



Teralba Quarry

2022 Annual Review

Project Approval PA10_0183



Prepared by:



RWCcorkery&co

May 2023



ACKNOWLEDGEMENT

R.W. Corkery & Co. acknowledge and pay our respects to the Traditional Custodians of the lands comprising NSW and Australia on which our projects are located. We appreciate the knowledge, advice and involvement of the Elders and extended Aboriginal community that contribute to our Projects and extend our respect to all Aboriginal and Torres Strait Islander peoples.





Teralba Quarry

2022 Annual Review

Project Approval PA10_0183

Period: 1 January 2022 to 31 December 2022

Prepared for:

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Table 1
Title Block

Name of operation	Teralba Quarry
Name of operator	Metromix Pty Ltd
Development consent / project approval #	PA10_0183
Name of holder of development consent / project approval	Metromix Pty Ltd
Mining Lease #	Not applicable
Name of holder of mining lease	Not applicable
Water licence #	Water Access Licence 40303
Name of holder of water licence	Metromix Pty Ltd
MOP/RMP start date	Not applicable
MOP/RMP end date	Not applicable
Annual Review start date	1 January 2022
Annual Review end date	31 December 2022
<p>I, Mo Yunusa, certify that this audit report is a true and accurate record of the compliance status of the Teralba Quarry for the period 1 January 2022 to 31 December 2022 and that I am authorised to make this statement of behalf of Metromix Pty Ltd.</p> <p><i>Note.</i></p> <p>a) <i>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p>b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: Section 192G (Intention to defraud by false or misleading statement – maximum penalty 5 years imprisonment); Section 307A, 307B and 307C (false or misleading application/information/documents – maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Name of authorised reporting officer	Mr Mo Yunusa
Title of authorised reporting officer	Manager of Quarries
Signature of authorised reporting officer	
Date	16 May 2023

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COMMONLY USED ACRONYMS

AHD	Australian height datum
ANZECC	Australia and New Zealand Environment and Conservation Council
APZ	Asset Protection Zone
DECCW	Department of Environment, Climate Change and Water
DPE	Department of Planning and Environment
EA	Environmental Assessment
EC	electrical conductivity
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
HVAS	high volume air sampler
LMCC	Lake Macquarie City Council
MEG	Mining, Exploration and Geoscience
PA	project approval
PM	particulate matter
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RWC	R.W. Corkery and Co. Pty Limited
TQCCC	Teralba Quarry Community Consultative Committee
TSP	total suspended particles
TSS	total suspended solids
VENM	virgin excavated natural material
WAL	Water Access Licence

1. STATEMENT OF COMPLIANCE

Table 2
Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes / No
Project Approval PA10_0183	No
EPL 536	No

Table 3
Non-compliances

Relevant Approval	Condition #	Condition Description (summary)	Compliance Status	Comment	Where Addressed in Annual Review
PA10_0183	5(5)	Notification of review of management plans	Administrative non-compliance	While the management plans were reviewed within three months of the submission of the 2021-2022 annual review, notification was not provided to the DPE.	12
EPL 536	G2.2	Contact number for incidents and responsible employees	Administrative non-compliance	Mr Darryn Bosch was appointed as the Quarry Manager during the 2022 reporting period, however, notification was not provided to the EPA of this appointment until April 2022.	12
PA10_0183	2(2)	Operation in accordance with all conditions of consent	Administrative non-compliance	The non-compliances described above indicate that not all conditions of PA10_0183 and EPL 536 were complied with during the reporting period.	12

Compliance Status Key

Risk level	Colour code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> potential for serious environmental consequences, but is unlikely to occur; or potential for moderate environmental consequences but is likely to occur.
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> potential for moderate environmental consequences, but is unlikely to occur; or potential for low environmental consequences but is likely to occur.
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).

2. INTRODUCTION

2.1 SCOPE AND FORMAT

This *Annual Review* has been prepared by R.W. Corkery & Co. Pty Limited (RWC) on behalf of Metromix Pty Ltd (Metromix) and in accordance with Condition 5(4) of Project Approval PA10_0183 (PA10_0183). The Annual Review records the activities and environmental monitoring undertaken within and surrounding the Teralba Quarry (the “Quarry”) during the period 1 January 2022 to 31 December 2022 (the “reporting period”). This document also outlines the activities and environmental monitoring planned to be undertaken by Metromix within and surrounding the Quarry from 1 January 2023 to 31 December 2023 (the “next reporting period”). This Annual Review has been prepared based upon the approval and licencing requirements applicable for the reporting period, however, the report generally follows the format and content requirements identified in the *Annual Review Guideline* dated October 2015.

The Quarry is situated upon Lots 1 and 2 DP 224037 and was initially established in 1964, with the operation purchased by Metromix in 1986. The Teralba Quarry Extensions Project (the Project) was approved in February 2013 under PA10_0183. A modification (MOD 1) to PA10_0183 was approved on 16 April 2018. **Figure 1** displays the location of the Quarry in the local context and **Figure 2** displays the layout of the Quarry.

The approved Quarry activities comprise the following.

- Conglomerate extraction (blasting and excavation).
- Processing operations (size reduction, screening, washing and blending).
- On-site load and haul operations involving off-road trucks on the internal road network conveying primary-crushed rock to the processing plant.
- Off-site transportation of products.
- Vehicle/equipment maintenance and ancillary activities and stores.
- Administration and product despatch.
- Progressive rehabilitation and maintenance.

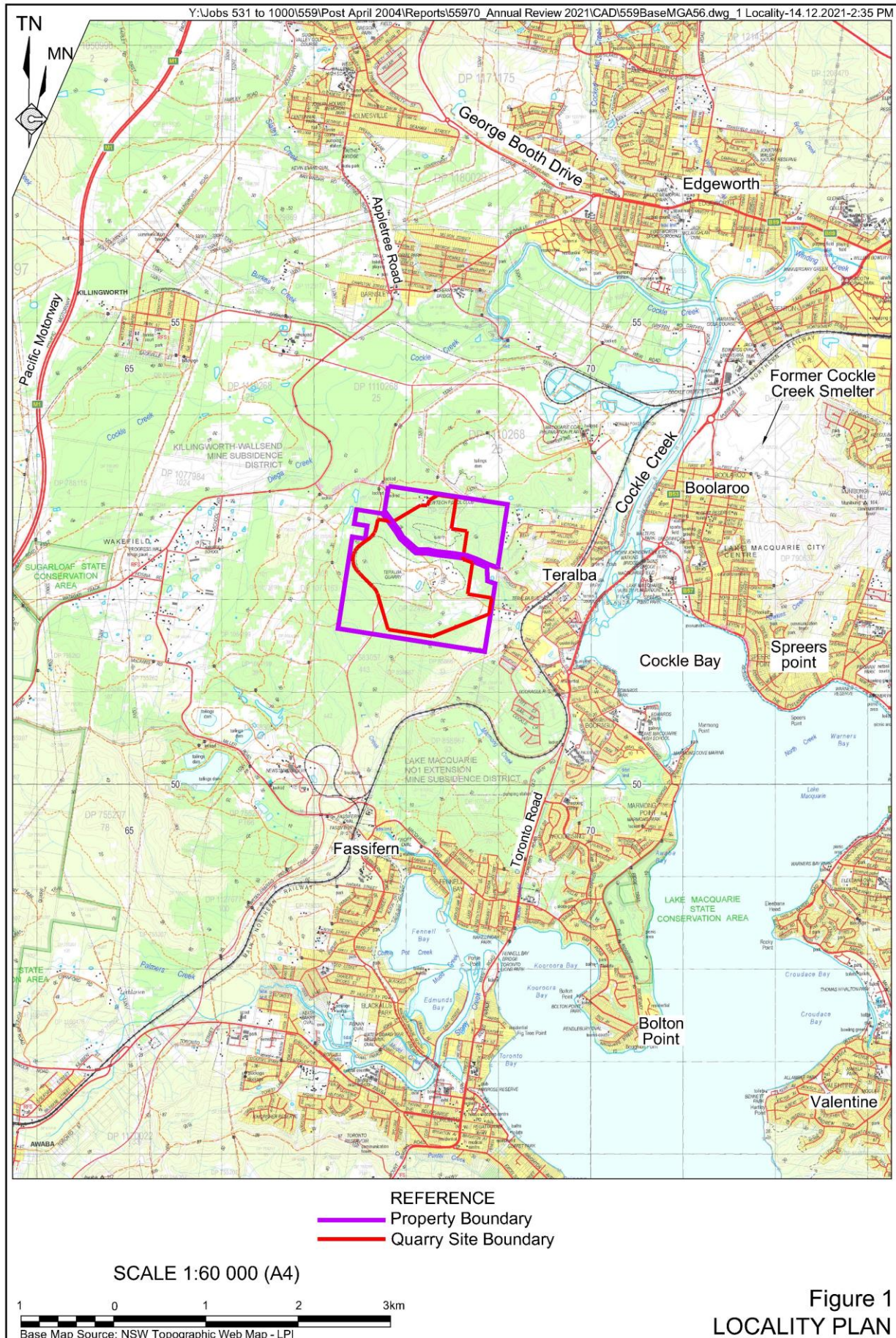
2.2 KEY PERSONNEL CONTACT DETAILS

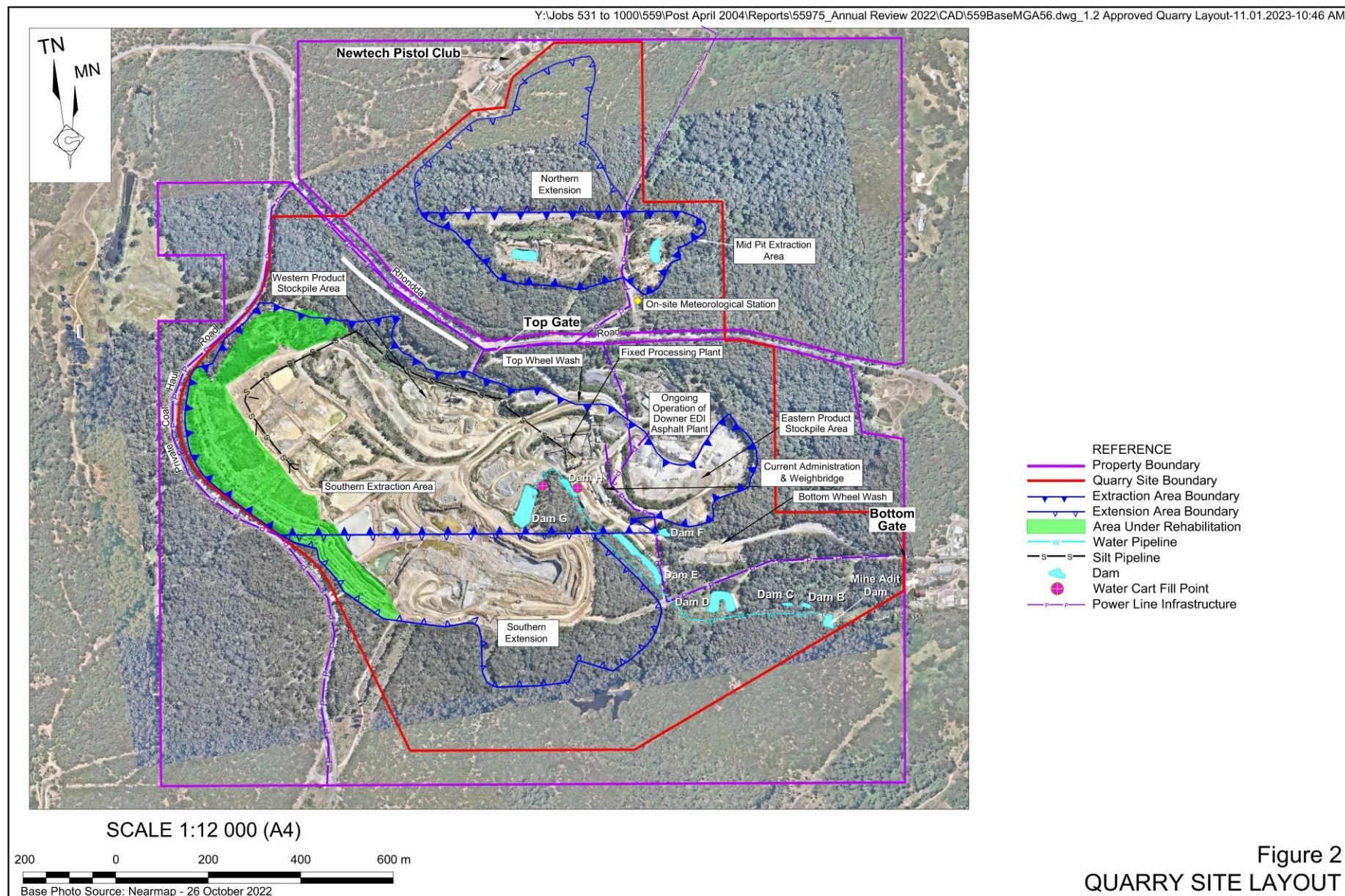
The key personnel contact names, position and phone numbers are as follows.

Name	Position	24 Hour Contact
Mo Yunusa	Manager of Quarries	0423 832 077
Darryn Bosch	Quarry Manager	0428 408 825

During the reporting period, the management of the Teralba Quarry, to ensure all conditional requirements were satisfied, was the responsibility of the Quarry Manager, Mr Darryn Bosch.

Personnel from Carbon Based Environmental Pty Ltd assist with management of the on-site meteorological station, air quality analyses and calibration of air quality and meteorological monitoring equipment.





3. APPROVALS

Metromix is required to operate the approved activities within the Quarry Site in accordance with PA10_0183 and licences listed in **Table 4**. An independent environmental audit was undertaken in February 2023 reviewing compliance with the conditions of PA10_0183, EPL 536, and WL 40303 over the period of January 2020 to December 2022. The audit was undertaken consistent with Condition 9 of Schedule 5 of PA10_0183. The audit report is available on the Metromix website, with the outcomes discussed in Sections 1, 11 and 12. In 2021, a variation to EPL 536 was approved following a 5-year licence integrity review. The variation related to the removal of noise monitoring requirements at two locations following receipt of written permission from the landowners of these properties.

Table 4
Teralba Quarry – Approvals and Licences

Approval/Licence	Original Issue Date	Current Version Issue Date	Expiry Date	Scheduled Activities
Project Approval PA10_0183	22 February 2013	16 April 2018 (Modification 1)	31 December 2038	Extracting, processing product despatch and ancillary activities
Environment Protection Licence No 536 (EPL 536)	25 September 2000	24 March 2021	01 June*	Crushing, grinding or separating; Extractive activities
Environment Protection Licence No 13015 (EPL 13015)	17 July 2015	18 March 2019	17 July*	Resource recovery; Waste storage
Water Access Licence No. 40303 (WL 40303)	12 October 2012 (as Bore Licence 20BL173206)	1 July 2016	No Expiry	Recovery and use of water from Dam A
* Licence Anniversary Date				

Condition 5(4) of PA10_0183 requires the preparation of an Annual Review that contains the following.

- A description of the activities (including preparatory activities, extraction, processing and rehabilitation) that were carried out during the reporting period (see Section 4), and the activities that are proposed to be carried out during the next reporting period (see Section 13).
- A comprehensive review of the environmental monitoring results and complaints recorded during the reporting period (see Sections 6, 7, 8, 9 and 10), including a comparison of these results against:
 - the relevant statutory requirements, limits or performance measures/criteria;
 - the monitoring results of previous years;
 - the identification of any trends in the monitoring data; and
 - the relevant predictions in the EA documents for the extension application and Modification 1.

- An assessment of compliance during the reporting period with the conditional requirements of PA10_0183, and a description of what actions were (or are) being taken to ensure compliance, where necessary (see Section 12).
- Identification of any trends in the monitoring data over the life of the Quarry (see Sections 6 and 7).
- A list of discrepancies between the predicted and actual impacts of the Quarry's operations, and an analysis of the potential cause of any significant discrepancies (see Sections 6, 7 and 8).
- A description of the measures that will be implemented throughout 2023 to improve the environmental performance of the Quarry (see Section 13).

Relevant conditions within PA10_0183 which nominate specific environmental criteria are as follows, with **Appendix 1** providing the complete records of all monitoring results.

- Condition 3(5): noise emissions (day shoulder, day, evening and night).
Each of the relevant noise criteria and frequencies are presented in Section 6.2.
- Condition 3(9): blasting overpressure and ground vibration emissions.
Each of the relevant blasting criteria are presented in Section 6.3 in conjunction with the assembled monitoring results.
- Condition 3(17): air quality emissions (deposited dust and particulate matter).
Each of the relevant air quality criteria are presented in Section 6.4 in conjunction with the assembled monitoring results.
- Condition 3(23): all surface water discharges from the site comply with the discharge limits in any EPL which regulates water discharges from the site.
Each of the relevant water criteria are presented in Section 7.2 in conjunction with the assembled monitoring results.

In addition to the specific environmental criteria, the following conditions within PA10_0183 specifically request further information be included in each Annual Review.

- *Condition 2(20b): Production Data – the Proponent shall include a copy of this data in the Annual Review (see Section 4.2 and **Appendix 1**).*
- *Condition 5(11a): Access to Information – the Proponent shall make copies of the annual review available on its website (over the last five years).*
- *PA10_0183 Appendix 3 – Action 6.6 – Ensure all groundwater monitoring data is incorporated into each Annual Review for the Teralba Quarry (see Section 7).*
- *PA10_0183 Appendix 3 – Action 12.5 – Include annual photographs of the progressive rehabilitation of quarry benches in each Annual Review. (see Section 4).*

Condition 3(21) of PA10_0183 requires Metromix to ensure a suitable meteorological station is operational in the vicinity of the Quarry, complying with the requirements outlined in *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DECCW, 2007) and is

capable of continuous real-time measurements in accordance with the *NSW Industrial Noise Policy* (EPA, 2000), or as otherwise approved by EPA. Metromix operates a comprehensive meteorological station in an elevated area adjacent to the Mid Pit Extraction Area, as shown on **Figure 2**. A summary of meteorological monitoring is provided in Section 6.1.1.

