

Grants Rd Sand



1 January 2022 to 31 December 2022

PROJECT APPROVAL 08_0099



Peter Andrews + Associates
PTY LTD

March 2023

Project Summary

Name of Operation	Grants Road Sand Quarry
Name of Operator	Steven Jones
Development consent / project approval #	08_0099
	Modification to the Project Approval dated 4 May 2018
Name of holder of development consent / project approval	GR and AK Jones
Environment Protection Licence	11240
Water licence #	WAL 17474; WAL36455; WAL 17440; WAL 36988; WAL37745; WAL37746
Name of holder of water licence	GR and AK Jones
MOP/RMP start date	25 July 2014
MOP/RMP end date	30 June 2044
Annual Review start date	1 January 2022
Annual Review end date	31 December 2022
Name of authorised reporting officer	Vanessa Colclough
Title of authorised reporting officer	Environmental Planner / Director
Date	31 March 2023

Document History and Status

Project: 23_001

Client: GR & AK Jones - Grants Road Sand Quarry

Version	Date issued	Issue	Author
A	31 March 2023	Annual Report to Department of Planning & Environment	Vanessa Colclough
B	3 April 2023	Annual Report to EPA	Vanessa Colclough

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1. Introduction

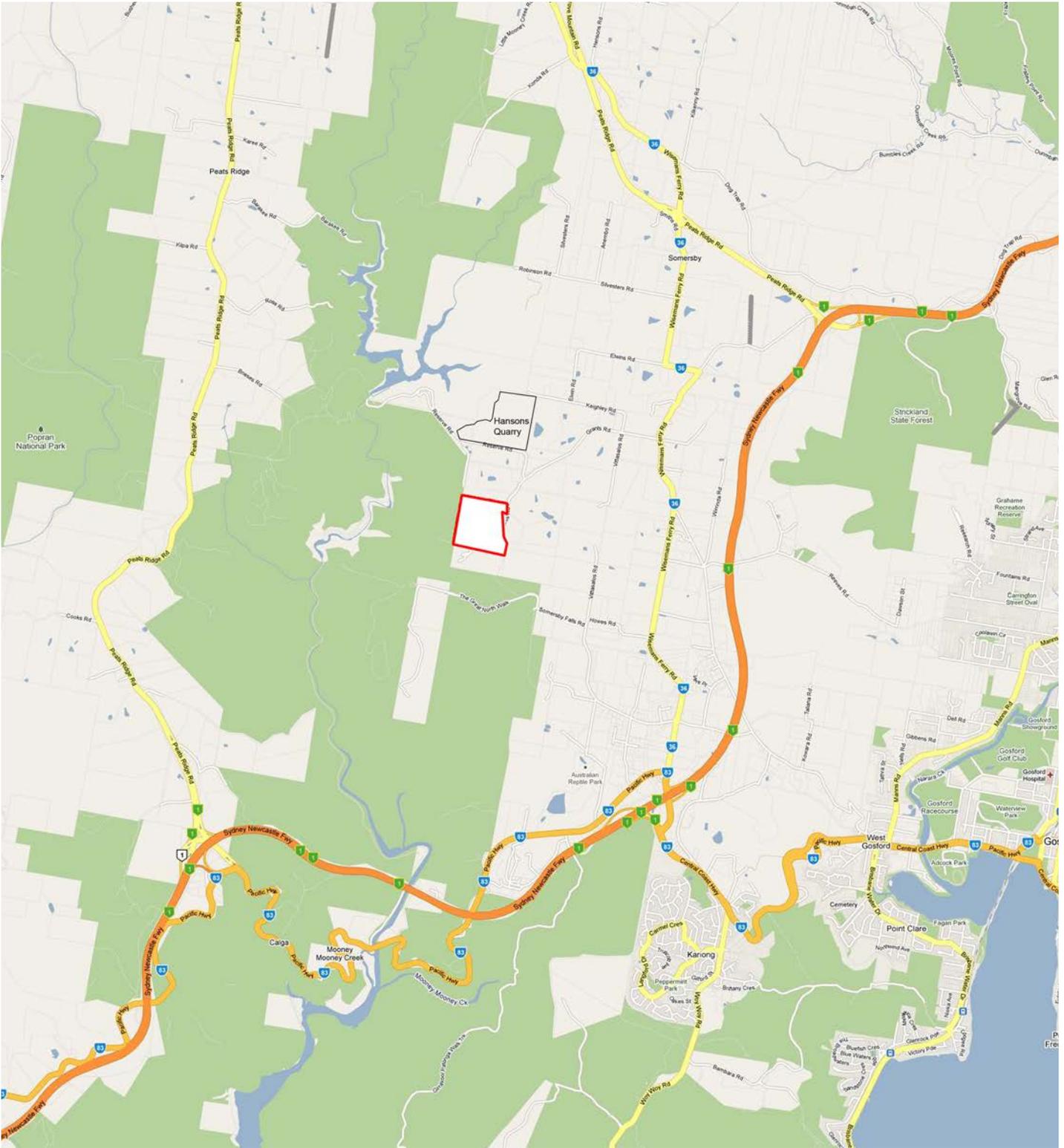
This Annual Review has been prepared for the Grants Road Sand Quarry located at 270 Grants Road, Somersby in accordance with Condition 4 Annual Review of Schedule 5 Environmental Management, Reporting and Auditing of the Project Approval 08_0099 dated 25 July 2014 and the Modification to the Project Approval dated 4 May 2018 and to satisfy the requirements of EPA modified Licence 11240. The Annual Review is for the period from 1 January 2022 to 31 December 2022 (the reporting period). Figure 1 shows the location and extent of the quarry. The Project Approval is included in Appendix 1 and Notice of Modification in Appendix 2.

The modification to the Project Approval was for the Environmental Assessment of the project titled Section 75W Modification Application for Changes to Biodiversity Offset Area for Approved Grants Road Sand Quarry Extension 270 Grants Road Somersby, dated December 2017 and supplementary ecological survey report titled Additional Ecological Information Report, dated March 2018.

This Annual Report provides a review of the activities that have occurred during the reporting period and documents the activities and environmental monitoring undertaken at the Quarry in 2022.

Schedule 5 condition 4 of the Project Approval and Modification requires that an Annual Review be undertaken by the end of March each year to review the environmental performance of the project. The Annual Review must:

- (a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;*
- (b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the:*
 - *relevant statutory requirements, limits or performance measures/criteria;*
 - *requirements of any plan or program required under this approval;*
 - *monitoring results of previous years; and*
 - *relevant predictions in the EA;*
- (c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;*
- (d) identify any trends in the monitoring data over the life of the project;*
- (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and*
- (f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.*



Source : Google Maps

Legend

The Site



Figure 1 - Locality Plan



Source : Apple Maps 2023

Legend

 The Site



Figure 2 - Aerial Photograph

2. Performance Requirements

2.1. Management

Grants Road Sand Quarry is under the management of Quarry Manager, Mr. Steven Jones. Whilst, all employees and contractors/suppliers have a responsibility for the effective and ongoing management of environmental impacts at the quarry, the Quarry Manager has specific duties and responsibilities including:

- Day to day implementation of the EMP.
- Ensuring site personnel have undertaken appropriate environmental awareness training and are observing all necessary management requirements.
- Ensure all required environmental auditing/monitoring is undertaken.
- Consultation with relevant stakeholders and complaints handling.

Contact details for any information in regard to the quarry or the operations can be directed as follows:

Quarry Manager – Mr Steven Jones - ph: 0418 116 861

Website - www.grantsrdsand.com.au

Email - info@grantsrdsand.com.au

Address - 270 Grants Road, Somersby NSW 2260

2.2. Hours of operation

The hours of operation for the quarry and for construction activities are:

- Monday to Friday 7.00am to 6.00pm; and
- Saturdays from 7.00am to 1.00pm.

Other activities, e.g. maintenance carried out on site may be conducted outside the above hours if conducted in a manner that is inaudible at all privately-owned residences. The following activities may be carried out on the site outside the above hours:

- Delivery or dispatch of materials as requested by the Police or other authorities; and
- Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

In such circumstances, the Proponent shall notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter. No such circumstances occurred during the reporting period.

2.3. Licences

The Licences held for the quarry during the reporting period are listed in the following table.

Table 1 – Licences

Approval / Licence	Approval / Licence Number	Issue Date	Expiry Date
Project Approval	08_0099	25 July 2014	30 June 2044
Environment Protection Licence	11240	13 October	
Water Licence	WAL 17474	11 December 2012	
Water Licence	WAL36455	1 November 2013	
Water Licence	WAL 17440	24 April 2014	
Water Licence	WAL 36988	13 January 2015	
Water Licence	WAL37745		
Water Licence	WAL37746		

2.4. Approval Requirements

The requirements and compliance under the Project Approval are outlined in Appendix 3 for the project. Additional information regarding the monitoring of the project is outlined in Section 4 of this Annual Review.

3. Activities undertaken during the Reporting Period

3.1. Activities

The following outlines the key activities undertaken at Grants Road Sand Quarry during the reporting period.

Table 2 – Key Activities

Month	Activities
January	<ul style="list-style-type: none"> Updating the website throughout the year with relevant reports. Weed management undertaken throughout the year. Maintaining equipment and implementing improvements to machinery to reduce any impacts.
February	<ul style="list-style-type: none"> Quarrying commenced in Precinct E. Submission of the 2021 Annual Report to the EPA.
March	
April	<ul style="list-style-type: none"> Submission of the 2021 Annual Report to the Department of Planning, Industry and Environment.
May	
June	<ul style="list-style-type: none"> Community consultation meeting not held due to COVID restrictions and there being no issues raised.
July	
August	
September	
October	
November	
December	<ul style="list-style-type: none"> Various monitoring undertaken throughout the year for the Annual Review.

Source: Grants Road Sand Quarry 2021

3.2. Quarrying and Extraction

The annual production for the quarry for the period from 1 January 2022 to 31 December 2022 is outlined below.

Table 3 – Production Summary

Material	Approved limit (Project approval MP_00800)	Previous reporting (actual)	This report period (actual)	Next reporting period (forecast)
Sand and sandstone products	250,000 tonnes per annum	118258.24 tonnes	143658.52 tonnes	150 000 tonnes

4. Environmental Monitoring

Grants Road Sand Quarry engaged the various consultants to undertake the environmental monitoring of the quarry site in accordance with Project Approval 08_0099 and Notice of Modification dated 4 May 2018. The following provides a summary of the monitoring and the environmental monitoring reports are attached in the relevant appendices.

4.1. Water Quality

The Water Quality Monitoring Report including surface water and ground water has been prepared by Larry Cook Consulting Pty Ltd and is attached in Appendix 4.

Water level monitoring is undertaken in three (3) dedicated monitoring bores. Water quality sampling and testing is carried out in two of these monitoring bores and at three surface water monitoring sites. The Water Monitoring Sites are identified in the following table. Regular water sampling was undertaken from 1 January to 31 December 2022.

Table 4 – Register of Water Monitoring Sites

Monitoring Site	Monitoring Type	Location	Monitoring
W1	Surface Water	North-west discharge point	Water quality
W4	Surface Water	New discharge into new dam in south western corner of Lot 1	Water quality
S1	Surface Water	South-west waterway on western boundary of Lot1	Water quality
G3 (BH 3)	Groundwater	Bore in NW corner of Lot 1 (control bore)	Water quality and automated water level
DDH 1	Groundwater	Northern central part of Lot 1	Automated water level

Summary of the results:

GEOCHEMISTRY

- The pH of the surface water sampled is slightly acidic that reflects rainwater recharge over the quarry precinct and potential mixing with local groundwater hosted by the Hawkesbury Sandstone. The recorded pH measurements are within the range of acceptable and agreed discharge levels.
- The relatively lower pH values recorded in the groundwater samples reflects rainwater recharge (carbonic acid) and retention of water within Hawkesbury Sandstone. These levels are 'low' but often typical of groundwater hosted by the Hawkesbury Sandstone in the Mangrove Mountain area and wider Sydney Basin.
- The concentrations of Total Suspended Solids (TSS) recorded in groundwater samples were low with the majority less than the LOR. Low levels were recorded in the surface water samples. Therefore, the recorded TSSs are less than the discharge level limit.
- Trace levels of phosphorus in surface water samples and low levels of nitrate+nitrite in groundwater samples likely reflect the agricultural history of the district (fertilisers and chicken growing).
- No significant impacts from current approved quarrying activities on this aquifer system were detected.

WATER LEVEL MONITORING

- The close correlation between rain events and the rise in the water table recorded in shallow monitoring bore G3 (BH3) suggests relative rapid recharge of the shallow aquifer system. This is consistent with the results of extensive groundwater investigations over the Site and surrounding district.
- The hydrographs for the relatively deeper sandstone-hosted monitoring bore DDH1 also show a direct response to rainfall events but with a notably more subdued magnitude.
- No potential impacts from approved quarrying activities on this aquifer system were detected.

4.2. Noise

A site attended noise audit was undertaken of the quarry on 17 January 2023 by Atkins Acoustics and Associates Pty Ltd and is attached in Appendix 5. The results of the audit are as follows.

Site inspections during the audit identified that onsite extraction and processing was established in Areas A, B and C. Activities included:

- Dozer and excavator mid-floor Area A.
- Truck out loading south western Area A.
- Washing Plant south western Area A.
- Dam water pump Area C.

Site inspection and attended noise audits were conducted between 7.00am and 10:00pm on Tuesday 17 January 2023. Weather observations and conditions reported at the onsite weather station during the audit were light north-east to south-east breeze (0.6 - 1.7m/sec), air temperature 19-22°C, relative humidity 77-90% and 60% light cloud cover.

The site attended sound pressure level measurements were conducted at three (3) locations selected to represent the residential receivers identified in Grants Road Sand Noise Management Plan. The reference measurement locations are:

- Location 1: 'Ibels' - 380 Somersby Falls Road
- Location 2: 'McGregor' - 239 Grants Road
- Location 3: 'Sammut' - 210 Grants Road

The noise measurement instrumentation selected comprised a SVAN949 Sound and Vibration Analyzer. The meter was programmed to calculate and record 15 minute statistical levels. Attended measurements during the audit where appropriate were used to assess source noise contributions associated with Grants Road Sand Quarry operations. A summary of the measurement results and calculated contributions is presented in the following table. Measurements at all reference assessment locations were influenced by bird noise.

Table 5 – Audit Measurement Results – January 2023

Measured Ambient Sound Pressure Levels dBA				Grants Road Sand Contribution	Comments
L _{Aeq}	L _{A10}	L _{A90}	L _{A1}	L _{Aeq, 15min} *	
Location 1: Ibels Residence – 380 Somersby Falls Road					
41.8	43.2	39.3	53.6	<35	Distant road traffic; Insects; Birds, GRS truck onsite. L _{Amax} 40/1dBA
Location 2: McGregor Residence – 239 Grants Road					
44.5	46.9	40.2	53.6	<38	GRS Dozer L _{Amax} 36/8dBA. Birds; Distant road traffic.
Location 3: Sammut Residence – 210 Grants Road					
45.1	46.6	39.8	57.4	<35	Distant road traffic; Insects; Birds; GRS not audible.

The findings of the measurement results show that noise from Grants Road Sand Quarry activities complied with the DoPE (*Application Number 08_0099, MOD 1*), noise condition L_{Aeq, 15min} 40dBA and EPA Licence 11240. The Site Quarry Manager confirmed that no noise related incidents were reported during the period from 1 January to 13 December 2022.

A review of the audit measurement results and previous reported audit measurements has shown that noise contributions from Grant Road Sand Quarry have remained steady.

4.3. Air Quality

Baseline air quality and meteorological reporting has been undertaken for the site by ERM Australia Pacific Pty Ltd and is attached in Appendix 6. All monitoring for air quality is conducted in accordance with the NSW Environmental Protection Agency (EPA).

The automatic weather station (AWS) and High Volume Air Sampler (HVAS) are located onsite and are used to provide the baseline monitoring for the quarry site.

The dominant winds for the annual period were from the west. The average wind speed for the period was 2.1 m/s and the percentage occurrence of calm wind conditions (less than or equal to 0.5 m/s) was 2.4 %. June was the coldest month on average with January the hottest month on average. A maximum daily average of 24.7°C was recorded on 12 December 2022.

The results for the available PM₁₀ data in 2021 are of a possible sixty samples (over approximately 12 months), ten (10) samples are reported, resulting in a data recovery rate of approximately 17%. The low data recovery rate was attributed to a malfunction of the high volume air sampler (HVAS), which required replacement of multiple instrument parts including a blower, inverter and motherboard. Availability of personnel to diagnose and repair the instrument was limited as was availability of rental equipment, contributing to the extended timeframe without PM10 data. EPA were made aware of the difficulties involved in finding available personnel to undertake HiVol repairs (via phone conversation with David Bell). The average PM10 concentration over the recorded 12-month period was 3.6 µg/m³. Whilst this is well below the annual EPA impact assessment criterion of 25 µg/m³ the low data capture is insufficient for evaluation against an annual average criterion and only a small portion of the year has been measured. All reported results are below the EPA maximum 24-hour average criterion of 50 µg/m³ for PM10.

Dust deposition is measured at two locations, R1 and R4. The annual average monthly dust deposition level (insoluble solids) for the period of 2022 was 0.6 g/m²/month at R1 and 0.5 g/m²/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m²/month. A maximum value of 1.8 g/m²/month was recorded in February at R1; all other recorded levels were below 1.8 g/m²/month.

The dust sample collected by the deposition gauges includes both dust generated by site activities (incremental dust impact) and dust from all other local sources (background dust levels). Even with the background levels accounted for, the annual average deposition levels are considerably below both the incremental and cumulative annual criteria.

A number of crystalline silica measurements were taken on 17 June 2022, 1 September 2022 and 19 December 2022. The samples were measured over the course of a shift, using personal air-samplers in the breathing zone of operators on dozers, excavators and loaders at the site. The results collected are corrected for the number of hours worked in a shift. These are presented in reports by WorkPlace Environment Consultants (WEC, 2022a, 2022b, 2022c).

4.4. Groundwater Dependent Ecosystems

The Groundwater Dependent Ecosystems monitoring report was undertaken by Conacher Consulting and is attached in Appendix 7.

The monitoring program for the Groundwater dependent ecosystems consists of a combination of aerial photograph assessment and mapping of GDEs within the predicted drawdown area, floristic plot surveys and field assessment for indicators and signs of potential project related impacts. The following variables were measured:

i. Native Plant Composition

Plot surveys were completed comparing the results of the baseline plot monitoring results from the initial monitoring period with the current plot conditions. The native flora species present and projected foliage cover were assessed. Comments are provided for the species observed, including GDE species, which are reliant on moist soil conditions.

ii. Exotic Plant Composition

All exotic flora species and total cover of exotic flora species were recorded for each plot.

iii. GDE Extent and Distribution

Mapping of GDE's was informed by aerial photograph analysis and interpretation using Nearmap imagery dated 15 August 2022.

iv. Vegetation Photo Point Monitoring

Photographs were taken for each monitoring quadrat from each cardinal point.

v. Surface Erosion and Sedimentation Monitoring

A visual inspection of the GDE patches downslope from the quarry site was undertaken to monitor for any surface erosion or sedimentation impacts from the quarry operations.

vi. Comparison with Groundwater Monitoring Data

A review of the groundwater monitoring undertaken by Larry Cook Consulting.

The review of the Groundwater Dependent Ecosystems concludes that all performance targets have been met for GDEs and requirement for mitigation or response measures has not been triggered in relation to 2022 site operations.

4.5. Somersby Mintbush Monitoring

The annual monitoring report for Somersby Mintbush *Prostanthera junonis* has been prepared by Conacher Consulting and is attached in Appendix 8.

Counts of flowering *P. junonis* plants was undertaken on 15 and 16 November 2022 at the Somersby Mintbush subpopulation locations adjacent to the quarry allotment identified by NSW NPWS (2000). The results of the counts are provided in Table 6.

Table 6 – Somersby Mint Bush Cumulative Count Results

Sub-Population Number	Count Results							
	2015	2016	2017	2018	2019	2020	2021	2022
3	0	2 flowering plants (several non-flowering juvenile regrowth plants observed)	18 flowering plants	42 flowering plants	29 flowering plants	46 flowering plants	41	43
4	0	No flowering plants. Several non-flowering juvenile plants observed	34 flowering plants	394 flowering plants	484 flowering plants	498 flowering plants (including outlier to the north)	472	485

The report concludes:

- An increase in the sub-populations 3 and 4 of Somersby Mintbush was recorded compared to the previous monitoring period.
- A slight increase in the Somersby Mintbush population recorded is likely a result of seasonal flowering occurrences at the time of survey.
- Ongoing maintenance of the northern section of the western property boundary fence is required.
- Suitable environmental controls should continue to be maintained for the Project.
- The additional reporting details recommended in the 2021 Annual Report have been incorporated into the Somersby Mintbush Report.

4.6. Landscape and Rehabilitation Monitoring

The review of the landscape and rehabilitation activities has been prepared by Conacher Consulting and is included in Appendix 9. An initial Landscape and Rehabilitation Plan (LRMP) for the project was approved on 11 December 2015. Since the preparation of this LRMP, the Biodiversity Offset Areas and Landscape Buffer Areas for the project have been revised through an approved Modification Application (No 1).

A revised Landscape and Rehabilitation Management Plan (LRMP) (Conacher Consulting Version 2 - 2019) and a new Biodiversity Offset Management & Habitat Rehabilitation Plan (Conacher Consulting November 2019) have been prepared to meet the current project approval and commitment requirements. These new documents have been forwarded to the Department of Planning, Industry and Environment and have been approved by the Department.

The following works have been completed in accordance with the Biodiversity Offset Strategy requirements for the project:

- Collection of initial baseline floristic monitoring data.
- Fencing of biodiversity offset area.
- Long term security of offset.
- Management of fauna nest boxes.

The Project is compliant with the requirements of the current Landscape and Rehabilitation Management Plan and Biodiversity Offset Management & Habitat Rehabilitation Plan prepared in compliance with the Conditions for the current Project Approval.

The progressive implementation of these plans is being undertaken as required.

No revisions to the current Landscape and Rehabilitation Management Plan and Biodiversity Offset Management and Habitat Rehabilitation Plan documents are recommended this stage.

A qualified bush regeneration company has been engaged to undertake ongoing weed removal and weed suppression within the landscape and rehabilitation areas. It is expected that these contractual arrangements will be finalised and commenced by June 2023.

The 2023 Annual Report is to provide an analysis of the revegetation and weed management works undertaken as identified in the BOMHRP and LRMP.

4.7. Heritage

The fence was constructed around the Grants Road RE1 Aboriginal Site and the initial monitoring of the site was undertaken in 2015.

As per the inspection, post approval, undertaken by Insite Heritage Pty Ltd, in 2015 and 2020, the sandstone block wall, 8m perimeter fencing and signage have remained in-situ.

The monitoring of Howes Reserve undertaken in 2020 did not show any indication of impact from the quarrying activities at Grant Sands. The vertical crack on the southern side of the Howes Reserve rockshelf has not widened during the intervening period, which indicates that vibration has not caused any impact to the Reserve.

The next Heritage assessment is scheduled for 2025.

There have been no complaints regarding cultural heritage in this period.

4.8. Community Consultation

The Community Consultative Committee was unable to meet in 2022 due to COVID restrictions. There were no issues raised by members and the committee meeting was deferred until 2023. Refer advice in Appendix 10.

4.9. Visual

An earth and sound mound have been constructed in the north eastern area of the quarry site by Grants Road Sand Quarry. This mound has been vegetated using existing grasses located on the site to minimise visual impact. This vegetation is to be continuously maintained.

Mounds have been constructed on the western boundary of the quarry site. These mounds are vegetated with grasses to minimise visual impact.

4.10. Waste Management

All waste generated is managed appropriately and no on-site disposal of general waste occurs. Grants Road Sand Quarry is also committed to reducing, reusing and recycling prior to disposal of waste.

The quarry site is permitted to accept VENM and ENM. The quarry did not receive VENM or ENM from January to December 2022.

4.11. Bushfire

Bushfire management of the quarry site is implemented by the Quarry Manager including maintaining the site and the onsite water cart is set up for firefighting purposes and also able to provide onsite water for fire brigade tankers. The Quarry Manager is also an active member of the Somersby Rural Fire Service.

4.12. Product Transport

Haulage trucks access the site from Grants Road and use the internal haulage routes. All trucks exit using the truck tyre wash before accessing Grants Road. Transport movements are identified on the Grants Road website and attached in Appendix 11.

5. 2023 Reporting Period

The following identifies the measures and activities that are proposed to be undertaken during the 2023 calendar year.

General

- Maintaining equipment and implementing improvements to machinery to reduce any impacts.
- Research and applying best practice in quarry management.
- Updating of the website to include additional environmental reporting and relevant data from the quarrying activities.

Water Quality

- Review and update of the Water Quality Management Plan and submit to the Department of Planning and Environment for approval.
- Carry out regular routine surface water and groundwater monitoring in the monitoring network during 2023 in accordance with the NSW EPA License 11240 and the requirements documented in the surface water and groundwater management plans. This includes maintenance and make repairs to pressure sensors to maintain integrity and communications.
- Continue oil and grease testing at surface water sample site S1 (when flowing) at the frequency of one sample per month when discharge occurs.
- Submit water samples to the project laboratory (ALS) for analysis, compile results and assess any trends and exceedances and, if required, implement a response and action plan in accordance with the environmental management plans.
- Prepare a report giving the results of the 2023 monitoring program and an assessment of any trends and potential impacts. This will include an ongoing assessment of hydrographs, pH, TSS, TDS, nitrogenous compounds and other tests as required.

Noise Quality

- Implement best management practice to minimise the construction, operational and road noise of the project.
- Assess the noise monitoring data and relocate, modify or stop operations on site to ensure compliance.
- Maintain the effectiveness of noise suppression equipment on plant and equipment on site.
- Minimise the noise impacts of the project during certain meteorological conditions.
- Continuation of the of the earth mounding/bunding on the western site boundaries.
- Additionally, and dependent on product demand, it is expected that the depths of the working platforms (Areas A,B and C) could increase by 2-3 metres.

Air Quality

- Review and update of the Air Quality Management Plan and submit to the Department of Planning and Environment for approval.
- Monitoring for air quality to be conducted in accordance with the NSW Environmental Protection Agency.
- Quarterly monitoring for crystalline silica.
- Monitoring HVAS sampler.
- Preparation of the Annual report.

Biodiversity

Groundwater Dependent Ecosystem

- Detailed monitoring and reporting of the Groundwater dependent ecosystems.
- The 2023 GDE Monitoring Report is to include a review of the current GDE monitoring process to determine if any improvements in monitoring and recording procedures can be implemented to improve reporting outcomes for the project.

Somersby Mintbush

- Further counts of the previously identified locations of *P. junonis*.
- Continuation of suitable erosion and sedimentation controls and maintenance.
- Ongoing maintenance of the northern section of the western property boundary fence is required.
- Preparation of the Annual report.

Landscape and Rehabilitation

- A qualified bush regeneration company to undertake ongoing weed removal and weed suppression within the landscape and rehabilitation areas.
- The 2023 Annual Report is to provide an analysis of the revegetation and weed management works undertaken as identified in the BOMHRP and LRMP.

Heritage

- Consultation with the Aboriginal Land Councils through the preparation of newsletters updating on activities of the Quarry.
- Inspection of biodiversity area subject to any works being undertaken.

Community Consultation

- Undertake community consultative committee meetings annually scheduled to be held in June 2023.

Waste Management and Minimisation

- Ensuring best practice is implemented throughout the quarry site.

Visual Impact

- Maintain the vegetation on all constructed mounds.
- Maintaining and improving the site where appropriate.

Bushfire Management

- Ensuring bushfire management practices are implemented.

Product Transport

- Monitor and record truck movements.

6. Community + Complaints

6.1. Complaint Management

The quarry has not received any complaints during the reporting period.

7. Trends

7.1. Trends in the monitoring data

Trends in monitoring data identified to date for the quarry expansion are outlined in the following table:

Table 8 – Trends in Monitoring Data

Key Issue	Trends	
Water Quality	Hydrographs for the three monitoring bores reveals fluctuations in water level associated with district rainfall events. Shallow monitoring bore G3 (BH3) shows sharp rises due to rainfall recharge events. More subdued response to rainfall recharge observed in two groundwater bores (DDH1 and DDH2).	
Noise	Noise contributions have remained steady as follows:	
	Summary monitoring results previous period (2022 review)	Summary monitoring results this reporting period (2022 review)
	Location 1: <35dBA	Location 1: <35dBA
	Location 2: <40dBA	Location 2: <38dBA
	Location 3: <40dBA	Location 3: <35dBA
Air Quality	It can be seen that PM10 concentrations were increasing from 2017 to 2019 before reducing in 2020 and 2021. The increase in concentrations from 2017 to 2019 and reduction in 2020 is seen across NSW. The highest concentrations in 2019, including the exceedance day experienced in December 2019, were due to drought and bushfire conditions across the region and is explained in the 2019 Annual Report.	
Biodiversity	The Somersby Mintbush population has increased over the years.	
Heritage	There has been no impact on the rock engravings on site and within the adjoining Howes Reserve.	

7.2. Comparison between the predicted and actual impacts of the project

Comparison data where available to the predicted and actual impacts of the project are outlined in the following table:

Table 9 – Comparison to the environmental assessment predictions

Key Issue	Comments
Water Quality	No exceedances or impacts from quarrying activities on the aquifer system were detected.
Noise	Noise exceedances were predicted, however the exceedances could be alleviated through the effective implementation of a number of mitigation measures. There has been no noise exceedance in this reporting period.
Air Quality	<p>The cumulative results predicted in the assessment indicate that the annual dust deposition level at the locations of the deposition gauges would be in the order of 1.7 g/m²/month at R1 and 1.9 g/m²/month at R4. The measured annual average dust deposition rates are 0.5 g/m²/month at both R1 and R4, respectively. This is considerably lower than the conservative predictions made in the air quality assessment.</p> <p>Given the results of the data during the monitoring period, currently no additional action is required to control environmental performance. Rather, it is recommended that current mitigation processes are sustained.</p>
Biodiversity	Impact on the Somersby Mintbush population and GDE populations. However, generally populations have remained the same or increased in size over the reporting periods.
Heritage	Possible impacts on the rock engravings on the site and within Howes Reserve. There has been no impact on the rock engravings on site and within the adjoining Howes Reserve.
Visual Impact	Visual impact proposed by the quarry extension is considered to be low given its location. However, the site is to be maintained and all stockpiles and acoustic mounds are to be vegetated once established. Visual impact is still low given its isolated location and the surrounding vegetation.
Product Transport	Transport numbers have grown due to the removal of restrictions due to COVID.

8. Independent Environmental Audit

8.1. Audit Non-compliances

Independent Environmental Audits have been carried out for the quarry extension. The following outlines the non-compliances and the actions undertaken or to be undertaken to address the non-compliance.

