



Teralba Quarry

2021 Annual Review

Project Approval PA10_0183



Prepared by:



R.W. CORKERY & CO. PTY. LIMITED

March 2022

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Teralba Quarry

2021 Annual Review

Project Approval PA10_0183

Period: 1 January 2021 to 31 December 2021

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 2021
Annual Review end date	31 December 2021
<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 2021 to 31 December 2021 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	

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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



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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 EPL 536	3(5) L5.2	Noise	High Risk non-compliance	Noise limits were exceeded on four occasions at one residence and once at another residence. The noise monitoring recorded an exceedance of up to 5dB(A) of the noise assessment criteria of 35dB(A). This is a significant exceedance and is considered a high risk non-compliance. Operational controls have been implemented in consultation with the EPA and DPE to ensure exceedances are not repeated.	12 5.2

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 2021 to 31 December 2021 (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 2022 to 31 December 2022 (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.

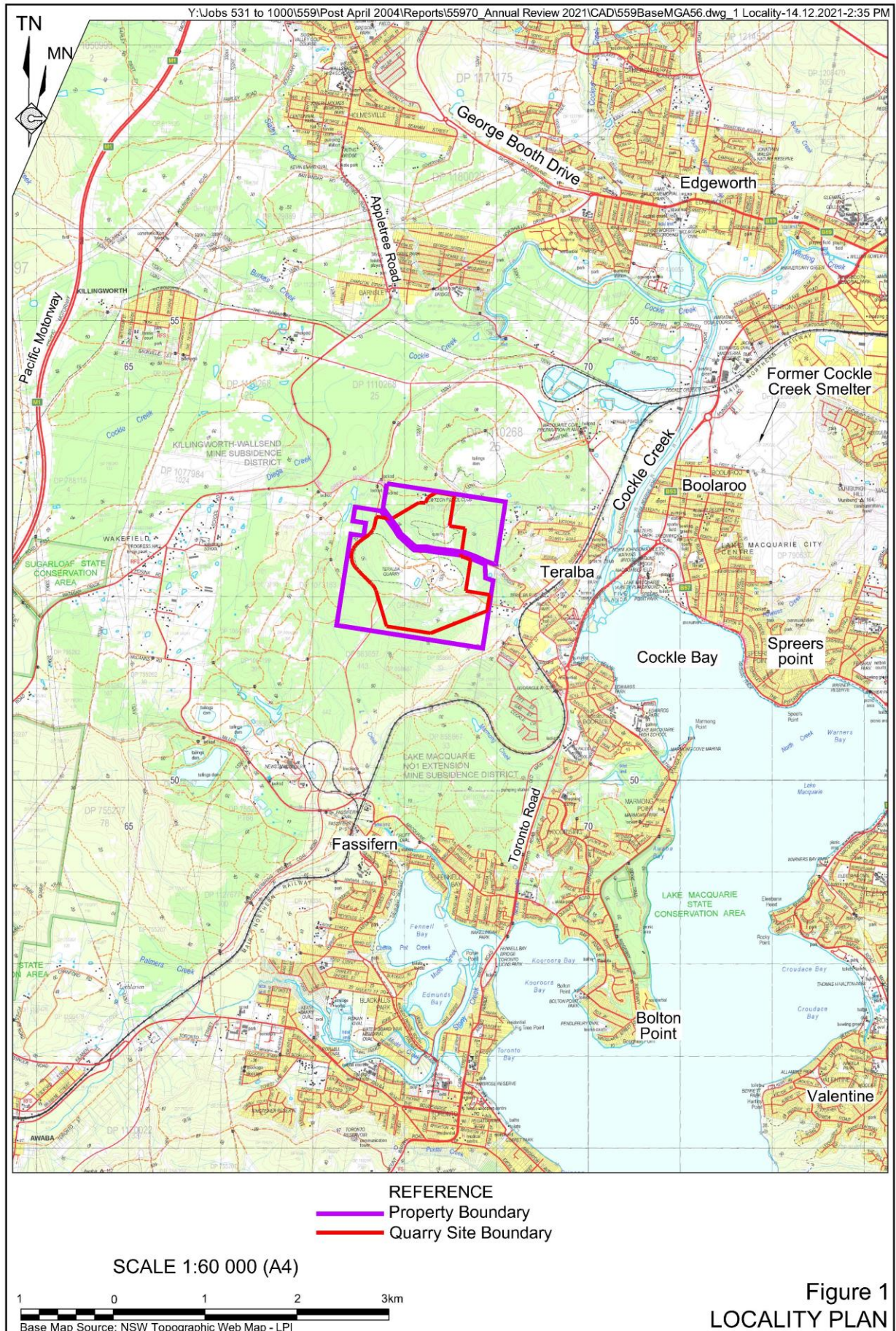
2.2 KEY PERSONNEL CONTACT DETAILS

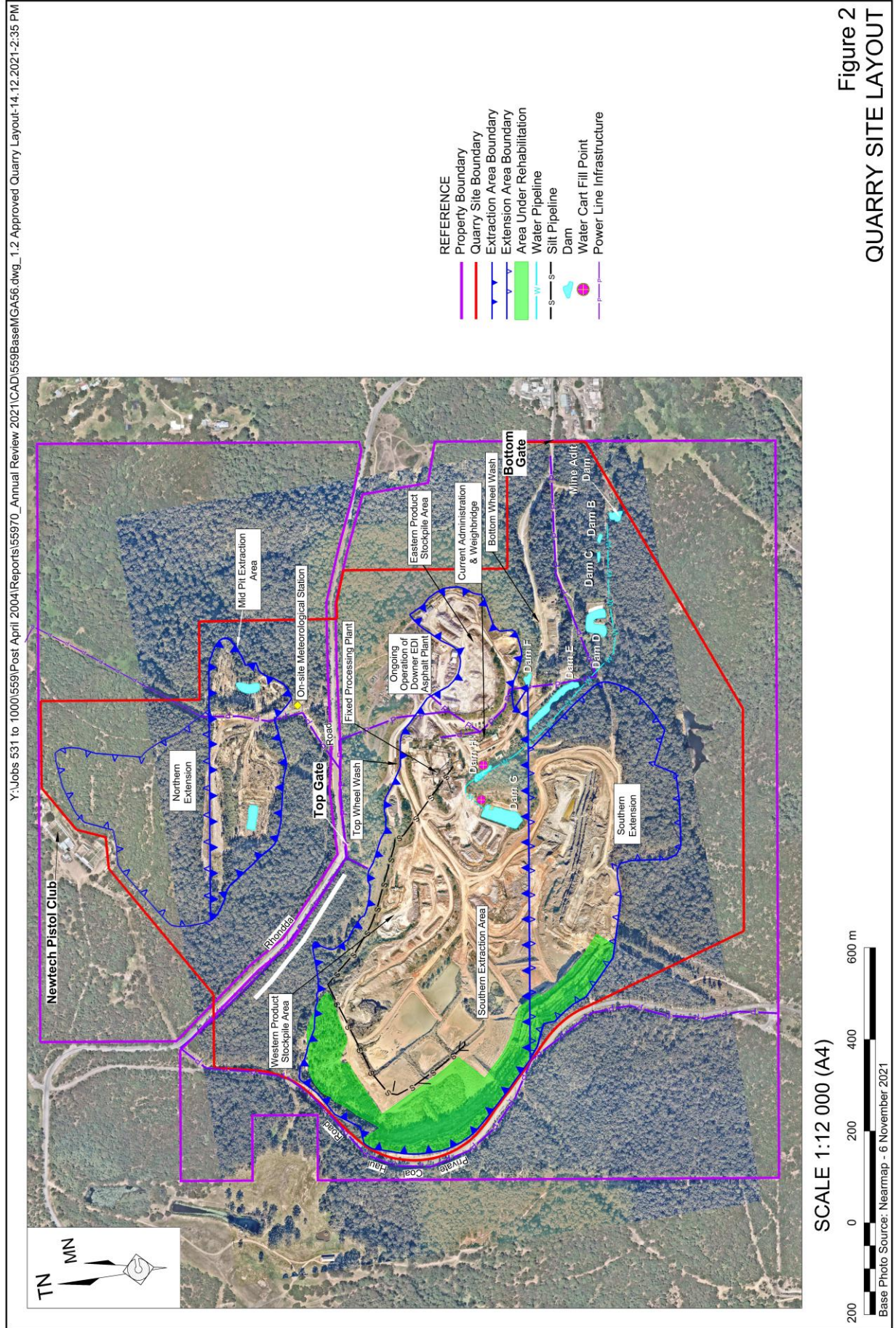
The key personnel contact names, position and phone numbers are as follows.

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 Manager of Quarries, Mr Mo Yunusa.

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 internal compliance review of the conditions of PA10_0183 is presented as **Appendix 1** with the outcomes discussed in Section 1 and Section 12. During the reporting period, one 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 5, 6, 7, 8 and 9), 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 5 and 6).
- 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 5, 6 and 7).
- A description of the measures that will be implemented throughout 2022 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 2** 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 5.2.
- Condition 3(9): blasting overpressure and ground vibration emissions.
Each of the relevant blasting criteria are presented in Section 5.3 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 5.4 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 6.2 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 2**).*
- *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. A summary of meteorological monitoring is provided in Section 5.1.

