REFERRAL ENVIRONMENTAL REVIEW APPENDICES

ROUND HILL

Revision Register

REV	DATE	NAME	DESCRIPTION OF CHANGES
1	Jan 2026	Preston	Draft issued for HanRoy review
2	Jan 2026	HanRoy	Internal review and updates
3	22 May 2026	Preston Consulting	Finalisation for submission to EPA

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Appendix 1: Legislative Context

1.1 Environmental Impact Assessment Process

1.1.1 Part IV of the *Environmental Protection Act 1986*

Part IV of the *Environmental Protection Act 1986* (EP Act) makes provisions for the Environmental Protection Authority (EPA) to undertake Environmental Impact Assessment (EIA) of significant proposals, strategic proposals and land use planning schemes. The Proposal (Round Hill Project) was considered to potentially be a significant proposal and as such requires referral to the EPA under Part IV of the EP Act.

The EPA uses environmental principles, factors and associated objectives as the basis for assessing whether a proposal or land use planning scheme's impact on the environment is acceptable. The environmental principles, factors and objectives, therefore, underpin the EIA process.

1.1.2 Section 87 of the *Environment Protection and Biodiversity Conservation Act 1999*

The Proposal was referred under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Department of Climate Change, Energy, the Environment and Water on 22 May 2026. It has not yet been determined whether the Proposal will be considered to be a controlled action.

1.2 Other Approvals and Regulation

1.2.1 Land Tenure

All Proposal aspects lie within the pending mining lease application M47/1670 and replacement mining lease application M47/1670, of which Hancock Prospecting Pty Ltd (HPPL) is the tenement holder. The Proposal will also cross a road reserve for the Great Northern Highway.

Currently land use within the Proposal is predominantly underlying unallocated Crown land with minor intersections with a road reserve (Great Northern Highway; Land ID number 3299861).

1.2.2 Other Decision Making Authorities, Approvals and Regulation

Implementation of the Proposal is subject to other approvals in addition to Part IV of the EP Act and the EPBC Act. Table 1 identifies other approvals and associated legislation that will apply to the Proposal. The relevant decision-making authorities (DMA) have also been identified for each approval or legislation.

Table 1: Other approvals and regulations

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
Minister for Environment Department of Water and Environmental Regulation (DWER)	EP Act Part V	**Native Vegetation Clearing Permit** (NVCP) – required for the clearing of native vegetation if the Proposal is not assessed under Part IV of the EP Act	Vegetation clearing	**Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* **Terrestrial Fauna** *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.* **Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	Yes. The NVCP has the ability to apply conditions to avoid and minimise impacts to vegetation, flora and fauna. Offset requirements can also be included in the conditions.
		Works Approval – required for the construction and commissioning of the processing plant. **Licence** – required for the operation of the processing	Noise emissions	**Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	Yes. While not expected to be significant, the primary source of noise emissions from the Proposal is the processing plant and the design of the plant will be assessed under Part V of the EP Act to ensure noise emissions are minimised and do not result in significant impacts to any sensitive receptors. Noise emissions from other aspects of the site are not expected to be significant and are unlikely to require additional regulation under Part IV of the EP Act in order to meet the objective for this factor.
			Dust emissions	**Flora and Vegetation** EPA's objective: *To protect flora and*	Yes. A primary source of dust emissions from the Proposal is the

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
		plant.		*vegetation so that biological diversity and ecological integrity are maintained* **Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	processing plant. The design the processing plant will be assessed under Part V of the EP Act to ensure dust emissions are minimised and do not result in significant impacts to any sensitive receptors. In addition to regulation under Part V of the EP Act, dust emissions from all aspects of the site are regulated under the Mining Act (refer below) and are not expected to be significant. These emissions are unlikely to require additional regulation under Part IV of the EP Act in order to meet the objective for this factor.
			Disposal of waste material and unintentional discharge of potentially contaminated water (stormwater) and hydrocarbons.	**Inland Waters** EPA's objective: *To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.* **Terrestrial Environmental Quality** EPA's objective: *To maintain the quality of land and soils so that environmental values are protected* **Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained*	Yes The Works Approval and Licence will regulate pollution of land or waters from the disposal of waste material or any spills of hydrocarbons within the relevant Prescribed Premises. Leaks and spills from all other aspects of the Proposal are regulated under the Mining Act (refer below) and are not expected to be significant. These emissions are unlikely to require additional regulation under Part IV of the EP Act in order to meet the objective for this factor.
Minister for Mines	Mining Act	**Mining**	Changes to the	**Terrestrial Environmental Quality**	Yes.

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
and Petroleum Executive Director, Resource and Environmental Compliance Division (Department of Mines, Petroleum and Exploration (DMPE)) State Mining Engineer (DMPE)	*Work Health and Safety Act 2020* (Western Australia (WA)) Work Health (Mines) Safety Regulations 2021	**Development and Closure Proposal (MDCP)** Required for any mining-related disturbance within tenements (i.e., all works apart from road intersection works)	stability of the landscape	EPA's objective: *To maintain the quality of land and soils so that environmental values are protected* **Inland Waters** EPA's objective: *To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.* **Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* **Terrestrial Fauna** *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*	A Mine Development and Closure Proposal (MDCP) will be submitted to DMPE prior to any disturbance at the Proposal and will be reviewed in accordance with the Approvals Statement. It will include auditable outcomes for key DMPE factors (flora vegetation and fauna, inland waters, terrestrial environmental quality and rehabilitation and mine closure.). These outcomes will be defined and approved by DMPE to ensure that the impacts on the key DMPE factors are mitigated to an acceptable level. In the context of landscape stability this will include an auditable outcome that the landscape will be safe and stable during mining to prevent slumps or collapsed walls which could have environmental impacts. The implementation of the MDCP under the Mining Act is considered suitable to mitigate this impact such that the EPA's objectives can be met. By meeting DMPE's Factors, the Proposal will also meet the EPA's objectives for the relevant factors. Additional regulation under Part IV of the EP Act is therefore unlikely to be required for this potential impact.
			Clearing of native vegetation	**Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* **Terrestrial Fauna** *To protect terrestrial fauna so that*	Partially. A MDCP will be submitted to DMPE prior to any disturbance at the Proposal and will be reviewed in accordance with the Approvals Statement. It will include auditable closure and rehabilitation outcomes and criteria which will be defined and approved by DMPE to ensure that cleared areas are rehabilitated to an acceptable level. In the context of vegetation clearing this will include an auditable outcome

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	**Relevant Key Environmental Factor and Objective**	**Can the DMA mitigate impacts and how will the EPA's factor be met?**
				biological diversity and ecological integrity are maintained.	that the rehabilitated areas will meet specific closure criteria designed to ensure flora, vegetation and fauna values are reinstated. The implementation of the MDCP under the Mining Act is considered suitable to mitigate rehabilitation and impacts during clearing however it is not considered suitable to mitigate impacts associated with the loss of vegetation. This is expected to require assessment under the EP Act to ensure that the EPA's objectives can be met.
			Introduction and spread of weeds	**Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained*	Yes. The approved MDCP will define outcomes to ensure that the Factors defined in DMPE's Environmental Objectives are met for the Proposal. The DMPE Factor: flora, vegetation and fauna, is relevant to this impact: DMPE's objective for this factor is: *To protect flora and vegetation, subterranean fauna and terrestrial fauna so that biological diversity and ecological integrity can be maintained.* These outcomes will be defined and approved by DMPE to ensure that impacts associated with weeds are mitigated to an acceptable level. This will include an auditable outcome to prevent the introduction or spread of any new weed species or populations during construction, operation, or closure. By meeting these outcomes and the objective of DMPE's Flora, Vegetation and Fauna Factor, the MDCP will ensure that the EPA's objective for flora and vegetation is met. Therefore, further regulation for the impact of the

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
					introduction and spread of weeds is not required to be regulated under Part IV of the EP Act.
			Alteration to the post mining land use	**Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* **Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	Yes. Approval of a MDCP will ensure that the Factors defined in DMPE's Environmental Objectives are met for the Proposal. The DMPE Factor: Rehabilitation and Mine Closure, is relevant to this impact. DMPE's objective for this factor is: Mining activities are rehabilitated and closed in a manner to make them physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/non-contaminating, and capable of sustaining an agreed post-mining land use, and without unacceptable liability to the State. By meeting the objective of DMPE's Rehabilitation and Mine Closure Factor, the Proposal will also meet the EPA's objectives for social surroundings that are relevant to this impact. Additional regulation under Part IV of the EP Act is therefore unlikely to be required for this potential impact.
		Mine Safety Management System Required for the construction and operation of the Proposal	N/A – this approval is predominantly related to safety and therefore not expected to regulate impacts to the environment		

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
Minister for Mines and Petroleum Chief Dangerous Goods (DG) Officer (DMPE)	*Dangerous Goods Safety Act 2004* (WA)	**DG Licence** Required for the storage of explosives (ANFO) May be required for the bulk storage of fuel if above specified limits (unlikely)	Contamination of soils, groundwater and surface water (hydrocarbon spills or ANFO contamination) Fire (combustion of stored fuel or ANFO)	**Terrestrial Environmental Quality** EPA's objective: *To maintain the quality of land and soils so that environmental values are protected* **Inland Waters** EPA's objective: *To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.* **Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* **Terrestrial Fauna** EPA's objective: *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*	Yes. A DG Licence sets standards for the way in which DGs are stored on site. These standards are aimed at ensuring DGs are stored safely and in such a way that will not result in impacts to the environment. Having a DG Licence ensures potential spills and combustion risks from the Proposal are mitigated. A DG licence (in combination with the Part V and Mining Act approvals) will meet the objectives of the EPA for both factors by minimising the risk of contamination of soils and water, and protecting flora and vegetation, and terrestrial fauna by minimising the risk of fire. The storage and management of hydrocarbons may already be regulated under Part V of the EP Act and the MDCP however the DG Licence provides additional mitigation for the design and storage of larger volumes of DG (if large volumes of hydrocarbons (>100,000 Litres) are required to be stored on site). Regulation of the potential impacts on the environment from the storage of DG is therefore not expected to be required under Part IV of the EP Act.
Minister for Lands Minister for Planning Chief Executive Officer	*Local Government Act 1995* (WA) *Planning and Development Act 2006* (WA)	N/A – a Development Application is not required as this Proposal will be approved under the Mining Act			

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
Chief Executive Officer (DWER) Minister for Water	*Rights in Water and Irrigation Act 1914* (WA)	**26D licence** Required for the construction of a bore to abstract groundwater **5C licence** Required for the abstraction of groundwater	Abstraction of groundwater from Aquifers Alteration of surface water flows	**Inland Waters** EPA's objective: *To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.*	Yes. A 26D Licence ensures that bores are drilled, constructed, and maintained appropriately to ensure the aquifer and the groundwater resource is not compromised. A 5C Licence regulates the taking of water in a proclaimed area or from an artesian source and assesses the impacts of the abstraction on the environment and other users. A 5C Licence is only granted if the impacts from the abstraction are shown to be sustainable with minimal environmental impacts or impacts to other users. The Proposal is not within a proclaimed groundwater area. Licence holders are obligated to comply with their resource allocation and any conditions included in the licence. Licence holders are also required to use water efficiently and responsibly, minimising impacts to the water resource. These Licences, where required, will ensure the Proposal meets the EPA's objective for Inland Waters by maintaining the hydrological regime of groundwater. Regulation of the potential impacts on the environment from the drilling and abstraction of groundwater is therefore not expected to be required under Part IV of the EP Act.
Commissioner for Main Roads WA	*Main Roads Act 1930* (WA)	**Application to 'Undertake Works within Road Reserve'** Intersection works within	N/A – this approval is safety and planning based and therefore not expected to regulate impacts to the environment		

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
		the Brand Highway road corridor			
Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972* (AH Act) (WA)	**Application for a permit under the AH Act.** Required for consent to impact any Aboriginal Heritage sites (if not able to be avoided)	Disturbance of Aboriginal Heritage Sites	**Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	Yes. An application for a permit under Section 18 of the AH Act will assess the significance of the proposed disturbance and determine what mitigation measures are required to obtain consent for any disturbance to an Aboriginal Heritage Site. This consultation and assessment process will meet the EPA's objective for Social Surrounds by protecting registered Aboriginal Heritage sites from significant harm.
			Disturbance or indirect impacts to areas or artefacts of Aboriginal cultural value	**Social Surroundings** EPA's objective: *To protect social surroundings from significant harm.*	No (if avoidance is not possible). If disturbance or indirect impacts within these areas cannot be avoided, then agreements with the Traditional Owners will be required. If impacts are deemed to be significant then assessment and potential regulation under Part IV of the EP Act may be required.
Minister for the Environment (Commonwealth)	EPBC Act	**s.133 Approval** – required for the assessment of the Proposal's impacts on Matters of National Environmental Significance	Direct impacts to Threatened Fauna (Vehicle Strike)	**Terrestrial Fauna** EPA's objective: *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*	No. While there is likely to be significant overlap in regulation, the EPBC Act is a Commonwealth Act and as such cannot be relied upon to regulate impacts under WA legislation.
			Clearing of potential Threatened Flora or Fauna habitat	**Flora and Vegetation** EPA's objective: *To protect flora and vegetation so that biological diversity and ecological integrity are*	

DMA and department (if relevant)	Legislation or agreement regulating the activity	Approval required and relevant proposal element	Whether and how statutory decision-making process can mitigate impacts on the environment?		
			Relevant Impact	Relevant Key Environmental Factor and Objective	Can the DMA mitigate impacts and how will the EPA's factor be met?
				maintained **Terrestrial Fauna** EPA's objective: *To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*	

1.3 Object and Principles of the EP Act

The EP Act identifies a series of principles for environmental management (Section 4a, EP Act, as amended). HPPL has considered these principles in relation to the development and implementation of the Proposal. Table 2 outlines how the principles relate to the Proposal.

Table 2: EP Act principles

Principle	How it will be addressed by the Proposal
1. The precautionary principle Where there are threats of serious irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, decisions should be guided by: a. careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and b. an assessment of the risk-weighted consequences of various options.	HPPL has commissioned numerous environmental and heritage studies in order to inform the design of the Proposal. Examples where a precautionary approach has been taken by HPPL include: • Removal of the majority of drainage lines from the Development Envelope (DE); • Restricting mining to above the water table only; and • Limited processing of ore on site, removing the requirement for a tailings storage facility.
2. The principle of intergenerational equity The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The Proposal will ensure the health of the environmental values, maintaining ecological functions for future generations, whilst minimising any impacts on the environment. The Proposal has been designed to address the EPA's objectives for the key environmental factors, with mitigation measures to reduce residual environmental impacts and offsets proposed for any significant residual impacts. The Proposal can be implemented without unacceptable impacts on the health, diversity or productivity of the environment.
3. The principle of the conservation of biological diversity and ecological integrity Conservation of biological diversity and ecological integration should be a fundamental consideration.	Survey work has been used to confirm the range and status of environmental values within the vicinity of the Proposal. HPPL will mitigate potential impacts from the Proposal according to the mitigation hierarchy; avoid, reduce and offset. Where impacts cannot be avoided or reduced to enable HPPL to achieve its objectives, offsets will be acquired.
4. Principles relating to improved valuation, pricing and incentive mechanisms 1) Environmental factors should be included in the valuation of assets and services. 2) The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement. 3) The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use	As discussed in the Referral Environmental Review Document, the Proposal mine plan, design and management controls have been revised to reduce potential impacts to environmental factors.

Principle	How it will be addressed by the Proposal
of natural resources and assets and the ultimate disposal of any waste. 4) Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, which benefit and/or minimise costs to develop their own solutions and responses to environmental problems.	
5. The principle of waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment	Waste will be minimised by adopting the hierarchy of waste controls; avoid, minimise, re-use, recycle and safe disposal.

2 Appendix 2: Proposal Content Document

Template

Proposal Content Document

Table 1: General proposal content description

Proposal title	Round Hill Project
Proponent name	Hancock Prospecting Pty Ltd
Short description	The Round Hill Project (Proposal) is a proposed iron ore mine that lies approximately 40 kilometres (km) northwest of Newman in the eastern Pilbara region of Western Australia (Figure 1). Round Hill is deposit separated into two hematite-goethite deposits (Round Hill Main and North), located either side of the Great Northern Highway. The Round Hill Main deposit is the subject of this Proposal. It is situated within the pending mining lease application M 47/1670, of which Hancock Prospecting Pty Ltd (HPPL) is the owner. The Proposal is expected to provide iron ore feed for the Roy Hill operation. It involves developing a new greenfields iron ore mine at Round Hill Main with a transport link to deliver 5 million tonnes per annum Direct Shipped Ore product or Run of Mine ore to the Roy Hill hub. The Proposal will require up to approximately 989 hectares (ha) of disturbance within a defined Development Envelope (DE) of 1,703 ha (Figure 5).

