MINING MANAGEMENT PLAN
Stage 1B Amendment

Nathan River Project

Mining Operations and Bing Bong Loading Facility

Operator name:	NRR Services Pty Ltd
Project name:	Nathan River Project
Authorisation:	1062-01
MMP reporting year:	2024 - 2025
Date:	29 January 2024
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2 INTRODUCTION

2.1 Operator Details

Operator details for the Nathan River Project (NRP) are summarised in **Table 2-1** below.

Table 2-1 Summary of Operator details

Operator:	NRR Services Pty Ltd
ABN:	38 634 895 800
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Email	Simon.Peat@nathan-river.com
Postal and Street address:	47 Callantina Road, Hawthorn, Victoria, 3122
Key contact/s:	Simon Peat – Chief Executive Officer Simon.peat@nathan-river.com 0418 124 024

2.2 Title Details

The mineral title details associated with the NRP are summarised in **Table 2-2**.

Table 2-2 Mineral Titles for the Nathan River Project

Title Number	Title Holder	Expiry Date	Underlying Land Tenure
AA29691	NRR Mining Pty Ltd	28/06/2042	Haul road from Mine to BBLF
AA29692	NRR Mining Pty Ltd	28/06/2042	BBLF offshore
ML28264	NRR Mining Pty Ltd	28/06/2042	Mining infrastructure, waste rock dump (WRD) and ancillary mining services.
ML28266	NRR Mining Pty Ltd	28/06/2042	Airstrip
ML28267	NRR Mining Pty Ltd	28/06/2042	Camp Facility
ML28962	NRR Mining Pty Ltd	28/06/2042	Mining administration facility
ML28963	NRR Mining Pty Ltd	28/06/2042	Airstrip
ML29628	NRR Mining Pty Ltd	28/06/2042	Bing Bong Port and Stockyard
EL25688	NRR Mining Pty Ltd	19/08/2024	BBLF
EL26759	NRR Mining Pty Ltd	30/10/2023	Exploration
EL27143	NRR Mining Pty Ltd	23/08/2024	Exploration
EL29548	NRR Mining Pty Ltd	26/08/2024	Exploration
EMP30340	NRR Mining Pty Ltd	6/01/2025	Exploration
EMP30341	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30342	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30343	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30344	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30345	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30346	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure
EMP30347	NRR Mining Pty Ltd	6/01/2025	Haul road infrastructure

2.3 Project Details

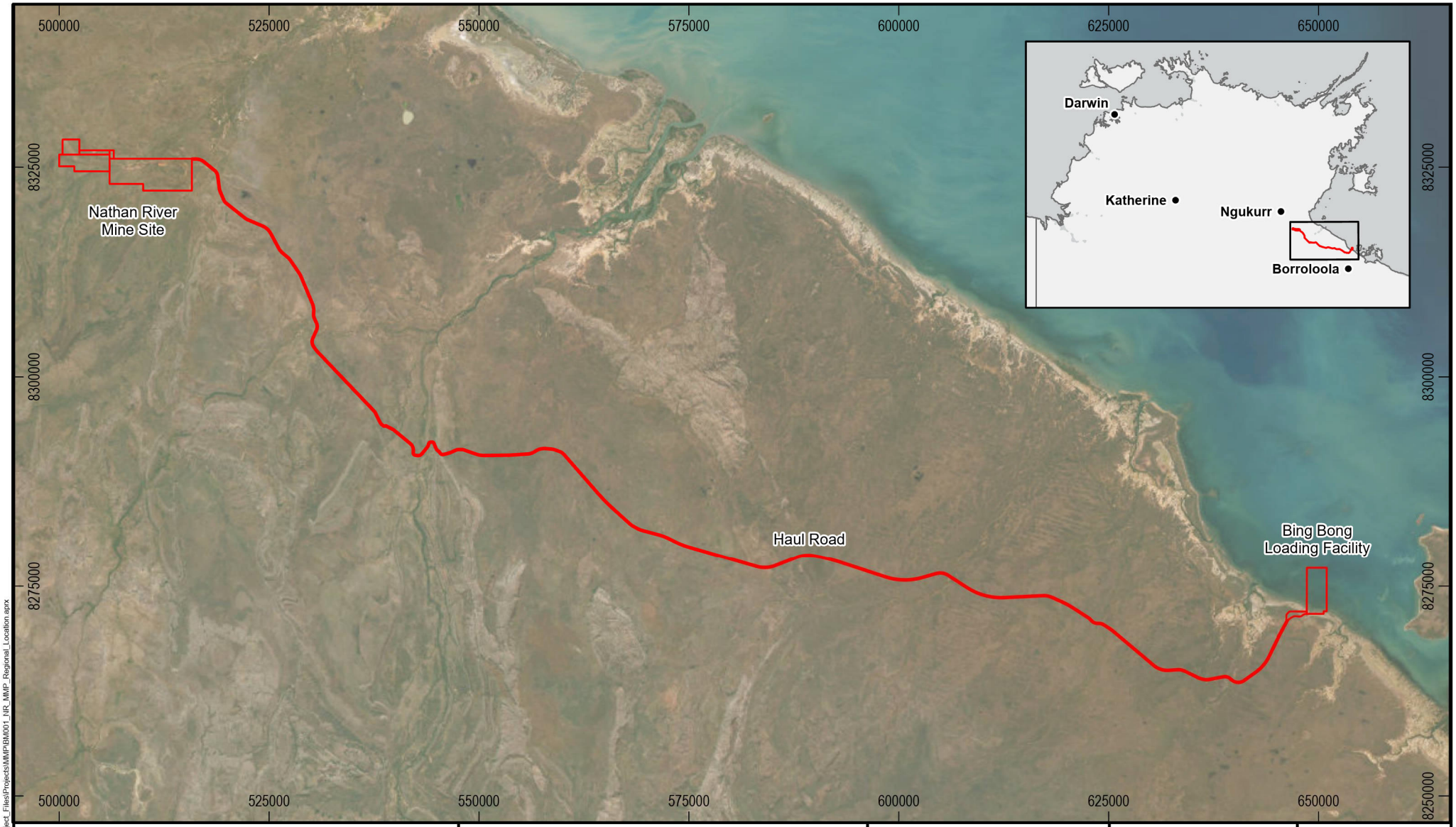
The NRP (previously referred to as the Roper Bar Iron Ore Mine (RBIOM)) is wholly operated by NRR Services Pty Ltd (NRR) since acquiring the NRP in 2019 from the previous operators, Western Desert Resources (WDR). The NRP is located approximately 530 kilometres (km) southeast of Darwin within the Gulf of Carpentaria and is comprised of three main operation domains: the mine, the haul road and the Bing Bong Loading Facility (BBLF). The mine is located within mining leases (ML) 28962, 28267, 28266, 28963 and 28264. The haul road, privately owned and operated by NRR, stretches for 171 km, connecting the mine and the BBLF allowing the haulage of material to the BBLF. The BBLF is situated within ML 29628, located on the south-western coast of Gulf of Carpentaria approximately 50 km north of Borroloola. Glencore's McArthur River Mine operates a larger loading facility at the BBLF and is the overarching controller of the Port. The regional location of the NRP is presented in **Figure 2-1**.

The previous operator, WDR commenced mine construction and operations in 2013 following the approval of the Roper Bar Iron Ore Project (RBIOP) Environmental Impact Statement (EIS) under the previous *Environmental Assessment Act.* Upon acquiring the RBIOP, NRR submitted a Mining Management Plan (MMP) in accordance with the *Mining Management Act 2001*, receiving approval in the form of mining authorisation 1062 to commence operations in 2020.

NRR currently operates the NRP under the approved Variation of Authorisation 1062-01 granted in October 2023 which authorises the recommencement of mining operations as per the activities detailed in the Stage 1A MMP amendment. The activities which are authorised under the current Variation to Authorisation 1062-01 include:

- Recommencement of mining focusing on the Danehill pit saddle and Zabeel North open-cut pit;
- Processing and sorting of ore;
- Haulage of ore to the BBLF; and
- Transhipment of ore from the BBLF.

In accordance with section 41(1-5) of the *Mining Management Act 2001*, should NRR propose amendments to the approved MMP, the amended MMP must be submitted and approved by the Minister prior to the amended MMP taking effect. NRR proposes amendments to the overarching MMP (2020) approved by authorisation 1062-01, seeking to recommence mining in the existing, currently inactive Danehill East open-cut pit at the NRP. Further details of the proposed MMP amendments are outlined in **Section 2.4**.



Legend

Tenement Boundaries

Source: Geoscience Australia 2006, Northern Territory Government (Department of Industry, Tourism and Trade) 2022, Nathan River Resources 2018-2020, METServe 2023, Earthstar Geographics.

Nathan River Project

Regional Location

0 5 10 20

Kilometers

Scale: 1:640,000 (A4)

14/06/2023

Datum: GDA2020
Projection: MGA53

FIGURE 2-1

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\MMP\BM001_NR_MMP_Regional_Location.aprx

2.4 MMP Amendment Overview

This MMP amendment, referred to Stage 1B, seeks to amend the activities currently authorised by Variation of Authorisation 1062-01 under the Stage 1A MMP amendment. The Stage 1B MMP amendment proposes the recommencement of mining operations within the currently inactive Danehill East open-cut pit. The proposed recommencement of mining in the Danehill East pit is the next key milestone for the NRP to return to full scale operations since the NRP was put into Care & Maintenance (C&M) in November 2021. Activities proposed as part of Stage 1B will commence after the completion of Stage 1A (expected to be June 2024) and will extend the authorised NRP operations through to late 2025. Stage 1B MMP period is proposed as July 2024 to October 2025 (15 months).

Stage 1B does not propose any significant changes to processing, haulage, BBLF transhipment or other ancillary activities currently authorised by the Stage 1A MMP amendment. These activities will continue to occur without change into and throughout Stage 1B. Despite no changes being proposed as part of this amendment, a summary of each activity proposed as part of Stage 1B is provided in **Section 3**.

The Stage 1B MMP amendment is an amendment of the overarching 2020 MMP which was granted approval through Authorisation 1062-01. Any activities, management plans, procedures or policies which are not the subject of this amendment will be followed and implemented as per the 2020 MMP.

2.5 Declaration

I hereby declare that the information provided in this amendment to the MMP amendment is true and correct to the best of my knowledge and that I accept that the misrepresentation or omission of facts may delay assessment for authorisation under the *Mining Management Act 2001*.

Simon Peat

Chief Executive Officer - NRR Services Pty Ltd

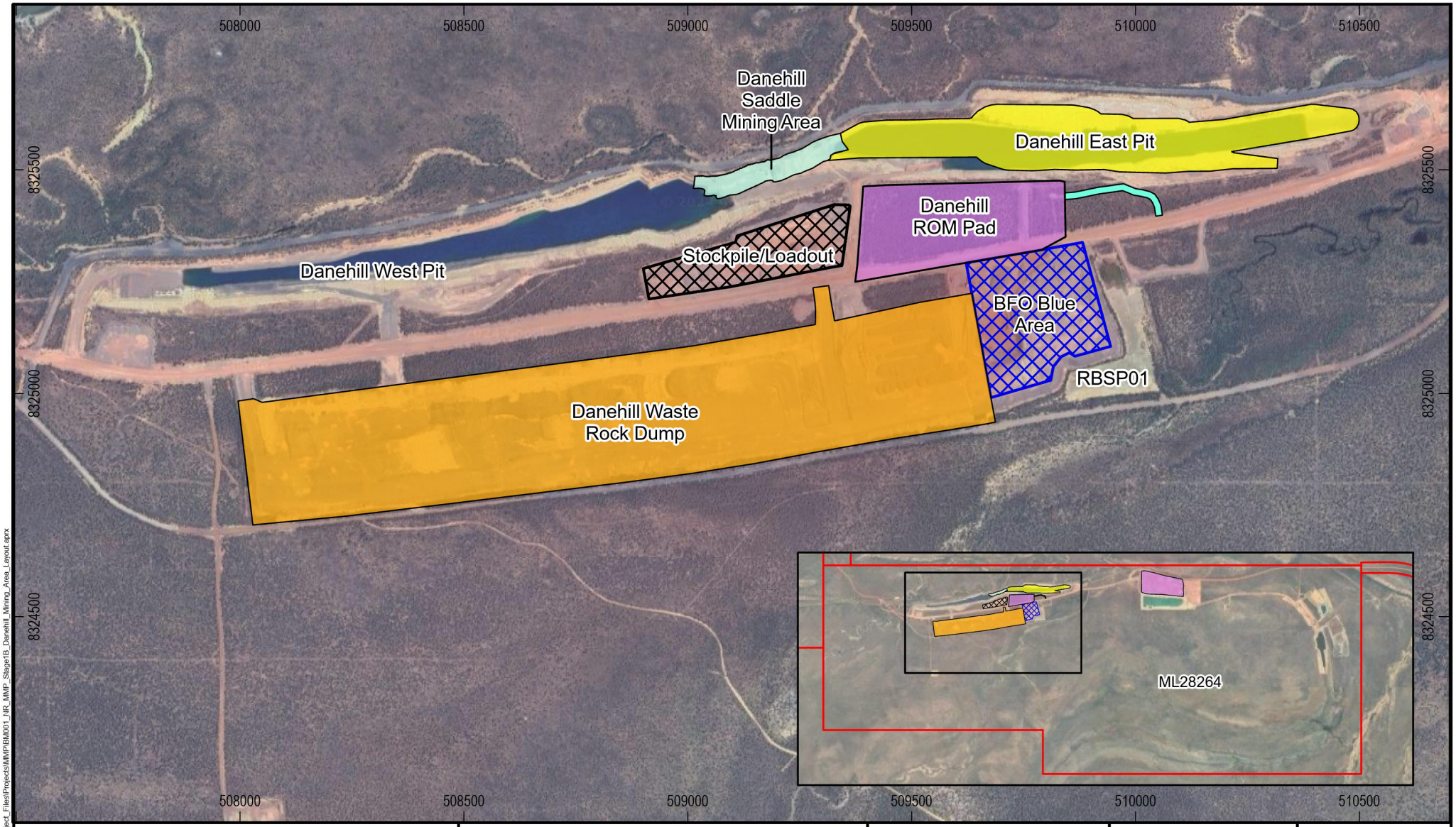
Date: 29/01/2024

3 OPERATIONAL ACTIVITIES

This section of the MMP amendment details the operational activities proposed for Stage 1B at the NRP. Stage 1B proposes the recommencement of mining activities in the inactive Danehill East open-cut pit in a continuation of Stage 1A operations which focuses on mining the Danehill Saddle and Zabeel North open-cut pit. Mining in the Danehill East open-cut pit has not occurred since the NRP was placed into C&M in November 2021.

The recommencement of mining in the Danehill East pit will focus on restructuring areas of the existing pit (e.g. access ramps and benches) to ensure the Danehill East pit can be safely and most efficiently operated. Following this, Stage 1B proposes the deepening of the pit floor along with incorporating the western pit extent into the Stage 1A Danehill saddle mining area. The proposed activities in the Danehill East pit will allow previously exposed ore to be removed along with uncovering additional ore identified in the Danehill East area. Mining activities proposed for Stage 1B are expected to extend the operational life of the NRP to October 2025. The proposed mining activities within the Danehill East pit will remain within the confines of the existing pit shell, avoiding any further disturbance or relocation of infrastructure within this area.

The proposed layout of the Danehill Mining Area for Stage 1B is presented in **Figure 3-1**.



Legend

- ML Boundary
- ROM Pad
- Stockpile / Loadout
- Danehill Processing Infrastructure Area
- Danehill Saddle Mining Area
- Danehill East Pit
- Danehill Waste Rock Dump
- Proposed Haul Road

Source: Nathan River Resources 2021-2024, METServe 2024, OpenStreetMap and Contributors.

Nathan River Project

Stage 1B Danehill Mining Area Layout

0 100 200 400

Meters

Scale: 1:12,000 (A4)

29/01/2024

Datum: GDA2020
Projection: MGA53

FIGURE 3-1

METSERVE
Mining & Energy Technical Services Pty Ltd

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3.1 Danehill East Mining Operations

3.1.1 Danehill East Open-Cut Pit

Stage 1B operations will focus on restructuring pit accesses and benching in the existing Danehill East pit, the removal of the previously exposed orebody, and further exposure of the orebody through the deepening of existing pit. Danehill East will be completed dewatered during Stage 1A operations, allowing access to the entire extent of the existing pit for Stage 1B. Approximately 3,570,000 tonnes (t) of material is proposed to be removed from the Danehill East pit during Stage 1B. **Table 3-1** provides estimated quantities on the materials to be mined at the Danehill East pit during Stage 1B, broken down by material type. **Figure 3-2** provides an estimated monthly material movement overview for Stage 1B.

The iron ore resource within the Danehill East area has been identified by the sampling of exploration and resource grade-control drill holes. Ore types at the NRP are defined by iron (Fe) grades derived from drill sample geochemical assay analysis and are further refined by visual inspections by qualified geologist and historic geological mapping. Direct Shipping Ore (DSO) within the proposed Danehill East pit design has an average ore grade of 59% Fe and Low-Grade Ore (LGO) having an average ore grade of 45% Fe. Material grading less than 30% Fe is considered waste material as it is not economically viable to process this material as ore.