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
2021 Independent Environmental Audit					
3	4c(iii) dot point 6	Soil and Water - Water Quality	Update GWMP to include an investigation of opportunities to maintain ecosystem function in high priority GDEs to the west and northwest of the project through facilitating run-on of clean surface waters.	The GWMP will be updated to incorporate these recommendations and also address the non-compliances as outlined below. The revised GWMP will be completed by 30 April 2022, reviewed and then submitted to the Department of Planning by 30 May 2022. Documentation was provided to the Department of Planning addressing these issues in May 2022. The GWMP is now to be updated with this information and submitted to the Department of Planning.	Open
3	4c(IV)	Soil and Water - Water Quality	Update GWMP to include a Surface and Ground Water Contingency Strategy	As identified above.	Open
3	11c and 12b dot point 3	Air Quality	Update AQMP to include protocols for adverse meteorological conditions and extraordinary events.	The AQMP will be updated to incorporate the recommendation and also address the non-compliances as outlined below. The revised AQMP will be completed by 30 April 2022, reviewed and then submitted to the Department of Planning by 30 May 2022 Documentation was provided to the Department of Planning including such protocols in May 2022. The AQMP is now to be updated with this information and submitted to the Department of Planning.	Open
3	11f	Air Quality	Report missing sampling events in EPL Annual Return.	The Air Quality Annual report reports the missing sampling events.	Closed
3	29, 29a, 29b and 29c	Landscape	Review of Conservation and Rehabilitation Bond is required prior to April 30, 2022.	Conservation and Rehabilitation Bond report reviewed, revised and submitted to the Department of Planning and Environment.	Closed

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
5	4c	Environmental Management	The auditee should discuss its EPL conditions with the appointed NSW EPA office to better understand the reporting requirements.	Grants Road Sand Quarry has liaised with the EPA office as part of its submission of its annual report as part of its licence.	Closed
5	5 and 5c	Environmental Management	Reviews of the GWMP and AQMP are required to address the non-compliances of the previous audit and this audit.	Refer above in regards to update of the GWMP and AQMP.	Open
Commitments		Groundwater	Send Annual Water Quality Monitoring Report to the Senior Hydrogeologist NOW for review.	The Annual Water Quality monitoring report will be sent to NOW as per the Statement of Commitments to commence as part of the 2021 Annual Report. Report submitted to NOW on 21 March 2021.	Closed
Commitments		Air Quality	The results indicate that the respirable crystalline silica concentration was lower than SafeWork NSW workplace exposure standards. Monitoring was not repeated quarterly in the first year of the quarry expansion. A campaign with 4 events, 3 months a part is required.	Air Quality annual reporting for 2023 will incorporate the 4 events, 3 months apart as required.	Open
2018 Independent Environmental Audit					
	13a	Operation of Plant and Equipment - Documentation of plant maintenance is not complete	Maintenance logs to be maintained	Maintenance logs to be updated and reviewed as part of the 2018 Annual Report	Closed
	13b	Operation of Plant and Equipment - Plant and equipment regular maintenance registers not up to date	Maintenance logs to be maintained	Maintenance logs to be updated and reviewed as part of the 2018 Annual Report	Closed
3	11c	Air Quality - AQMP does not have protocols for adverse meteorological conditions and extraordinary events	Update AQMP to include protocol for adverse meteorological conditions and extraordinary events	Air Quality consultant to review and comment as part of the 2018 Annual review and prepare an Addendum if required.	Air Quality consultant determined Addendum not required. Closed
3	11d	Air Quality - Systems are in place to monitor the servicing of vehicles however these were not up to date at the time of the site visit.	Maintenance logs to be maintained	Maintenance logs to be updated and reviewed as part of the 2018 Annual Report	Closed
3	11f	Air Quality - carry out regular air quality monitoring to determine whether the project is complying with the relevant conditions of the approval	HVAS sampling to comply with 6 day sampling period	The sampling machinery has now been fixed and the sampling should be in accordance with the requirements for 2023.	Open

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
3	12b	Air Quality - the air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events	As per 11c	Noted as per 11c	Air Quality consultant noted that the non-compliance was due to the bushfires within the area. Closed
5	9	Independent Environmental Audit	Auditor notes that the lodgement by 30 June 2018 is non-compliant	An extension of time was requested for the independent environmental audit prior to 30 June 2018 by the Department of Planning. The Department of Planning provided an extension of time for the audit to 31 October 2018. Therefore, this is compliant	Closed
	3	Statutory Requirements - Comply with all conditional requirements in all approvals and licences	EPL requires updating	Grants Road Sand Quarry applied for a revised EPL in 2016. Various discussions have been held with EPA and a draft licence issued. Grants Road Sand Quarry has requested EPA for the final licence on several occasions. EPA has advised that the officer handling it has gone on extended leave and that they will action the revised licence asap. Grants Road to follow up again by the middle of November 2018 if not received.	EPA revised Licence issued. Closed
7		Groundwater - provide a complete set of results of the production and monitoring program including a review and assessment of the statistical analysis to NOW and the quarry owner	Analysis not reviewed by the NOW	To be undertaken as part of the 2018 Annual Review	Water Quality Annual Review provided to quarry owner. Annual review sent to NOW 21 March 2021. Closed.
		Groundwater - parameters have not been recorded	Recording of parameters of monitoring samples	Parameters to be recorded for monitoring samples and included in the 2018 Annual Review.	Closed.
8		Surface Water - relocate the chicken farmer operations storage shed	Prior to the commencement of the quarry operations	Chicken farming operations have ceased and the chicken sheds have been cleaned.	Closed.

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
10		Noise - Plant and equipment to be maintained	Equipment maintenance logs have not been kept up to date.	Noted as per 13a	Closed.
11		Air Quality - carry out campaign monitoring for respirable crystalline silica	Carry out asap.	Air quality consultant to review as part of the 2108 Annual review	Closed.

Appendix 1

PROJECT APPROVAL 08_0099

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

As delegate for the Minister of Planning, I approve the project application referred to in Schedule 1, subject to the conditions in Schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the project.

Chris Wilson
Executive Director
Development Assessment Systems & Approvals

Sydney

2014

Red text represents MOD 1 (Biodiversity Offset Area) - April 2018

SCHEDULE 1

Application Number:	08_0099
Proponent:	GR and AK Jones
Approval Authority:	Minister for Planning
Land:	Lot 1 and 2 DP358717
Project:	Grants Road Sand Quarry Extension

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DEFINITIONS

Annual Review	The review required by condition 3 of schedule 5
BCA	Building Code of Australia
Biodiversity Offset Strategy	The conservation and management of the Proponent's offset sites on Lot 1 and 2 DP358717, as shown in Appendix 3
CCC	Community Consultative Committee
Conditions of this approval	Conditions contained in Schedules 2 to 5 inclusive
Council	Central Coast Council
Department	Department of Planning and Environment
Dol Water	Department of Industry - Water
DRG	Division of Resources and Geoscience in the Department
EA	Environmental Assessment of the project titled <i>Grants Road Sand Quarry Extension - Environmental Assessment Report</i> prepared by Peter Andrews and Associates, dated April 2013; and the Proponent's response to the issues raised in submissions, dated December 2013
EA (MOD 1)	Environmental Assessment of the project titled <i>Section 75W Modification Application for Changes to Biodiversity Offset Area for Approved Grants Road Sand Quarry Extension 270 Grants Road Somersby</i> , dated December 2017 and supplementary ecological survey report titled <i>Additional Ecological Information Report</i> , dated March 2018
Environmental Consequences	The environmental consequences of quarrying operations, including erosion, sedimentation and adverse impacts on water quality, water quantity and biodiversity
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the POEO Act
Feasible	Means what is possible and practicable in the circumstances
GDEs	Groundwater Dependent Ecosystems
High Priority GDEs	GDEs listed in Schedule 5 of the <i>Water Sharing Plan for the Kulnura Mangrove Mountain Groundwater Sources 2003</i> , including <i>Hawkesbury Coastal Banksia Woodland</i> and <i>Sandstone Hanging Swamps</i>
Incident	A set of circumstances that: <ul style="list-style-type: none"> • causes, or threatens to cause, material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this approval
Land	As defined in the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this approval, where it is defined as the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Landscape buffer areas	The buffer areas as shown in Appendix 3
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Minister	Minister for Planning, or delegate
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the project
Modification 1	The modifications to the project as described in EA (MOD 1)
Negligible	Small and unimportant, such as to be not worth considering
OEH	Office of Environment and Heritage
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not owned by a public agency or a mining or quarrying company (or its subsidiary)
Project	The project as described in the documents in condition 2 of Schedule 2, as well as quarrying operations and disturbance existing on the site as at 25 July 2014

Proponent	GR and AK Jones or any person who seeks to carry out the approved project under this approval
Public Infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications etc.
Quarrying operations	The extraction, processing and transportation of extractive materials on the site and the associated removal of vegetation, topsoil and overburden
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The restoration of land disturbed by the project to a good condition and for the purpose of establishing a safe, stable and non-polluting environment
RMS	Roads and Maritime Services
Secretary	Planning Secretary under the EP&A Act or nominee
Site	The land described in Schedule 1
Statement of Commitments	The Proponent's commitments in Appendix 1
VENM	Virgin Excavated Natural Material and/or Excavated Natural Material

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance **measures and** criteria established under this approval, the Proponent **must** implement all reasonable and feasible measures to prevent, **if prevention is not reasonable or feasible, minimise any material** harm to the environment that may result from the construction, operation, or rehabilitation of the project.

TERMS OF APPROVAL

2. The Proponent **must** carry out the project generally in accordance with the:
 - (a) EA;
 - (b) EA (MOD 1); and
 - (c) Statement of Commitments.

Note: The Statement of Commitments is reproduced in Appendix 1.

- 2A. **The Proponent must carry out the project in accordance with the conditions of this approval.**
3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.
4. The Proponent **must** comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
 - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval;
 - (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this approval; and
 - (c) the implementation of any actions or measures contained in these documents.

LAPSING OF APPROVAL

5. If the project has not been physically commenced within 5 years of the date of this approval, then this project approval shall lapse.

LIMITS ON APPROVAL

Quarrying Operations

6. The Proponent may carry out quarrying operations on the site until 30 June 2044.

Note: Under this approval, the Proponent is required to rehabilitate the site and carry out additional undertakings to the satisfaction of the Secretary. Consequently, this approval will continue to apply in all other respects other than the right to conduct extraction operations until the rehabilitation of the site and those undertakings have been carried out to a satisfactory standard.

Production Limit

7. The Proponent **must** not extract process and transport more than 250,000 tonnes of quarry products from the site in any calendar year.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

8. By the end of December 2015, or as otherwise agreed by the Secretary, the Proponent **must** surrender all existing development consents that it holds for the site in accordance with Section 104A of the EP&A Act.

Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrender of consent should not be

understood as implying that works legally constructed under a valid consent can no longer be legally maintained or used.

9. Prior to the surrender of this development consent, the conditions of this approval shall prevail to the extent of any inconsistency with the conditions of that consent.

STRUCTURAL ADEQUACY

10. The Proponent **must** ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Under Part 6 of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works; and*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

DEMOLITION

11. The Proponent **must** ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

PROTECTION OF PUBLIC INFRASTRUCTURE

12. The Proponent **must**:
- repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the project; and
 - relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the project.

Note: This condition does not apply to damage to roads caused as a result of general road usage.

OPERATION OF PLANT AND EQUIPMENT

13. The Proponent **must** ensure that all the plant and equipment used at the site, **or used to monitor the performance of the project**, is:
- maintained in a proper and efficient condition; and
 - operated in a proper and efficient manner.

UPDATING AND STAGING OF STRATEGIES, PLANS OR PROGRAMS

14. To ensure that strategies, plans and programs required under this approval are updated on a regular basis, and that they incorporate any appropriate additional measures to improve the environmental performance of the project, the Proponent may at any time submit revised strategies, plans or programs for the approval of the Secretary. With the agreement of the Secretary, the Proponent may also submit any strategy, plan or program required by this approval on a staged basis.

With the agreement of the Secretary, the Proponent may prepare a revision of or a stage of a strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this approval.

Notes:

- *While any strategy, plan or program may be submitted on a staged basis, the Proponent will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times. If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the project to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.*
- *For the avoidance of doubt, existing approved management plans, strategies or monitoring programs for the Grants Road Sand Quarry will continue to apply until the approval of a similar plan, strategy or program under this approval (see condition 8 above).*
- *See also condition 5 of Schedule 5.*

PRODUCTION DATA

15. The Proponent **must**:
 - (a) provide annual quarry production data to **DRG** using the standard form for that purpose; and
 - (b) report this data in the Annual Review (see condition 4 of Schedule 5).

IDENTIFICATION OF APPROVED EXTRACTION LIMITS

16. By 30 September 2014, unless otherwise agreed with the Secretary, the Proponent **must**:
 - (a) engage a registered surveyor to mark out the boundaries of the approved limits of extraction within the entire site; and
 - (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.
17. While quarrying operations are being carried out, the Proponent **must** ensure that these boundaries are clearly marked at all times in a manner that allows operating staff to clearly identify the approved limits of extraction.

COMPLIANCE

18. The Proponent **must** ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this approval relevant to activities they carry out in respect of the project.

SCHEDULE 3 ENVIRONMENTAL PERFORMANCE CONDITIONS

SOIL AND WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Proponent is required to obtain the necessary water licences for the project, including in respect of the extraction and/or interception of groundwater.

Water Supply

1. The Proponent **must** ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of operations under the approval to match its available water supply, to the satisfaction of the Secretary.

Compensatory Water Supply

2. The Proponent **must** provide a compensatory water supply to any owner of a privately-owned groundwater bore where monitoring indicates that the project is causing (or contributing to, in conjunction with another quarry project) a reduction in pumping yield of more than 10%, or a 2 metre decline in the water table, in consultation with DoI Water, and to the satisfaction of the Secretary.

The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the project. Equivalent water supply must be provided (at least on an interim basis) within 24 hours of the loss being identified.

If the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

If the Proponent is unable to provide an alternative long-term supply of water, then the Proponent **must** provide alternative compensation to the satisfaction of the Secretary.

Pollution of Waters

3. Unless an EPL authorises otherwise, the Proponent **must** comply with section 120 of the POEO Act during the carrying out of the project.

Water Management Plan

4. The Proponent **must** prepare and implement a Water Management Plan for the project to the satisfaction of the Secretary. This plan must:
 - (a) be prepared by suitably qualified person(s), approved by the Secretary;
 - (b) be prepared in consultation with DoI Water, and be submitted to the Secretary for approval by the end of November 2014; and
 - (c) include a:
 - (i) Site Water Balance that includes:
 - details of:
 - sources and security of water supply;
 - water use and management on site;
 - any off-site water transfers;
 - reporting procedures; and
 - measures that would be implemented to minimise clean water use on site;
 - (ii) Surface Water Management Plan, that includes:
 - detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the project;
 - a detailed description of the water management system on site, including the:
 - clean water diversion system;
 - erosion and sediment controls;
 - dirty water management system; and
 - water storages;
 - a program to monitor and report on surface water flows and quality in water bodies that could potentially be affected by the project; and

- a comparison of monitoring results with modelled predictions;
- (iii) Groundwater Management Plan, that includes:
- detailed baseline data on groundwater levels, yield and quality in local sandstone aquifers, privately-owned groundwater bores and in areas of high priority GDEs that could be affected by the project;
 - groundwater impact assessment criteria for local sandstone aquifers, privately-owned bores and high priority GDEs;
 - a program to monitor and report on:
 - groundwater inflows to the quarrying operations;
 - the impacts of the project on:
 - local sandstone aquifers;
 - privately-owned groundwater bores; and
 - high priority GDEs,
 - including provision for continuous groundwater monitoring; and
 - a program to validate the groundwater model for the project, and comparison of monitoring results with modelled predictions;
 - a protocol, developed in consultation with Central Coast Sands Quarry, to appropriately apportion responsibility for any potential impacts to privately-owned groundwater bores and/or high priority GDEs that may be affected cumulatively by the project and operations at Central Coast Sands Quarry;
 - an investigation of opportunities to maintain ecosystem function in high priority GDEs to the west and northwest of the project through facilitating run-on of clean surface waters; and
- (iv) a Surface and Ground Water Contingency Strategy, that includes:
- a protocol for the investigation, notification and mitigation of identified exceedances of the surface water and groundwater impact assessment criteria;
 - measures to mitigate and/or compensate potentially affected landowners of privately-owned land, including provision of alternative long-term supply of water to the affected landowner that is equivalent to the loss attributed to the project; and
 - the procedures that would be followed if any unforeseen impacts are detected during the project.

Note: In the event that there is a dispute between the Proponent and Central Coast Sands Quarry concerning the development, finalisation or implementation of the above protocol, then either party may refer the matter to the Secretary for resolution. The decision of the Secretary on the matter shall be final.

NOISE

Hours of Operation

5. The Proponent **must** only conduct construction activities and quarrying operations on the site:
- (a) between 7.00 am and 6.00 pm, Monday to Friday;
 - (b) between 7.00 am and 1.00 pm, Saturday; and
 - (c) at no time on Sunday or public holidays.

Note: The Proponent may carry out other activities e.g. maintenance, on the site provided that these activities are conducted in a manner that is inaudible at all privately-owned residences.

6. The following activities may be carried out on the site outside the hours specified in condition 5:
- (a) delivery or dispatch of materials as requested by Police or other authorities; and
 - (b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

In such circumstances the Proponent **must** notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Noise Impact Assessment Criteria

7. The Proponent **must** ensure that the construction and operational noise generated by the project does not exceed the criteria in Table 1 at any residence on privately-owned land.

Table 1: Noise criteria

Receiver Location	$L_{Aeq (15 min)}$ dB(A)
All privately-owned residences	40

Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy*. Appendix 2 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 1 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of the agreement.

Operating Conditions

8. The Proponent **must**:
- implement best management practice to minimise the construction, operational and road noise of the project;
 - regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this approval;
 - maintain the effectiveness of noise suppression equipment on plant and equipment on site;
 - minimise the noise impacts of the project during meteorological conditions under which the noise limits in this approval do not apply (see Appendix 2); and
 - carry out regular noise monitoring to determine whether the project is complying with the relevant conditions of this approval,
- to the satisfaction of the Secretary.

Noise Management Plan

9. The Proponent **must** prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with the EPA, and submitted to the Secretary for approval by the end of November 2014;
 - describe the measures that would be implemented to ensure:
 - compliance with the relevant conditions of this approval;
 - best management practice is being employed; and
 - the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply;
 - describe the proposed noise management system; and
 - include a monitoring program that:
 - uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;
 - evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
 - defines what constitutes a noise incident at the project, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

AIR QUALITY

Air Quality Impact Assessment Criteria

10. The Proponent **must** ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not exceed the criteria listed in Tables 2, 3, 4 and 5 at any residence on privately-owned land.

Table 2: Long-term criteria for particulate matter

Pollutant	Averaging Period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 $\mu\text{g}/\text{m}^3$

Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³
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Table 3: Short-term criteria for particulate matter

Pollutant	Averaging Period	^d Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

Table 4: Long-term criteria for deposited dust

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Table 5: Impact assessment criterion for crystalline silica

Pollutant	Averaging Period	Criterion
^e Chronic Reference Exposure Level (REL) (PM ₄)	Annual	3 µg/m ³

References to Tables 2 to 5:

^a Total impact (ie. incremental increase in concentrations due to the project plus background concentrations due to all other sources);

^b Incremental impact (ie. 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 3580.10.1:2003: Methods for Sampling and Analysis of Ambient 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 Secretary in consultation with the EPA; and

^e Crystalline silica must be analysed in accordance with a test method approved by the Department of Health.

Operating Conditions

11. The Proponent **must**:
- implement best practice management to minimise the dust emissions of the project;
 - regularly assess air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval;
 - minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d under Table 5);
 - implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site; and
 - minimise the area of surface disturbance and maximise progressive rehabilitation of the site; and
 - carry out regular air quality monitoring to determine whether the project is complying with the relevant conditions of this approval,
- to the satisfaction of the Secretary.

Air Quality Management Plan

12. The Proponent **must** prepare and implement an Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with the EPA and submitted to the Secretary for approval by the end of November 2014;
 - describe the measures that would be implemented to ensure:
 - compliance with the relevant conditions of this approval;
 - best practice management is being employed; and
 - the air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events;
 - describe the proposed air quality management system; and
 - include an air quality monitoring program that:
 - is capable of evaluating the performance of the project;

- includes a protocol for determining any exceedances of the relevant conditions of approval;
- effectively supports the air quality management system; and
- evaluates and reports on the adequacy of the air quality management system.

METEOROLOGICAL MONITORING

13. For the life of the project, the Proponent **must** ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

TRANSPORT

Monitoring of Product Transport

14. The Proponent **must**:
- keep accurate records of the:
 - amount of quarry products transported from the site (per calendar month and year); and
 - number of laden vehicle movements from the site (per hour, day, week, calendar month and year); and
 - publish these records on its website biannually.

Operating Conditions

15. The Proponent **must** ensure that:
- all project-related heavy vehicles enter and exit the site in a forward direction;
 - all laden vehicles entering or leaving the site have their loads covered; and
 - all laden vehicles leaving the site are cleaned of sand and other material that may fall on the road, before leaving the site.

Grants Road Maintenance

16. The Proponent **must**, in conjunction with the operator of the Central Coast Sands Quarry, cause to be prepared a road condition assessment and road maintenance contributions study of Grants Road. The study must:
- be undertaken by a suitably qualified, experienced and independent person(s) endorsed by the Secretary;
 - be undertaken in consultation with Council;
 - be submitted to the Secretary for approval by the end of March 2015;
 - be co-funded by the Proponent and the operator of the Central Coast Sands Quarry on a basis which is proportionate to the maximum number of tonnes of quarry product expected to be dispatched from each quarry over the life of their major project approvals, and the length of Grants Road affected by laden vehicles from each quarry;
 - assess current road condition of the length of Grants Road affected by laden vehicles from each quarry, and future road maintenance requirements for this length of road over the life of the major project approvals for both quarries;
 - give consideration to the usage of Grants Road by laden vehicles from each quarry over the past five years and the predicted usage of Grants Road by laden vehicles from each quarry over the life of their major project approvals, including any importation of VENM; and
 - recommend per tonne/per kilometre road maintenance contributions for the project for the haulage of quarry products and VENM on Grants Road.

If the Proponent and the operator of the Central Coast Sands Quarry cannot agree on any aspect of undertaking this study or the implementation of its recommendations, then either party may refer the matter to the Secretary for resolution. The decision of the Secretary on the matter shall be final.

17. The Proponent **must** pay contributions to Council for the maintenance of Grants Road, in accordance with the study required under condition 16, unless otherwise agreed by the Secretary.

Traffic Management Plan

18. The Proponent **must** prepare and implement a Traffic Management Plan for the project, to the satisfaction of the Secretary. This plan must:
- be submitted to the Secretary for approval by the end of November 2014;
 - include a drivers' code of conduct to minimise the impacts of project-related trucks on local residences and road users; and
 - describe the measures that would be put in place to ensure compliance with the drivers' code of conduct.

BIODIVERSITY

Biodiversity Performance Measures

19. The Proponent **must** ensure that the project does not cause any exceedances of the performance measures in Table 6, to the satisfaction of the Secretary.

Table 6: Biodiversity impact performance measures

Feature	Measure
High priority GDEs located within 1 kilometre of extraction operations	Minor environmental consequences, including: <ul style="list-style-type: none">negligible erosion of the surface of the GDEs;negligible sedimentation within the GDEs;minor changes in the size of the GDEs;no significant change to the composition or distribution of species within the GDEs.
Somersby Mintbush	Negligible environmental consequences

Offsets

20. If the Proponent exceeds the performance measures in Table 6 and the Secretary determines that:
- it is not reasonable or feasible to remediate the impact or environmental consequence; or
 - remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence;
- then the Proponent **must** provide a suitable offset to compensate for the impact or environmental consequence, to the satisfaction of the Secretary.

Note: Any offset required under this condition must be proportionate with the significance of the impact or environmental consequence.

Groundwater Dependent Ecosystem Monitoring and Management Program

21. The Proponent **must** undertake additional studies on the high priority GDEs located within 1 kilometre of extraction operations under the approval and potentially impacted by the project. The studies **must** be undertaken in consultation with Dol Water and include:
- a description of the nature and extent of groundwater reliance for each GDE;
 - long-term monitoring of the condition of the GDEs;
 - performance indicators for project-related environmental consequences on GDEs and trigger levels to initiate mitigation/response measures; and
 - mitigation/response measures to ensure minor environmental consequences on the GDEs, to the satisfaction of the Secretary.

Somersby Mintbush Monitoring and Management Program

22. The Proponent **must** prepare and implement, in consultation with OEH and Council, a Somersby Mintbush (*Prostanthera junonis*) Monitoring Program within the vicinity of the site. This program must include:
- a baseline assessment of the extent and condition of the Somersby Mintbush populations before commencement of quarrying operations under the approval;
 - long-term monitoring of these populations;
 - establishment of performance indicators for project-related environmental consequences on Somersby Mintbush and trigger levels to initiate mitigation/response measures; and

- (d) mitigation/response measures to ensure negligible environmental consequences on the Somersby Mintbush, to the satisfaction of the Secretary.

Biodiversity Offset Strategy

23. The Proponent **must** implement the **Biodiversity Offset Strategy** as described in the EA, **EA (MOD 1) and Landscape and Rehabilitation Management Plan** and as summarised in Table 7, and shown conceptually in Appendix 3, to the satisfaction of the Secretary.

Table 7: Summary of the Biodiversity Offset Strategy

Area	Offset Criteria	Size (hectares)
On-site Offset Area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0

Note: See Statement of Commitment No 9 for additional biodiversity offset requirements.

Long Term Security of Offset

24. Within 6 months of the determination of Modification 1, or as otherwise agreed by the Secretary, the Proponent must:
- (a) engage an independent registered surveyor to survey and permanently mark the boundaries of the offset areas;
 - (b) submit a survey plan of these boundaries to the Secretary;
 - (c) ensure that these boundaries are clearly marked at all times in a permanent manner that allows operating staff, the landowner and inspecting officers to clearly identify those boundaries; and
 - (d) cause restrictive and positive covenants under the *Conveyancing Act 1919* to be placed on the titles of the land referring to the surveyed offset areas, to ensure that the Proponent and the landowner:
 - manage the offset areas for conservation in perpetuity;
 - implement the Landscape and Rehabilitation Management Plan; and
 - permit ongoing access to the offset areas by the Department and other relevant public authorities for the purposes of monitoring compliance with the covenants and Landscape and Rehabilitation Management Plan,
 to the satisfaction of the Secretary.

LANDSCAPE

Rehabilitation Objectives

25. The Proponent **must** rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy as described in the EA, **EA (MOD 1) and Landscape and Rehabilitation Management Plan** and comply with the objectives in Table 8.

Table 8: Rehabilitation objectives

Feature	Objective
Site (as a whole)	<ul style="list-style-type: none"> • Safe, stable and non-polluting. • Minimise the visual impact of the final landforms as far as is reasonable and feasible.
Surface Infrastructure	<ul style="list-style-type: none"> • To be decommissioned and removed, unless the Secretary agrees otherwise.
Quarry Benches	<ul style="list-style-type: none"> • Suitably landscaped and revegetated using native species.
Quarry Pit Floor	<ul style="list-style-type: none"> • Establish land with a level of at least Class 4 agricultural suitability over 80% of the quarry floor.
Community	<ul style="list-style-type: none"> • Ensure public safety. • Minimise the adverse socio-economic effects associated with quarry closure.

Progressive Rehabilitation

26. The Proponent **must** rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active and which are not ready for final rehabilitation.

Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in future.

Landscape and Rehabilitation Management Plan

27. The Proponent **must** prepare and implement a Landscape and Rehabilitation Management Plan for the site, including the offset area, to the satisfaction of the Secretary. This plan must:
- be prepared by suitably qualified person(s) whose appointment has been approved by the Secretary;
 - be prepared in consultation with OEH, DRG and Council, and submitted to the Secretary for approval by the end of July 2015;
 - describe how the implementation of the **Biodiversity Offset Strategy and Statement of Commitment Number 9** would be integrated with the overall rehabilitation of the site;
 - describe the short, medium, and long term measures that would be implemented to:
 - manage the remnant vegetation and habitat on the site and in the offset areas;
 - implement the **Biodiversity Offset Strategy**;
 - **manage the buffer areas surrounding the extraction area; and**
 - **ensure compliance with the rehabilitation objectives and the progressive rehabilitation obligations in this approval;**
 - include detailed performance and completion criteria for evaluating the performance of the **Biodiversity Offset Strategy** and the rehabilitation of the site, including triggers for any necessary remedial action;
 - include a detailed description of the measures that would be implemented over the next 3 years (to be updated for each 3 year period following initial preparation of the plan), including the procedures to be implemented for:
 - enhancing the quality of remnant vegetation and fauna habitat;
 - landscaping the site and along public roads to minimise visual and lighting impacts;
 - restoring native endemic vegetation and fauna habitat;
 - maximising the salvage of environmental resources within the approved disturbance area – including tree hollows, vegetative and soil resources – for beneficial reuse;
 - ensuring minimal environmental consequences for threatened species, populations and habitats;
 - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
 - controlling weeds and feral pests;
 - controlling erosion;
 - controlling access; and
 - bushfire management;
 - include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria;
 - identify the potential risks to the implementation of the **Biodiversity Offset Strategy** and

- rehabilitation of the site, and include a description of the contingency measures that would be implemented to mitigate these risks; and
- (i) include details of who would be responsible for monitoring, reviewing and implementing the plan.

Conservation and Rehabilitation Bond

28. The Proponent **must** lodge a Conservation and Rehabilitation Bond with the Department within 6 months of the approval of the Landscape and Rehabilitation Management Plan, to ensure that the **Biodiversity Offset Strategy** and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the Plan. The sum of the bond **must** be determined by:
- (a) calculating the cost of implementing the **Biodiversity Offset Strategy** over the next 3 years;
 - (b) calculating the cost of rehabilitating disturbed areas of the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and
 - (c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.

Notes:

- *Alternative funding arrangements for long term management of the **Biodiversity Offset Strategy**, such as provision of capital and management funding as agreed by OEH as part of a **Stewardship Agreement** or transfer to conservation reserve estate can be used to reduce the liability of the conservation and biodiversity bond.*
 - *If capital and other expenditure required by the Landscape and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for the lodgement of a bond in respect of the remaining expenditure.*
 - *If the rehabilitation of the site area is completed to the satisfaction of the Secretary, then the Secretary will release the bond. If the rehabilitation of the site is not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant works.*
29. Within 3 months of each Independent Environmental Audit (see condition 9 of Schedule 5) **or approval of each revised version of the Landscape and Rehabilitation Management Plan**, the Proponent **must** review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must:
- (a) consider the performance of the implementation of the rehabilitation of the site to date;
 - (b) consider the effects of inflation; and
 - (c) calculate the cost of rehabilitating the disturbed areas of the site (taking into account the likely surface disturbance over the next 3 years of quarrying operations).

HERITAGE

Heritage Management Plan

30. The Proponent **must** prepare and implement an Aboriginal Cultural Heritage Management Plan for the project to the satisfaction of the Secretary. This plan must:
- (a) be prepared by suitably qualified person(s) whose appointment has been approved by the Secretary;
 - (b) be prepared in consultation with OEH and local Aboriginal stakeholders;
 - (c) be submitted to the Secretary for approval by the end of November 2014;
 - (d) include a description of the measures that would be implemented for:
 - protecting, monitoring and managing Aboriginal sites within the site, including the **Biodiversity Offset Strategy**;
 - maintaining and managing reasonable access for Aboriginal stakeholders to cultural heritage items on site and in the biodiversity offset areas;
 - managing the discovery of any human remains or previously unidentified Aboriginal objects on site, including (in the case of human remains) stop work provisions and notification protocols;
 - ongoing consultation with the local Aboriginal stakeholders in the conservation and management of Aboriginal cultural heritage both on-site and in the biodiversity offset areas;
 - ensuring any workers on site receive suitable heritage inductions prior to carrying out any activities which may disturb Aboriginal sites, and that suitable records are kept of these inductions; and

- the long term management of the Aboriginal cultural heritage values of the site post extraction operations and rehabilitation of the site.

VISUAL

30. The Proponent **must** implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project to the satisfaction of the Secretary.
31. The Proponent **must**:
 - (a) vegetate any earthen perimeter bund at the project within 3 months of establishing the bund, using appropriate flora species to minimise the visual and off-site sedimentation impacts of the project; and
 - (b) maintain this vegetation in a good condition throughout the remainder of the project, to the satisfaction of the Secretary.

WASTE MANAGEMENT

32. The Proponent **must**:
 - (a) minimise and monitor the waste generated by the project;
 - (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of;
 - (c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and
 - (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.
33. Prior to importing any VENM to the site, the Proponent must obtain a 'resource recovery exemption' under the POEO Act and provide evidence of this approval to the Department.

DANGEROUS GOODS

34. The Proponent **must** ensure that the storage, handling, and transport of dangerous goods are done in accordance with the relevant *Australian Standards*, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

BUSHFIRE

35. The Proponent **must**:
 - (a) ensure that the project is suitably equipped to respond to any fires on site; and
 - (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing:
 - (a) an exceedance of any relevant criteria in Schedule 3, the Proponent **must** notify the 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
 - (b) an exceedance of any relevant air quality criteria in Schedule 3, the Proponent **must** send a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary’s decision, the Proponent **must**:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
 - consult with the landowner to determine his/her concerns;
 - conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and
 - if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and
- (b) give the Secretary and landowner a copy of the independent review.

**SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING**

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Proponent **must** prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary. The strategy must:
 - (a) be submitted to the Secretary for approval by the end of November 2014;
 - (b) provide the strategic framework for environmental management of the project;
 - (c) identify the statutory approvals that apply to the project;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;
 - (e) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
 - receive, record, handle, and respond to complaints;
 - resolve any disputes that may arise during the course of the project;
 - respond to any non-compliance;
 - respond to emergencies; and
 - (f) include:
 - copies of any strategies, plans and programs approved under the conditions of this approval; and
 - a clear plan depicting all the monitoring to be carried out under the conditions of this approval.

Management Plan Requirements

2. The Proponent **must** ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:
 - (a) detailed baseline data;
 - (b) a description of:
 - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - any relevant limits or performance measures/criteria;
 - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;
 - (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
 - (d) a program to monitor and report on the:
 - impacts and environmental performance of the project;
 - effectiveness of any management measures (see c above);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the project over time;
 - (g) a protocol for managing and reporting any:
 - incidents;
 - complaints;
 - non-compliances with statutory requirements; and
 - exceedances of the impact assessment criteria and/or performance criteria; and
 - (h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Adaptive Management

3. 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, at the earliest opportunity:

- (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) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

Annual Review

4. By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent **must** review the environmental performance of the project to the satisfaction of the Secretary. This review must:
 - (a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
 - (b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/criteria;
 - requirements of any plan or program required under this approval;
 - monitoring results of previous years; and
 - relevant predictions in the EA;
 - (c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
 - (d) identify any trends in the monitoring data over the life of the project;
 - (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and
 - (f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.

Revision of Strategies, Plans and Programs

5. Within 3 months of the submission of an:
 - (a) annual review under condition 4 above;
 - (b) incident report under condition 7 below;
 - (c) audit report under condition 9 below; or
 - (d) any modification to the conditions of this approval,the Proponent **must** review the **suitability of all** strategies, plans and programs required under this approval, to the satisfaction of the Secretary. 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.

Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the project.

CONSULTATION

- 5A. Where the conditions of this approval require consultation with an identified party, the Proponent must:
 - (a) consult with the relevant party prior to submitting the subject document to the Secretary for approval; and
 - (b) provide details of the consultation undertaken, including:
 - the outcome of that consultation, matters resolved and unresolved; and
 - details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed any unresolved matters.

However, if the Secretary agrees, a strategy, plan or program may be prepared without consultation being undertaken with an identified party required under a condition of this consent.

Community Consultative Committee

6. If directed by the Secretary, the Proponent **must** establish and operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. Any such CCC must be operated in general accordance with the *Community Consultative Committee Guidelines: State Significant Projects (2016)*.

Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.*
- *In accordance with the Department's guideline, the CCC should be comprised of an independent chair and appropriate representation from the Proponent, Council (if available) and the local community.*
- *This CCC can be combined with any other CCC established under conditions of consent or approval for State Significant quarry developments on the Somersby Plateau.*

REPORTING

Incident Reporting

7. The Proponent **must** immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Proponent **must** provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Proponent **must** provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval.

AUDITING

Independent Environmental Audit

9. By 30 June 2015 and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent **must** commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
- be **led and** conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
 - include consultation with the relevant agencies **and the CCC**;
 - assess the environmental performance of the project and assess whether it is complying with the requirements in this approval and any relevant EPL or necessary water licences for the project (including any assessment, strategy, plan or program required under these approvals);
 - review the adequacy of strategies, plans or programs required under the abovementioned approvals;
 - recommend** appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy, plan or program required under the abovementioned approvals; **and**
 - be conducted and reported to the satisfaction of the Secretary.**

Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

10. **Within 3 months of commencing each audit, or within another timeframe agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary and any other agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The Proponent must implement these recommendations, to the satisfaction of the Secretary.**

ACCESS TO INFORMATION

11. By the end of November 2014, the Proponent **must**:
- make copies of the following publicly available on its website:
 - the documents referred to in condition 2 of Schedule 2;
 - all current statutory approvals for the project;
 - all approved strategies, plans and programs required under the conditions of this approval;
 - a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs;
 - a complaints register, updated monthly;

- the annual reviews of the project;
 - any independent environmental audit, and the Proponent's response to the recommendations in any audit;
 - minutes of CCC meetings;
 - any other matter required by the Secretary; and
- (b)** keep this information up to date, to the satisfaction of the Secretary.

APPENDIX 1 STATEMENT OF COMMITMENTS

Subject	Commitments	Timing
1. General Arrangements	The development must be carried out in accordance with the Environmental Assessment (April 2013) prepared by Peter Andrews + Associates Pty Ltd and this Addendum Report. This Addendum Report will override the Environmental Assessment where there is an inconsistency.	Ongoing
2. Staging	Staging of the development will be in accordance with the staging of works set out in the Environmental Assessment (April 2013).	Ongoing
3. Statutory Requirements	Obtain and maintain all relevant approvals and licences.	As required and continuous
	Comply with all conditional requirements in all approvals and licences.	As required
4. Hours of Operation	7.00am to 6.00pm Monday to Friday 7.00am to 1.00pm Saturday	Ongoing
5. Reporting Requirements	Undertake monitoring for the key areas as identified below.	As required
	Incorporate relevant data/monitoring information in the Annual Reports.	Annually
	Incorporate the management measures into the Environmental Management Plan. The development is to operate at all times within the terms and conditions of the Environmental Management Plan.	Prior to commencement and subject to five yearly reviews
	Update procedures manual for the operation of the quarry with regards to the quarry expansion including the following and ensure all staff are aware of procedures. <ul style="list-style-type: none"> • Operation of plant and equipment • Environmental monitoring • Restrictions imposed on quarrying • Vegetation removal • Sedimentation and erosion • Transportation 	Prior to commencement of the operations
	Provision of the annual production data to the Department of Trade and Investment	Annually
6. Soils and Land capability	Locate areas for acoustic earth mounds.	Prior to topsoil stripping operations
	Maintain topsoil for rehabilitation and minimise soil loss through erosion.	Ongoing
	Vegetate all mounds with Kikuyu grass	As required
	Implement downslope sedimentation controls as required	Until the surface of the mounds are vegetated
7. Groundwater	Undertake automatic water level measurements in water level data logger in monitoring bores	Initially 4-hourly samples. Assess data after 12 months and depending on the results, decrease frequency to 8-hourly samples
	Undertake groundwater sampling in representative monitoring bores	Initially 3 monthly. Assess data after 12 months and depending on the results, decrease frequency to 6

Subject	Commitments	Timing
		monthly samples
	Undertake automatic rainfall measurements in tipping bucket rain gauge data logger on site	Continuous logging at every 0.2mm tip with time/date stamps.
	Preparation of the Groundwater Management Plan, which incorporates the development of a water level and water quality monitoring program and the development of a set of trigger levels and mitigation measures if adverse impacts occur on the environmental and/or neighbouring water users.	Within 6 months of the project approval
	Provide a complete set of results of the production and monitoring program including a review and assessment of the statistical analysis to the <i>Senior Hydrogeologist DoI Water</i> and the quarry owner.	Annually
	Communicate with any landowner if there is a scientifically and independently demonstrated significant impact on any neighbouring water users surrounding the site.	As required
8. Surface Water	Preparation of an Environmental Management Plan for the quarry extension based on a continuation of the current environmental management and mitigation measures for the quarry expansion as outlined in the current EMP.	Prior to the commencement of the quarry operations
	Construct earth bunds and surface water diversion banks and drains around the perimeter of the entire quarry pit void. Bunds and/or diversion drains will require ongoing minor realignments as the quarry pit develops and advances especially through zone 'C'. Bunds can be designed as 'multi-purpose' to provide additional public 'Highwall' safety in addition to surface water flow management.	Prior to the commencement of the quarry operations and ongoing
	Relocate the chicken farming operations storage shed that is currently located on the south west drainage path to the south of the site and bund the storage site to contain runoff while chicken farming is ongoing at the site.	Prior to the commencement of the quarry operations and ongoing
	Construct 'out of pit' containment infrastructure in the south-eastern most section of the property boundary adjacent to Zone E to capture and passively treat contaminated surface water runoff whilst simultaneously providing additional water security. Infrastructure to consist of: <ol style="list-style-type: none"> 1. One 10 Megalitres (ML) Pollution Control Dam (PC Dam) to receive nitrogen rich runoff from Zones F&G where the existing chicken and machinery sheds are located. This dam will gravity flow via a spillway into a shallow polishing pond. Control structures such as rock 'rip rap' or similar will be required to control water runoff velocity prior to entering the PC Dam. 2. Broad shallow polishing pond/s will receive any water spilled or transferred from PC Dam and provide passive treatment through suitable wetland plant species. 3. Pipeline and pumps for transfer of water each way between the in-pit decant pond and out of pit PC Dam. 4. A floating siphon in the PC Dam to maintain a 5 ML operating level. <p>Ensure PC Dam and pond are located outside of the water pipeline easement and located generally as shown on the plans. Access to the ponds will be along the southern boundary across the water pipeline easement.</p>	Prior to the commencement of the quarry operations and ongoing
	Continue monitoring of surface water at locations W1 and W4	Monitor until stage 2 of the quarry commences.

	<p>After construction of the control pond and polishing pond, it is proposed that the quality of the treated quarry discharge released to the south west waterway is monitored at the future surface water quality monitoring location S1 shown in Appendix 2 of this report. Initially, the control pond and polishing dam will be used mainly to treat runoff from the chicken farming operations, the existing dwelling and a small area of pasture, and will only be used to treat water captured within the quarry during large rainfall events until the commencement of stage 2 of the quarry. As the quarry extends to the maximum quarry footprint in stage 2, pumping out of the quarry may occur as regularly as weekly.</p> <p>Undertake water quality monitoring by a grab sample taken during discharge downstream of the control pond and polishing pond at location S1 on a monthly</p>	Monthly water monitoring
	<p>basis. The parameters will be monitored and compared against the proposed discharge limits as follows:</p> <ul style="list-style-type: none"> • Suspended solids 40mg/L • Oil and grease – 5 and/or none visible • pH – 6.0-8.0 	
9. Biodiversity and Environmental Management	Identify the boundaries of the quarry.	Prior to clearing of vegetation
	Preparation of a detailed Biodiversity Offset Management and Habitat Rehabilitation Plan for areas to be retained as biodiversity offsets within the site.	Prior to the clearing of vegetation
	<p>Biodiversity offsetting will be undertaken to compensate for unavoidable impacts to biodiversity within the site including the removal of 1.5 hectares of Cleared Land with Remnant Trees vegetation and the loss of 18 hollow bearing trees. The areas within the site proposed for biodiversity offsetting are located in the north-eastern section of the site and along the western section of the site. The offsetting strategy proposed will result in the improvement and maintenance of biodiversity values on the site for the medium to long term.</p> <p>A total of 7 hectares of land will be retained and managed as a biodiversity offset to compensate for the loss of 1.5 hectares of Cleared Land with Remnant Trees vegetation.</p> <p>Offset areas will be protected in perpetuity and subject to a 10 year rehabilitation and maintenance period. The areas proposed for retention comprise the following:</p> <ul style="list-style-type: none"> • Offset Area A. 1.05 hectares of Scribbly Gum Woodland in the east of Lot 1 DP358717; • Offset Area B. 1.51 hectares of Scribbly Gum Woodland in the west of Lot 1 DP358717; and • Offset Area C. 4.44 hectares of Red Bloodwood - Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion in the west of Lot 2 DP358717. <p>The areas proposed for offsetting will be subject to protective fencing to exclude livestock (all areas) and local populations of feral deer (Areas A and B), replanting of endemic tree and shrub species within cleared areas and weed management of noxious and environmental weeds (Areas A and B). A total of 170 hollow-bearing trees will be retained and 36 nest boxes will be erected to compensate for the loss of 18 hollow bearing trees. Any shortfall in hollow-bearing trees will be supplemented by installing either salvaged hollow sections of trees at a ratio of one salvaged hollow section per hollow-bearing tree, or nest boxes at a ratio of two salvaged nest boxes per hollow-bearing tree.</p>	The first 10 years of Stage 2

	All hollow-bearing trees to be removed are to be inspected and sectionally dismantled by an arborist, under the supervision and direction of an ecologist. Where possible, escaped fauna is to be caught by the consulting ecologist and transported to a suitable release area. If juvenile or injured fauna are encountered they are to be captured and transported to a wildlife carer or a veterinary surgeon as required. In the case where the arborist declares a tree or stag unsafe to climb, machine removal with a rotating grab or similar will be required.	Prior to removal of the hollow-bearing trees
10. Noise	<p>Incorporate noise reducing measures (upgraded exhausts, enclosures/panels to engines, or localised plant specific shielding*) to achieve the following noise reductions:</p> <ul style="list-style-type: none"> • Dozer 4db; • Trencor 3dB; • McCloskey 3dB; and • Sandwash Plant 8dB for air cooled 6 cylinder engine* (Smaller 4 cylinder engine is now operating with a purpose designed enclosure and exhaust resulting in an 8dB reduction and does not require further attenuation). <p>All reversing alarms replaced with level varying or broadband "quacker" type alarms.</p>	Prior to the use of the plant equipment.
	Plant and equipment to be maintained to ensure acoustic performance is not de-rated and complies with the recommended limits outlined in the Noise Impact Assessment (NIA) and incorporating the specified noise controls.	Throughout the life of the quarry.
	A Site Operational Management Plan (SOMP) be developed to ensure that the dozer, Trencor and McCloskey do not operate simultaneously.	Throughout the life of the quarry.
	Provision of an earth mounds 3-4 metres high along the southern and south-eastern quarry boundaries as shown on Figure 14 of the Environmental Assessment before commencing Precincts E, F and G.	Prior to quarrying of stage 2.
	The SOMP to document procedures to maximise site shielding and minimise number of plant and equipment on exposed locations, particularly on the eastern and southern portions of the quarry (areas B, C, F and G). That is, where practical and feasible only one (1) item of plant would operate at an exposed level (<8m below ground level) at any one time and extraction to proceed against a working face where practical.	During quarrying of the stage 2.
	<p>A site weather station will be installed and continually monitor ambient weather conditions including wind speed and direction at a height of ten (10) metres above ground level. The current weather conditions would be utilised to manage day to day quarry operations, and the SOMP incorporate strict protocols including:</p> <ul style="list-style-type: none"> • Cease operations within Precinct F and G during north-north-west or west wind conditions up to 3m/s with respect to the operation of the dozer, Trencor and McCloskey in exposed locations (<8m below ground level); and • Utilise periods of high winds >5m/s (particularly east and south-east winds) and/or rain with elevated background noise levels to extract material within exposed locations (Areas B, F and G). 	During quarrying of the relevant precincts.

	<p>A Complaints Management Procedure (CMP) be prepared to deal with any noise complaints as follows and include:</p> <ul style="list-style-type: none"> • Site contact telephone number during business hours to lodge complaints or seek additional information (and message service for out of hours). If phone unattended it should divert to mobile phone of site quarry manager; • Log to record complaint including time of alleged noise issue, duration, description of noise, prevailing weather conditions and complainants contact details; • Complaints to be responded to in a timely manner. Where the noise is currently occurring, Quarry Manager must investigate and determine noise source is noise is likely to be exceeding Approval Noise Limits. If exceedance is occurring, operations to be amended or ceased; • Audits at sensitive receiver locations to identify noise contributions, compliance and determine if additional procedures or controls to minimise noise from the site are required; • A record of noise investigations to be maintained on site and complainants informed of outcomes of investigations and actions implemented following any noise complaints; and • All site plant including trucks to be regularly inspected and maintained to ensure that the equipment is operating in accordance with specifications and satisfied the noise limits referenced in the NIA (min Annually). 	Prior to the commencement of the quarry extensions.
	<p>Undertake an Annual Noise monitoring program that incorporates:</p> <ul style="list-style-type: none"> • Site attended noise measurements at the three (3) reference locations and record aural observations, statistical noise levels (LA90, LAeq), weather conditions and quarry operations. Typically measurement considering of two (2) 15 minute measurement periods at each receiver; • Attended nearfield or midfield measurements to confirm operating noise levels and determine sound power levels of individual plant and equipment for comparison with source noise data utilised in the EIS Noise Impact Assessment; • Assessment of noise audit measurement results against Conditions of Consent and any pending Licence to determine compliance; • Provide recommendations for ameliorative or management measures for Quarry operator where noise exceedances are identified; • Preparation of Annual Noise Monitoring Report for submission to Consent Authority and/or EPA. 	Annually
11. Air Quality	Preparation of an air quality management plan incorporating PM ₁₀ monitoring at the most affected off-site sensitive location.	Annually
	<p>Minimise dust impacts at sensitive residences through the following onsite management procedures. These procedures to meet the KPIs outlined in this report and be reviewed.</p> <ul style="list-style-type: none"> • Water of unsealed roads; • Use of wheel-wash and operation of sealed road from wheel-wash to the front gate; • Covering of loads during hauling; • Water of stockpiles when necessary; • Limiting vehicle speed onsite; and 	Annually
	<ul style="list-style-type: none"> • Limiting the area of disturbed land and progressive rehabilitation of completed areas. 	

	Carry out campaign monitoring for respirable crystalline silica. The monitoring would assess the exposure of quarry workers to respirable crystalline silica (in accordance with Australian Standard (AS 2985-2009) - Workplace atmospheres - Method for sampling and gravimetric determination of respirable dust.	First year of the quarry extension (on a day of maximum throughput). Monitoring to be repeated quarterly in the first year and if more than two consecutive results demonstrate low risk, monitoring would be discontinued.
	Incorporate greenhouse gas reduction measures for the operation of the project including: <ul style="list-style-type: none"> • Opportunities to increase energy efficiency will be continuously reviewed including opportunities to minimise haul distances for quarry material, ensuring trucks are fully loaded to maximise productivity and efficiency, reducing trips by coordinating delivery and removal of materials. • Consideration of the use of alternative fuels where economically and practically feasible. • Regular maintenance of diesel powered equipment to ensure operation at peak efficiency. • Consideration of energy efficiency for all electrical equipment, appliances, lighting and hot water system. 	Throughout the life of the quarry
12. Roadworks and Traffic Management	All vehicles leaving the site with loads of extracted material are to be sufficiently covered to prevent windblown dust.	Ongoing
13. Heritage	Grants Rd RE1 and RE2 sites are to be preserved.	Continuous
	Incorporate a ten (10) metre buffer on the southern, eastern and western boundary of the anthropomorphic figure (Grants Rd RE1).	For the life of the quarry
	The bund wall for the quarry extension in the area of Grants Rd RE1 to be constructed of block wall rather than earth in between the engraving and the boundary.	Prior to the quarrying of Precinct C
	The engraving (Grants Rd RE1) is incorporated into the monitoring programme currently in place for the adjacent Howes Aboriginal Reserve.	Five yearly
	A protective fence is constructed 8 metres around each side of the Grants Rd RE 1 site to prevent inadvertent damage. The fence should incorporate appropriate signage to ensure the access within the fenced zone is limited to maintenance activities such as grass cutting.	Prior to the quarrying of Precinct C
	Traffic is to be directed around the small mound at the Grants Rd RE 2 site to ensure minimal disturbance.	Continuous
	An additional monitoring site visit be undertaken to review the recommendations effectiveness to protect the site.	12 months after the project approval
	The quarry operator to develop and implement an Aboriginal Cultural Heritage Induction Program for all personnel associated with the quarry operations. A register is to be kept off staff/contractors that have been inducted.	Prior to the commencement of the quarry extensions
Should any materials suspected of being of Aboriginal occupation origin be located during the quarry operations that work cease in that location immediately and that the Office of Environment & Heritage be contacted immediately.	For the life of the quarry	
14. Visual Impact	Vegetate all stockpiles and the acoustic earth mounds using appropriate species noting that the current conditions of consent requires the use of Kikuyu grass for the stabilisation of stockpiles.	For the life of the quarry
	Maintain grass covered mounds.	For the life of the quarry
	Maintain the site.	For the life of the quarry
	Keep the site clean and tidy where possible.	Continuous

	Progressively revegetate all areas where quarrying is completed.	Upon completion of quarrying in a precinct
15. Bushfire Protection	Provision of an on-site mobile water pump and tank, with firefighting hose connections to be located on site.	For the life of the quarry
	Management of the site to provide a defensible space to the bushfire hazard. These areas are to be regularly inspected and maintained by the landowners.	For the life of the quarry
16. Waste Management	Keep the site clean and tidy where possible	For the life of the quarry
	Ensure all general waste / garbage is removed by a licensed waste collection contractor at least on a weekly basis.	Continuous
	Preparation of a waste management plan for the demolition of any structures.	Prior to demolition.
17. Mine Rehabilitation	Ensure completed areas of the quarry are revegetated to reduce sedimentation and erosion and dust emissions and visual impact.	As required
	Preparation of a quarry rehabilitation plan to identify staging for rehabilitation.	Within five years of commencement of the quarry extension
	A detailed decommissioning plan will be prepared as part of the review of the Environmental Management Plan.	Towards the end of the life of the Quarry (two years prior)
	A five year monitoring program to be implemented upon completion of the rehabilitation.	Five years after the rehabilitation.

APPENDIX 2 NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 2 is to apply under all meteorological conditions except the following:
 - a) during periods of rain or hail; or
 - b) wind speeds greater than 3 m/s measured at 10 m above ground level.

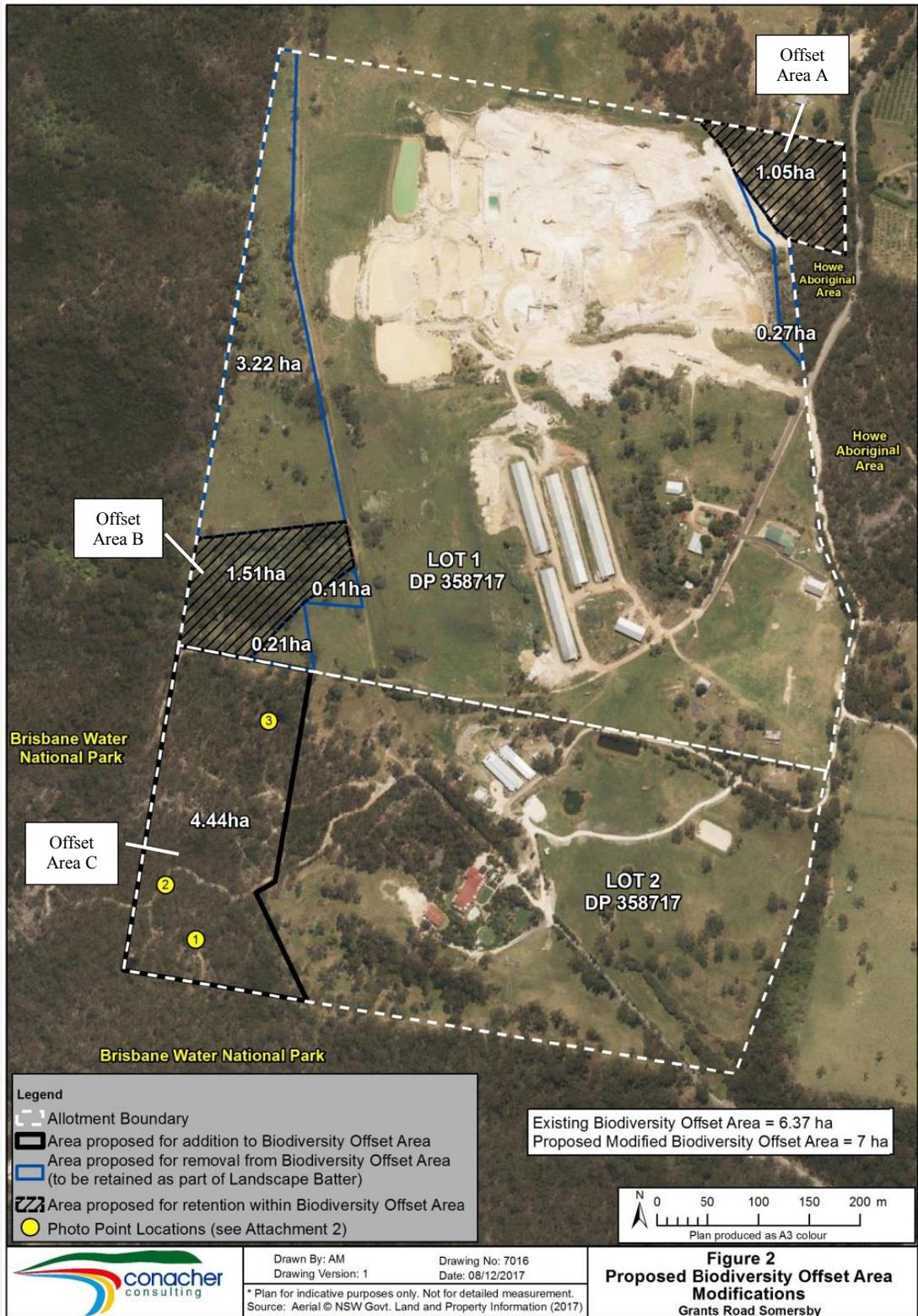
Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions **must** be that recorded by the meteorological station in the vicinity of the site.

Compliance Monitoring

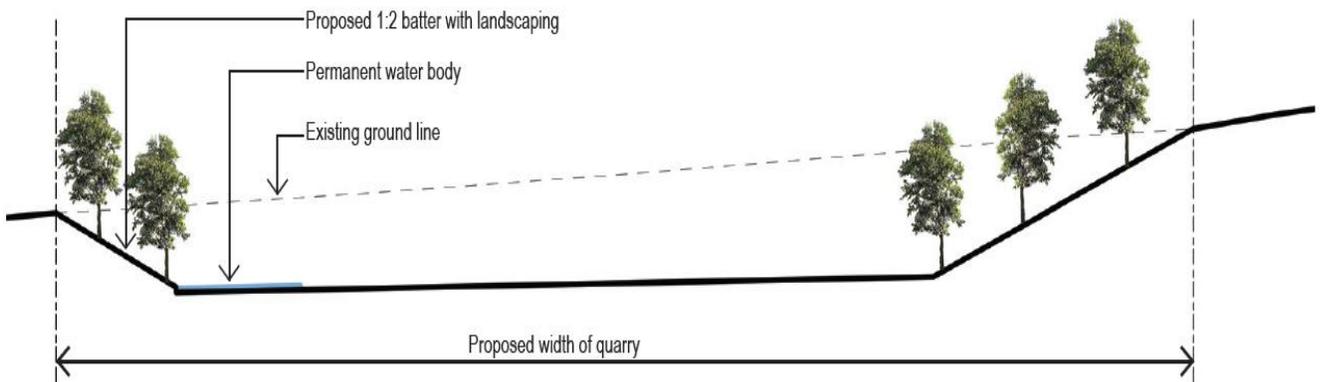
3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
 - a) monitoring locations for the collection of representative noise data;
 - b) meteorological conditions during which the collection of noise data is not appropriate;
 - c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
 - d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

**APPENDIX 3
BIODIVERSITY OFFSET AND LANDSCAPE BUFFER AREAS**





**APPENDIX 4
CONCEPTUAL FINAL LANDFORM**



Appendix 2 **NOTICE OF MODIFICATION**

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, I modify the project approval referred to in Schedule 1, as set out in Schedule 2.



Howard Reed
Director
Resource Assessments

Sydney

04 May

2018

SCHEDULE 1

Project approval 08_0099 for the Grants Road Sand Quarry, granted by the Executive Director Development Assessment Systems & Approvals, as delegate of the Minister for Planning, on 25 July 2014.

SCHEDULE 2

- In Schedule 1, replace "Lot 1 DP358717" with "Lot 1 and 2 DP358717".
- In the list of definitions, delete the terms "Biodiversity Offset Strategy", "Council", "DRE", "NOW", "Project" and "Secretary", and their definitions, and insert the following terms and definitions in alphabetical order:

Biodiversity Offset Strategy	The conservation and management of the Proponent's offset sites on Lot 1 and 2 DP358717, as shown in Appendix 3
Council	Central Coast Council
DoI Water	Department of Industry - Water
DRG	Division of Resources and Geoscience in the Department
EA (MOD 1)	Environmental Assessment of the project titled <i>Section 75W Modification Application for Changes to Biodiversity Offset Area for Approved Grants Road Sand Quarry Extension 270 Grants Road Somersby</i> , dated December 2017 and supplementary ecological survey report titled <i>Additional Ecological Information Report</i> , dated March 2018
Feasible	Means what is possible and practicable in the circumstances
Landscape buffer areas	The buffer areas as shown in Appendix 3
Modification 1	The modifications to the project as described in EA (MOD 1)
Project	The project as described in the documents in condition 2 of Schedule 2, as well as quarrying operations and disturbance existing on the site as at 25 July 2014
Secretary	Planning Secretary under the EP&A Act or nominee
- Delete all references to "shall" and replace with "must", except in conditions 3, 5 and 9 of Schedule 2, the note to condition 4 of Schedule 3 and the final sentence of condition 16 of Schedule 3.
- Delete all references to "DRE" and replace with "DRG".
- Delete all references to "NOW" and replace with "DoI Water".
- Delete all references to "biodiversity offset strategy" and replace with "Biodiversity Offset Strategy".
- In condition 1 of Schedule 2:
 - after the words "specific performance", insert the words "measures and"; and
 - delete the words "and/or minimise any" and replace with ", if prevention is not reasonable or feasible, minimise any material".

8. In condition 2 of Schedule 2, delete sub-paragraphs (b) and (c) and replace with:
 - (b) EA (MOD 1); and
 - (c) Statement of Commitments.
9. Following condition 2 of Schedule 2, insert the following:
 - 2A. The Proponent must carry out the project in accordance with the conditions of this approval.
10. In the Notes to condition 10 of Schedule 2, delete the term "4A" and replace with "6".
11. In condition 13 of Schedule 2, after the words "plant and equipment used at the site", insert the words ", or used to monitor the performance of the project,".
12. After condition 17 of Schedule 2, insert the following:

COMPLIANCE

18. The Proponent must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this approval relevant to activities they carry out in respect of the project.
13. In condition 23 of Schedule 3:
 - (a) before the words "described in the EA", insert the word "as";
 - (b) after the term "EA, ", insert the words "EA (MOD 1) and Landscape and Rehabilitation Management Plan and";
 - (c) delete the words "and revised"; and
 - (d) delete Table 7, and its Note, and replace with the following:

Table 7: Summary of the Biodiversity Offset Strategy

Area	Offset Criteria	Size (hectares)
On-site Offset Area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0

Note: See Statement of Commitment No 9 for additional biodiversity offset requirements.

14. Delete condition 24 of Schedule 3 and replace with:
 24. Within 6 months of the determination of Modification 1, or as otherwise agreed by the Secretary, the Proponent must:
 - (a) engage an independent registered surveyor to survey and permanently mark the boundaries of the offset areas;
 - (b) submit a survey plan of these boundaries to the Secretary;
 - (c) ensure that these boundaries are clearly marked at all times in a permanent manner that allows operating staff, the landowner and inspecting officers to clearly identify those boundaries; and
 - (d) cause restrictive and positive covenants under the *Conveyancing Act 1919* to be placed on the titles of the land referring to the surveyed offset areas, to ensure that the Proponent and the landowner:
 - manage the offset areas for conservation in perpetuity;
 - implement the Landscape and Rehabilitation Management Plan; and
 - permit ongoing access to the offset areas by the Department and other relevant public authorities for the purposes of monitoring compliance with the covenants and Landscape and Rehabilitation Management Plan,
 to the satisfaction of the Secretary.
15. In condition 25 of Schedule 3:
 - (a) after the words "rehabilitation strategy", insert the words "as described"; and

(b) after the term "EA,", insert the words "EA (MOD 1) and Landscape and Rehabilitation Management Plan".