Table 2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Physical elements		
Mine elements, including: • Above water table (AWT) mine pits • Ore processing facility (crushing and screening) • Waste rock dumps (WRD) Associated infrastructure and support facilities (energy supply infrastructure, wastewater treatment plant; landfill, offices, workshops, laydown areas, etc.); and Transport of the ore to Roy Hill including public	Figure 1	Disturbance of no more than 989 ha within a 1,703 ha Development Envelope.

road (Main Roads WA) intersection upgrades.		
Construction elements		
Groundwater abstraction/dewatering	Figure 1	Abstraction of no more than 0.95 gigalitres / annum (GLpa).
Operational elements		
Ore processing	N/A	Production of approximately five million tonnes per annum of iron ore.
Groundwater abstraction	N/A	Abstraction of no more than 0.95 GLpa.
Proposal elements with greenhouse gas emissions		
Construction elements:		
32,438 t CO_2-e	Scope 1	
–	Scope 2	
–	Scope 3	
Operation elements:		
582,215 t CO_2-e	Scope 1	
–	Scope 2	
50,664,412 t CO_2-e	Scope 3	
Rehabilitation		
Areas temporarily cleared during the construction phase will be rehabilitated following construction. Final closure and rehabilitation to commence within 5 years of cessation of operations.		
Commissioning		
Commissioning of the processing facility to be undertaken.		
Decommissioning		
Removal of all above-surface and buried infrastructure within 5 years of cessation of operations.		
Other elements which affect extent of effects on the environment		
Proposal time*	Maximum project life	16 years
	Construction phase	Approximately 1 year
	Operations phase	Up to 10 years

	Decommissioning phase	Approximately 5 years

** Proponents should only provide realistic timeframes to avoid unnecessary change to proposal applications at referral (section 38C), assessment (section 43A) or post assessment (section 45C).*

3 Appendix 3: Other Environmental Factors or Matters

The Proposal will not require any works within marine environments and therefore the following factors are not relevant to the Proposal:

- Benthic Communities and Habitat;
- Coastal Processes;
- Marine Environmental Quality; and
- Marine Fauna.

Landforms, Terrestrial Environmental Quality, Air Quality and Human Health were identified as having a low likelihood of significant impacts, a summary of these assessments is provided in the similarly named sections below.

Subterranean Fauna, Inland Waters and Greenhouse Gases were identified as requiring further assessment information, therefore more detailed information is provided on these factors in the similarly named sections below.

3.1 Landforms

Mine Earth (2025) was commissioned by HPPL to complete a landform assessment for the Proposal. The objectives of the assessment were to:

- Review regional land system information; and
- Describe the landforms within the survey area and assess their significance in accordance with the EPA Environmental Factor Guideline for Landforms.

The likely landforms within the survey area were initially identified via desktop assessment, using aerial imagery, land system mapping and descriptions, Digital Elevation Model (DEM) and vegetation/fauna mapping. Each landform was then visited in the field (where possible) with photos and field observations recorded at various observation sites, as per the Environmental Factor Guideline for Landforms (EPA, 2018). Field notes and photos for each landform are included in Appendix 5.5.

The field data, DEM, land system mapping, vegetation mapping and fauna habitat mapping were then used to digitise the approximate boundaries of the landforms.

The following limitations were associated with the landform assessment:

- Given the large size of the survey area, only a small proportion of each landform was observed and hence the condition/integrity of the entire landform could not be viewed. The condition/integrity of the landforms was determined from a combination of field observations, erosion risk classification (from the land system mapping) and vegetation condition mapping;
- Landform mapping utilised survey imagery, DEM visualisation and publicly available data (such as land system mapping) and vegetation mapping (Rapallo Environmental (Rapallo), 2024) to inform the interpretation and digitisation of landform boundaries. These datasets include a level of inherent approximation and generalisation;

- The mapping of landform boundaries was limited by the accuracy of the available datasets and scope of the field survey; and
- The significance of heritage sites within the survey area is unknown, and therefore the social importance cannot be determined for each landform at this time.

The landforms identified during the field survey are listed below, with their approximate extent within the survey area detailed in Figure 1:

- Stony plains;
- Rocky Hill;
- Undulating Gravelly Plains;
- Low Rises;
- Drainage tracts; and
- Washplains.

Field observations and photos of each of the landforms is included in Appendix 5.5. The extent, condition/integrity, geology, morphology and environmental values of each landform are summarised in Table 3.

135000

7430000

7425000

Legend

- Drainage
- Stony Plains
- Washplains
- Low Rises
- Undulating Gravelly Plains
- Rocky Hill

MINE EARTH

Figure 1: Landforms of the Proposal (Mine Earth, 2025)

N

0 0.7 1.4 2.8

Kilometers

Scale: 1:25,000 at A3

Spatial Reference
PCS: GDA 1994 MGA Zone 51
GCS: GCS GDA 1994
Datum: GDA 1994

Author: S. Parnaby

Reviewed by: S. Perry

Date:01.07.2025

Maxar

135000

3.1.1 Assessment of Landform Significance

The following criteria were used to determine if a landform is significant: Variety, Integrity, Ecological Importance, Scientific Importance, Rarity, Social Importance (EPA, 2018). The information summarised in Table 3 is used to conduct the assessment for each landform. The assessment of the landform significance within the survey area against the criteria is provided in Table 4.

The Rocky hill landform within the survey area is rare on a local scale, hence an investigation of other Rocky hills in the region was conducted to determine its rarity in the region.

The investigation aimed to identify whether other Rocky hill landforms with the following characteristics are present within the region:

- Similar shape and size (i.e., a hill) that is set apart from ranges as a discrete landform surrounded by plains;
- Was formed by the same processes (erosional);
- Consists of similar geology (i.e., Brockman Iron Formation, according to the surface geology mapping);
- Is in a similar environment (i.e., Newman land system); and
- Has a similar elevation.

Seven other Rocky hill landforms with the above characteristics were identified within the region as outlined in Figure 2. It should be noted that the surface geology and land systems shown are based on broad scale regional mapping. Elevation of the rocky hills examined ranged between approximately 1,430 - 1,778 metres Australian Height Datum (mAHD) and the hills ranged between approximately 14 - 75 hectares (ha) in area.

All of the Rocky hills had similar morphological characteristics, being roughly round in shape and were set apart from ranges as discrete landforms, often surrounded by plains. All hills shared the same surface geology, being the Brockman Iron Formation, and were a part of the same Newman land system.

There is inherent variability between these landforms, however all share the characteristics listed above which define them as Rocky hill landforms. Hence, Rocky hills of this type are not considered to be rare in the region.

Based on the assessment of the significance of the landforms against the criteria in Table 3 and observations made on site, none of the landforms present within the surveyed area are considered significant.

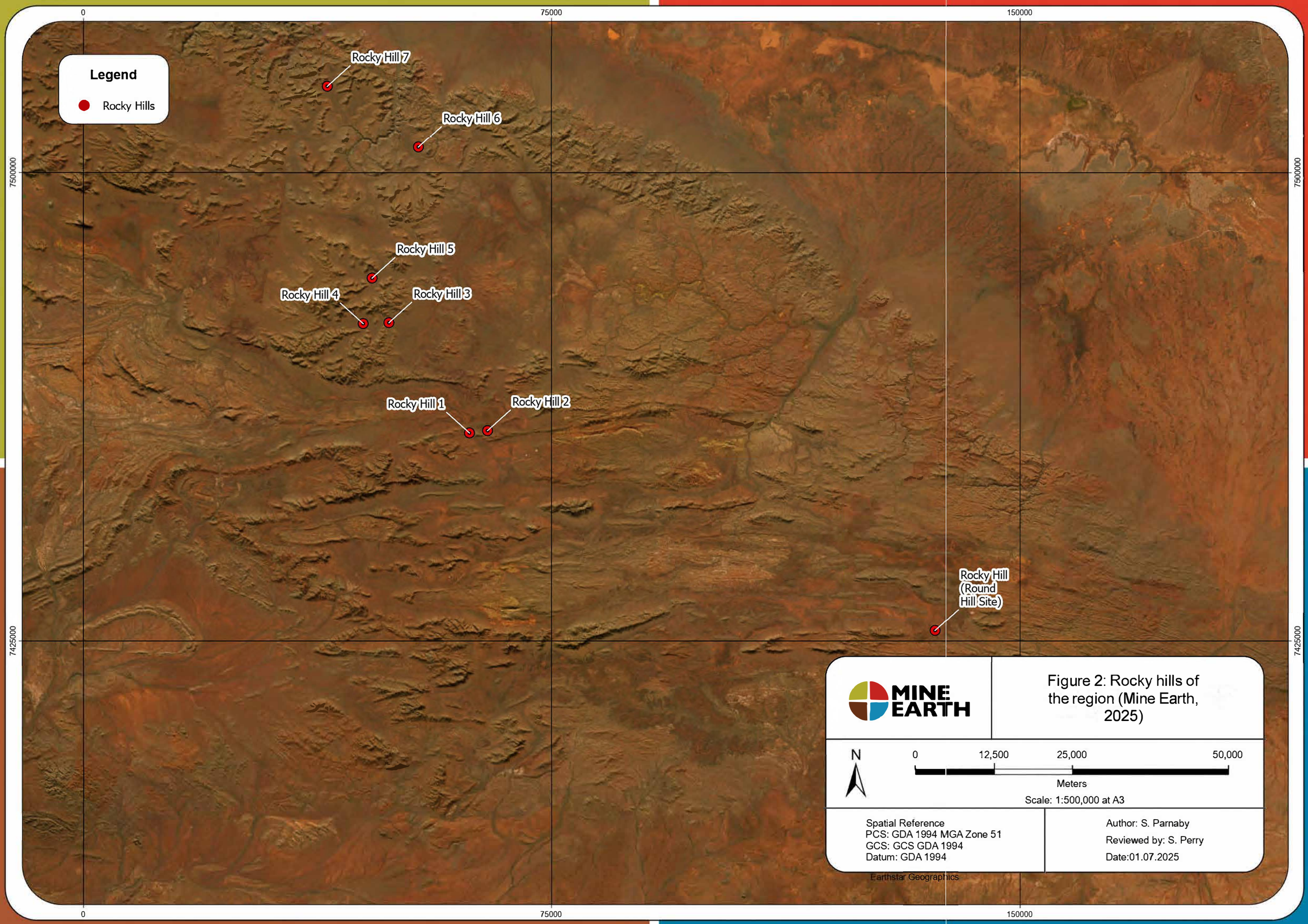
Table 3: Landforms of the Proposal (Mine Earth, 2025)

Landform	Condition/integrity	Geology	Morphology
Drainage tracts	Good to Very Good condition and good integrity with low wind and low-moderate water erosion risk, some cattle grazing disturbance evident on fringing vegetation. The vegetation within the drainage tracts has been mapped as very good to excellent condition (Rapallo, 2024).	Quaternary alluvium and colluvium	Discrete drainage foci intersecting broad internal drainage flats with intermittent narrow channelled tracts. Receives run-on from adjacent washplains and hardpan surfaced channel beds.
Low rises	Good condition, good integrity with exploration disturbance evident.	Jaspilite, chert, siltstone, shale, dolomite and minor acid volcanics	Erosional surface, gently inclined low rises sloping towards surrounding washplains. Sparse open woodland over a predominantly spinifex understorey, outcropping rock near the crest of the low rise.
Rocky hill	Good condition and good integrity, exploration disturbance on parts of slopes, large gullies on all sides, with low wind and water erosion risk if undisturbed. The vegetation at the base of the rocky hill has been mapped as very good to excellent condition (Rapallo, 2024).	Jaspilite, chert, siltstone, shale, dolomite and minor acid volcanics	Isolated, discrete round hill with steep, mid to high slope position with gentle relief lower slopes/foot slopes. Large steep sided gullies on mid slope, approximately equidistant from one another on all sides. Hill crest is rounded with gentle relief.
Stony plains	Moderate to good condition and good integrity, evidence of cattle disturbance. Low risk of wind erosion and low risk of water erosion. The vegetation within the stony plain has been mapped as good to very good condition (Rapallo, 2024).	Partially cemented Quaternary alluvium and colluvium	Level to gently sloped depositional plains with possible hardpan, broad disparate drainage foci and moderate to high density surface lag of predominantly iron stone.
Undulating gravelly plains	Good condition and good integrity with low wind and water erosion risk if undisturbed. Exploration disturbance evident. The vegetation within the undulating gravelly plains has been mapped as very good to excellent condition (Rapallo, 2024).	Archaean basalt, Lower Proterozoic basalt, dolerite, tuff and agglomerate, minor shale and jaspilite.	Undulating plains with predominantly gravel-sized ironstone surface lag, interspersed with minor shallow drainage channels. Located at the southeastern foot of the Proposal.
Wash plains	Moderate to good condition, with impact from cattle in parts. Good integrity. Exploration disturbance evident in some areas. Low wind erosion risk and low water erosion risk if undisturbed. The vegetation within the wash plains has been mapped as good to excellent condition (Rapallo, 2024).	Partially cemented Quaternary alluvium and colluvium	Extensive level washplains which have been shaped by sheet flow, where water disperses across the surface and converges in densely vegetated groves. These groves typically form curved, banded patterns that lie counter to the main direction of flow.

Table 4: Assessment of landform significance (Mine Earth, 2025)

Landform	Variety	Integrity	Ecological importance	Scientific Importance	Rarity	Social Importance	Significant
Drainage tracts	Well represented at the local and regional scale.	Good condition.	Do not have a distinctive or exclusive role in maintaining existing ecological or physical processes and do not support endemic or highly restricted plants or animals.	Not an important geomorphological or geological site, nor are of recognised scientific interest as a reference site or an example of where important natural processes are operating.	Not rare at the local or regional scale.	Unknown social importance.	No
Low rises		Degraded in places by cattle and are in moderate to good condition.					No
Rocky hill		Good condition.	Does not have a distinctive or exclusive role in maintaining existing ecological or physical processes but does provide habitat for conservation significant species.		There is only one example of this landform within the survey area and immediate surrounds, such that it is uncommon at the local scale. However, there are numerous examples of rocky hills with similar morphology and composition in the region. Rocky hills are not rare at the regional scale.		No
Stony plains		Moderate to good condition.	Do not have a distinctive or exclusive role in maintaining existing ecological or physical processes and do not support endemic or highly restricted plants or animals.		Not rare at the local or regional scale.		No
Undulating gravelly plains		Moderate to good condition.					No
Wash plains		Degraded in places by cattle					No

Landform	Variety	Integrity	Ecological importance	Scientific Importance	Rarity	Social Importance	Significant
		and are in moderate to good condition.					


0
75000
150000
7500000
7425000
Legend
Rocky Hills
Rocky Hill 7
Rocky Hill 6
Rocky Hill 5
Rocky Hill 4
Rocky Hill 3
Rocky Hill 1
Rocky Hill 2
Rocky Hill (Round Hill Site)
MINE EARTH
Figure 2: Rocky hills of the region (Mine Earth, 2025)
N
0
12,500
25,000
50,000
Meters
Scale: 1:500,000 at A3
Spatial Reference
PCS: GDA 1994 MGA Zone 51
GCS: GCS GDA 1994
Datum: GDA 1994
Author: S. Parnaby
Reviewed by: S. Perry
Date:01.07.2025
Earthstar Geographics

3.2 Subterranean fauna

3.2.1 Survey Effort

3.1.1.1 Stygofauna

HPPL contracted Bennelongia Environmental Consultants (Bennelongia) to undertake an assessment of subterranean fauna (stygofauna) in the Proposal and surrounding area to determine whether any species are likely to be impacted by the proposed development (Bennelongia, 2025a; Appendix 5.6).

Two rounds of stygofauna surveys were conducted over the Proposal from 24 - 25 July and 28 - 29 October 2024. Twenty-three samples were collected from 15 bores or drillholes. During the same sampling periods some of the holes were scraped for troglofauna and occasionally this process collected additional stygofauna species.

Sampling methods followed those recommended by EPA (2016a, 2021) and are described below.