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

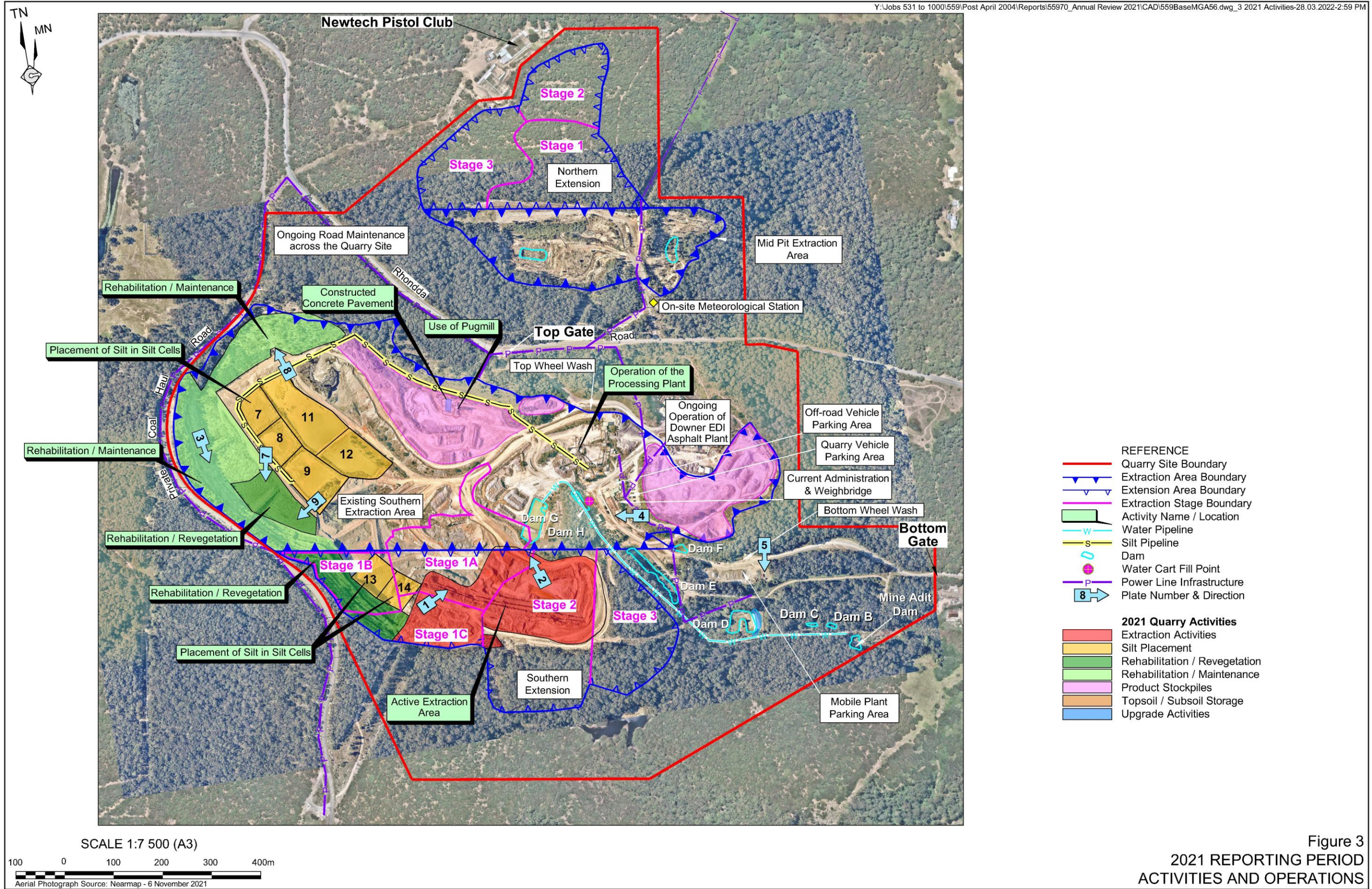
Extraction operations continued within Stages 1A, Stage 1B and Stage 2 of the Southern Extension area during the reporting period. A total of 26 blasts were initiated in 2021. **Plate 1** displays a view to the north of the active extraction area (Stage 2) being prepared for blasting. **Plate 2** displays completed benches in the Stage 2 extraction area. Vegetation in Stage 2B1 was cleared during the reporting period and the land was prepared for extraction. Extraction in Stage 2B1 did not commence during the reporting period. 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 881 758t of material was extracted during the reporting period. Total product sales (products despatched from the Quarry) during the reporting period was 721 114.66t (within the approved limit of 1 million tonnes per annum). This is higher than the total sales in 2020 (455 258t). **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 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 2**. It is anticipated that total sales in the next reporting period would be consistent with the current reporting period.

Table 5
Teralba Quarry Sales – 2021

2021 (Month)	Washed Products (t)	Road Pavement (t)	Other (t)	Recycled Road Base (t)	Total (t)
January	26 918.58	8 618.74	-	978.9	36 516.22
February	32 913.44	15 551.58	890.14	415.92	49 771.08
March	36 049.12	12 167.54	1 612.76	1 196.46	51 025.88
April	42 496.16	21 655.48	2 711.58	733.62	67 596.84
May	44 430.82	18 425.08	2 780.36	2 677.02	68 313.28
June	48 290.06	19 775.02	2 475.58	5 049.26	75 589.92
July	38 963.02	19 171.56	1 564.74	4 890.68	64 590.00
August	46 092.54	13 780.52	545.82	2 169.92	62 588.80
September	52 770.62	9 429.22	2 468.72	2 077.76	66 746.32
October	46 038.95	11 516.27	819.72	2 928.60	61 303.54
November	44 524.86	10 438.36	1 042.28	1 964.72	57 970.22
December	39 565.56	12 823.22	1 592.40	5 121.38	59 102.56
Total	499 053.73	173 352.59	18 504.10	30 204.24	721 114.66

Source: Metromix





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Plate 1: A view to the north of the active extraction area (Stage 2) being prepared for a blast

Plate 2: A view to the northwest towards the Pugmill and Pugmill Stockpile Area



Plate 3: A view along the upper extraction bench in Stage 1B



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 2020 was that the processing plant operated in the “wet” mode for approximately 69.2% of sales, compared to approximately 73.4% in 2020. The remaining 30.8% of the total products comprised of road pavement products (28.2%) and fill materials (2.6%) respectively.

4.4 RECYCLING OPERATIONS

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

A total of 7 126.18t of concrete washout was imported to the pugmill area (the application area for EPL 13015) during the reporting period and 6 527.84t of concrete washout was processed into recycled concrete roadbase product. These levels remain consistent with approved operations.

4.5 OVERBURDEN AND SILT MANAGEMENT

In 2021, approximately 160 643t of overburden was removed within the existing Southern Extension area, 50 094t of which was used for capping Silt Cells. The remaining 110 549t was used for reinforcement of existing dam walls and for landform construction within rehabilitation areas.

All silt produced from the processing plant was pumped to Silt Cells 7, 8 which overflow to 9 and Silt Cell 11 which overflows to 12.

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 (5 x 20m³ bins)
- waste oil (6 100L)
- co-mingled recyclables (50 x 240L bins)
- oily rags (1 x 240L bin)
- paper and cardboard (7 x 3m³ bins)
- shredded paper bin (3 x 240L bins)
- oil filters (10 x 240L bins)
- batteries (15)



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.

A small demountable crib room and a shipping container were installed adjacent to the Mobile Plant Parking Area during the reporting period. Both items of additional infrastructure were connected to electricity and plumbing.

4.8 CHANGES TO EQUIPMENT FLEET

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

- A T40 Drill Rig was hired on a contract basis.
- A Komatsu WA500-8 Wheel Loader was added to the equipment fleet on a dry hire basis.

In addition, a mobile crushing plant was used on a contract basis to complete monthly campaigns beginning in August 2021 to produce between approximately 15kt to 25kt of roadbase material. Each campaign requires the use of an impactor, screen, stacker, excavator, front end loader and two articulated dump trucks.

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 there was no change to the Bushfire Management Plan.

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 4**).

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.



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Plate 4: A view of the vehicle refuelling area

Plate 5: A view of the new demountable and shipping container



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 2021 and December 2021 are collated in **Appendix 2. Table 6** provides a summary of transportation and limit compliance during the reporting period. The maximum daily average for each conditional requirement is well 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.