The Quarry operates in accordance with the following management plans and strategies.

- Environmental Management Strategy
- Biodiversity and Rehabilitation Management Plan
- Aboriginal Heritage Management Plan
- Air Quality Management Plan
- Blast Management Plan
- Lower Level Management Plan
- Noise Management Plan
- Waste Management Plan
- Water Management Plan
- Transport Management Plan

Each of these plans has been reviewed and approved by the Department of Planning and Environment (DPE).

4. OPERATIONS SUMMARY

4.1 INTRODUCTION

Operational areas within the Teralba Quarry are referred to in the same manner as described in the 2011 *Environmental Assessment* (RWC, 2011) i.e. Northern Extension, Mid Pit Extraction Area, Southern Extraction Area and Southern Extension.

Figure 3 presents the location(s) of the activities described.

4.2 EXTRACTION OPERATIONS

Extraction operations continued within Stages 2A and Stage 1C of the Southern Extension area during the reporting period. A total of 25 blasts were initiated in 2022. **Plate 1** displays a view of the active extraction area (Stage 2A). **Plate 2** presents a view of the Stage 2 extraction area, the Pugmill, and Pugmill Stockpile Area. As shown in **Plate 3**, vegetation clearing in Stage 2B1 and 2B2 began during the reporting period to prepare for extraction. No vegetation clearing or extraction occurred in Stage 3 of the southern Extension during the reporting period. A former powerline easement that had been cleared of vegetation is being used as an internal access road in order to minimise vegetation clearing for current activities.

Approximately 945,173t of material was extracted during the reporting period. Total product sales (products despatched from the Quarry) during the reporting period was 869,010t (within the approved limit of 1 million tonnes per annum). This is higher than the total sales in 2021 (721,115t). **Table 5** records the monthly/annual sales of the various products produced at the Quarry during the reporting period. This data is drawn from Quarry records and is to be provided to the Division of Mining, Exploration and Geoscience (MEG) of the DPE in accordance with the requirements of Condition 2(20) of PA10_0183. A copy of the annual return for extractive materials to MEG for 2021/2022 is included within **Appendix 1**. It is anticipated that total sales in the next reporting period would be consistent with the current reporting period.

Table 5
Teralba Quarry Sales – 2022

2022 (Month)	Washed Products (t)	Road Pavement (t)	Other (t)	Recycled Road Base (t)	Total (t)
January	28,922	12,739	4,393	1,696	47,749
February	37,306	12,736	2,512	3,113	55,667
March	33,184	13,639	2,992	2,918	52,732
April	34,730	12,586	4,613	1,095	53,023
May	46,118	12,973	4,085	3,554	66,730
June	48,478	22,859	15,039	2,910	89,287
July	35,678	9,825	3,865	4,005	53,373
August	62,356	26,943	17,780	6,434	113,514
September	49,306	19,532	13,973	4,380	87,191
October	48,796	12,478	7,299	4,191	72,764
November	65,789	27,607	13,019	4,281	110,696
December	46,359	11,632	4,409	3,884	66,284
Total	537,021	195,549	93,980	42,460	869,010

Source: Metromix

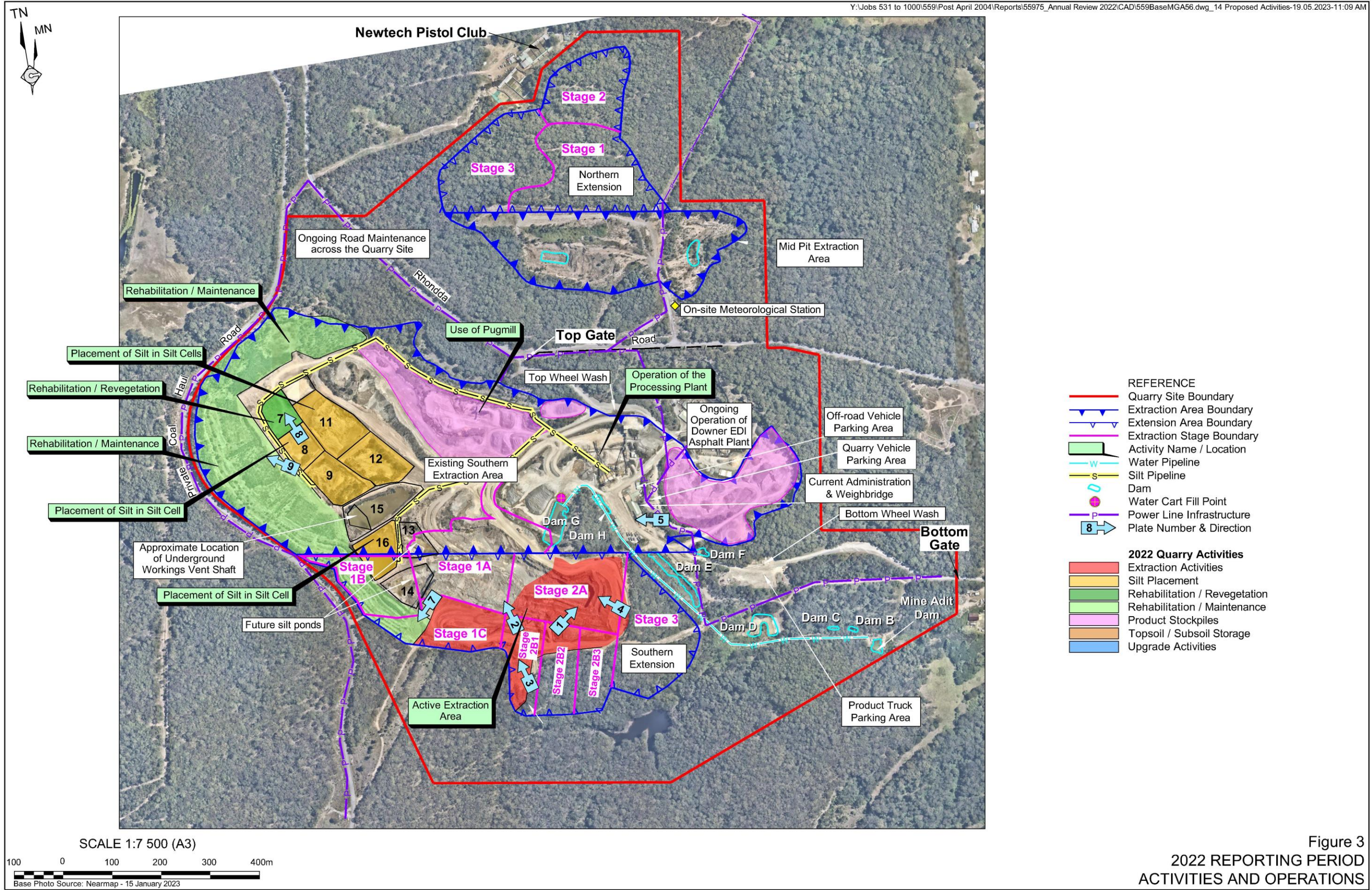




Plate 1 A view of the active extraction area (Stage 2A)
(E559AL_005)



Plate 2 A view to the northwest towards the Pugmill and Pugmill Stockpile Area
(E559AL_009)



**Plate 3 A view of vegetation clearing progress in Stage 2B1
(E559AL_021)**

4.3 PROCESSING OPERATIONS

Processing operations occurred throughout the reporting period, producing washed products and road pavement products. Fill materials were not processed through the processing plant.

The only change during the reporting period when compared to 2021 was that the processing plant operated in the “wet” mode for approximately 61.7% of sales, compared to approximately 69.2% in 2021. The remaining 38.3% of the total products comprised of road pavement products (27.3%) and fill materials (11%) respectively.

4.4 RECYCLING OPERATIONS

No crushed concrete was despatched/sold during the reporting period.

A total of 5,356t of concrete washout was imported to the pugmill area (the application area for EPL 13015) during the reporting period and 10,417t of concrete washout was processed into recycled concrete roadbase product. These levels remain consistent with approved operations.

4.5 OVERBURDEN AND SILT MANAGEMENT

In 2022, approximately 56,641t of overburden was removed from within the existing Southern Extension area, 2,408t of which was used for capping Silt Cells. The remaining 54,233t was used for reinforcement of existing silt cell walls and for increasing the height of the internal road which leads to the rehabilitation area.

All silt produced from the processing plant was pumped to Silt Cells 8 and 11 which overflow to Silt Cells 9 and 12, respectively. Silt was also pumped to the Silt Cell 16 during the reporting period. **Plate 4** presents a view to the west across all silt cells.



Plate 4 A view to the west across all silt cells
(E559AL_008)

4.6 WASTE MANAGEMENT

Silt produced as a result of processing within the processing plant is placed in the silt cells within the Southern Extraction Area as part of the Quarry final landform construction program and is consequently not classified as production waste. No other wastes produced at the Quarry are classified as production wastes.

The following non-production wastes (and quantities) were produced at the Quarry during the reporting period.

- general waste (2 x 6m³ bins)
- general waste (9 x 20m³ bins)
- waste oil (5,100L)
- co-mingled recyclables (48 x 240L bins)
- paper and cardboard (14 x 3m³ bins)
- shredded paper bin (6 x 240L bins)
- oil filters (3 x 240L bins)
- batteries (18)
- oily water (7.3L)

All waste produced at the Quarry was removed by licenced contractors. All general waste (putrescible) was disposed of at the Awaba Waste Facility, the closest licenced facility, with the remaining industrial waste (not defined as general (putrescible)), was removed and disposed of by contractors at appropriately licenced facilities.

4.7 SITE INFRASTRUCTURE AND SERVICES

During the reporting period, waste oil continued to be stored in a bunded shipping container next to the workshop area. Oil is stored in this container until it is necessary to be removed by a licenced contractor.

The roof of the workshop/laboratory building was replaced during the reporting period.

4.8 CHANGES TO EQUIPMENT FLEET

The following equipment was replaced and/or upgraded during the reporting period.

- A PC850 Excavator was sold and a new PC700 Excavator is expected to be delivered in 2023.
- Two Wheel Loaders (WA500-6 and HL770) were sold. A WA480 Wheel Loader is being used on a dry hire basis awaiting the delivery of a new WA500 Wheel Loader in 2023.

4.9 BUSHFIRE MANAGEMENT

In 2018, the *Bushfire Management Plan* was discussed with and reviewed by the Deputy Captain of the local Teralba Fire Service and a 20m Asset Protection Zone (APZ) was established around the fuel and oil storage areas.

During the reporting period, the *Bushfire Management Plan* was updated to include measures for the establishment and maintenance of an APZ of at least 20m around all plant infrastructure, as well as an additional APZ of at least 50m around the administration area and various control rooms.

4.10 HAZARDOUS MATERIAL MANAGEMENT

Hazardous materials within the Quarry Site are appropriately managed with diesel fuel stored in above ground tanks with roofing and appropriate bunding (110% of the total diesel tank capacity) (see **Plate 5**).



**Plate 5 A view of the vehicle refuelling area
(E559AL_054)**

Aerosols and paints continued to be stored within the designated hazardous material cabinets within the workshop area.

Hazardous waste materials such as batteries, oily rags and oil filters were stored as outlined within Metromix's waste management procedure and removed by a licenced contractor and disposed of at an appropriately licenced facility.

4.11 PRODUCT TRANSPORTATION

The transportation of products from the Quarry is limited under Condition 2(8) and 2(9) of PA10_0183 to include the following transportation limits.

Condition 2(8) - The Proponent must not:

- a) transport more than 1 million tonnes of quarry products from the site in any calendar year; or*
- b) dispatch more than 326 laden trucks from the site on any day; or*

- c) *dispatch more than 241 laden trucks per day or 20 per hour westwards along Rhondda Road;*
- d) *dispatch more than 85 laden trucks per day or 8 per hour eastwards through Teralba;*
- e) *dispatch laden trucks for travel through Teralba between 6 pm and 6 am; and*
- f) *receive unladen trucks via the railway street entrance between 6 pm and 7 am.*

Condition 2(9) - The Proponent must limit the total hourly truck dispatch rates from the site to the levels shown in Table 1.

Table 1 – Truck Dispatch Hours

Dispatch Period	Maximum Hourly Dispatch Rate
6:00 am – 7:00 am	Up to 28 loaded trucks
7:00 am – 6:00 pm	Up to 20 loaded trucks
6:00 pm – 5:00 am	Up to 6 loaded trucks
5:00 am – 6:00 am	Up to 12 loaded trucks

The approved transport corridors are displayed on **Figure 4** and summarised below.

Route 1 – Northwestern Corridor:

Westwards along Rhondda Rd, and then northwards along Wakefield Rd and Northville Rd to George Booth Drive.

Route 2 – Southwestern Corridor:

Westwards along Rhondda Rd, and then southwards along Wakefield Rd to the M1 Freeway.

Route 3 – Northeastern Corridor:

Northeast along Railway St Teralba, crossing the railway line, then southwards along York St Teralba, then north-easterly along Five Islands Road to either The Esplanade (to the east) or Lake Road (to the north).

Route 4 – Southeastern Corridor:

Northeast along Railway St Teralba, crossing the railway line, then southwards along York St Teralba and Toronto Road.

The monitoring records of truck movements between January 2022 and December 2022 are collated in **Appendix 1. Table 6** provides a summary of transportation and limit compliance during the reporting period. The maximum daily average for each conditional requirement is below the approved limits in *Conditions 2(8) and 2(9)*. There were no identified non-compliance issues with the Teralba Quarry Driver's Code of Conduct during the reporting period.

4.12 VENM/ENM IMPORTATION MANAGEMENT

No Virgin Excavated Natural Material (VENM) was imported to the Quarry Site for fill purposes during the reporting period.

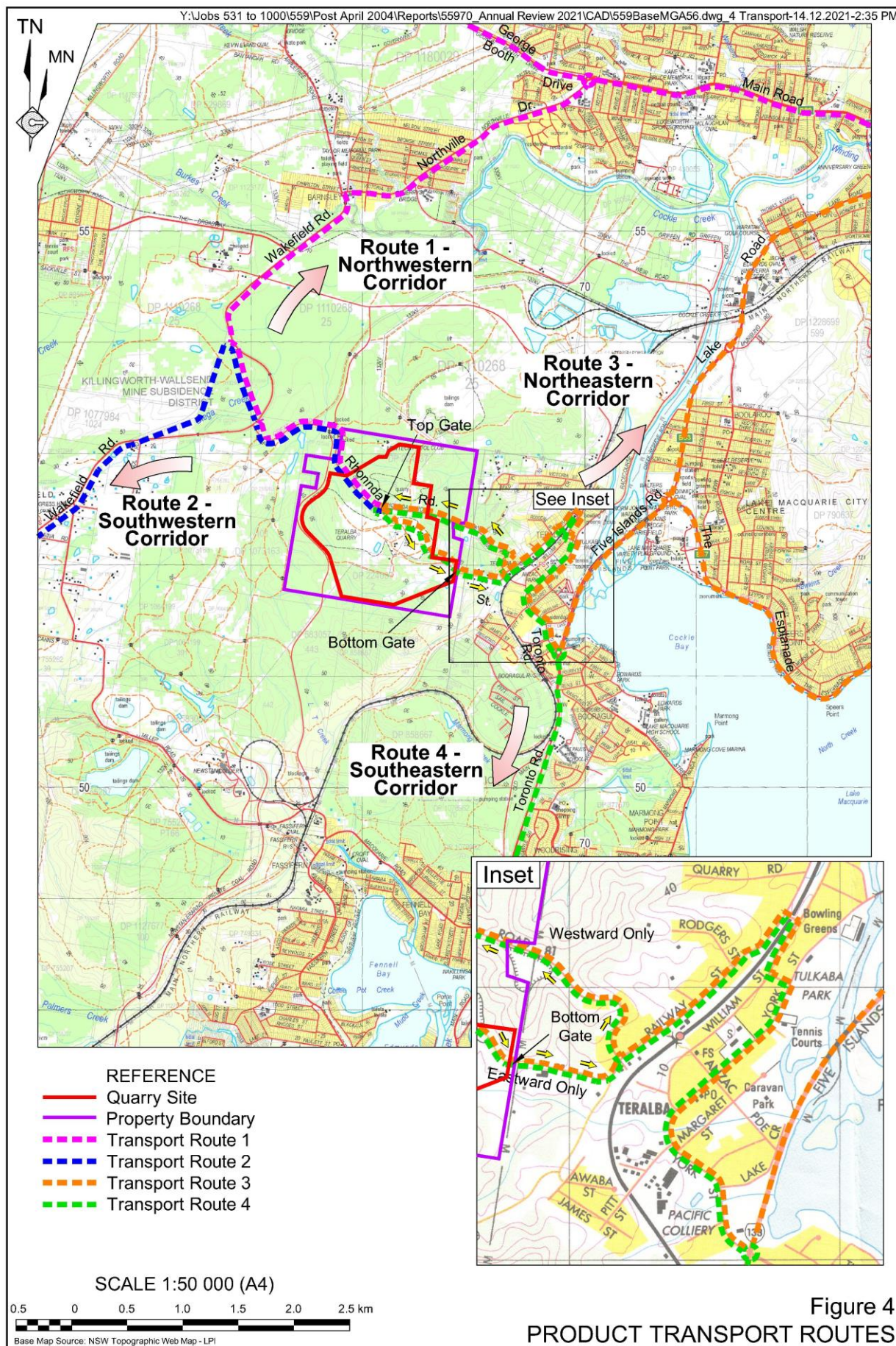


Table 6
Summary of Transportation Limit Compliance – 2022

Condition Description			Maximum Record for 2022											
Time Period	Condition	Approved Limits	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual	Annual Product Despatch	1 million tonnes												
Daily	Total trucks per day	326 trucks/day												
Daily	Westwards trucks per day	241 trucks/day												
Daily	Eastwards trucks per day	85 trucks/day												
6:00am to 7:00am	Cumulative Max Hourly	28 trucks/hour												
7:00am to 6:00pm	Cumulative Max Hourly	20 trucks/hour												
6:00am to 7:00am	Westwards Max Hourly	28 trucks/hour												
7:00am to 6:00pm	Westwards Max Hourly	20 trucks/hour												
6:00am to 6:00pm*	Eastwards Max Hourly	8 trucks/hour												
6:00pm to 5:00am	Westwards Max Hourly	6 trucks/hour												
5:00am to 6:00am	Westwards Max Hourly	12 trucks/hour												
	Compliance with approved limits													
	Exceedance of approved limits													
* Transport eastwards is not permitted between the hours of 6:00pm and 6:00am														
Source: Metromix														

4.13 SUBSIDENCE

An on-site audit of the ground and strata management protocols in place at the Quarry was undertaken by the Resources Regulator during the 2021 reporting period. During this audit, Quarry personnel advised the Resources Regulator inspectors of the proposed plans for management of subsidence underneath Bench 5 in the vicinity of Stage 1B which was identified during the 2019 reporting period. Additional cavities in the area were also identified during the 2021 reporting period, which likely occurred as a result of dykes within the rock unit being extracted and geotechnical constraints arising from historical underground mine workings. It was advised that the inspector who issued the prohibition notice must be notified prior to commencement of blasting in the area as they are the approval authority regarding lifting the prohibition notice.