Stygofauna were sampled at each hole using weighted plankton nets. At every hole, six hauls were taken, three using a 50 micrometres (µm) mesh net and three with a 150 µm mesh net, with the net being lowered to the bottom of the hole and oscillated briefly to agitate benthos (increasing the likelihood of collecting benthic species) before being slowly retrieved. Contents of the net were transferred to a 125 millilitres (ml) polycarbonate vial after each haul, flushed with bore water to reduce fine sediment content, preserved in 100% ethanol and refrigerated at a constant 4°C. Nets were washed between holes to minimise between-hole contamination.

3.1.1.2 Troglofauna

HPPL contracted Bennelongia to also undertake an assessment of subterranean fauna (troglofauna) in the Proposal and surrounding area to determine whether any species are likely to be impacted by the proposed development (Bennelongia, 2025b; Appendix 5.7).

A three-round survey for troglofauna was conducted at the Proposal, with round one taking place between 5 February - 23 April 2024, round two taking place between 22 July - 25 September 2024, and the final round taking place between 28 October 2024 and 17 January 2025. The survey included both prospective pit and reference areas outside the pits. All sampling points were in the tenements of the Proposal.

During the first round, 29 scrape samples were collected, with 49 traps being set and collected from 29 drill holes. In round two, 39 scrapes were collected, while 68 traps were collected from 40 drill holes.

During the final round, 35 scrapes were collected while 53 traps were collected from 35 drill holes. Overall, 104 holes were sampled for troglofauna, resulting in 103 scrapes, and 170 troglofauna traps set and collected within the survey area.

Of these, 56 samples were from within the proposed areas of impact and 48 samples were from reference areas outside the proposed impact areas, but within the DE. Note in this context that not all drill holes could be scraped and trapped for reasons of depth and access. However, considerable

effort was made to retrieve both traps and scrape samples whenever possible to improve sampling accuracy. Details for all drill holes sampled are compiled in Appendix 5.7.

3.1.1.2.1 Sampling Methods

Sampling methods followed those outlined by the EPA (2016a, 2021) and are described below.

Troglofauna was sampled in 150 millimetres (mm) uncased drill holes. At each hole, a 90 mm diameter net with 150 µm mesh was lowered to the base of the hole or just below the water table and hauled back to the surface along the wall of the hole. This was repeated 4 to 8 times depending on accessibility, changing the side of the hole being scraped, with the aim of scraping any troglofauna that were located on the walls into the net. The content of each haul was transferred into a larger net, flushed with bore water to reduce fine sediment content, and then deposited in a 125 ml polycarbonate vial. The vial was then filled with 100% ethanol and preserved on ice for further analyses in the lab, including molecular analyses. Nets were washed between holes with Decon-90 to minimise between-hole contamination.

3.1.1.2.2 Troglofauna trapping

After completing to scraping process, one or two cylindrical PVC traps, baited with moist leaf litter that had been sterilised via microwaving, were suspended at depth in each hole. If only one trap was placed, the trap would be placed within several metres above the water table or the bottom of the hole, depending on accessibility and depth of each drill hole. If two traps were set, then the second would be placed halfway down the drill hole. The drill hole was sealed for the duration of the traps lifecycle to reduce contamination risk from terrestrial vertebrates and invertebrates. Traps remained for 8 - 9 weeks before being retrieved, and the leaf litter emptied into a zip-lock bag for extraction in the lab.

3.1.1.2.3 Survey Limitations

Thirty-nine (39) samples were excluded from DNA analysis. The samples may have been influenced by degradation due to exposure issues caused during a freighting delay, however none of these samples included specimens that required DNA analysis for identification or impact assessment purposes, and therefore this limitation had an insubstantial impact on the results and findings.

3.2.2 Existing Environment

3.1.1.3 Stygofauna

The Proposal was found to contain a moderately rich stygofauna community, with 20 species or morphospecies of stygofauna being collected within the surveyed area (Table 5). Stygofauna groups collected include roundworms (Nematoda), earthworms (Oligochaeta), ostracods (Ostracoda), copepods (Copepoda), syncarids (Syncarida), amphipods (Amphipoda), and slaters (Isopoda).

Nematodes were collected in the survey but are not considered in environmental impact assessments (EPA, 2016a); all records of nematodes collected here are counted as a single species.

The species list is collated from the specimens collected in stygofauna net hauls, as well as the bycatch from troglofauna scrapes that entered the water table.

Table 5: Stygofauna of the Proposal

Higher Classification	Lowest Identification	No of Animals
Nematoda		
Nematoda	Nematoda sp.	7
Annelida		
Clitella		
Enchytraeidae	Enchytraeidae sp. Biologic-OLIGO20	1
	Enchytraeidae `2 bundle` s.l. (long thin 2 per seg)	2
	Enchytraeidae `2 bundle` s.l. (short sclero 2 per seg)	4
	Enchytraeidae `2 bundle` s.l. (short sclero 4 per seg)	1
	Enchytraeidae `3 bundle` s.l. (short sclero)	10
Phreodrilidae	Phreodrilidae sp. AP DVC s.l.	10
	Phreodrilidae sp. AP SVC s.l.	2
Crustacea		
Ostracoda		
Areacandona	*Areacandona mulgae*	5
Maxillopoda		
Diacyclops	*Diacyclops humphreysi* s.l.	12
	Diacyclops sobeprolatus	1
Fierscyclops	*Fierscyclops (Fierscyclops) frustratio*	2
Pescecyclops	*Pescecyclops* `BCY117`	2
Parastenocaris	*Parastenocaris* `COP001`	1
Malacostraca		
Billibathynella	*Billibathynella cassidis*	9
Paramelitidae	Paramelitidae `BAM226`	23
	Paramelitidae `BAM242`	6
	Paramelitidae Genus 2 sp.	2
Kruptus	*Kruptus* sp.	1

Higher Classification	Lowest Identification	No of Animals
Pygolabis	*Pygolabis weeliwolli*	1

Phylum/Subphylum

Class

The prospectivity for stygofauna in the regional area around the Proposal is high and groundwater under the Proposal mine pits supports a moderately rich stygofauna assemblage. The aquitard formed by Mt Sylvia and Mt McRae Shale to the north of the mine pits may create vertical and horizontal barriers, limiting distributions, as may the occurrence of unmineralized Banded Iron Formation (BIF) to the south. However, the distributions of the species collected suggest a high level of east-west connectivity.

The richness of the stygofauna community and the large depth to water at the holes sampled (usually >40 meters below ground level (mbgl)) conflicts with the 30 mbgl threshold for rich stygofauna communities suggested by Halse et al. (2014). However, the depth threshold seems not to apply to some fractured rock aquifers and suggests the stygofauna community in the Proposal is using the mineralised Brockman Iron Formation aquifer.

Although the Proposal supports a moderately rich assemblage, these species will not be impacted as the Proposal will not involve Below Water Table (BWT) mining, and groundwater abstraction for site use will be low (refer to Section 3.4.3).

3.1.1.4 Troglofauna

The desktop review suggested that the prospectivity for troglofauna in the local and regional area in and around the Proposal is high and also suggested that the Proposal mine pit impact area supports a moderately rich stygofauna assemblage. The unmineralized BIF, and sheetwash plain provides prospective and fractured habitat, while the deep depth to the water table, >30 metres (m), also provides considerable area of possible habitat, increasing the likelihood of abundant and diverse troglofaunal communities. A field survey was therefore undertaken to establish troglofaunal species occurrence and distributions at the Proposal and its vicinity.

A total of 28 species of troglofauna were collected from 273 samples, taken from 104 sites during three rounds of sampling, resulting in a relatively abundant, but only moderately diverse troglofauna community being present within the survey area. Genetic analysis was completed on 19 specimens, with 17 being successfully sequenced and assisting the assessment of species ranges.

Troglofauna groups collected include earthworms (Oligochaeta), microwhip scorpions (Palpigradi), pseudoscorpions (Pseudoscorpiones), short-tailed whip-scorpions (Schizomida), centipedes (Chilopoda), millipedes (Diplopoda), pauropods (Pauropoda), symphylans (Symphyla), diplurans (Diplura), silverfish (Zygentoma), cockroaches (Blattodea), true bugs (Hemiptera), beetles (Coleoptera), and flies (Diptera). The survey also yielded some specimen fragments or juveniles

(denoted as sp. indet.) that might belong to other species collected here might represent the same species. Following a precautionary approach, they are listed separately in Table 6.

The species list is collated from the specimens collected in troglofauna scrapes, traps, as well as the bycatch from stygofauna nets that were scraped along the side of uncased bores.

Table 6: Troglofauna recorded at the Proposal

Higher Classification	Lowest ID	No of Records
Annelida		
Oligochaeta		
Enchytraeidae	Enchytraeidae `2 bundle` s.l. (short sclero 2 per seg)	1
Arthropoda		
Arachnida		
Palpigradi	Palpigradi sp. indet	1
Tyrannochthonius	*Tyrannochthonius* `BPS604`	1
Draculoides	*Draculoides* sp. indet (juvenile)	1
	Draculoides `SCH055`	6
Myriapoda		
Chilopoda		
Cryptops	*Cryptops* `BSCOL146`	1
	Cryptops `BSCOL147`	1
Mecistocephalus	*Mecistocephalus* `BGE075`	1
Dipolpoda		
Lophoturus	*Lophoturus madecassus*	33
Pauropoda		
Pauropoda	Pauropoda sp. Biologic-PAUR085	1
Pauropodidae	Pauropodidae `BPU127`	1
	Pauropodidae `BPU128`	1
Decapauropus	*Decapauropus tenuis*	2
Symphyla		
Scutigerella	*Scutigerella* `BSYM142`	3

Higher Classification	Lowest ID	No of Records
Hexapoda		
Japygidae	Japygidae sp. indet.	3
	Japygidae `BDP154` (DPL002)	1
	Japygidae `BDP246` (DBP165 grp)	3
Dodecastyla	*Dodecastyla* sp. indet	7
Trinemura	*Trinemura* sp. indet (juvenile)	2
	Trinemura `BZY120`	2
Nocticola	*Nocticola* sp. indet	10
	Nocticola quartermainei s.l.	4
Cixiidae	Cixiidae sp. B02	4
Meenoplidae	Meenoplidae sp. WAM-PHAC001/H-HEM003	6
Phaconeura	*Phaconeura* sp. indet	15
Gregorydytes	*Gregorydytes ophthalmianus*	1
Rodwayia	*Rodwayia* sp. indet	1
Allopnyxia	*Allopnyxia* sp. B01	5
Total No.	28	198

Phylum/Subphylum

Class

Eight troglofaunal species collected were unique to the study, with three being restricted to the survey area; Cryptops `BSCOL147`, Pauropodidae `BPU127` and `BPU128`, all three of which are expected to have an extended linear range outside of areas of impact due to a combination of horizontally connected prospective geologies, small surface area of impact, and data deficiencies meaning that all three species were collected from a single drill hole or single specimens which is almost certainly reflecting the difficulties in sampling troglofauna at low abundances rather than real species distributions in this interconnected geology.

3.2.3 Mitigation

No specific mitigation measures were identified for subterranean fauna, other than those committed to by other factors, in particular Inland Waters (Section 3.2.3).

3.2.4 Impact Assessment

The Proposal will require the excavation of troglofauna habitat however the small size of the mine pits and the known presence of interconnected geology means that only a small proportion of habitat will be removed.

In summary, given the presence of interconnected geology, Bennelongia (2025b) considered that the impact to troglofaunal values resulting from Proposal development is negligible and unlikely to have a major impact on the subterranean fauna present.

3.3 Terrestrial Environmental Quality

There are no proposed impacts to Terrestrial Environmental Quality however, some minor unintentional impacts have the potential to occur such as hydrocarbon or chemical spills, or erosion. Large volumes of chemicals or hydrocarbons are not going to be stored on site, and these potential impacts are easily managed under industry-standard measures such that they are unlikely to be significant.

Geochemical Assessment (SRK Consulting, 2025; Appendix 5.8) identified that there was no problematic water material on site that required specific management.

Based on the above, and the information provided in Appendix 5.8, this factor is unlikely to be a significantly impacted by the Proposal.

3.4 Inland waters

Information within this section has been sourced from the Surface Water (Surface Water Solutions, 2025; Appendix 5.3) and Groundwater Assessments (Darkwater Consulting, 2025; Appendix 5.4) undertaken for the Proposal.

3.4.1 Survey Effort

Surface Water

Surface Water Solutions (2025) was commissioned by Darkwater Consulting, on behalf of HPPL to conduct surface water investigations, including pre- and post-development hydrology and proposed surface water management at the Proposal.

Hydraulic modelling was conducted with a two-dimensional approach using HEC-RAS Version 6.7 software. A direct precipitation or rain-on-grid hydraulic model was set up for the Round Hill catchment areas draining to Great Northern Highway, covering the site area under baseline and developed conditions. Hydraulic models were developed for the 20%, 10%, 5%, and 1% Annual Exceedance Probability (AEP) flood events under existing and Proposal conditions. Drainage management features were added to the Proposal conditions model to reduce potential ponding and scour.

Model input parameters applied to each hydraulic model runs are summarised in Table 7.

Table 7: Summary of surface water model parameters

Parameter	Adopted Value
Model Area	58 square kilometres (km^2)
Inflow	Regional Flood Frequency Estimation Model (RFFE) Peak Discharge Rates
Precipitation	12 hour nested frequency storm + 20% climate change uplift
Outflow	0.2% normal depth energy gradient
Initial Loss	20 mm + 10% climate change uplift
Continuing Loss	5 mm + 10% climate change uplift
Simulation Window	24 hours
Computation Time Step	5 to 10 seconds
Computational Mesh Size	10 to 20 metres
Roughness	0.040 to 0.080
Equation Set	Full momentum shallow water equation
DEM Resolution	1 x 1 m to 30 x 30 m

3.1.1.5 Groundwater

Darkwater Consulting (2025) was engaged by HPPL to complete a Hydrogeological Impact Assessment to support the Proposal. As part of this assessment, outcomes of hydrogeological investigations completed during the study were summarised and used to develop an updated conceptual model of the DE.

Investigative drilling completed during this study resulted in the establishment of three production bores across various hydrostratigraphic units within the DE, which were assessed as being able to sustainably meet the Proposal water demands for the proposed duration (up to 10 years) inclusive of a construction phase.

3.4.2 Existing Environment

3.1.1.6 Surface Water

3.1.1.6.1 Surface Water Catchment Area

The Proposal is located in the Fortescue River Region within the Pilbara-Gascoyne Division (Australian Rainfall and Runoff Data Hub, 2020). A catchment area of approximately 15 km^2 drains toward the Proposal upstream of the proposed pits, and a total catchment area of approximately 41 km^2 drains to the Great Northern Highway crossing along Coondiner Creek. Downstream of the Great Northern Highway, runoff reaches the Lyndon River, which ultimately drains to the Fortescue Marsh. Eagle Rock Pool, located along the Lyndon River, drains a catchment area of approximately 280 km^2, including the Proposal catchment area.

The Proposal is located adjacent to a 500 km^2 internally draining catchment area. Based on observations during a November 2023 site visit by Surface Water Solutions (2025), some surface water connections appear to be present between the 500 km^2 catchment area and the Great Northern Highway during infrequent events; however, the available topographic information is inadequate for defining the level and frequency of the connections. Catchment areas are shown in Figure 3.