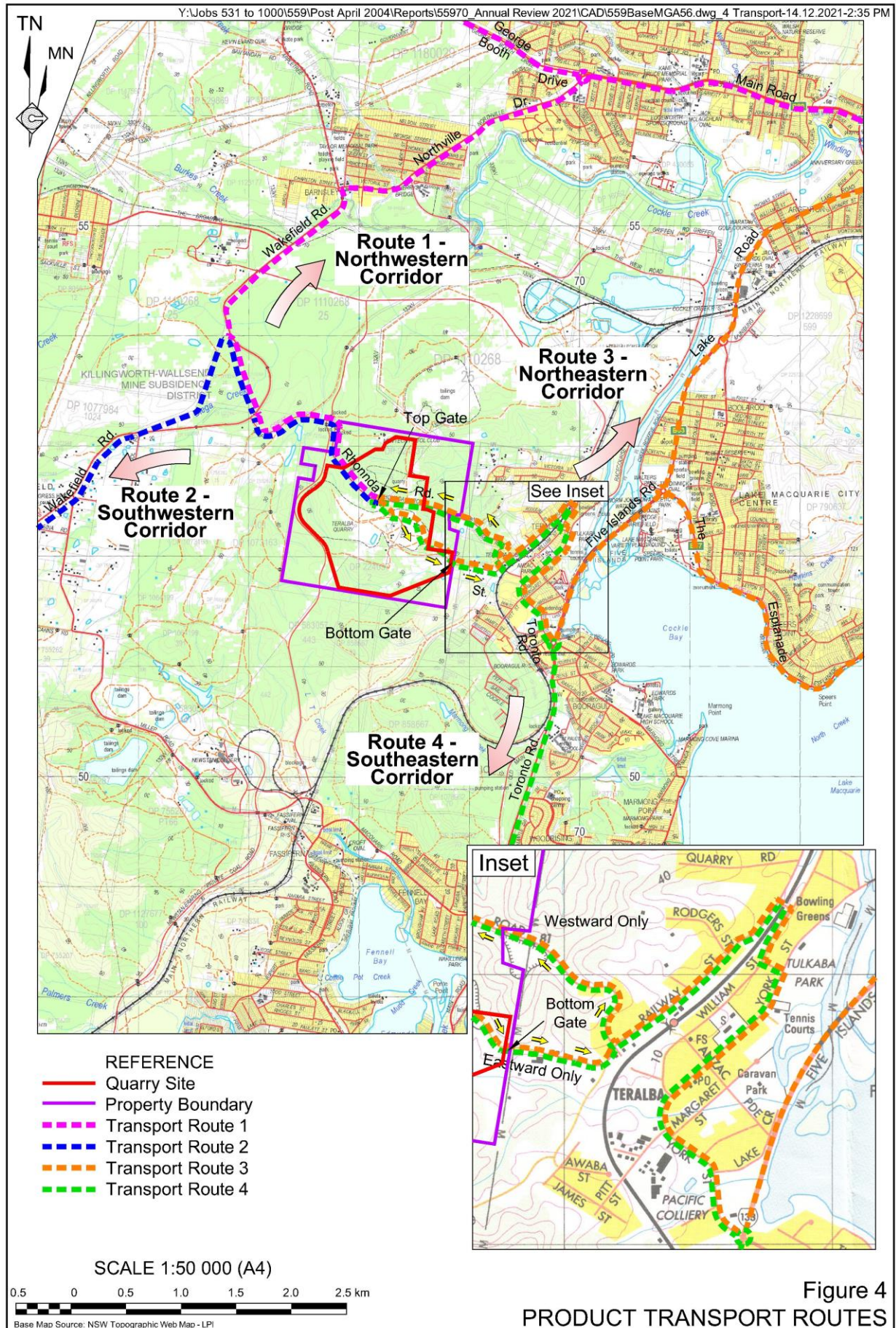


Table 6
Summary of Transportation Limit Compliance – 2021

Condition Description			Maximum Record for 2021											
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 on 16 November 2021. 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. Metromix plan to recommence operations in this location during the next reporting period (see Section 13).

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. No recycled road base products from Civilake's operation were sold in 2021. 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 the DPE regarding the 2020 Annual Review was provided on 9 July 2021. DPE deemed the report to be satisfactory. However, the correspondence requested that future Annual Reviews include a comparison of the number of community complaints received during the reporting period with the complaints received during the previous 5 years and a discussion of any apparent trends, along with identification of when the next Independent Environmental Audit is scheduled.

This information is presented in Sections 9.3 and 10 respectively.

5.1 ENVIRONMENTAL PERFORMANCE

5.1.1 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.

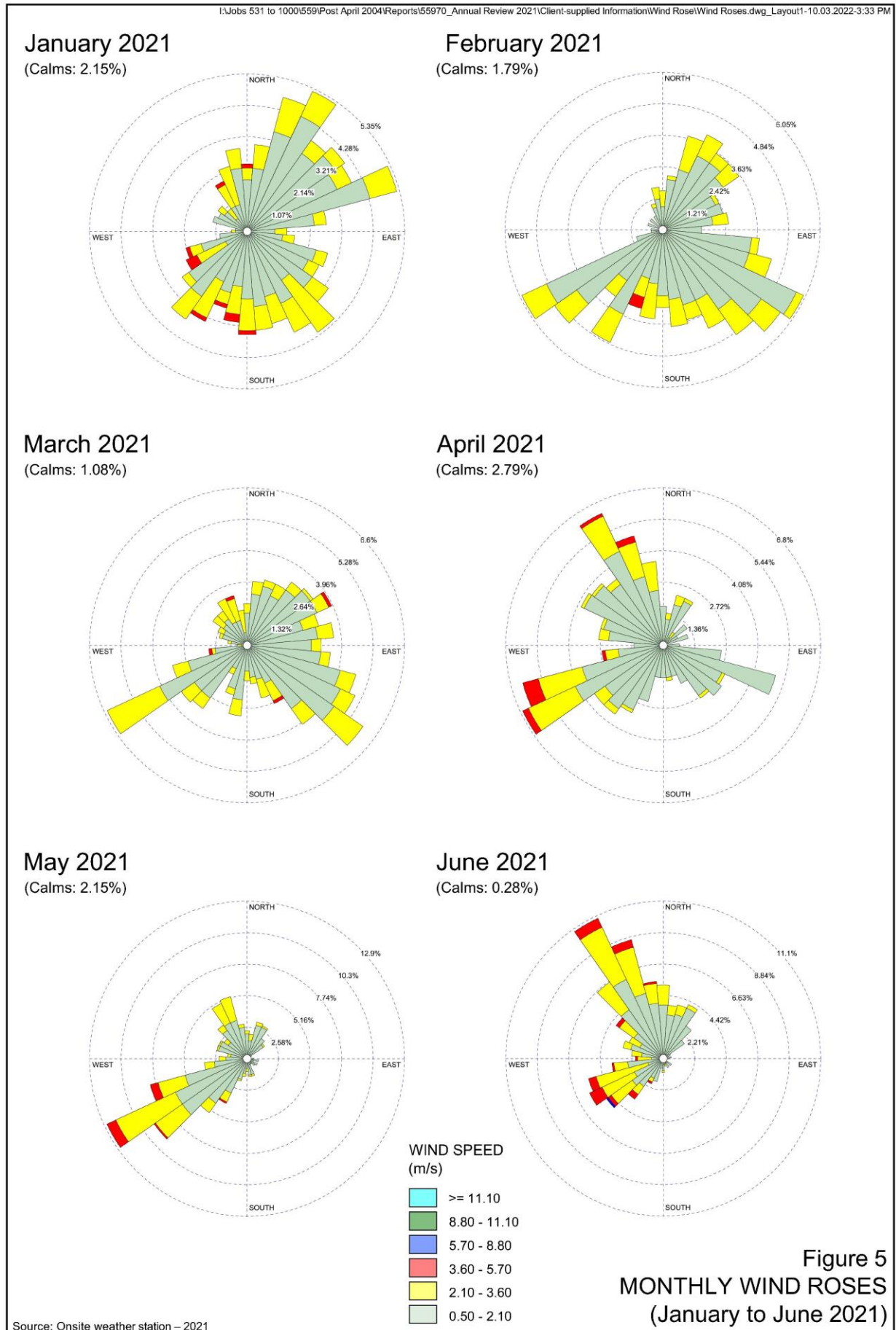
The requirement for the meteorological station to measure the continuous real-time measurement of temperature lapse rate is not warranted given the Quarry's close proximity to the coast and Lake Macquarie.

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 south. 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.