Table 3-1 Material Quantities to be mined at Danehill East Pit during Stage 1B

Material Type	Defining grade	Approximate Tonnes
Direct Shipping Ore (DSO)	> 50 % Fe	520,000
Low-Grade Ore (LGO)	> 30% to < 50% Fe	435,000
Waste	< 30% Fe	2,615,000
	Total	3,570,000

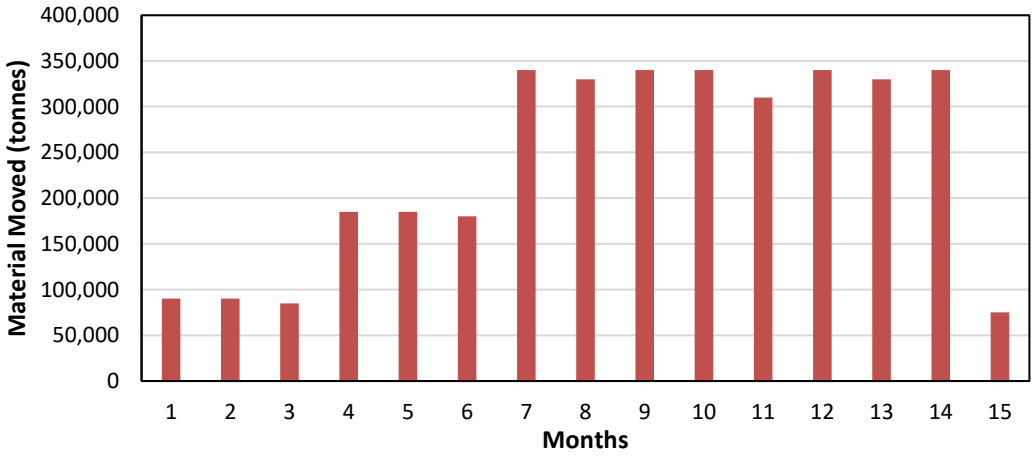


Figure 3-2 Stage 1B Material Movement Overview

Stage 1B mining operations will continue to implement conventional open-cut mining methods utilising the following equipment fleet:

- 90 t hydraulic excavators;
- 50 t moxie dump truck fleet;
- Graders;
- Front-end loaders;
- Tracked bulldozers;
- 50 t moxie water cart fleet;
- Service trucks and light vehicle fleet; and
- 2x Mobile crushing and screening units; and
- 2x Ore sorters.

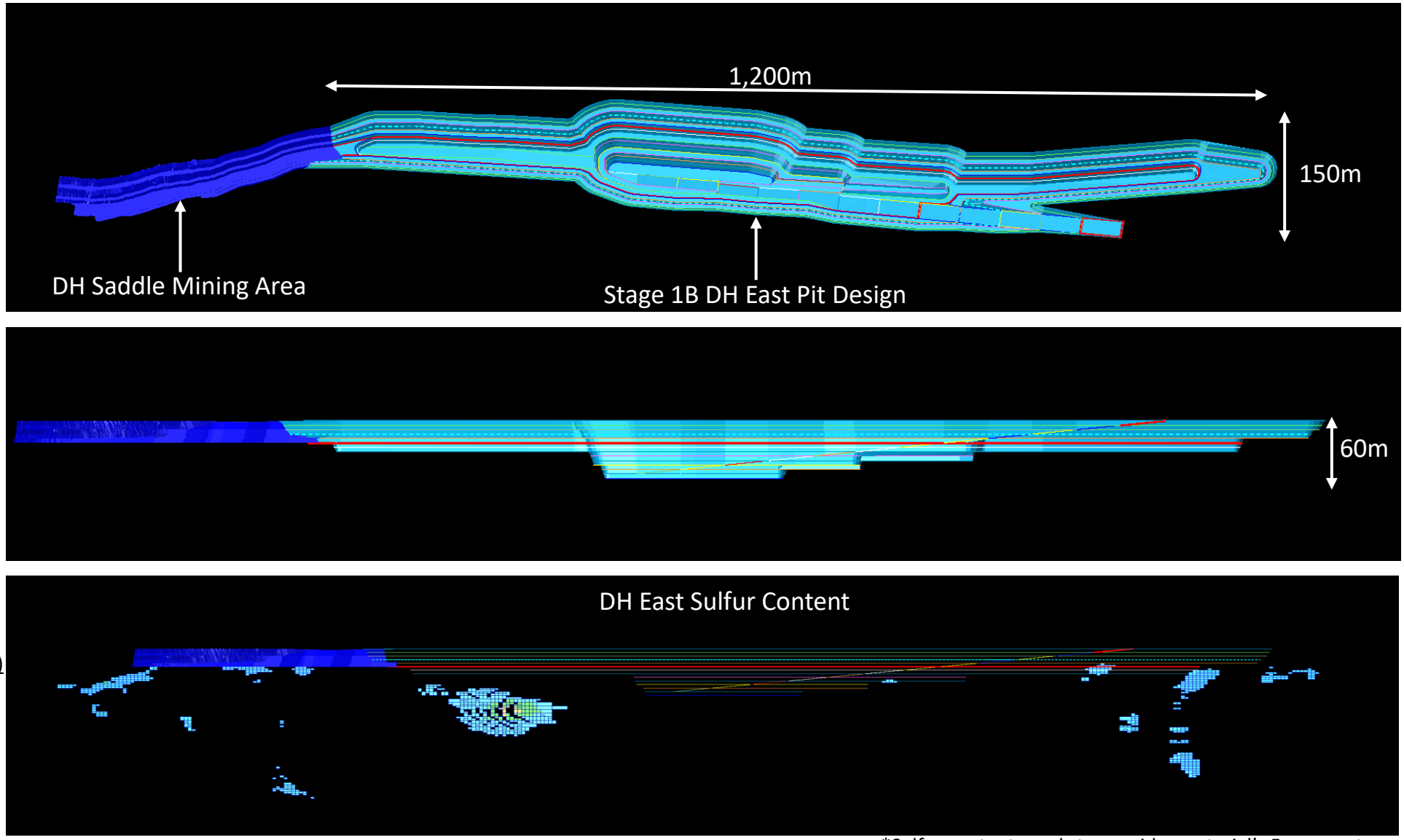
Stage 1B operations is anticipated to remove a maximum of 11,000 t of material per day from the Danehill East pit utilising the abovementioned equipment fleet. To achieve this target and increase the NRP's operational efficiency, the NRP will reinstate 24-hour mining operations which will include 12-hour day and night shifts.

In-floor sumps and dewatering infrastructure will remain in place within the Danehill East pit from dewatering activities conducted in Stage 1A. Dewatering infrastructure will maintain dry floor conditions throughout Stage 1B, and also provide water management contingencies should it be needed. Drill and blasting activities will continue to be required as per Stage 1A operations. Blasting activities are expected to occur once a week and will follow blasting procedures currently implemented in Stage 1A operations.

Figure 3-3 presents a 3D schematic of the proposed Danehill East pit design at the end of the Stage 1B MMP period. The Danehill East pit design proposes to extend the pit depth to -40 m RL, a further 25 m from the current pit floor level. **Table 3-2** provides a summary of the proposed pit dimensions compared to the pit design currently.

Table 3-2 Danehill East Pit Details

	Existing Design	Stage 1B Design
Disturbance Area (ha)	19.11	19.11
Length (m)	1,222	1,222
Width (m)	207	207
Depth (mRL)	-15	-40
Depth (m below natural surface)	35	60



*Sulfur content needs to consider material's Fe percentage

Figure 3-3 **Danehill East Pit Design for Stage 1B**

The Danehill East pit design proposed for Stage 1B will remain within the confines of the existing pit crest, hence there are no changes to the disturbance area nor other pit dimensions except for pit depth. This has been done to avoid any further disturbance of the surrounding environment (e.g. Towns River) and to avoid the need to relocate critical infrastructure (e.g. Danehill levee wall).

In order to restructure the existing pit and extend pit depth, the following berm designs will be implemented:

- 20 m RL to 0 m RL – a 5 m wide berm every 10 mRL within the weathered rock profile; then
- 0 mRL to -40 mRL – a 7 m wide berm every 15 mRL within the fresh rock profile.

These berm designs are currently implemented in both Danehill pits and aim to capture loose material and prevent material from falling into the active mining workings. Both these designs will continue to be implemented during the proposed Stage 1B mining activities.

No potentially-acid forming (PAF) waste material is expected to be exposed during Stage 1B operations. All waste material removed from the Danehill East pit during Stage 1B is anticipated to be non-acid forming (NAF) waste material. **Figure 3-3** above presents the output of the geological block model showing areas within the Danehill East pit where material containing >0.3 % sulfur content is expected. Despite the vast majority of material being below 0.3 % sulfur content, a small amount (< 2,000 t) of LGO material (>30% < 50% Fe) will be removed which has indicated sulfur contents above 0.3 %, shown in the eastern extent of the pit. Although drilling samples have indicated this material may be elevated in sulfur, it is classified as LGO due to its iron grade. Hence, this material will be crushed, blended and shipped with other DSO and LGO material, removing the need to store this material on-site. **Table 3-4** provides the average sulfur content for all material proposed to be removed from the Danehill East pit. Evident from **Table 3-4**, sulfur content remains well below 0.3 %.

Table 3-4 Average geochemical parameters for Danehill East material

Material Type	SiO_2 (%)	Al_2O_3 (%)	Sulfur Content (%)
DSO	11.0	2.1	0.03
LGO	29.5	2.7	0.04
Waste	58.6	9.5	0.10
Average	33.0	4.8	0.06

3.1.2 Danehill Waste Rock Dump

Material at the NRP with iron grade less than 30% is classified as waste and will not be processed, and will be stored in the designated waste rock dumps. During Stage 1B, approximately 2,615,000 t of waste material (< 30% Fe) is proposed to be removed from the Danehill East pit. All waste material removed from the Danehill East pit is proposed to be stored in the existing Danehill Waste Rock Dump (WRD) adjacent to the Danehill pits. This WRD is well established and currently stores all waste rock produced by the Danehill pits since the commencement of the NRP.

The design of the Danehill WRD will not significantly differ from the design currently authorised by the Stage 1A MMP amendment as the Stage 1A WRD design has adequate capacity to store waste material from both Stage 1A and 1B operations. **Figure 3-4** presents the proposed design for the Danehill WRD including a cross sectional view showing the height of the existing landform prior to Stage 1A, and the proposed height of the WRD at the completion of Stage 1A and 1B operations. The Danehill WRD will reach a maximum height of 52mRL, an increase of 16 m above the existing WRD landform.

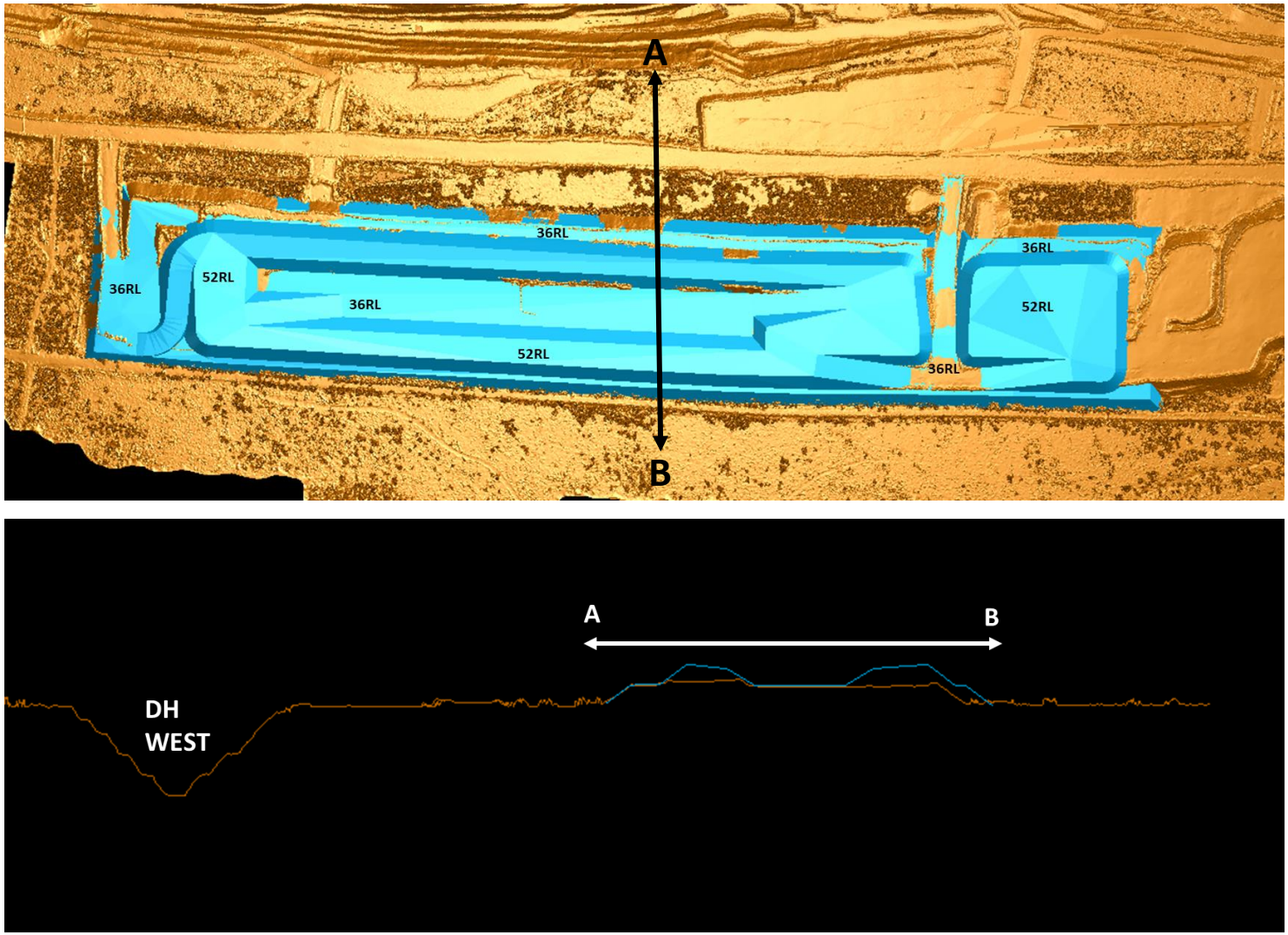


Figure 3-4 **Danehill WRD Design Schematic**

As outlined in **Section 3.1.1**, all waste material is expected to be classified as NAF and will not require storage in the existing PAF cell on the Danehill WRD. A small portion of LGO material which is identified to be elevated in sulfur content will be removed during Stage 1B, as identified in the geological block model output (**Figure 3-3**). Despite this material expected to be elevated in sulfur content, it is classified as LGO and will be processed, blended and shipped with other DSO/LGO material. Hence, this material will not require storage in the Danehill WRD. The geological block model is comprised of data collected numerous historic exploration and resource grade drilling across the NRP resource areas. This model is used to identify the expected iron grades (Fe %) within the known resource as well as outlining the location of PAF waste material. Given the quantity of data which is incorporated into the model, the geological block model is considered to be robust and appropriate for the purposes of mining planning, resource definition and waste characterisation.

Should any unexpected PAF waste material be encountered throughout Stage 1B operations, it will be hauled and stored in the existing PAF cell located on the Danehill WRD. Such material will be manged in accordance with the approved *Acid and Metalliferous Drainage Management Plan* (Pendragon 2019).

3.2 Danehill ROM Pad

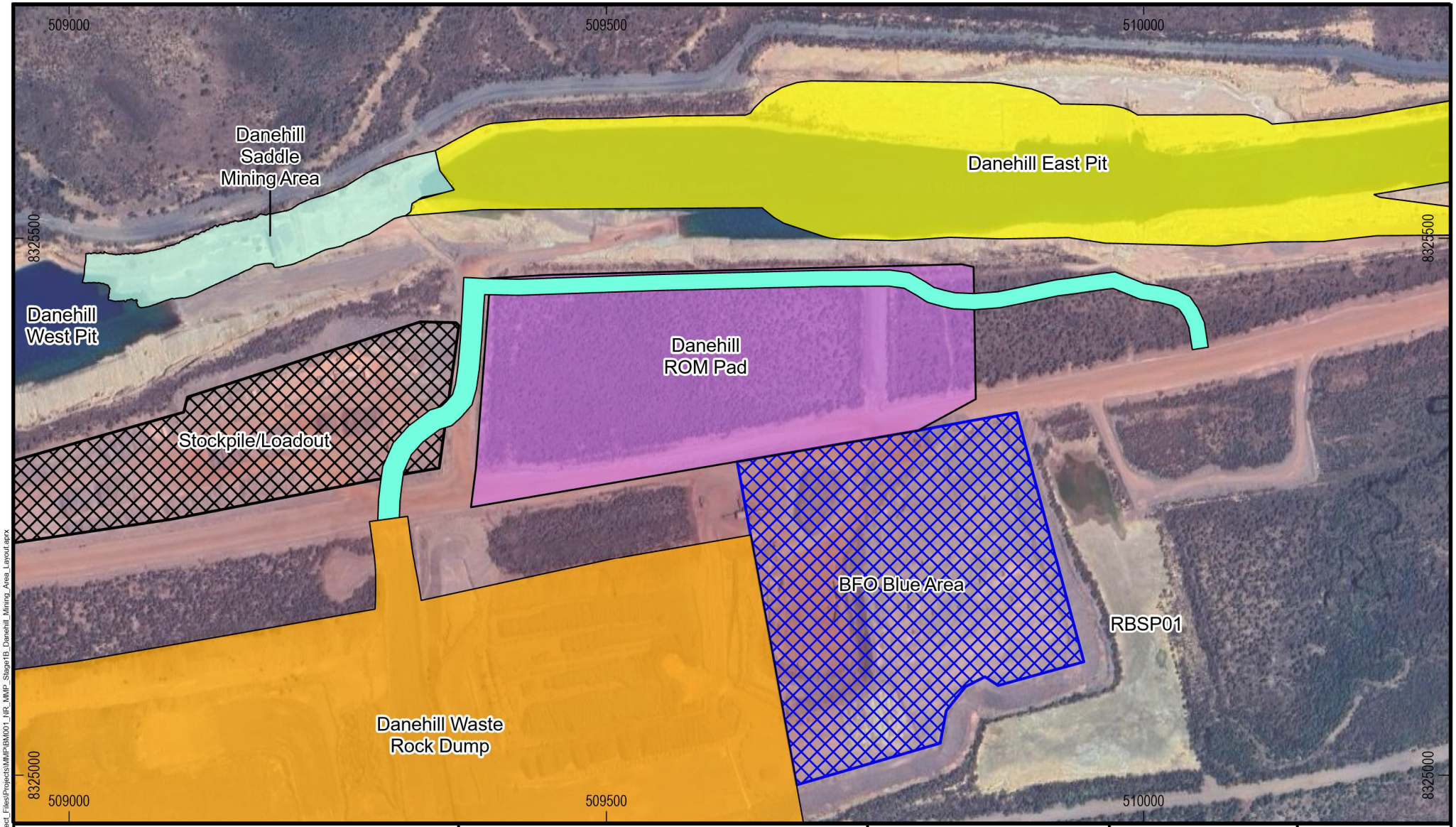
NRR seeks approval to construct an additional ROM pad within the Danehill Mining Area. The proposed Danehill ROM pad will house an additional ore sorter and mobile crushing circuit for the purposes of increasing production, shorten haulage distances and improve the overall cost efficiency of operations during Stage 1B. The proposed ROM pad will specifically process ore and LGO material extracted from the Danehill East pit during Stage 1B, whereby ore material removed from Zabeel North during Stage 1A will continue to use the existing ROM pad. The proposed Danehill ROM pad will merge with the existing mine haul road, with a new haul road to be aligned around the perimeter of the proposed ROM pad. **Figure 3-5** presents the proposed design for the Danehill ROM Pad.