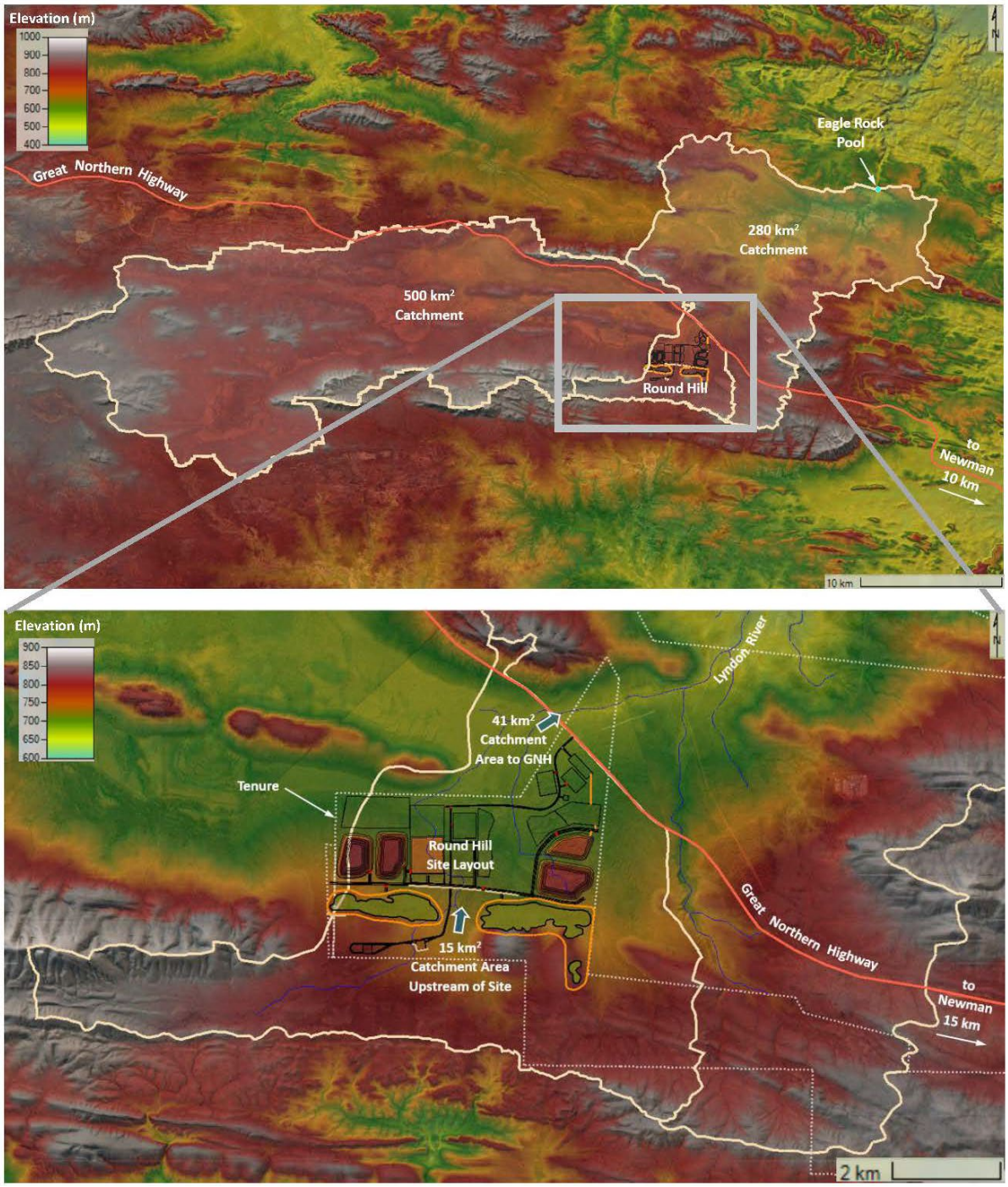


Figure 3: Catchment areas

3.1.1.6.2 Rainfall Intensity-Frequency-Depth

Intensity-Frequency-Depth data is required to characterise storm rainfall intensities and is provided by the Bureau of Meteorology (BoM). Information is provided for various AEP (BoM, 2025). On this basis, rainfall intensity data for the Proposal is shown in Table 8.

Table 8: Intensity-frequency-depth data (rainfall depth in mm)

AEP/ Average Recurrence Interval Duration	63 % 1 Yr	50 % 2 Yr	20 % 5 Yr	10 % 10 Yr	5 % 20 Yr	2 % 50 Yr	1 % 100 Yr
5 mins	60.8	79.8	108	126	148	178	201
30 mins	28.4	37.4	51.3	59.9	70.8	85.4	96.8
1 hour	18.8	24.9	34.7	40.8	48.6	59.1	67.4
2 hours	11.4	15.3	22.1	26.5	32	39.7	45.8
12 hours	2.71	3.81	6.24	7.98	10.2	13.4	16.1
24 hours	1.65	2.33	3.87	4.98	6.4	8.47	10.2
48 hours	1.01	1.43	2.35	3.02	3.86	5.09	6.13
72 hours	0.718	1.02	1.69	2.17	2.79	3.69	4.46

3.1.1.6.3 Evaporation

Estimated pan evaporation (as determined from BoM contour map) indicates that evaporation exceeds rainfall every month of the year, with annual evaporation levels an order of magnitude higher than annual rainfall (Table 9).

Table 9: Average monthly rainfall and estimated pan evaporation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Rainfall (mm)	69	70.2	42.8	20.8	18.2	16.2	13.2	6.1	5.5	5.7	13	35.4
Mean Evaporation (mm)	400	300	300	250	175	125	150	200	250	350	450	400

3.1.1.6.4 Regional Flood Frequency Estimation

Surface Water Solutions (2025) includes estimated peak discharge rates for the 15 km^2 upstream of the Proposal site and for the 500 km^2 internally draining catchment area west of the site (Appendix 5.3) Discharge estimates are based on the RFFE procedure. The RFFE model provides peak discharge rates by location based on historical gauge records and assigned catchment input values (Engineers Australia, 2015). The nearest gauge applied in the model is located approximately 200 kilometres (km) west of the Proposal, with a contributing catchment area of approximately 250 km^2.

The 10% AEP peak discharge rate is 34 cubic metres per second (m^3/s) for the local catchment and 207 m^3/s for the larger catchment. The considerable distance from the nearest gauge limits the accuracy of the results as reflected by the extremely wide confidence bands. The 2021 RFFE update (currently a beta release) yields a 1% AEP discharge rate of 108 m^3/s for the 15 km^2 catchment using the

recommended small catchment model. Results are shown for comparison in Appendix 5.3 (Surface Water Solutions, 2025).

3.1.1.6.5 Flood Mapping

The DWER floodplain mapping tool (2023) does not show any mapped floodplains in the vicinity of the Proposal; the nearest mapped floodplain is at Roebourne, approximately 300 km northwest of the Proposal.

3.1.1.6.6 Drainage

The Proposal is located in the upper margins of the Coondiner Creek catchment, and immediately north of the Western Creek and Homestead Creek catchments. Coondiner Creek flows to the north, through the Hope Downs 4 mine site, and reports to the southern boundary of the Fortescue Marsh. The Western Creek and Homestead Creek catchments flow to the south-east and east, before flowing north through the Newman area and reporting to the Fortescue River.

A 500 km^2 internally draining catchment is present immediately west of the Proposal. While surface water contributions from this catchment may only occur during sufficiently large rainfall events, this area represents a likely groundwater recharge area which contributes to groundwater throughflow.

Watercourses in the Proposal are ephemeral, with surface water flows only occurring during sufficiently large rainfall events. Drainage is poorly defined in the Proposal area, while the Coondiner Creek becomes more defined north of the Great Northern Highway. North of the Proposal, the Coondiner Creek watercourse has been partially diverted by mining infrastructure relating to the Hope Downs 4 mine site (Strategen, 2010).

Eagle Rock Pool and Eagle Rocks Falls are identified as permanent water holes occurring along Coondiner Creek, downstream of the Hope Downs 4 mine site (Strategen, 2010). Named watercourses and rock pools within catchments associated with the Proposal are shown in Figure 4.

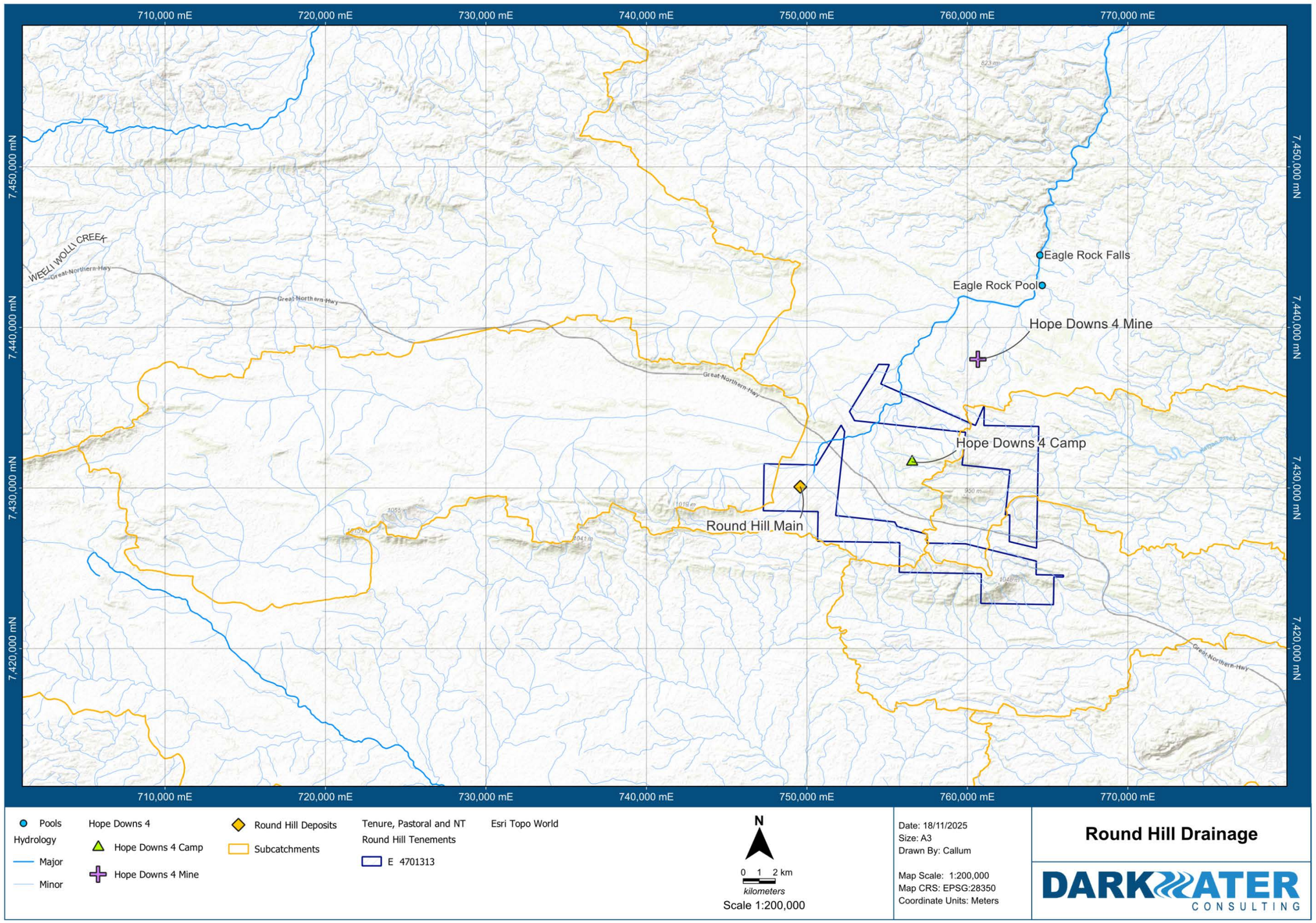


Figure 4: Drainage surrounding the Proposal

3.1.1.7 Ground water

Information within this section has been sourced from the Referral Environmental Review Document unless stated otherwise.

3.1.1.7.1 Hydrogeology

In general, the regional groundwater system is hosted in aquifers associated with Tertiary Detritals and underlying Paraburdoo Member of the Wittenoom Formation, located within the present-day, strike orientated valleys between ridges of Brockman and Marra Mamba Iron Formation. In addition, zones of high permeability associated with mineralisation, or with more generalised weathering, form localised aquifers. The extent to which these aquifer-systems are in hydraulic connection varies with the site specific geology and is largely dependent on structural features.

The primary aquifer units within the Proposal are associated with:

- The Dales Gorge and Joffre members of the Brockman Iron Formation, especially where secondary permeability is introduced through weathering/mineralisation;
- Tertiary detritals located within valleys, where extending below the water table; and
- Wittenoom Formation, or specific sub-units of the Wittenoom Formation, where sufficiently weathered to introduce secondary permeability.

Brockman Iron Formation

The Brockman Iron Formation is composed of broadly low permeability BIF/chert/shale. Mineralisation and weathering introduces secondary porosity and permeability, increasing aquifer prospectivity. Mineralisation at the Proposal and the Manhattan area is primarily hosted within the Dales Gorge Member, with minor mineralisation at the Proposal occurring in the Joffre Member and Whaleback Shale. Below water table mineralisation is primarily within the Dales Gorge Member.

The base of weathering is interpreted to represent the effective base of aquifer within the Brockman Iron Formation. The base of weathering as observed in exploration drilling is generally between 550 and 600 mAHD, which equates to a saturated thickness of 60 to 110 m.

Testing of EAPB1300, screened in an unmineralised region of the Dales Gorge Member, indicates that the Brockman Iron Formation forms a prospective, continuous aquifer outside of mineralisation within the Proposal. This could be a product of broader processes associated with mineralisation elsewhere in the area, and/or associated with extensive weathering observed throughout the unit.

Testing of EAPB1303, screened within the mineralised Dales Gorge Member, indicates regional aquifer prospectivity in the Brockman Iron Formation outside of the immediate Proposal orebody. Deep weathering of the Dales Gorge Member was also identified in resource drilling.

Tertiary Sediments

Tertiary detritals and Quaternary alluvium and colluvium are present north of the Proposal deposit, overlying sub-cropping Wittenoom Formation and associated with the drainage lines of Coondiner Creek.

Lithological logging and water level information indicates that there is no significant or continuous saturated tertiary aquifer within the Proposal. Resource drilling in the Manhattan area, and subsequent piezometer installations, did not identify any perched groundwater system associated with Coondiner Creek.

Wittenoom Formation

The Wittenoom Formation contains (from oldest to youngest): the West Angela Member, Paraburdoo Member, and Bee Gorge Member. There is no differentiation between Members of the Wittenoom Formation in the Proposal resource model. The Wittenoom Formation is primarily dolomite, with minor shale and BIF. It is generally of low permeability except where karstic weathering of dolomite is present, in which it can form a regional aquifer.

There is evidence to support the presence of dolomite within the sub cropping Wittenoom Formation north of the Proposal orebody. Assay results of sterilisation drilling completed in this area indicate extensive intervals with high CaO and MgO signatures indicative of Dolomite (up to ~30% CaO and ~20% MgO by weight). Based upon proximity to the overlying Mt Sylvia Formation, this may represent the Paraburdoo Member, which is primarily dolomite, or a dolomitic sub-bed of the upper Bee Gorge Member.

EAPB1303, which intersects this zone, was highly productive during testing and displayed limited drawdown. While the broader continuity of this sub-unit has not been tested, regional geological mapping indicates it is likely laterally extensive along the strike-orientated valley.

North of this dolomitic zone, HRPB0002, and proximal piezometers, displayed significantly lower hydraulic conductivity and associated sustainable yields. The position of these sites proximal to the regional syncline hinge, and logging of BIF and shale units, indicates these are likely screened within the overlying Bee Gorge Member EAPB1303 is therefore interpreted as being screened within east-west trending weathered Paraburdoo Member, bound by the less permeable Bee Gorge Member. There is inferred continuity to the west and east following the bedding along the southern limb of the east-plunging regional anticline structure.

While drilling information along the northern limb of this regional anticline is limited, assay results from all available Wittenoom Formation drilling on the northern limb displayed high CaO and MgO signatures at depth.

The base of weathering is interpreted to represent the effective base of aquifer within the Wittenoom Formation. The base of weathering as observed in exploration drilling is in the order of 600 mAHD, which equates to a typical saturated thickness of 55 to 60 m. Depth of weathering is variable throughout the area, likely attributable to the heterolithic nature of the Wittenoom Formation.

Mount McRae Shale and Mount Sylvia Formations

The Mount McRae Shale Formation and Mount Sylvia Formation are primarily composed of low permeability shales and are considered regional aquitards separating the Brockman Iron Formation and Wittenoom Formation.

During test pumping of EAPB1300, no drawdown was observed in the adjacent piezometer screened within this unit. There are no identified structures which may compromise the continuity of these units. It is expected that they will act as a hydraulic barrier between the Brockman Iron Formation and the Wittenoom Formation.

Some drawdown was observed in EAPZ1244, screened in the Footwall Zone or Colonial Chert Member of the Mount McRae Shale, during test pumping of EAPB1302. This may represent the presence of some localised secondary permeability or may be attributed to the proximity of this piezometer to the contact with the Dales Gorge Member.

Whaleback Shale Member

The Whaleback Shale Member of the Brockman Iron Formation separates the underlying Dales Gorge Member from the overlying Joffre Member. The Whaleback Shale Member is dominantly composed of shale and expected to act as an aquitard except in areas where secondary permeability has been introduced. Minor mineralisation is observed in the unit at the Proposal; however, this mineralisation occurs above the water table. As such, the Whaleback Shale Member is interpreted to act as an aquitard which further compartmentalizes the Brockman Iron Formation aquifer units.

