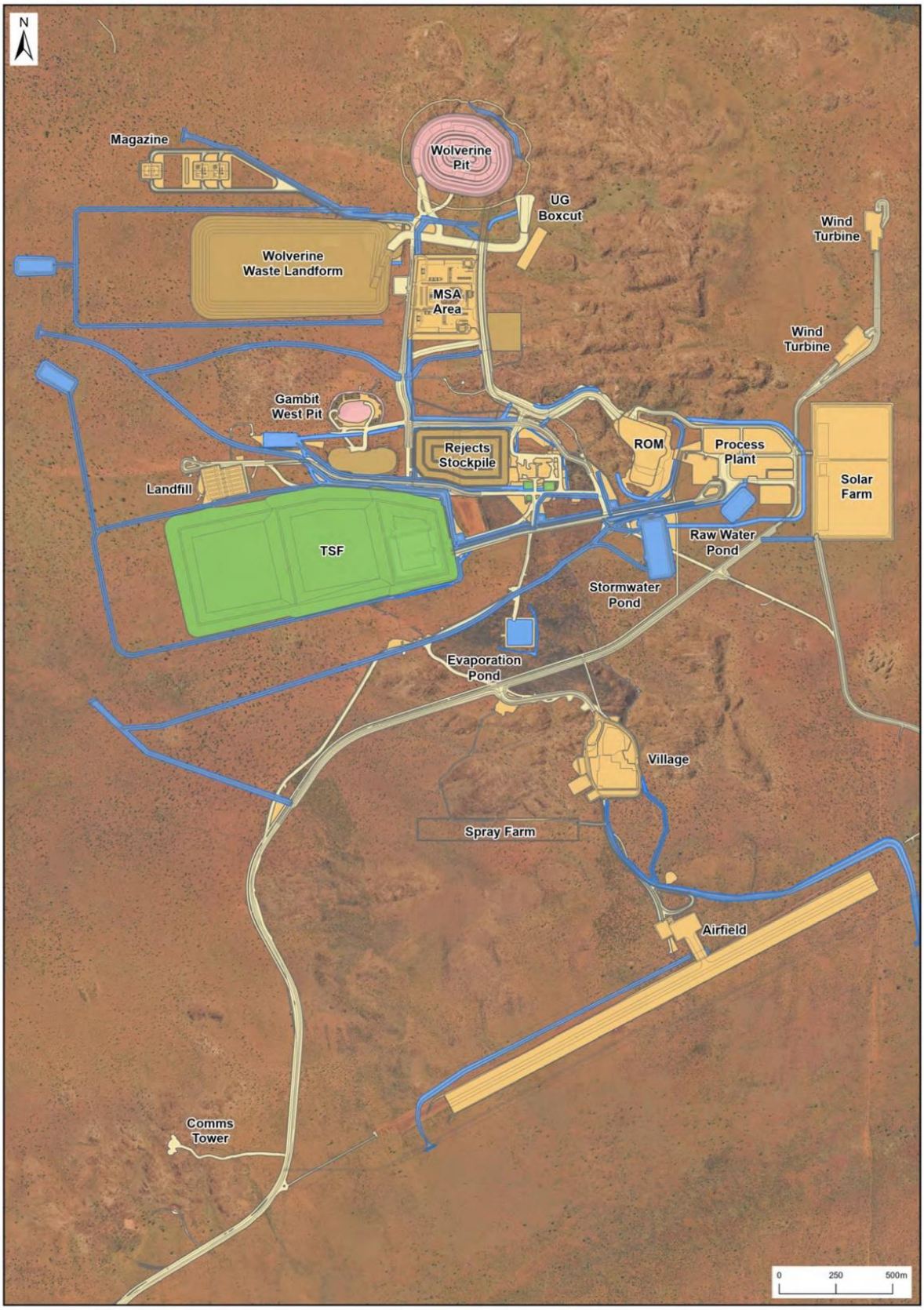

Figure 8: Browns Range HRE Project Infrastructure Layout

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Airstrip

The existing airstrip is a 1,100 m unsealed airstrip capable of landing turboprop planes of 9 seat capacity and a maximum take-off weight of 5,700 kg. An upgrade to extend the airstrip to 2,000 m making it suitable for a 76 seat Dash-8 Q400 or similar will support the fly-in fly-out (FIFO) workforce for construction and operations. The airstrip will include refuelling and basic check in facilities.