The proposed ROM pad will require clearing of undisturbed land between the haul road and the Danehill East pit. The dimensions of the proposed ROM pad and associated disturbance footprint are outlined in **Table 3-5**. Despite the additional clearing of undisturbed land, the area is located in the centre of the Danehill mining area and is considered to be of limited environmental value.

Water management infrastructure will be constructed around the perimeter of the proposed ROM pad ensuring all surface run-off from this area is captured and does not report to the receiving environment. Given the area's proximity to mining activities and the Danehill East pit, the area is surrounded by mining operations and is considered to be of limited environmental value.

Table 3-5 Dimensions of the proposed Danehill ROM Pad

	Danehill ROM Pad
Disturbance Area (ha)	7
Length (m)	450
Width (m)	150



Legend

- ML Boundary
- ROM Pad
- Stockpile / Loadout
- Danehill Processing Infrastructure Area
- Danehill Saddle Mining Area
- Danehill East Pit
- Danehill Waste Rock Dump
- Proposed Haul Road

Source: Nathan River Resources 2021-2024, METServe 2024, OpenStreetMap and Contributors.

Nathan River Project

Stage 1B Danehill Haul Road Realignment

0 50 100 150

Meters

Scale: 1:5,000 (A4)

29/01/2024

Datum: GDA2020
Projection: MGA53

FIGURE 3-5

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\MMP\BM001_NR_MMP_Stage1B_Danehill_Mining_Area_Layout.aprx

3.3 Zabeel Mining Operations

No additional mining activities are proposed for the Zabeel mining area during Stage 1B. Mining activities in the Zabeel North open-cut pit, as authorised by the Stage 1A MMP amendment, may continue into the Stage 1B MMP period should activities not be completed by the approval of Stage 1B MMP amendment.

3.4 Processing and Haulage

3.4.1 Processing

Similar to Stage 1A, crushing, processing and ore sorting will occur processing both DSO and LGO into lump ore material (6 to 32 mm in size) and fines material (< 6 mm). Mobile crushing and processing (screening) equipment will continue to alternate positions between the BFO Blue processing area, ROM pad, and the proposed Danehill ROM Pad. Ore sorting equipment will remain fixed at the BFO Blue LGO stockpile, and an additional ore sorter located on the proposed Danehill ROM Pad. The use of mobile processing equipment allows for operational flexibility, shorter haulage distances and more efficient grading of ore material.

Approximately 4,000 t per day is expected to be crushed and 1,000 t of ore sorted ready for haulage to the BBLF per day. All processed ore will be stockpiled in designated graded stockpiles on the ROM pads awaiting haulage to the BBLF. Although the amount of stockpiled ore is expected to vary throughout operations, no more than 100,000 t of DSO material will be stockpiled on the ROM pads at any one time. Stockpiling and processing volumes remain consistent with the Stage 1A MMP amendment and are not expected to increase during Stage 1B operations.

No chemical processing of material will be required for Stage 1B operations. Processing of ore will only consist of crushing, screening and sorting of material. Rejects and residual material from processing activities will either be stockpiled on the ROM pads for alternate use (e.g. stoking material for blasting) or transported to the Danehill WRD for storage.

Dust suppression around processing areas will continue to be the focus of NRP operations during Stage 1B. NRR intends to add to the fleet of water carts operating at the mine in efforts to reduce dust generation from crushing, screening and ore sorting activities. Dust suppression within processing areas is crucial to maintaining safe working conditions for personnel and reducing dust load to the receiving environment.

3.4.2 Haulage

Haulage of material from the mine to the BBLF stockyard will transport approximately 2,000 t of ore per day. Haulage activities will utilise quad trailer road trains and operate over a 24-hour period with an anticipated 17 return truck movements per day. Routine roadway inspections of the entire haul road and bridges will continue to occur to ensure this infrastructure remains in a safe and operational condition. Should any issues with the haul road be identified (i.e. unsafe road conditions), haulage will be paused until such issues are rectified allowing a safe haulage operation.

NRR intends to increase dust suppression activities along the haul road in Stage 1B in order to maintain safe driving conditions for haulage vehicles and reduce dust load to the surrounding environment. Given the isolation of the haul road from other NRP infrastructure, NRR wishes to utilise existing groundwater bores which are located along the alignment of the haul road for dust suppression water supply. Further details regarding the use of groundwater for haul road dust suppression is provided in **Section 3.5.2**.

3.5 Bing Bong Loading Facility

The BBLF will continue to be used for transhipment activities throughout Stage 1B facilitating the distribution of NRP product to market. Stage 1B does not propose any operational changes to activities which are currently occurring in the Stage 1A operation. Ore material will continue to be stockpiled in designated graded stockpiles within the BBLF stockyard, whereby material will be loaded onto the transhipment barge using hopper and conveyor infrastructure.

Transhipment barges are transported using tugboats operated by NRR out to bulk carrier vessels moored in deeper water off the coast of the BBLF. Each barge has a capacity of approximately 4,000 t (subject to tidal conditions). Several barges are required to fill the capacity of each bulk carrier ship, which has a capacity of 60,000 t. During Stage 1B, two bulk carrier ships a month are expected to be filled, however this may increase during Stage 1B as the loading, transhipment and marine operation is further optimised.

Dust suppression will continue to be the focus during loading operations at the BBLF. Water stored in the BBLF sediment ponds will be used for dust suppression along the loading conveyor belt, wetting the material as it is loaded onto the barge. Dust suppression water supply at the BBLF will be supplemented by mine water or extracted groundwater (further discussed in **Section 3.5.2**). In light of recent increases in dust generated from BBLF operations, further dust suppression measures will be implemented prior to the commencement of Stage 1B activities. These additional measures include:

- Increasing the moisture content of material being loaded;
- Covering and introduction of a large water spray on the transfer point between the fixed conveyor and the loadout stacker;
- Additional water carts operating within the BBLF stockyard, continuously wetting down stockpiles, roads and conveyor hoppers;
- Emergency fire hoses on tugboats to be used to create a 'water wall' to limit dust when loading barge when dust generation is deemed to be excessive;
- A review of the shipping / barge loading schedule to take into account forecasted wind conditions;
- Implementation of a complete stop rule to barge loading conditions give rise to excessive and unacceptable dust conditions (eg. strong winds during barge loading); and
- Additional cleaning staff at NR BBLF and MRM BBLF to ensure dust is removed from build-up areas in a timely manner.

NRR have also recently engaged a dust suppression specialist to investigate potential solutions to further improving dust suppression at the BBLF operation (e.g. addition of additives to loaded material). Additional environmental monitoring will also be implemented prior to the commencement of Stage 1B, further discussed in **Section 4** and the Dust Management Plan (**Appendix C**).

Marine operations will continue to follow all procedures which are currently implemented in Stage 1A. NRR will continue to maintain a positive relationship with Glencore's McArthur River Mining (MRM), the other operator of the BBLF, and work with MRM to ensure safe shipping operations at the BBLF.

3.6 Ancillary Activities

3.6.1 Water Management

To facilitate mining operations proposed in Stage 1B, dewatering and internal water transfers are required. During Stage 1A, dewatering of the Danehill East and West pits will commence, transferring approximately 450 megalitres (ML) of mine-affected water to the inactive Zabeel South pit and RBSP02 (once commissioned) for temporary storage. Dewatering activities in both Danehill pits are required to ensure safe mining conditions during saddle mining in Stage 1A and will also allow access to the Danehill East pit for Stage 1B operations.

Throughout Stage 1B operations, water volumes in the Danehill West pit must remain below the Full Storage Capacity (FSL) volume of 982 ML to avoid overtopping the remaining saddle and impacting mining activities proposed for the Danehill East pit. NRR intends to operate Danehill West below its designated Maximum Operating Level (MOL) of 770.5 ML which will ensure a minimum of 3 m freeboard below the top of the saddle. A summary of the water storage operating levels are presented in **Table 3-6** at the completion of Stage 1A operations. **Table 3-7** outlines the current water inventory at the NRP along with historic water volumes since November 2022.

Onsite water management will operate in accordance with the *NRP Water Management Trigger Action Response Plan (TARP)* (**Appendix B**) which has been updated to reflect the water management strategy to be implemented in Stage 1B.

Table 3-6 Water Storage Operating Levels

Levels	Zabeel South	Zabeel North	Danehill East	Danehill West	RBSP01	RBSP02
Upper Operating Level (UOL)	1,183 ML	0 ML	0 ML[1]	770.5 ML	NA	602.4 ML
Maximum Operating Volume (MOV)	1,250 ML	0 ML	0 ML[1]	770.5 ML	94 ML	630 ML
Full Storage Capacity (FSL)	1,307 ML	802 ML [4]	1,300 ML [2]	982 ML	104 ML [3]	882 ML

1 Level to facilitate Stage 1B mining activities.

2 Mining activities to be impacted.

3 FSL volume at the point which RBSP01 will overflow to adjacent irrigation area.

4 FSL volume at the end of Stage 1A mining operations.

Table 3-7 NRP Water Inventory

Water Storage	MOL (ML)	November 2022 (ML)	June 2023 (ML)	January 2024 (ML)
RBSP01	40	0	20	40
RBSP02	602	10	~120	18
Danehill West	770.5	615	1,059	908
Danehill East	0	55	455	307
Zabeel South	1,250	240	466.5	439
Zabeel North	802	0	32.9	0
TOTAL	3,424.5	920	2,133.4	1,712

RBSP01, Danehill WRD Sediment Pond, will continue to be the main fill point for water carts at the NRP. RBSP01 will receive water periodically from Danehill West when water volumes become low to ensure water is available at RBSP01 for dust suppression purposes at all times.

RBSP02, ROM Sediment Pond, is anticipated to be commissioned prior to the commencement of Stage 1B activities. As of January 2024, repairs to the dam walls, blocking of the previous inlet culvert and installation of the spillway have been completed. The commissioning and operation of RBSP02 is now subject to the development and implementation of the following requirements as per the Variation of Authorisation 1062-01:

- A TARP as per Condition 19;
- Operations, Maintenance and Surveillance Manual as per Condition 22 and 23; and
- Submission of an independent certifying engineer (ICE) endorsed “as-constructed” report as per Condition 47.

Once commissioned, RBSP02 will receive mine-affected water from the Danehill pits or Zabeel South pit during Stage 1B with a MOL capacity of 630 ML. Water stored in RBSP02 will be utilised for dust suppression within the processing area on the ROM.

RBSP07, Zabeel WRD Sediment Pond, will not be used as a water storage during Stage 1B operations. This is in accordance with DITT’s instruction issued in September 2021 instructing NRR to repair the pond and demonstrate that the pond is fit for purpose. No mine-affected water has been pumped into RBSP07 since the issue of the DITT instruction. Despite this, approximately 30 ML of surface water runoff / rainfall has accumulated in the pond as of January 2024.

A temporary water cart fill point will be installed at RBSP07 prior to Stage 1B, utilising the accumulated water for dust suppression with the aim to dewater the decommissioned pond. Once RBSP07 is completely dewatered, NRR intends to backfill the pond void with NAF waste rock material.

A revised water balance has been completed to reflect the current water inventory and the proposed water management strategy for the Stage 1B MMP period. The revised water balance completed by WRM has been provided in **Appendix A**. The water balance model has been used to predict the NRP's water management systems (WMS) performance over the MMP period, based on 131 different modelled climatic sequences. The water balance assumes a 'no discharge' scenario, whereby the NRP does not have the ability to discharge mine-affected water off-site under a waste discharge licence (WDL) during the MMP period.

The water balance has indicated that the Zabeel South pit will have adequate storage capacity to receive the required water from the Danehill pits needed to facilitate both Stage 1A and 1B operations whilst remaining below its MOL under all climatic scenarios. Both the Danehill East and West pits are predicted to maintain their corresponding MOLs throughout the 2024/25 wet season under the 'wet' climatic scenario (10% exceedance probability) as sufficient storage capacity is available in Zabeel South and RBSP02 to allow dewatering. Despite this, the Danehill pits will exceed their MOLs under the 'very wet' climatic scenario (1% exceedance probability) as Zabeel South and RBSP02 do not have sufficient capacity. Should this scenario occur, Stage 1B mining activities will be impacted. RBSP02 is not predicted to spill under the 'wet' climatic scenario (10% exceedance probability), however, is expected to spill in 5 out of 131 modelled climate scenarios (4% exceedance probability) during the 2024/25 wet season. Given this risk of RBSP02 spilling to the receiving environment, contingencies have been developed should the NRP receive significant rainfall over the 2024-2025 wet season. Specific water management contingencies are outlined in and controlled by the NRP Water Management TARP (NRR 2024).

The Water Management TARP intends to mitigate the risk of uncontrolled discharges to the receiving environment. Should contingencies outlined in the TARP have to be implemented, mining activities will be impacted to some degree. Preventing uncontrolled water discharges to the receiving environment is NRR's highest priority throughout Stage 1A and Stage 1B operations.

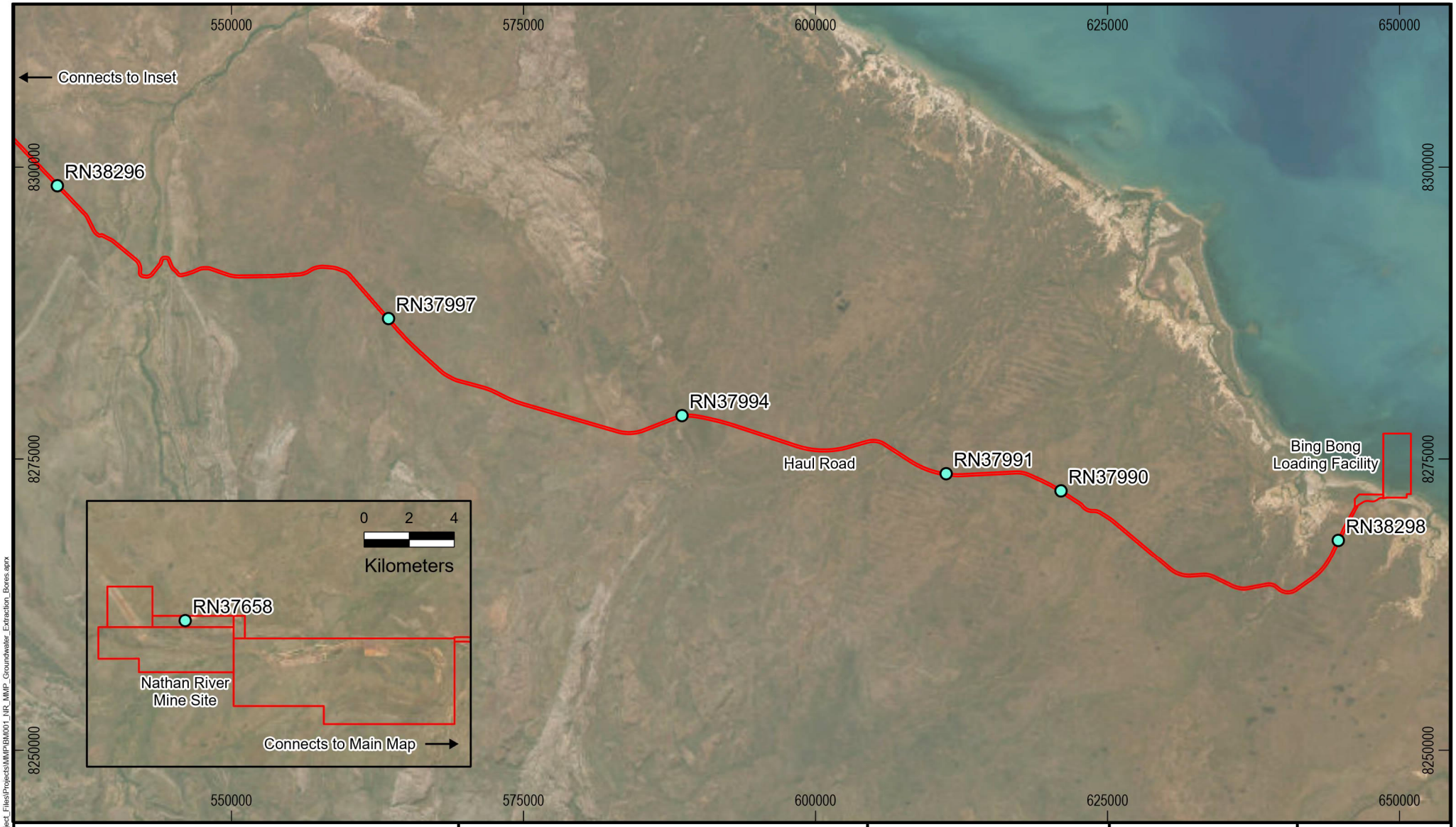
The Stage 1B operation does not propose nor require a waste discharge licence (WDL) for the MMP period. Evident by **Section 3.6** and the revised water balance, all mine-affected water will continue to be appropriately managed onsite during the Stage 1B MMP period without the need to discharge to the receiving environment under a WDL. However, in preparation for the 2024/25 wet season, an application for a WDL will be sought later in 2024 to provide the opportunity to discharge surplus water.

3.6.2 Groundwater Extraction

NRR proposes to utilise several existing groundwater bores along the haul road for water extraction. Extracted groundwater will be used for dust suppression along the haul road aiming to reduce the generation of dust associated with haulage activities. Extracted groundwater will also be used to supplement the supply required for BBLF dust suppression should sediment ponds become dry. **Figure 3-6** presents the location of existing groundwater bores which NRR is proposing to utilise with **Table 3-8** summarising the construction details of each proposed groundwater bore. NRR already extracts groundwater from the Sawfish bore for the purposes of camp water supply.