3.1.1.7.2 Groundwater Recharge and Discharge

The Proposal is located in the upper margins of the Coondiner Creek catchment, immediately north of the catchment divide. Groundwater recharge occurs through a combination of direct infiltration of rainfall, and through concentration of sheet-flow and subsequent infiltration along drainage lines.

The internally draining catchment, located west of the Proposal, represents a potentially significant source of groundwater recharge to the sub-cropping Wittenoom Formation present throughout this catchment. The contribution of this catchment to groundwater recharge is supported by groundwater level observations, and through hydrochemical typing of collected water samples.

There are no identified areas of groundwater discharge within the immediate Proposal. Groundwater leaves the Proposal as throughflow towards the north, broadly following the topography and associated Coondiner Creek catchment, ultimately reporting to the Fortescue Marsh.

Chloride mass balance assessment of water quality samples indicate recharge rates in the order of 3 to 6% of annual rainfall, or between 9 and 18 mm per annum. This is based on assessment of observed chloride concentrations in groundwater samples and a regional chloride deposition rate of approximately 3 milligrams per litre (mg/L) per annum (Wilkins, et al., 2022).

Application of this recharge rate to the immediate Proposal surround and up-catchment area (nominal 68 km^2) equates to 0.6 to 1.2 Gigalitre per annum (GLpa) of recharge. Potential recharge occurring within the internally draining catchment (up to 500 km^2) immediately west of the Proposal, and associated throughflow, represents a significant additional component of groundwater recharge.

3.1.1.7.3 Groundwater Receptors

Regionally, groundwater receptors are associated with topographical lows where depth to groundwater is reduced, such as drainage lines, where groundwater may support vegetation or surface

expressions of groundwater. Depths to groundwater in the area, which exceed 30 mbgl, are indicative of the low likelihood of interaction between groundwater and superficial features.

The Proposal can be considered to be likely to support stygofauna, on the basis the prevalence of stygofauna in the Pilbara region and the site characteristics: fresh to brackish groundwater aquifer in fractured rock. Geological units known to provide stygofauna habitat are rock types or regolith deposits that have secondary porosity and are fully or partly saturated, usually occurring below the water table, including, but not limited to alluvial formations; calcretes (particularly when associated with paleochannel aquifers); channel iron deposits; fractured rock aquifers; karstic limestone and dolomite (EPA, 2021).

3.1.1.7.4 Groundwater Contours

Groundwater contours, shown in Figure 5, display the broadly north to north-easterly flow of groundwater.

Groundwater levels range from 60 mbgl (~662 mAHD) south of the orebody, to 27 mbgl (~654 mAHD) in the Manhattan area north of the Great Northern Highway. Trends indicate groundwater flowing to the north/north-east, broadly mirroring the topography and associated ephemeral drainage of Coondiner Creek.

High hydraulic gradients are observed across the Brockman Iron Formation at the Proposal and Manhattan (0.002 to 0.006), attributable groundwater flow occurring perpendicular to the strike of low permeability hydrostratigraphic units.

Hydraulic gradients in the southern limb of the Wittenoom Formation, interpreted as weathered dolomite of the Paraburdoo Member, are significantly lower (~0.0005 to 0.0008), indicative of higher hydraulic conductivity in this area. Water levels in this area display some component of eastward groundwater flow, potentially representing interaction between local northward groundwater flow through the Brockman Iron Formation and a regional eastward groundwater flow component along strike through the Wittenoom Formation.

Greater hydraulic gradients are observed in the area surrounding HRPB0002 (~0.0015), indicative of reduced hydraulic conductivity across the interpreted Bee Gorge Member of the Wittenoom Formation.

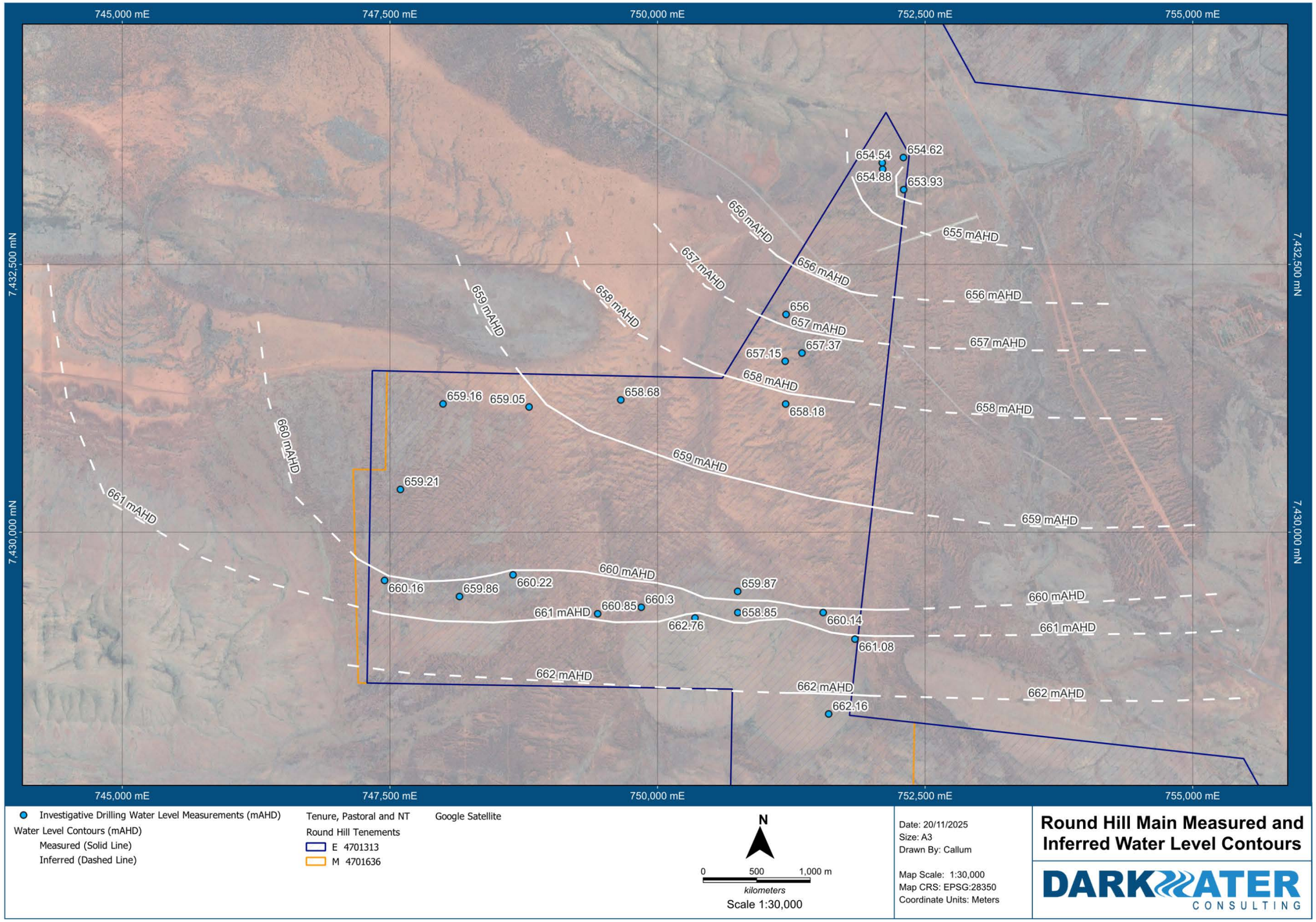


Figure 4: Drainage surrounding the Proposal

3.1.1.7.5 Groundwater Quality

Major ion chemistry of sampling programs are presented as Piper diagrams in Appendix 5.3 (Surface Water Solutions, 2025).

Spatial distribution of total dissolved solids (TDS) values during the 2025 sampling program are shown in Figure 6.

Groundwater quality is fresh across the Proposal, ranging between 371 and 820 mg/L. The highest value observed at EAPZ0607, screened in the Wittenoom Formation, was significantly different to 2024 observations (400 mg/L). This variability is expected to be related to sampling error and is not viewed as representative of temporal variability in water quality.

There is no distinct correlation between the direction of groundwater flow and TDS. There appears to be some degree of correlation with interpreted hydraulic conductivity of hydrostratigraphic units. This may indicate the influence of relatively uniform recharge across the Proposal and the influence of residence times in less permeable units.

Samples are broadly bicarbonate and calcium/magnesium dominant. The most distinct trend in samples appears to be an increase in relative proportion of calcium and magnesium in Wittenoom Formation samples, and in down-gradient samples collected in EAPB1302 in the Manhattan area.

Calcium and magnesium percentages are shown spatially in Figure 7. Relative freshness in piezometers interpreted as being screened in the Paraburdoo Member, and the calcium/magnesium signature observed in the Dales Gorge Member down-gradient, may demonstrate the influence of flow through the weathered Paraburdoo Member on the regional groundwater system.

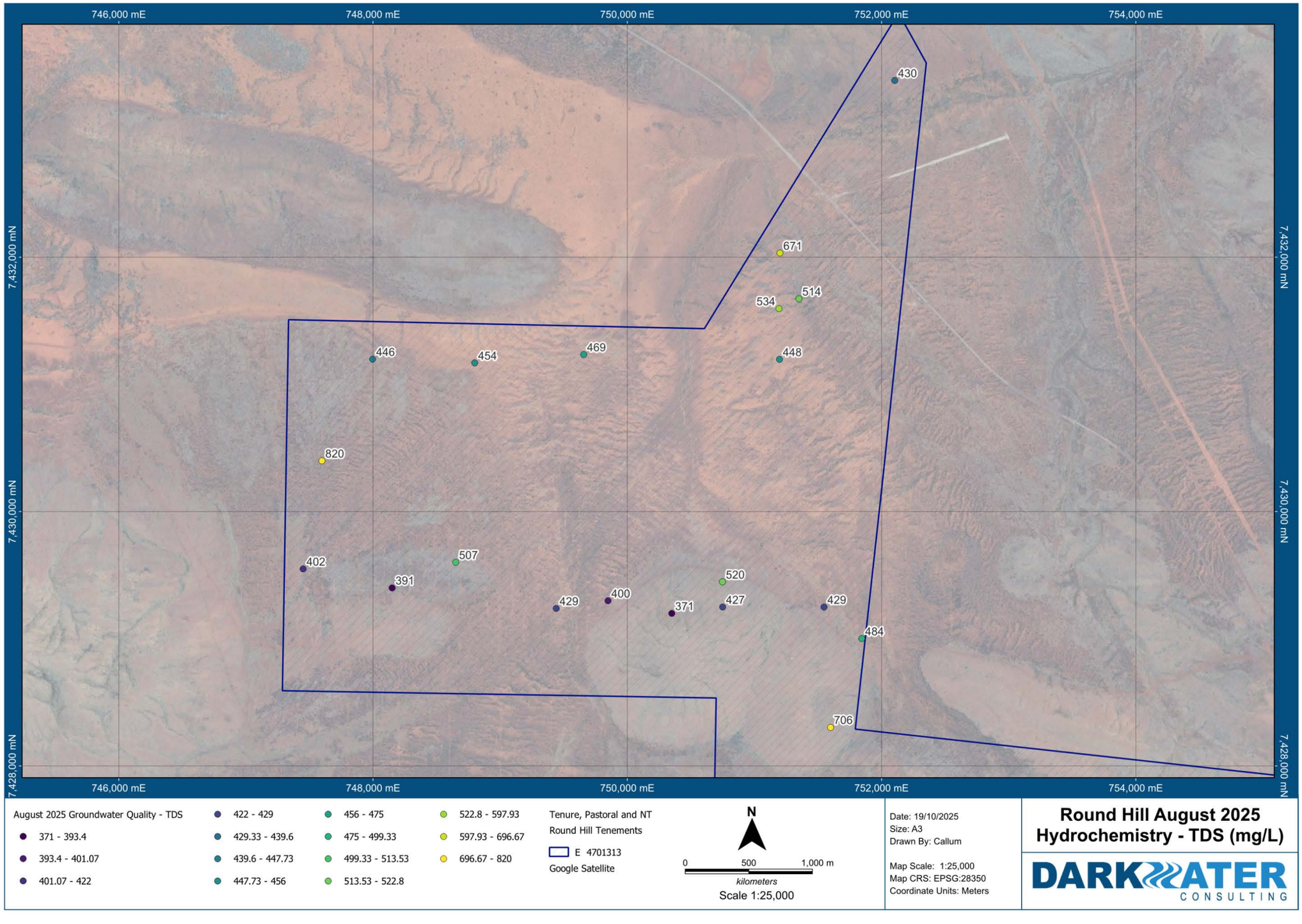


Figure 6: Hydrochemistry – TDS

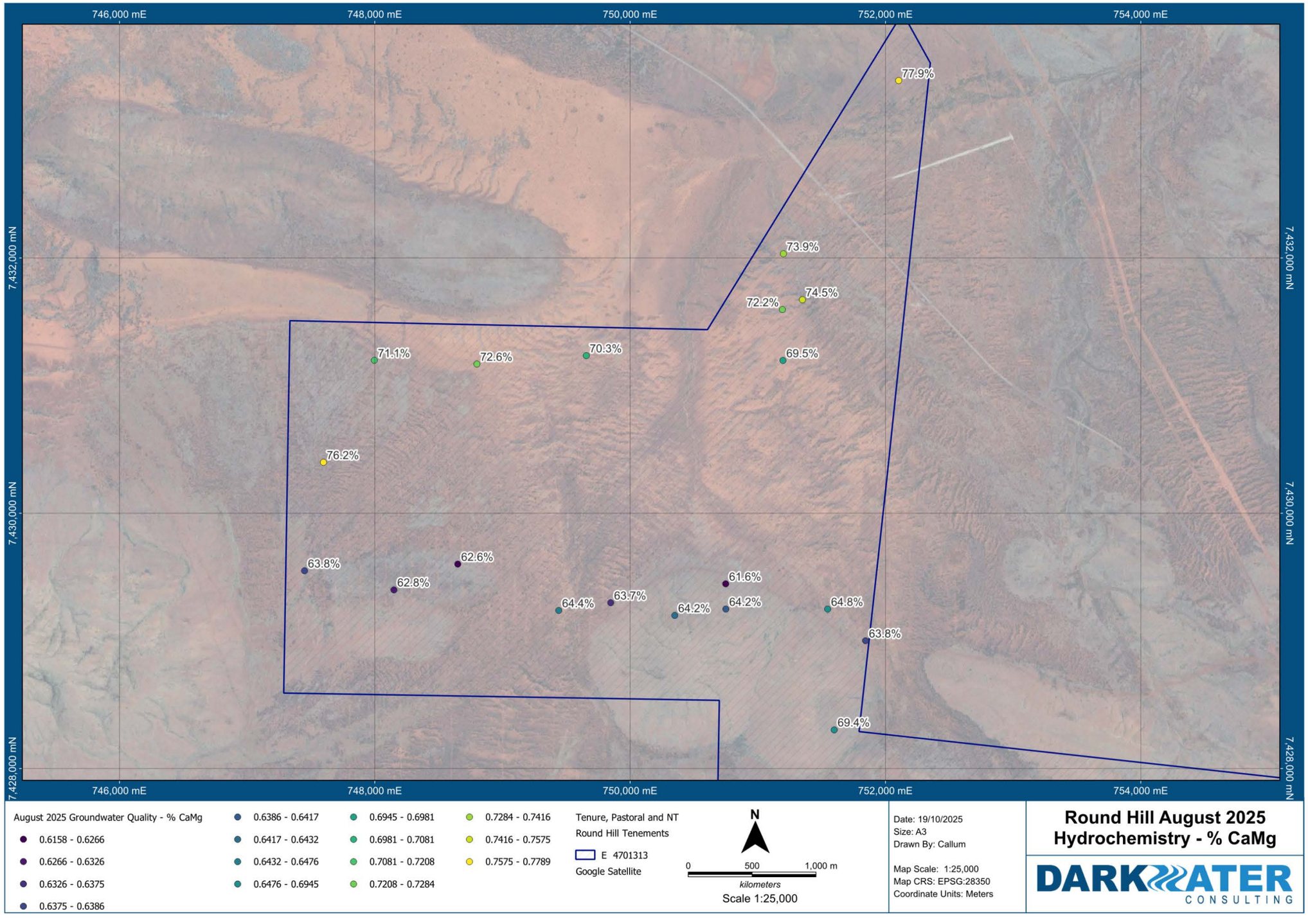


Figure 7: Hydrochemistry - % CaMg

3.4.3 Water Supply

3.1.2 Mine Water Balance

A mine water balance has been constructed to assess water supply requirements for the Proposal. As there is no BWT component associated with the Proposal, the water demand estimate is directly tied to the Proposal water supply requirements, and no assessment of surplus disposal is required.