No further consultation was undertaken with the Resources Regulator on this matter during the reporting period, and operations have not recommenced in this location.

4.14 NON-METROMIX OPERATIONS

The two non-Quarry-related commercial operations located within the Quarry Site boundary, namely the Newtech Pistol Club and the Downer EDI asphalt plant, continued to operate independently of all Quarry-related operations. A pugmill previously operated by Civilake is

now the responsibility of Metromix. Approximately 42,132.7 tonnes of recycled road base products from Civilake's operation were sold in 2022. A view of the pugmill and pugmill stockpile area is displayed on **Plate 2**.

In line with the commercial agreements with Metromix to operate within the Quarry Site, regular meetings, particularly with Downer EDI, were held to discuss the ongoing operation of the Quarry and to limit interactions between the two operations. During the reporting period, a number of informal meetings were held between Metromix and Downer EDI with no follow-up actions arising from these meetings.

Metromix maintains an open-door policy with the Newtech Pistol Club with no formal discussions taking place during the reporting period.

No coal was hauled on the Coal Haul Road to Eraring during the reporting period, however, the road was used periodically by Origin Energy to cart flyash for rehabilitation of their decommissioned tailings dam.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

Correspondence from DPE regarding the 2021 Annual Review was provided on 26 April 2022. DPE deemed the report to be satisfactory and no further actions were required.

6. ENVIRONMENTAL PERFORMANCE

6.1 METEOROLOGICAL MONITORING

Condition 3(21) requires that a meteorological station operate in the vicinity of the Quarry Site for the life of the Project. Metromix has installed a meteorological station (location shown on **Figure 3**), ensuring that the meteorological station complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* guideline.

The requirement for the meteorological station to measure the continuous real-time measurement of temperature lapse rate is not warranted given the Quarry's close proximity to the coast and Lake Macquarie.

In accordance with Condition M4.1 of EPL 536, the meteorological station currently monitors the following parameters.

- Temperature (at 2m and 10m above ground level)
- Wind Speed and Direction
- Rainfall
- Solar Radiation
- Humidity
- Sigma Theta

Figures 5 and **6** provide monthly wind speed and direction data recorded at the Quarry during the reporting period. The wind rose data indicates that during cooler months (May to September) winds were generally from the southwest, northwest and north with warmer months (December to February) featuring winds from the east, southeast and southwest. Spring and autumn winds had less defined prevailing wind patterns, with wind coming from all directions.

Table 7 presents a summary of the continuous monitoring recorded during the reporting period for meteorological parameters that are required to be monitored under EPL 536.

Significant rainfall was experienced during the reporting period, especially in the months of March and July. The total rainfall received at the on-site weather station was 353.4mm in March and 383.6mm in July, which are respectively 2.5 times and 6 times greater than the long-term average recorded at the Bureau of Meteorology (BoM) weather station 061133 at Bolton Point (The Ridge Way), located 2.5km away from Teralba. The BoM weather station calculates a long-term monthly average from rainfall data collected between 1962-2022, recording a long-term average rainfall for March of 142.9mm and 60.5mm in July.

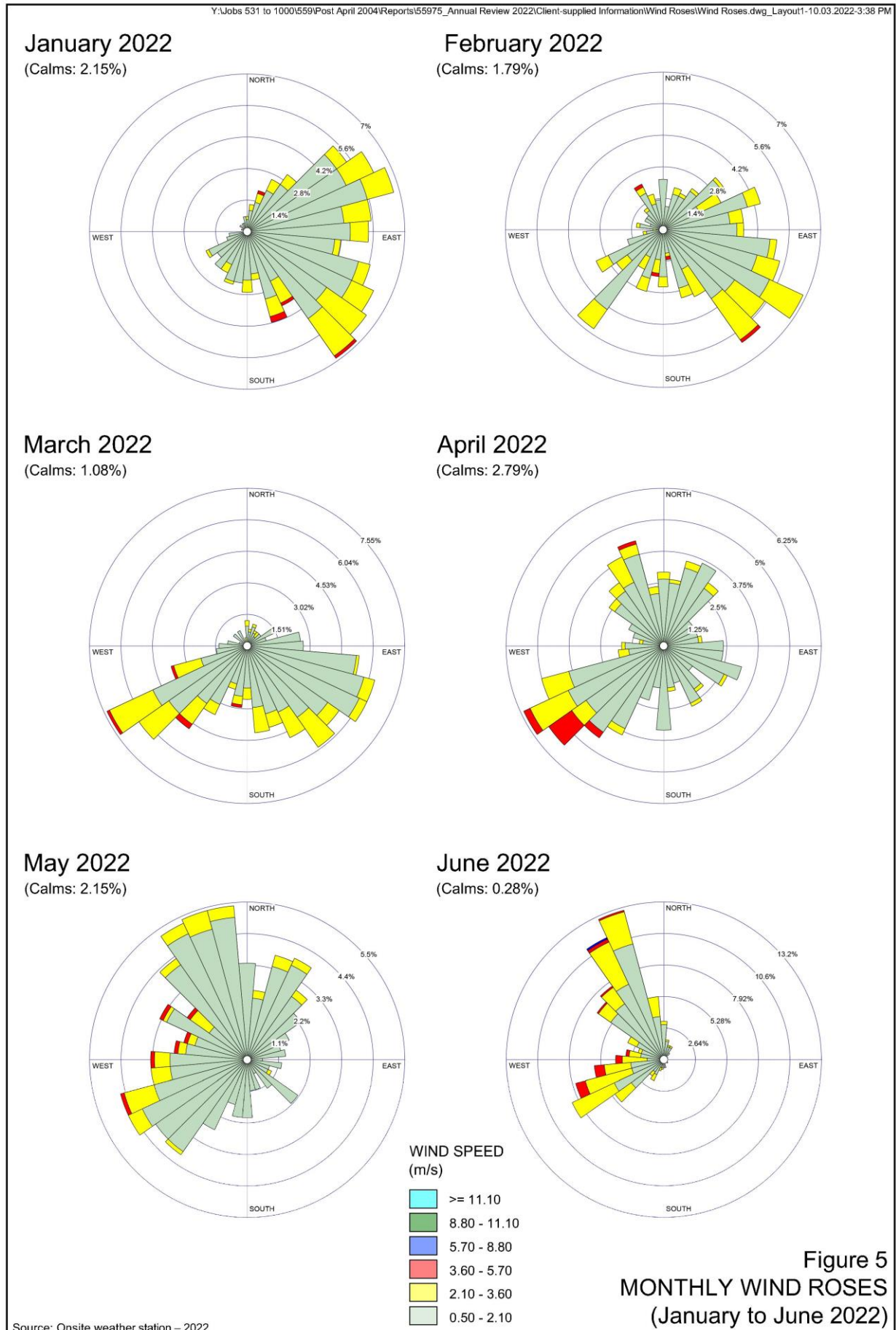


Figure 5
MONTHLY WIND ROSES
(January to June 2022)

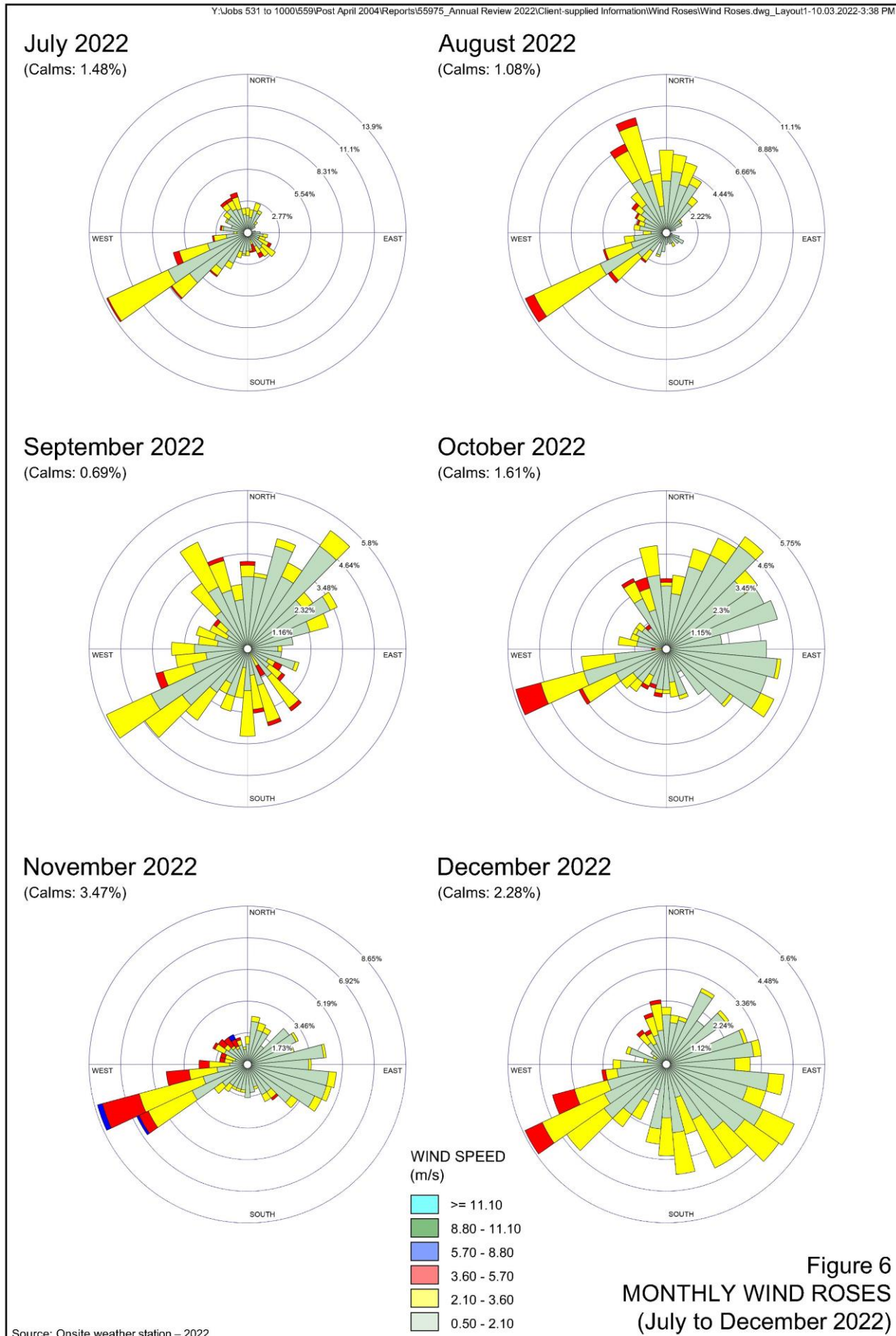


Table 7
Meteorological Data Summary – 2022

Monitored Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Rainfall (mm)	98.2	131.2	353.4	166.2	111.6	16.8	383.6	45.2	122.8	166.4	63.8	46.0	1705.2
Average Minimum Temperature (°C) at 2m	16.8	18.2	17.7	15.1	12.1	5.6	9.1	6.6	8.8	7.6	9.2	15.1	11.8
Average Maximum Temperature (°C) at 2m	33.0	27.8	25.2	23.6	20.3	20.2	16.6	22.8	23.8	28.8	34	25.9	25.2
Average Minimum Temperature (°C) at 10m	17.1	18.5	18.1	15.7	12.8	6.2	9.7	6.9	9.6	8.3	9.7	15.6	12.4
Average Maximum Temperature (°C) at 10m	31.9	26.7	24.4	23.0	19.8	19.9	16.3	22.3	23.0	28.2	33.4	24.8	24.5
Average Sigma Theta	34.6	34.8	33.5	30.5	31.1	33.8	30.8	30.0	31.9	30.8	32.8	34.2	32.4
Average Solar Radiation (W/m ²)	207.9	181.7	129.8	123.0	93.6	97.7	85.4	116.6	138.3	155.8	240.4	227.8	149.8
Average Relative Humidity (%)	75.0	73.0	80.0	76.2	75.0	62.9	73.0	66.0	71.0	71.0	61.0	65.0	70.8

6.2 NOISE

6.2.1 Introduction

The updated *Noise Management Plan*, prepared in accordance with Condition 3(8) of PA10_0183 and approved on 14 January 2022, details the locations and frequency of noise monitoring that is required to be undertaken within and surrounding the Quarry. In addition, PA10_0183 – Appendix 3 (Statement of Commitments) details Metromix's commitment to undertake noise monitoring within three months of operations beginning in the Southern and Northern Extensions. A noise monitoring survey was undertaken in September 2022 by Spectrum Acoustics Pty Limited (Spectrum) and has been included in **Appendix 1**.

Table 8 lists the address and coordinates of each noise monitoring location and **Figure 7** displays the noise monitoring locations relative to local land holdings.

Table 8
Noise Monitoring Locations

Noise Monitoring Locations*	Address	Easting	Northing
EPL-A	Awaba Street, Teralba	369080	6351470
EPL-B ¹	Rhondda Road, Teralba	369250	6351915
EPL-C ²	Rhondda Road, Teralba	369205	6352015
EPL-D	Rhondda Road, Teralba	369150	6352135
EPL-E	Victoria Avenue, Teralba	369060	6352620
EPL-F ²	Victoria Avenue, Teralba	369130	6352945
EPL-H	School Road, Wakefield	366210	6352520
<p>* See Figure 7</p> <p>Note 1: During monitoring on 30 August 2017, the landowner requested that monitoring be undertaken away from this property. Monitoring was undertaken at easting 369247 and northing 6351878 (approximately 30m south of the property).</p> <p>Note 2: Metromix has obtained permission for this monitoring location to be omitted as other monitoring locations are nearby and closer to quarry related noise.</p>			

Independent monitoring at the nominated locations was required to be undertaken twice annually during the first 2 years of operations and then revert to annual monitoring after this time. Monitoring twice annually has continued until 2018 (i.e. over five years). The current approved *Noise Management Plan* specifies annual monitoring only. It is noted that EPL 536 previously required monitoring to be undertaken twice annually, however, a variation was approved on 9 September 2020 which requires noise monitoring to be undertaken annually.

Three items of mobile equipment were sold during the reporting period, with delivery of replacement equipment expected in 2023 (see Section 4.8). As the equipment is similar to that previously used and as all equipment is not used at the same time, noise sources are expected to remain consistent with the assessment for the Teralba Quarry Extension Project.

6.2.2 Noise Criteria

Table 9 presents the noise criteria for the Quarry during the specific time periods as nominated in Condition 3(5) of PA10_0183.