16. In condition 27 of Schedule 3:
 - (a) before the words "would be integrated" in sub-paragraph (c), insert the words "and Statement of Commitment Number 9";
 - (b) delete the word "and" at the end of the second bullet point in sub-paragraph (d); and
 - (c) delete the third bullet point in sub-paragraph (d) and insert the following:
 - manage the buffer areas surrounding the extraction area; and
 - ensure compliance with the rehabilitation objectives and the progressive rehabilitation obligations in this approval;
17. In the Notes to condition 28 of Schedule 3, delete the term "Biobanking" and replace with "Stewardship".
18. In condition 29 of Schedule 3, after the words "Independent Environmental Audit (see condition 9 of Schedule 5)", insert the words "or approval of each revised version of the Landscape and Rehabilitation Management Plan".
19. In condition 5 of Schedule 5:
 - (a) before the words "strategies, plans and programs", insert the words "suitability of all";
 - (b) delete the number "4" and replace with "6".
20. After condition 5 of Schedule 5, insert the following:

CONSULTATION

- 5A. Where the conditions of this approval require consultation with an identified party, the Proponent must:
 - (a) consult with the relevant party prior to submitting the subject document to the Secretary for approval; and
 - (b) provide details of the consultation undertaken, including:
 - the outcome of that consultation, matters resolved and unresolved; and
 - details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed any unresolved matters.

However, if the Secretary agrees, a strategy, plan or program may be prepared without consultation being undertaken with an identified party required under a condition of this consent.

21. In condition 6 of Schedule 5:
 - (a) delete the words "*Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007, or its latest version)" and replace with "*Community Consultative Committee Guidelines: State Significant Projects (2016)*"; and
 - (b) in the second bullet point of the Notes, delete the word "on", and replace with "of".
22. In condition 9 of Schedule 5:
 - (a) after the word "be" in sub-paragraph (a), insert the words "led and ";
 - (b) after the words "relevant agencies" in sub-paragraph (b), insert the words "and the CCC";
 - (c) delete the word "and" at the end of sub-paragraph (d);
 - (d) delete the full stop at the end of sub-paragraph (e) and replace with "; and"; and
 - (e) insert the following sub-paragraph:
 - (f) be conducted and reported to the satisfaction of the Secretary.
23. Delete condition 10 of Schedule 5 and replace with the following:
 10. Within 3 months of commencing each audit, or within another timeframe agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary and any other agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The Proponent must implement these recommendations, to the satisfaction of the Secretary.
24. In Appendix 1, in Statement of Commitment Number 9:
 - (a) delete the number "7.1" after the words "A total of", and replace with "7";
 - (b) delete the bullet points and replace with:
 - Offset Area A. 1.05 hectares of Scribbly Gum Woodland in the east of Lot 1 DP358717;
 - Offset Area B. 1.51 hectares of Scribbly Gum Woodland in the west of Lot 1 DP358717; and

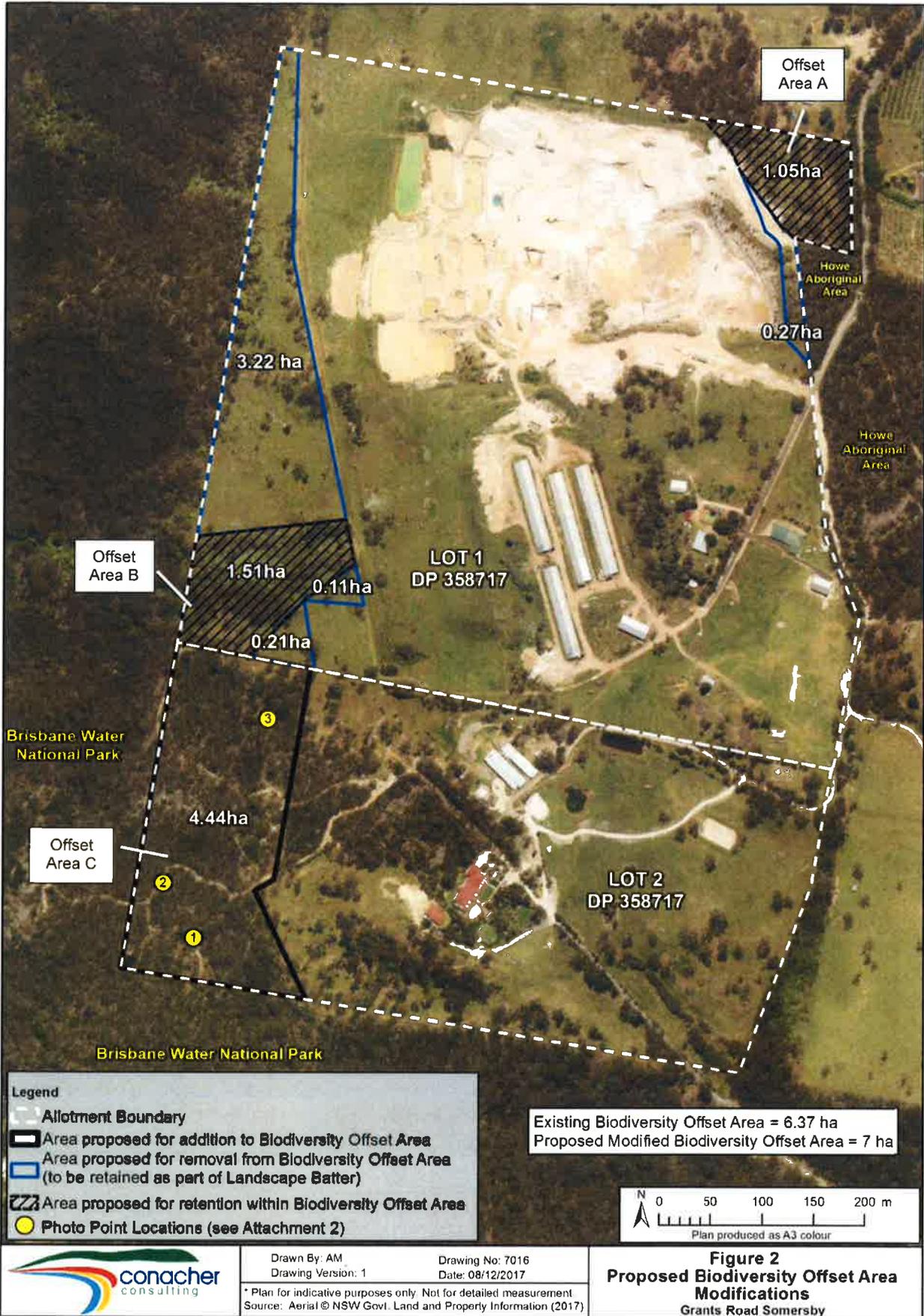
- Offset Area C. 4.44 hectares of Red Bloodwood - Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion in the west of Lot 2 DP358717.

- (c) after the words "exclude livestock", insert "(all areas)";
- (d) after the word "feral", delete the words "Rusa Deer, intensive", and insert "deer (Areas A and B)";
- (e) after the words "environmental weeds", insert "(Areas A and B)"; and
- (f) after the words "36 nest boxes will be erected to compensate for the loss of 18 hollow bearing trees.", insert the words "Any shortfall in hollow-bearing trees will be supplemented by installing either salvaged hollow sections of trees at a ratio of one salvaged hollow section per hollow-bearing tree, or nest boxes at a ratio of two salvaged nest boxes per hollow-bearing tree."

25. Delete Appendix 3 and replace with the following:

APPENDIX 3

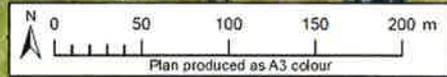
BIODIVERSITY OFFSET AND LANDSCAPE BUFFER AREAS





Legend

-  Subject Site Boundary
-  Landscape Buffer Area



Drawn By: AM
Drawing Version: 1

Drawing No: 8013
Date: 08/12/2017

* Plan for indicative purposes only. Not for detailed measurement.
Source: Aerial © Nearmap (2018) Air Photo Date: 08/08/2017

Landscape Buffer Areas

Grants Road, Somersby

Appendix 3 **APPROVAL CONDITIONS + COMPLIANCE**

Compliance Checklist

The requirements under the Project Approval and a summary of the compliance with the relevant condition are outlined in the following table for the project. It should be noted that the following table has been updated in accordance with the Modification to the Project Approval dated 4 May 2018.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
Schedule 2 Administrative Conditions				
1.	In addition to meeting the specific performance measures and criteria established under this approval, the Proponent must implement all reasonable and feasible measures to prevent, if prevention is not reasonable or feasible, minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Extent of the project	Monitoring of the quarry extension continues to show minimal impacts. Refer to Section 4.0 for monitoring results.	Compliant
2.	The Proponent must carry out the project generally in accordance with the: (a) EA; (b) EA (MODI); and (c) Statement of Commitments	Extent of the project	The project is being carried out generally in accordance with the Environmental Assessment.	Compliant
2A.	The proponent must carry out the project in accordance with the conditions of approval.	Extent of the project	Noted.	Compliant
3.	If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Extent of the project	Noted.	Compliant
4.	The Proponent must comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval;	Extent of the project	This Annual review addresses the issues raised by the Department of Planning and Environment on the review of the 2022 Annual Report.	Compliant
	(b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this approval; and	Extent of the project	No additional reports have been commissioned by the Department.	Not triggered.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
	(c) the implementation of any actions or measures contained in these documents.	Extent of the project	Actions have been undertaken in accordance with the actions identified by the Department.	Compliant
5.	If the project has not been physically commenced within 5 years of the date of this approval, then this project approval shall lapse.	Within 5 years being 25 July 2019	Project has been physically commenced and therefore condition no longer applies.	Compliant
6.	The Proponent may carry out quarrying operations on the site until 30 June 2044.	30 Jun 2044	Consent still operational.	Compliant
7.	Production must not extract, process and transport more than 250,000 tonnes of quarry products.	Per calendar year	The annual production for the quarry for 2022 was 143658.52 tonnes.	Compliant
8.	Surrender of existing development consent for the quarry	By the end of December 2015	The existing development consent was surrendered by notification to the then Gosford City Council (now Central Coast Council).	Compliant
9.	Conditions of this approval shall prevail to the extent of any inconsistency with the conditions of that consent	Prior to the surrender of the above development consent.	Condition no longer applicable as the previous consent has been surrendered.	Compliant
10.	All new and upgraded structures to comply with the relevant requirements of the BCA	Prior to construction	No new or upgraded structures undertaken to date.	Not triggered
11.	Demolition work carried out in accordance with the relevant Australian Standard	At demolition	No demolition works undertaken to date.	Not triggered
12.	Protection of public infrastructure	At all times	No impact on public infrastructure.	Compliant
13.	All plant and equipment maintained and operated in a proper and efficient manner	At all times	Plant and equipment monitored as part of the Annual Review.	Compliant
14.	Updating and staging of strategies, plans or programs to incorporate any appropriate additional measures to improve the environmental performance of the project.	On a regular basis	Updating of the management plans will consider any additional environmental performance of the project.	Not triggered.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
15.	Provide quarry production data to DRG and report as part of the Annual Review.	Annually	Production data provided to DRG. Production data recorded in the Annual Review.	Compliant.
16.	A registered surveyor to mark out the boundaries of the approved limits of extraction within the entire site and submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.	30 September 2014	Survey undertaken and provided to the Department. Survey marks outlined on the boundary.	Compliant.
17.	Ensure boundaries are clearly marked at all times in a manner that allows operating staff to clearly identify the approved limits of extraction.	Extent of quarrying operations	Survey marks are in place.	Compliant.
18.	Ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this approval relevant to activities they carry out in respect of the project.	Extent of quarrying operations	Incorporated as part of induction of employees and subcontractors.	Compliant.
Schedule 3 Environmental Performance Conditions				
Soil and Water				
1.	Ensure sufficient water for the project	Extent of quarrying operations.	Sufficient water is available for the project.	Compliant.
2.	Provide a compensatory water supply to any owner of a privately-owned groundwater bore where monitoring indicates that the project is causing (or contributing to, in conjunction with another quarry project).	When there is a reduction in pumping yield of more than 10% or a 2 m decline in the water table.	Not applicable as there has not been the decline in the water table.	Not triggered.
3.	Compliance with s120 of the POEO Act.	Extent of the project	There has been no pollution of water.	Compliant.
4.	Preparation of the Water Management Plan	30 November 2014	Water Management Plan prepared and approved by the Department. The WMP will be updated to include an investigation of opportunities to maintain ecosystem function in high priority GDEs to the west and northwest of the project	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status				
			through facilitating run-on of clean surface waters.					
Noise								
5.	Construction activities and quarrying operations on the site to only occur: (a) between 7.00 am and 6.00 pm, Monday to Friday; (b) between 7.00 am and 1.00 pm, Saturday; and (c) at no time on Sunday or public holidays.	Extent of the project	GRSQ reports it has operated within the operating hours.	Compliant.				
6.	The following activities may be carried out on the site outside the hours specified in condition 5: (a) delivery or dispatch of materials as requested by Police or other authorities; and (b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.	Extent of the project	Noted.	Not triggered.				
7.	The Proponent must ensure that the construction and operational noise generated by the project at any residence on privately owned land does not exceed the following: <table border="1" data-bbox="427 774 938 890"> <thead> <tr> <th>Receiver Location</th> <th>LAeq, 15min dB(A)</th> </tr> </thead> <tbody> <tr> <td>All privately owned residences</td> <td>40</td> </tr> </tbody> </table> This noise criteria does not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of the agreement.	Receiver Location	LAeq, 15min dB(A)	All privately owned residences	40	Extent of the project	The Noise monitoring reports show that operational noise on private residences does not exceed 40 dB(A).	Compliant.
Receiver Location	LAeq, 15min dB(A)							
All privately owned residences	40							
8.	The Proponent must: (a) implement best management practice to minimise the construction, operational and road noise of the project;	Extent of the project	The quarry operates in accordance with the consent.	Compliant.				
	(b) regularly assess noise monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the noise criteria in this approval;	Extent of the project	Noise criteria is met.	Compliant.				

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status									
	(c) maintain the effectiveness of noise suppression equipment on plant and equipment on site;	Extent of the project	Noise suppression on equipment is maintained where relevant.	Compliant.									
	(d) minimise the noise impacts of the project during meteorological conditions under which the noise limits in this approval do not apply;	Extent of the project	Noise impacts minimised.	Compliant.									
	(e) carry out regular noise monitoring to determine whether the project is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.	Extent of the project	Noise monitoring carried out.	Compliant.									
9.	Preparation of the Noise Management Plan	30 November 2014	Noise Management Plan prepared and approved by the Department.	Compliant.									
Air Quality													
10.	<p>Ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not exceed the criteria listed below at any residence on privately-owned land</p> <p>Long-term criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>^a 90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>Annual</td> <td>^a 30 µg/m³ Note 1</td> </tr> </tbody> </table> <p>Note 1: 30 µg/m³ criterion has been amended to 25 µg/m³</p>	Pollutant	Averaging Period	d Criterion	Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³ Note 1	Extent of project	Dust deposition sampling and PM10 monitoring measurements undertaken. No exceedances in reporting period for PM10 or deposited dust.	Compliant.
Pollutant	Averaging Period	d Criterion											
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³											
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³ Note 1											
	<p>Short-term criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>24 hours</td> <td>^a 50 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging Period	d Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hours	^a 50 µg/m ³	Extent of project	Reported results are well within the EPA maximum 24-hour average criterion of 50 µg/m ³ .	Compliant.			
Pollutant	Averaging Period	d Criterion											
Particulate matter < 10 µm (PM ₁₀)	24 hours	^a 50 µg/m ³											

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status								
	<p>Long-term criteria for deposited dust</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td>^c Deposited Dust</td> <td>Annual</td> <td>^b 2 g/m²/month</td> <td>^a 4 g/m²/month</td> </tr> </tbody> </table>	Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level	^c Deposited Dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month	Extent of project	The results of the dust deposition level over the recorded period are below the EPA cumulative annual average criterion of 4 µg/m ³ .	Compliant.
Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level									
^c Deposited Dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month									
	<p>Impact assessment criterion for crystalline silica</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>^e Chronic Reference Exposure Level (REL) (PM₄)</td> <td>Annual</td> <td>3 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging Period	d Criterion	^e Chronic Reference Exposure Level (REL) (PM ₄)	Annual	3 µg/m ³	Undertake monitoring at maximum throughput. Monitoring will be repeated quarterly and if two consecutive results demonstrate low risk the monitoring will be discontinued.	The results of the measured samples of respirable crystalline silica are below the relevant standards.	Compliant.		
Pollutant	Averaging Period	d Criterion										
^e Chronic Reference Exposure Level (REL) (PM ₄)	Annual	3 µg/m ³										
11	The Proponent must: (a) implement best practice management to minimise the dust emissions of the project;	Extent of project	Dust emissions are minimised. Air quality is well below the air quality criteria.	Compliant.								
	(b) regularly assess air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval;	Extent of project	<p>60 samples are required from the HVAS sampler across a 12 month period. Ten (10) samples are reported, resulting in a data recovery rate of approximately 17%.</p> <p>The reason for the reduced number of samples taken are outlined in Section 4.3 of this Annual Review. GRSQ has now been able to obtain technical assistance in maintaining the HVAS sampler. Technical</p>	Non-compliant.								

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
			assistance was not available due to a number of reasons particularly the lack of technical staff. The average PM ₁₀ concentration over the recorded 12 month period is well below the annual EPA impact assessment criterion as outlined above	
	(c) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d under Table 5);	Extent of project	The Air Quality Management Plan will be reviewed to include protocols for adverse meteorological conditions and extraordinary events	Compliant.
	(d) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site; and	Extent of project	Equipment is monitored to minimise the release of greenhouse gas emissions	Compliant.
	(e) minimise the area of surface disturbance and maximise progressive rehabilitation of the site; and	Extent of project	The area of quarrying is minimised and will be progressively rehabilitated as required.	Compliant.
	(f) carry out regular air quality monitoring to determine whether the project is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.	Extent of project	As outlined in (b) above.	Non-compliant.
12.	Prepare the Air Quality Management Plan	30 November 2014	The Air Quality Management Plan has been prepared and approved by the Department. It will be updated to address the above. Air quality monitoring has not been undertaken in accordance	Non-compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
			with the AQMP as outlined in 11(b) above.	
Meteorological Monitoring				
13.	Ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the <i>Approved Methods for Sampling of Air Pollutants in New South Wales</i> guideline.	Extent of the project	A suitable meteorological station has been placed on site.	Compliant.
Transport				
14.	Keep accurate records of the: <ul style="list-style-type: none"> Amount of quarry products transported from the site (per calendar month and year) and Number of laden vehicle movements from the site (per hour, day, week, calendar month and year). 	Publish the records on the website biannually	Records exhibited on the website and recorded in the Annual Review.	Compliant.
15.	Ensure that: <ul style="list-style-type: none"> Project related heavy vehicles enter and exit the site in a forward manner. All loads will be covered entering or leaving the site. All laden vehicles leaving the site are cleaned of sand and other material that may fall on the road, before leaving the site. 	Extent of the project	GRSQ ensures that project related heavy vehicles comply.	Compliant.
16.	In conjunction with the operator of the Central Coast Sands Quarry, prepare a road condition assessment and road maintenance contributions study of Grants Road.	31 March 2015	Grants Road assessment and maintenance report prepared and approved by the Department.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status						
17.	Pay contributions to Council for the maintenance of Grants Road	Payment in accordance with the study required under condition 16, unless otherwise agreed by the Secretary.	Contributions paid to Central Coast Council.	Compliant.						
18.	Prepare a Traffic Management Plan including a drivers' code of conduct.	30 November 2014	Traffic Management Plan prepared and approved by the Department.	Compliant						
Biodiversity										
19.	<p>Ensure that the project does not cause any exceedances of the performance measures in the following table, to the satisfaction of the Secretary</p> <table border="1"> <thead> <tr> <th>Feature</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>High priority GDEs located within 1 kilometre of extraction operations</td> <td> Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. </td> </tr> <tr> <td>Somersby Mintbush</td> <td>Exceedances of Trigger Levels</td> </tr> </tbody> </table>	Feature	Measure	High priority GDEs located within 1 kilometre of extraction operations	Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. 	Somersby Mintbush	Exceedances of Trigger Levels	Annually	Environmental reporting identifies no exceedances.	Compliant.
Feature	Measure									
High priority GDEs located within 1 kilometre of extraction operations	Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. 									
Somersby Mintbush	Exceedances of Trigger Levels									

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
20.	If the performance measures in Condition 19 are exceeded and the Secretary determines that: (a) it is not reasonable or feasible to remediate the impact or environmental consequence; or (b) remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence; then the Proponent shall provide a suitable offset to compensate for the impact or environmental consequence, to the satisfaction of the Secretary.	As required	To be undertaken as part of the Annual reporting for the Department of Planning.	Not triggered.
21.	Undertake additional studies on the high priority GDEs located within 1 kilometre of extraction operations under the approval and potentially impacted by the project. The studies must be undertaken in consultation with DoI Water.	Annually	GDE Monitoring and Management Plan approved by the Department.	Compliant.
22.	The Proponent must prepare and implement, in consultation with OEH and Council, a Somersby Mintbush (<i>Prostanthera junonis</i>) Monitoring Program within the vicinity of the site.	Annually	Somersby Mintbush Monitoring Plan approved by the Department.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status						
23.	<p>Implement the biodiversity offset strategy described in the EA, EA (EA Mod 1) and Landscape and Rehabilitation Management Plan and as summarised and revised in the following table:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Offset Criteria</th> <th>Size (ha)</th> </tr> </thead> <tbody> <tr> <td>On-site offset area</td> <td> Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. </td> <td>7.0</td> </tr> </tbody> </table>	Area	Offset Criteria	Size (ha)	On-site offset area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0		The on-site offset area has been set aside. 36 nest boxes have been placed within the area.	Compliant.
Area	Offset Criteria	Size (ha)								
On-site offset area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0								

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
24.	<p>The Proponent must:</p> <p>(a) engage an independent registered surveyor to survey and permanently mark the boundaries of the offset areas;</p> <p>(b) submit a survey plan of these boundaries to the Secretary;</p> <p>(c) ensure that these boundaries are clearly marked at all times in a permanent manner;</p> <p>(d) cause restrictive and positive covenants under the <i>Conveyancing Act 1919</i> to be placed on the titles of the land referring to the surveyed offset areas, to ensure that the Proponent and the landowner:</p> <ul style="list-style-type: none"> - manage the offset areas for conservation in perpetuity; - implement the Landscape and Rehabilitation Management Plan; and - permit ongoing access to the offset areas by the Department and other relevant public authorities for the purposes of monitoring. 	<p>Within 6 months of the determination of Modification 1, or as otherwise agreed by the Secretary,</p>	<p>The surveyor has prepared and submitted the survey plan to the Department of Planning, Industry and Environment. The surveyor has also completed and submitted the revised Landscape and Rehabilitation Management Plan and Biodiversity offset area and Habitat Rehabilitation Plan to reflect the modified Biodiversity Offset Strategy.</p> <p>The 88B Instrument has been lodged with the Department</p>	Compliant.
Landscape				
25.	<p>Rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EA, EA (Mod 1) and Landscape and Rehabilitation Management Plan comply with the following objectives:</p> <ul style="list-style-type: none"> • Safe, stable and non-polluting. • Minimise the visual impact of the final landforms as far as is reasonable and feasible. • Surface infrastructure to be decommissioned and removed, unless the Secretary agrees otherwise. • Quarry benches suitably landscaped and revegetated using native species. • Establish land with a level of at least Class 4 agricultural suitability over 80% of the quarry floor. • Ensure public safety. • Minimise the adverse socio-economic effects associated with quarry closure. 	<p>At the end of the quarry project.</p>	<p>Not applicable at this time of review.</p>	Not triggered.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
26.	Rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim stabilisation measures must be implemented where reasonable and feasible to control dust emissions in disturbed areas that are not active, and which are not ready for final rehabilitation.	Progressively throughout the quarry operations as required.	Not applicable at this time as all open areas are currently being quarried.	Not triggered.
27.	Prepare and implement a Landscape and Rehabilitation Management Plan for the site, including the offset area, to the satisfaction of the Secretary.	31 July 2015 Revised plan November 2019	Landscape and Rehabilitation Management Plan prepared and approved by the Department.	Compliant.
28.	Lodge a Conservation and rehabilitation bond with the Department.	Within six months of approval of the Landscape and rehabilitation management plan	Conservation and rehabilitation bond lodged with the Department.	Compliant.
29.	Review, and if necessary, revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must: (a) consider the performance of the implementation of the rehabilitation of the site to date; (b) consider the effects of inflation; and (c) calculate the cost of rehabilitating the disturbed areas of the site taking into account the likely surface disturbance over the next 3 years of quarrying operations.	Within 3 months of each Independent Environmental Audit	A review of the Conservation and Rehabilitation bond has been undertaken.	Compliant.
Heritage				
30.	Prepare Heritage Management Plan	30 November 2014	Heritage Management Plan prepared and approved by the Department.	Compliant.
Visual				
30.	Implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project to the satisfaction of the Secretary.	Extent of project.	Bunds are progressively vegetated.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
31.	Vegetate any earthen perimeter bund at the project, using appropriate flora species to minimise the visual and off-site sedimentation impacts of the project; and maintain this vegetation in a good condition throughout the remainder of the project, to the satisfaction of the Secretary.	Within 3 months of establishing the bund	Perimeter bunds vegetated and to be maintained.	Compliant.
Waste Management				
32.	(a) minimise and monitor the waste generated by the project; (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of; (c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	Progressively throughout the quarry operations as required and reported annually.	Minimisation of waste.	Compliant.
33.	Obtain a 'resource recovery exemption' under the POEO Act and provide evidence to the Department	Prior to import of any VENM to the site.	EPA have advised that a resource recovery exemption is not required. This has been acknowledged and approved by the Department.	Compliant.
Dangerous Goods				
34.	Ensure that the storage, handling, and transport of dangerous goods are done in accordance with the relevant <i>Australian Standards</i> , particularly AS1940 and AS1596, and the <i>Dangerous Goods Code</i>	Extent of project.	GRSQ ensure appropriate storage and handling.	Compliant.
Bushfire				
35.	Ensure that the project is suitably equipped to respond to any fires on site and assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.	Extent of project.	GRSQ ensure appropriately equipped.	Compliant.
Schedule 4 Additional Procedures				

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
1.	<p>Notification of monitoring results to landowners where:</p> <p>(a) An exceedance of any relevant criteria in Schedule 3, the Proponent must notify the 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.</p> <p>(b) an exceedance of any relevant air quality criteria in Schedule 3, the proponent shall send a copy of the NSW Health fact sheet entitled Mine Dust and You (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately owned).</p>	As soon as practicable after obtaining monitoring results	No exceedances have been determined as part of the monitoring results.	Compliant.
2.	<p>If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land.</p> <p>If the Secretary is satisfied that an independent review is warranted, then the Proponent must:</p> <p>(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:</p> <ul style="list-style-type: none"> • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and • if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and <p>(b) give the Secretary and landowner a copy of the independent review.</p>	Within 2 months of the Secretary's decision.	Not required at this time of the review.	Not triggered.
Schedule 5 Environmental Management, Reporting and Auditing				
1.	The Proponent must prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary	30 November 2014	Environmental Management Strategy prepared and approved by the Department.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
2.	The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines	Annually	Noted.	Compliant.
3.	Assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3. Where any exceedance of these criteria and/or performance measures has occurred, the Proponent must, at the earliest opportunity: (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) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.	Extent of Project.	Assessed as part of the monitoring and annual review.	Compliant.
4.	Annual review of the environmental performance of the project to the satisfaction of the Secretary.	By the end of March each year, or other timing as may be agreed by the Secretary.	A request for an extension of time was approved by the Department. Annual Review to be submitted by end of April 2022.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
5.	Review the strategies, plans and programs required under this approval, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.	Within 3 months of the submission of an: (a) annual review under condition 4 above; (b) incident report under condition 7 below; (c) audit report under condition 9 below; or (d) any modification to the conditions of this approval,	The Air Quality Management Plan and the Water Quality Management Plans are to be updated and submitted to the Department.	Compliant.
5A	Where the conditions of this approval require consultation with an identified party, the Proponent must: (a) consult with the relevant party prior to submitting the subject document to the Secretary for approval; and (b) provide details of the consultation undertaken. However, if the Secretary agrees, a strategy, plan or program may be prepared without consultation being undertaken with an identified party required under a condition of this consent.	Extent of Project.	Not required to date.	Not triggered.
6.	Establish and operate a Community Consultative Committee (CCC) to the satisfaction of the Secretary.	If directed by the Secretary.	The Department of Planning, Industry and Environment required the quarry to operate under the existing Community Consultative Committee. Currently operational.	Compliant.
7.	Notify the Secretary and any other relevant agencies of any incident. Provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Immediately Within 7 days of the date of the incident.	It is considered no incidences from the quarry has occurred.	Not triggered.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
8.	Provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval.	Extent of project.	Complies. All reporting provided on the website once approved.	Compliant.
9.	Commission and pay the full cost of an Independent Environmental Audit of the project.	By 30 June 2015 and every 3 years thereafter, unless the Secretary directs otherwise.	Initial Independent Environmental audit undertaken in 2015. Independent Environmental audit undertaken in 2018. Independent Environmental audit undertaken in September 2021. Extension sought and approved by the Department due to COVID restrictions. Next Environmental audit due June 2024.	Compliant.
10.	Submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.	Within 3 months of completion of the audit, or as otherwise agreed by the Secretary.	Independent Environmental Audit submitted.	Compliant.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
11.	<p>Make copies of the following publicly available on its website:</p> <ul style="list-style-type: none"> • the documents referred to in condition 2 of Schedule 2; • all current statutory approvals for the project; • all approved strategies, plans and programs required under the conditions of this approval; • a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; • a complaints register, updated monthly; • the annual reviews of the project; • any independent environmental audit, and the Proponent's response to the recommendations in any audit; • minutes of CCC meetings; • any other matter required by the Secretary; and <p>keep this information up to date, to the satisfaction of the Secretary.</p>	Extent of project	<p>The Grants Road Sand Quarry website incorporates:</p> <ul style="list-style-type: none"> • Modification to The Project Approval • The Project Approval • Environmental Assessment • The Environmental Strategy • Plans of Management • Complaints Register • Truck movements • Independent Audit • Annual Reviews • Minutes of the CCC meetings 	Compliant.

Appendix 4
WATER QUALITY MONITORING
Larry Cook Consulting Pty Ltd

Larry Cook Consulting Pty Ltd

SURFACE WATER AND GROUNDWATER MONITORING PERIOD 1.1.22 – 31.12.22

GRANTS ROAD SAND QUARRY

Grants Road Sand
Lot 1 in DP358717
270 Grants Road Somersby

PREPARED FOR: GRANTS ROAD SAND

PROJECT NUMBER: 23020

DATE: 15TH MARCH 2023

Larry Cook Consulting
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1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Grants Road Sand was granted state government approval to produce a range of sand products and high-quality hard rock in their quarrying operations at Lot 1 in DP358717, 270 Grants Road Somersby (the Site). A modified project approval was granted by the Minister of Planning under Section 75J of the Planning and Assessment Act 1979 in 2018 to incorporate Lot 2 in DP 358717 and a modification (MOD 1) regarding a Biodiversity Offset Area.

Grants Road Sand hold Environmental Protection License No.11240 issued under the *Protection of the Environment Act 1997*. The License authorises scheduled activities at the Site. Following a several applications from *Grants Road Sand* to vary the license conditions commencing 10 May 2016, and subsequent responses from NSW EPA, a variation of License No.11240 was granted by letter notification on 12th October 2021 (Notice No.1603746).

The variation relevant to water monitoring references Condition P1.2 – *varied water discharge and monitoring points to 'W1', 'W4' and 'S1' and geographic coordinates*.

Larry Cook Consulting Pty Ltd was commissioned by *Grants Road Sand* to prepare an annual Water Monitoring Report documenting the results of ongoing water monitoring in a network of dedicated monitoring bores and surface water monitoring sites strategically located within the *Grants Road Sand* quarry precinct. Monitoring included collection and compilation of automated water level measurements and prescribed water quality testing.

The objectives of the water monitoring are documented in the Groundwater Management Plan prepared by *Larry Cook Consulting Pty Ltd* for *Grants Road Sand* in 2014 (Ref. 11017-D dated November 2014) and in the Surface Water Management Plan prepared by *Larry Cook Consulting Pty Ltd* for *Grants Road Sand* in 2015 (Ref. 11017-E dated February 2015). The objectives of the management plans were prepared in accordance with Schedule 3 Part 4 (c) (i, ii, iii & iv) of the Project Approval.