Water demand components and resultant total water demand is provided in Table 10. As water demand inputs are constant and not attached to any Proposal variables (i.e., total material movement), the total water demand is constant and assumed to remain the same for the duration of operations (nominally up to 8 years dependent on product strategy).

Estimated Proposal water demand is approximately 0.73 GLpa (23 litres per second (L/sec)). Inclusion of a nominal 30% buffer, to capture any uncertainty in component estimates, increases the Proposal water demand to 0.95 GLpa (30 L/sec).

This water balance does not account for the potential reductions in dust suppression requirements associated with direct rainfall over the Proposal or capture of rainfall and/or surface water runoff by the mining void. These intercepted volumes would offset abstraction requirements and reduce the overall Proposal water demand.

Table 10: Water demand components and estimated total water demand

Component	Unit	Water Requirement		Comments
		Kilolitres per day	GLpa	
Operational water requirement	Mining dust suppression	1,431	0.522	Assumed 2 x CAT-777 water trucks at 75% operational capacity, operating within active mining areas
	Plant dust suppression	120	0.044	Water usage in plant to meet dust suppression and product moisture content requirements
	Haulage dust suppression	360	0.131	Dust suppression component associated with dust suppression of product stockpiles, loading of road trains, and maintaining access road between loading area and Great Northern Highway
	Drilling	4.1	0.001	Additional water demand for wet drilling
Potable water requirement	Camp	78.1	0.029	Value provided by HPPL - Inclusive of efficiency losses due to reverse osmosis process
Total		**1,993**	**0.728**	
Total (inclusive of 30% buffer)		**2,591**	**0.946**	

3.1.3 Groundwater Sources

Proposed water supply sites are listed in Table 11 and shown in Figure 8. Assessment of production bores established during the investigative drilling phase of this study indicates that these sites will be able to collectively meet the water supply requirements of the Proposal (Rockwater, 2025).

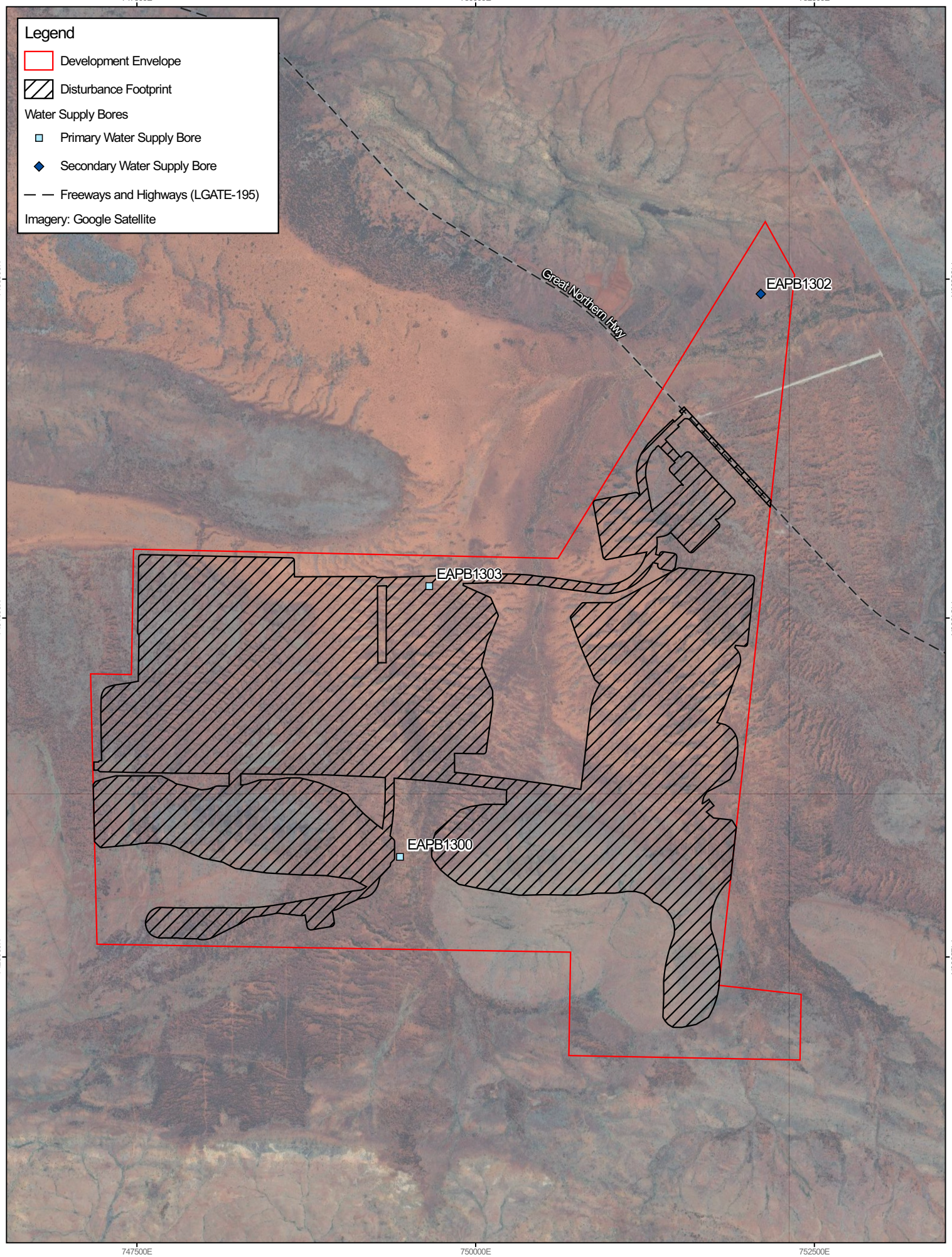
It is proposed that the two near-mine abstraction bores, EAPB1300 and EAPB1303, are used as the primary water supply sites due to their proximity to the DF, and the ability to monitor drawdown within the Proposal tenure.

Based upon the adopted hydrogeological conceptualisation, there is potential for aquifer heterogeneity, and the presence of barriers to groundwater flow, to influence sustainable abstraction rates in bores over the duration of the Proposal.

As such, it is important that there is flexibility in the distribution of abstraction between the three established water supply sites. It is proposed that all sites are equipped at the operational capacity at which they were tested (20 L/sec) to allow for the ability for any one site to meet a majority of the Proposal water demands.

Table 11: Proposed water supply sites

Bore ID	Easting	Northing	Standing water level (metres below top of casing)	Required abstraction rate (L/sec)
Primary Water Supply Bore				
EAPB1300	749441	7429239	37.8	20
EAPB1303	749657	7431236	29.47	20
Secondary Water Supply Bore				
EAPB1302	752104	7433391	31.46	20



0 0.6 1.2 km

GDA2020 / MGA zone 50

1:35,000

N

Project: 0612_ROU_002
Date: 23/12/2025
Size: A4
Author: ASmithers

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Figure 8: Proposed water supply sites

3.4.4 Mitigation

A key avoidance component of the Proposal is the removal of mining and infrastructure within the main drainage line that runs north-south through the middle of the Proposal. This has avoided any damming or diversions of that drainage line, maintaining flows to the north.

Minimisation measures are described in the following sections.

3.1.3.1 Surface Water

3.1.3.1.1 Maintaining Water Flows

The results of preliminary models were extracted to guide the sizing and placement of drains, bunds, culverts, and floodways. Bunding is proposed to route external runoff around the outside perimeter of the site, avoiding mixing of runoff from natural catchments with site runoff. Culverts will be placed at roadway crossings where drainage can be conveyed with reasonable culvert lengths. Excavated drains will be installed to provide consistent longitudinal slopes along the outside of bunds and in areas where pooling was predicted. Roadway drains will intercept upstream drainage and route runoff to culvert or floodway crossings. Where channels cross roadway alignments at grade, armoured floodways are proposed to prevent erosion and reduce post-flood maintenance requirements.

3.1.3.1.2 Scour and Sedimentation

The flood maps in Appendix 5.3 show areas where ponded water will accumulate and where flow constrictions result in relatively high velocities. The velocity maps in Appendix 5.3 highlight areas where Type A or Type B rock is likely to be installed as scour mitigation. Detailed adjustments to the layout may further reduce ponding by providing additional drainage corridors between features. Maximum velocities and accompanying armour rock requirements may likewise be reduced by further, detailed adjustments to fill areas to reduce localised flow constrictions.

Batter slopes will be protected with coarse material appropriate for the design slope and pad size to protect against erosion from local rainfall runoff. Based on the predicted velocities, no armour rock is required within the site area to protect against external, impinging flows except where noted above. Batter slopes will use standard erosion protection measures. Any flow concentration related to non-modelled features may require localised scour protection.

Some remedial earthworks requirements would be expected following greater-than-design events.

Catch bunds and drains will be placed at the toe of exposed slopes to collect sediments and pollutants. Sediment basins will be incorporated into the design where placed fill material or exposed excavation batter slopes are exposed to direct rainfall and runoff. Additional bunds may be required to separate mine-affected water from external flows.

3.1.3.2 Groundwater

Groundwater abstraction will be managed under the conditions of the 5C Licence, with specific withdrawal limits and rates expected to be imposed to minimise the potential environmental impacts of the abstraction.

3.1.3.2.1 Proposed Monitoring Sites

Proposed monitoring sites are listed in Table 12. The location of these sites relative to water supply sites and the proposed Proposal footprint are shown in Figure 9. Proposed locations are preliminary and may be revised to minimise interaction with the proposed Proposal footprint or to incorporate improved hydrogeological understanding.

The purpose of the proposed monitoring network is to:

- Measure drawdown associated with abstraction bores, in order to assess impacts to groundwater levels and validate predictions;
- Assess aquifer performance and improve understanding of aquifer units, allowing for borefield optimization and assess requirements for contingency measures; and
- Regularly monitor groundwater quality to identify any water quality changes attributable to abstraction.

Where possible, existing monitoring infrastructure has been incorporated into the monitoring network. However, overlapping of some existing infrastructure with the proposed Proposal footprint will require establishment of new monitoring sites.

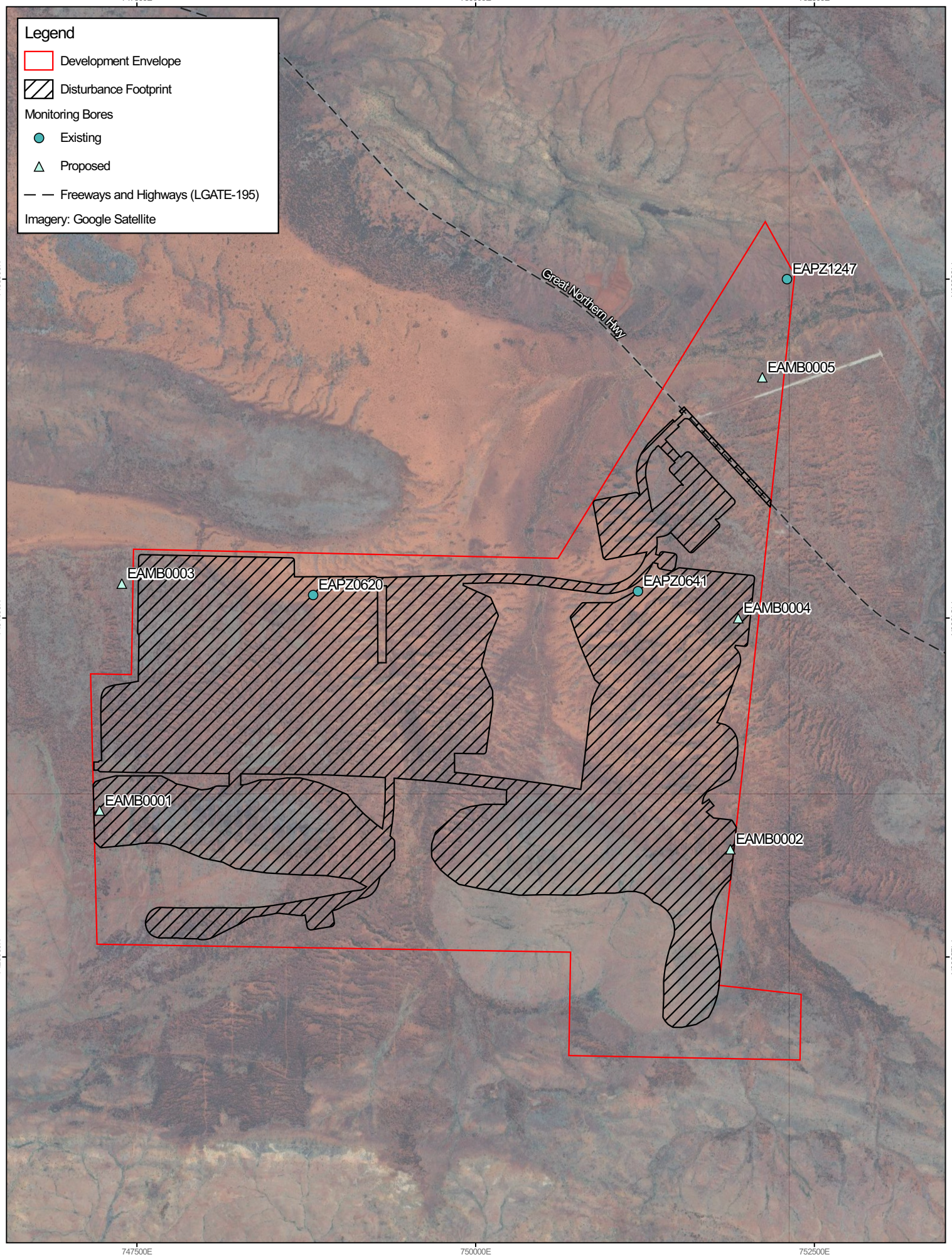
Proposed monitoring activities will involve:

- Regular monitoring of bore abstraction rates, field water level measurements and field water quality parameters;
- Regular collection of field water levels at monitoring bores;
- Continuous monitoring of groundwater levels in all sites using pressure transducers; and
- Regular collection of water samples at all sites for laboratory analysis.

Table 12: Proposed monitoring bores

Associated Production Bore	Bore ID	Easting	Northing	Status	Targeted Unit	Purpose
EAPB1300	EAMB0001	747224	7429581	Proposed	Dales Gorge (Brockman Iron Formation)	Monitoring along strike of EAPB1300, Tenement boundary monitoring
	EAMB0002	751879	7429295	Proposed	Dales Gorge (Brockman Iron Formation)	
EAPB1303	EAPZ0620	748800	7431170	Existing	Paraburdoo Member (Wittenoom Formation)	Monitoring along strike of EAPB1303
	EAPZ0641	751197	7431198	Existing	Bee Gorge Member (Wittenoom Formation	
	EAMB0003	747388	7431254	Proposed	Paraburdoo Member (Wittenoom Formation)	Monitoring along strike of

Associated Production Bore	Bore ID	Easting	Northing	Status	Targeted Unit	Purpose
	EAMB0004	751937	7430999	Proposed	Paraburdoo Member (Wittenoom Formation)	EAPB1303, Tenement boundary monitoring
EAPB1302	EAPZ1247	752297	7433500	Existing	Dales Gorge (Brockman Iron Formation)	Monitoring along strike of EAPB1302
	EAMB0005	752115	7432776	Proposed	Bee Gorge Member (Wittenoom Formation	Monitoring of any drawdown propagation associated with EAPB1302



0 0.6 1.2 km

GDA2020 / MGA zone 50

1:35,000

Project: 0612_ROU_028
Date: 23/12/2025
Size: A4
Author: ASmithers

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Figure 13: Proposed monitoring bores

3.4.5 Impact Assessment

3.1.3.3 Surface Water

With the implementation of mitigation, the primary impact on surface water is the reduction in catchment area, which equates to a 19.5% reduction in the local catchment that flows under Great Northern Highway, and a 2.9% reduction in the broader catchment that reports to Eagle Rock Pool (Surface Water Solutions, 2025; Figure 10).