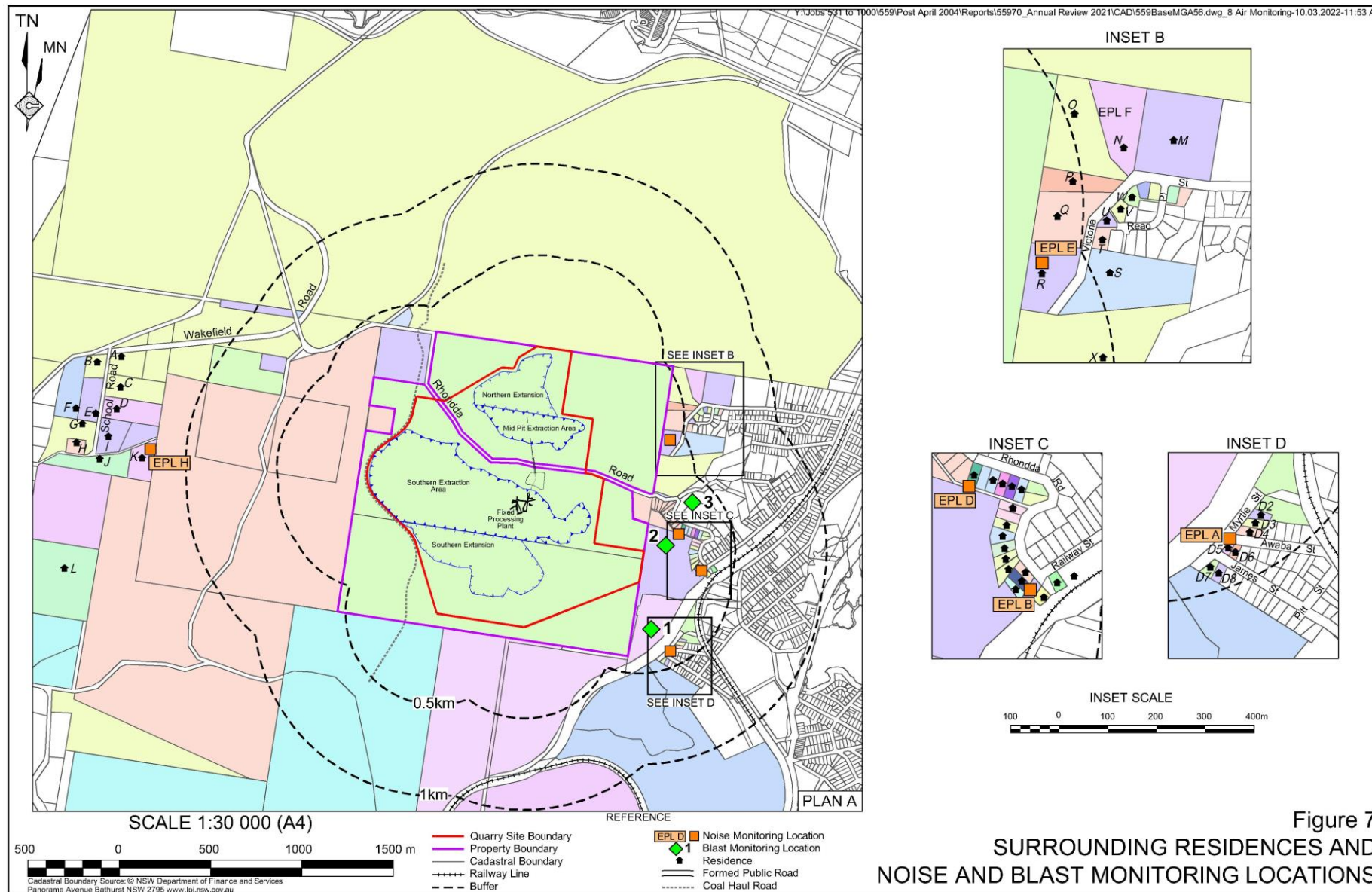


Table 9
Teralba Quarry – Noise Criteria

Residence*	Time Period				
	6:00am-7:00am	7:00am-6:00pm	6:00pm-10:00pm	10:00pm-6:00am	
Residence A					
Criterion	L _{Aeq} (15 min)				L _A (1 min)
	38	38	37	35	45
Residence B					
Criterion	L _{Aeq} (15 min)				L _A (1 min)
	42	46	36	35	45
Residence C					
Criterion	L _{Aeq} (15 min)				L _A (1 min)
	42	42	35	35	45
Residence D, E, G, H, I					
Criterion	L _{Aeq} (15 min)				L _A (1 min)
	35	35	35	35	45
Residence F					
Criterion	L _{Aeq} (15 min)				L _A (1 min)
	37	38	38	35	45
* See Figure 7					

6.2.3 Noise Monitoring Results and Discussion

Attended noise monitoring was conducted during daytime, evening, shoulder and night periods between 5 September 2022 and 8 September 2022 at monitoring locations EPL-A, B, D, E and H by Spectrum.

Based upon the location of active quarrying activities (i.e. only within the existing Southern Extraction Area and Southern Extension), it was determined that the nominated locations identified above would only be monitored. Metromix has obtained permission for locations EPL-C and EPL-F to be omitted from the monitoring program as compliance at these locations may be inferred from other nearby monitoring locations.

During the monitoring period in 2017, the landowner at Residence B (EPL-B) requested that the monitoring not take place in front of their house. Since that time, the monitoring location has been moved 30m to the south of this location so that operators could still distinguish Quarry vehicles from other noise sources and record noise levels.

Monitoring location EPL-B is situated close to the corner of Rhondda Road and Railway Street. This monitoring location is included predominantly to measure Quarry noise from trucks exiting the Quarry along the private section of the access road (through the Teralba Business Park).

The results of the attended noise monitoring survey identified that noise from the Quarry was generally inaudible in the local setting. Noise emissions did not exceed the relevant criterion at any monitoring location during any part of the surveyed time period.

It is noted that two non-compliances regarding exceedances of the noise criterion occurred in 2021. However, the results of operational noise monitoring during 2022 are consistent with results recorded from 2015 to 2020, indicating that the Quarry remains generally inaudible in the local setting.

6.3 BLASTING

6.3.1 Blasting Activities

A total of 25 blasts occurred during the reporting period, with 11 blasts occurring in Stage 1C, 7 in 2A, 4 in 2B-1, 2 in 2B-2, and 1 in 2B-3. Blast monitoring was undertaken for each blast initiated at the Quarry throughout 2022.

The *Blast Management Plan* prepared in accordance with Condition 3(16) of PA10_0183 details the locations and frequency of blast monitoring that is required to be undertaken during blasts at the Quarry.

Blast monitoring continues to be undertaken at the locations nominated on **Figure 7** for each blast, i.e. at Locations 1 and 2 for blasts initiated south of Rhondda Road and Locations 2 and 3 for blasts initiated north of Rhondda Road. No blasts were initiated north of Rhonda Road during the reporting period.

6.3.2 Blasting Criteria

Table 10 presents the blasting criteria for the Quarry provided in Condition (3)9 of PA10_0183 with all blasts required to occur between 10:00am to 4:00pm, Monday to Friday only, public holidays excluded.

Table 10
Teralba Quarry – Blasting Criteria

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Any residence on privately owned land, or any public infrastructure	120	10	0%
	115	5	5% of the total number of blasts over a 12 month period

6.3.3 Blast Monitoring Results

Table 11 presents the results of blast monitoring undertaken throughout 2022 against the criteria for the Quarry. Airblast overpressure and ground vibration were not monitored at Location 3 throughout 2022 as no blasting was undertaken north of Rhondda Road during the reporting period.

Table 11
Blast Monitoring Results – 2022

Blast Date	Blast Time	Location 1 ¹		Location 2 ¹		Location 3 ^{1,2}	
		Airblast Over pressure (dB(L))	Ground Vibration (mm/s)	Airblast Over pressure (dB(L))	Ground Vibration (mm/s)	Airblast Over pressure (dB(L))	Ground Vibration (mm/s)
19 January	13:39:30	104.7	0.60	100.8	0.06	NM	NM
1 February	15:55:00	103.9	0.70	101.4	0.06	NM	NM
14 February	14:31:01	NT	NT	109.8	0.18	NM	NM
28 February	15:54:47	NT	NT	NT	NT	NM	NM
3 March	14:27:00	106.0	0.08	NT	NT	NM	NM
23 March	15:05:00	102.2	1.01	NT	NT	NM	NM
12 April	14:35:53	107.6	0.16	NT	NT	NM	NM
27 April	15:48:12	104.2	0.94	NT	NT	NM	NM
9 May	14:39:03	NT	NT	99.2	0.30	NM	NM
6 June	14:52:32	NT	NT	91.6	NT	NM	NM
22 June	13:42:18	NT	NT	103.2	0.28	NM	NM
15 July	14:00:00	NT	NT	NT	NT	NM	NM
29 July	12:04:28	102.7	0.08	NT	NT	NM	NM
18 August	13:20:00	NT	NT	NT	NT	NM	NM
31 August	12:31:00	NT	NT	NT	NT	NM	NM
15 September	13:17:00	NT	NT	NT	NT	NM	NM
21 September	12:23:00	NT	NT	NT	NT	NM	NM
5 October	12:49:56	NT	NT	NT	NT	NM	NM
10 October	13:00:42	NT	NT	NT	NT	NM	NM
18 October	14:33:12	97.5	0.34	94.0	0.18	NM	NM
28 October	10:41:13	103.5	0.33	NT	NT	NM	NM
3 November	14:57:36	106.1	0.42	103.2	0.26	NM	NM
16 November	15:13:00	111.8	0.31	110.6	0.28	NM	NM
8 December	13:04:00	100.8	0.33	NT	NT	NM	NM
21 December	11:57:00	101.8	0.32	106.5	0.18	NM	NM
Notes: NT – Not Triggered, NM – Not Measured ¹ See Figure 7 . ² Monitoring only undertaken at Location 3 when blasting is conducted in the Mid Pit or Northern Extraction Area.							

As shown in **Table 11**, all blasts undertaken during the reporting period were within the criteria identified in **Table 10** with some not triggering the blast monitor at all. The blast monitor trigger level is generally set to 100dB(L) for airblast overpressure and 0.13mm/s for ground vibration. The maximum airblast overpressure recorded throughout 2022 was 111.8dB(L), while the maximum ground vibration was 1.01mm/s.

All blasting was undertaken between 10:41am and 3:55pm, i.e. within of the prescribed hours for blasting.

In terms of historic trend analysis, between 2015 and 2019 (excluding 2017), the majority of blast events did not trigger the blast monitors. In 2017, majority of blasts triggered the blast monitor, which is considered most likely due to the blasting size and locations during 2017 compared to other years. Between 2010 and 2022, excluding 2020, there have been no instances where the criteria presented in **Table 10** were exceeded and all blasting results were consistent with those predicted in the EA. The three exceedances recorded in 2020 can be considered an anomaly as they are not consistent with historic blasting practices or the other blasts that occurred in 2020.

Both airblast overpressure and ground vibration results are below the predictions made in the EA for the Teralba Extensions Project, with the exception of the three exceedances during the 2020 reporting period. It is noted that the assessment was based on modelling of worst-case scenarios and blast MIC of up to 60kg.

6.4 AIR QUALITY

6.4.1 Introduction

Air quality monitoring is required to be undertaken in accordance with Condition 3(17) and the approved *Air Quality Management Plan* required under Condition 3(20) of PA10_0183.

Air quality monitoring at the Quarry has historically been undertaken for deposited dust, however, Condition (3)17 requires that Total Suspended Particulates (TSP) and PM₁₀ also be monitored through the ongoing use of a HighVolume Air Sampler (HVAS). Following discussions with the EPA in 2013, it was determined that TSP was not required to be monitored as it is recognised that the concentration of PM₁₀ particles is of greater importance given its nexus with potential health issues and background deposited dust levels (<4g/m²/month). This is reflected in the current version of EPL 536 dated 24 March 2021. TSP was not monitored by Metromix during 2021 but compliance and an estimated annual average level has been inferred from PM₁₀ monitoring results.

The HVAS required to monitor for PM₁₀ is located at EPA Point 3, at the same location as the Rodgers Street deposited dust gauge.

6.4.2 Air Quality Monitoring Locations and Frequency

The current air quality monitoring network consists of five deposited dust gauges and the HVAS (see **Figure 8**). **Table 12** provides the coordinates of each location and the date established / sampling frequency respectively. The HVAS was installed in April 2014. In January 2019, the landowners at the Margaret Street location notified Metromix that they no longer granted access to the property for dust monitoring. The dust gauge was subsequently moved to a location on York Street and monitoring in this location commenced from 1 February 2019.

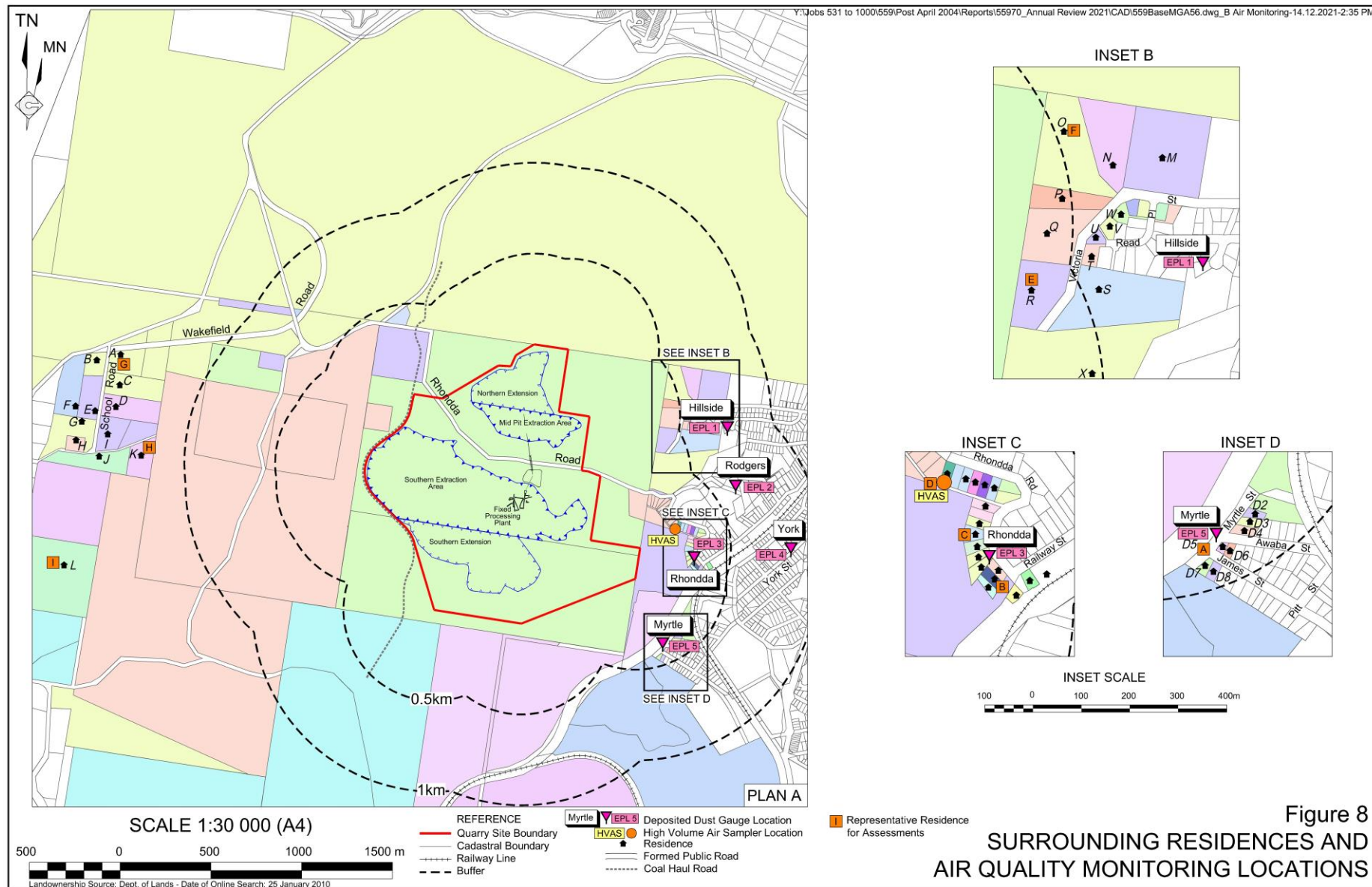


Table 12
Locations of Air Quality Monitoring Equipment

Monitoring Location*	Easting	Northing	Date Established	Sampling Frequency
DDG – Hillside	369422	6352680	June 2004	Monthly
DDG – Margaret	369622	6351763	April 2011 – Dec 2018	Ceased
DDG - York	369777	6352013	1 Feb 2019	Monthly
DDG – Myrtle	369071	6351492	June 2004	Monthly
DDG – Rhondda	369240	6351972	June 2004	Monthly
DDG – Rodgers	369467	6352369	April 2011	Monthly
Weather Station	368413	6352751	March 2013	Continuous
HVAS	369467	6352369	April 2014	6 days
* See Figure 8			DDG = Deposited Dust Gauge	

6.4.3 Air Quality Criteria

The air quality criteria for the Quarry, as outlined within Condition 3(17) of PA10_0183, are provided in **Table 13**.

Table 13
Air Quality Criteria

Pollutant	Criterion ^d	Averaging Period
Total suspended particulate matter (TSP)	90 µg/m ³ ^a	Annual average
Particulate matter <10µm (PM ₁₀)	50 µg/m ³	24-hour maximum
	25/30 µg/m ³ ^a	Annual average
Deposited dust ^c	4 g/m ² /month ^a	Annual average
	2 g/m ² /month ^b	Maximum Incremental Increase
^a Project Approval (PA10_0183) outlines the annual average PM ₁₀ criteria to be 30µg/m ³ . However, EPL 536 Condition R4.5a) requires that the air quality monitoring data is assessed against the Air Impact Assessment Criteria outlined in EPA's <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i> . The most up to date version of this guideline was published in 2022 and outlines the annual average PM ₁₀ criteria to be 25µg/m ³ . Metromix has considered both criteria for its review of particulate matter monitoring. ^b Incremental impact (i.e.: incremental increase in concentrations due to the project on its own); ^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580010.1.2003: Methods for Sampling and Analysing Air-Determination of Particulate Matter – Deposited Matter – Gravimetric Method. ^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with EPA.		

6.4.4 Air Quality Monitoring Results

Table 14 presents the results of the deposited dust monitoring program for 2022 and **Figure 9** presents the long term deposited dust monitoring results. **Table 15** presents the results of the PM₁₀ monitoring during the reporting period and **Figure 10** presents the long term PM₁₀ monitoring results.

It is generally recognised that PM₁₀ constitutes approximately 40% of Total Suspended Particulates (TSP) and that compliance with TSP criteria may be demonstrated by dividing the recorded PM₁₀ by 0.4. This is a common and accepted practice in low risk situations.