Table 3-8 Construction details for Groundwater Extraction Bores

Registration Number	Easting (GDA94 Z53)	Northing (GDA94 Z53)	Location	Depth (mbgl)	Screened Interval (mbgl)	Yield (L/sec)	Proposed Use	Proposed Usage Volume (ML/annum)
RN037990	621015	8272269	Haul Road	71	59 - 65	2 - 5	Haul Road Dust Suppression	36
RN037991	611183	8273740		48	36 - 42	5 - 10		36
RN037994	588571	8278717		60	42 - 48	2 - 5		36
RN037997	563446	8287030		36	18 - 30	> 10		36
RN038296	535091	8298407	Cox River HR Crossing	90	62 - 74	2 - 5		36
RN038298	644751	8268024	Bing Bong Creek HR Crossing	54	36 - 48	2 - 5		36
RN037658	503854	8326791	Sawfish Camp		53 - 65	> 10	Camp Water Supply	12
							TOTAL	**228**



Legend

- Groundwater Extraction Bores
- Tenement Boundaries

Source: Geoscience Australia 2006, Northern Territory Government (Department of Industry, Tourism and Trade) 2022, Nathan River Resources 2018-2024, METServe 2023-2024, Earthstar Geographics.

Nathan River Project

Location of Groundwater Extraction Bores

0 2.5 5 10
Kilometers

Scale: 1:460,000 (A4)

16/01/2024

Datum: GDA2020
Projection: MGA53

FIGURE 3-6

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\MMP\BM001_NR_MMP_Groundwater_Extraction_Bores.aprx

In accordance with regulation 3 of the *Water Regulations 1992*, an application to take water under the *Water Act 1992* must be submitted to the Department of Environment, Parks and Water Security (DEPWS) for consideration. Should the application meet the requirements of the *Water Regulations 1992*, a permit to take water will be granted. NRR is currently compiling all the necessary information for this application and anticipates the submission of the application in the coming weeks.

A maximum of 40 ML per annum is proposed to be extracted from the haul road groundwater bores detailed in **Table 3-7**, along with an additional 12 ML per annum from the Sawfish bore to supply camp services. The existing groundwater bores which have been selected will be equipped with a submersible pump, storage water tank and a water truck fill point. Flow meters will be installed on each bore pump to ensure the volume of groundwater extracted from each bore is accurately recorded. Given the extraction of groundwater from these bores, quarterly groundwater level measurements and quality samples from each bore will be completed to ensure extraction activities are not impacting the regional groundwater resource (further discussed in **Section 4**).

3.6.1 Watercourse Diversions

No watercourse diversions (Towns River or Pandanus Creek Diversions) are required or proposed for Stage 1B operations.

3.6.2 Exploration Activities

No exploration activities are proposed as part of the Stage 1B MMP amendment.

4 ENVIRONMENTAL MANAGEMENT

The Stage 1B MMP amendment will continue to implement the existing Environmental Management System and management plans currently implemented in Stage 1A and approved in the 2019 MMP. Although majority of the management plans authorised in the 2019 MMP remain relevant, several management plans have been contemporised to reflect current operations at the NRP. Management plans which have been updated include:

- Dust Management Plan (DMP); and
- Water Management TARP.

The updated documents have been appended to this Stage 1B MMP amendment for DITT's consideration. **Table 4-1** briefly summarises the amendments to each management plan.

Table 4-1 Summary of document updates

Plan	Amendments
Dust Management Plan	• Addition of PM10, PM2.5 and TSP monitoring at the Mine and the BBLF. • Addition of weather stations to be implemented at the Mine and BBLF. • Updated dust management measures at the BBLF associated with barge loading. • Updated dust management measures along the haul road.
Water Management TARP	• Updated water storage operating levels. • Addition of RBSP02 to TARP as an available water storage. • Prioritised water storages should dewatering be required based on Stage 1B operational needs.

5 REFERENCES

Pendragon (2019) Acid and Metalliferous Drainage Management Plan.

Western Desert Resources (2012) Roper Bar Iron Ore Project Environmental Impact Statement.

WRM (2024) Nathan River Water Balance Modelling Update Addendum Memo.

Appendix A – WRM Water Balance Model Update

WRM
WATER + ENVIRONMENT

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MEMORANDUM

Date	29 January 2024
Attention	Emerson Pollard
Company	METServe
WRM ref.	1547-13-G1
Subject	Nathan River Resources MMP amendment – 2024 Water Balance Update

Dear Emerson,

1 INTRODUCTION

As requested, we have updated the Nathan River Resources Pty Ltd (NRR) site water balance assessment based on the recent pit water level information and the updated water management strategy provided by METServe personnel on 27 November 2023.

The latest site water balance model (WBM) (WRM, 2023) was developed to assess the NRR water management system for the previous Mine Management Plan (MMP) period between May 2023 and December 2024. This memorandum presents the changes to the WRM (2023a) WBM and results to account for the proposed MMP amendment between December 2023 and June 2025. This WBM update assessed for the 18-month MMP, which consists of two stages:

- Stage 1A: MMP period between 1 December 2023 to 31 May 2024; and
- Stage 1B: MMP period between 1 June 2024 to 31 May 2025.

The following mining strategy was defined for the 18-month MMP period by METServe in consultation with NRR:

- For Stage 1A:
  - Mine the Danehill pit saddle (which separates Danehill East and Danehill West pits) and Zabeel North pit; and
  - Re-commission the ROM dam (RBSP02) with a storage capacity of 882 ML.
- For Stage 1B:
  - Mine Danehill East pit from -8mRL to -40 mRL.
  - Maintain a saddle between the Danehill East and Danehill West pits.

The water balance model was run for the 18-month MMP period to assess the performance of the proposed water management strategy for a full containment scenario. The WRM (2023a) WBM was updated for this assessment to reflect the proposed changes for the MMP amendment period.

2 WATER BALANCE ASSUMPTIONS

This section outlines the changes made to the previous water balance model (WRM, 2023) based on the information provided by METServe and discussion with the site personnel. The key changes made include:

- Update initial water level of site storages;

- Use RBSP02 and Zabeel South pit as water storages;
- Increase the RBSP02 storage capacity from 591 ML to 882 ML; and
- Increase the RBSP02 MOL volume from 10 ML to 630 ML (a MOL of 21.1 mRL). The proposed MOL volume provides a less than 10% exceedance probability (wet) spill risk. Note that the proposed MOL volume does not consider geotechnical considerations of the dam embankment. Advice from an experienced geotechnical engineer should be obtained to confirm at what level the RBSP02 wall can safely store water to this level for prolonged periods of time. If required, the MOL should be lowered to meet the geotechnical requirements.

Where possible, water will be pumped out of the Danehill pits when they exceed their MOL to RBSP02 or Zabeel South pit. Table 1 shows the adopted initial water volumes, MOL volume and total capacity for each storage based on information provided by NRR. Table 2 shows the initial level and MOL (for Stage 1A and Stage 1B) in each pit. Figure 1 shows the proposed Stage 1A and Stage 1B NRR WMS schematic.

Table 1 Adopted storage characteristics for NRR storages

Dam name	Initial Volume (Nov 2023) (ML)	MOL Volume (ML)	Total Capacity (ML)
Danehill West	908	770.5	3,700
Danehill East	307	0^	1,750
Zabeel North	0	0	802
Zabeel South	439	1,250	1,307
RBSP02	18	630	882
RBSP01	40*	40	60
Total	1,712	2,723	7,949

^ Danehill east is emptied for mining

* Initial volume of RBSP01 is as of June 2023

Table 2 Adopted pit initial level and MOL

Dam name	Initial Level (Nov 2023) (mRL)	MOL (mRL)	
		Stage 1A	Stage 1B
Danehill West	-6	-8	-8
Danehill East	4	-8	-40
Zabeel North	0	0	0
Zabeel South	5.5	17.3	17.3

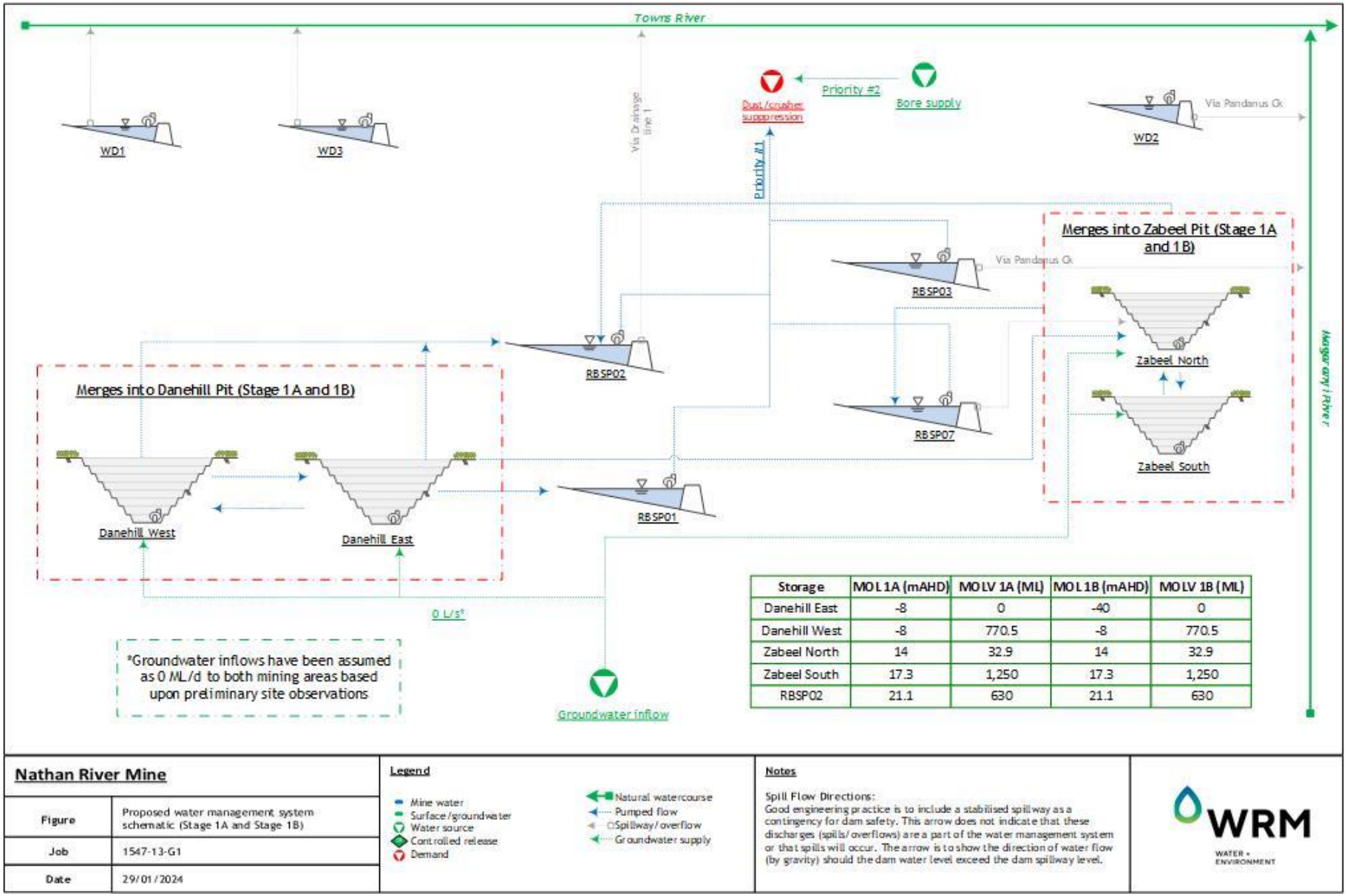


Figure 1 Proposed Stage 1A and Stage 1B water management system schematic

3 RESULTS

3.1 GENERAL

This section assesses the water balance model results for the December 2023 to June 2025 MMP amendment period. The results were assessed for the following two MMP stages:

- Stage 1A: MMP period between 1 December 2023 to 31 May 2024; and
- Stage 1B: MMP period between 31 May 2024 to 1 June 2024.

The modelled water inventories in the Danehill East, Danehill West, Zabeel South and Zabeel North pits are shown in Figure 2, Figure 3, Figure 4 and Figure 5 respectively. The ROM dam (RBSP02) water inventory is shown in Figure 6.

3.2 INTERPRETATION OF RESULTS

The water balance model has been run using historic climate data over a forecast period of 18 months. In interpreting the forecast results, it should be noted they provide a statistical analysis of the WMS performance over the next 18 months of mine life, based on 131 different climatic sequences (realisations).

The forecast results are represented as a band, with the 50th percentile (median trace) in the middle of the band. When viewing storage inventories, the 90th percentile represents 10% exceedance (i.e. generally very wet conditions) and the 10th percentile results represent 90% exceedance (i.e. generally very dry conditions). There is an 80% chance that the result will fall within the 10th and 90th percentiles and a 98% chance the result will fall between the 1st and 99th percentiles. It is important to note that a percentile trace shows the percentage chance of exceeding particular value on any particular day, and does not represent continuous results from a single model realisation (e.g. the 90th percentile trace does not represent a single continuous 90th percentile climate scenario over the simulation, rather it shows the volume/rate exceeded by 90% of the 131 realisations on each day of the simulation).

3.3 WATER BALANCE RESULTS

3.3.1 Stage 1A (1 December 2023 to 31 May 2024)

The Danehill pits dewatering at 10.4 ML/d is predicted to take approximately 1.5 months to reach the MOV at -8 mAHD. Assuming dewatering starts on 1 December, approximately 450 ML will be dewatered from the Danehill pits to reach the MOV on 14 January 2024. The predicted Danehill pit behaviour during Stage 1A includes:

- Under the P50 trace (50% exceedance probability), Danehill pits remain below their MOLs.
- Under the P90 trace (10% exceedance probability), Danehill pits remain below their MOLs.
- Under the P99 trace (1% exceedance probability (very wet)), Danehill pits exceed their MOLs during the wet season, which will potentially affect mining of pit saddle during Stage 1A.

The Zabeel pits are predicted to operate at or below their MOL volumes during Stage 1A for all climatic realisations.

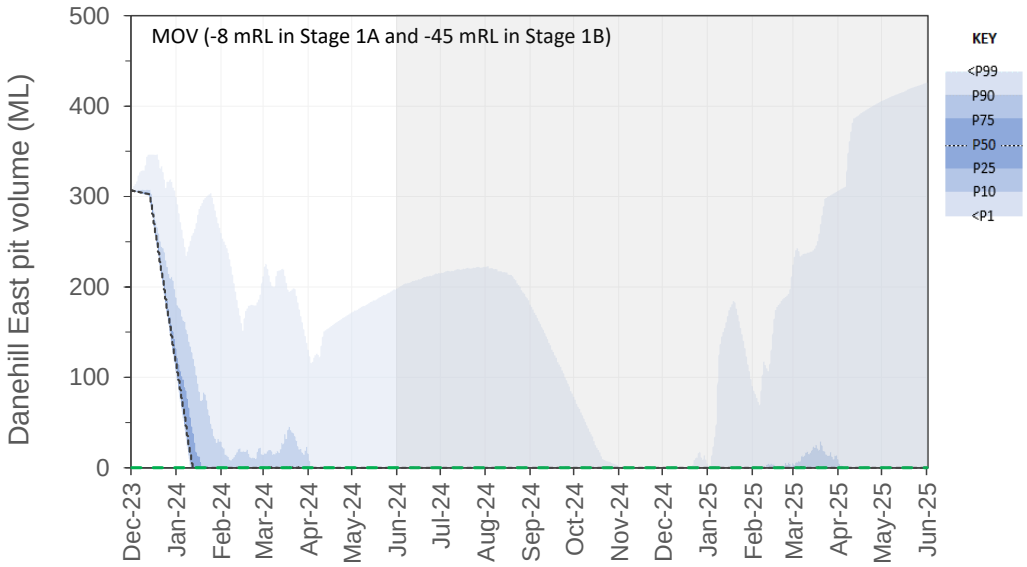
The RBSP02 inventory is predicted to increase by approximately 450 ML between December 2023 and January 2024 due to 450 ML of pumped inflow from the Danehill pits. The predicted RBSP02 behaviour during Stage 1A includes:

- Under the P50 trace (50% exceedance probability), RBSP02 is predicted to reach its MOL volume in March 2024.

- Under the P90 trace (10% exceedance probability (wet)), RBSP02 is predicted to reach its MOL volume in January 2024. Dewatering of Danehill pits to the Zabeel pits will be required to maintain the Danehill Pits at their MOL volumes.
- Under the P99 trace (1%ile exceedance probability (very wet)), RBSP02 is predicted to overflow in March 2024. Dewatering of Danehill pits to Zabeel pits will be required to maintain the Danehill Pits at their MOL volumes.
- RSPB02 is expected to meet haul road dust suppression demand for all climatic scenarios.
- RSBP02 is predicted to spill to the environment in 5 of the 131 modelled climate sequences (i.e. approximately 4% exceedance probability) during 2024/25 wet season.