2.0 SITE DETAILS

2.1 LOCATION AND SITE IDENTIFICATION

The existing sand quarry and proposed quarry extension are located on Grants Road in Lots 1 and 2 in DP358717 on the Somersby Plateau.

The location of the Property is shown in **Figure 1** and a recent Near Map image with the property boundaries resented in **Figure 2**.. The topographic map sheet covering the Property is the 1:25,000-scale Gosford topographic map sheet (9131-2S.) The approximate MGA coordinates of the centre of the proposed Project Site are Easting 338500 m and Northing 6304250 m. The key features required to identify the Site are summarised in **Table 1**.

Table 1 Site Identification Details	
Site	Description
Site Name	Grants Road Sand
Site Owner	G.R. & A.K. Jones
Address	270 Grants Road Somersby NSW 2250
Title Plan	Lots 1 and 2 in DP358717
LGA	Central Coast Council

3.0 WATER MONITORING SITES

A network of groundwater monitoring bores and surface water monitoring sites are established on the Site.

Water level monitoring was undertaken in three dedicated monitoring bores. Water quality sampling and testing is carried out in two of these monitoring bores and at three surface water monitoring sites.

Two variations of the monitoring network were made during the 2022 reporting period:

1. Due to the predictable redundancy of Monitoring Site G4 (BH4) in the 2021 reporting period as a consequence of the planned quarry expansion (including the settling pond system), Monitoring Bore DDH 1 was substituted in the water quality monitoring network for the 2022 reporting period.
2. The location of surface water monitoring site W4 was moved slightly during the reporting period due to the construction of a new pond system and associated hydraulic connections.
3. Monitoring Site DDH2 was unfortunately irreparably damaged during the reporting period due to expanding proximal slimes heaps.

A Request for Variation for the changes noted above is documented in **Section 10**.

The locations of the surface water and groundwater monitoring (sample) sites are shown in **Figure 2** and locations of the monitoring bores (sampling and water level) annotated in **Figure 3**. A register of the monitoring sites provided in **Table 2**.

Table 2 Register of Water Monitoring Sites					
Monitoring Site	Monitoring Type	Location	Coordinates		Monitoring
			Latitude	Longitude	
W1	Surface Water	North-west discharge point	33.389232486	151.261317787	Water quality
W4	Surface Water	New discharge into new	33.392929548	151.261955886	Water quality

		dam constructed in late 2021 in south-western corner of Lot 1			
S1	Surface Water	South-west waterway on western boundary of Lot 1	33.392487740	151.260202612	Water quality
G3 (BH 3)	Groundwater	Bore in NW corner of Lot 1 (control bore)	33.388331468	151.262004099	Water quality and automated water level
DDH 1	Groundwater	Northern central part of Lot 1	33.389981712	151.263173542	Water quality and automated water level

4.0 GROUNDWATER LICENSING

Four active groundwater licenses are held by the owners. A register listing the licenses and annual water entitlements is provided in **Table 3**.

Table 3 Water Take					
License	WSP and Water Source	Water Entitlement	Passive Take/Inflows	Active Pumping	Total
WAL 36455	Water Sharing Plan North Coast and Porous Rock Kulnura Mangrove Mountain Groundwater Source	14 ML	Passive Take	Nil	82 ML
WAL 36988		50 ML			
WAL 37745		6 ML			
WAL 37746		12 ML			

It is noted that the sand processing operation utilises rainfall stored in dams/ponds. Groundwater is not used for the sand extraction activities or processing operations. A total of 82 ML licensed water entitlement is held which is used to offset pit inflow (passive take) predicted in the computer groundwater model.

5.0 AUTOMATED WATER LEVEL MEASUREMENTS

5.1 INTRODUCTION

Automated water level measurements are collected in water level sensors (pressure transducers) originally installed in a network of four monitoring bores.

The existing 2G/3G compatible water level sensors were replaced in April 2021 with *Ontoto Astro* satellite pressure transducers (water level sensors and data loggers) which incorporate Holykell HPT604 Water Level Pressure Sensors each with a pressure range 0-20m.

Subsequently, one of the monitoring bores (G4 (BH4)) was removed during the 2021 reporting period due to pond expansion in this area and DDH2 irreparably damaged during the 2022 reporting period due to expanding proximal slime heaps. The water level sensor installed in monitoring Bore G3 (BH3) is believed to be still logging however, data uploads ceased on 4th April 2022 due to Telstra reception issues (interference) in this part of the quarry precinct.

5.2 WATER LEVEL MONITORING RESULTS

Hydrographs generated for monitoring bores G3 (BH3) and DDH1 during the 2022 reporting period are presented in **Figure 4**. Daily rainfall acquired for the BOM weather station at Mangrove Mountain (Station No. 061375) is also charted. The following observations and comments are provided:

- The water level fluctuations recorded in monitoring bores DDH1 and G3 (BH3) directly reflect fluctuations in rainfall recorded in the BOM rain gauge at Mangrove Mountain. However, it is noted that the rain gauge was out of service between 19th January and 23rd February and again between 29th February and 24th March.

The hydrograph for DDH1 is relatively subdued due to the relatively deeper semi-confined sandstone-hosted aquifers. The relatively unconfined aquifer hosted by G3 (BH3) is observed to rapidly respond to rainfall recharge events.

- The hydrograph for DDH1 reveals two major and significant rainfall events the first in mid-February and the second in early July. A constant decline in the water table is noted after about late October 2022 due to a significant reduction in rainfall amounts and event frequency.
- No potential impacts from current approved quarrying activities on the sandstone-hosted aquifer system were detected.

6.0 WATER SAMPLING

Prescribed water sampling was undertaken in the nominated groundwater monitoring bores and surface water monitoring sites by *Grants Road Sand* during the reporting period 1.1.22 through 31.12.22. Four campaigns of sampling and testing was undertaken. Between August and December 2022. Other planned sampling campaigns during the reporting period were cancelled due to intermittent Covid-19 restrictions and ongoing rain events and flooding due to consecutive La Nina events. Approximately 2,300 mm of rain was recorded by the BOM in Mangrove Mountain for the five-month period to May 2022.

The samples were submitted to the project's NATA accredited laboratory ALS Environmental for a suite of prescribed tests and determinations listed in **Table 4**. The samples were transported to the project laboratory in an esky under Chain of Custody (COC) protocol.

Table 4 List of Analytes and Tests
pH
Total Suspended Solids (TSS)
Total Dissolved Solids
Nitrite + Nitrate as N
Total Kjeldahl Nitrogen as N
Total Nitrogen as N
Total Phosphorus as P

7.0 QUALITY ASSURANCE & QUALITY CONTROL

7.1 DATA QUALITY OBJECTIVES

The data quality objectives of the investigation were to obtain sufficient representative data to allow a high-quality groundwater assessment including:

- Characterisation of groundwater quality; and
- Identification of any risks posed to the environment.

The assessment was conducted to a standard consistent with generally accepted and current professional consulting practice for such an investigation. The evaluation criteria (Decision Rules) adopted for the investigation are summarised in **Table 5**.

Table 5 Data Quality Objectives	
DQO	Evaluation Criteria
Documentation completeness	Completion of calibration records, chain of custody documentation, laboratory test certificates from NATA-accredited laboratory
Data comparability	Use of appropriate techniques for the sampling, storage and transportation of samples. Use of NATA accredited laboratory.
Data representativeness	Adequate sampling coverage dictated by distribution of pre-selected monitoring bores, and selection of representative samples

Precision and accuracy for sampling and analysis	Use properly trained and qualified field personnel. Achieve laboratory QC criteria.
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7.2 FIELD QA/QC

The Quality Assurance and Quality Control QA/QC protocols used during the fieldwork are listed in **Table 6**.

Table 6 Field QA/QC	
Protocol	Description
Sampling Team	The fieldwork was managed and carried out by an experienced technician or suitably trained staff member.
QA/QC System	All fieldwork was conducted in accordance with Industry Standard Sampling Procedure.
Chain of Custody Forms	All samples were logged and transferred under appropriately completed Chain of Custody (COC) Forms.
Preservation	All samples were delivered to the project laboratory in appropriately preserved containers, with preservation consisting of packing samples in eskies with ice.
Blind Field Duplicates	Duplicate testing was not carried out for these assessments.

7.3 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

The project laboratory (ALS) used for the tests and chemical analysis of samples during the 2022 period is NATA accredited for the selected tests and analysis.

8.0 RESULTS

Laboratory results are summarised in **Table 7**. A copy of the laboratory certificates supplied by Grants Road Sand is provided in **Annexure 1**.

In summary:

- Monitoring Site S1 on the south-western boundary of the Site (drainage) was noted to be dry during attempts to collect samples in 2022.
- The **pH of the surface water** (W1 and W4) was reported as slightly acidic to near neutral (6.39 to 7.43) which is consistent with previous measurements.
- The **pH of groundwater** (G3 and DH1) is slightly to moderately acidic (4.33 to 6.61) which is consistent with previous measurements.
- The concentrations of **Total Suspended Solids (TSS)** recorded in the two **surface water** monitoring sites (W1 and W2) ranged from 8 to 18 mg/L.

- The concentrations of **Total Suspended Solids (TSS)** recorded in the two **groundwater** monitoring bores (G3 and DDH1) were mostly less than the LOR with a maximum concentration of 6 mg/L recorded in DDH1 during the September and December 2022 sampling campaign.
- The concentrations of **Total Dissolved Solids (TDS)** recorded in the two **surface water** monitoring bores W1 and W4 were between 38 and 68 mg/L for the 2022 reporting period. These levels indicate low salinity.
- Levels of **TDS** between 93 and 126 mg/L were recorded in **groundwater** monitoring bores G3 and DDH1 for the 2022 reporting period. These levels also indicate low salinity.
- The concentrations of **Nitrate plus Nitrite** in the two surface water monitoring sites collected in 2022 were all less than the LOR with one exception, 0.02 mg/L recorded in W1 in October 2022. The levels recorded in the groundwater monitoring bores G4 and DDH1 are between 5.26 and 7.16 mg/L over the four sampling campaigns in 2022. Relative soluble nitrate is likely associated with the 100-year agricultural history of the area.
- The concentrations of **Total Kjeldahl Nitrogen (TKN)** were between 0.6 and 1.2 mg/L in the surface water monitoring sites W1 and W4 to between 0.5 and 1.0 mg/L in the two groundwater monitoring sites G3 and DDH1.
- Levels of **Total Phosphorus** were recorded at between 0.04 and 0.15 mg/L in the two surface water monitoring sites W1 and W4 and between less than the LOR to 0.05 mg/L in groundwater monitoring bores G3 and DDH1. Phosphorus is likely associated with the agricultural history of the area.
- No potential significant impacts from current approved quarrying activities on this sandstone-hosted aquifer system were detected.

9.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of surface water and groundwater testing obtained from the 2022 reporting period, the following discussion, conclusions and recommendations are presented.

GEOCHEMISTRY

- The pH of the surface water sampled is slightly acidic that reflects rainwater recharge over the quarry precinct and potential mixing with local groundwater hosted by the Hawkesbury Sandstone. The recorded pH measurements are within the range of acceptable and agreed discharge levels.
- The relatively lower pH values recorded in the groundwater samples reflects rainwater recharge (carbonic acid) and retention of water within Hawkesbury Sandstone. These levels are 'low' but often typical of groundwater hosted by the Hawkesbury Sandstone in the Mangrove Mountain area and wider Sydney Basin.
- The concentrations of Total Suspended Solids (TSS) recorded in groundwater samples were low with the majority less than the LOR. Low levels were recorded in the surface water samples. Therefore, the recorded TSSs are less than the discharge level limit.

- Trace levels of phosphorus in surface water samples and low levels of nitrate+nitrite in groundwater samples likely reflect the agricultural history of the district (fertilisers and chicken growing).
- No significant impacts from current approved quarrying activities on this aquifer system were detected.

WATER LEVEL MONITORING

- The close correlation between rain events and the rise in the water table recorded in shallow monitoring bore G3 (BH3) suggests relative rapid recharge of the shallow aquifer system. This is consistent with the results of extensive groundwater investigations over the Site and surrounding district.
- The hydrographs for the relatively deeper sandstone-hosted monitoring bore DDH1 also show a direct response to rainfall events but with a notably more subdued magnitude.
- No potential impacts from approved quarrying activities on this aquifer system were detected.

RECOMMENDATIONS

- Retain sampling and water quality testing in groundwater monitoring site DDH1 as a replacement monitoring site for the now defunct Monitoring Site G4 subject to state government approval (see Section 10).
- Retain sampling and water quality testing in new surface water monitoring site W4 as a replacement monitoring site for the now defunct Monitoring Site W4 subject to state government approval (see Section 10).
- Replace destroyed groundwater monitoring bore DDH2 with a new groundwater monitoring site, the location of which is subject to state government approval (see Section 10).
- Install a new water level sensor and recorder with telemetry functionality in the new groundwater monitoring bore subject to state government approval.
- Continue acquisition and charting of water level measurements in existing groundwater monitoring bores G3, DDH1 and a new monitoring bore.
- Carry out regular routine surface water and groundwater monitoring in the monitoring network during 2023 in accordance with NSW EPA License 11240 and the requirements documented in the surface water and groundwater management plans. This includes maintenance and make repairs to pressure sensors to maintain integrity and communications.
- Continue oil & grease testing at surface water sample site S1 (when flowing) at the frequency of one sample per month when discharge occurs.
- Submit water samples to the project laboratory (ALS) for analysis, compile results and assess any trends and exceedances and, if required, implement a response and action plan in accordance with the environmental management plans.
- Prepare a report giving the results of the 2023 monitoring program and an assessment of any trends and potential impacts. This will include an ongoing assessment of hydrographs, pH, TSS, TDS, nitrogenous compounds and other tests as required.

10.0 REQUEST FOR VARIATION

The proposed variations are:

- Adopt existing groundwater monitoring bore DDH1 as a replacement for the defunct groundwater monitoring bore G4.
- Adopt sampling and water quality testing in the new surface water monitoring site W4 as a replacement for 'old' monitoring site W4. The recommended location of new W4 site is shown in **Figure 3**.
- Drill and construct a new groundwater monitoring bore to replace DDH2 which was destroyed during the 2022 reporting period. The recommended location of the new bore is shown in **Figures 3 and 4**.

The recommended depth of the monitoring bore is 20.0 m.

Construction should be in accordance with the *Minimum Construction Requirements for Water Bores in Australia (MCR) Fourth Edition (2020)*: Class 18 50 mm UPVC casing, 3.0 m-long slotted Class 18 50 mm UPVC screen at the base of the installation and a 150mm steel monument.

- Install a new water level sensor and recorder with telemetry functionality in the new groundwater monitoring bore.

11.0 ENVIRONMENTAL PERFORMANCE

A summary of the environmental performance assessed against the approved criteria documented in the Groundwater Management Plan and Surface Water Management Plan is provided in **Table 8**.

Table 8
Environmental Performance

Environmental Aspect	Approval Criteria	Summary Monitoring Results Period 1/1/22-31/12/22	Proposed Improvement Measures
Groundwater	<p>Section 4 - Schedule 3 of Project Approval and Appendix 1 - Statement of Commitments.</p> <ul style="list-style-type: none"> • Undertake automated water level measurements in four nominated monitoring bores G3 (BH3), G4 (BH4), DDH1 & DDH2. Minimum 4 hourly readings. • Undertake groundwater sampling in representative monitoring bores G3 & G4. Six monthly sampling • Undertake automated rainfall measurements – tipping bucket rain gauge. 	<ul style="list-style-type: none"> • DDH2 inadvertently destroyed. • Hydrographs for the remaining two monitoring bores reveals fluctuations in water level directly associated with district rainfall events. Shallow monitoring bore G3 (BH3) shows sharp rises due to rainfall recharge events. More subdued response to rainfall recharge observed in groundwater monitoring bore DDH1. • No impacts from quarrying activities on the aquifer system were detected. • Automated daily rainfall collected. 	<ul style="list-style-type: none"> • Replace monitoring bore DDH2 with a new monitoring bore 'like for like'. • Install a new water level sensor and recorder with telemetry function in the new monitoring bore. • Carry out repairs as needed in the water level sensor in G3 (BH3). • Ensure the integrity of the installed sampling equipment and full suite of analytes is tested. • Maintain and calibrate water level sensors.
Surface Water	<p>Section 4 - Schedule 3 of Project Approval and Appendix 1 - Statement of Commitments.</p> <ul style="list-style-type: none"> • Undertake surface water sampling at representative sites W1, W4 - six monthly sampling and testing when ponds discharging, and monthly testing for site S1 when discharging. 	<ul style="list-style-type: none"> • Monitoring site W4 ceased effectiveness due to construction of a new silt dam and discharge location. • Early 2022 sampling significantly affected by intermittent Covid-19 constraints and site access issues associated with 	<ul style="list-style-type: none"> • Replace 'old' W4 with a new surface water discharge monitoring site 'new' W4 approximately 65 m south of the 'old' discharge site ('old' W4). • Continue oil & grease testing at site S1 when discharge occurring

		<p>consecutive La Nina events resulting in prolonged above average rain.</p> <ul style="list-style-type: none">• Results of pH, TDS, TSS, N compounds, TKN, TP• No exceedances or impacts from quarrying activities on the aquifer system were detected	
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12.0 COMPLIANCE STATUS

A summary of the compliance requirements, monitoring methodology and evidence for the development is provided in **Table 9**.

Table 9 Compliance Status				
Section	Compliance Requirement	Development Phase	Monitoring Methodology	Evidence
Section 7 in Appendix 1 - Statement of Commitments Groundwater	<ul style="list-style-type: none"> Water level measurements 	<ul style="list-style-type: none"> At all times 	<ul style="list-style-type: none"> Automated real time measurements in water level sensors, data loggers with telemetry 	<ul style="list-style-type: none"> Real time minimum 4-hourly measurements downloaded as required. Data stored/archived in a dedicated data base and hydrographs constructed.
	<ul style="list-style-type: none"> Water sampling and testing 	<ul style="list-style-type: none"> At all times 	<ul style="list-style-type: none"> Regular prescribed sampling (6 monthly for G3, DDH1 and 'new' monitoring bore (to be approved)). 	<ul style="list-style-type: none"> COCs and laboratory certificates
	<ul style="list-style-type: none"> Rainfall monitoring 	<ul style="list-style-type: none"> At all times 	<ul style="list-style-type: none"> Automated real time measurements of rainfall with telemetry 	<ul style="list-style-type: none"> Real time 4-hourly measurements downloaded as required. Data stored/archived in a dedicated database.
	<ul style="list-style-type: none"> Compile results of the monitoring program including a review and assessment of trends, exceedances and impacts 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> Reporting 	<ul style="list-style-type: none"> Annual report

<p>Section 8 in Appendix 1 - Statement of Commitments Surface Water</p>	<ul style="list-style-type: none"> Water sampling and testing Compile results of the monitoring program including a review and assessment of trends, exceedances and impacts 	<ul style="list-style-type: none"> At all times Annually 	<ul style="list-style-type: none"> Regular prescribed sampling (6 monthly for W1 and 'new' W4 and 1 monthly for S1 (when discharge occurring)) Reporting 	<ul style="list-style-type: none"> COCs and laboratory certificates Annual report
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13.0 CLOSURE

Please do not hesitate to contact Larry Cook on 0428 884645 if you have any questions or you require further information.

For and on behalf of
Larry Cook Consulting

A handwritten signature in black ink that reads "Larry Cook". The signature is written in a cursive, flowing style.

Larry Cook
Hydrogeologist and Environmental Consultant

ANNEXURES

ANNEXURE 1

Laboratory Certificate I

Sampling Sep 2022
Ref. ES2235431



ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order : **ES2235431**
Client : **GR & AK Jones**
Contact : Ms Leanne Jones
Address : 270 Grants Rd
Somersby NSW 2350
Telephone : ----
Project : **Water Samples**
Order number : ----
C-O-C number : ----
Sampler : Steven Jones
Site : ----
Quote number : **Blanket Quote**
No. of samples received : **4**
No. of samples analysed : **4**

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 05-Oct-2022 08:25
Date Analysis Commenced : 05-Oct-2022
Issue Date : 12-Oct-2022 18:32



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Accreditation Category

Ankit Joshi

Senior Chemist - Inorganics

Sydney Inorganics, Smithfield, NSW



Page : 2 of 2
 Work Order : ES2235431
 Client : GR & AK Jones
 Project : Water Samples

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Analytical Results

Compound	CAS Number	LOR	Sample ID		W1	W4	G3	G4
			Sampling date / time	Unit				
Sub-Matrix: WATER (Matrix: WATER)								
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	28-Sep-2022 11:15	6.99	6.65	4.80	4.38
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	28-Sep-2022 11:15	38	64	110	126
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L		12	10	5	6
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	7.08	7.16
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	1.2	0.6	0.7
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
Total Nitrogen as N	----	0.1	mg/L		0.6	1.2	7.7	7.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L		0.04	0.08	0.02	0.03

ANNEXURE 2

Laboratory Certificate II

Sampling Oct 2022
Ref. ES2238555



ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order : **ES2238555**

Page : 1 of 2

Client : **Grants Rd Sand Pty Ltd**
Contact : Ms Leanne Jones
Address : 270 Grants Rd
Somersby NSW 2350

Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----
Project : **Water Samples**
Order number : ----
C-O-C number : ----
Sampler : Steven Jones
Site : ----
Quote number : **Blanket Quote**

Telephone : +61-2-8784 8555
Date Samples Received : 27-Oct-2022 09:45
Date Analysis Commenced : 28-Oct-2022
Issue Date : 03-Nov-2022 16:37

No. of samples received : 4
No. of samples analysed : 4



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signature

Accreditation Category

Ankit Joshi

Senior Chemist - Inorganics

Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Analytical Results

Compound	CAS Number	LOR	Sampling date / time	Sample ID			
				W1	W4	G3	G4
Sub-Matrix: WATER (Matrix: WATER)							
EA005P: pH by PC Titrator							
pH Value	----	0.01	pH Unit	7.32	6.39	4.58	4.33
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Total Dissolved Solids @180°C	----	10	mg/L	49	53	93	94
EA025: Total Suspended Solids dried at 104 ± 2°C							
Suspended Solids (SS)	----	5	mg/L	11	8	<5	<5
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	5.26	5.25
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.0	0.6	0.9
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser							
Total Nitrogen as N	----	0.1	mg/L	0.9	1.0	5.9	6.2
EK067G: Total Phosphorus as P by Discrete Analyser							
Total Phosphorus as P	----	0.01	mg/L	0.10	0.11	0.02	0.05
EP020: Oil and Grease (O&G)							
Oil & Grease	----	5	mg/L	<5	<5	<5	<5

ANNEXURE 3

Laboratory Certificate III

Sampling Nov 2022
Ref. ES2244095



Environmental

CERTIFICATE OF ANALYSIS

Work Order : **ES2244095**

Page : 1 of 2

Client : **Grants Rd Sand Pty Ltd**

Laboratory : Environmental Division Sydney

Contact : Ms Leanne Jones

Contact : Customer Services ES

Address : 270 Grants Rd
Somersby NSW 2350

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61-2-8784 8555

Project : Water Samples

Date Samples Received : 07-Dec-2022 10:30

Order number : ----

Date Analysis Commenced : 07-Dec-2022

C-O-C number : ----

Issue Date : 13-Dec-2022 19:49

Sampler : Steven Jones

Site : ----

Quote number : Blanket Quote

No. of samples received : 4

No. of samples analysed : 4



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signature

Accreditation Category

Ankit Joshi

Senior Chemist - Inorganics

Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

Analytical Results

Compound	CAS Number	LOR	Unit	Sample ID			
				W1	W4	G3	G4
			Sampling date / time				
Sub-Matrix: WATER (Matrix: WATER)							
EA005P: pH by PC Titrator							
pH Value	----	0.01	pH Unit	6.85	6.83	4.61	4.42
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Total Dissolved Solids @180°C	----	10	mg/L	68	68	96	94
EA025: Total Suspended Solids dried at 104 ± 2°C							
Suspended Solids (SS)	----	5	mg/L	14	13	<5	<5
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	5.36	5.32
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.2	1.0	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser							
Total Nitrogen as N	----	0.1	mg/L	1.3	1.2	6.4	5.9
EK067G: Total Phosphorus as P by Discrete Analyser							
Total Phosphorus as P	----	0.01	mg/L	0.11	0.09	<0.01	<0.01

ANNEXURE 4

Laboratory Certificate IV

Sampling Dec 2022
Ref. ES2246626

CERTIFICATE OF ANALYSIS

Work Order : **ES2246626**

Page : 1 of 2

Client : **Grants Rd Sand Pty Ltd**

Laboratory : Environmental Division Sydney

Contact : Ms Leanne Jones

Contact : Customer Services ES

Address : 270 Grants Rd
Somersby NSW 2350

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61-2-8784 8555

Project : Water Samples

Date Samples Received : 23-Dec-2022 11:20

Order number : ----

Date Analysis Commenced : 23-Dec-2022

C-O-C number : ----

Issue Date : 09-Jan-2023 17:15

Sampler : Steven Jones

Site : ----

Quote number : Blanket Quote

No. of samples received : 4

No. of samples analysed : 4



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signature

Accreditation Category

Wisam Marassa

Inorganics Coordinator

Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

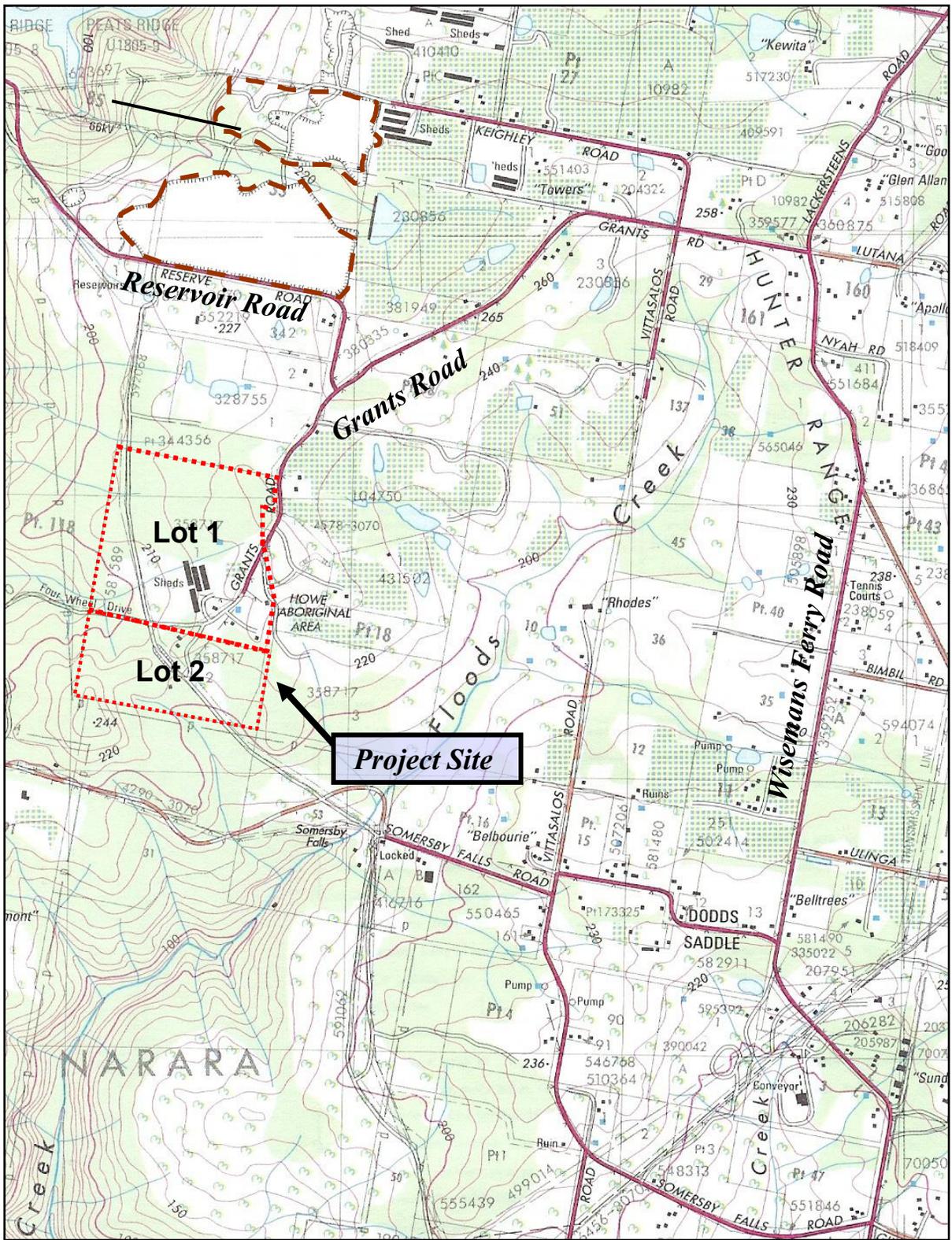
ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Analytical Results

Compound	CAS Number	LOR	Unit	Sample ID			
				W1	W4	G3	G4
Sub-Matrix: WATER (Matrix: WATER)							
EA005P: pH by PC Titrator							
pH Value	----	0.01	pH Unit	7.43	7.01	6.61	6.33
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Total Dissolved Solids @180°C	----	10	mg/L	57	67	96	98
EA025: Total Suspended Solids dried at 104 ± 2°C							
Suspended Solids (SS)	----	5	mg/L	15	18	<5	6
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	5.45	5.46
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.1	0.5	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser							
Total Nitrogen as N	----	0.1	mg/L	1.2	1.1	6.0	6.1
EK067G: Total Phosphorus as P by Discrete Analyser							
Total Phosphorus as P	----	0.01	mg/L	0.15	0.14	0.03	0.02

FIGURES



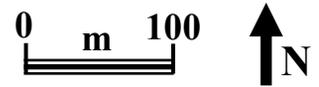
Larry Cook Consulting
 PO Box 8146
 Tumby Umbi NSW 2261
 Ph: 02 4340 1114

Grants Road Sand Quarry

Location of Project Site

Scale: As shown

FIGURE 1



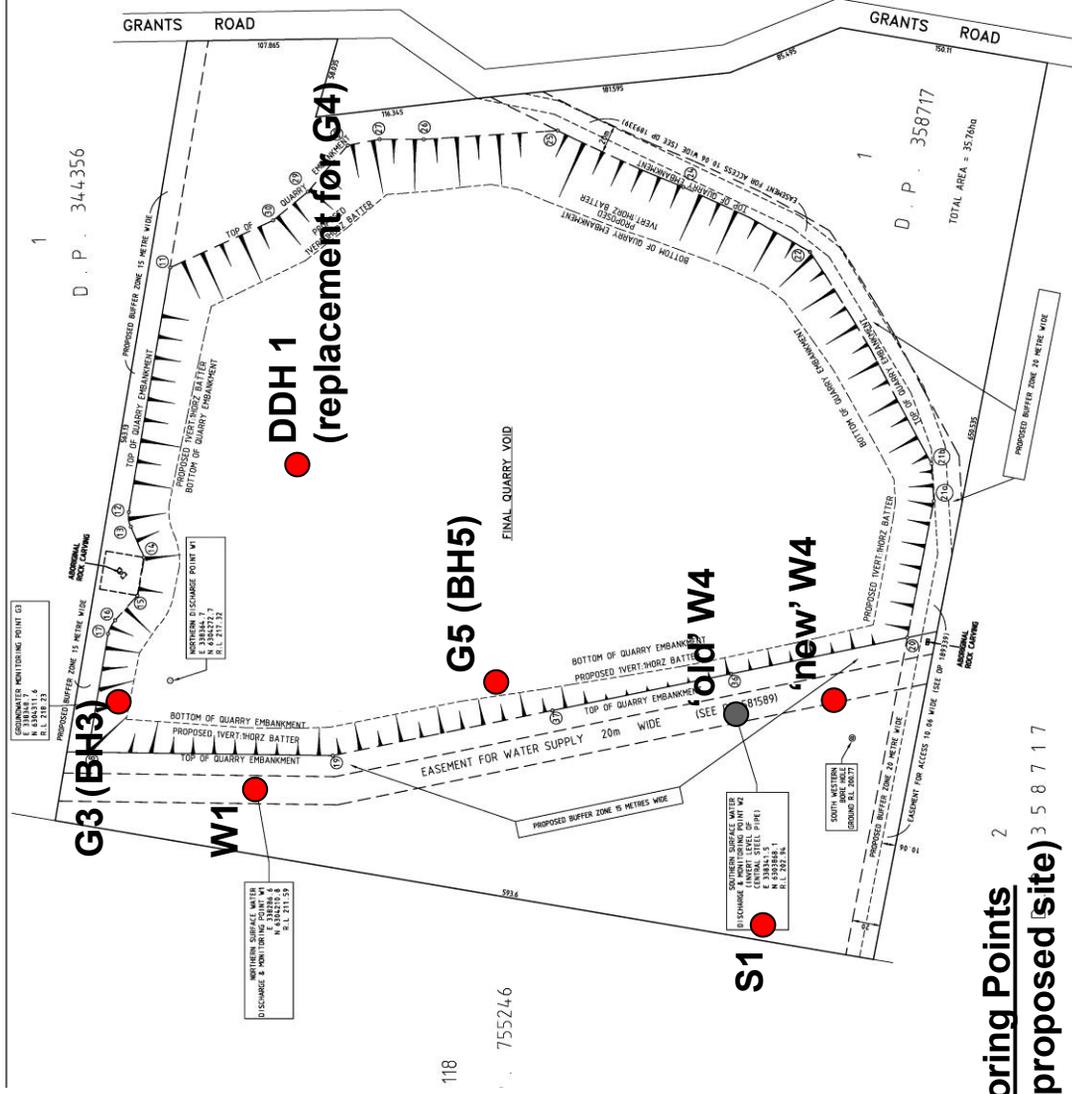
Larry Cook Consulting
PO Box 8146
Tumbi Umbi NSW 2261
Ph: 02 4340 1114