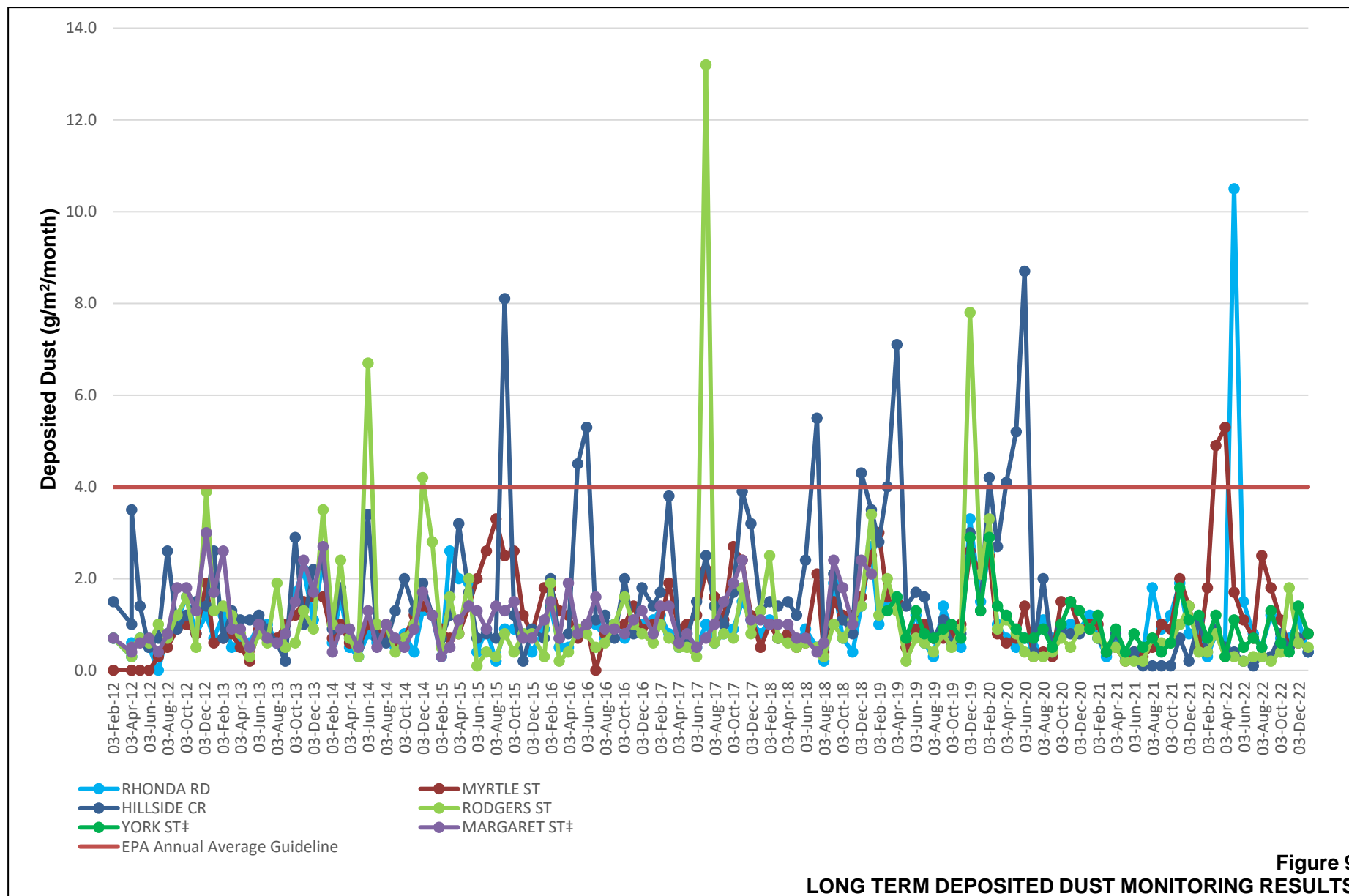
Based on this approach, the annual average TSP for the Quarry is estimated to be 24µg/m³. This is well within the assessment criteria of 90.0µg/m³.

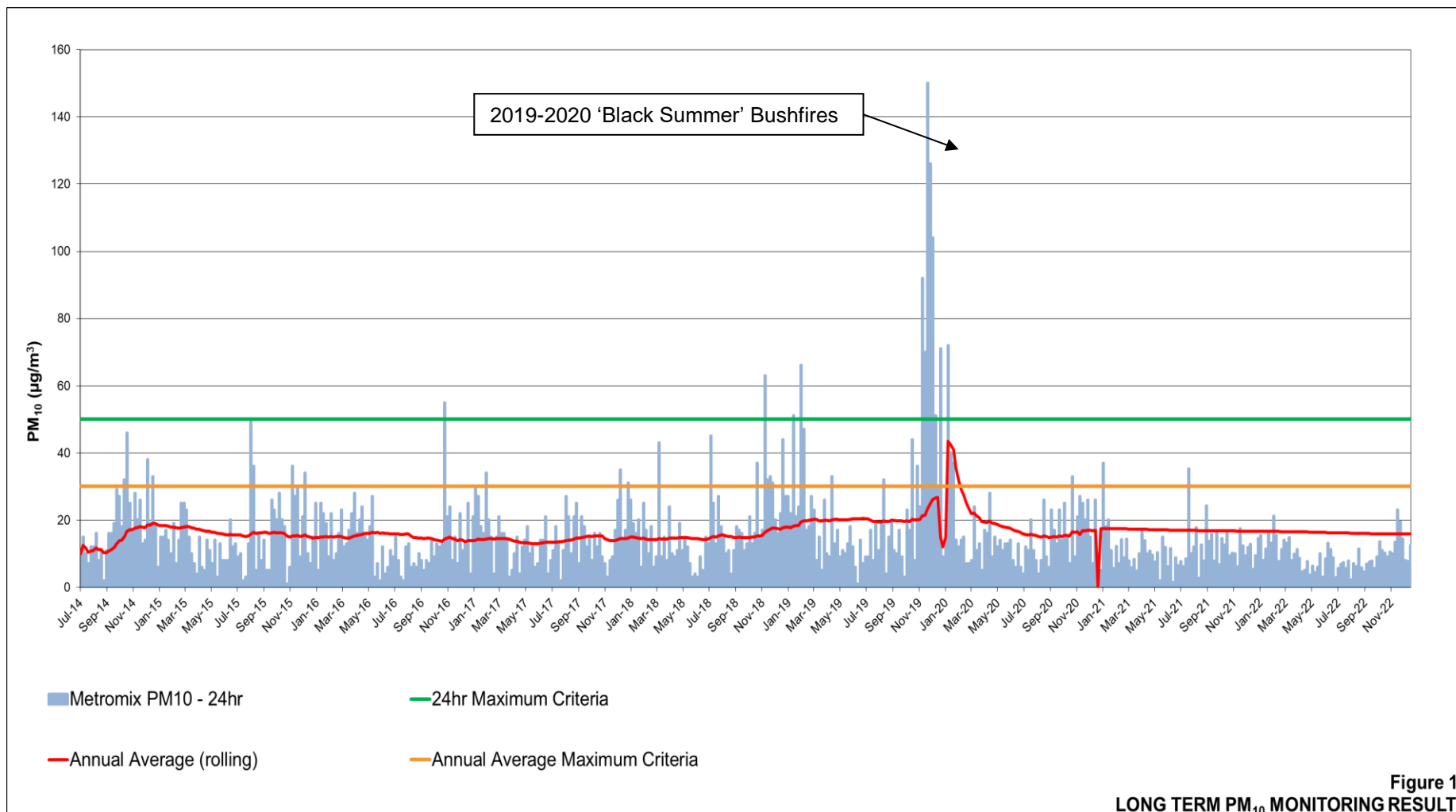
Table 14
Deposited Dust Monitoring Results – 2022

Deposited Dust Levels (g/m ² /month)					
Residence ID	Rhondda ¹	Myrtle ¹	Hillside ¹	Rodgers ²	York ³
Criterion	4	4	4	4	4
Pre - 2022 Average*	1.1	1.2	1.5	1.1	1.0
Results 2022					
January	0.3	1.8	0.4	0.4	0.7
February	0.8	4.9	0.9	0.8	1.2
March	0.6	5.3	0.5	0.3	0.3
April	10.5	1.7	0.4	0.3	1.1
May	1.5	1.1	0.2	0.2	0.5
June	0.8	0.7	0.1	0.3	0.7
July	0.5	2.5	0.3	0.3	0.5
August	1.2	1.8	0.3	0.2	1.3
September	0.7	1.1	0.8	0.4	0.6
October	0.7	0.5	0.5	1.8	0.4
November	1.1	0.6	0.7	0.6	1.4
December	0.4	0.8	0.4	0.5	0.8
Average	1.6	1.9	0.5	0.5	0.8
* Based upon available results for deposited dust collected prior to the reporting period.					
¹ Installed and operated since 2004		² Installed and operated since 2011		³ Installed and operated since 2019	

Table 15
PM₁₀ Air Quality Monitoring Results – 2022

Month	Samples (Run Dates) (Number)	Monthly Average Result (µg/m ³)	Daily 24hr PM ₁₀ Exceedance	Annual Average (µg/m ³)
Criteria		50		25/30*
January	5	11.7	0	
February	5	14.7	0	
March	5	12.2	0	
April	5	7.8	0	
May	5	5.6	0	
June	5	9.2	0	
July	5	6.3	0	
August	5	5.8	0	
September	5	7.2	0	
October	6	9.4	0	
November	5	13.2	0	
December	5	12.4	0	
Annual Average	-	-	-	9.6
* Project Approval (PA10_0183) outlines the annual average PM ₁₀ criteria to be 30µg/m ³ . However, EPL 536 Condition R4.5a) requires that the air quality monitoring data is assessed against the Air Impact Assessment Criteria outlined in EPA's <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i> . The most up to date version of this guideline was published in 2022 and outlines the annual average PM ₁₀ criteria to be 25µg/m ³ . Metromix has considered both criteria for its review of particulate matter monitoring.				





6.4.5 Analysis of Results

All recorded deposited dust levels were compliant with the nominated criteria as identified in **Table 13** throughout the reporting period. It is noted that these results are generally consistent with average deposited dust results from preceding historic averages as well as those predicted in the EA for the Quarry.

During the 2022 reporting period, there were no exceedances of the maximum average 24-hour PM₁₀ criteria (50µg/m³) and no recorded exceedance of the annual average PM₁₀ criteria (25/30µg/m³).

The monitored particulate matter levels are lower than those predicted in the EA for the Teralba Extension Project, however, it should be noted that the predictions in the EA related to worst-case scenario operations including operations in the Northern Extension and Mid Pit area. Operations in these areas are yet to (re)commence and existing operations remain consistent with these predictions (i.e. no exceedances of the relevant criteria).

6.5 FAUNA HABITAT

6.5.1 Introduction

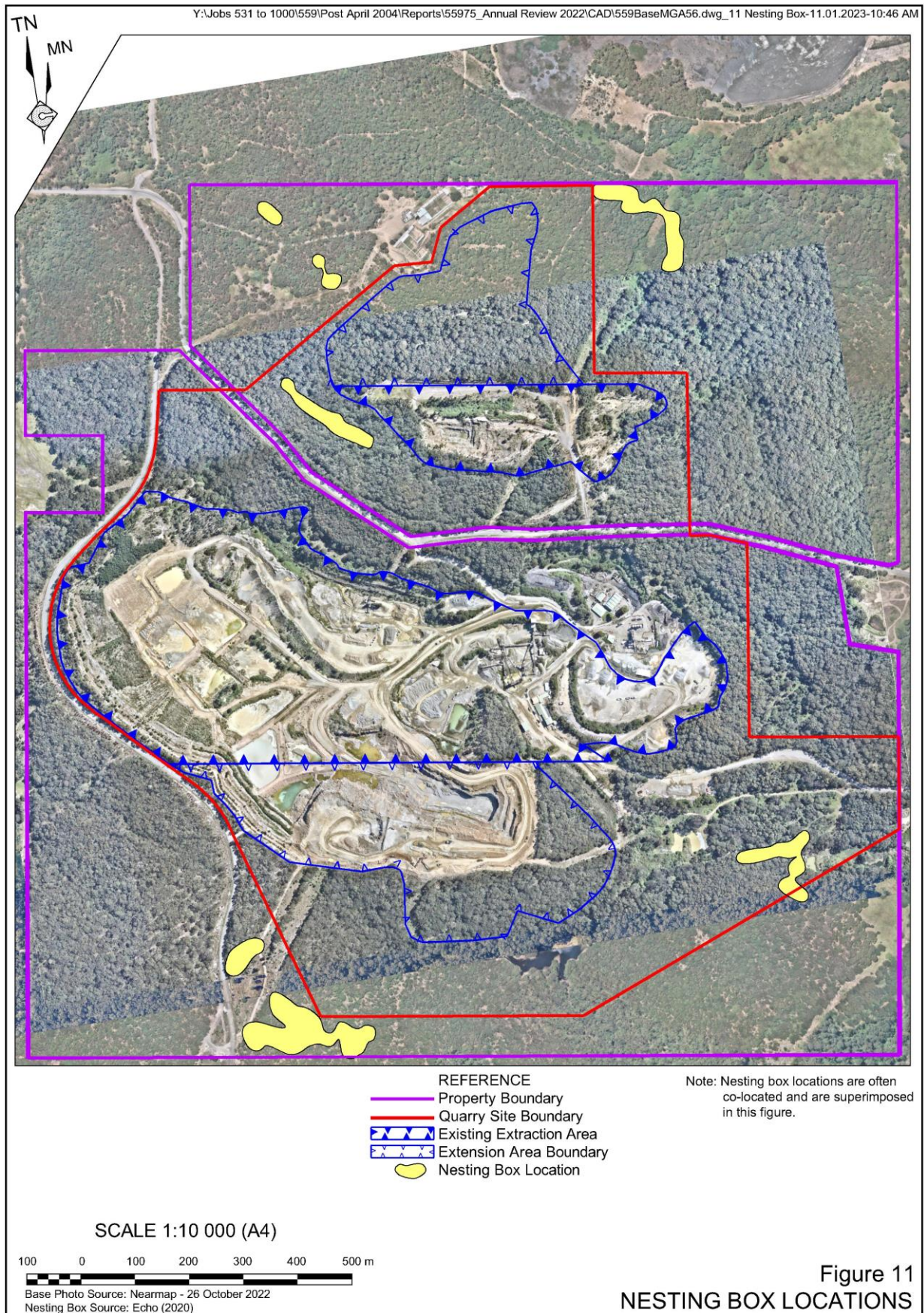
In order to mitigate against the impact of removal of hollow-bearing trees, nesting boxes have been installed to provide for replacement nesting sites for the targeted species. The installation of nesting boxes for the following species as outlined within Condition 3(50) of PA10_0183 was completed in April and September 2014 with their locations shown in **Figure 11**.

- 20 microbat nesting boxes
- 20 Little lorikeet nesting boxes
- 30 Squirrel glider nesting boxes

These boxes have been monitored and where necessary relocated since their installation. During October and November 2017, a total of 18 nesting boxes were installed to replace those that had previously been damaged or destroyed due to theft or bushfire. The location of the boxes was chosen to avoid the areas previously damaged by bushfire. Five additional nest boxes for each of the target species are stored at the Quarry so that replacements can be installed quickly if damage is recorded.

In 2020, an additional 11 nesting boxes were installed as required under a commitment relating to vegetation clearing for the approval for the powerline relocation. These boxes have since been included as part of the annual nesting box monitoring program.

During the reporting period, three microbat nest boxes were replaced due to termite damage and structural issues.



6.5.2 Nesting Box Usage

The nesting boxes were inspected on 26 September 2022 by Echo Ecology and Surveying. The 2022 Nest Box Monitoring Report is provided as **Appendix 2** and provides coordinates for all nesting box locations and an update on box usage during the reporting period. The following represents a summary of the key findings of the report.

- One of the target species, namely Squirrel Gliders, were recorded as using the nesting boxes during the reporting period.
- Neither of the remaining target species, namely Little Lorikeets or microbats, were observed in the nesting boxes during the inspection.
- One nesting box was recorded as being occupied by a Sugar Glider.
- One nesting box contained at least three individuals that were either Squirrel or Sugar Gliders but could not be confidently identified.
- A further 30 nesting boxes contained leaves with depressions like those created by Gliders, indicating that these boxes are used by either Squirrel or Sugar Gliders for sheltering.
- A total of 16 boxes had leaves present (but no defined nest) indicating that animals had visited the nesting boxes.
- Ants were found in one of the boxes.
- Termites were found in another nine of the boxes.
- No feral honey bees were observed.

The Nesting Box Monitoring Report notes that while the nest boxes have been used by only one of the target species, namely Squirrel Gliders, the boxes have historically been used by native fauna species (e.g. Sugar Gliders). The usage by Sugar Gliders increased progressively from 2015 to 2018 but showed a decrease since the 2019 reporting period.

For many years the identification of Squirrel Gliders of the Quarry Site has been considered an error in the original identifications give that no individuals had been sighted since the original survey. The recent identification of the Squirrel Glider within the Quarry Site is a positive sign that the Quarry operations are not impacting this species and they can continue to use the adjacent vegetation as habitat.

The nesting boxes show evidence of use by one of the target species over the past 12 months, and therefore, removing and relocating the nesting boxes would impact use of these boxes by the target species and Sugar Gliders. Echo Ecology recommends that the boxes continue to be maintained and monitored and only relocated if not used within 10 years of installation. At this time a review of the effectiveness of the nest boxes for the target species would be suitable.