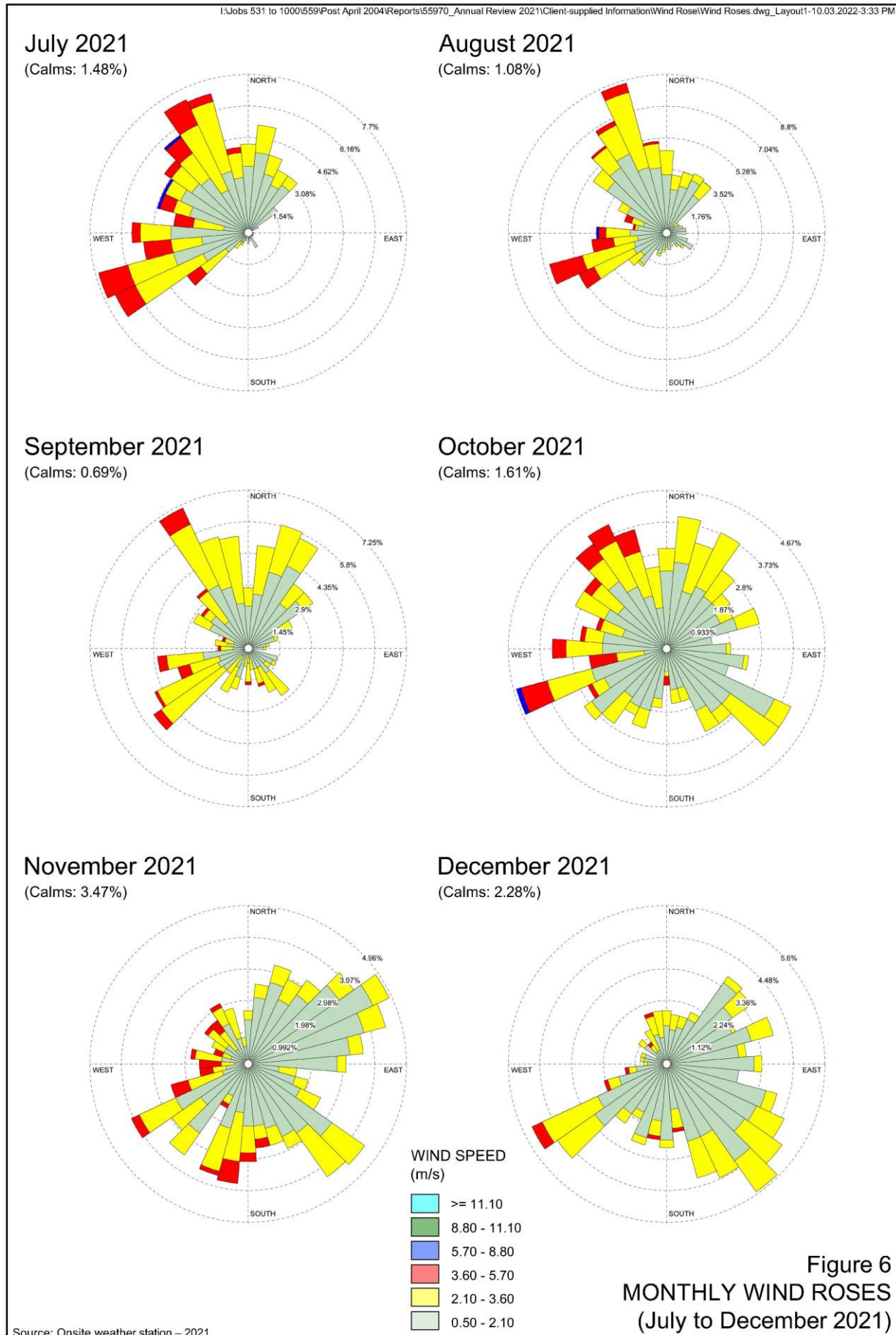


Table 7
Meteorological Data Summary – 2021

Monitored Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Rainfall (mm)	130.0	135.0	362.8	24.0	25.0	55.2	22.4	63.8	46.2	114.2	280.2	83.8	1342.6
Average Minimum Temperature (°C) at 2m	18.1	18.2	17.2	13.1	11.6	9.1	8.6	9.7	11.1	13.3	15.2	17.3	13.5
Average Maximum Temperature (°C) at 2m	28.6	26.4	25.5	23.3	20.7	17.4	17.5	20.4	23.3	25.3	23.68	26.9	23.3
Average Minimum Temperature (°C) at 10m	18.5	18.5	17.5	13.9	12.3	9.7	9.2	10.6	11.7	13.8	15.5	17.6	14.1
Average Maximum Temperature (°C) at 10m	27.3	25.4	24.7	22.5	20.0	16.9	17.0	19.8	22.4	24.3	22.8	25.7	22.4
Average Sigma Theta	30.9	32.2	31.9	27.3	27.0	28.3	29.8	28.4	29.1	31.9	32.8	33.1	30.2
Average Solar Radiation (W/m ²)	214.6	183.9	137.7	148.3	104.6	88.7	101.7	127.5	172.3	199.1	162.7	215.1	154.7
Average Relative Humidity (%)	71.7	77.0	75.0	66.0	68.0	69.0	62.0	57.0	58.0	61.0	74.0	73.0	67.6



5.2 NOISE

5.2.1 Introduction

The *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. Noise monitoring surveys were undertaken in August and November 2021 by Spectrum Acoustics Pty Limited (Spectrum) and have been included in **Appendix 2** (Spectrum, 2021a and 2021b).

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 previously EPL 536 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 replaced during the reporting period (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 remain consistent with the assessment for the Teralba Quarry Extension Project.

5.2.2 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					

5.2.3 Noise Monitoring Results and Discussion

Attended noise monitoring was conducted during daytime, evening, shoulder and night periods between 16 August 2021 and 18 August 2021 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).

It was noted that at the time of noise measurements being undertaken, limitations were placed on the movement of people due to the impacts of the COVID-19 pandemic. As a result, there was less observed road and rail traffic when compared to previous noise monitoring campaigns. Additionally, there was less contribution to the acoustic environment from other industries in the area.

Noise monitoring over the period from 16 to 18 August 2021 identified the following exceedances of the criteria stated in PA10_0183 and EPL 536.

- Location EPL D – Noise levels were measured during the daytime period at 38dB(A) on 16 August 2021 and 40dB(A) on 17 August 2021, and 38dB(A) during the morning shoulder period and 37dB(A) during the evening period on 17 August 2021 (criteria 35dB(A)).
- Location EPL E – noise levels were measured at 38dB(A) during the daytime period on August 16 2021 (criteria 35dB(A)).

During the times of the noise exceedances, the worst-case noise levels were measured under light winds (light to light breeze, Beaufort Scale 1 to 2) that were generally from the west to northwest. These conditions are noise enhancing for the receivers at Locations D and E in relation to noise from the Quarry. Further to this, during the monitoring period, neighbouring coal mining operations were using roads in the vicinity of the Quarry for transportation. These activities would have been difficult to distinguish from the Quarry transport operations.

In response to the non-compliant noise levels, Metromix committed to incorporate the following additional operational protocols into an update to the *Noise Management Plan* for the Quarry.

- Bulldozer operations above RL 60 AHD will be conducted between 7:00am and 6:00pm only. That is, morning shoulder and evening periods would be avoided (there is no night-time operations under approved operating hours).
- Protocols will be established to ensure that Quarry activities above RL 60 AHD will be limited to no more than four earthmoving plant at any one time (Front End Loaders, Excavators and/or Dump Trucks).
- Any mobile crushing and screening activities in Stages 1 and 2 of the southern extraction area will occur below RL 60 AHD. This will allow for the access haul road to act as a sound barrier between quarry activities and the residents to the east of the quarry. However, where feasible mobile crushing and screening activities would occur in the Quarry Floor or in a similar location that provides attenuation of noise generation such as beside stockpiles or other barriers.

Additional noise monitoring was undertaken at the above locations in November 2021. No further exceedances were identified during this monitoring campaign. The resulting report was provided to DPE, and correspondence from DPE dated 17 November 2021 noted that as there had been no sustained exceedances, the Department considered that there had been no breach of PA10_0183. The updated *Noise Management Plan* was supplied to DPE on 10 December 2021.

It is noted that the results from the second campaign of operational noise monitoring during 2021 are consistent with results recorded from 2015 to 2020, indicating that the Quarry remains generally inaudible in the local setting. The monitored noise 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 that included operations in the later stages of the Southern Extension and operations in the Northern Extension. Operations in the Northern Extension area is yet to commence.

5.3 BLASTING

5.3.1 Blasting Activities

A total of 26 blasts occurred during the reporting period, with 5 blasts occurring in Stage 1C, 1 in 2B, and the rest of the blasts taking place in Stage 2A. Blast monitoring was undertaken for each blast initiated at the Quarry throughout 2021.

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.

5.3.2 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

5.3.3 Blast Monitoring Results

Table 11 presents the results of blast monitoring undertaken throughout 2021 against the criteria for the Quarry. Airblast overpressure and ground vibration were not monitored at Location 3 throughout 2021 as no blasting was undertaken north of Rhondda Road during the reporting period.

Table 11
Blast Monitoring Results – 2021

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)
22 January	11:52:04	101.7	0.2	NT	NT	NM	NM
11 February	14:50:06	105.6	0.37	102.3	0.08	NM	NM
17 February	12:50:00	109.7	1.43	NT	NT	NM	NM
11 March	13:42:00	101.5	0.24	NT	NT	NM	NM
7 April	14:56:49	NT	NT	111.2	0.16	NM	NM
14 April	13:36:13	106.3	0.3	100.8	0.05	NM	NM
5 May	11:44:23	NT	NT	101	0.12	NM	NM
25 May	14:38:00	100.2	2.61	105.9	0.16	NM	NM
3 June	12:58:38	103.1	0.1	99.9	0.12	NM	NM
17 June	14:04:00	NT	NT	104	0.12	NM	NM
23 June	14:17:06	108.8	0.11	103.2	0.12	NM	NM
30 June	15:01:11	103.1	0.08	NT	NT	NM	NM
14 July	13:05:06	105	0.45	100.4	0.3	NM	NM
22 July	13:24:00	NT	NT	NT	NT	NM	NM
27 July	12:15:00	NT	NT	NT	NT	NM	NM
9 August	12:52:17	102.9	0.22	NT	NT	NM	NM
20 August	15:12:21	103.9	0.3	NT	NT	NM	NM
30 August	15:12:21	NT	NT	NT	NT	NM	NM
14 September	14:30:00	107.5	0.3	102.4	0.1	NM	NM
24 September	13:57:19	NT	NT	101.9	0.12	NM	NM
6 October	14:54:03	100.4	0.43	96.1	0.23	NM	NM
20 October	15:44:22	103.4	0.18	NT	NT	NM	NM
4 November	15:05:11	108.4	1.05	102.8	0.44	NM	NM
23 November	11:31:04	101.9	0.44	NT	NT	NM	NM
15 December	14:45:22	107.2	0.75	NT	NT	NM	NM
16 December	11:13:02	NT	NT	NT	NT	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 2021 was 111.2dB(L), while the maximum ground vibration was 2.61mm/s.

All blasting was undertaken between 11:13am and 3.44pm, i.e. within of the prescribed hours for blasting.

In terms of historic trend analysis, during 2015 and 2016, it was rare for the blasting activities to trigger the blast monitor, whereas the majority of blast events triggered the monitors in 2017. Only four blasts during 2018 triggered the blast monitor. This is considered most likely due to the blasting size and locations during 2017 compared to other years. In 2019, the majority of blasts did not trigger the blast monitors and Metromix complied with all blast monitoring criteria for all blasts. Between 2010 and 2019, and in 2021, there were 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.