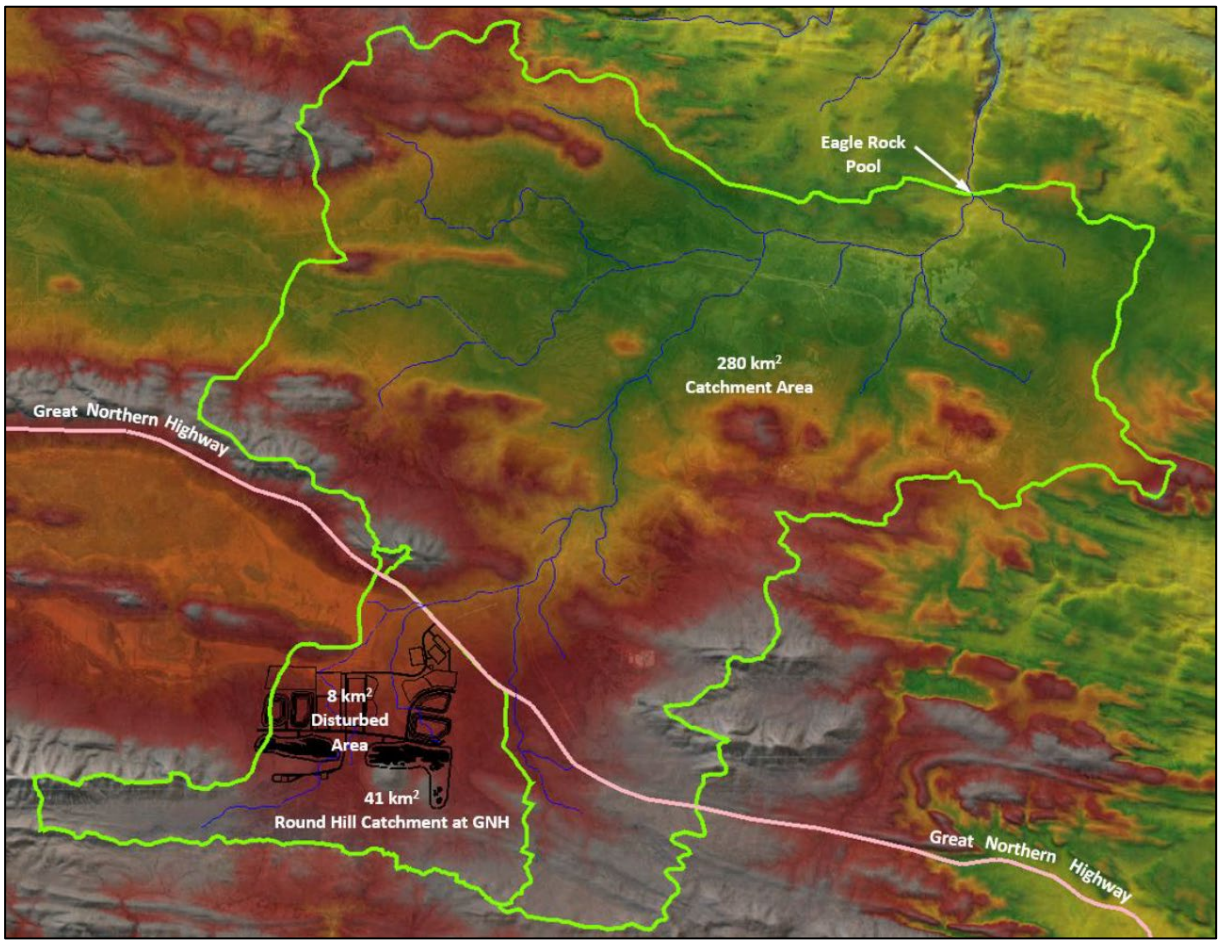

Figure 10: Disturbance area relative to natural catchments

The influence of the Proposal during flow events is generally equivalent to the catchment size reduction at Eagle Rock Pool, with a 2.9% reduction in flow volumes during a 10% AEP and 1% AEP event. Impacts in the local catchment are generally lower than the catchment reduction, with a 14.0% and 12.1% reduction in flow volume under Great Northern Highway.

These changes are within natural ranges, with the reductions equivalent to a slightly smaller rainfall event. The influence of the Proposal on the downstream hydrology is therefore unlikely to be significant.

3.1.3.4 Groundwater

3.1.3.4.1 Abstraction

Drawdown contours at the end of the abstraction period (Year 10) are shown in Figure 11. Hydrographs showing drawdown at production bores and at Hope Downs 4 Camp are shown in Figure 12.

Predictions show that drawdown associated with abstraction from EAPB1300 and EAPB1303 will propagate both along strike within the Brockman Iron Formation and regionally within the Wittenoom Formation. Low permeability units which bound the abstraction areas will constrain impacts to the DE, preventing propagation of drawdown beyond the regional anticline structure.

Model runs predicted a drawdown of approximately 15 m at EAPB1300, and approximately 12.5 m at EAPB1303. Using the installed base of screen depths, this represents a 28% reduction in saturated thickness at EAPB1300, and a 21% reduction in saturated thickness at EAPB1303.

More broadly, drawdown generated in the Dales Gorge Member through abstraction at EAPB1300 equates to a reduction in saturated thickness of approximately 16% across the modelled extent of the unit. Drawdown generated in the Wittenoom Formation through abstraction at EAPB1303 equates to a reduction in saturated thickness of approximately 17% across the modelled extent of the unit. These values assume the base of aquifer is represented by the completed depth of the relevant production bores, which is conservative based upon interpreted depths to weathering in exploration logging.

Construction details registered in the DWER Water Information Reporting database describe the Hope Downs 4 Camp water supply bores as being screened at depths of up to 124 - 130 mbgl, or approximately 590 - 584 mAHD. A predicted 5.5 m drawdown in the Hope Downs 4 Camp area, attributable to Round Hill abstraction, would equate to an approximate 8% reduction in saturated aquifer thickness intersected by these bores.

Based upon these factors, there is a low likelihood of changes to groundwater levels associated with abstraction having a significant impact on regional subterranean fauna habitat and groundwater users.

Based upon groundwater chemistry characterisation, there is limited variability in water quality across the site. Conceptually, there are no identified features which would cause a significant change in groundwater quality resulting from abstraction for water supply purposes.

These assumptions will be validated through regular monitoring of groundwater quality during the operation of the Proposal water supply to measure and manage any water quality impacts derived from abstraction.

Assessment of various risks associated with the Proposal water supply are summarised in Table 13.

Table 13: Groundwater impact assessment

Component	Description	Risk Rating	Treatments
Groundwater Dependent Vegetation	• No groundwater dependent vegetation is identified within the domain of predicted groundwater impacts • Observed depths to groundwater (60 to 27 mbgl) support a lack of interaction between groundwater and vegetation	N/A	N/A
Surface Expression of Groundwater (e.g., Pools)	• No permanent/semi-permanent surface water features are identified within the domain of predicted groundwater impacts • Observed depths to groundwater (60 to 27 mbgl) support a lack of interaction between regional groundwater system and any surface features	N/A	N/A
Subterranean Fauna	• Groundwater level reductions resulting from abstraction will reduce the saturated thickness of units which support subterranean fauna communities (stygofauna) • Subterranean fauna characterisation studies indicate these species are likely continuous along strike within targeted hydrostratigraphic units • Predicted drawdowns in hydrostratigraphic units equates to a nominal 16 - 17% reduction in saturated thickness within analytical model bounds • Water levels predicted to recover within time-frame equivalent to Proposal life post-mining	Low	• Application of conservative approach to impact assessment • Continued monitoring of groundwater levels and quality, and comparison to predicted impacts • Adaptive management of abstraction network to mitigate impacts where necessary
Other users	• Groundwater level reductions resulting from Proposal abstraction will reduce the saturated thickness of units which are targeted by Hope Downs 4 Camp abstraction • Predicted impacts represent an approximate 8% reduction in saturated thickness in Hope Downs 4 Camp abstraction bores, based upon available bore construction information	Low	
Water supply continuity	• Assessment of Proposal water supply sustainability is based upon testing of production bores and the hydrogeological conceptualisation of the groundwater system • Continuity of tested hydraulic parameters along strike has resultant impact on scale of drawdown and potential contingency measures • Limited drawdown estimated relative to total saturated aquifer thickness	Low	• Application of conservative approach to impact assessment • Continued monitoring of groundwater levels and comparison to predicted aquifer response • Adaptive management of abstraction network to
Cumulative Impacts	• Based on available information, the proposed abstraction represents a 4% increase in total licenced abstraction, which is negligible in the regional catchment context	Low	

Component	Description	Risk Rating	Treatments
	• The geological stratigraphy and structures within the region limit interaction between the proposed abstraction and third-party abstraction		ensure continuity of water supply

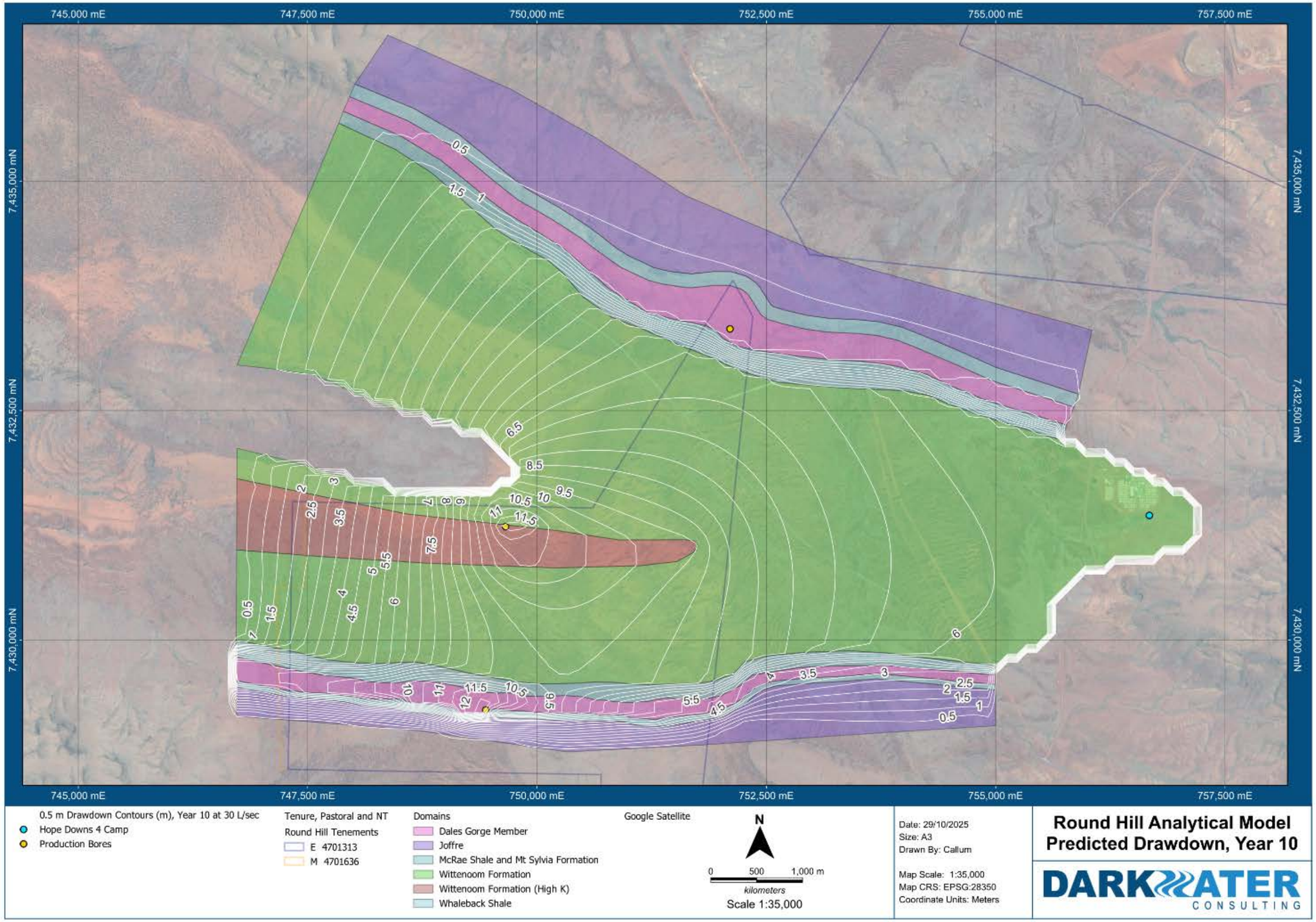

Figure 11: Predicted maximum groundwater drawdown contours

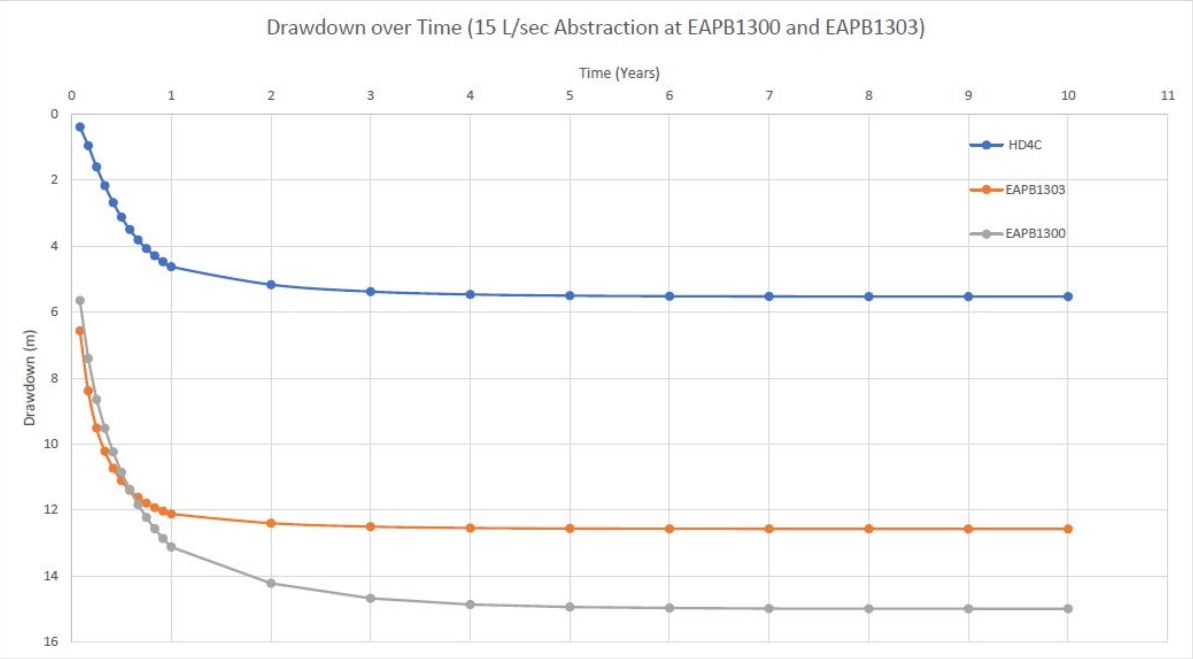

Figure 12: Drawdown over time at bore locations

3.1.3.4.2 Post Abstraction Groundwater Recovery

A range of methods were applied to frame the magnitude of abstraction relative to regional recharge, and to estimate the length of time required for groundwater levels to recover upon cessation of abstraction.

The proposed abstraction rate (0.95 GLpa) falls within the range of estimated recharge over the immediate Proposal catchment (0.6 - 1.2 GLpa). The internally draining catchment located west of the Proposal represents an additional source of recharge to the local groundwater system at a similar or greater magnitude to recharge within the Proposal domain (i.e., a further 0.6 - 1.2 GLpa of recharge).

The total maximum proposed abstraction of 9.5 GL (0.95 GLpa over a period of 10 years) is equivalent to 4 - 8 years of recharge over areas which contribute groundwater to the Proposal domain.

The analytical model constructed to assess drawdown was also used to assess the rate of groundwater recovery. Groundwater levels in abstraction bores recovered to within baseline levels in a similar timescale to the length of proposed abstraction i.e., within a ten-year period.

Conceptualisation of recovery times are also supported by available test pumping data, with all tested bores being observed to recover to within 90% of pre-testing groundwater levels in less than 24 hours after cessation of pumping.

In conclusion, the proposed abstraction is deemed to be sustainable based upon the volume of abstraction relative to groundwater recharge. It is anticipated that the groundwater system will recover from abstraction within a similar timeframe to the length of proposed abstraction i.e., within ten years post-abstraction.

3.5 Air Quality

The EPA's environmental objective for this factor is *"to maintain air quality and minimise emissions so that environmental values are protected"* (EPA, 2016b).

Health issues associated with dust emissions are likely to be minimal given the composition of the ore and the implementation of controls required by Works Approvals and Licences issued under Part V of the EP Act to minimise airborne dust. Additionally, water or dust suppressants will be applied to disturbed areas, mining areas and product transfer/storage areas as required to minimise dust generation.