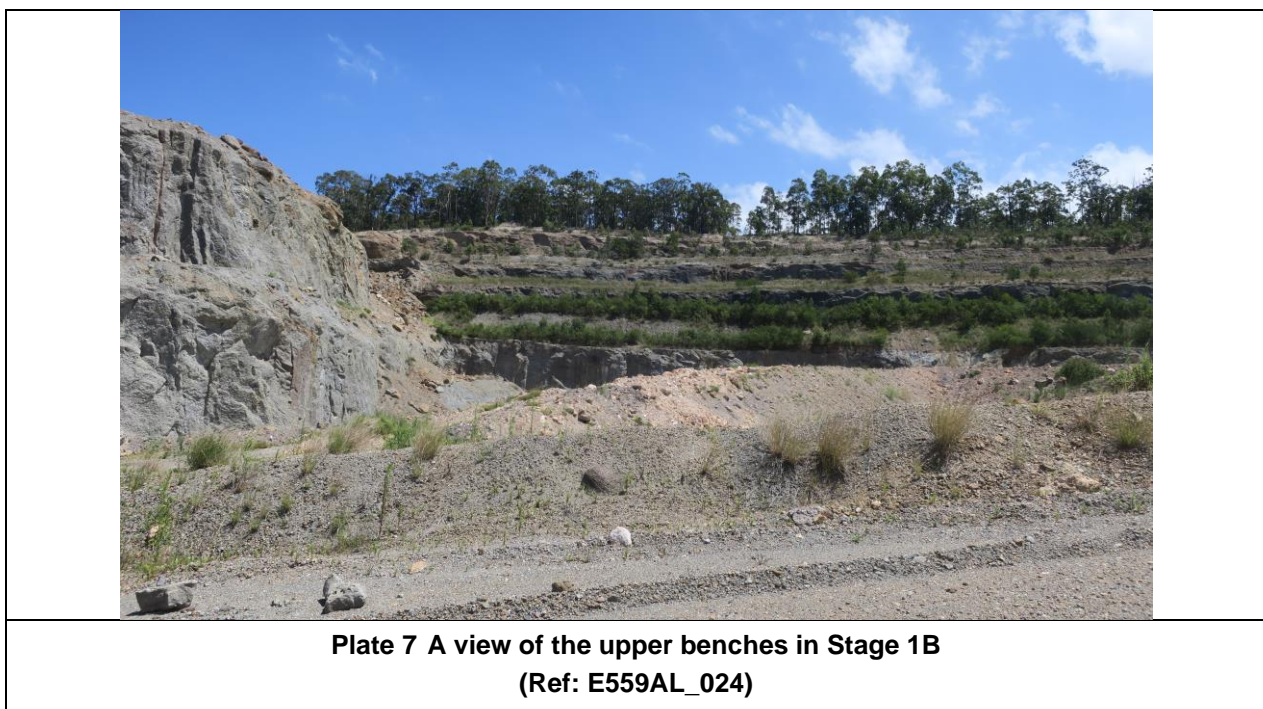
6.6 VISIBILITY

It has been acknowledged in previous reporting that the upper benches of the Southern Extension Extraction Area (Stage 1B) are visible from some parts of the residential areas in the vicinity of Speers Point. The upper benches that are visible represent only minor impacts, as Speers Point is more than 4.3km from the Quarry.

Plate 6 displays the area visible from Speers Point.



In order to mitigate visual impacts from these locations, rehabilitation activities on the two upper benches within Stage 1B was enhanced through watering and maintenance, as shown in **Plate 7**. Vegetation condition will continue to be monitored in this area.



7. WATER MANAGEMENT

7.1 INTRODUCTION

The most recent version of the *Water Management Plan* for the Teralba Quarry was approved by DPE on 23 December 2020.

The surface water management system of the Quarry comprising Dams A to G continued to operate efficiently. The practice of pumping from Dam H to Dam G continued to reduce the quantity of water reporting to Dam D.

All water pumped or transferred around the Quarry continued to be measured throughout the reporting period with a series of flow meters. No changes to water management infrastructure occurred during 2022.

Metromix was not required to supply water to any users whose water supply was affected by the Quarry operation. The nearest bore that is located down-gradient of the Quarry is stock/domestic well GW080494 in Fassifern Road, Fassifern, approximately 2.6km to the south. It is considered unlikely that Quarry activities will impact this bore.

7.2 WATER QUALITY

7.2.1 Introduction

Monitoring of surface water was undertaken on a monthly basis throughout the reporting period in accordance with the *Water Management Plan* for the Quarry.

It should be noted that the water monitoring program relates principally to surface water, although monitoring of water in Dam A (hereafter referred to as “Mine Adit Dam”) effectively relates to groundwater, as this water reaches the surface via a former mine adit associated with historic underground coal workings beneath the Quarry. No other groundwater monitoring is undertaken at the Quarry and based upon this, all water monitoring within this document relates only to surface water monitoring.

7.2.2 Water Quality Location, Sampling and Frequency

Water quality monitoring is required to be undertaken at EPA Point 4 (Mine Adit Dam overflow, EPA Point 5 (Discharge off site from Dam B), EPA Point 6 (Northwestern boundary into unnamed creek) and EPA Point 7 (Northeastern boundary to unnamed creek) with these locations shown on **Figure 12**.

Table 16 presents the required frequency and method of monitoring to be undertaken at the nominated EPA points, i.e. in the event water is flowing at the nominated locations. It is noted that water quality monitoring at Dam B was required to be monitored daily during discharge over the reporting period. However following a variation to EPL 536 in September 2020 and update to the Water Management Plan in December 2020, the frequency of monitoring has been reduced to once within 12 hours of discharge. This frequency is acceptable given the key record of monitoring indicating minimal change (and often improvement) in the quality of water discharged.

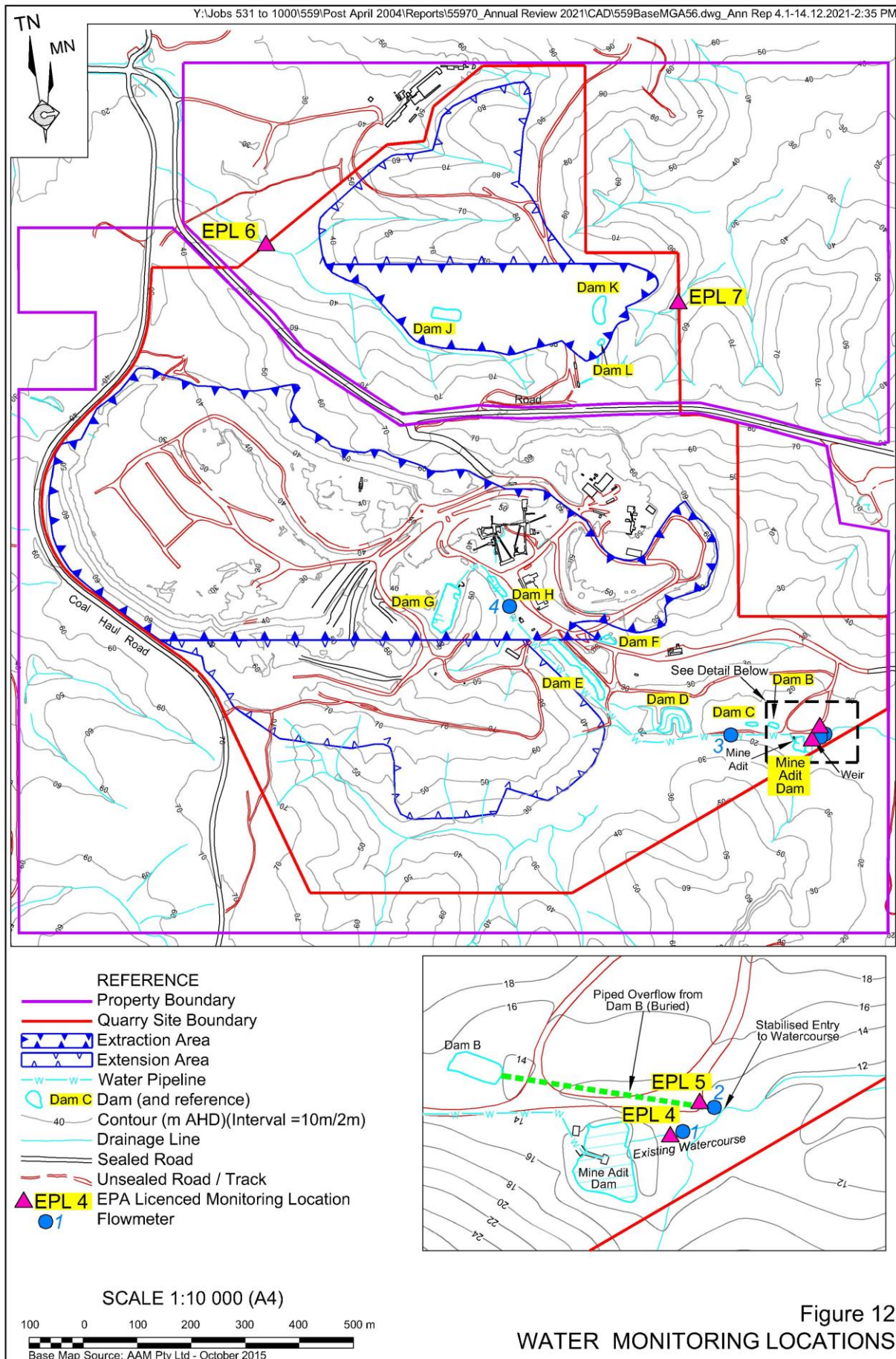


Table 16
Surface Water Monitoring Requirements

EPA Point	Frequency	Monitoring for:	Method
4	Monthly	pH, Total suspended solids (TSS), Electrical Conductivity (EC), oil and grease	Grab sample
5	Within 12 hours of discharge	pH, TSS, EC, oil and grease	Grab sample
6 and 7	Within 8 hours of discharge and weekly during discharge	pH, EC, TSS	Grab sample
4 and 5	Continuous (during discharge from monitoring point 4 – Dam B)	Flow	Flow meter/ continuous logger

7.2.3 Water Quality Assessment Criteria and Results

Water quality is required to be monitored at all nominated locations for pH, total suspended solids (TSS), Electrical Conductivity (EC), and oil and grease. **Table 17** presents a summary of the results of the surface water quality monitoring program during the reporting period. The results of the entire surface water monitoring program are provided in full in **Appendix 1**.

Table 17
Surface Water Monitoring Results – 2022

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	pH	EC	TSS	Oil & Grease	Comments	Method
Units	pH Units	µS/cm	mg/L	mg/L		-
EPL Criterion*	6.5-8.5	NA	<50	10	None	-
ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	<5	None	-
EPA Discharge Point 4 – Mine Adit Dam (Monthly)						
January	7.13	1830	<5	<5	None	Grab sample
February	7.10	2010	6	<5	None	
March	6.96	1360	6	<5	None	
April	7.27	1550	23	<5	None	
May	7.68	1750	<5	<5	None	
June	7.12	1710	7	<5	None	
July	7.16	1620	12	<5	None	
August	7.15	1530	10	<5	None	
September	7.33	1740	16	<5	None	
October	7.31	1560	27	<5	None	
November	6.96	1700	16	<5	None	
December	7.28	1770	11	<5	None	

Table 17 (Cont'd)
Surface Water Monitoring Results – 2021/2022

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	pH	EC	TSS	Oil & Grease	Comments	Method
Units	pH Units	µS/cm	mg/L	mg/L		-
EPL Criterion*	6.5-8.5	NA	<50	10	None	-
ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	<5	None	-
EPA Discharge Point 5 – Dam B (Daily during Discharge)						
January	No discharge					
February	No discharge					
08/03/2022	6.78	664	10	<5	None	
04/04/2022	6.88	758	<5	<5	None	
02/05/2022	7.10	746	<5	<5	None	
01/06/2022	6.85	774	<5	<5	None	
04/07/2022	7.00	638	<5	<5	None	
01/08/2022	6.79	587	<5	<5	None	
05/09/2022	7.86	649	<5	<5	None	
10/10/2022	6.92	539	22	6	None	
01/11/2022	7.53	77	<5	<5	None	
December	No discharge					
EPA Discharge Point 6 – Northwestern Boundary to Creek (During and Following Discharge)						
There were no instances of water discharged from EPA Point 6 during the reporting period						
EPA Discharge Point 7 – Northeastern Boundary to Creek (During and Following Discharge)						
There were no instances of water discharged from EPA Point 7 during the reporting period						
* EPL 536 Condition L1.1 nominates the licensee must comply with Section 120 of the <i>Protection of the Environment Operations Act 1997</i> . As such, the ANZECC water quality guidelines have been adopted.						

Although the Quarry does not discharge water to the Mine Adit Dam, this dam naturally discharges to the downstream watercourse on a regular basis and, as it is located within the area of management for the Quarry, Metromix has committed to monitor the water quality and discharge volumes.

7.2.4 Water Use

Water Access Licence (WAL) 40303 permits the extraction and use of water from the Mine Adit Dam with an allocation of 1,407 shares (currently 1ML per share).

Reporting is currently only required for water pumped from the Mine Adit Dam to Dam G under licence as this represents groundwater intercepted from the Mine Adit. **Table 18** displays the water flow measurements monitored between the Mine Adit Dam to Dam G during the reporting period.

Table 18
Surface Water Flow Measurements – Mine Adit Dam to Dam G – 2022

Month	Flow Meter Readings	Usage (ML)
January	6525509.48	100.8
February	6633059.32	107.5
March	6719592.16	86.5
April	6786960.83	67.4
May	6887196.49	100.2
June	6985680	98.5
July	7170732.73	185.1
August	7183554	12.8
September	7278494	94.9
October	7415129	136.6
November	7504387	89.3
December	7505913	81.5
Total		1161.1

7.2.5 Discussion of Results

In considering water quality limits nominated in **Table 17**, the following comments are relevant.

1. pH values within the Mine Adit Dam varied from 6.96 to 7.68 with an average pH of 7.20.
2. Discharge from Dam B occurred monthly from March to November during the reporting period, with only one day of flow recorded during each month of discharge. The pH values were neutral on average (7.08) which is within the EPL and ANZECC criterion of 6.5 to 8.5. All pH values were within the criteria during the reporting period.
3. EC values were monitored within the Mine Adit Dam and recorded a range between 1360µS/cm and 2010µS/cm and an average value of 1677.5µS/cm, which is below the ANZECC guideline level. EC values at Dam B were also below the ANZECC guideline level, recording a range between 539µS/cm and 776µS/cm with an average value of 681µS/cm.
4. TSS values were within the EPL criterion and ANZECC guideline level of 50mg/L in both the Mine Adit Dam and Dam B during the reporting period.

Flow measurements indicate that a total of 1,161.1ML of water was pumped from the Mine Adit Dam to Dam G during the 2022 reporting period. This is higher than historic use (664.1ML in 2020, 1,060.8ML in 2019, 923.6ML in 2018 and 1,077ML in 2017), however within the licence allocation under WAL 40303. Water use is closely tied to the requirements of the washing processes used for product preparation and dust suppression and the higher rate of water use is consistent with increased production during the reporting period.

7.2.6 Conclusion

Water monitoring at Metromix's Teralba Quarry has demonstrated that the Quarry operations have not adversely impacted the water quality in the surrounding and downstream areas of the Quarry. This is consistent with the water monitoring results from previous reporting periods (2015 to 2021) and indicates that the Quarry continues to operate with negligible impact to the quality of water in Lake Macquarie.

8. REHABILITATION

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

The status of land under rehabilitation within former Silt Cell 7 is displayed in **Plate 8** and the older and more developed rehabilitation of benches on the western side of the Quarry is displayed in **Plate 9**. T.E.N.T.A.C.L.E. Inc. prepared a progress report of the regeneration works undertaken during 2022 on behalf of Metromix, summarising the aims, methods and results of the rehabilitation works. A copy of the progress report by T.E.N.T.A.C.L.E Inc. is reproduced in **Appendix 6**.

Rehabilitation works during the reporting period included four key activities.

- Revegetation of silt cell 7.
- Weeding within active areas of the Quarry and in the undisturbed non-operational areas of the property.
- Clearing of a 20m perimeter of vegetation behind the fuel pump to reduce the risk of fires.
- Weeding and maintenance of previously rehabilitated areas.

Figure 13 identifies the location of rehabilitation activities undertaken throughout the reporting period.

A variety of weed control methods were used including the removal of target weed species through both manual and chemical controls such as cut/scrape and paint application of herbicide, hand removal, and spraying. Weed management activity focussed upon the following weeds during the reporting period.