5.4 AIR QUALITY

5.4.1 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 High Volume 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.

5.4.2 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	

5.4.3 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

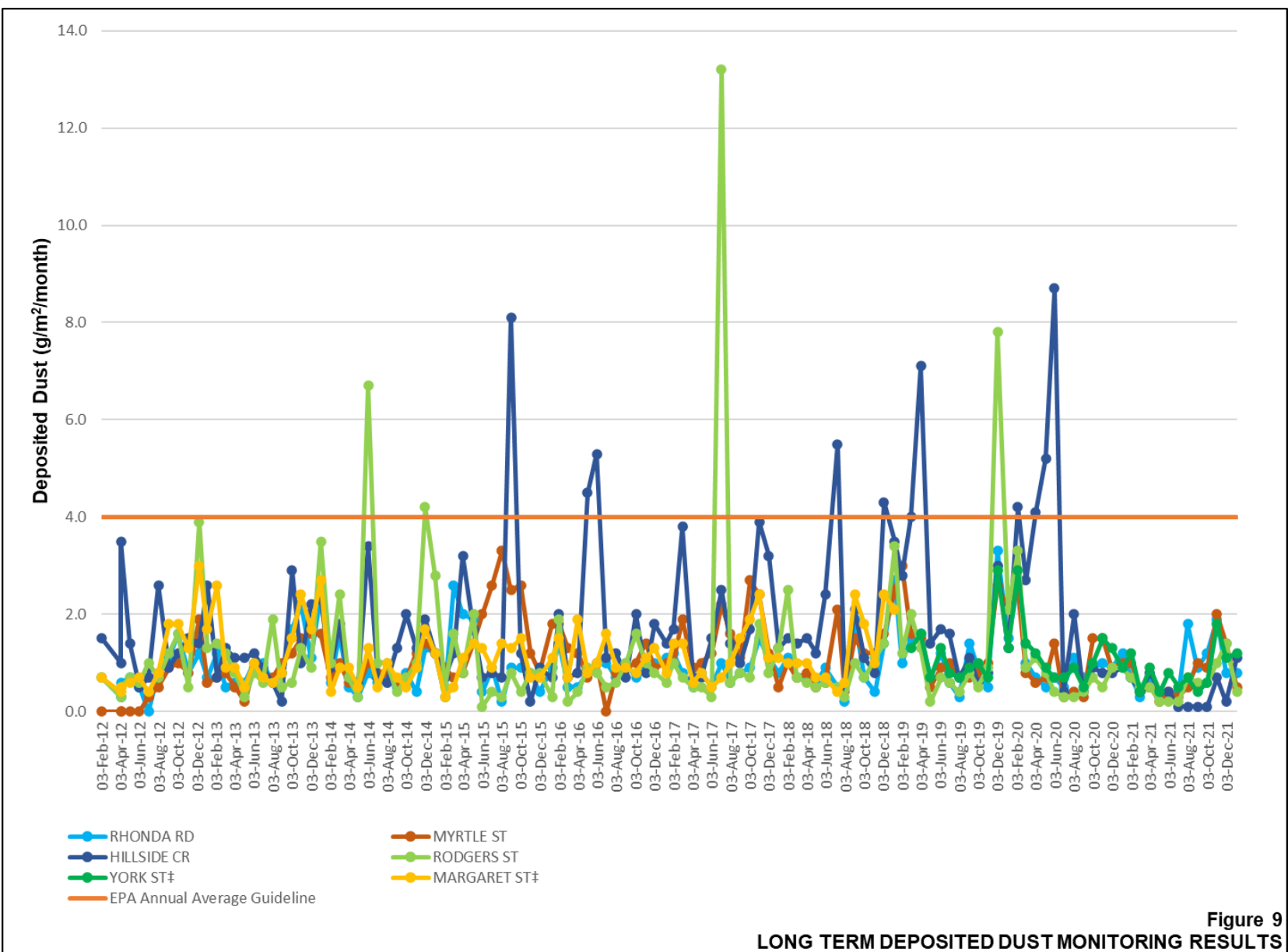
Pollutant	Criterion ^d	Averaging Period
Total suspended particulate matter (TSP)	90µg/m ³ ^a	Annual average
Particulate matter <10µm (PM ₁₀)	50µg/m ³	24-hour maximum
	30µg/m ³ ^a	Annual average
Deposited dust ^c	4 g/m ² /month ^a	Annual average
	2 g/m ² /month ^b	Maximum Incremental Increase
^a No longer required under Condition M2.2 EPL 536; ^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.		

5.4.4 Air Quality Monitoring Results

Table 14 presents the results of the deposited dust monitoring program for 2021 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 27.75µg/m³. This is well within the assessment criteria of 90.0µg/m³.



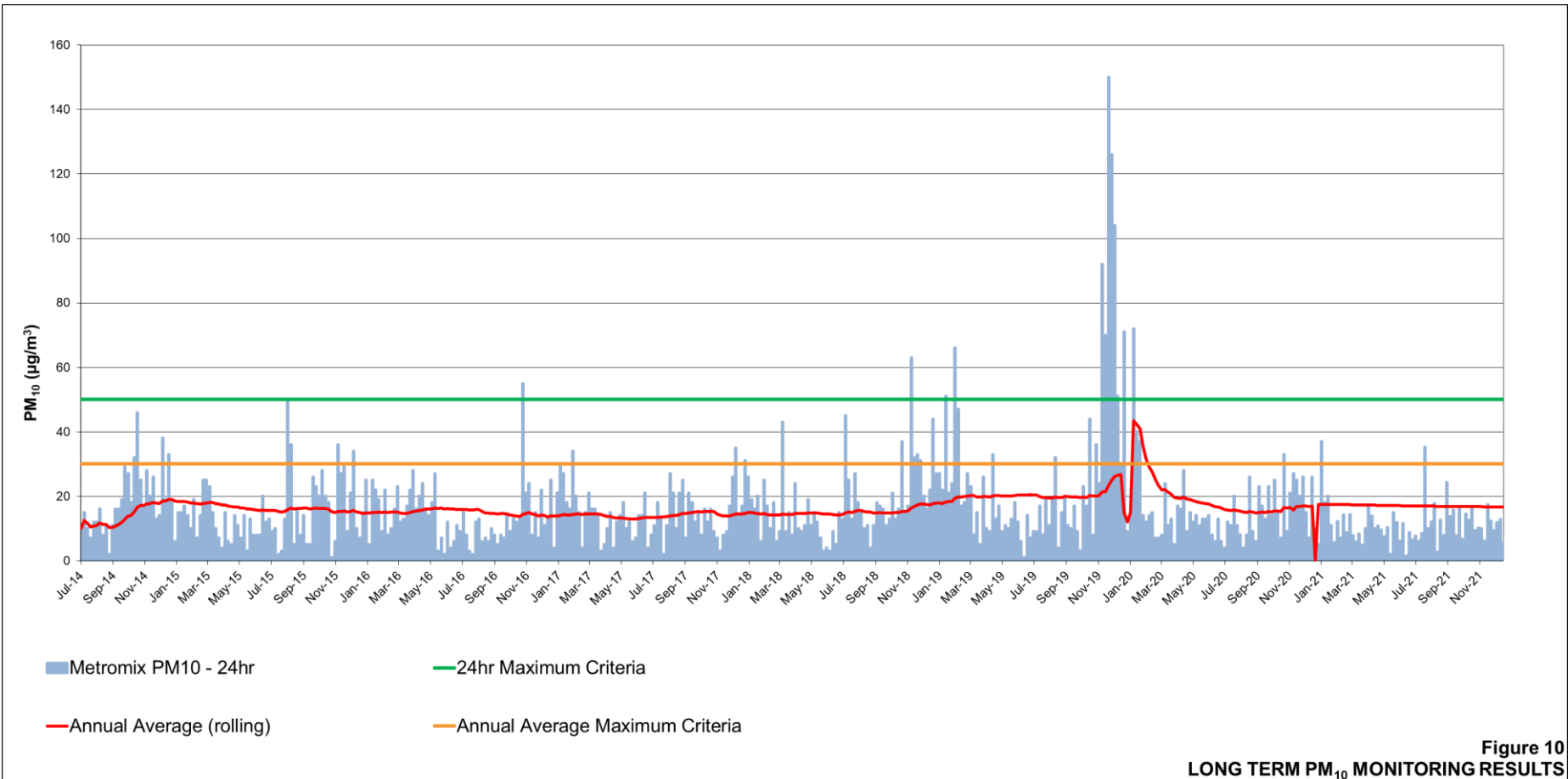


Table 14
Deposited Dust Monitoring Results – 2021

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 - 2021 Average*	1.0	1.2	1.6	1.2	1.1
Results 2021					
January	0.7	1.0	0.7	0.7	1.2
February	0.3	0.4	0.4	0.5	0.4
March	0.6	0.5	0.8	0.5	0.9
April	0.3	0.2	0.4	0.2	0.4
May	0.3	0.4	0.4	0.2	0.8
June	0.4	0.3	0.1	0.2	0.5
July	1.8	0.5	0.1	0.7	0.7
August	0.9	1.0	0.1	0.6	0.4
September	1.2	0.9	0.1	0.6	0.6
October	1.9	2.0	0.7	1.0	1.8
November	0.8	1.4	0.2	1.4	1.1
December	0.8	0.5	1.1	0.4	1.2
Average	0.8	0.8	0.4	0.6	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 – 2021

Month	Samples (Run Dates) (Number)	Monthly Average Result (µg/m ³)	Daily 24hr PM ₁₀ Exceedance	Annual Average (µg/m ³)
Criteria		50	50	25/30*
January	5	18.0	0	
February	5	10.0	0	
March	5	9.0	0	
April	5	11.1	0	
May	5	8.0	0	
June	5	9.2	0	
July	5	7.5	0	
August	6	15.1	0	
September	5	13.9	0	
October	5	13.3	0	
November	5	10.6	0	
December	5	10.3	0	
Annual Average	-	-	-	11.1
* 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 2017 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.				