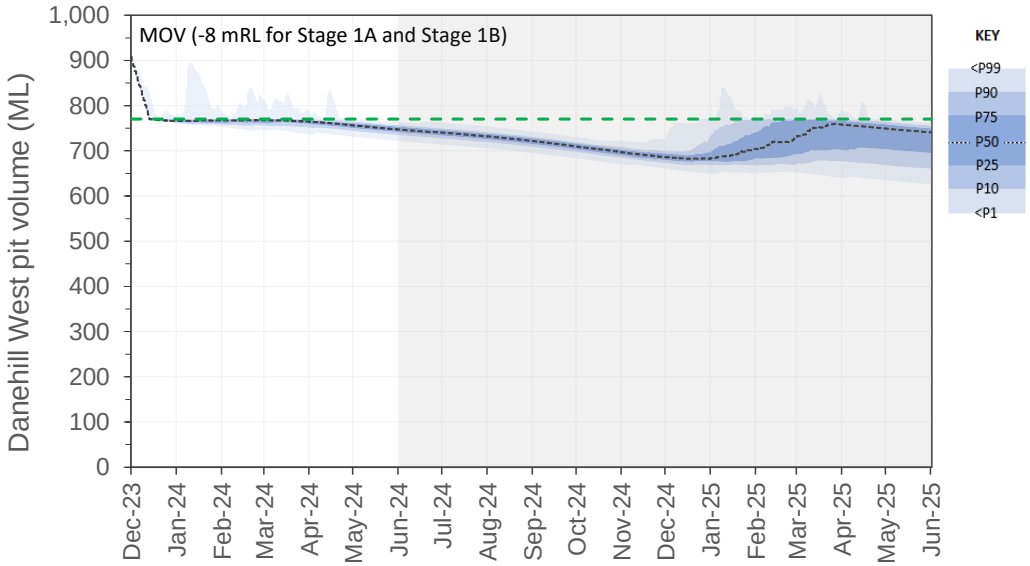
3.3.2 Stage 1B (1 June 2024 to 31 May 2025)

- The predicted Danehill pit behaviour during Stage 1B include:
  - Under the P50 trace (50% exceedance probability), the Danehill pits start collecting rainfall runoff water around January 2025. Danehill East and Danehill West are predicted to remain below their MOL volumes during the 2024/25 wet season.
  - Under the P90 trace (10% exceedance probability (wet)), the Danehill pits start collecting rainfall runoff water from January 2025 and predicted to be maintained at or below their MOL volume during 2024/5 wet season.
  - Under the P99 trace (1%ile exceedance probability (very wet)), the Danehill pits start collecting water from December 2024 and are predicted to exceed their MOL volumes due to insufficient capacity in RBSP02 and the Zabeel pits.
- The predicted Zabeel Pit behaviour during Stage 1B includes:
  - Under the P90 trace (10% exceedance probability (wet)), the Zabeel pits remain below their MOLs.
  - Under the P99 trace (1%ile exceedance probability (very wet)), the Zabeel South pit remains at its MOL for the duration of Stage 1B but does not spill. Zabeel North pit also exceeds its MOL for significant periods of time.
- The predicted RBSP02 behaviour during Stage 1B include:
  - Under the P50 trace (50% exceedance probability), RBSP02 is predicted to be 540 ML at the start of Stage 1B. The RBSP02 can supply haul road dust suppression demand.
  - Under the P99 trace (1% exceedance probability (very wet)), RBSP02 is predicted to spill in March 2025.
  - Under the P1 trace (99% exceedance probability (very dry)), RBSP02 is predicted to be 200 ML at the start of Stage 1B and can supply haul road dust suppression till September 2024, after which pit water will be used to meet the demand.
  - RSBP02 is predicted to spill to the environment in 5 of the 131 modelled climate sequences (i.e. approximately 4% exceedance probability) during 2024/25 wet season.



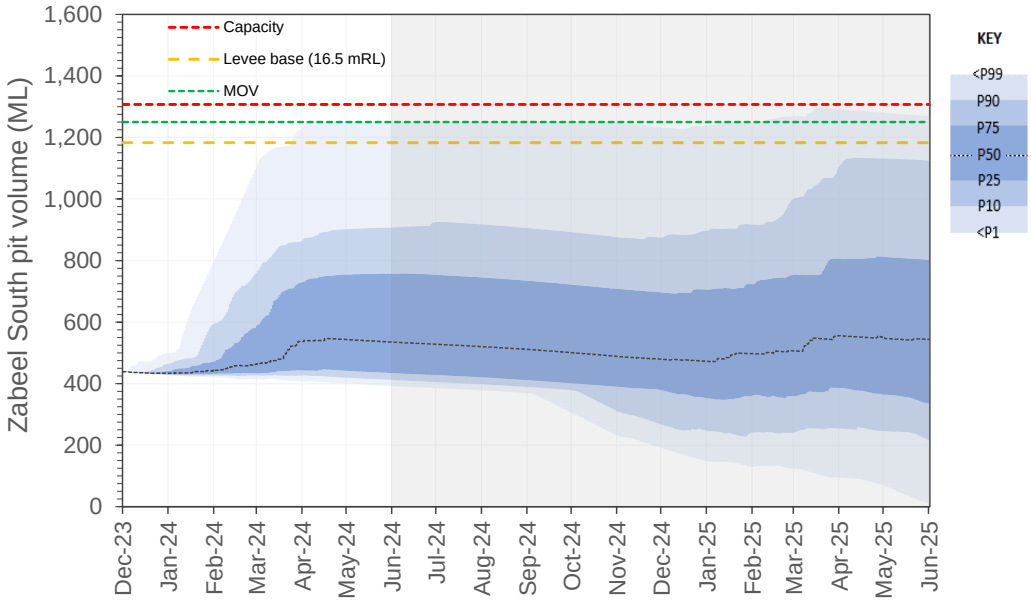
Notes:
1. Non-shaded area of the chart represents Stage 1A and shaded area represents Stage 1B
2. Probablistic model results presented using blue shading.

Figure 2 Danehill East pit forecast storage inventory



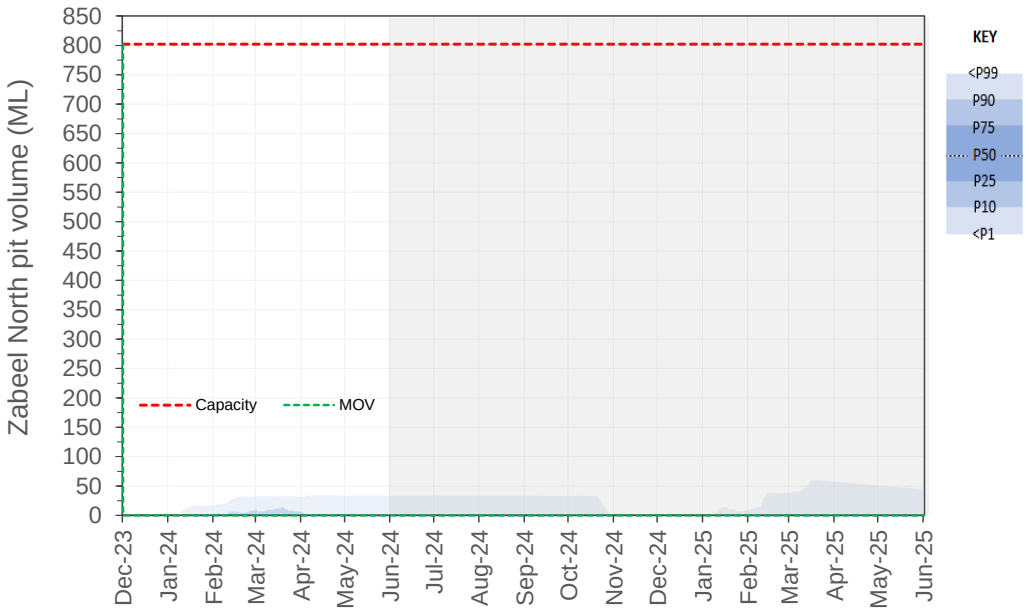
Notes:
1. Non-shaded area of the chart represents Stage 1A and shaded area represents Stage 1B
2. Probablistic model results presented using blue shading.

Figure 3 Danehill West pit forecast storage inventory



Notes:
1. Non-shaded area of the chart represents Stage 1A and shaded area represents Stage 1B
2. Probablistic model results presented using blue shading.

Figure 4 Zabeel South pit forecast storage inventory



Notes:
1. Non-shaded area of the chart represents Stage 1A and shaded area represents Stage 1B.
2. Probablistic model results presented using blue shading.

Figure 5 Zabeel North pit forecast storage inventory

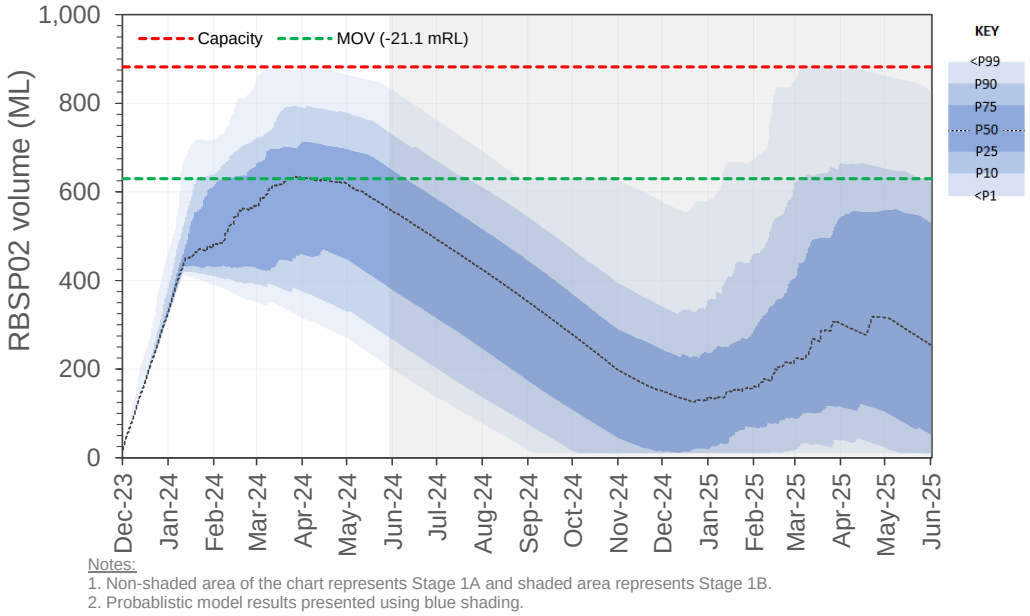


Figure 6 RBSP02 forecast storage inventory

Regards,

Julian Orth

Senior Principal Engineer

REFERENCES

WRM (2023)	*Nathan River Project Zabeel Surface Water Assessment.* WRM Water & Environment, document number 1547-13-C, March 2023
WRM (2023a)	*Nathan River Resources MMP Amendment – Site Water Balance Update,* WRM Water & Environment, document number 1547-13-E1, June 2023

Appendix B – NRP Water Management Trigger Action Response Plan (TARP)

Water Management
Trigger Action Response Plan (TARP)

Nathan River Project

Operator name:	NRR Services Pty Ltd
Project name:	Nathan River Project
Authorisation:	1062-01
MMP reporting year:	2024 - 2025
Date:	29 January 2024
Document distribution list:	DITT
	NRR Services Pty Ltd

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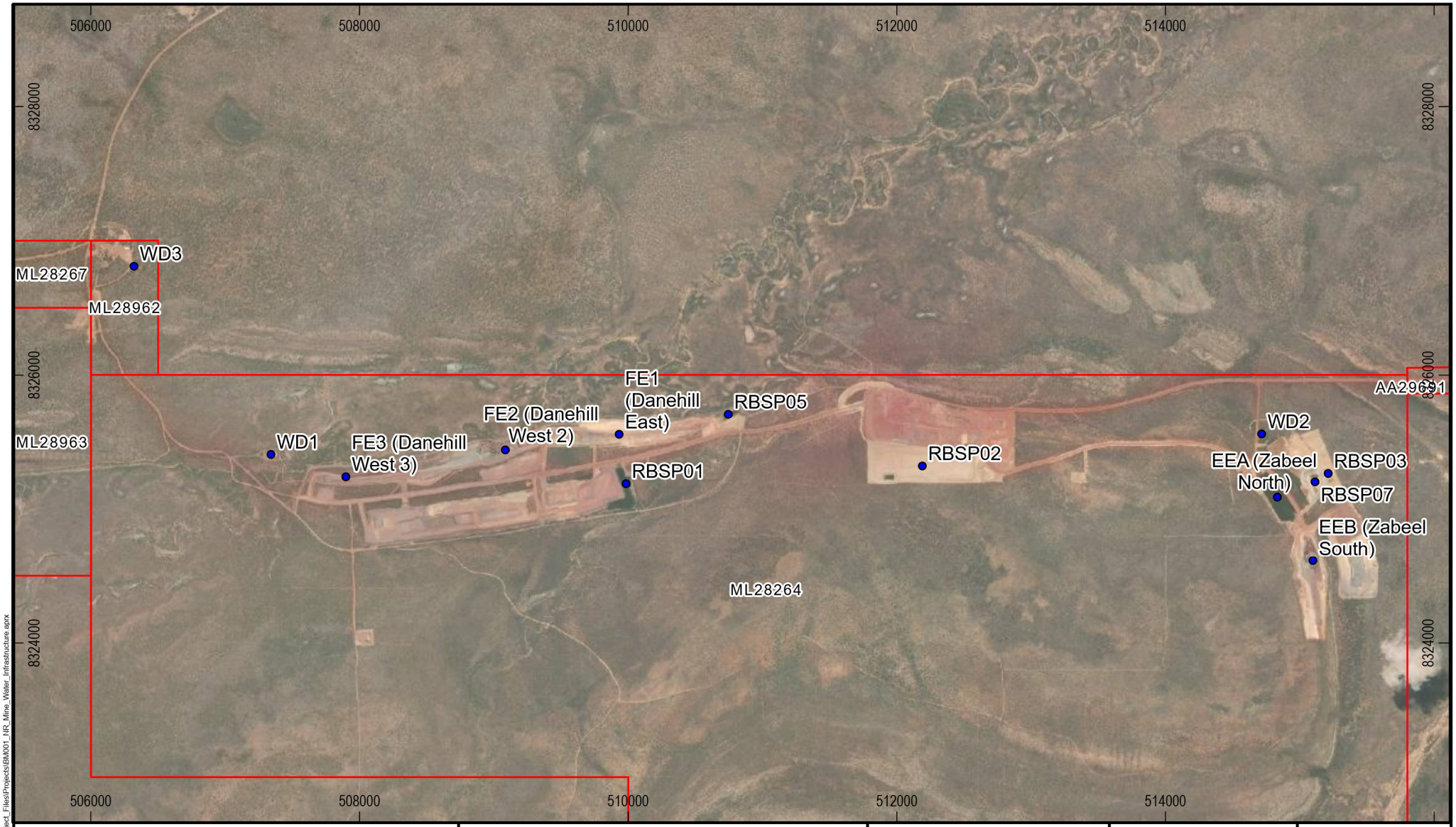
1 INTRODUCTION

In accordance with Variation of authorisation (1062-01) issued for the Nathan River Project (NRP), a Trigger Action Response Plan (TARP) has been developed attaining to the on-site water management at the NRP. This TARP specifically addresses the water management strategy to be implemented for the Stage 1B MMP period (July 2024 to October 2025), in accordance with activities outlined in the Stage 1B MMP amendment.

During Stage 1A operations, dewatering of the Danehill East and West pits will commence, transferring approximately 450 megalitres (ML) of mine-affected water to the unused Zabeel South pit and RBSP02 (once commissioned) for temporary storage. Dewatering activities will ensure safe mining conditions during Stage 1A saddle mining as well as providing access to the Danehill East pit in preparation for Stage 1B operations.

NRR's highest priority over the MMP period is water management, avoiding any uncontrolled mine water discharges to the receiving environment. **Figure 1** presents the location of the main water storages at the NRP.



Legend

- Water Storages
- ML Boundary

Source: Nathan River Resources 2023, METServe 2023, Maxar.

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\BM001_NR_Mine_Water_Infrastructure.aprx

Nathan River Project

Mine Water Infrastructure

0 0.5 1 1.5

Kilometers

Scale: 1:40,000 (A4)

3/08/2023

Datum: GDA2020
Projection: MGA53

FIGURE 1

Nathan River Resources

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2 TRIGGER ACTION RESPONSE PLAN

Trigger Action Response Plans (TARP) are a useful adaptive management tool which assist in managing scenarios that differ from normal conditions. Condition 19 of the Variation of Authorisation 1062-01 outlines the Operator must develop and adhere to the TARPs for the site. A TARP should explicitly outline a minimum set of actions which must be enacted in response to exceedance/s of nominated criteria developed using a tiered system as a function of increasing risk. This TARP aims to assist with the operation and management of the NRP's key water storages throughout the MMP period, including actions with the intent of mitigating the risk of uncontrolled discharges to the receiving environment whilst facilitating mining operations.

This TARP incorporates information from the revised water balance completed for the Stage 1B MMP amendment (WRM 2024). Four tiered levels are used in this TARP, each with a scenario description and a corresponding action which must be implemented in response. **Table 1** outlines the levels used in this TARP.

This TARP does not assume a waste discharge licence (WDL) is granted for the 2023-24 or 2024-205 wet season. Should this assumption change, the TARP will be updated accordingly.

Table 1 – TARP Level Descriptions and Actions

TARP Level	Description	Action
Level 1	Stored volume is less than Upper Operating Level (UOL).	Pumped inflows can occur at this level.
Level 2	Stored volume is greater than UOL and less than Maximum Operating Volume (MOV).	Early warning – cease pumped inflows from other storages unless otherwise specified in another TARP. Identify potential receiving water storages for pumped outflows should Level 3 be triggered.
Level 3	Stored volume is greater than MOV but less than Full Storage Level (FSL).	Imminent risk – commence pumped outflows immediately to other water storages.
Level 4	Stored volume is greater than FSL.	Uncontrolled discharge of water – undergo monitoring and reporting procedures.

2.1 Water Storage Operating Levels

Table 2 presents the Upper Operating Level (UOL), Maximum Operating Volume (MOV) and Full Storage Level (FSL) for each water storage within the NRP Water Management System. Operating levels for Danehill East and West pits reflect the water volumes which are required to facilitate Stage 1B mining operations. Should Danehill East and West pits exceed their corresponding MOVs, mining activities may be impacted.