- | | |
|--|---|
| • African Daisy (<i>Senecio pterophorus</i>) | • Fishbone fern (<i>Nephrolepis cordifolia</i>) |
| • Arum lily (<i>Zantedeschia aethiopica</i>) | • Fleabane (<i>Conyza sp</i>) |
| • Bitou Bush (<i>Chrysanthemoides monilifera subsp. rotundata</i>) | • Green Cestrum (<i>Cestrum parqui</i>) |
| • Blackberry Nightshade (<i>Solanum nigrum</i>) | • Ground Asparagus (<i>Asparagus aethiopicus</i>) |
| • Brazilian Nightshade (<i>Solanum seaforthianum</i>) | • Inkweed (<i>Phytolacca octandra</i>) |
| • Camphor laurel (<i>Cinnamomum camphora</i>) | • Jacaranda (<i>Jacaranda mimosifolia</i>) |
| • Cape Gooseberry (<i>Physalis peruviana</i>) | • Lantana (<i>Lantana camara</i>) |
| • Cassia (<i>Senna pendula var. glabrata</i>) | • Morning Glory (<i>Ipomoea purpurea</i>) |
| | • Moth Vine (<i>Araujia sericifera</i>) |
| | • Ochna (<i>Ochna serrulata</i>) |
| | • Pampas Grass (<i>Cortaderia sp</i>) |

- Castor Oil (*Ricinus communis*)
- Climbing Asparagus (*Asparagus plumosus*)
- Coastal morning glory (*Pomoea cairica*)
- Crofton (*Ageratina adenophora*)
- English Ivy (*Hedera helix*)
- Fireweed (*Senecio madagascariensis*)
- Paspalum (*Paspalum dilatatum*)
- Purple Top (*Verbena bonariensis*)
- Scotch Thistle (*Onopordum sp*)3
- Small Leaf Privet (*Ligustrum sinense*)
- Stinking Roger (*Tagetes minuta*)
- Turkey Rhubarb (*Rumex sagittatus*)
- Wild Tobacco (*Solanum mauritianum*)



Plate 8 Rehabilitation progress on former Silt Cell 7
(E559AL_038)



**Plate 9 Rehabilitation progress on benches on the western side of the Quarry
(E559AL_031)**

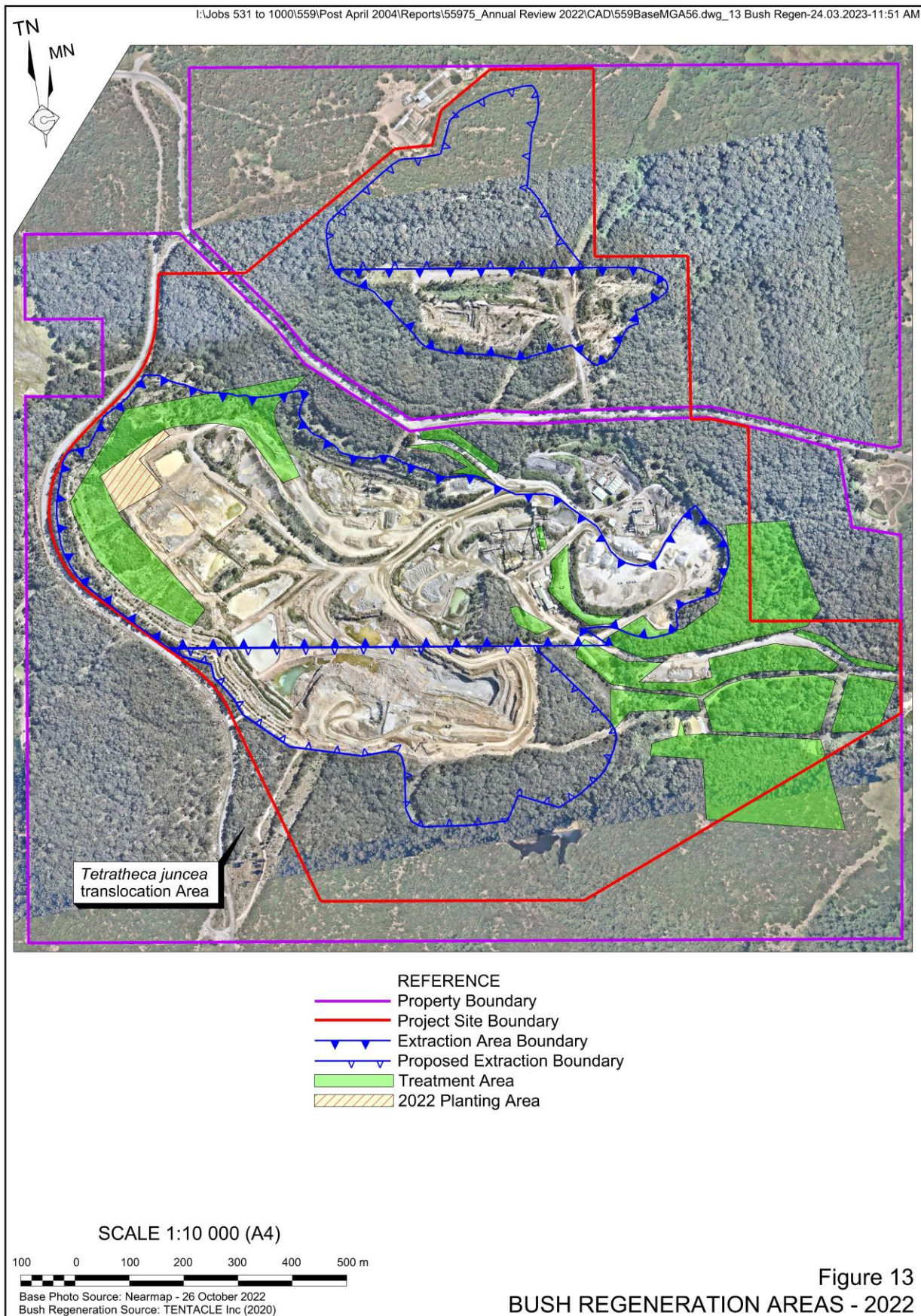


Figure 13
BUSH REGENERATION AREAS - 2022

A total of 1,000.3 hours were worked by T.E.N.T.A.C.L.E. staff performing environmental restoration and bush regeneration activities during 2022.

In 2015, 40 endangered Black-eyed Susan (*Tetratheca juncea*) were translocated from the active areas of the Quarry to a location to the south, with a survival rate of 80% being reported four months after translocation.

During 2022 a total of 1,100 native trees, shrubs and grasses were planted in the western portion of the Quarry along completed silt cells. A total of 12 different native species were planted during the reporting period which consisted of the following:

- 35 Hickory Wattle - *Acacia implexa*
- 85 Juniper Wattle - *Acacia ulicifolia*
- 25 Spotted Gum – *Corymbia maculata*
- 45 White Mahogany – *Eucalyptus acmenoides*
- 45 Grey Ironbark – *Eucalyptus paniculata*
- 45 Broad-leaved White Mahogany – *Eucalyptus umbra*
- 45 Sydney Red Gum - *Angophora costata*
- 200 Wiry Panic – *Entolasia stricta*
- 200 Cogon Grass – *Imperata cylindrica*
- 200 Kangaroo Grass – *Themeda australis*
- 90 Basket Grass - *Lomandra longifolia*
- 85 Gorse Bitter Pea – *Daviesia ulicifolia*

Prior to planting, a seed mix was spread across the site that consisted of native tree, grass, and shrub species. Observations throughout the year found that a considerable amount of the seedlings had emerged.

8.2 BIODIVERSITY OFFSET

A modification to PA10_0183 was approved on 16 April 2018 that removed the approved biodiversity offset area from the consent and replaced this with biodiversity credits. A revised biodiversity offset strategy was subsequently approved in July 2018 that describes Metromix's intention to retire credits following purchase on the open market.

The staged biodiversity offsetting obligations are described in Conditions 3(54) to 3(56) of PA10_0183. The staged obligations are aligned with the staged development of the Quarry such that Metromix cannot proceed to the next stage of development of the Quarry until the biodiversity offset obligations for that stage have been satisfied. **Table 19** summarises the biodiversity offset strategy for the Quarry.

Table 19
Offsetting Stages, Timing and Credits

Development Stage	Credit Required	Number of Credits	Timing
Stage 1 and Stage 2 in Southern Extension	PCT1589 or equivalent	670	31 December 2018 (completed)
Stage 1 and Stage 2 in Southern Extension	Black-eyed Susan (<i>Tetradlea juncea</i>)	1,103	31 December 2018 (completed)
Stage 3 in Southern Extension	PCT1589 or equivalent	171	2027 (indicative)
Stage 1, Stage 2 and Stage 3 in Northern Extension	PCT1589 or equivalent	502	2034 (indicative)

The biodiversity credits for Stage 1 and Stage 2 in the Southern Extension were retired on 21 December 2018, operations are yet to commence in Stage 3 of the Southern Extension and the Northern Extension.

8.3 DISCUSSION

Progressive rehabilitation activities have been reviewed in relation to the rehabilitation objectives described in Condition 3(58) of PA10_0183 and presented in **Table 20**.

Progressive rehabilitation activities have continued generally in accordance with the planned progress for rehabilitation described in the approved Biodiversity and Rehabilitation Management Plan and similar to that undertaken in previous years.

8.4 REHABILITATION DURING THE NEXT REPORTING PERIOD

Soil/biomass and overburden resulting from extraction activities within Stage 2 will continue to be used for the establishment of a rehabilitation area over Silt Cell 8 during the next reporting period.

T.E.N.T.A.C.L.E Inc. will continue to be used on site for approximately 1,000-man hours per year to control weeds throughout the Quarry Site as well as plant seedlings and monitoring plant health. Further maintenance will be completed in the next reporting period around Dam A and Dam D. The 20m cleared perimeter around the fuel station will continue to be maintained throughout the next reporting period.

Continued monitoring will be undertaken during the next reporting period, principally in the vicinity of former Silt Cell 7 with maintenance in the former revegetated areas should it be required. Planting will preferentially occur in Autumn due to past success at this time. The scale of planting will be determined by climatic conditions including predicted rainfall.

Table 20
PA10_0183 Condition 3(58) Rehabilitation Objectives

Feature	Objectives	Comments
Site (as a whole)	<ul style="list-style-type: none"> • Safe • Hydraulically and geotechnically stable • Non-polluting • Fit for the intended post-mining land use(s) • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible • Minimising visual impacts when viewed from surrounding land. 	Areas subject to progressive rehabilitation satisfy this objective. Backfilling of silt cells is occurring progressively to ensure these areas are stable and suitable for revegetation activities.
Surface Infrastructure	<ul style="list-style-type: none"> • To be decommissioned and removed, unless otherwise agreed by the Secretary. 	The oil storage container was decommissioned during the 2020 reporting period and replaced by a bunded shipping container for oil storage.
Benched Quarry Walls	<ul style="list-style-type: none"> • Landscaped and revegetated utilising native tree and understorey species, ensuring that the tree canopy is restored and integrated with the surrounding canopy to minimise visual impacts. 	Revegetation activities on the two upper benches within Stage 1B applied a selection of native tree flora species in accordance with the species described in the Biodiversity and Rehabilitation Management Plan.
Quarry Pit Floors and Silt Ponds	<ul style="list-style-type: none"> • Landscaped and revegetated utilising native flora species and felled trees from clearing. • Revegetation not required for existing and proposed industrial areas. 	Revegetation activities on the Quarry floor areas to the west of the Southern Extension Area (see Figure 13) applied available mulch material and a selection of native tree flora species in accordance with the species described in the Biodiversity and Rehabilitation Management Plan.
Other land affected by the Project	<p>Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:</p> <ul style="list-style-type: none"> • native endemic species: and • a landform consistent with Figure 8 (Appendix 6 of PA10_0183) and the surrounding environment. 	Progressive rehabilitation has applied native endemic species described in the approved Biodiversity and Rehabilitation Management Plan. Progressive final landform development is considered to be consistent with Appendix 6 of PA10_0183.

9. ABORIGINAL HERITAGE

It was planned that the artefacts identified during the 2019 monitoring campaign would be buried in a suitable location identified in consultation with Aboriginal Stakeholders during the 2021 reporting period. However, due to site restrictions as a result of COVID-19 for much of 2021, this activity was postponed.

During the reporting period, Metromix contacted Austral Archaeology Pty Ltd, who currently have the artefacts in their possession, on two separate occasions to coordinate reburial activities. However, no response has been received as of 30 March 2023. Metromix will continue to pursue Austral Archaeology Pty Ltd throughout 2023 and it is anticipated that reburial of these artefacts will be undertaken during the next reporting period.

10. COMMUNITY

10.1 SURROUNDING COMMUNITY

During the reporting period, it is understood that there were no changes to the land ownership adjacent to the Quarry. Metromix maintained contact with its closest neighbours throughout 2022 through informal discussions and involvement with the Community Consultative Committee.

10.2 COMMUNITY CONSULTATIVE COMMITTEE MEETINGS

One meeting of the Teralba Quarry Community Consultative Committee (TQCCC) was held during the reporting period on 17 May 2022. The full minutes of the meetings are provided as **Appendix 3** and a brief overview of the meeting is provided in this subsection.

During the TQCCC meeting, the committee was given an overview of the activities undertaken in 2021 to 2022 as presented in the 2021 Annual Review. The committee was updated on Quarry operations, all non-compliances and complaints received since the previous TQCCC meeting, ongoing monitoring and rehabilitation, details of corrective actions carried out in response to on-site subsidence (see Section 4.13), and the status of extraction in Stage 1C and Stage 2. No action items which Metromix would be responsible for arose from the meeting.

10.3 ENVIRONMENTAL COMPLAINTS

Metromix received a total of one complaint from the community during the reporting period on 8 June 2022 which was lodged through the Resources Regulator Telephone Line. A copy of the complaints record is provided in **Appendix 4**. The occurrence of one complaint during the reporting period is consistent with the history of very few complaints at the Quarry with one being made in 2021 and few in the years prior. It should also be noted that the majority of historical complaints have related to traffic or transport matters. This demonstrates Metromix's successful management of operations during the reporting period. The following presents an overview of the complaint.

8 June 2022 Complaint

This complaint was lodged by a member of the community through the Resources Regulator Telephone Line. The complaint was made regarding a near-miss between the complainant and a White Prado that had entered Rhondda Road from the Teralba Quarry exit. The Resources Regulator advised the complainant that the Resources Regulator is not responsible for the safety of public roads and recommended the complainant contact Lake Macquarie City Council (Council). The Resources Regulator also called the Quarry Manager to discuss the complaint and requested that the matter be raised during a toolbox meeting with Quarry employees. Quarry employees were reminded to exit and enter the Quarry Site in a safe manner during the next toolbox meeting.

11. INDEPENDENT AUDIT

It is noted that an Independent Environmental Audit was undertaken for the period between January 2020 and January 2023 on 6 and 7 February 2023. As the audit report was completed prior to this document being finalised, the report has been used in lieu of an internal compliance review for the reporting period with the outcomes described in Sections 1 and 12.

The outcomes of the audit report and Metromix's response to the matters raised are presented in **Table 21**, with the full audit report and response available from the Metromix website¹. All matters raised in the audit report have been addressed and are considered closed.

¹ See <https://www.metromix.com.au/resources/>

Table 21
Response to the Non-Compliance Issues

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Issue No.	Condition	Requirement	Issue sighted	Metromix Response																																				
NC-01	Schedule 2 Condition 2	The Proponent, in acting on this approval, must carry out the project in accordance with: (a) the conditions of this approval; and (b) all written directions of the Secretary	Non-compliances have been recorded against Conditions of Approval Schedule 3 (Conditions 4,26,30), Schedule 5 (Condition 1,10,11). Recommendation: It is recommended that all non-compliances identified are addressed and closed out. Consider implementing a process to track compliance requirements and status.	Noted.																																				
NC-02	Schedule 3 Condition 5 EPL L5.1, L5.2, L5.3	Noise Criteria The Proponent must ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land. <i>Table 2: Noise criteria dB(A)</i> <table><tr><th>Location</th><th>Day Shoulder 6-7 am LAeq(15 min)</th><th>Day 7 am – 6 pm LAeq(15 min)</th><th>Evening 6 – 10 pm LAeq(15 min)</th><th>Night 10 pm – 6 am LAeq(15 min)</th><th>LA1(1 min)</th></tr><tr><td>A</td><td>38</td><td>38</td><td>37</td><td>35</td><td>45</td></tr><tr><td>B</td><td>42</td><td>46</td><td>36</td><td>35</td><td>45</td></tr><tr><td>C</td><td>42</td><td>42</td><td>35</td><td>35</td><td>45</td></tr><tr><td>D, E, G, H, I</td><td>35</td><td>35</td><td>35</td><td>35</td><td>45</td></tr><tr><td>F</td><td>37</td><td>38</td><td>38</td><td>35</td><td>45</td></tr></table> <i>Notes:</i>	Location	Day Shoulder 6-7 am LAeq(15 min)	Day 7 am – 6 pm LAeq(15 min)	Evening 6 – 10 pm LAeq(15 min)	Night 10 pm – 6 am LAeq(15 min)	LA1(1 min)	A	38	38	37	35	45	B	42	46	36	35	45	C	42	42	35	35	45	D, E, G, H, I	35	35	35	35	45	F	37	38	38	35	45	Noise exceedances at two locations (D, E) on 16 August 2021. Recommendation: Where significant changes to quarry operations are planned, the potential noise impact of the planned changes should be reviewed to ensure that the changes do not result in noise level exceedances.	In response to the noise exceedances, additional noise monitoring was undertaken in November 2021 at the two locations that experienced exceedances (D, E). No further exceedances were identified during this monitoring campaign. In order to prevent any future noise criteria exceedances, Metromix has reviewed noise management at the site and updated the Noise Management Plan to include the following additional management and mitigation measures: <ul style="list-style-type: none">• Bulldozer operations above RL60 AHD will be conducted between 7:00am and 6:00pm only.• Protocols will be established to ensure that Quarry activities above RL60 will be limited to no more than four earthmoving plant at any one time.• Any mobile crushing and screening activities in Stage 1 and 2 of the southern extraction area will occur below RL 60 AHD. The updated Noise Management Plan was supplied to DPE on 10 December 2021 and approved on 14 January 2022.
Location	Day Shoulder 6-7 am LAeq(15 min)	Day 7 am – 6 pm LAeq(15 min)	Evening 6 – 10 pm LAeq(15 min)	Night 10 pm – 6 am LAeq(15 min)	LA1(1 min)																																			
A	38	38	37	35	45																																			
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C	42	42	35	35	45																																			
D, E, G, H, I	35	35	35	35	45																																			
F	37	38	38	35	45																																			
NC-03	Schedule 3 Condition 9 EPL L6.3	Blasting Criteria The Proponent must ensure that the blasting on the site does not cause exceedances of the criteria in Table 4. <i>Table 4: Blasting criteria</i> <table><tr><th>Location</th><th>Airblast overpressure (dB(Lin Peak))</th><th>Ground vibration (mm/s)</th><th>Allowable exceedance</th></tr><tr><td>Any residence on privately owned land,</td><td>120</td><td>10</td><td>0%</td></tr><tr><td>or any public infrastructure</td><td>115</td><td>5</td><td>5% of the total number of blasts over a period of 12 months</td></tr></table> However, these criteria do not apply if the Proponent has a written agreement with the relevant owner or infrastructure provider/owner, and the Proponent has advised the Department in writing of the terms of this agreement.	Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance	Any residence on privately owned land,	120	10	0%	or any public infrastructure	115	5	5% of the total number of blasts over a period of 12 months	The airblast overpressure criteria was exceeded on three occasions in the period January and March 2020. Recommendation: Subsequent to the blast exceedances, Metromix have implemented processes to manage blasts and ensure compliance with blast criteria. No further exceedances have occurred. No further action required.	Metromix considers this issue is resolved and notes continued compliance with the blasting criteria.																								
Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance																																					
Any residence on privately owned land,	120	10	0%																																					
or any public infrastructure	115	5	5% of the total number of blasts over a period of 12 months																																					
NC-04	Schedule 3 Condition 19	Operating Conditions The Proponent must: (a) implement best management practice to minimise the dust emissions of the project; (b) regularly assess air quality monitoring data and relocate, modify, and/or stop operations on site as may be required to ensure compliance with the relevant conditions of this approval, (c) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see Note d to Tables 5-7 above); (d) minimise any visible off-site air pollution; (e) minimise surface disturbance of the site and undertake progressive rehabilitation of the site; and monitor and report on compliance with the relevant air quality conditions in this approval, to the satisfaction of the Secretary.	PM10 monitoring not conducted on 3/01/2020 and 9/01/2020 due to equipment failure. Recommendation: Metromix should ensure that monitoring is undertaken in accordance with the approved AQMP.	Metromix considers this issue is resolved. While every effort is made to ensure the continuous monitoring of air quality, it is noted that there are unfortunately unforeseeable instances where this will not be possible.																																				