5.4.5 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 2021 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).

5.5 FAUNA HABITAT

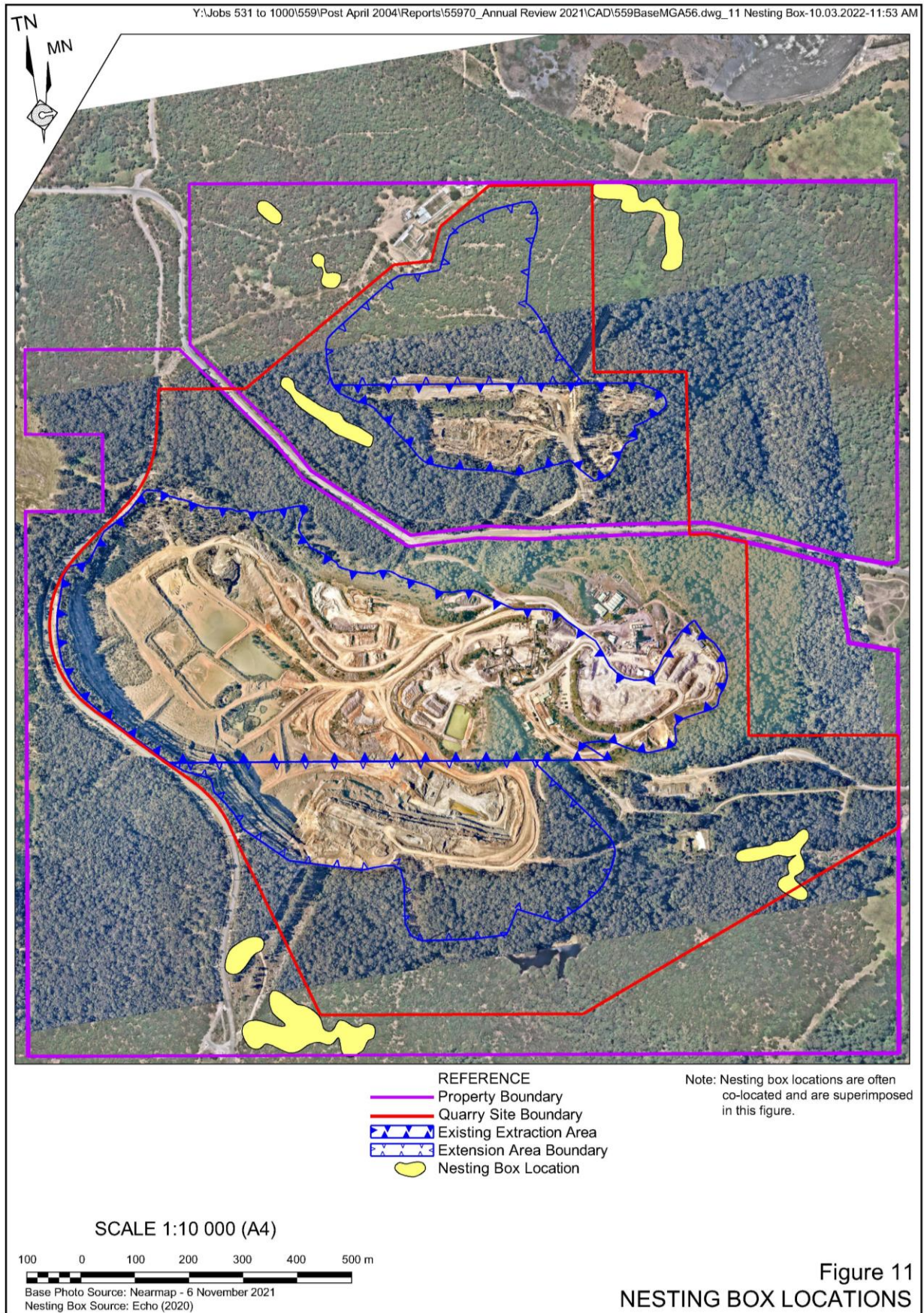
5.5.1 Introduction

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.



5.5.2 Nesting Box Usage

The nesting boxes were inspected on 29 October 2021 by Echo Ecology and Surveying. The 2021 Nest Box Monitoring Report is provided as **Appendix 3** 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.
- No nesting boxes were recorded as being occupied by Sugar Gliders.
- A further 32 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 nine 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 five 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. Echo Ecology and Surveying concluded that the reduced occupancy was likely due to the drought conditions experienced in NSW since 2019.

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.

5.6 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, Metromix has continued to prioritise revegetation activities on the two upper benches within Stage 1B with tubestock and placed logs (**Plate 3**) on the visible faces.

During the reporting period, rehabilitation activities on these benches was enhanced through watering and maintenance. Vegetation condition would continue to be monitored in this area.

6. WATER MANAGEMENT

6.1 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 2021.

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.

6.2 WATER QUALITY

6.2.1 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.

6.2.2 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.

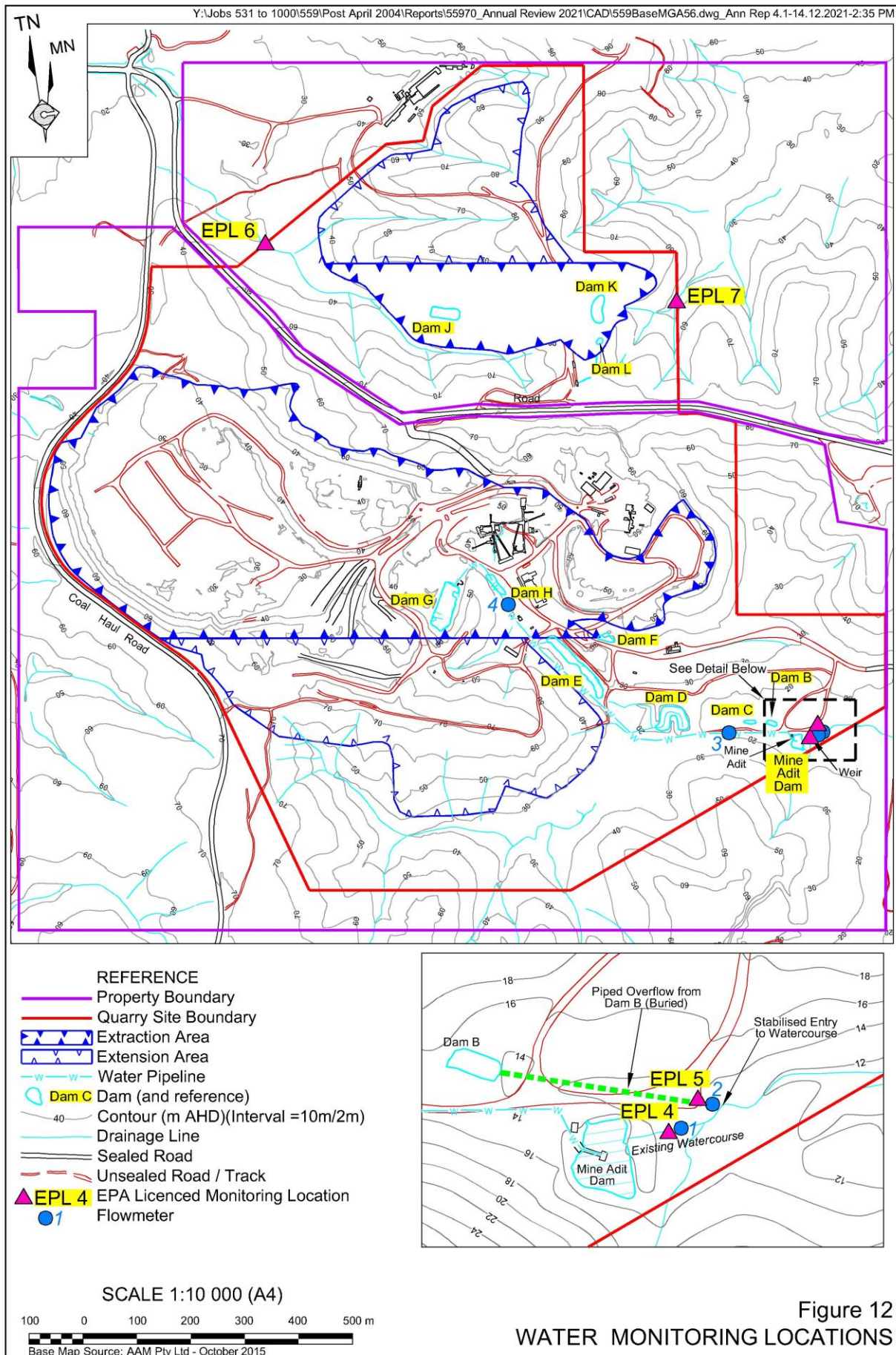


Table 16
Surface Water Monitoring Requirements

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

6.2.3 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 2**.