Table 2 – Water Storage Operating Levels

Levels	Zabeel South	Zabeel North	Danehill East	Danehill West	RBSP01	RBSP02
Upper Operating Level (UOL)	1,183 ML	0 ML	0 ML [1]	770.5 ML	NA	602.4 ML
Maximum Operating Volume (MOV)	1,250 ML	0 ML	0 ML [1]	770.5 ML	94 ML	630 ML
Full Storage Capacity (FSL)	1,307 ML	802 ML [4]	1,300 ML [2]	982 ML	104 ML [3]	882 ML

1 Level to facilitate Stage 1B mining activities
2 Mining activities to be impacted
3 FSL volume at the point which RBSP01 will overflow to adjacent irrigation area.
4 FSL volume at the end of Stage 1A mining operations

NRR intends to utilise RBSP02 as a water storage during the Stage 1B MMP period. DITT has conditionally accepted the engineering report accepting that RBSP02 is fit for purpose to store mine-affected water. As of January 2024, repairs to the dam walls, blocking of the previous inlet culvert and installation of the spillway have been completed. The commissioning and operation of RBSP02 is now subject to the development and implementation of the following requirements as per the Variation of Authorisation 1062-01

- a TARP (this document) as per Condition 19;
- an Operations, Maintenance and Surveillance Manual as per Condition 22 and 23; and
- Submission of an independent certifying engineer (ICE) endorsed "as-constructed" report as per Condition 47.

Once commissioned, RBSP02 will receive mine-affected water from either the Danehill pits or Zabeel South during Stage 1B with a MOV capacity of approximately 630 ML. Water stored in RBSP02 will be utilised for dust suppression within the processing area on the ROM.

2.2 Water Transfers and TARP Volumes

Dewatering from both Danehill East and West pits will commence in Stage 1A, transferring mine-affected water to the Zabeel South pit and RBSP02 (once commissioned) for temporary storage. Stage 1B mining operations require the Danehill East pit to be dry, whilst continuing to use the Danehill West pit as a key water storage at the NRP. At the completion of saddle mining in Stage 1A, a portion of the saddle separating the two Danehill pits will remain, leaving capacity in the the Danehill West pit to store mine-affected water without impacting mining activities. In order to do this, water volumes in the Danehill West pit must be maintained below the MOV of 770.5 ML. The implemented MOV allows 3 m freeboard (or an additional ~210 ML) before water from the Danehill West pit overtops the saddle and enters the Danehill East pit. If this was to occur, mining activities in the Danehill East pit would be impacted.

Table 3 presents the TARP levels and the associated water volumes for the key water storages at the NRP over the Stage 1B MMP period. Certain water storages outlined in **Table 3** have not been assigned level 1 or 2 volume triggers because these storages are not expected to receive pumped inflows during this period (a requirement of the Level 1 and 2 TARP). Only Zabeel South, RBSP01 and RBSP02 are planned to receive pumped inflows, hence have Level 1 and 2 TARP levels assigned in **Table 3**. Zabeel North and both Danehill pits will not receive pumped inflows unless dewatering from another storage is required under this TARP. Level 3 and 4 volume triggers have been assigned to these storages in order to mitigate the risk of uncontrolled discharge should extremely wet conditions occur.

Table 3 – TARP Level Volumes

TARP Level	Zabeel South	Zabeel North	Danehill West	Danehill East	RBSP02
Level 1	< 1,183 ML	NA	NA	NA	< 602 ML
Level 2	1,183 – 1,250 ML	NA	NA	NA	602 – 630 ML
Level 3	1,250 – 1,307 ML	1 – 802 ML	770.5 - 982 ML	1 – 1,300 ML	630 – 882 ML
Level 4	> 1,307 ML	> 802 ML	> 982 ML	> 1,300 ML	> 882 ML

The water management strategy at the NRP aims to operate all water storages below their corresponding MOV, reducing the risk of uncontrolled discharges to the receiving environment along with facilitating mining operations. In the instance whereby a water storage has triggered TARP Level 3, NRR will commence pumped outflows from the Level 3 storage to another NRP water storage which remains below its MOV (Level 1 or Level 2). The following water storages, ranked in order of priority, should receive pumped inflows in the event of a storage triggering Level 3:

1. RBSP02;
2. Zabeel South Pit;
3. Zabeel North Pit;
4. Danehill West Pit; and
5. Danehill East Pit.

Once water transfers are underway, transfers will continue until one of the following occurs:

- The source storage water volume returns below its MOV; or
- The receiving storage triggers its UOL.

TARP levels have not been assigned to RBSP01 as it is an active sediment basin by which overflows report to the adjacent irrigation area and the Danehill East pit. Given RBSP01 is used as the main water supply for operational dust suppression with the water volume typically declining, it is not anticipated to overflow to the Danehill east pit.

3 MONITORING

In order to for this TARP to be implement and actioned, water storage volumes informing this TARP must be frequently updated. NRR currently collects fortnightly water volume surveys across mine water storages, along with additional surveys after large rainfall events. Once updated water volumes are collected, the TARP is reassessed to indicate if a water storage's TARP level has changed. Should a water storage's TARP level change, all operational stakeholders will be inform of the change and the subsequent change in action as per the TARP. MOV indicators (starpickets) will be installed at each water storage allowing for the visual comparison of the water level to the MOV.

Monitoring of water volumes and inspection of all mine water infrastructure will occur frequently throughout the 2023-2024 wet season and the MMP period. All water transfers will utilise flow meters to record flow and transfer volumes and will be recorded in a log along with source and destination of each transfer. Along with water transfer record keeping, water storages and associated infrastructure (i.e. pipeline, holding tanks) across the mine will be frequently inspected and maintained to ensure no uncontrolled discharges to the receiving environment. Along with frequent infrastructure inspections, monthly water quality monitoring of mine water storages will continue as outlined in the Water Management and Monitoring Plan (NRR 2019).

4 REFERENCES

NRR (2019) NRP Water Management and Monitoring Plan (WMMP).

WRM (2024) Nathan River Water Balance Modelling Update Addendum Memo.

Appendix C – Dust Management Plan

Dust Management Plan

Nathan River Project

Mining Operations and Bing Bong Loading Facility

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2 INTRODUCTION

2.1 Background

NRR Services Pty Ltd (NRR) operates an iron ore mine in the Roper Region of the Northern Territory known as the Nathan River Project (NRP). The NRP is located approximately 530 kilometres (km) southeast of Darwin within the Gulf of Carpentaria and is comprised of three main operation domains: the mine, the haul road and the Bing Bong Loading Facility (BBLF).

The previous operator, WDR commenced mine construction and operations in 2013 following the approval of the Roper Bar Iron Ore Project (RBIOP) Environmental Impact Statement (EIS) under the previous *Environmental Assessment Act*. Upon acquiring the RBIOM, NRR submitted a Mining Management Plan (MMP) in accordance with the *Mining Management Act 2001,* receiving approval in the form of mining authorisation 1062 to commence operations in 2020.

NRR currently operates the NRP under the approved Variation of Authorisation 1062-01 granted in October 2023 which authorises the recommencement of mining operations as per the activities detailed in the Stage 1A MMP amendment. The activities which are authorised under the current Variation to Authorisation 1062-01 include:

- Recommencement of mining, focusing on the Danehill pit saddle and Zabeel North open-cut pit;
- Processing and sorting of ore;
- Haulage of ore to the BBLF; and
- Transhipment of ore from the BBLF.

There is the potential that operations at the NRP may generate dust which has the potential to impact personnel and the surrounding environment. Given this risk, NRR have prepared and implemented this Dust Management Plan (DMP). The purpose of the DMP is to ensure the health and well-being of mine personnel and the amenity of persons who live and work in the vicinity of the NRP, and to reduce the impact of dust emissions on the surrounding environment. This DMP has been designed to address requirements under relevant legislation, policies, standards, and guidelines.

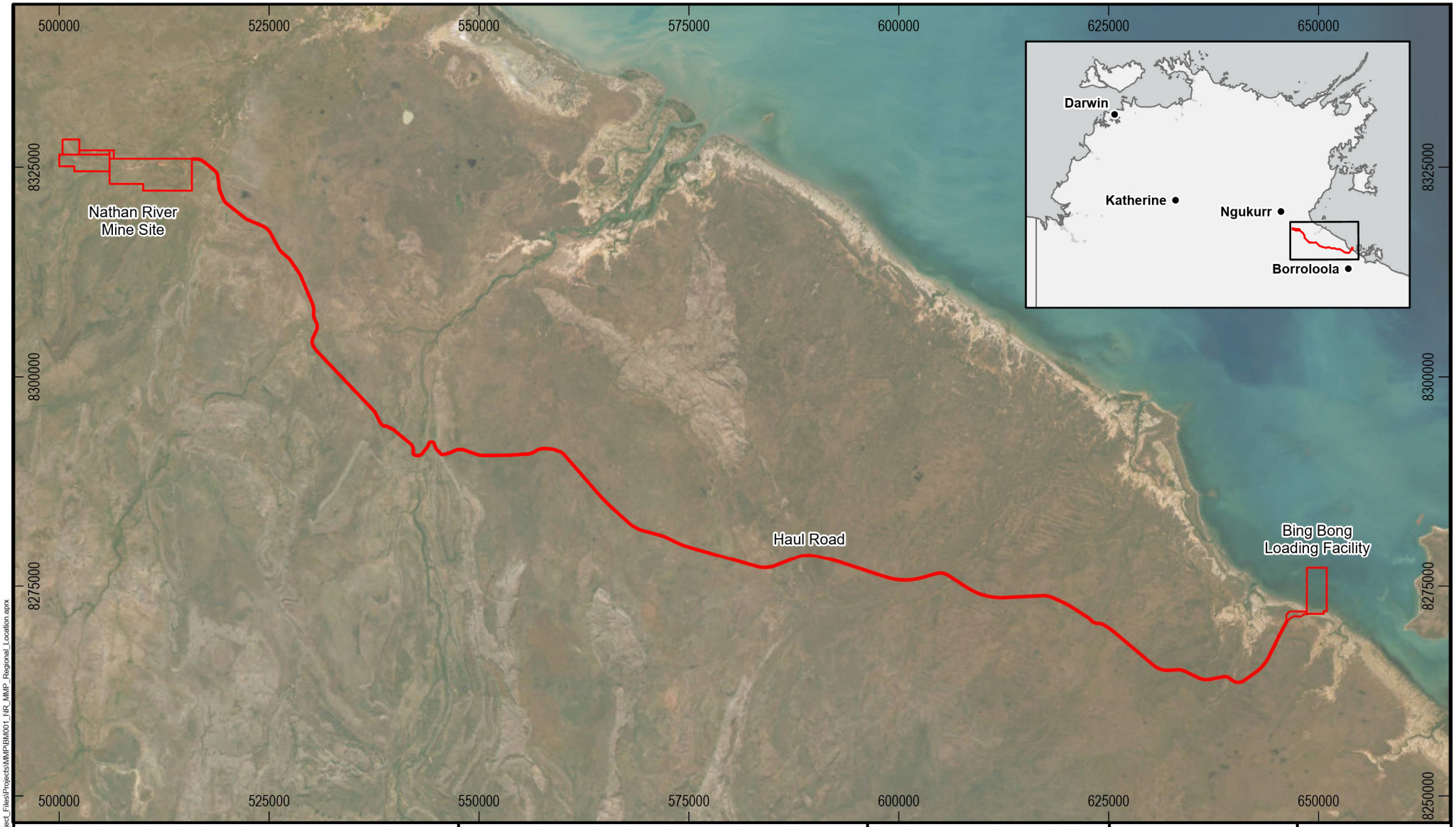
2.2 Location and surrounding land use

The NRP is located within mining leases (ML) 28962, 28267, 28266, 28963 and 28264. The haul road, privately owned and operated by NRR, stretches for 171 km connecting the mine and the BBLF allowing the haulage of material to the BBLF. The BBLF is situated within ML 29628, located on the south-western coast of Gulf of Carpentaria approximately 50 km north of Borroloola. Glencore's McArthur River Mine operates a larger loading facility at the BBLF and is the overarching controller of the Port. The regional location of the NRP is presented in **Figure 2-1**.

The mine area is situated within NT Portion 819 which is the former St Vidgeon Pastoral Lease. Adjacent to the mine is the Limmen National Park. The Haul Road crosses four land tenures including the Limmen National Park, Lorella Springs Station, Wurrunburru Association and McArthur River Station. **Table 2-1** details the surrounding land uses.

Table 2-1 NRP Surrounding land use

Name	Tenure Type
Lorella Springs Station NT Portion 1333	Pastoral Lease
NT Portion 2432	Crown Lease in Perpetuity
McArthur River Station NT Portion 4319	Perpetual Pastoral Lease
Wurrunburra Association Incorporated	Crown Lease Perpetual
Limmen National Park	Reserve



Legend

Tenement Boundaries

Source: Geoscience Australia 2006, Northern Territory Government (Department of Industry, Tourism and Trade) 2022, Nathan River Resources 2018-2020, METServe 2023, Earthstar Geographics.

Nathan River Project

Regional Location

0 5 10 20

Kilometers

Scale: 1:640,000 (A4)

14/06/2023

Datum: GDA2020
Projection: MGA53

FIGURE 2-1

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\MMP\BM001_NR_MMP_Regional_Location.aprx

2.3 Scope and overview

The scope and objectives of this DMP are to:

- Describe operational dust conditions at the NRP (including the BBLF) and surrounds, including the review of pre-mining dust measurements in comparison to dust measurements collected at background locations;
- Outline potential dust impacts associated with mining, processing, haulage and transhipment activities on the surrounding environment;
- Provide management and monitoring recommendations for each of the three operation domains (Mine, Haul Road and BBLF) to ensure the operations are carried out in compliance with relevant policies and guidelines; and
- Provide details on roles and responsibilities, incident reporting, complaints procedures, and consultation with potentially affected parties.

2.4 Plan review and updates

Review of this DMP will be undertaken annually to assess effectiveness and performance against the DMP objectives. Where necessary, the DMP will be updated to reflect identified changes or modifications.

3 DUST ASSESSMENT

3.1 Pre-mining dust emissions

Prior to mining, dust conditions in the vicinity of the NRP were dominated by dust produced from vehicles travelling along the unsealed sections of the Savannah Way that are closest to the NRP boundaries. This is in addition to dust and smoke produced from bushfires and burning off activities, and a small amount of dust from pastoral activities. These conditions are enhanced in the dry season months compared to the wet season (where heavy rain reduces dusty conditions).

3.2 Environmental dust measurements pre-NRP

Baseline dust monitoring was undertaken by VDM for WDR in July – August 2012. Baseline monitoring was undertaken at eight locations across both the mine camp (now referred to as Sawfish Camp) and the BBLF stockyard. Baseline dust deposition monitoring was conducted at the location of the proposed mine accommodation camp for a total of 28 days from the 18 July to 15 August 2012. Dust deposition monitoring was also conducted at the proposed BBLF stockyard site over a 31-day period from 17 July to 17 August 2012.

The objective of the baseline dust monitoring was to determine the level of naturally occurring deposited dust at the location of the Sawfish camp and BBLF stockyard.

The results of the ambient dust monitoring data are summarised in **Table 3-1** below.

Table 3-1 Baseline depositional dust results collected in 2012

Location ID	Sample ID	Collection duration (days)	Insoluble Solids (g/m^2/month)
BBLF Stockyard	1 North	31	1.2
	2 East	31	1.0
	3 South	31	0.5
	4 West	31	0.9
Sawfish Camp	5 North	28	2.1
	6 West	28	0.8
	7 South	28	0.5
	8 East	28	1.9

3.2.1 Local climate conditions

Climate

The Roper River region is located within the tropics and experiences two distinct seasons, the dry season from May to October and the wet season from November to April. The wettest months are January and February with the average monthly rainfall of 2,085 mm and 2,108 mm, respectively. The driest months are July and August both with an average daily rainfall of 3 mm. Temperatures range from an average maximum of 39.75 °C in November, to average minimum temperatures of 14.65 °C in August. **Figure 3-1** below summarises rainfall and temperature data collected from 2012 to 2018 from the Ngukurr Airport (this is the nearest active weather station with a long history of records) (BoM 2018).

The average yearly evaporation greatly exceeds the average rainfall, which is typical for northern Australia. Average annual evaporation rates are between 2,000 mm and 2,400 mm, while average annual rainfall for Ngukurr Airport is 825.2 mm (BoM 2018). Local meteorological observations at the Mine and BBLF will be recorded by NRR on a frequent basis.

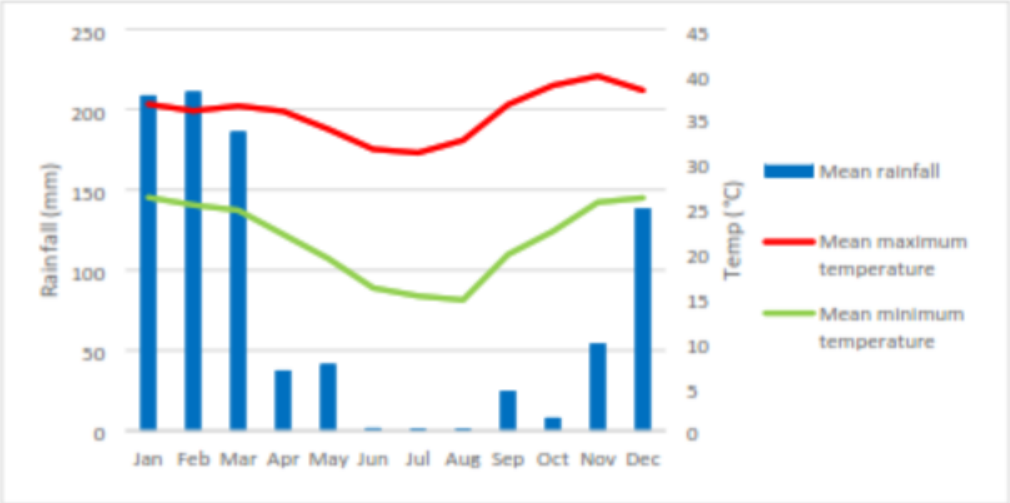


Figure 3-1 Mean monthly climate data for the closest weather station (Ngukurr Airport - 014299)

Wind

Prevailing winds are south-easterly during the dry season associated with high pressure cells in central Australia. During the wet season, monsoonal weather from the northwest is more typical. Wind speed and dominant direction plays an important role in the dispersion of dust particles. Wind speed at McArthur River Mine Airport BoM Station (station 014704) (this is the nearest open station with current wind information and roses, with similar conditions to the NRP) ranges from 5.5 km/h (during March at 9 am) to 13.2 km/h (during October at 3 pm) (BoM 2018). Wind speeds generally display a higher maximum speed in the dry season months. On average, throughout the course of a year, wind direction is predominantly south-east in the morning and easterly in the afternoon (BoM 2018).