Grants Road Sand Quarry

Near Map Image August 2022

Scale: As shown

FIGURE 2



**Surface Water
Monitoring Points
W1, 'new' W4 & S1**

**Groundwater Monitoring Points
G3, DDH1, G5 (new proposed site)**

Modified after Stephen Thorne & Associates (2015)

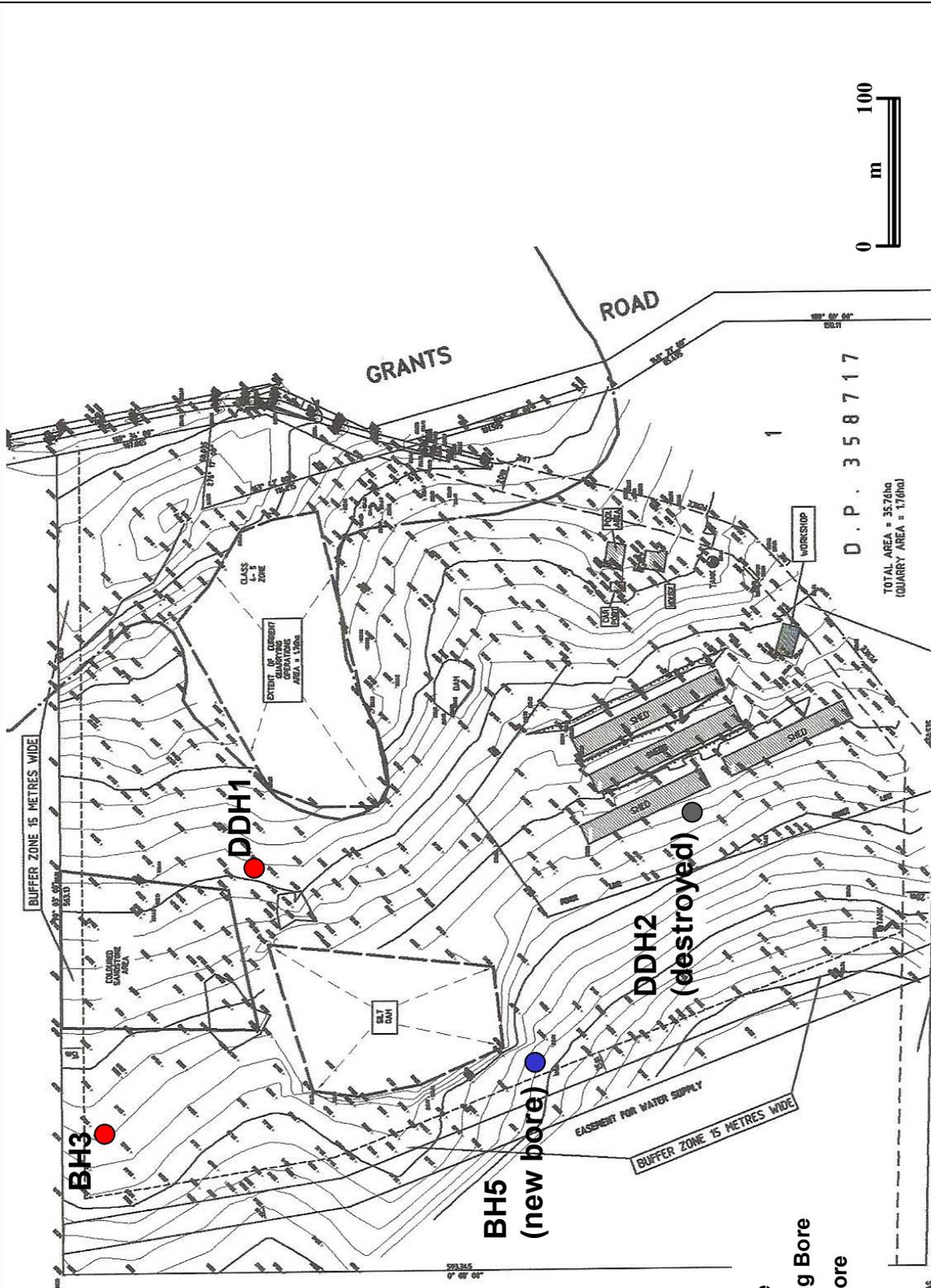
Larry Cook Consulting
PO Box 8146
Tumbi Umbi NSW 2261
Ph 02 4340 1114

Grants Road Sand Quarry
Locations of Monitoring Sites



Scale: As shown

FIGURE 3



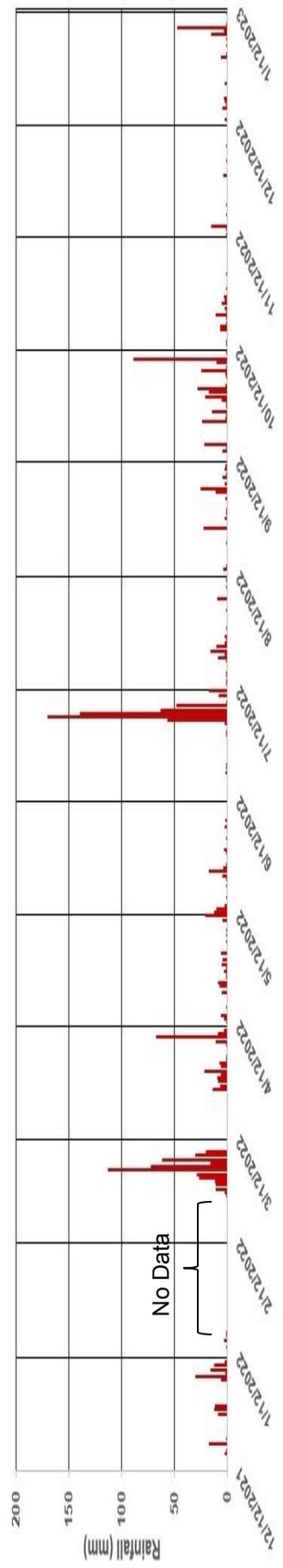
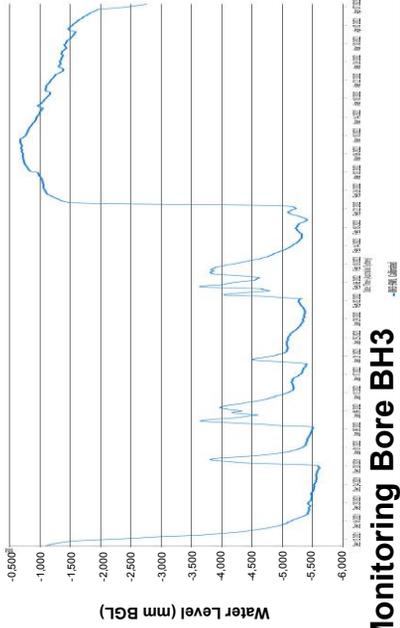
- Existing Monitoring Bore
- New Proposed Monitoring Bore
- Redundant Monitoring Bore

Larry Cook Consulting
 PO Box 8146
 Tumbi Umbi NSW 2261
 Ph 02 4340 1114

Grants Road Sand Quarry
 Site Plan and Locations of Monitoring Bores

Scale: As shown

FIGURE 4



Rainfall (Mangrove Mountain Station: 061375

Larry Cook Consulting
 PO Box 8146
 Tumbi Umbi NSW 2261
 Ph 02 4340 1114

Grants Road Sand Quarry
 Hydrographs BH3 and DDH1

Scale: As shown

FIGURE 5

Appendix 5
NOISE AUDIT REPORT
Atkins Acoustic

Grants Road Sand Pty Ltd.
Grants Road
SOMERSBY NSW 2250

Postal Address
P.O. Box 432
Gladesville
N.S.W. 1675
AUSTRALIA
A.C.N. 068 727 195
A.B.N. 19 068 727 195
Telephone: 02 9879 4544
Fax: 02 9879 4810
Email: AtkinsAcoustics@bigpond.com.au

Attention: Steve Jones

21 January 2023

Atkins Acoustics and Associates Pty Ltd.
Consulting Acoustical & Vibration Engineers

ENVIRONMENTAL NOISE AUDIT
GRANTS ROAD SAND QUARRY. SOMERSBY
ENVIRONMENTAL PROTECTION LICENCE 11240

1.0 INTRODUCTION

Atkins Acoustics was retained by Grants Road Sand Pty Ltd to conduct an environmental noise audit of the Grants Road Sand Quarry (GRS) operations.

This report has been prepared to address the 2021 annual noise monitoring requirements and compliance with the Department of Planning and Environment (DoPE), Application number 08_0099. MOD 1, dated April 2018 and EPA Licence 11240 (dated 12 October 2021, Condition L4. The audit period for the noise audit was from 16 December 2021 to 17 January 2023.

Graham Atkins conducted the site-attended audit. Graham's qualifications and membership include BE, MAAS, MIEAust and CPEng. Atkins Acoustics and Associates Pty Ltd a Member Firm of the AAAC employ Graham. The audit included inspections of the quarry site and inquiries with GRS (Mr Steven Jones). The results and finding of the audit are addressed in the report and an Environmental Performance Table and Compliance Status Table provided in *Attachment 1*.

The quarry currently operates under approval from the Department of Planning and Environment (DoPE), Application number 08_0099. MOD 1, dated April 2018. Specific noise conditions (Schedule 3 - Conditions 5, 6, 7, 8 & 9) contained within the approval include a requirement for the preparation of a *NMP (Schedule 3 - Condition 9)* to the satisfaction of the Secretary.

The approval includes:

- extraction, processing and transportation of up to 250,000 tonnes per annum of various grades of washed sand, mortar sand, sandstone blocks and retaining wall rocks for a period of approximately thirty (30) years.
- total extraction of approximately nine point five (9.5) million tonnes (Mt) of extractable sand and sandstone.
- extension of quarry by approximately twenty (20) hectares.
- extraction to depth of thirty-five (35) metres, and
- extraction by dozer and excavator.

The quarry operates from 7.00am to 6.00pm Monday to Friday and 7.00am to 1.00pm Saturday.

2.0 APPROVAL CONDITIONS (Noise)

Project construction and quarry operational noise conditions imposed by the DoPE (Application Number 08_0099, MOD 1), dated April 2018 – Schedule 3 are presented below:

NOISE

Hours of Operation

5. The Proponent shall only conduct construction activities and quarrying operations on the site:
 - (a) between 7.00 am and 6.00 pm, Monday to Friday;
 - (b) between 7.00 am and 1.00 pm, Saturday; and
 - (c) at no time on Sunday or public holidays.

Note: The Proponent may carry out other activities e.g. maintenance, on the site provided that these activities are conducted in a manner that is inaudible at all privately-owned residences.

6. The following activities may be carried out on the site outside the hours specified in condition 5:
 - (a) delivery or dispatch of materials as requested by Police or other authorities; and
 - (b) emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

In such circumstances the Proponent shall notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Noise Impact Assessment Criteria

7. The Proponent shall ensure that the construction and operational noise generated by the project does not exceed the criteria in Table 1 at any residence on privately-owned land.

Table 1: Noise criteria

Receiver Location	$L_{Aeq (15 min)}$ dB(A)
All privately-owned residences	40

Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy*. Appendix 2 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 1 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of the agreement.

The EPA Environmental Protection Licence 11240 (dated 12 October 2021), Limit and Monitoring Conditions L4 and M7 states:

- L4.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

NOISE MONITORING POINT 8,10,13

Time Period	Measurement Parameter	Measurement Frequency	Sound Pressure Level $L_{Aeq 15minute}$
All	$L_{Aeq 15minute}$	n/a	40

- L4.2 The noise limits set out in the table at L4.1 apply under all meteorological conditions except for the following:
- Wind speeds greater than 3 metres/second at 10 metres above ground level;
 - or Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level;
 - or Stability category G temperature inversion conditions.
- L4.3 For the purposes of condition L4.2:
- The meteorological conditions are to be determined from the meteorological data obtained from the meteorological weather station identified as EPA monitoring point 7; and
 - Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy (EPA 2000).
- L4.4 To determine compliance with the noise limits at condition L4.1, the noise measurement equipment must be located:
- at the most affected point at a location where there is no dwelling at the location; or
 - approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
 - within 30 metres of a dwelling façade, but not closer than 3 metres, where any dwelling on the property is situated more than 30 metres from the property boundary; or
 - within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
- L4.5 To assess compliance with noise limits for the premises, attended noise monitoring must be undertaken in accordance with the conditions above and:
- at the three most affected locations listed in the noise monitoring point table at P1.3;
 - occur annually each reporting period at the time of year generally associated with maximum noise transmission (i.e. generally winter conditions);
 - occur during each day period as defined in the NSW Industrial Noise Policy (EPA 2000).
 - in accordance with the relevant requirements and exemptions in the NSW Industrial Noise Policy (EPA 2000).
- L4.6 A non-compliance of the noise limits specified in the table at condition L1.4 will still occur where noise generated from the premises in excess of the prescribed limit is measured:
- at a location other than the monitoring point locations prescribed in the table at condition P1.3; and/or
 - at a point other than the most affected point at a location.

M7 Noise monitoring

M7.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.

NOISE MONITORING POINT 8,10,13

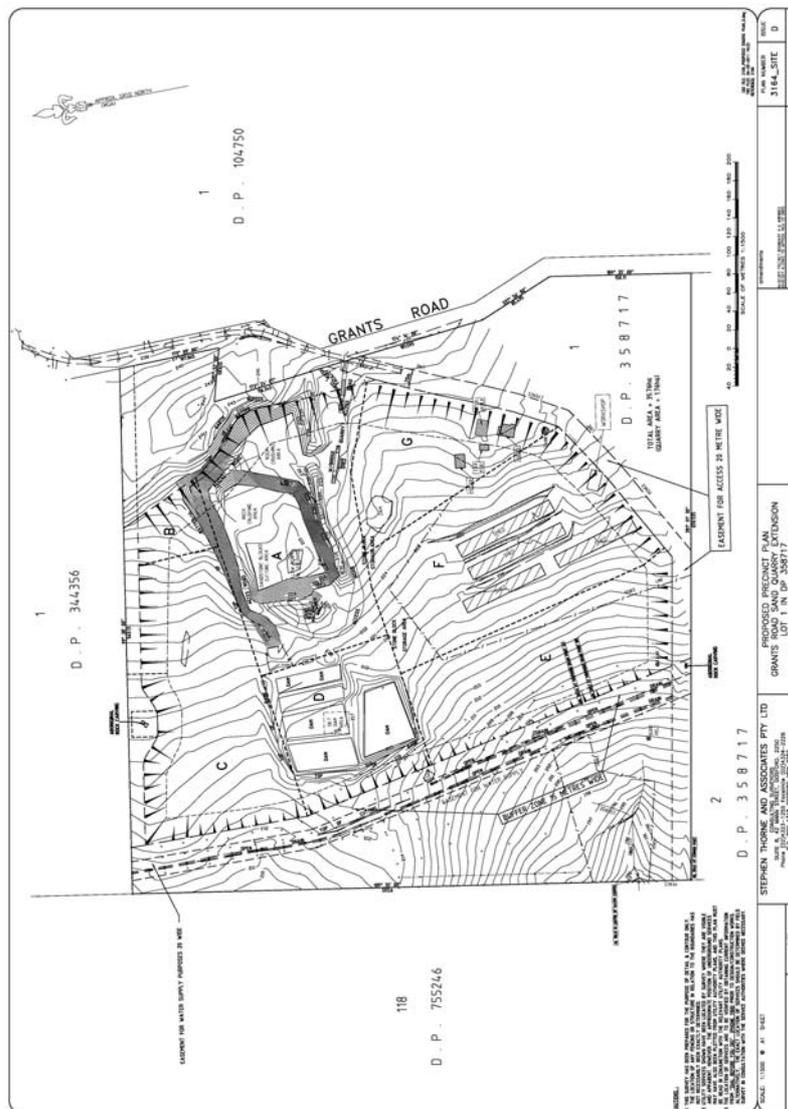
Time Period	Measurement Parameter	Measurement Frequency	Sound Pressure Level LAeq 15minute
All	LAeq 15minute	n/a	40

3.0 DESCRIPTION OF SITE ACTIVITIES

The audit identified onsite extraction and processing of quarry products on Areas A, B and C (*Figure 1*). Operating plant and equipment identified during the audit included:

- Dozer and excavator mid-floor Area A.
- Truck out loading south-western Area A
- Washing Plant south-western Area A
- Dam water pump Area C

Figure 1. Quarry Precinct Layout



4.0 OVERVIEW

The noise audit was undertaken between 7.00am and 10.00pm, Tuesday 17 January 2023.

In accordance with the Approval Conditions noise measurements were conducted at three (3) reference residential locations shown in *Attachment 2*.

Location 1: 'Ibels' - 380 Somersby Falls Road

Location 2: 'McGregor' - 239 Grants Road

Location 3: 'Sammut' - 210 Grants Road

4.1 Measurement Instrumentation

The measurement instrumentation comprised a Svan 949 Sound and Vibration Analyzer. The meter was programmed to calculate and record 15 minute statistical levels. The reference calibration level of the meter was checked prior to and after the measurements with a Bruel & Kjaer Sound Level Calibrator Type 4230 and remained within ± 0.5 dBA. The meter carried appropriate and current NATA calibration (*Attachment 3*).

Measurements were undertaken in accordance with procedures documented in Australian Standard AS1055-1997 'Acoustics - Description and Measurement of Environmental Noise' and the NSW Environmental Protection Authority, Industrial Noise Policy (*INP*) guidelines.

4.2 Weather Conditions

Weather observations and conditions reported at the onsite weather station (33.393004312°S, 151.266117075°E during the audit were light east to south-east breeze (0.6 - 1.7m/sec), air temperature 19-22°C, relative humidity 77-90% and 60% light cloud cover.

4.3 Review of Noise Related Incidents

The Site Manager confirmed that no noise related incidents were reported during the period from 16 December 2021 to 16 January 2023.

5.0 MEASUREMENT RESULTS

5.1 Off-site Measurement Results

Attended measurements during the audit where appropriate were used to assess source noise contributions associated with Grants Road Sand Quarry operations. A summary of the measurement results and calculated contributions is presented in *Table 1*. Birds influenced measurements at all reference assessment locations.

Table 1: Audit Measurement Results

dBA re: 20×10^{-6} Pa

Measured Ambient Sound Pressure Levels dBA				Estimated Grants Road Sand Contribution L _{Aeq, 15min}	Comments
L _{Aeq}	L _{A10}	L _{A90}	L _{A1}		
Location 1: Ibels Residence – 380 Somersby Falls Road					
41.8	43.2	39.3	53.6	<35	Distant road traffic; Insects; Birds; GRS truck onsite L _{Amax} 40/1dBA.
Location 2: McGregor Residence – 239 Grants Road					
44.5	46.9	40.2	53.6	<38	GRS Dozer L _{Amax} 36/8dBA. Birds; Distant road traffic
Location 3: Sammut Residence – 210 Grants Road					
45.1	46.6	39.8	57.4	<35	Distant road traffic; Insects; Birds; GRS not audible

5.2 Compliance Status

The results in *Table 1* demonstrate that noise from Grants Road Sand Quarry activities complied with the DoPE (*Application Number 08_0099, MOD 1*), noise condition L_{Aeq, 15min} 40dBA and EPA Environmental Protection Licence 11240 (dated 12 October 2021).

Table 2 presents a summary of the noise compliance status for the Grants Road Sand Quarry operations.

Table 2 – Noise Compliance Status

Unique ID	Compliance Requirement	Development Phase	Monitoring methodology	Evidence and comments
7	The Proponent must ensure that the construction and operational noise generated by the project does not exceed L _{Aeq, 15min} 40dBA at all privately owned residences	At all times	Daily onsite inspection of plant and equipment. Annual Noise Audit Acoustic Consultant	Annual Compliance Report from Acoustic Consultant

5.3 Noise Trends

A review of the measurement results (*Table 4*) and previous reported levels has shown that noise contributions from Grant Road Sand Quarry have remained steady.

Table 4 – Environmental Performance Summary

Environmental Aspect	Approval Criteria: Requirements in the management plan.	Summary of Monitoring Results in the Previous Reporting Period	Summary of Monitoring Results in this Reporting Period	Improvement Measures to be implemented
Noise	Schedule 3 Conditional 7 of the Approval	Location 1: <35dBA Location 2: <40dBA Location 3: <40dBA	Location 1: <35dBA Location 2: <38dBA Location 3: <35dBA	Extension of earth mounding, routine maintenance program, replacement of faulty noisy plant/equipment

5.4 Noise Mitigation Planning

Noise mitigation options planned for the next calendar year, include the continuation of the earth mounding/bunding on the western site boundaries. Additionally, and dependent on product demand, it is expected that the depth of the working platforms (Areas A, B and C) could increase by 2-3 metres.

6.0 CONCLUSION

Atkins Acoustics was retained by Grants Road Sand Pty Ltd to conduct an environmental noise audit for the Somersby Quarry.

The quarry currently operates under approval from the Department of Planning and Environment, Application number 08_0099. MOD 1, dated April 2018 and.

The noise audit was undertaken between 7.00am and 10.00pm, Tuesday 17 January 2023.

The findings of the measurement results show that noise from Grants Road Sand Quarry activities complied with the DoPE (*Application Number 08_0099, MOD 1*), noise condition $L_{Aeq, 15min}$ 40dBA and EPA Licence 11240 (dated 12 October 2021, Condition L4.

The Site Quarry Manager confirmed that no noise related incidents were reported during the period from 16 December 2021 to 16 January 2023.

A review of the audit measurement results (*Table 1*) and previous reported audit measurements has shown that noise contributions from Grant Road Sand Quarry have remained steady.

Noise mitigation options planned for the next calendar year, include the continuation of the earth mounding/bunding on the western site boundaries. Additionally, and dependent on product demand, it is expected that the depth of the working platforms (Areas A, B and C) could increase by 2-3 metres.

ATKINS ACOUSTICS & ASSOCIATES PTY LTD.



ATTACHMENT 1: ENVIRONMENTAL PERFORMANCE & COMPLIANCE STATUS SUMMARY

ENVIRONMENTAL PERFORMANCE TABLE

Environmental Aspect	Approval Criteria	Summary of Monitoring Results in the Previous Monitoring Period	Summary of Monitoring Results in this Monitoring Period	Recommendations
Noise	The proponent shall ensure that the construction and operational noise generated by the project does not exceed $L_{Aeq\ 15min}$ 40 at any residence on privately-owned land	No exceedances	No exceedances	<ul style="list-style-type: none"> Continue to undertake noise monitoring to determine whether the project is complying with the relevant conditions of Approval. Maintain the effectiveness of noise suppression equipment on plant and equipment

COMPLIANCE STATUS TABLE

Schedule and Condition Number	Approval Criteria	Compliance	Evidence	Recommendations
Schedule 3 Condition L4	The proponent shall ensure that the construction and operational noise generated by the project does not exceed $L_{Aeq\ 15min}$ 40 at any residence on privately-owned land	Compliant	Attended annual noise audit	<ul style="list-style-type: none"> Continue to undertake noise monitoring. Continue onsite inspections of plant and equipment to ensure noise mitigations are operational and effective

ATTACHMENT 2: ASSESSMENT MONITORING LOCATIONS

(Reference Source: Six Maps)



ATTACHMENT 3: Svan Certificate of Calibration.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: **SLM42569**

EQUIPMENT TESTED: Sound & Vibration Analyzer

Manufacturer: Svantek

Type No: Svan-949 **Serial No:** 9713

Mic. Type: 7052E **Serial No:** 48484

Pre-Amp. Type: SV12L **Serial No:** 22940

Filter Type: 1/3 Octave **Test No:** FILT6765

Owner: Atkins Acoustics
21 Ernest Street
Hunters Hill NSW 2110

Tests IEC 651 & 804 (AS/NZS 1259-1990)
Performed: IEC 1260 (AS/NZS 4476-1997)
Comments: All tests passed for type 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1009 hPa ±1 hPa	Date of Receipt :	20/04/2022
Temperature	21 °C ±1° C	Date of Calibration :	22/04/2022
Relative Humidity	51 % ±5%	Date of Issue :	26/04/2022

Acu-Vib Test Procedure: AVP05 (SLM) & AVP06 (Filters)

CHECKED BY: **AUTHORISED SIGNATURE:**
Jack Kieft

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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(02) 9689 8133
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Page 1 of 2 Calibration Certificate
AVCERT05.2 Rev.2.0 14/04/2021

Appendix 6
BASELINE AIR QUALITY MONITORING
Environmental Resources Management (ERM)



Compliance Monitoring Annual Report 2022

Grants Road Sand Quarry, 270 Grants
Road, Somersby NSW 2250

27 March 2023

Project No.: 0476648

Document details	
Document title	Compliance Monitoring Annual Report 2022
Document subtitle	Grants Road Sand Quarry, 270 Grants Road, Somersby NSW 2250
Project No.	0476648
Date	27 March 2023
Version	1.0
Author	Ashraf Rahman
Client Name	Grants Road Sand

Document history

Version	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
1	00	Ashraf Rahman	Tania Haigh	Karie Bradfield	15.02.2023	Draft for client comment
Final	01	Ashraf Rahman	Tania Haigh	Karie Bradfield	27.03.2023	FINAL

Signature Page

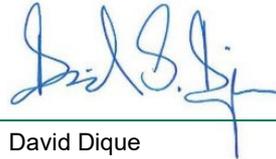
24 March 2023

Compliance Monitoring Annual Report 2022

Grants Road Sand Quarry, 270 Grants Road, Somersby NSW 2250



Tania Haigh
Senior Consultant – Air Quality



David Dique
Partner

ERM Australia Pacific Pty Ltd
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Acronyms and Abbreviations

Name	Description
Approved Methods	Approved methods for the sampling and analysis of air pollutants in NSW
EPA	(NSW) Environment Protection Authority
EPL	Environmental Protection Licence
NEPM (AAQ)	National Environment Protection (Ambient Air Quality) Measure
ppb	parts per billion
ppm	parts per million
PM	(airborne) particulate matter
PM ₁₀	airborne particulate matter with an aerodynamic diameter of less than 10 µm
PM _{2.5}	airborne particulate matter with an aerodynamic diameter of less than 2.5 µm
µg/m ³	micrograms per cubic metre

EXECUTIVE SUMMARY

As part of the Conditions of Approval issued on 25 July 2014 for the Grants Road Sand Quarry Extension, the proponent is required to monitor meteorological and dust parameters and report annually on the results and findings.

This report summarises the meteorological and dust parameters measured at the site from January to December 2022. Dust parameters measured were particulate matter (PM₁₀), deposited dust and respirable crystalline silica (RCS).

No exceedances of the air quality criteria were measured during the 2022 reporting period. There were also no reported incidents or complaints received.

1. INTRODUCTION

ERM Australia Pacific Pty Ltd (ERM) was engaged by Grants Road Sand to undertake the annual reporting for compliance monitoring at the Grants Road Sand Quarry, located on the NSW Central Coast at Somersby.

Dust and meteorological monitoring are required under the Project Approval issued in 2014. Monitoring is conducted using two dust deposition gauges, one high-volume sampler, and an automatic weather station (AWS). The required monitoring locations are shown in Figure 4.

The results of the monitoring programs are provided on an annual basis. This report summarises the data collected during the January to December 2022 period. The data has been reviewed to provide an evaluation of the suitability of the dust management processes employed at site by comparison of dust measurements with air quality criteria and review of any long-term trends.

All monitoring for air quality is conducted in accordance with the NSW Environmental Protection Agency (EPA)¹ "Approved methods for the sampling and analysis of air pollutants in NSW" (NSW DEC 2005) (Approved Methods).

Specifically, the approved methods relevant to this monitoring plan are:

- AM-1 – Guide for the siting of sampling equipment;
- AM-2 – Guide for measurement of horizontal wind for air quality applications;
- AM-4 – Meteorological monitoring guidance for regulatory modelling applications;
- AM-18 – Particulate matter – PM₁₀ – high volume sampler with size-selective inlet; and
- AM-19 – Particulates – deposited matter – gravimetric method.

AM-1 refers to the Australian Standard (AS) 2922 – 1987, however this has been superseded by AS/NZS 3580.1.1:2016 Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment.

The siting of all instrumentation is undertaken in accordance with the requirements set out in both AS 2922 – 1987 and AS/NZS 3580.1.1:2016. Where conflicts arise, preference will be given to the more recent standard.

AM-2 refers to the Australian Standard AS 2923 – 1987 "Ambient Air – Guide for the Measurement of Horizontal Wind for Air Quality Applications". AS 2923 applies to the determination of wind speed and direction for the purpose of air quality applications and sets out requirements for apparatus, calibration and maintenance, siting and installation and data recording and processing (including appropriate methods for wind averaging). A monitoring site for the meteorological station (met station) was chosen in accordance with AS 2923 – 1987. The location is away from buildings or other obstructions that would otherwise impact on the prevailing wind flow.

¹ The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2. PROJECT DETAILS

Project name	Grants Road Sand Quarry Extension
Application Number	08_0099
Address	270 Grants Road, Somersby NSW 2250 (Figure 4)
Project Phase	Operational Compliance Report
Compliance Reporting Period	1 January 2022 to 31 December 2022
Project Activity Summary	Measurements for Respirable Crystalline Silica (RCS), PM10, deposited dust and meteorological parameters have been analysed and reported consistent with requirements specified in the Project Approval, including the statement of commitments

3. COMPLIANCE STATUS SUMMARY (PROJECT APPROVAL ISSUED 25 JULY 2014)

Unique ID	Compliance Requirement	Development Phase	Monitoring methodology	Evidence and comments
Schedule 3, Condition 10	Ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not exceed the criteria.	Operation	Dust deposition sampling and PM10 monitoring measurement as described in Section 1.	No exceedances in reporting period for PM10 or deposited dust, however PM10 data capture insufficient for evaluation against an annual average criterion.
Schedule 3, Condition 11, Part a	Implement best practice management to minimise the dust emissions of the project.	Operation	SMS alerts from on-site weather station when wind speeds are high. Operations are modified or ceased during these periods.	Grants Rd have advised there is remote access to the weather station and SMS alerts are configured.
Schedule 3, Condition 11, Part b	Regularly assess air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval.	Operation	Dust deposition sampling, PM10 monitoring and meteorological measurement as described in Section 1.	Grants Rd have advised there is analysis of data throughout the year to ensure levels below short-term criteria and on track to remain below annual criteria.
Schedule 3, Condition 11, Part c	Minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events.	Operation	SMS alerts from the on-site weather station when winds are above certain speeds, as detailed in the Air Quality Management Plan.	Remote access to the weather station to enable SMS alerts.
Schedule 3, Condition 11, Part f	Carry out regular air quality monitoring to determine whether the project is complying with the relevant conditions of this approval.	Operation	Dust deposition sampling, PM10 monitoring and meteorological measurement as described in Section 1.	No exceedances in reporting period for PM10 or deposited dust, however PM10 data capture insufficient for evaluation against an annual average criterion.
Schedule 3, Condition 13	For the life of the project, the Proponent must ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.	Operation	10 m meteorological mast installed at the site complying with all relevant methods listed in Section 1.	Data capture rate for all parameters except rainfall for 2022 was above the required 90%. It appears the rain gauge was not operating properly during 2022.
Schedule 5, Condition 7	Immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested	Operation	PM10 monitoring as described in Section 1.	No incidents recorded.