It is considered unlikely that the Proposal will have a significant impact on air quality. The nature and scale of the Proposal, and the separation distance to surrounding sensitive receptors far exceeds the EPA's minimum recommended buffer and adverse impacts to Air Quality are not expected to occur.

Based on the above, HPPL considers that the Proposal can be implemented such that there are no significant residual impacts to this factor, and the EPA objective can be met.

3.2 Greenhouse Gas Emissions

3.2.1 Receiving Environment

National and State Greenhouse Gas Emissions

The Quarterly Update of Australia's National Greenhouse Gas (GHG) Inventory: June 2025 (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2025a) estimated Australia's Greenhouse Gas (GHG) emissions for the year to June 2025 to be 437.5 million tonnes of carbon dioxide equivalent (Mt CO_2-e). Australia's emissions have declined 28.5% on the year to June 2005.

State emission estimates are based on the latest (2023) national estimates calculated in *The National Inventory Report 2023* (DCCEEW, 2025b). Estimates are calculated on a United Nations Framework Convention on Climate Change accounting basis. A total of 89.3 Mt CO_2-e GHG emissions was estimated for WA for the year.

A sectoral breakdown of Australia and WA GHG emissions is provided in Table 14.

Table 14: Sectoral breakdown of National and State GHG emissions

Sector	Australian emissions (DCCEEW, 2025) (Mt CO_2-e)	WA	
		Emissions (DCCEEW, 2023) (Mt CO_2-e)	Contribution to national emissions (%)
Energy	386.9	81.4	21.0
Industrial Processes	30.0	5.4	18.0
Agriculture	80.4	10.0	12.4
Waste	13.8	1.9	13.8
Land use, land use change, and forestry	-73.7	-9.4	12.8
Inventory Total	**437.5**	**89.3**	**20.4**

3.2.2 Mitigation

HPPL has mitigated the potential impacts to this factor according to the mitigation hierarchy to ensure the Proposal will be implemented in a manner that aligns with State and Commonwealth targets.

3.2.2.1 Mitigation of Scope 1 Emissions

The following measures are proposed to avoid, reduce, or offset Scope 1 emissions:

- Investigate use of alternative power options such as site-based renewable energy sources;
- Ongoing optimisation of the Proposal to reduce energy use; and
- Review and investigations of other energy efficiency measures.

Further details of these measures are provided below.

3.2.2.1.1 Renewable energy supply

HPPL has investigated several power supply options for the Proposal, including hybrid power generation. Onsite renewable power will replace a portion of the energy requirements of the Proposal. However, studies for preferred renewable option are ongoing. HPPL will continue to investigate the development of onsite renewable power, with the intent to utilise cleared land that is no longer needed for other purposes post-construction.

3.2.2.1.2 Other measures

Reductions in Scope 1 emissions will be achieved by maximising the diesel efficiency for the Proposal to reduce diesel use. The following activities will be implemented to minimise the use of diesel:

- Haul truck scheduling, routing, and idling times will be optimised to minimise diesel consumption;
- Site and mine access will be designed to limit the amount of effort required for machinery and trucks (i.e., roads constructed with low gradient);
- Haul roads will be compacted to reduce rolling resistance;
- The haul road design will be optimised to minimise the amount of distance haul trucks need to travel;
- Truck maintenance will be scheduled regularly, including tyre condition inspections and monitoring; and
- Consideration of fuel efficiency of haul trucks will be undertaken during procurement.

3.2.3 Impact Assessment

3.2.3.1 Emission Sources

Scope 1 emissions are the emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility level. Scope 1 emissions are sometimes referred to as direct emissions. Scope 1 emissions associated with the Proposal will primarily be generated from the consumption of diesel by vehicles for road haulage, non-transport, and power generation. Diesel used by trucks for the transport of product to the Roy Hill Hub is included as Scope 1 emissions, in accordance with EPA Guidance. This differs from the National Greenhouse and Energy Reporting Scheme (NGERS), where product transport would be regarded as Scope 3 emissions.

Scope 2 emissions are the emissions released to the atmosphere from the indirect consumption of an energy commodity, such as grid electricity that is generated at another facility. Power will be generated on site, as such, power generation will be included in Scope 1 GHG emissions. No Scope 2 emissions will be produced.

Scope 3 emissions are indirect GHG emissions (other than Scope 2 emissions) that are generated upstream and downstream of the Proposal's value chain. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business. Examples of Scope 3 emissions associated with the Proposal include:

- Energy used at the Roy Hill Hub to further process the ore delivered from this Proposal;
- Fuel used by ships in exporting the product to overseas customers;
- Diesel used by trucks to transport goods to steel mill; and
- The production of the steel end product.

3.2.3.2 Emission Calculation Methods

Emissions were calculated by inputting Proposal elements (extent and type of vegetation clearing, fuel use, operating hours, and life of mine) into relevant GHG emission calculators.

The GHG that are reported under the NGERS include CO_2, methane, nitrous oxide, sulphur hexafluoride and specified kinds of hydro fluorocarbons and perfluorocarbons. The main gases expected to be released from activities associated with the Proposal are CO_2, methane, and nitrous oxide. These are expressed in units of tonnes of CO_2 equivalent (t CO_2-e), which considers the 'global warming potential' (GWP) of each gas. CO_2 has a GWP of 1. Methane has a GWP of 28, such that 1 tonne of methane is expressed as 28 t CO_2-e. Nitrous oxide has a GWP of 265.

3.2.3.3 GHG Emission Estimates

Estimated GHG emissions include consideration of Scope 1, 2 and 3 emissions.

Consistent with the EPA's objective, HPPL has considered measures to reduce the net GHG emissions from the Proposal. HPPL has previously investigated two methods of power generation, solely diesel (Scenario 1) and hybrid power generation (Scenario 2).

3.2.3.4 Construction

Scope 1 emissions source and quantification method:

Total Scope 1 Construction GHG emissions: 32,438 t CO_2-e

The methods adopted by to quantify the Scope 1 GHG emissions are aligned primarily with the Australian Government's NGERS, which is administered by the Clean Energy Regulator.

Energy and emission factors for each of the identified Scope 1 and 2 emissions sources are sourced from the latest NGERS Measurement Determination (Compilation 16) (Australian Office of Parliamentary Counsel, 2023).

Scope 2 emissions source and quantification method:

Total Scope 2 Construction GHG emissions: 0 t CO_2-e

Power production during construction will be sourced entirely from onsite generation.

Scope 3 emissions source and quantification method:

Total Scope 3 Construction GHG emissions: 0 t CO_2-e

3.2.3.5 Operation

HPPL has continued to review how it will operate the Proposal to reduce the GHG emissions. The incorporation of a hybrid energy solution is expected to reduce total Scope 1 emissions by reducing the long term reliance on on-site diesel generation and maximise the use of hybrid power generation. This will result in total estimated Scope 1 emissions reducing from 746,636 t CO_2-e to 582,215 t CO_2-e.

Scope 1 emissions source and quantification method:

Total Scope 1 Operation GHG emissions: 582,215 t CO_2-e

Annual Average Scope 1 emissions: 47,281 t CO_2-e

The methods adopted to quantify the Scope 1 GHG emissions are aligned primarily with the Australian Government's NGERS, which is administered by the Clean Energy Regulator.

Energy and emission factors for each of the identified Scope 1 emissions sources are sourced from the latest NGERS Measurement Determination (Compilation 16) (Australian Office of Parliamentary Counsel, 2023).

Scope 2 emissions source and quantification method:

Total Scope 2 Operation GHG emissions: 0 t CO_2-e.

Power production during operations will be sourced entirely from onsite generation.

Scope 3 emissions source and quantification method:

Total Scope 3 Operation GHG emissions: 50,664,412 t CO_2-e

Annual Average Scope 3 emissions: 3,897,262 t CO_2-e

The methods adopted to quantity Scope 3 GHG emissions are aligned primarily with the Australian Government's NGERS, which is administered by the Clean Energy Regulator.

The estimated emissions over the life of the Proposal for Scope 1 are shown in Figure 13 (No Scope 2 emissions are predicted).

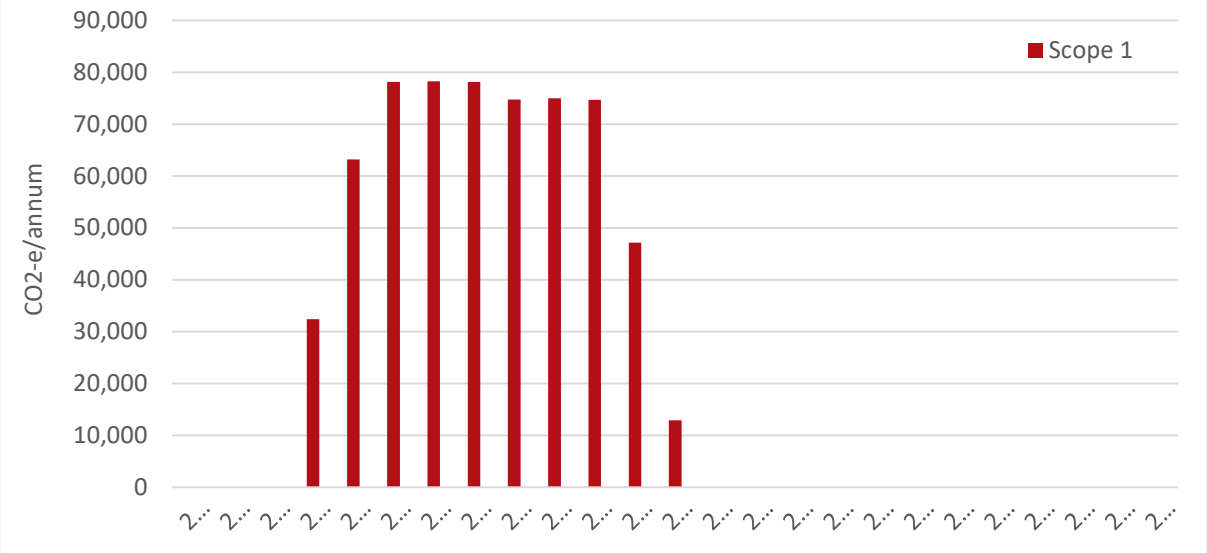

Figure 13: Estimated Scope 1 emissions over the life of the Proposal

3.2.3.6 Summary

A summary of the estimated emissions inventory for the life of the Proposal is provided in Table 15. Table 16 defines the predicted GHG emissions (direct, indirect, and cumulative) in a local and regional context.

Table 15: GHG emissions summary

Emissions	Average Emissions (t CO_2-e per year)	Total Emissions (t CO_2-e)	Percentage
Scope 1 emissions			
Non- transport	12,720	**139,923**	22.8
Transport	1,254	**13,795**	2.2
Power Generation - Hybrid	6,795	**74,747**	12.2
Construction	328	**3,611**	0.6
Clearing and Waste	4,406	**48,470**	7.9
Road Haulage - Road	30,373	**334,107**	54.4
Total Scope 1 Emissions	55,878	**614,653**	100
Scope 2 emissions			
Total Scope 2 Emissions	**0**	**0**	**0**
Scope 3 emissions			
LNG road transport	3,460	**38,065**	0.1
Shipping	58,828	**647,104**	1.3
Steel	4,543,568	**49,979,244**	98.6
Total Scope 3 Emissions	4,605,856	**50,664,412**	100

Table 16: Predicted GHG emissions

Environmental value	Potential direct impact	Potential indirect impact	Impacts associated with other proposals	Total cumulative impact
GHG emissions	Up to 51,279,065 t CO_2-e over the life of the Proposal averaging 3,944,543t CO_2-e per year	Up to 6,673,232 t CO_2-e of Scope 3 GHG emissions per year	Total annual State GHG emission of approximately 89.3 Mt CO_2-e (5.4 Mt CO_2-e of which are Scope 1 GHG emissions from industrial processes) Total annual National GHG emissions of approximately 437.5 Mt CO_2-e (30.0 Mt CO_2-e of which are Scope 1 GHG emissions from industrial processes)	Total annual State GHG emission of approximately 93.2 Mt CO_2-e (5.4 Mt CO_2-e of which are Scope 1 GHG emissions from industrial processes) Total annual National GHG emissions of approximately 441.4 Mt CO_2-e (30.0 Mt CO_2-e of which are Scope 1 GHG emissions from industrial processes)

An average of 3,944,543 t CO_2-e per annum is estimated to be produced over the life of the Proposal.

The Proposal is predicted to increase WA's annual GHG emissions from Industrial Processes on average by a negligible amount per annum. Scope 1 and 3 emissions represent an overall increase to WA's GHG emissions of 4% when compared to the State's total GHG emissions of 89.3 Mt of CO_2-e for 2023 (DCCEEW, 2025b).

The Proposal is also predicted to increase Australia's annual GHG emissions by 0.9% when compared to the National total GHG emissions of 437.5 Mt CO_2-e for June 2025 (DCCEEW, 2025a).

Based on the information provided above, the Proposal will result in a small contribution to WA (and subsequently, Australia's) annual GHG emissions. Given the relatively small contribution, the impact resulting from the implementation of the Proposal is not considered significant. Nevertheless, mitigation measures are proposed to minimise GHG emissions as far as practicable (Section 9.6).

3.2.4 GHG Emissions Offsets

In the event that HPPL is not able to meet their GHG Emission targets, and/or where carbon emissions cannot be avoided or reduced to enable HPPL to achieve its objectives, HPPL will offset the remaining GHG emissions with tangible offsets. Potential tangible offset options include but are not limited to undertaking additional re-vegetation activities on land held by HPPL, investing in carbon offset projects and purchasing, and surrendering carbon offset credits that meet the Australian Government's Climate Active Carbon Neutral Standard's offsets integrity principles.

Scope 3 emissions come predominantly from steel production. Minerals Research Institute of WA (2025) notes that the global steel industry is one of the largest carbon emitters in the world, but also one of the hardest to abate. Recognising the challenges to decarbonising existing production, hydrogen-based steelmaking has emerged as a potential pathway to producing green steel. However, the production of green hydrogen needed for green steel is not yet available at a commercial scale.

Therefore, there is limited ability of HPPL to reduce Scope 3 emissions in the short term associated with steel production until there is the structural changes in these industries to produce low-carbon products.

However, planned measures such as the selection of low-emissions products in the procurement process will assist in lowering Scope 3 emissions associated with the Proposal.

3.3 Human Health

The Proposal does not pose any foreseeable risk to Human Health. No radiation or harmful pollutants are to be produced by the Proposal.

Appendix 4: Stakeholder Consultation Register

Appendix 5: Relevant Technical Surveys

Appendix 5.1: Flora and Vegetation Survey (Rapallo, 2024)

Appendix 5.2: Terrestrial Fauna Survey (Rapallo, 2024)

Appendix 5.3: Surface water Impact Assessment (Surface Water Solutions, 2025)

Appendix 5.4: Groundwater Assessment (Darkwater Consulting, 2025)

Appendix 5.5: Landform Assessment (Mine Earth, 2025)

Appendix 5.6: Stygofauna Survey (Bennelongia, 2025a)

Appendix 5.7: Troglofauna Survey (Bennelongia, 2025b)

Appendix 5.8: Geochemical Assessment

4 Glossary

Term	Definition
µm	Micrometres
AEP	Annual Exceedance Probability
AH Act	*Aboriginal Heritage Act 1972*
Bennelongia	Bennelongia Environmental Consultants
BIF	Banded Iron Formations
BoM	Bureau of Meteorology
BWT	Below Water Table
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DEM	Digital Elevation Model
DG	Dangerous Goods
DMA	Decision-making authorities
DMPE	Department of Mines, Petroleum and Exploration
DWER	Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation* Act 1999
GHG	Greenhouse gas
GLpa	Gigalitre per annum
GWP	Global Warming Potential
ha	Hectare
HPPL	Hancock Prospecting Pty Ltd
km	Kilometre
km^2	Square kilometre
L/sec	Litres per second
m	Meters
m^3/s	Meters cubed per second
mAHD	Meters Australian Height Datum
mbgl	Meters below ground level
MDCP	Mine Development and Closure Proposals
mg/L	Milligram per Litre
ml	Millilitres
mm	Millimetres
Mt CO2-e	Million tonnes of carbon dioxide equivalent
NGERS	National Greenhouse and Energy Reporting Scheme
NVCP	Native Vegetation Clearing Permit

Proposal	Round Hill Project
Rapallo	Rapallo Environmental
RFFE	Regional Flood Frequency Estimation model
ROG	Rate of Gassing
t CO_2-e	Tonnes of carbon dioxide equivalent
TDS	Total dissolved solids
WA	Western Australia

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