Table 17
Surface Water Monitoring Results – 2021

Page 1 of 2

	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	7.18	1890	6	<5	None	Grab Sample
February	7.11	1880	<5	<5	None	
March	7.16	1800	8	6	None	
April	7.07	1600	6	<5	None	
May	7.12	1680	8	<5	None	
June	7.49	1940	26	<5	None	
July	7.32	1970	<5	<5	None	
August	7.34	1960	<5	<5	None	
September	7.30	2050	<5	<5	None	
October	7.48	2180	8	<5	None	
November	7.24	2080	<5	<5	None	
December	7.13	1830	<5	<5	None	

Table 17 (Cont'd)
Surface Water Monitoring Results – 2020/2021

Page 2 of 2

	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)						
4/01/2021	7.24	862	6	<5	None	Grab Sample
1/02/2021	7.40	921	<5	<5	None	
11/02/2021	7.32	1140	<5	<5	None	
March	No discharge					
1/04/2021	6.67	793	<5	<5	None	Grab Sample
3/05/2021	6.83	771	<5	<5	None	
June	No discharge					
July						
August						
September						
October						
25/11/2021	6.83	851	5	<5	None	Grab Sample
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.

6.2.4 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 – 2021

Month	Flow Meter Readings	Usage (ML)
January	5291725.00	80.9
February	5386566.05	94.8
March	5475020.48	88.5
April	5566445.42	91.4
May	5674206.5	107.8
June	5766041.09	91.8
July	5858895.35	92.9
August	5957926.59	99.0
September	6073473.44	115.5
October	6190238.38	116.8
November	6317014.17	126.8
December	6424723.63	107.7
Total		1 213.9

6.2.5 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 7.07 to 7.49 with an average pH of 7.25.
2. Discharge from Dam B occurred in January, February, April, May and November with only one day of flow recorded during each month of discharge apart from February, which recorded 2 days of flow during the reporting period. The pH values were neutral on average (7.05) 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 1600µS/cm and 2180µS/cm and an average value of 1905µS/cm, which is below the ANZECC guideline level. EC values at Dam B were also below the ANZECC guideline level, recording a range between 771µS/cm and 1140µS/cm with an average value of 890µS/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 1 213.9ML of water was pumped from the Mine Adit Dam to Dam G during the 2021 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 well 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.

6.2.6 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 2020) and indicates that the Quarry continues to operate with negligible impact to the quality of water in Lake Macquarie.

7. REHABILITATION

7.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

The status of land under rehabilitation within former Silt Cell 4 is displayed in **Plate 7** and the older and more developed rehabilitation of former Silt Cell 1 and Silt Cell 2 is displayed in **Plate 8**. The condition of vegetation in former Silt Cell 5 is displayed in **Plate 9**. T.E.N.T.A.C.L.E. Inc. prepared a progress report of the regeneration works undertaken during 2021 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 7**.

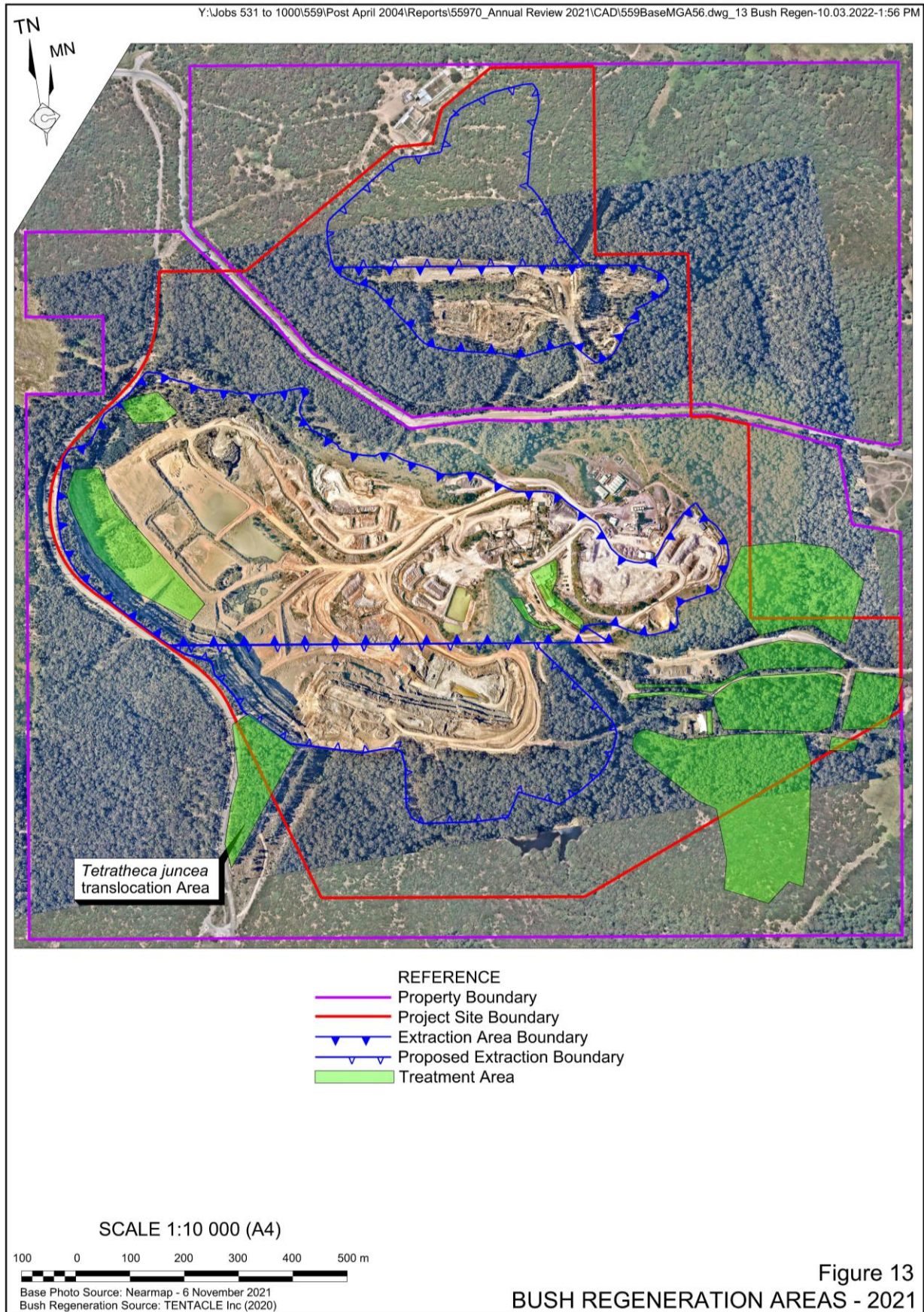
Rehabilitation works during the reporting period included four key activities.

- Revegetation of silt cells and portion of Stage 1B.
- 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 including the location of translocated *Tetratheca juncea*.

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 or splatter gun application of herbicide, hand removal or seed head removal. Weed management activity focussed upon the following weeds during the reporting period.

- | | |
|--|--|
| • African Daisy (<i>Senecio pterophorus</i>) | • Farmer's Friends (<i>Bidens Pilosa</i>) |
| • Arum Lily (<i>Zantedeschia aethiopica</i>) | • Fireweed (<i>Senecio madagascariensis</i>) |
| • Asparagus Fern (<i>Asparagus aethiopicus</i>) | • Green Cestrum (<i>Cestrum parqui</i>) |
| • Blackberry (<i>Rubus fruticosus</i>) | • Inkweed (<i>Phytolacca octandra</i>) |
| • Cassia (<i>Senna pendula</i>) | • Lantana (<i>Lantana camara</i>) |
| • Castor Oil Plant (<i>Ricinus communis</i>) | • Large Leaf Privet (<i>Ligustrum lucidum</i>) |
| • Climbing Asparagus Fern (<i>Asparagus aethiopicus</i>) | • Madeira Vine (<i>Anredera cordifolia</i>) |
| • Coral Tree (<i>Erythrina x sykesii</i>) | • Pampas Grass (<i>Cortaderia sp</i>) |
| • Costal Morning Glory (<i>Ipomoea cairica</i>) | • Small Leaf Privet (<i>Ligustrum sinense</i>) |
| • Crofton (<i>Ageratina Adenophora</i>) | • Spear Thistle (<i>Cirsium vulgare</i>) |
| | • Stinking Roger (<i>Tagetes minuta</i>) |
| | • Wild Tobacco (<i>Solanum mauritianum</i>) |





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Plate 7: Rehabilitation progress on former Silt Cell 4

Plate 8: Rehabilitation progress on former Silt Cells 1 and 2



Plate 9: Rehabilitation progress on former Silt Cell 5

A total of 849.25 hours were worked by T.E.N.T.A.C.L.E. staff performing environmental restoration and bush regeneration activities during 2021.

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 2021 a total of 1 327 native trees, shrubs and grasses were planted in the western portion of the Quarry along completed benches and completed silt cells. A total of 13 different native species were plant during the reporting period which consisted of the following.

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

Prior to planting, a seed mix was spread across the site that consisted of native plant seeds, fertiliser and non-germinating oats. The seed mix was also spread on the shelf below the planted section along the south western section of Stage 1B. Observations throughout the year found that a considerable amount of the seedlings had emerged.

7.2 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
Stage 1 and Stage 2 in Southern Extension	Black-eyed Susan (<i>Tetradlea juncea</i>)	1 103	31 December 2018
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.

7.3 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.

7.4 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 Cells 6 and 10 during the next reporting period.