Accommodation village

While the Company will be looking to source employees locally wherever possible, a 100% rostered FIFO workforce will be employed due to the remoteness of the site. To house both the construction and operations' workforce, the existing accommodation village will be expanded, with its occupancy increased from 80 to 352 rooms.

Accommodation standards will be typical of mine accommodation in Western Australia with each room containing air conditioning, shower and toilet facilities, mini fridge, internet (wi-fi) and television. Existing camp rooms will be refurbished to meet this standard. The village central facilities an administration office and infirmary, kitchen and dining hall (dry mess), communal toilets and laundries, and an ice room. A gymnasium, wet mess, multi-purpose sports court and a recreation room will also be included for communal use.

Power supply and fuel storage

An onsite purpose-built hybrid diesel-solar-wind power station will supply power to the Project. This power station will be located adjacent to the process plant area and will be sized and configured to supply all electricity requirements to the mine, process plant and camp. The power station will have capacity for a total power demand of 9.8 megawatt with renewable energy generation contribution of up to 73% per year. The diesel power station will comprise 13 x 1 megawatt generators generating at 400 V and will be capable of meeting the mine maximum demand in the case where renewable energy generation is not operating. The renewable energy generation will comprise a nominal 10-megawatt solar farm, two wind turbines of 4.5 megawatts each and a battery energy storage system of 8.2 megawatt and 8.2-megawatt hour. The power station will be built, operated and maintained by an independent power producer.

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

Water supply and treatment

Total Project water demand is estimated at 1.3 gigalitres per annum. This is to be supplied by groundwater sourced from the Gardiner Sandstone aquifer located approximately 13 km to the southwest of the mine and process plant area. Water exploration drilling, pump testing and groundwater modelling work has concluded that this aquifer will sustain the long-term supply, with extraction having negligible environmental impact. The water is of good quality, and will not require treatment for the process plant, and only minimal treatment for potable water use.

Communications

Due to the remote nature of the Project, no communication facilities currently exist within close vicinity of the mine lease area. The DFS includes the construction of a high performance, high reliability microwave network from Browns Range to Halls Creek, where backhaul fibre services can be accessed to provide a 1GBps internet service to the Project site.

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Logistics

Project logistics incorporates the shipping and road transport requirements of construction phase materials and equipment, operational phase supplies, and product off-site.

Construction phase

During the construction phase, transport of materials and equipment, including wind and solar farm components will utilise existing container and breakbulk liner shipping services into the Port of Darwin or Fremantle Port. The Port of Darwin is preferred based on its superior berthing capability and landside facilities and its connecting road network to the Project site being capable of road transporting construction materials up to the size of wind turbine blades. There will also be construction materials and equipment (excluding wind blades) that need to be transported from Perth or Fremantle to site.

A construction phase transport envelope study has been conducted on the proposed road route to ensure that any height and width restrictions will not prevent large equipment movements from reaching site. Construction material and equipment logistics will be managed by the respective construction contractors.

Operational phase

The Project will import all reagents, consumables, general freight and spares required to support the operation of the mine site. A Perth warehouse and consolidation facility will be established for receival and storage of material to maximise inbound truck loads. Inbound materials from Perth would be loaded on double trailers and transported to site via the Great Northern Highway.

The concentrate produced at the Project will be packaged in 1.5 t bulka bags and loaded into tautliner trucks for delivery to Iluka's Eneabba Rare Earth Refinery via the Great Northern Highway, the shortest and most direct transport route. The Eneabba Rare Earths Refinery is located in Eneabba in the Midwest region of Western Australia, approximately 300 km north of Perth.

Wet season access

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

Assessment of the Duncan Road and Gordon Downs Road upgrades completed in 2022 by Main Roads Western Australia indicates that the Sturt Creek crossing upgrade has been constructed to a serviceability level that should result in road closures of less than two months during the wet season.

The wet season will have negligible impacts on day-to-day mine operations on site and personnel movement via the airstrip, however road transport may be impacted. To mitigate this, storage facilities on site have been designed and costed to accommodate a maximum two-month road outage.