Figure 3-2 and **Figure 3-3** below show the average annual wind directions and speeds for 9 am and 3 pm at McArthur River Mine Airport.

Wind speed at Centre Island BoM Station (Station 014703) (this is the nearest open station with current wind information and roses with similar conditions to the BBLF) ranges from 14.6 km/h (during December at 9 am) to 23 km/h (during June at 9 am) (BoM 2018). Wind speeds generally display a higher maximum speed in the dry season months. On average, throughout the course of a year, wind direction is predominantly southeast in the morning and east to north-easterly in the afternoon (BoM 2018). **Figure 3-4** and **Figure 3-5** below show the average annual wind directions and speeds for 9 am and 3 pm at Centre Island.

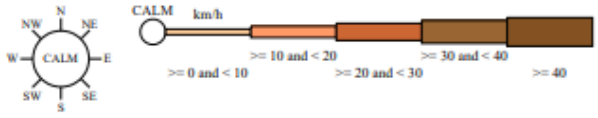
Rose of Wind direction versus Wind speed in km/h (01 Jan 1969 to 10 Aug 2023)

Custom times selected, refer to attached note for details

MCARTHUR RIVER MINE AIRPORT

Site No: 014704 • Opened Mar 1968 • Still Open • Latitude: -16.4423° • Longitude: 136.076° • Elevation 40m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am
17825 Total Observations

Calm 17%

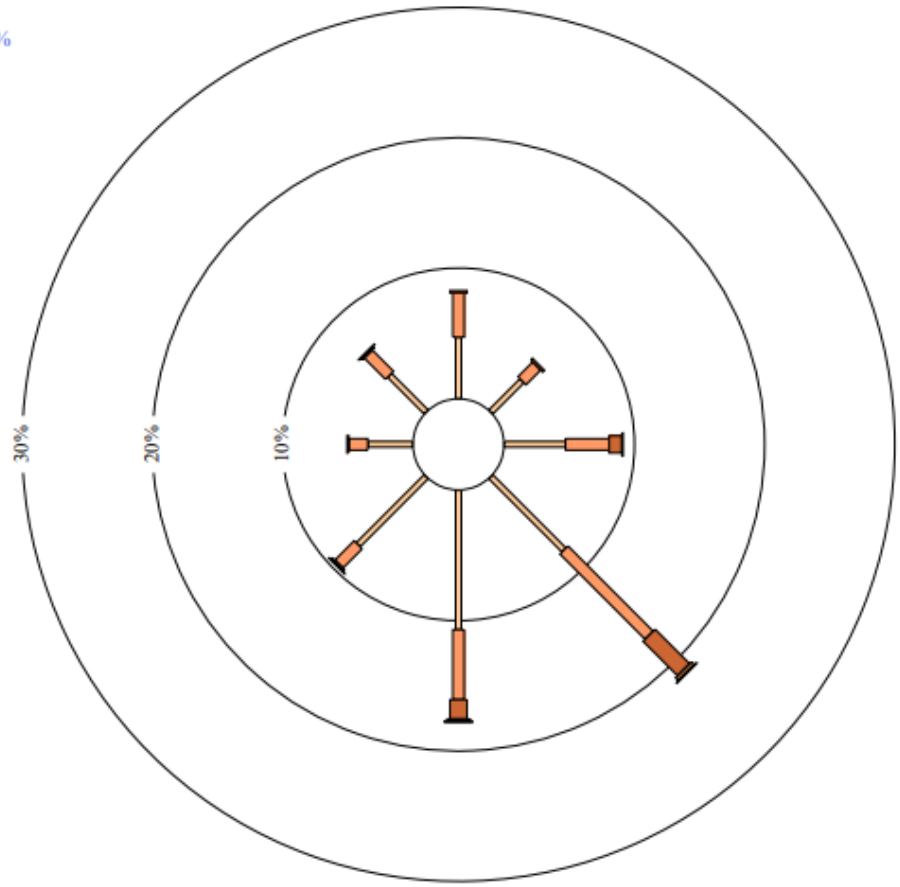


Figure 3-2 McArthur River Mine Airport 9am wind rose (014704)

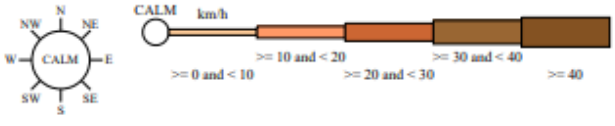
Rose of Wind direction versus Wind speed in km/h (01 Jan 1969 to 10 Aug 2023)

Custom times selected, refer to attached note for details

MCARTHUR RIVER MINE AIRPORT

Site No: 014704 • Opened Mar 1968 • Still Open • Latitude: -16.4423° • Longitude: 136.076° • Elevation 40m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm
17081 Total Observations

Calm 5%

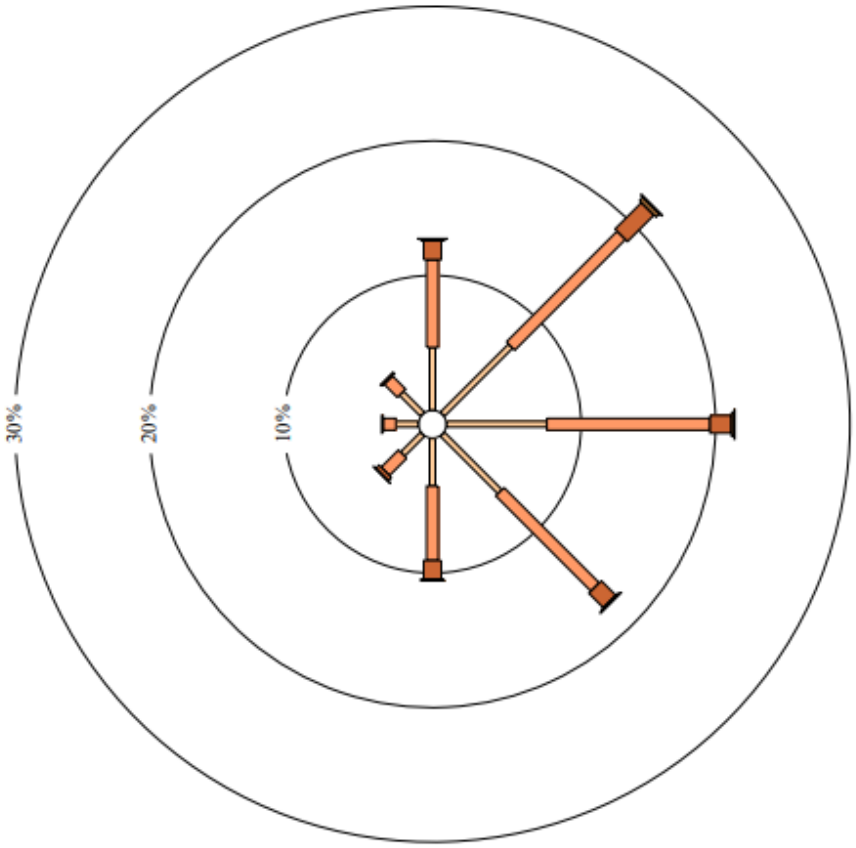


Figure 3-3 McArthur River Mine Airport wind rose 3pm (014704)

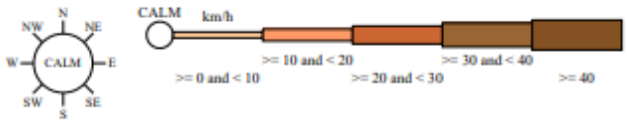
Rose of Wind direction versus Wind speed in km/h (13 Oct 1974 to 10 Aug 2023)

Custom times selected, refer to attached note for details

CENTRE ISLAND

Site No: 014703 • Opened Jan 1968 • Still Open • Latitude: -15.7426° • Longitude: 136.8192° • Elevation 12.m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



9 am
20547 Total Observations

Calm 1%

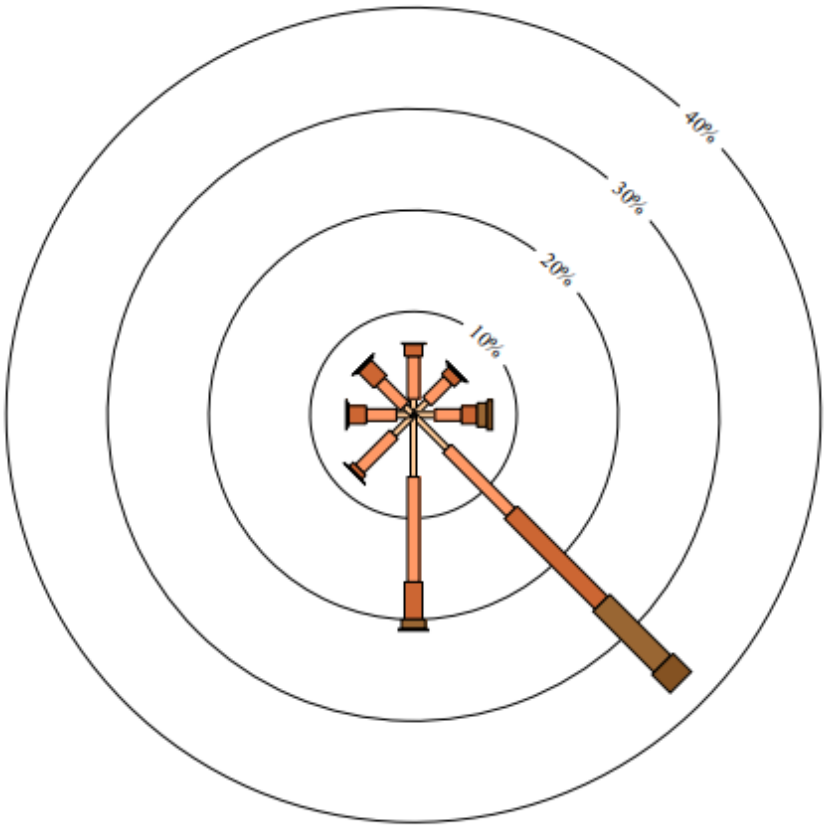


Figure 3-4 Centre Island Wind Rose 9am

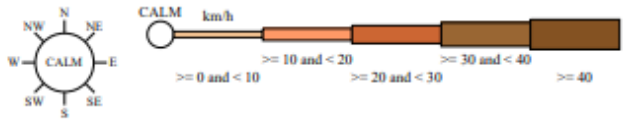
Rose of Wind direction versus Wind speed in km/h (13 Oct 1974 to 10 Aug 2023)

Custom times selected, refer to attached note for details

CENTRE ISLAND

Site No: 014703 • Opened Jan 1968 • Still Open • Latitude: -15.7426° • Longitude: 136.8192° • Elevation 12.m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.



3 pm
20370 Total Observations

Calm *

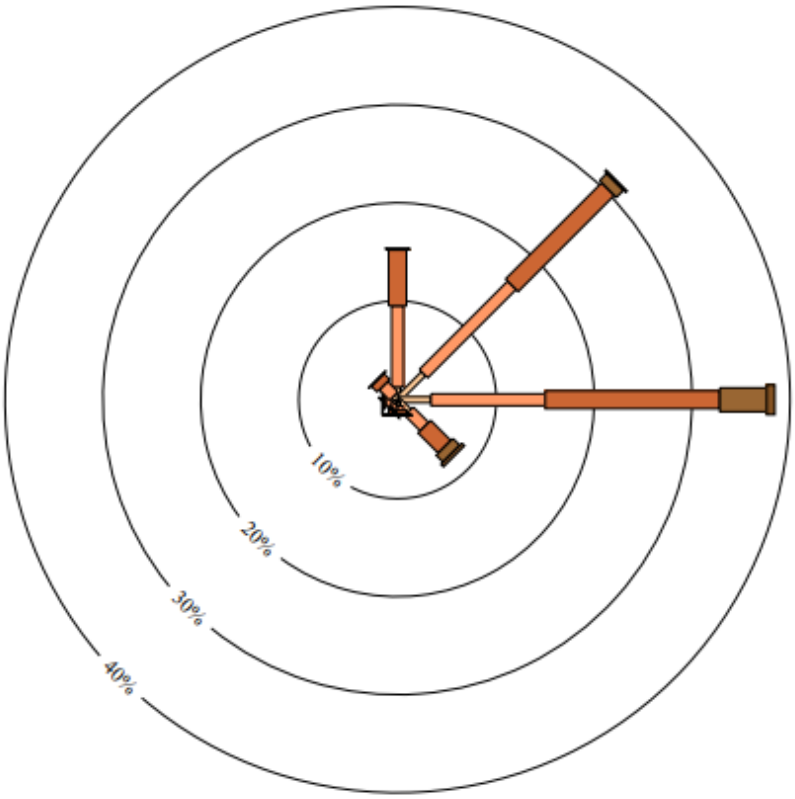


Figure 3-5 Centre island Wind Rose 3pm

3.3 Sensitive receptors

A list of the sensitive receptors relevant to the NRP are summarised below:

- The nearest non-mining settlement to the NRP mine is Ngukurr (approximately 50 km north of the mine) which is considered is the largest settlement in the region with approximately 1,149 residents (ABS 2016). The nearest sensitive receptors are located within:
    - the informal camping area at Towns River on Nathan River Road. This campground is approximately 15 km north-east of the mine.
    - Additionally, the Limmen River campground (within Limmen National Park near Savannah Way), is approximately 2 km south of the haul road.
- Fauna and flora (including livestock and crops) located within or close to the project area; and
- The BBLF and its surrounding environment are considered dust sensitive receptors due to the potential dust produced through stockpiling and ship loading.

3.4 NRP related dust sources

Mining, haulage and transhipment activities at the NRP have the potential to generate additional dust. The dominant dust sources associated with operations at the NRP include:

- Drilling;
- Blasting;
- Excavation;
- Ore crushing and screening;
- Dumping into stockpiles;
- Wind blown erosion from stockpiles;
- Bulldozing;
- Wheel generated dust from haul trucks and road train movements;
- Wheel generated dust from light vehicle movements;
- Road train loading and unloading;
- Road train transporting ore along unsealed sections of haul road;
- Road train unloading and stockpiling at the BBLF stockyard;
- Barge loading;
- Areas of exposed topsoil prior to vegetation cover growth; and
- Land clearing.

Generating large amounts of airborne dust may pose the following risks:

- Affect the visibility of personnel;
- Accumulate on the surrounding vegetation, reducing plants ability to photosynthesise;
- Accumulate on the surfaces of nearby properties and work areas;
- Harm the health of personnel exposed to the dust through breathing in fine particulate matter and potential contaminants (e.g. crystalline silica) found naturally in the environment. This is especially true for activities include the earthworks and ore crushing and screening plant, where personnel will come into contact with a higher concentration of dust.

4 MANAGEMENT AND MONITORING

4.1 Objectives

The objectives of dust management at the NRP aim to achieve the following:

- No complaints received in regards to the excessive generation of dust associated with NRP operations;
- No adverse impacts to local residents, NRP personnel or the general public;
- No adverse impacts to surrounding fauna and flora (including livestock and crops);
- No adverse impacts to the BBLF or surrounding environment; and
- No exceedances of performance criteria (refer to **Section 4.5**).

4.2 Legislation and policy

Dust nuisance is governed under the *Waste Management and Pollution Control Act* 1998 (WMPC Act). Section 83 of the WMPC Act provides for general environmental offences, outlines that a person must not create an environmental nuisance. Section 4 of the WMPC Act defines environmental nuisance as:

A. An adverse effect on the amenity of an area that:
    1. Is caused by noise, smoke, dust, fumes or odour; and
    2. Unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place with the area or are otherwise lawfully in the area.
B. An unsightly or offensive condition caused by contaminants or waste.

The Northern Territory Government does not currently prescribe legislative dust level limits for mining activities. Key guidelines and standards relevant to dust management include:

- *Public and Environmental Health Act 2011*;
- *Soil Conservation and Land Utilisation Act 1969*;
- *Waste Management and Pollution Control Act 1998*;
- *National Environmental Protection Measure for Ambient Air Quality 1998*;
- Australian Standard AS3580.10.1:2003 (R2014), Methods for sampling and analysis of ambient air; Method 10.1: Determination of Particulates - Deposited Matter - Gravimetric Method;
- Australian Standard AS3640 - 2009 Workplace atmospheres - Method for sampling and gravimetric determination of inhalable dust;
- Australian Standard AS3580.9.6-2003 - Determination of Suspended Particulate Matter-PM10 High Volume Sampler with Size Selective Inlet-Gravimetric Method;
- Australian Standard AS2985-2009 Workplace Atmospheres – Method for Sampling and Gravimetric Determination of Respirable Dust;
- Australian Standard AS3580.9.3:2015 Methods for sampling and analysis of ambient air Method 9.3: Determination of suspended particulate matter - total suspended particulates (TSP) – High volume sampler gravimetric method;
- NOHSC: 1003 Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment; and
- Australian Standard AS3580.1.1:2016: Methods for Sampling and analysis of ambient air Part 1.1: Guide to siting air monitoring equipment.

Impact assessment criteria, as a guide, has been taken for the NSW Environmental Protection Authority (NSW EPA) Document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (2022).

4.3 Dust limits

Table 4-1 presents the environmental impact assessment criteria for particulate matter and deposited dust over both short- and long-term averaging periods. These assessment criteria were developed by the NSW EPA (2022).

Table 4-1 Particulate matter and deposited dust impact assessment criteria (NSW EPA 2022)

Pollutant	Averaging Period	Criterion	
Total suspended particulates (TSP) (NEPC 2021)	Annual	90 µg/m^3	
Particulate matter < 10 µm (PM10) (NEPC 2021)	Annual	25 µg/m^3	
	24 hours	50 µg/m^3	
Particulate matter < 2.5 µm (PM2.5) (NEPC 2021)	Annual	8 µg/m^3	
	24 hours	25 µg/m^3	
Deposited Dust (NERDDC 1988)	Annual	2 g/m^2/month [b]	4 g/m^2/month [a, d]

a. This impact assessment criterion applies to assessments prepared before 1 January 2025

b. This impact assessment criterion applies to assessments prepared after 1 January 2025

d. Maximum total deposited dust level

As outlined in the NSW EPA guidance document, assessment criteria must only be applied to the nearest existing or likely future off-site sensitive receptor. Given this guidance, the assessment criteria are only applied to monitoring locations at the nearest existing sensitive receptor to the mine and the BBLF (further discussed in **Section 4.6**).