T.E.N.T.A.C.L.E Inc. will continue to be used on site for approximately 800-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, along with the gully below northern entrance and exit to target Lantana. 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 5 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.

It is also recommended that wire fence be installed around the *Tetradlea* translocation area along with signage to deter trespassers from entering the area.

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.

8. 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.

9. COMMUNITY

9.1 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 2021 through informal discussions and involvement with the Community Consultative Committee.

9.2 COMMUNITY CONSULTATIVE COMMITTEE MEETINGS

One meeting of the Teralba Quarry Community Consultative Committee (TQCCC) was held during the reporting period on 5 May 2021. The full minutes of the meetings are provided as **Appendix 4** 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 2020 as presented in the 2020 Annual Review and for the current year to date. The committee was updated on Quarry operations, all non-compliances and complaints in 2020 to date, ongoing monitoring and rehabilitation, details of the approved variation to EPL 536, details of electrical and structural upgrades, and the status of extraction in Stage 1C. No action items which Metromix would be responsible for arose from the meeting.

9.3 ENVIRONMENTAL COMPLAINTS

Metromix received a total of one complaint from the community during the reporting period on 1 October 2021 which was lodged through the Metromix Complaints Telephone Line. A copy of the complaints record is provided in **Appendix 5**. The occurrence of one complaint during the reporting period is consistent with the history of very few complaints at the Quarry with two being made in 2020 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.

1 October 2021 Complaint

This complaint was lodged by a member of the community through the Metromix Complaints Telephone Line. The complaint was made regarding a Metromix truck passing too close to the complainant as he rode his horse along Wakefield Road. The complainant did not wish to provide the number of the truck in question. Metromix apologised to the complainant and a company memo was distributed to Metromix transport staff and Downer Asphalt regarding

driver behaviour. On 14 October 2021, the complainant was advised that the memo had been distributed and was on display at the Quarry weighbridge and sign in station where it was readily viewable by all Quarry transport staff and visitors. The complainant thanked Metromix for their efforts in resolving this complaint and noted that there had already been a noticeable positive change in driver behaviour.

10. INDEPENDENT AUDIT

No Independent Environmental Audits were undertaken during the reporting period. It is noted that the next Independent Environmental Audit is scheduled to take place in February 2023.

11. EXTERNAL AUDIT

No external audits were undertaken during the reporting period.

12. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

A total of two non-compliances occurred during the reporting period regarding exceedances of the noise stated in PA10_0183 and EPL 536. Further information regarding identification and remediation of this exceedance is provided in Section 5.2.3. Metromix notified the EPA and DPE of the non-compliance once it was aware of the outcomes of noise monitoring. Further investigation of the non-compliance resulted in additional operational commitments related to noise management being proposed. These measures were incorporated into the Quarry's *Noise Management Plan* and approved by DPE on 14 January 2022. Additional noise monitoring was undertaken in November 2021 which confirmed the implemented noise controls were successful in reducing noise levels generated by the Quarry. Feedback from DPE regarding the non-compliance was received on 17 November 2021 and noted that as there had been no sustained exceedances, the Department considered that there had been no breach of PA10_0183.

Condition 2(2) 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-compliance described in Section 5.2.3 indicates that all conditions of PA10_0183 were not complied with during the reporting period and therefore Metromix is also not compliant with Condition 2(2).

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 2022 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 2A and 2B (see **Figure 14**). Extraction in Stage 2B1 is expected to commence in 2022.

13.3 ABORIGINAL HERITAGE

Operations would continue in accordance with the *Heritage Management Plan* in 2022 including staff training as awareness and the implementation of unexpected find protocols (should they be required). The artefacts identified during the 2019 monitoring campaign will be buried in a suitable location identified in consultation with Aboriginal Stakeholders in 2022.

13.4 PROCESSING

Processing activities will continue as per the current reporting period in 2021 with approximately 70% being washed. It is forecast that approximately 800 000t of product will be despatched from the Quarry.

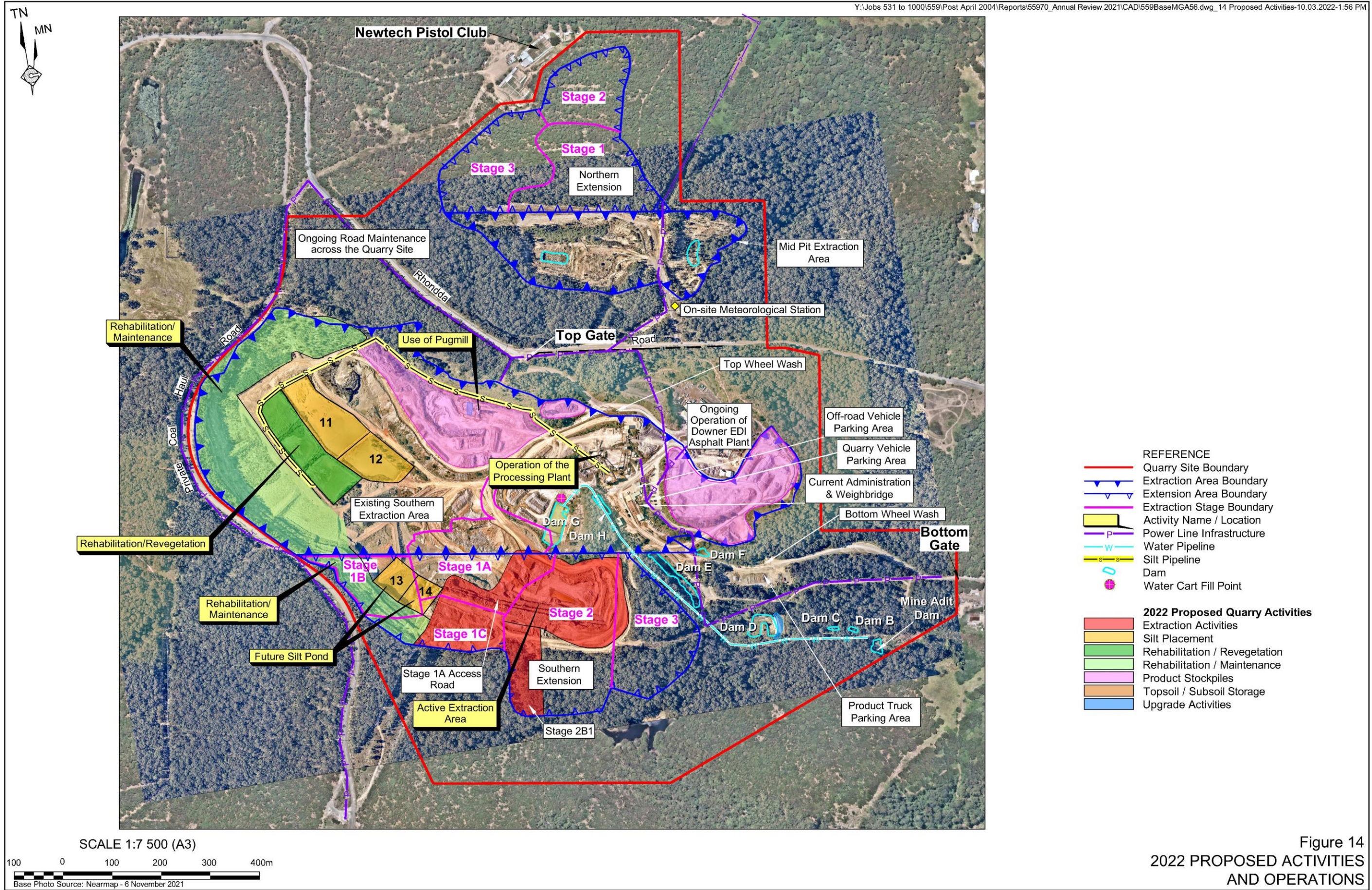
13.5 RECYCLING OPERATIONS

Sale of material previously stockpiled as part of Civilake's operations will recommence in 2021. 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 7, 8 and 9 in preparation for rehabilitation of these areas.

Silt will continue to be placed in Silt Cells 11, 12, 13 and 14.



13.7 CONSTRUCTION ACTIVITIES

During the next reporting period the roof of the workshop building will be replaced. This may be delayed to 2023 depending on revenue raised throughout the 2022 period.

Investigations will be undertaken into the feasibility of construction of a new silt washing processing component. It is intended that the new component would 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 Rd will continue to be replaced/upgraded as needed.

13.10 FAUNA HABITAT

During the next reporting period, Metromix does not anticipate the installation of any additional nesting boxes. 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. The 20m Asset Protection Zone (APZ) around the fuel and oil storage areas will 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 2022. 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 2022.

- 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 business as normal producing and supplying asphalt to the local markets.

Glencore may truck flyash along the coal haul road in 2022.

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 (2021a) *August 2021 Noise Monitoring Results - Teralba Quarry.*

Spectrum Acoustics Pty Limited (2021b) *Additional Noise Monitoring Results, November 2021 – Teralba Quarry.*

Appendices

(Total No. of pages including blank pages = 354)

- Appendix 1 2021 Internal Compliance Review (48 pages)
- Appendix 2 Monitoring Data and Records (82 pages)
- Appendix 3 2021 Nest Box Monitoring Report (182 pages)
- Appendix 4 2021 Community Consultative Committee
Meeting Minutes (8 pages)
- Appendix 5 2021 Community Complaints Register (6 pages)
- Appendix 6 Non-Compliances (4 pages)
- Appendix 7 Bush Regeneration Annual
Report 2021 (22 pages)

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