4. NON-COMPLIANCES

With the exception of TSP monitoring (discussed below), there are no instances of non-compliance recorded during the 2022 reporting period, however it is noted that PM₁₀ data capture was insufficient for evaluation against an annual average assessment criterion. Summaries of the monitoring data through the year are shown in Appendix A.

It is noted that the facility operates under Environmental Protection Licence (EPL) 11240. This license was reissued on 12 October 2021. In addition to monitoring currently conducted at the site, a requirement is included to monitor TSP using a high-volume sampler at Point 1 and evaluate the annual average concentration against a criterion of 90 µg/m³. A review was conducted (ERM, 2022) to determine whether the addition of TSP would constitute a useful metric for the assessment of environmental performance of the Site. This review, based on analysis of PM₁₀ monitoring at the site over seven years and a typical ratio of PM₁₀ to TSP, concluded that if compliance with the annual average PM₁₀ criterion is achieved, then the annual average TSP will also comply. On this basis, given that PM₁₀ is currently monitored, TSP is not considered a useful metric for the evaluation of performance against air quality standards.

5. PREVIOUS REPORT ACTIONS

The following actions were identified during preparation of the 2021 monitoring report:

- TSP should be measured using a high-volume sampler co-located with the AWS in order to evaluate the annual average TSP concentration during the next reporting period (calendar year 2022). This has been discussed in Section 4 and as a result of a review, is not considered a useful metric for the evaluation of performance against air quality standards; and
- The annual report for 2022 should also include a summary of compliance with the EPL 11240 air quality monitoring requirements and air quality criteria. This is addressed in Appendix A.

6. INCIDENTS

No incidents were notified from Grants Road Sand Quarry during the 2022 reporting period.

7. COMPLAINTS

No complaints arising from Grants Road Sand Quarry were received during the 2022 reporting period.

8. MONITORING DATA SUMMARIES

8.1 Meteorology

The valid data recovery rate for each meteorological parameter during the reporting period is 97%, with the exception of rainfall. It appears the rain gauge did not operate properly during the reporting period.

8.1.1 Wind data

A wind rose for the annual period 2022 is presented in Figure 5. The wind rose indicates that winds from the west are dominant. The average wind speed for the period was 2.1 m/s and the percentage occurrence of calm wind conditions (less than or equal to 0.5 m/s) was 2.4%.

8.1.2 Temperature

A plot of the daily average temperature, recorded at 2 m and 10 m, is shown in Figure 6. The maximum daily average of 24.7°C was recorded on 12 December 2022. The monthly average temperature is shown in Table 2. June was the coldest recorded month on average and January was the hottest month on average.

8.1.3 Rainfall

The AWS recorded one single rainfall event of 0.2 mm on 2nd April 2022. In contrast, a total of 2,318 mm rainfall was recorded by the Bureau of Meteorology's (BoM) AWS at Gosford, 8.2 km southwest of the site. This lack of rainfall data from the Grants Road AWS should be investigated.

A plot of the daily total rainfall from the BoM AWS at Gosford is shown in Figure 7 and the total monthly rainfall is shown in Figure 8.

8.2 Air quality

The NSW EPA specifies air quality assessment criteria relevant for assessing impacts from air pollution in the *Approved Methods for the Modelling and Assessment of Pollutants in New South Wales* (NSW DEC, 2022) (Approved Methods). These criteria are health-based (i.e. they are set at levels to reduce the risk of adverse health effects). The EPA criteria are consistent with the National Environment Protection Measures for Ambient Air Quality (referred to as the Air NEPM) (NEPC, 2021). The assessment criteria for annual average PM₁₀ has reduced from 30 µg/m³ to 25 µg/m³ in recent years in both of these sources.

Air concentration limits are also specified in EPL 11240 that must be met at the monitoring locations.

Table 3 and Table 4 summarise the air quality criteria for concentrations of particulate matter and deposited dust levels that are relevant to this study. Where multiple criteria are listed, the more stringent is adopted to assess compliance in this report.

8.2.1 Particulate matter (PM₁₀)

The results for the available PM₁₀ data are presented in Figure 9. Of a possible 60 samples (over approximately 12 months), ten (10) samples are reported, resulting in a data recovery rate of approximately 17%.

The low data recovery rate was attributed to a malfunction of the high volume air sampler (HVAS), which required replacement of multiple instrument parts including a blower, inverter and motherboard. Availability of personnel to diagnose and repair the instrument was limited as was availability of rental equipment, contributing to the extended timeframe without PM₁₀ data. EPA were made aware of the difficulties involved in finding available personnel to undertake HiVol repairs (via phone conversation with David Bell). The average PM₁₀ concentration over the recorded 12-month period was 3.6 µg/m³. Whilst this is well below the annual EPA impact assessment criterion of 25 µg/m³ the low data capture is insufficient for evaluation against an annual average criterion and only a small portion of the year has been measured. All reported results are below the EPA maximum 24-hour average criterion of 50 µg/m³ for PM₁₀.

The dust sample collected by the HVAS monitor includes both dust generated by site activities (incremental dust impact) and dust from all other local sources (background dust levels). However as stated previously, even with the background levels accounted for, PM₁₀ levels are considerably below their respective 24-hour and annual criterion.

Annual average PM₁₀ concentrations for 2016 to 2022 are shown in Table 5 and Figure 10. Figure 11 presents the individual monitoring results from 2016 to 2022. It can be seen that PM₁₀ concentrations were increasing from 2017 to 2019 before reducing in 2020 and 2021. The increase in concentrations from 2017 to 2019 and reduction in 2020 is seen across NSW. The highest concentrations in 2019, including the exceedance day experienced in December 2019, were due to drought and bushfire conditions across the region and is explained in the 2019 Annual Report.

8.2.2 Dust deposition

Dust deposition is measured at two locations, R1 and R4, as shown in Figure 4. The results for the available dust deposition data are presented in Figure 12. The annual average monthly dust deposition level (insoluble solids) for the period of 2022 was 0.6 g/m²/month at R1 and 0.5 g/m²/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m²/month. A maximum value of 1.8 g/m²/month was recorded in February at R1; all other recorded levels were below 1.8 g/m²/month.

The dust sample collected by the deposition gauges includes both dust generated by site activities (incremental dust impact) and dust from all other local sources (background dust levels). Even with the background levels accounted for, the annual average deposition levels are considerably below both the incremental and cumulative annual criteria.

Annual average dust deposition levels at R1 and R4 from 2017 to 2022 are shown in Table 6 and Figure 13. Monthly dust deposition measurements at R1 and R4 from January 2017 to December 2022 are shown in Figure 14.

8.2.3 Respirable crystalline silica

A number of crystalline silica measurements were taken on 17 June 2022, 1 September 2022 and 19 December 2022. The samples were measured over the course of a shift, using personal air-samplers in the breathing zone of operators on dozers, excavators and loaders at the site. The results collected are corrected for the number of hours worked in a shift. These are presented in reports by WorkPlace Environment Consultants (WEC, 2022a, 2022b, 2022c).

These results are summarised in Figure 1, Figure 2 and Figure 3 below indicating that levels were below the relevant workplace health and safety standards.

Job	Test	Time	Result	Standards
Bulldozer Operator Eric Secombe Komatsu 375	respirable dust respirable silica	7:04 -12:45 17 Jun 2022	0.048 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
	Ripping			
Excavator - Bucket Ben McGowan Cat 336E	respirable dust respirable silica	6:57-12:42 17 Jun 2022	0.019 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
Loader Operator Murray Jones Cat 980G	respirable dust respirable silica	7:08 -12:49 17 Jun 2022	0.096 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
	Feeding wash plant			
Loader Operator Lis'ate Vaka	respirable dust respirable silica	7:10 -12:50 17 Jun 2022	0.039 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
	Sales			
Telehandler operator Beejay Greentree Cat TH414	respirable dust respirable silica	7:01 -12:44 17 Jun 2022	0.038 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
	Moving product - Loading Trucks			
Comments Light winds, last rain 1.4 mm on 6 Jun 2022 (Mangrove Mountain) High results must be notified to the NSW Resources Regulator.				

Figure 1: Crystalline Silica Measurement Results Summary (WEC, 2022a).

Job	Test	Time	Result	Standards
Excavator -Cutting Wheel Reece	respirable dust respirable silica	7:25 -13:14 1 Sep 2022	0.038 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
Excavator - Long arm Stephen	respirable dust respirable silica	7:34 -13:17 1 Sep 2022	0.087 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
Loader Operator Lis'ate (Sonny)	respirable dust respirable silica	7:33 -13:17 1 Sep 2022	0.048 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
Driver Joseph	respirable dust respirable silica	7:29 -13:16 1 Sep 2022	0.038 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hr) 0.035 mg/m ³ (10-hr)
Comments Light winds, last rains 2.6-0.60-0.20 mm on 27-29 Aug 2022 (Mangrove Mountain) High results must be notified to the NSW Resources Regulator.				

Figure 2: Crystalline Silica Measurement Results Summary (WEC, 2022b).

Job	Test	Time	Result	Standards
Excavator Operator Bryan Baldwin	respirable dust respirable silica	7:09 -13:36 19 Dec 2022	0.034 mg/m ³ <0.004 mg/m ³	2.100 mg/m ³ (10-hour) 0.035 mg/m ³ (10-hour)
Loader Operator Beejay	respirable dust respirable silica	7:07 -13:06 19 Dec 2022	0.101 mg/m ³ <0.005 mg/m ³	2.100 mg/m ³ (10-hour) 0.035 mg/m ³ (10-hour)
Loader Operator Murray Jones	respirable dust respirable silica	7:12 -13:46 19 Dec 2022	0.042 mg/m ³ <0.004 mg/m ³	2.100 mg/m ³ (10-hour) 0.035 mg/m ³ (10-hour)
Telehandler Operator Joseph Tregellis	respirable dust respirable silica	7:04 -13:51 19 Dec 2022	0.049 mg/m ³ <0.004 mg/m ³	2.100 mg/m ³ (10-hour) 0.035 mg/m ³ (10-hour)
Comments Light winds, no rain during the test period, last rains 11 mm on 16-19 Dec (Mangrove Mountain) High results must be notified to the NSW Resources Regulator.				

Figure 3: Crystalline Silica Measurement Results Summary (WEC, 2022c).

9. CONCLUSION

As part of the Conditions of Approval issued on 25 July 2014 for the Grants Road Sand Quarry Extension, the proponent is required to monitor meteorological and dust parameters and report annually on the results and findings.

Particulate matter (PM₁₀), deposited dust and, respirable crystalline silica (RCS) were measured during the reporting period. No exceedances of the air quality criteria were measured during the 2022 reporting period. However PM₁₀ data capture insufficient for evaluation against an annual average criterion which was due to difficulties involved in finding available personnel to undertake HiVol repairs . There were also no reported incidents or complaints received.

TSP was not measured as per EPL 11240, however, this is not considered a useful metric to incorporate into the monitoring program. Compliance with metrics for PM₁₀ indicates compliance with TSP air quality criteria.

The rain gauge did not collect rainfall data during almost the entire reporting period. This should be investigated and rectified. The low data capture for PM₁₀ from the high-volume sampler should be reviewed, and if possible, action taken to prevent such a data loss in future reporting periods.

10. LIMITATIONS

1. This report is based solely on the scope of work described in proposal '0476648 Grant Road 2022 Annual Report and AQMP Update Proposal P1.pdf' performed by Environmental Resources Management Australia Pacific Pty Ltd (**ERM**) for Grants Road Sand (the **Client**). The Scope of Work was governed by a contract between ERM and the Client (**Contract**).
2. No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract.
3. The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by, the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work.
4. This report was prepared between December 2022 and March 2023 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report.
5. This report is based on analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:
 - a. did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by;
 - b. assumes no responsibility or liability for errors in data obtained from, the Client, any third parties or external sources (including regulatory agencies).
6. Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances.
7. Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:
 - a. the suitability of the site(s) for any purpose or the permissibility of any use;
 - b. the presence, absence or otherwise of any environmental conditions or contaminants at the site(s) or elsewhere; or
 - c. the presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the site(s).
8. Use of the site for any purpose may require planning and other approvals and, in some cases, environmental regulator and accredited site auditor approvals. ERM offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.
9. The ongoing use of the site or use of the site for a different purpose may require the management of or remediation of site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.

10. This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context.
11. Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:
 - a. has been prepared and is intended only for the exclusive use of the Client and the appointed contaminated land auditor;
 - b. must not to be relied upon or used by any other party;
 - c. has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
 - d. does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the site(s); and
 - e. does not purport to provide, nor should be construed as, legal advice.

11. REFERENCES

Australian Standard / New Zealand Standard (2015). Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM₁₀ high volume sampler with size-selective inlet - Gravimetric method. AS 3580.9.6:2015.

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WEC (2022b). "*Exposure to Dust & Crystalline Silica Dust (Q3) (Sep 2022), Grants Rd Sand*", report prepared by WorkPlace Environment Consultants, 27 September 2022.

WEC (2022c). "*Exposure to Dust & Crystalline Silica Dust (Q4) (Dec 2022), Grants Rd Sand*", report prepared by WorkPlace Environment Consultants, 16 January 2023.

APPENDIX A FIGURES & TABLES

Table 1: Weather Station Parameters

Parameter	Unit	Frequency	Averaging Period	Sampling Method
Rainfall	mm	Continuous	10-Minute	AM-4
Temperature	°C			AM-4
Temperature @ 10m	°C			AM-2 and AM-4
Wind Speed @ 10m	m/s			AM-2 and AM-4
Wind Direction @ 10m	Degrees			AM-2 and AM-4
Sigma Theta	Degrees			AM-2 and AM-4
Relative Humidity	%			AM-4
Solar Radiation	W/m2			AM-4

Monitoring Locations

The Grants Road Sand Quarry compliance monitoring locations are shown in Figure 4. Featured are the AWS, the HVAS and two dust deposition gauges (R1 and R4). The HVAS is located at the southeast corner of the site and is co-located with the AWS. One of the dust deposition gauges is located on the southern boundary between the operations and the nearest southern residence. The second gauge is located on the northeast corner of the site where the nearest northern residences are.



Figure 4: Monitoring Locations at Grants Road Quarry

Wind Data

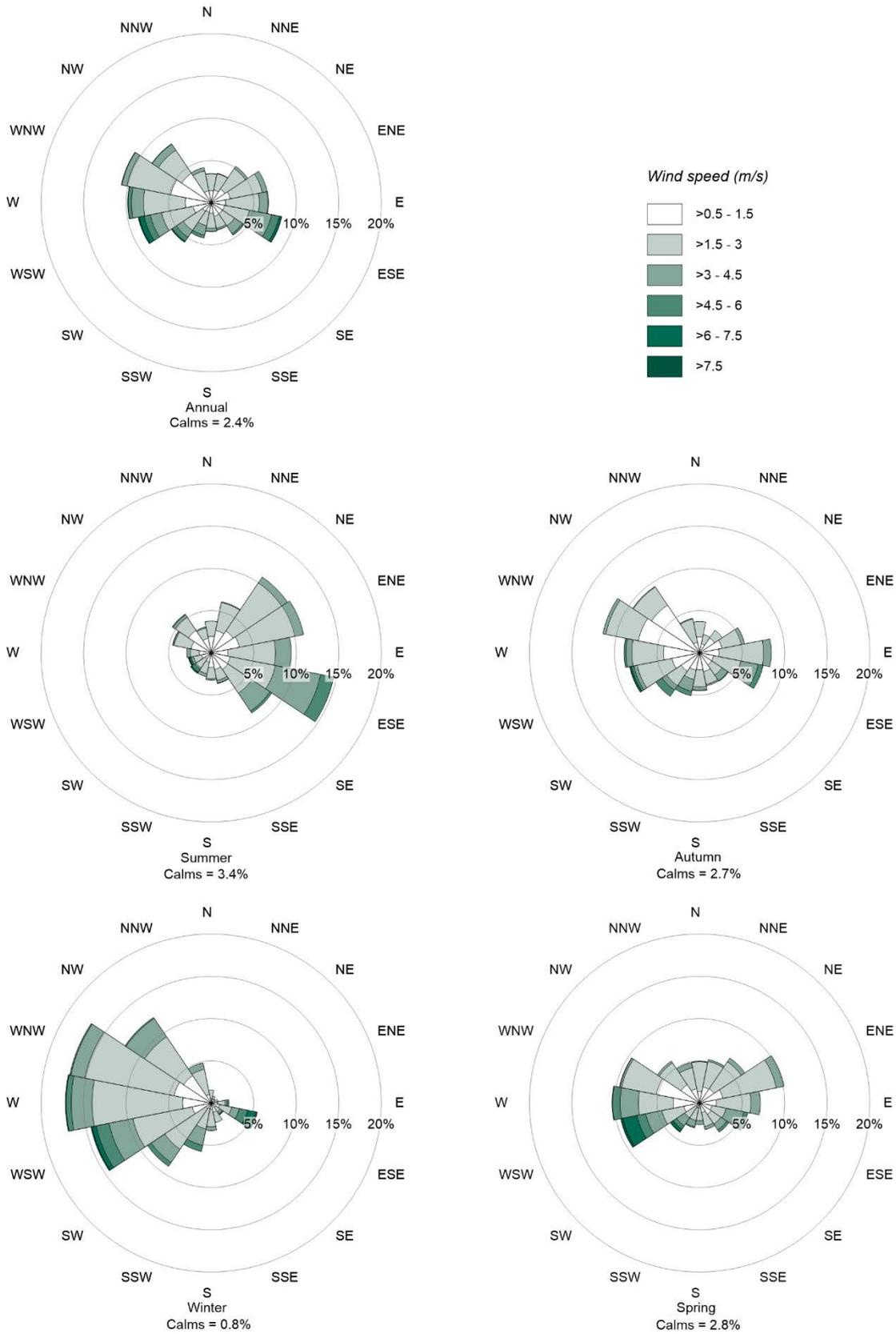


Figure 5: Grants Road Sand Wind Rose, 2022

Temperature

Table 2: Monthly Average Temperature, 2022

Month	Monthly Average Temperature at 2m (°C)	Monthly Average Temperature at 10m (°C)
January	21.4	21.4
February	20.4	20.4
March	19.1	19.2
April	17.1	17.4
May	14.2	14.6
June	10.8	11.1
July	10.9	11.3
August	12.5	12.8
September	13.6	13.7
October	15.4	15.6
November	17.0	16.9
December	18.3	18.1

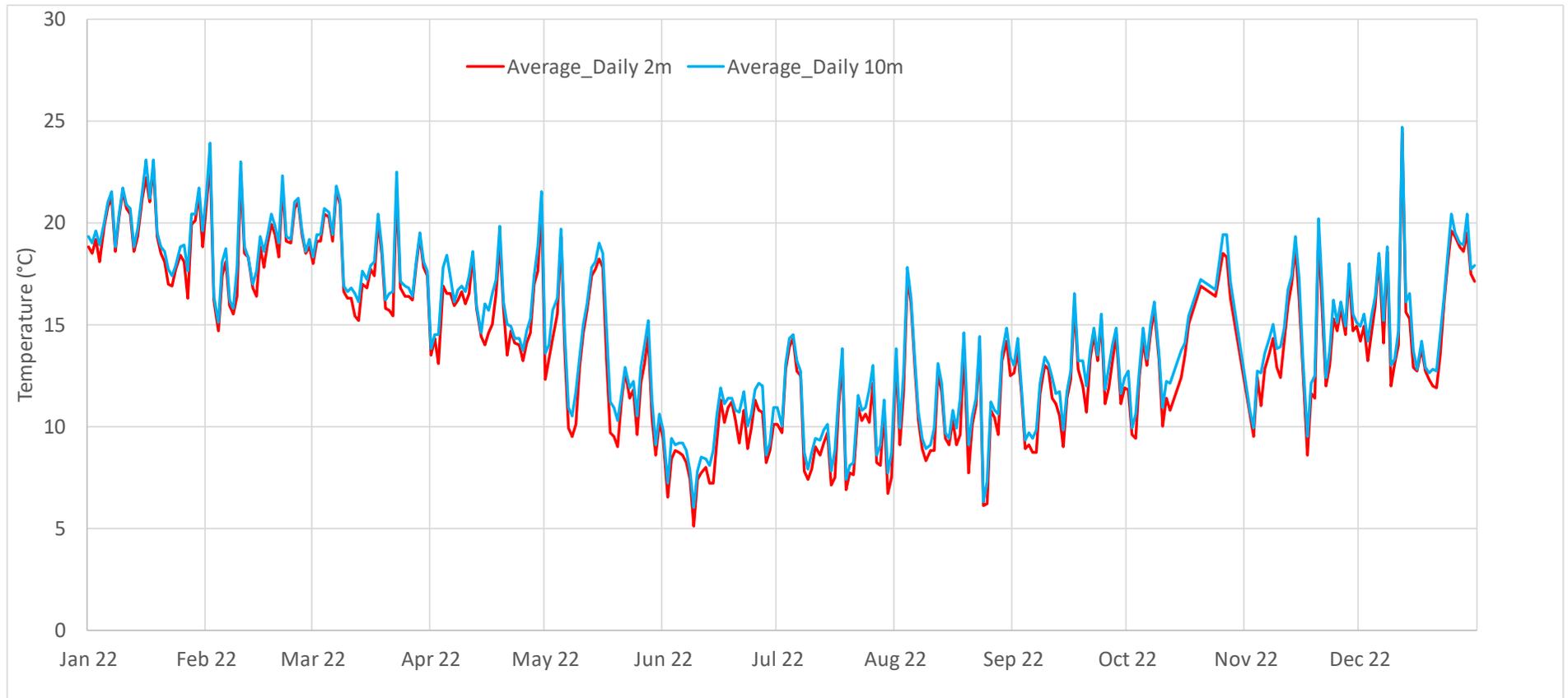


Figure 6: Average Daily Temperature, 2022

Rainfall

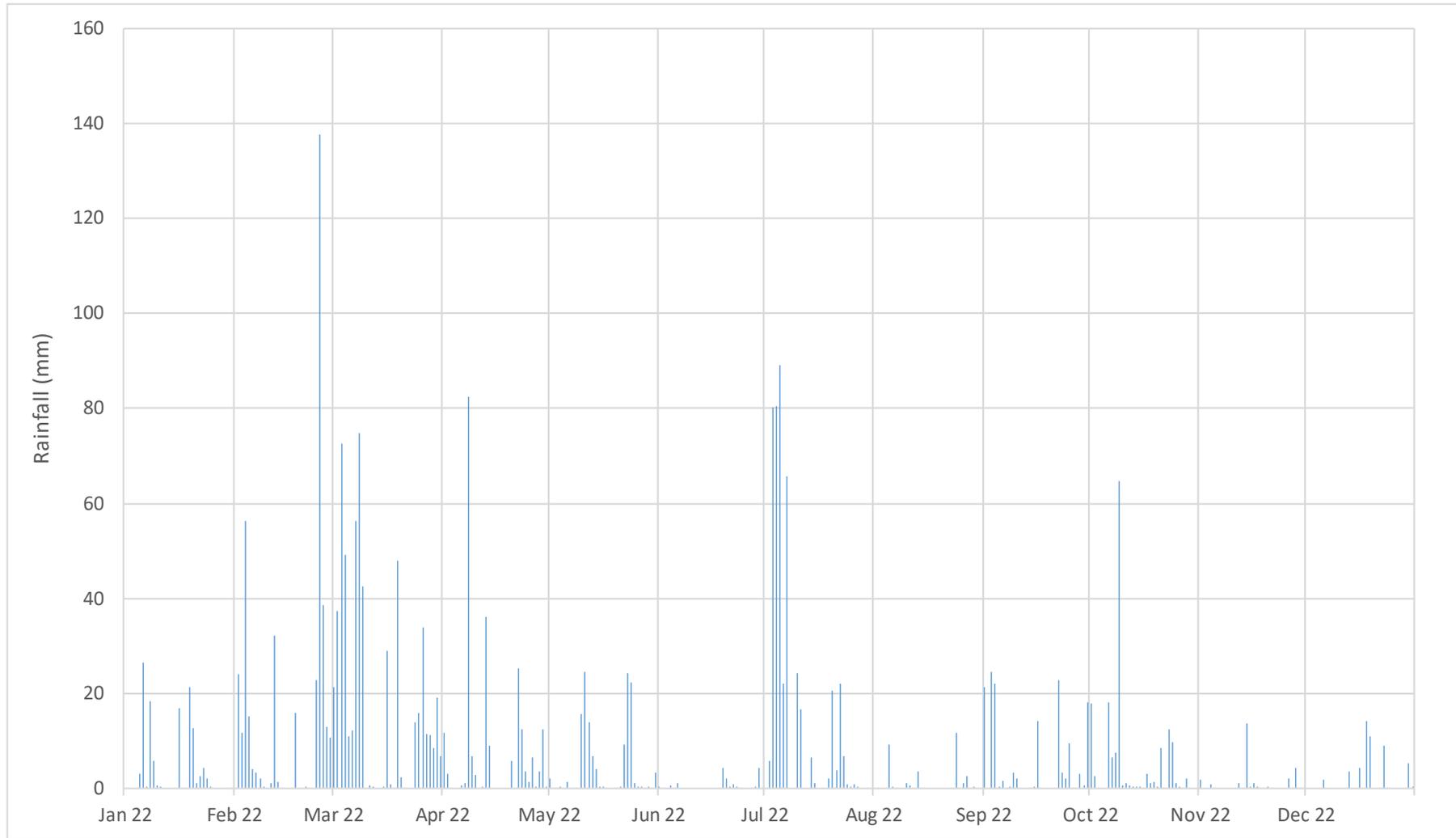


Figure 7: Daily Rainfall (taken from the Bureau of Meteorology's Gosford AWS) for 2022

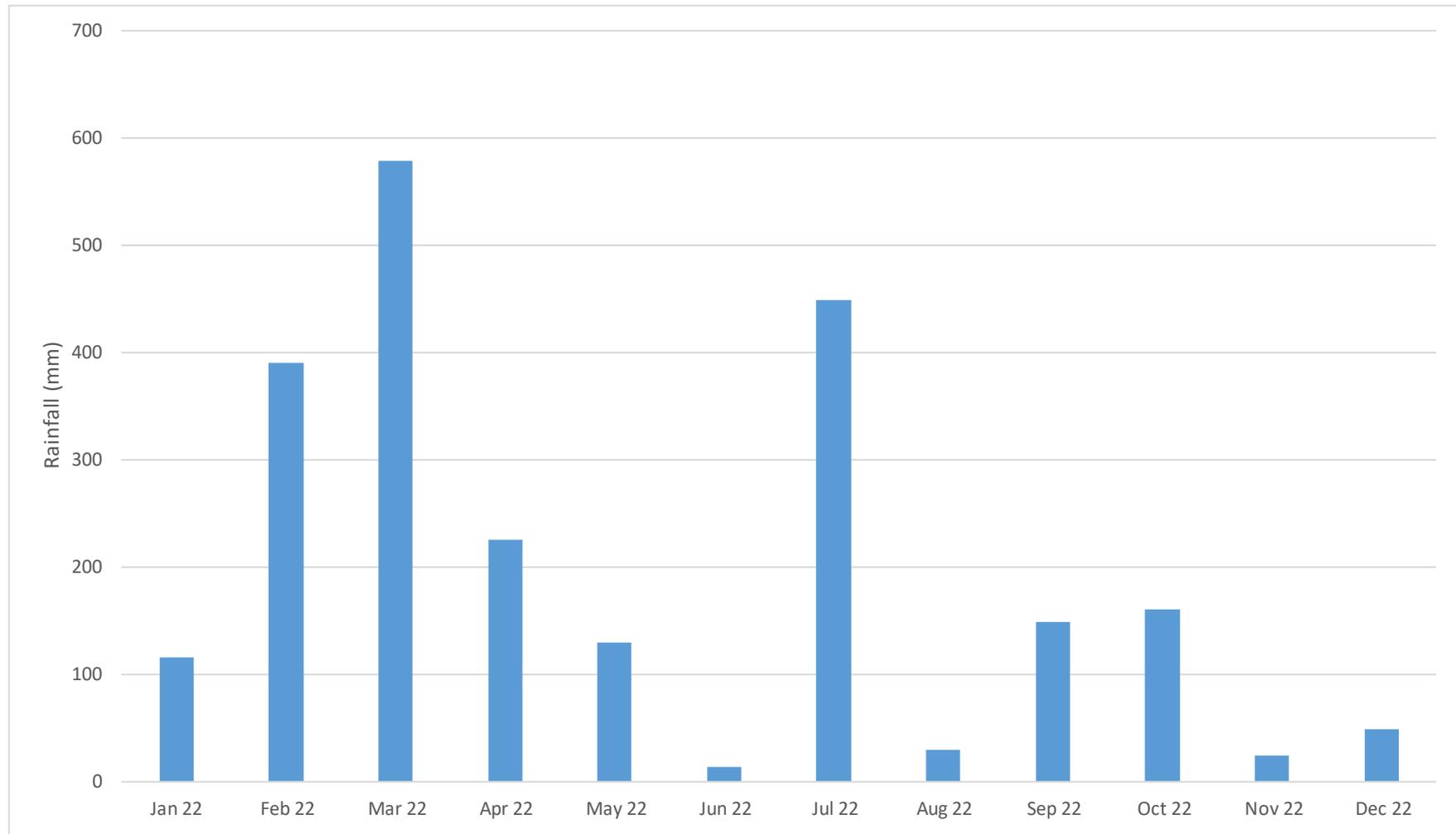


Figure 8: Monthly Rainfall Total (taken from the Bureau of Meteorology's Gosford AWS) for 2022

Air Quality

The NSW EPA specifies air quality assessment criteria relevant for assessing impacts from air pollution in the *Approved Methods for the Modelling and Assessment of Pollutants in New South Wales* (NSW DEC, 2022) (Approved Methods). These criteria are health-based (i.e. they are set at levels to reduce the risk of adverse health effects). The EPA criteria are consistent with the National Environment Protection Measures for Ambient Air Quality (referred to as the Air NEPM) (NEPC, 2021). The assessment criteria for annual average PM₁₀ has reduced from 30 µg/m³ to 25 µg/m³ in recent years in both of these sources.

Table 3 and Table 4 summarise the air quality criteria for concentrations of particulate matter and deposited dust levels that are relevant to this study. Where multiple criteria are listed, the more stringent is adopted to assess compliance.

Table 3: Air Quality Standards / Goals for Particulate Matter

Pollutant	Averaging Period	Standard / Goal	Source
Particulate matter with an equivalent aerodynamic diameter less than 10 µm (PM ₁₀)	24-hour maximum	50 µg/m ³	Air NEPM Approved Methods EPL 11240
	Annual mean	25 µg/m ³	Air NEPM Approved Methods
		30 µg/m ³	EPL 11240

Notes: µg/m³ – micrograms per cubic metre, µm – micrometre.

Table 4: Air Quality Standards / Goals for Deposited Dust

Pollutant	Averaging Period	Standard / Goal	Source
Deposited dust (insoluble solids)	Annual mean	2 g/m ² /month (Incremental)	Approved Methods EPL 11240
	Annual mean	4 g/m ² /month (Cumulative)	Approved Methods

Notes: g/m²/month – grams per metre square per month.

Respirable crystalline silica measurements have been evaluated by comparison with OH&S criteria (Section 8.2.3). This follows from the statement of commitments in the Project Approval which included the measurement of respirable crystalline silica using personal air-samplers on personnel working on-site.