Table 21 (Cont'd)
Response to the Non-Compliance Issues

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Issue No.	Condition	Requirement	Issue sighted	Metromix Response
NC-05	Schedule 3 Condition 23	Surface Water Discharges The Proponent must ensure that all surface water discharges from the site comply with the discharge limits in any EPL which regulates water discharges from the site, or with section 120 of the POEO Act.	3 exceedances of the TSS criterion were recorded at EPL Point 5 during discharge on 27, 28 and 29/07/2020. The exceedances were identified as resulting from significant rainfall. Recommendation: Metromix should review current erosion and sediment control practices to identify opportunities to reduce the sediment burden of water entering the surface water discharge system.	A compliance inspection and weather forecast check is undertaken daily to ensure controls are effectively implemented. Metromix considers that the significant rainfall events and subsequent exceedances of the TSS criterion at EPL Point 5 were not under the control of Metromix. The Metromix monitoring system recorded these events, demonstrating the effectiveness of current management. Metromix intend to continue implementing water management in accordance with the approved Water Management Plan.
NC-06	Schedule 4 Condition 1	As soon as practicable and no longer than 7 days after obtaining monitoring results showing an: (a) exceedance of any relevant criteria in Schedule 3, the Proponent must notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the project is again complying with the relevant criteria; and an exceedance of the relevant air quality criteria in Schedule 3, the proponent must send a copy of the NSW Health fact sheet entitled “ <i>Mine Dust and You</i> ” (as may be updated from time to time) to the affected landowners and/or existing tenants of the land.	While the EPA and DPE were notified of the exceedance of noise criteria in August 2021, residents had not been notified. Recommendation: Where an exceedance of any relevant criteria in Schedule 3 is identified, Metromix should notify affected landowners in writing of the exceedance and provide regular monitoring results.	This non-compliance is noted and Metromix will notify affected landowners in writing of any exceedance and provide monitoring data to follow up as requested by the landowner
NC-07	Schedule 5 Condition 2	Adaptive Management The Proponent must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this approval and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Proponent must as soon as becoming aware of any exceedance: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur; (b) consider all reasonable and feasible options for remediation (where relevant); (c) within 14 days of the exceedance occurring, submit a report to the Secretary describing these remediation options and any preferred remediation measures or other course of action; and (d) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.	Exceedances of the criteria and/ or performance measures were identified in relation to noise, water quality and blasting. Recommendation: Metromix should ensure that adequate controls are identified and implemented to ensure no exceedances of project criteria or performance measures occur	See above responses to NC-02 – NC-05.

Table 21 (Cont'd)
Response to the Non-Compliance Issues

Page 3 of 3

Issue No.	Condition	Requirement	Issue sighted	Metromix Response																								
NC-08	Schedule 5 Condition 8	<p>Revision of Strategies, Plans & Programs</p> <p>Within 3 months of the submission of an:</p> <p>(a) annual review under condition 4 above;</p> <p>(b) incident report under condition 7 below;</p> <p>(c) audit report under condition 9 below; and</p> <p>(d) any modifications to this approval,</p> <p>the Proponent must review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.</p> <p>The Proponent must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.</p> <p><i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.</i></p>	<p>While a letter verifying that management plans had been reviewed following submission of the 2021-2022 Annual Review, evidence that the letter had been submitted to DPE was not available.</p> <p>Recommendation:</p> <p>Metromix should ensure that, when management plans are reviewed, the Department is notified in writing of the outcome of the reviews.</p>	Noted.																								
NC-09	EPL M2.3	<table><tr><td colspan="4">Water and/ or Land Monitoring Requirements Point 4</td></tr><tr><td>Pollutant</td><td>Unit of Measure</td><td>Frequency</td><td>Sampling Method</td></tr><tr><td>Electrical conductivity</td><td>microsiemens per centimetre</td><td>Monthly</td><td>Grab sample</td></tr><tr><td>Oil and Grease</td><td>milligrams per litre</td><td>Monthly</td><td>Grab sample</td></tr><tr><td>pH</td><td>pH</td><td>Monthly</td><td>Grab sample</td></tr><tr><td>Total suspended Solids</td><td>milligrams per litre</td><td>Monthly</td><td>Grab sample</td></tr></table>	Water and/ or Land Monitoring Requirements Point 4				Pollutant	Unit of Measure	Frequency	Sampling Method	Electrical conductivity	microsiemens per centimetre	Monthly	Grab sample	Oil and Grease	milligrams per litre	Monthly	Grab sample	pH	pH	Monthly	Grab sample	Total suspended Solids	milligrams per litre	Monthly	Grab sample	<p>No sample was collected from EPA Point 4 in November 2020 following a change of personnel.</p> <p>Recommendation:</p> <p>Metromix should ensure that, where a change in personnel occurs, a thorough handover is conducted to ensure the new worker understands all requirements of the role.</p>	Metromix will undertake thorough staff training to ensure employees are aware of monitoring and compliance requirements. New staff are to review and sign management plans as part of onboarding to ensure role clarity.
Water and/ or Land Monitoring Requirements Point 4																												
Pollutant	Unit of Measure	Frequency	Sampling Method																									
Electrical conductivity	microsiemens per centimetre	Monthly	Grab sample																									
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pH	pH	Monthly	Grab sample																									
Total suspended Solids	milligrams per litre	Monthly	Grab sample																									
NC-10	G2.2	The licensee is to inform the EPA in writing of the appointment of any subsequent contact persons, or changes to the person’s contact details as soon as practicable and in any event within fourteen days of the appointment or change.	<p>New Quarry Manager commenced work in April 2022. The EPA had not been notified within 14 days.</p> <p>Recommendation:</p> <p>Metromix should ensure that, the EPA is informed in writing of the appointment of any new contact persons, or changes to the person’s contact details as soon as practicable and in any event within fourteen days of the appointment or change.</p>	Metromix liaise with officers from the EPA on a regular basis. It is therefore considered that the EPA is aware of the change to the responsible person for the Quarry that occurred on 18 January 2022. It is acknowledged that this change was not formally notified to the EPA in writing until 26 April 2022.																								

12. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

An Independent Environment Audit for the period 1 January 2020 to 31 December 2022 was undertaken on 6 and 7 February 2023 by Mr James Hart of James Hart Consulting. The audit report and response to audit recommendations was submitted to DPE on 23 March 2023. A total of three non-compliance issues were identified in the audit relating to the reporting period.

- Condition 5(5) of PA 10_0183 requires Metromix to review and, if necessary, revise all management plans within three months of the submission of an annual review, incident report, audit report, or any modifications to the project approval. It also requires Metromix to notify the DPE in writing of the review of management plans. While the management plans were reviewed within three months of the submission of the 2021-2022 annual review, resulting in the revision of the Bushfire Management Plan, notification was not provided to the DPE.
- Condition G2.2 of EPL 536 requires Metromix to inform the EPA in writing of the appointment of any subsequent contact persons, or changes to the person's contact details as soon as practicable and within fourteen days of the appointment or change. While Mr Darryn Bosch was appointed as the Quarry Manager during the 2021 reporting period, notification was not provided to the EPA of this appointment until April 2022.
- Condition 2(2) of PA 10_0183 describes the requirement to operate the Quarry in accordance with the conditions of consent presented in PA10_0183, the statement of commitments and any written direction of the Secretary of DPE. The non-compliances described in this section indicate that not all conditions of PA10_0183 and EPL 536 were complied with during the reporting period and therefore Metromix is also not compliant with Condition 2(2) of PA10_0183.

Metromix has noted the above non-compliances and recommendations identified in the Independent Environmental Audit (see **Table 21**) and will ensure that the DPE is informed in writing following the review of management plans, and that the EPA is informed in writing of the appointment of any new contact persons within 14 days of their appointment. It is considered that all non-compliances identified for the reporting period are of an administrative nature and do not result in any risk of environmental harm.

13. ACTIVITIES TO BE COMPLETED DURING THE NEXT REPORTING PERIOD

13.1 INTRODUCTION

The following section provides a brief summary of the operational activities planned throughout the 2023 reporting period. **Figure 14** presents the location(s) of the activities described.

13.2 EXTRACTION OPERATIONS

Extraction would continue in the Southern Extension Area within Stage 1C and 2B (see **Figure 14**).

13.3 ABORIGINAL HERITAGE

Operations would continue in accordance with the *Heritage Management Plan* in 2023 including staff training as awareness and the implementation of unexpected find protocols (should they be required). It is anticipated that the artefacts identified during the 2019 monitoring campaign will be buried in a suitable location identified in consultation with Aboriginal Stakeholders in 2023.

13.4 PROCESSING

Processing activities will continue as per the current reporting period in 2023 with approximately 70% being washed. It is forecast that approximately 802.000t of product will be despatched from the Quarry.

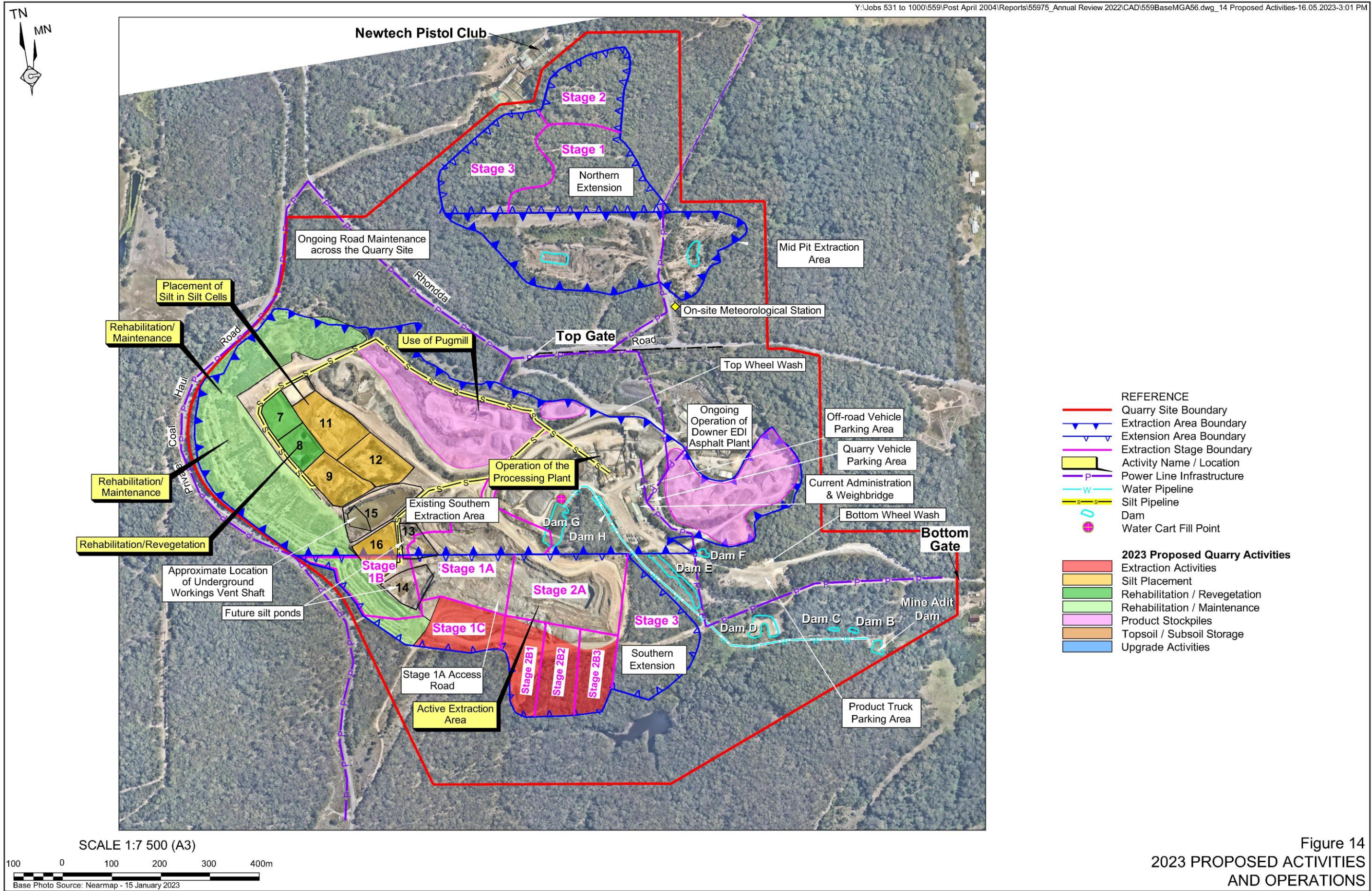
13.5 RECYCLING OPERATIONS

Material previously stockpiled as part of Civilake's operations has since been depleted. Metromix will continue to blend conglomerate and concrete washout waste to produce a saleable recyclable road base for the civil market.

13.6 OVERBURDEN AND SILT MANAGEMENT

Overburden will begin to be placed within Silt Cells 8 and 9 in preparation for rehabilitation of these areas.

Silt will continue to be placed in Silt Cells 8, 11, and 16.



13.7 CONSTRUCTION ACTIVITIES

During the next reporting period the Laboratory will be refurbished. One additional Silt Cell will be constructed.

A Silt Processing Plant will also be added to the processing operations with the intention to improve processing efficiency and separation of useable fines to maximise the amount of material recovered during processing.

13.8 WASTE MANAGEMENT

General waste, co-mingled Council recycling, paper and cardboard, scrap steel, waste oil, oil filters, etc. will continue to be collected by licenced contractors and volumes and dates recorded.

13.9 SITE INFRASTRUCTURE AND SERVICES

Boundary fencing and gates at easement areas along Rhondda Road will continue to be replaced and upgraded as needed.

13.10 FAUNA HABITAT

During the next reporting period, Metromix does not anticipate the installation of any additional nesting boxes will be undertaken or required. However, monitoring and maintenance of existing nesting boxes will continue in the third quarter of the year as required by PA10_0183.

13.11 WATER MANAGEMENT

Water management during the next reporting period will continue to utilise the existing surface water management system of the Quarry comprising Dams A to G. Flow meters will also continue to be used to record water that is pumped from the Mine Adit Dam to Dam G.

13.12 BUSH FIRE MANAGEMENT

Bush fire management will continue in accordance with the *Bush Fire Management Plan* during 2022. All established APZs within the Quarry Site will continue to be maintained.

13.13 HAZARDOUS MATERIAL MANAGEMENT

The existing diesel tank bunding and management of aerosols and paints within the workshop area will continue as is current practice. Each of these activities will be monitored as part of Metromix's internal auditing.

13.14 PRODUCT TRANSPORTATION

Product despatch will continue in the same manner as it has during the past reporting period. Truck movements will be recorded in and out of the Quarry i.e. with respect to routes, weights and times in accordance with the *Transport Management Plan*. All efforts would be placed on avoiding any exceedance of the limitations nominated in Conditions 2(8) and 2(9).

13.15 VENM/ENM IMPORTATION MANAGEMENT

It is not envisaged any VENM/ENM will be imported into the Teralba Quarry during 2023. However, should it be required for rehabilitation activities, the importation, placement and/or reprocessing of VENM/ENM would not exceed the approved limit of 100,000t of VENM/ENM per year.

13.16 MONITORING

Metromix will continue to undertake and/or commission the following monitoring activities throughout 2023.

- Water Quality Monitoring – Monthly and/or event-related: EPA-4, EPA-5, EPA-6 and EPA-7.
- Flow Measurements: Mine Adit Dam to Dam G.
- Operational Noise: Residences A, B, D, E and H.
- Equipment Noise if there are changes in the equipment fleet.
- Airblast Overpressure and Ground Vibration: all blasts monitored at Locations 1 and 2.
- Meteorology: all parameters – continuously.
- Deposited Dust Monitoring: five locations.
- PM₁₀: every 6 days at Rodgers Street HVAS.
- Nesting Box Usage: 3rd quarter.

13.17 NON-METROMIX OPERATIONS

Road surfacing company Downer EDI is expected to continue producing and supplying asphalt to the local markets.

Origin Energy may continue to truck flyash along the coal haul road in 2023.

The Newtech Pistol Club is expected to continue activities in a similar manner to previous years.

14. REFERENCES

Australian and New Zealand Environment. Conservation Council (ANZECC) (2000)
Australian and New Zealand Guidelines Fresh and Marine Water Quality.

Department of Environment, Climate Change and Water (DECCW) (2007) *Methods for the Sampling and Analysis of Air Pollutants in NSW*

NSW Environment Protection Authority (EPA) (2000) *NSW Industrial Noise Policy*

R.W. Corkery & Co. Pty Limited (RWC) (2011) *Environmental Assessment for the Teralba Quarry Extensions – November 2011.* R.W. Corkery and Co. Pty Limited

Spectrum Acoustics Pty Limited (2022) *September 2022 Noise Monitoring Results - Teralba Quarry.*

Appendices

- Appendix 1 Monitoring Data and Records
- Appendix 2 2022 Nest Box Monitoring Report
- Appendix 3 2022 Community Consultative Committee Meeting Minutes
- Appendix 4 2022 Community Complaints Register
- Appendix 5 Non-Compliances
- Appendix 6 Bush Regeneration Annual Report 2022