4.4 Management actions

To minimise the potential dust impacts associated with the NRP to personnel and the surrounding environment, several mitigation measures are specified in **Table 4-2**.

Table 4-2 Dust Mitigation Measures

Activity	Mitigation
Blasting events	Ensure that blasting only occurs when low wind conditions exist at the blasting site.
Excavation, bulldozing and grading activities	Increasing the moisture content of the material before excavation activities to minimise dust generation. Ensure active mining areas are frequented by a water cart wetting down surfaces. Avoid excavation activities during high wind conditions (> 60km/h – as measured at the NRP's weather station). Stop works immediately if dust is excessive and water down area to minimise dust generation. Removal of topsoil will be kept to the minimum depth as far as practicable.
Dumping onto stockpiles	Increasing the moisture content of the material before excavation will minimise the dust generation during dumping. Ensure active dumping areas are frequented by a water cart wetting down surfaces. Avoid material transfer during high wind conditions (> 60km/h – as measured at the site weather station). Stop works immediately if dust is excessive and water area to minimise dust generation.
Land clearing activities	Minimise the amount of area which is required to be disturbed whilst also facilitating operational activities.

Activity	Mitigation
	Proposed clearing boundaries to be surveyed prior to disturbance to ensure the extent of clearing is kept to a minimum. If possible, use a blade up technique, leaving the grass roots intact and therefore providing cover. Should land clearing activities generate excessive dust, ensure a water cart is wetting down cleared surfaces. Rehabilitation of cleared land no longer required, should be undertaken as soon as possible. Rehabilitation activities of cleared land should occur as soon as practical or land is no longer required to facilitate mining activities.
Wheel-generated dust from vehicles	Road/tracks with high traffic use are to be regularly watered with a water cart. Vehicle speeds are restricted on unsealed roads as required.
Ore crushing and screening	Dust hooding and misting/sprays at transfer points. Use of personal respiratory protection devices where necessary. Processing area and stockpiles are frequently wetted down using a water cart to reduce wind-blown dust.
Road train loading and unloading	Increasing the moisture content of haulage material before loading to minimise dust generation. Reduce/avoid loading and unloading of material from haulage vehicles during high wind conditions (> 60 km/h - as measured at the site weather station). If critical, ensure a water cart is nearby to wet down stockpile area.
Road train transporting ore	Road trains are to cover their loads at all times during transport. Wetting down of unsealed sections of the haul road using water carts, reducing wheel generated dust.
Areas of exposed topsoil prior to vegetation cover growth	Areas of revegetation will be monitored regularly. If windblown dust is an issue, dust suppression in the form of water spraying may be required as necessary until site is stabilised. This will need to take place until the site is fully revegetated and has established ground cover.
Barge loading operations at BBLF	Water sprays along the extent of the main conveyor. Increasing moisture content of material prior to loading onto the conveyor. Covering / containment of the transfer point between the main conveyor and stacker transfer point. Emergency fire hoses on tugboats to be used to create 'water wall' during barge loading in windy conditions. Review of shipping/barge loading schedule to consider forecasted wind conditions, avoiding loading during high wind conditions. Implementation of stacker water spray halo and sock to reduce dust generation from the end of stacker to barge surface.

Activity	Mitigation
Water sources	At the Mine, water will be sourced from existing surface water storages. At BBLF and the haul road, water will be sourced from existing surface storages, existing groundwater bores, or via water truck from the haul road turkey nests and borrow pits

The following mitigation measures apply to all activities at the NRP:

- Excessive dust will be visually assessed and will be determined by the amount of dust generated during sustained operations and the impact this has on visibility. If dust conditions exceed 20% opacity during sustained operations, the stockpile will be watered to increase the moisture content for dust suppression.
- Vehicle speeds will be restricted on unsealed roads as required by the relevant road rules and site procedures. Within the mine site and at BBLF, speed limits are sign posted on all internal haul and access roads. Speed limits are based on road conditions and potential risks and hazards. Speed limits are subject to change if conditions change. Speed limits are the maximum speed a vehicle should travel, and vehicles are to be driven at all times according to the prevailing conditions.
- Winds of >60 km/hr may create conditions where dust becomes airborne from mining areas, stockpiles and cleared areas. Dust generated from mining activities during high winds are expected to also increase under these conditions, adding to the amount of airborne dust. The increased airborne dust lift due to high wind speeds increases potential for environmental harm. High wind conditions may reduce visibility, which additionally poses an increased safety risk to personnel and operating equipment.
- Weather stations will be installed and operated at the Sawfish Camp and at the BBLF facility.

4.5 Performance criteria

The following performance criteria measures apply the Project:

No dust complaints to be received by the NT Environmental Protection Agency or the Department of Industry, Tourism and Trade (DITT) as the regulator of mining operations;

- No dust complaints received by NRR (as the operator);
- No annual exceedances of 90 µg/m^3 for TSP at the relevant monitoring location;
- No annual exceedances of 25 µg/m^3 for PM10 at the relevant monitoring location;
- No 24-hourly exceedances of 50 µg/m^3 for PM10 at the relevant monitoring location;
- No annual exceedances of 8 µg/m^3 for PM2.5 at the relevant monitoring location;
- No 24-hourly exceedances of 25 µg/m^3 for PM2.5 at the relevant monitoring location;
- No annual exceedances of 4 g/m^2/month for depositional dust (cumulative impact) at the relevant monitoring location; and
- No annual exceedances of 2 g/m^2/month for depositional dust (incremental impacts) at the relevant monitoring location.

4.6 Monitoring

Daily visual assessments will be made to determine the effectiveness of dust mitigation measures and responses actioned as required (e.g. increased water truck movements). Ambient air monitoring will be undertaken at the locations specified in **Table 4-3**. Deposited dust, TSP, PM10 and PM2.5 will be monitored to assess compliance against the air quality limits outlined in **Table 4-1**. Locations of dust monitoring locations at the NRP are presented in **Figure 4-1** and **Figure 4-2**.

In total, 18 dust deposition gauges are included in the dust monitoring network whilst two continuous high volume dust monitoring stations are proposed (**Figure 4-1** and **Figure 4-2**). The dust deposition gauges will monitor deposited particulate matter throughout NRP operations inclusive of the Sawfish camp, mine, processing area and the BBLF.

Two high-volume air samplers will be installed at the NRP, one at the Sawfish camp and another at the BBLF, which will collect 24-hour measurements of TSP, PM10 and PM2.5 during operations.

Table 4-3 details the rationale for the selection for each dust monitoring location.

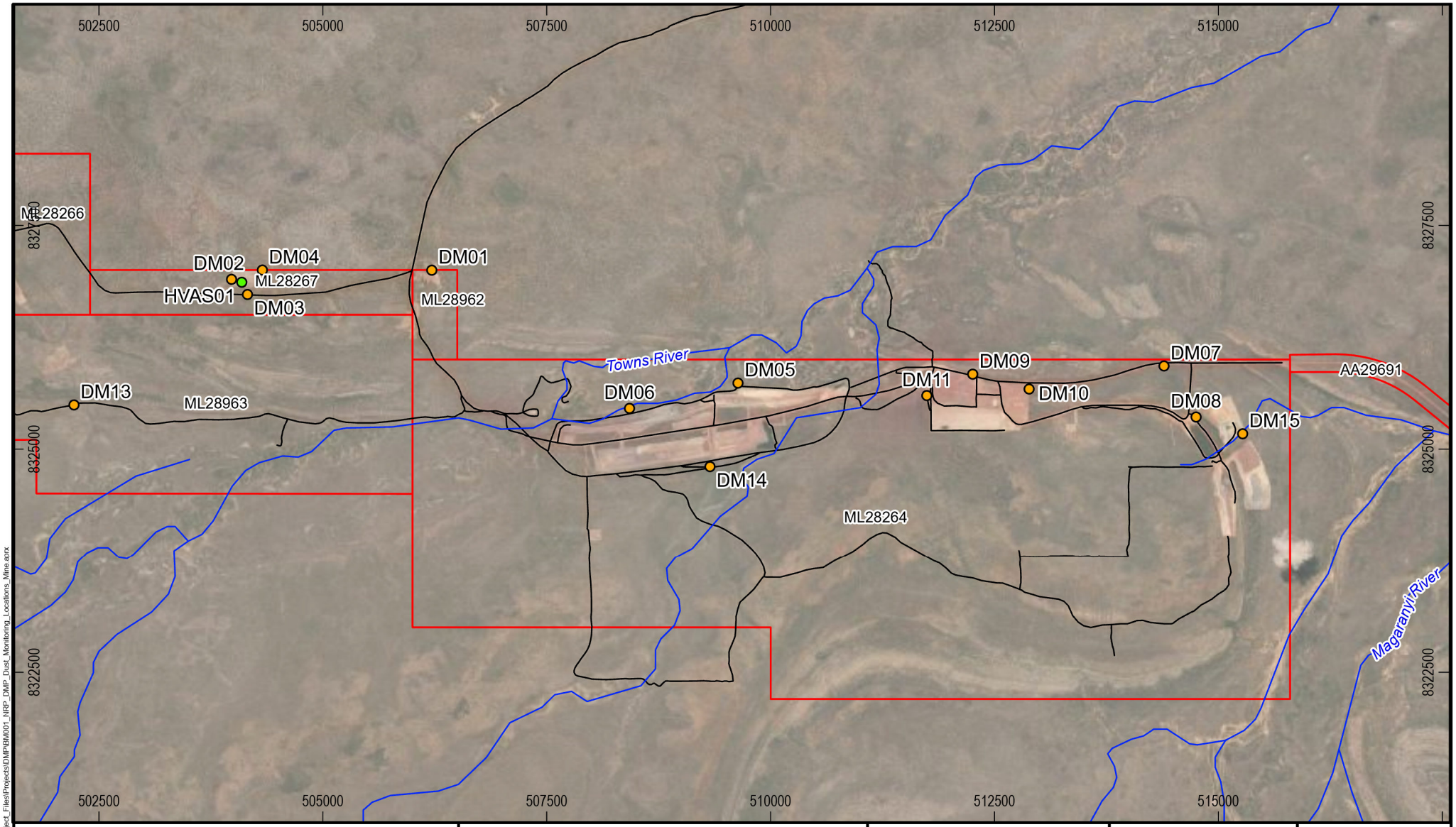
Table 4-3 Dust monitoring location rationale

Location	Position rationale
DM01	Located north of the Workshop area.
DM02, DM03 & DM04	Located (respectively) west, south and north of Sawfish Camp as this is the nearest residential sensitive receptor, and the respective directions found to have the highest baseline monitoring results. Weather station located at the Sawfish Camp.
DM05, DM06 & DM14	DM05 and DM06 located to the north of the Danehill pits, and DM14 to the south of Danehill Waste Rock Dump, capturing dust associated with mining activities within the Danehill mining area.
DM07	DM07, located between the ROM pad and Zabeel mining area along the haul road.
DM09, DM10 & DM11	DM09, DM10 and DM11 located north, east and west of the ROM respectively, capturing dust generated from crushing and loading activities.
DM08 & DM15	DM08 and DM15 located within the Zabeel mining area, capturing dust generated from Zabeel mining activities.
DM13	DM13 located to the west of mining operations and is considered representative of background dust conditions.
BBDM01 to BBDM04	One dust monitoring location has been positioned in each quadrant surrounding the BBLF stockyard and loading conveyor.
BBDM05 & BBDM06	Located to the north-west & south-west of the barge loading conveyor. Site will capture dust associated with barge loading activities.
HVAS01	Sawfish Camp High-volume air sampler - continuous telemetered dust monitoring station measuring TSP, PM10 and PM2.5. This location was selected because the Sawfish camp is considered to be the nearest sensitive receptor to mining operations.
HVAS02	BBLF High-volume air sampler – continuous telemetered dust monitoring station measuring TSP, PM10 and PM2.5 at the BBLF. This location was selected to monitor dust generation during loading activities, along with monitoring any impacts to other port operators at the BBLF.

The dust monitoring program has been developed in consideration with the NSW EPA's 2022 environmental impact assessment criteria (**Table 4-1**). As outlined in **Section 4.3**, assessment criteria (**Table 4-1**) must only be applied to the monitoring location at the nearest sensitive receptor. Hence, **Table 4-1** assessment criteria will only apply to Sawfish Camp monitoring locations (DM02, DM03, DM04 and HVAS01), whereas assessment criteria will be applied to HVAS02 and BBDM06 at the BBLF. **Table 4-4** summarises the parameters which will be monitored as part of the dust monitoring program, along with the monitoring frequency and method of monitoring.

Table 4-4 Dust Monitoring Program

Parameter	Method	Frequency	Duration
Deposited Matter (Insoluble Solids)	Depositional Dust Gauges	Monthly	28 – 31 days
TSP, PM2.5, PM10	High-volume air samplers	Continuous	Continuous



Legend

- Access Tracks
- Watercourses
- Tenement Boundaries
- High-volume Air Sampler
- Depositional Dust Gauges

Source: Northern Territory Government (Department of Environment, Parks and Water Security 2021; Department of Industry, Tourism and Trade 2022), Nathan River 2024, METServe 2024, Earthstar Geographics.

Nathan River Project

Dust Monitoring Locations (Mine)

0 0.5 1 2

Kilometers

Scale: 1:60,000 (A4)

29/01/2024

Datum: GDA2020
Projection: MGA53

FIGURE 4-1

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\DMP\BM001_NRP_DMP_Dust_Monitoring_Locations_Mine.aprx

Legend

- Access Tracks
- Watercourses
- Tenement Boundaries
- High-volume Air Sampler
- Depositional Dust Gauges

Source: Northern Territory Government (Department of Environment, Parks and Water Security 2021; Department of Industry, Tourism and Trade 2022), Nathan River 2024, METServe 2024, Maxar.

Nathan River Project

Dust Monitoring Locations - Bing Bong Loading Facility (BBLF)

0 50 100 200

Meters

Scale: 1:5,000 (A4)

29/01/2024

Datum: GDA2020
Projection: MGA53

FIGURE 4-2

METSERVE
Mining & Energy Technical Services Pty Ltd

Path: S:\Projects\BM001 Nathan River\ArcGIS\Project_Files\Projects\DMP\BM001_NRP_DMP_Dust_Monitoring_Locations_BBLF.aprx

4.7 Triggers and corrective actions

The dust monitoring program will be implemented and maintained throughout all foreseeable operations at the NRP. Should any adverse environmental impacts be identified, complaints be received, or monitoring results at the select monitoring location exceed the corresponding assessment criteria, associated with NRP dust emissions, a review of this plan along with the dust management and mitigation measures implemented at that time will be undertaken. Should the investigation of the complaint or environmental impact identify NRP dust emissions as a contributing cause, more comprehensive monitoring will be implemented by a qualified technician, along with further dust suppression activities. A review will also be undertaken of the monitoring frequency, particularly at the location of the criteria exceedance. If deemed necessary, increase the frequency and scale of monitoring.

If any actual or potential non-conformance is identified, corrective actions will be initiated:

- Review Bureau of Meteorology or local weather station weather conditions to identify causative factor;
- Supplementary monitoring to be undertaken to identify the source of the non-compliance;
- Review of the operational activities and management measurements to:
    - Where possible, identify which activities were occurring at the time of the non-compliance or potential non-compliance;
    - Determine which activities most likely contributed to the non-compliance or potential non-compliance;
    - Review NRR's operational processes and environmental management controls that are implemented; and
    - Implement an agreed alternative to more effective control future dust emissions.

4.8 Reporting

NRR will ensure all records pertaining to this DMP are stored and available for up to five years following the collection of data. Recordkeeping will include:

- Complaints Register and investigation records;
- Dust monitoring results and report by an appropriately qualified consultant undertaking the analysis; and
- Data also includes the recording and storage of complaints register and investigation records.

4.9 Roles and responsibilities

NRR is responsible for the implementation of, and compliance with, this DMP. Personnel responsible for communicating environmental matters, and ensuring management practices and procedures are being implemented, include the Chief Executive Officer, Project Manager and General Manager(s).

All staff, contractors, and consultants will complete a comprehensive site induction that includes information on air quality issues and dust management.

5 INCIDENT REPORTING AND COMPLAINTS

5.1 Incident reporting and complaints

In the event of an environmental incident, DITT will be notified as soon as practicable after NRR becomes aware of the incident, as per Section 29 of the *Mining Management Act 2001*. Initial contact will be made verbally, followed by notification in writing as soon as possible after the incident. A subsequent investigation report will be submitted to DITT outlining the pertinent details of the investigation carried out, results and interpretations of any monitoring during the incident, outcomes of actions taken at the time to prevent or minimise unlawful environmental harm, and actions taken to prevent further incidents from occurring (to be determined in consultation with relevant parties).

Any complaints received during operations at the NRP will be reported through NRR's internal incident reporting system and reported in the annual Environmental Mining Report (EMR).

A Complaints Register has been developed and will continue to be implemented throughout operations at the NRP. The complaints register includes the following details of each complaint received:

- Complainant contact information;
- Time and date of complaint;
- Reasons for complaint;
- Investigations undertaken;
- Conclusions formed;
- Actions taken to address complaints;
- Abatement measures implemented;
- Person responsible for resolving the complaint; and
- Feedback provided to the complainant.

Upon notification, the Project Manager or General Manager(s) will investigate the event and coordinate the implementation of corrective or preventative action. The Project Manager or General Manager(s) are also responsible for reporting significant incidents to the DITT along with ensuring that corrective action is taken to prevent recurrence.

NRR will ensure that the procedure for incident reporting is being complied with and that the procedure allows for the timely reporting, investigation, and mitigation of incidents, hazards and near misses.

5.2 Contact details

The Chief Executive Office will be the designated person for receiving and responding to complaints from the community, as well as disseminating information on general site operations. Contact details are provided in **Table 5-1**.

Table 5-1 NRP Designated Contact Details

Name:	Simon Peat – Chief Executive Officer
Mobile:	0418 124 024
Email:	Simon.peat@nathan-river.com

6 REFERENCES

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