Particulate Matter (PM₁₀)

Measured Results

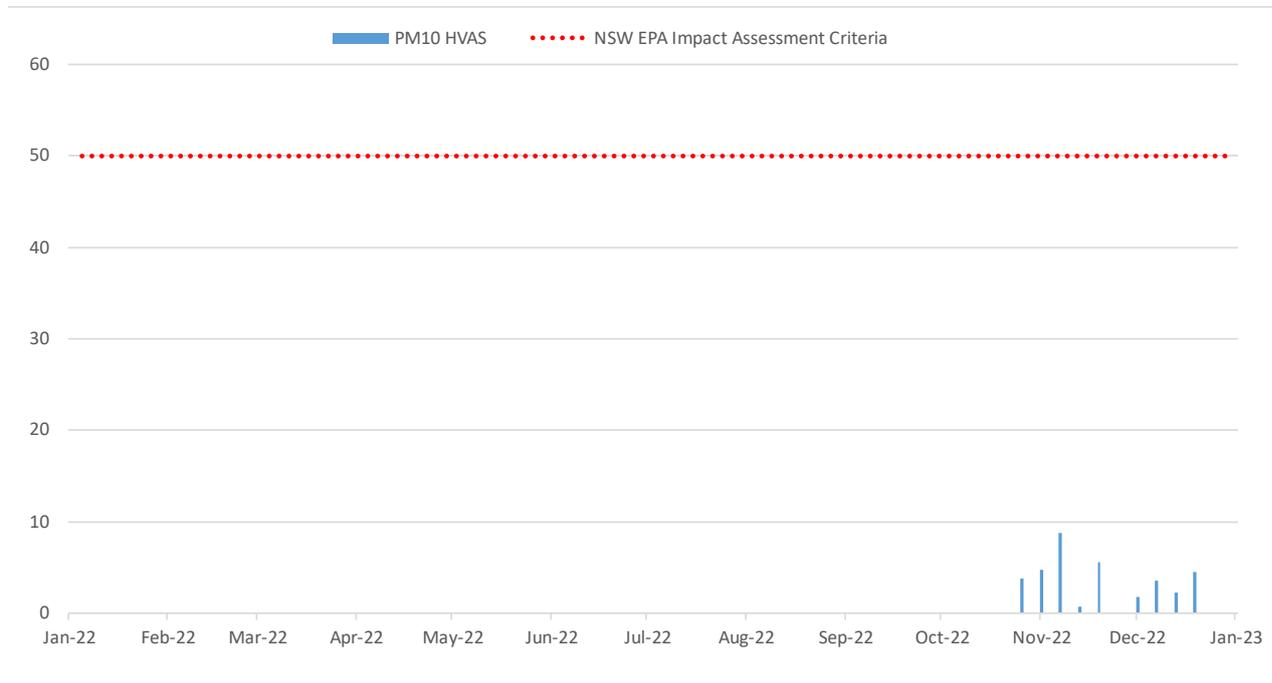


Figure 9: HVAS monitoring results for PM₁₀, 2022

Comparison to the environmental assessment predictions

The Air Quality Assessment (AQA) for the Grants Road Sand Quarry Extension was completed by PAEHolmes in 2013, Air Quality Impact Assessment – Extension of Grants Road Quarry (PAEHolmes, 2013). The cumulative results predicted in the assessment indicate that the 24 hour PM₁₀ ground level concentrations at the current location of the HVAS would be in the order of 70 µg/m³. The highest measured cumulative 24-hour PM₁₀ concentration was 8.8 µg/m³ in 2022, a value considerably lower than the conservative predictions made in the air quality assessment, however, data capture for 2022 was very low and it is possible higher concentrations could have occurred at other times during the year particularly during dry seasons.

The predicted annual average PM₁₀ concentration in the AQA was approximately 30 µg/m³ at the HVAS location. The average of available data in 2022 is 3.6 µg/m³. This is consistent with the 24-hour results, where the actual concentration has been established to constitute 50% or less than the predicted concentration at the same location.

Given the results of the data during the monitoring period, currently no additional action is required to control environmental performance. Rather it is recommended that current mitigation processes are sustained and that data capture for PM₁₀ be improved.

Trend analysis for PM₁₀

HVAS PM₁₀ monitoring results have been gathered from January 2016 to December 2022. Table 5 and Figure 10 present the annual average PM₁₀ concentrations from 2016 to 2022. Figure 11 presents the individual monitoring results from 2016 to 2022.

It can be seen that PM₁₀ concentrations were increasing from 2017 to 2019 before reducing in 2020 and 2021. The increase in concentrations from 2017 to 2019 and reduction in 2020 is seen across NSW. The highest concentrations in 2019, including the exceedance day experienced in December 2019, were due to drought and bushfire conditions across the region and is explained in the 2019 Annual Report.

Table 5: Annual average PM₁₀ concentrations from HVAS from 2016 to 2022

Year	Annual average PM ₁₀ concentrations (µg/m ³)
2016	9.1
2017	7.2
2018	9.4
2019	14.8
2020 ^a	4.3
2021	3.9
2022 ^b	3.6

Notes:

^a Only 9 months of data captured in 2020.

^b Only 2 months of data captured in 2022.

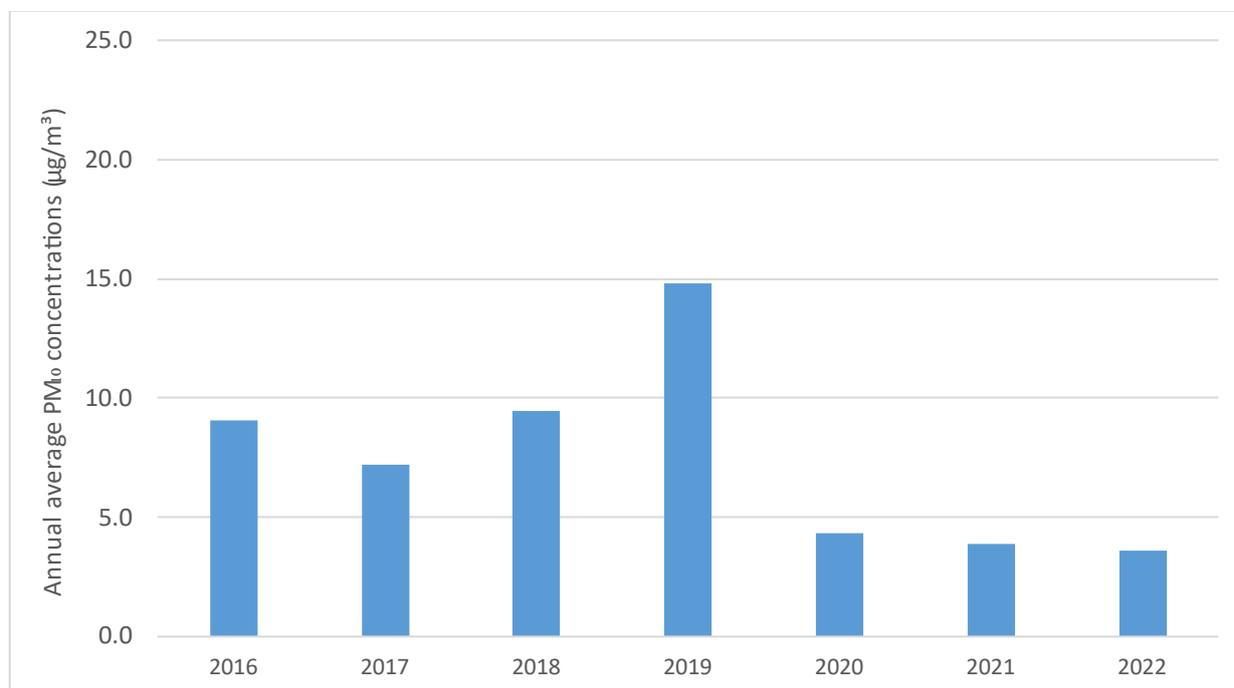


Figure 10: Annual average PM₁₀ concentrations from HVAS for 2016 to 2022

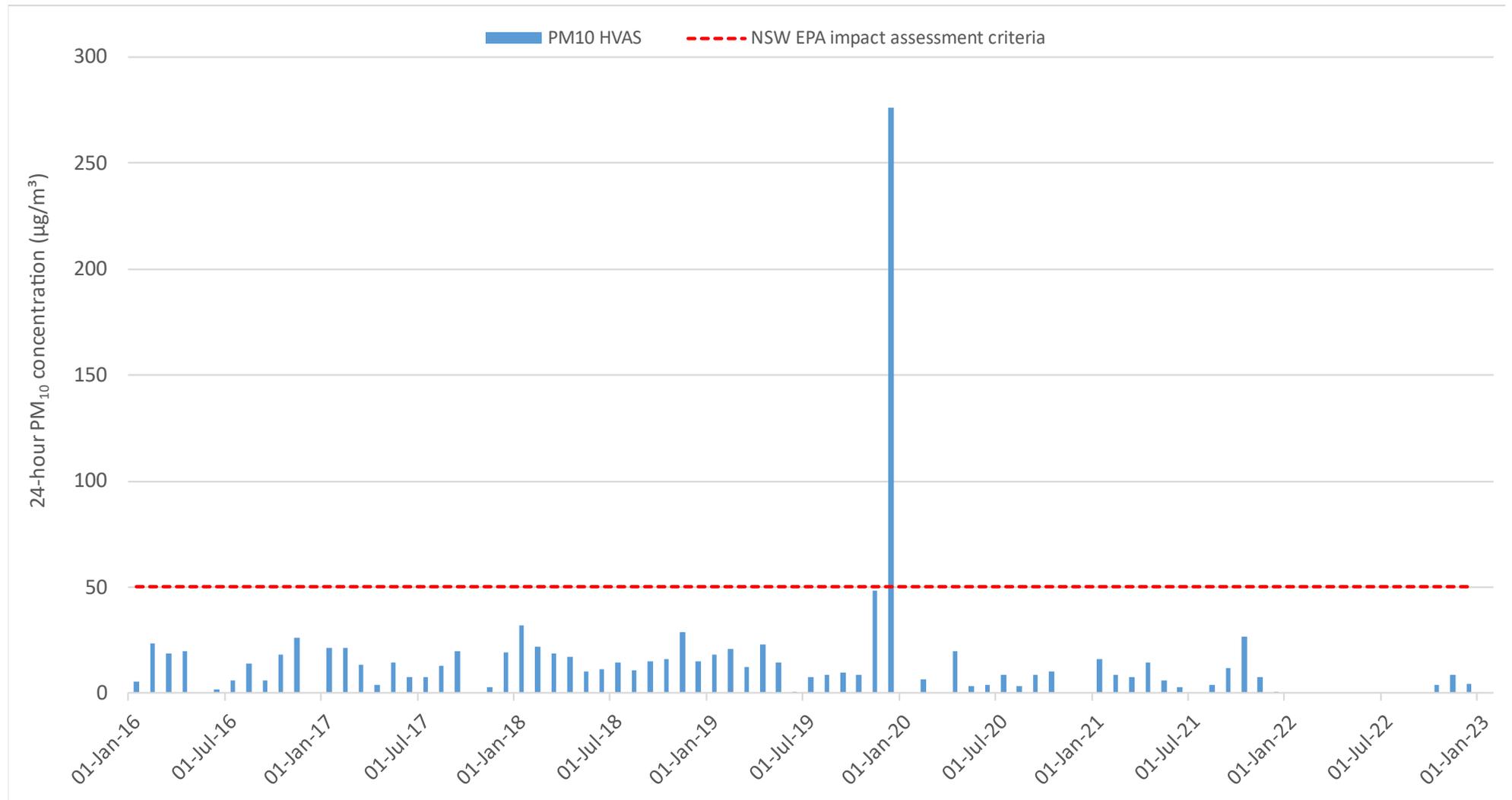


Figure 11: 2016 – 2022 HVAS monitoring results for PM₁₀

Dust Deposition

Measured Results

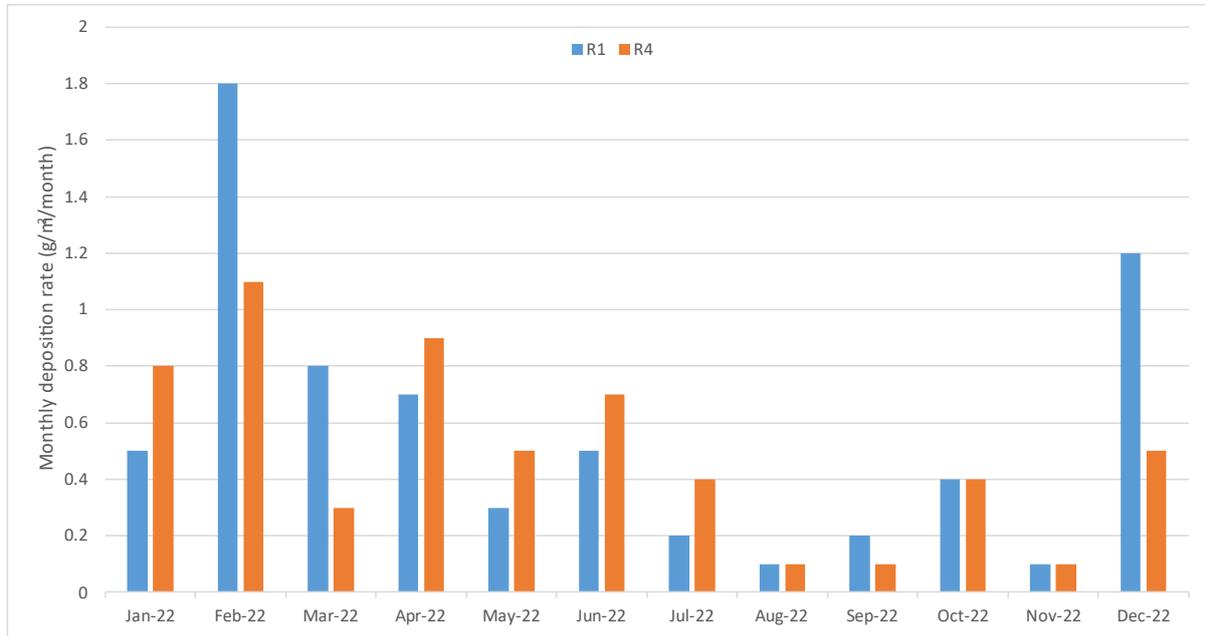


Figure 12: Dust deposition (total insoluble solids, g/m²/month) for 2022

Comparison to environmental assessment predictions

The Air Quality Assessment (AQA) for the Grants Road Sand Quarry Extension was completed by PAEHolmes in 2013, Air Quality Impact Assessment – Extension of Grants Road Quarry (PAEHolmes, 2013). The cumulative results predicted in the assessment indicate that the annual dust deposition level at the locations of the deposition gauges would be in the order of 1.7 g/m²/month at R1 and 1.9 g/m²/month at R4. The measured annual average dust deposition rates are 0.5 g/m²/month at both R1 and R4, respectively. This is considerably lower than the conservative predictions made in the air quality assessment.

Given the results of the data during the monitoring period, currently no additional action is required to control environmental performance. Rather, it is recommended that current mitigation processes are sustained.

Trend analysis for dust deposition

Dust deposition measurements at R1 and R4 have been gathered from January 2017 to December 2022. Table 6 and Figure 13 present the annual average dust deposition levels at R1 and R4. There is no clear trend in the data. Figure 14 presents the monthly dust deposition results from 2017 to 2022.

Table 6: Annual average dust deposition levels (g/m²/month)

Year	R1	R4
2017	0.6	0.9
2018	0.4	0.5
2019	0.7	0.7
2020 ^a	2.2	0.7
2021	0.6	0.6
2022	0.6	0.5

Notes:

^a Only 9 months of data captured in 2020.

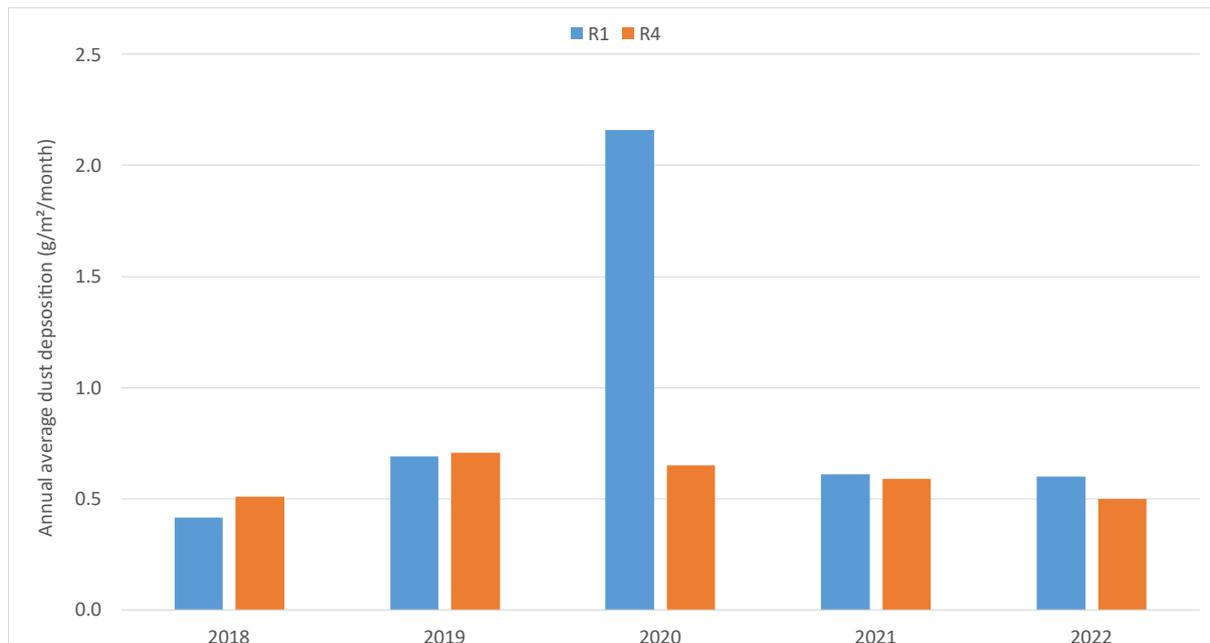


Figure 13: Annual average dust deposition levels (g/m²/month) for 2017 to 2022

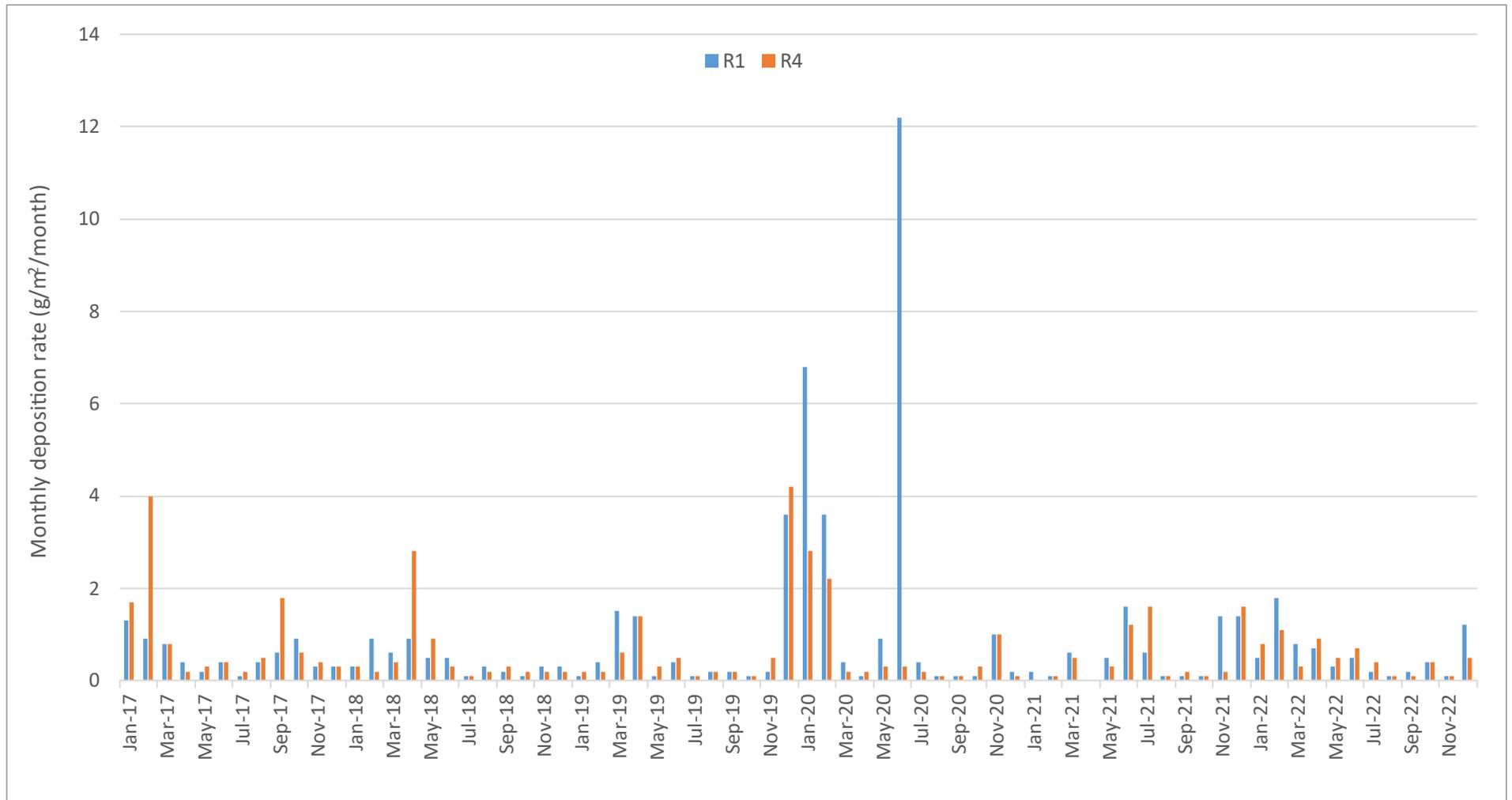


Figure 14: 2017 – 2022 dust deposition monitoring results

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Appendix 7
GROUNDWATER DEPENDENT ECOSYSTEM
Conacher Consulting



**GROUNDWATER DEPENDANT ECOSYSTEMS
2022 ANNUAL MONITORING REPORT**

**GRANTS ROAD
SAND QUARRY**

**JANUARY 2023
REF: 23003**

**GROUNDWATER DEPENDANT ECOSYSTEMS
2022 ANNUAL MONITORING REPORT**

GRANTS ROAD

SAND QUARRY

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PREFACE

This report has been prepared by *Conacher Consulting* to address the annual reporting requirements for High Priority Groundwater Dependant Ecosystems for the Grants Road Sand Quarry at Somersby.

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APPENDIX 2 MONITORING PLOT PHOTOGRAPHS

SECTION 1

INTRODUCTION & BACKGROUND

1.1 DOCUMENT INTENT

This report has been prepared by *Conacher Consulting* to address the annual monitoring requirements of Condition 21 “Groundwater Dependant Ecosystem Monitoring and Management Program” of the Schedule 3 Environmental Performance Conditions specified within the Project Approval for the Grants Road Sand Quarry Extension project (Project Approval No. 08_0099 Mod 1 .

1.2 PROJECT SITE DETAILS

The quarry is located within Lots 1 & 2 DP 358717, Grants Road Somersby. The four monitoring plots for the Groundwater Dependant Ecosystems are located downslope of the quarry site within the adjoining Brisbane Water National Park, as shown in Figure 1.

1.3 GROUNDWATER DEPENDANT ECOSYSTEMS WITHIN 1KM

High Priority Groundwater Dependant Ecosystems (GDEs) were defined in the Water Sharing Plan for the Kulnura Mangrove Mountain Groundwater Source (Dept. of Infrastructure, Planning and Natural Resources 2006). The following High Priority GDEs have been identified within 1km of the site:

- Sandstone Hanging Swamp; and
- Hawkesbury Coastal Banksia Woodland.

These map units relate to mapping prepared by NPWS in 2003 which has been superseded by Council’s current vegetation mapping prepared by Bell (2019). The plant community or vegetation type named Hawksbury Coastal Banksia Woodland is now included in the Hawksbury Banksia Wet Scrub plant community (Bell 2019). This plant community name is now used in this report. Further mapping for the modelled drawdown area has been prepared by *Conacher Consulting* and is provided in Figure 1.1. This mapping provides an estimate of the current extent of High Priority GDEs within the modelled groundwater drawdown area as outlined below.

Sandstone Hanging Swamp

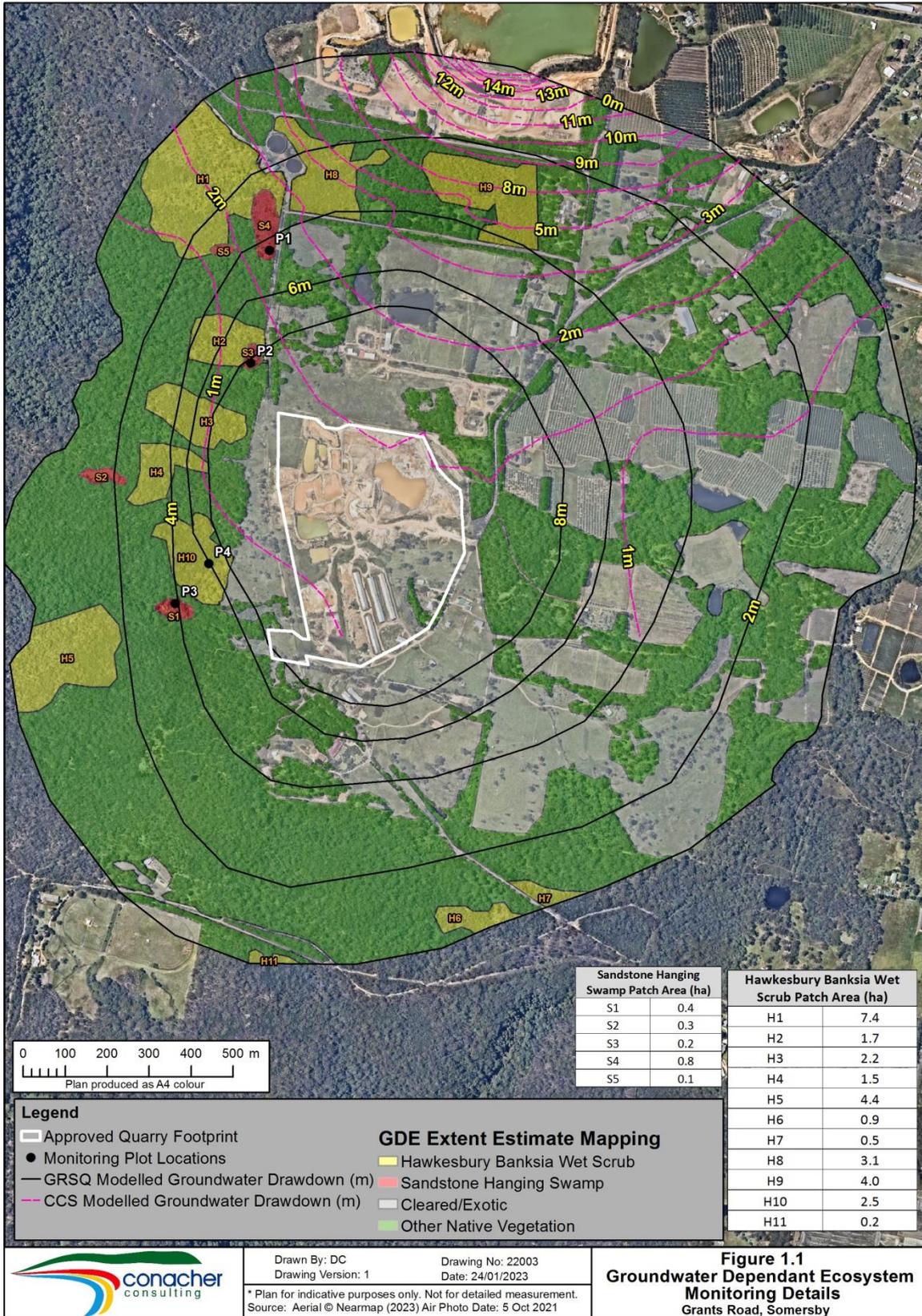
The floristic composition of this vegetation type indicates that it is likely to have high dependence on groundwater and can be considered a high-dependence facultative GDE.

The current estimated extent of Sandstone Hanging Swamp within the modelled drawdown area is 1.8 hectares. The sizes of individual patches are mapped and listed in Figure 1.1.

Hawkesbury Banksia Wet Scrub

This plant community is similar to the Hawkesbury Banksia Scrub Woodland (Bell 2019) and is included as a GDE due to its midslope topographical location, higher abundance of moisture loving species and the presence of Sandstone Hanging Swamp in close proximity.

The current estimated extent of this plant community within the modelled drawdown area is 28.6 hectares. The sizes of individual patches are mapped and listed in Figure 1.1.



SECTION 2

MONITORING DETAILS AND RESULTS

2.1 MONITORING METHODOLOGY

The monitoring program for High Priority Groundwater Dependant Ecosystems (GDEs) consists of a combination of aerial photograph assessment and mapping of GDEs within the predicted drawdown area, floristic plot surveys and field assessment for indicators and signs of potential project related impacts.

Four vegetation monitoring plots were surveyed for the selected locations shown in Figure 1.1. The GPS for the centre of each of the monitoring plots is recorded in Table 2.1. The extent of the monitoring plots was ten metres from the monitoring peg. The monitoring survey was undertaken on 17 March 2022. The monitoring variables observed and assessed are described below.

i. Native Plant Composition

Plot surveys were completed comparing the results of the baseline plot monitoring results from the initial monitoring species data with the current plot conditions. The native flora species present and projected foliage cover were assessed. Comments are provided for the species observed, including GDE species which are reliant on moist soil conditions.

ii. Exotic Plant Composition

All exotic flora species and total cover of exotic flora species was recorded for each plot.

iii. GDE Extent and Distribution

Mapping of GDE's was informed by aerial photograph analysis and interpretation using Nearmap imagery dated 15 August 2022.

iv. Vegetation Photo Point Monitoring

Photographs were taken for each monitoring quadrat from each cardinal point during the monitoring survey for record purposes and later evaluation.

v. Surface Erosion and Sedimentation Monitoring

A visual inspection of the GDE patches downslope from the quarry site was undertaken to monitor for any surface erosion or sedimentation impacts from the quarry operations.

vi. Comparison with Groundwater Monitoring Data

The groundwater monitoring undertaken by Larry Cook Consulting for the current and previous monitoring periods was reviewed and is discussed in Section 2.3 of this Report.

2.2 FLORISTIC MONITORING RESULTS

Monitoring plots were sampled for the current monitoring period. A summary of the floristic plot survey results is provided in Table 2.1 and full floristic plot results are provided in Table 2.2.

The GDE indicator species were determined from the floristic plot results and are identified in Table 2.2. These species occur in moist or swamp environments such as coastal upland swamps. There are several other species characteristic of Hawkesbury Banksia Wet Scrub and Sandstone Hanging Swamp within the plots sampled, however, these species are

considered to be not indicative of wet environments and can often be found in adjoining areas which do not contain high priority groundwater dependant ecosystems.

No change in indicator species richness was observed for the monitoring plots. The species richness remained the same for indicator species in the monitoring plots. It is recommended that a review of the monitoring methodology and results be undertaken for the next annual report.

TABLE 2.1 FLORISTIC PLOT RESULT SUMMARY				
Variables	Plot 1 Sandstone Hanging Swamp	Plot 2 Sandstone Hanging Swamp	Plot 3 Sandstone Hanging Swamp	Plot 4 Hawkesbury Banksia Wet Scrub
Indicator Species Number				
2018 Monitoring	9	11	13	4
2019 Monitoring	9	11	13	4
2020 Monitoring	12	13	13	4
2021 Monitoring	12	13	13	4
2022 Monitoring	12	13	13	4
Indicator Species Cover %				
2018 Monitoring	84	63	74	1
2019 Monitoring	79	63	69	1
2020 Monitoring	85	66	74	1
2021 Monitoring	85	66	74	1
2022 Monitoring	85	66	74	1
Total Species Number				
2018 Monitoring	39	40	50	35
2019 Monitoring	39	40	50	35
2020 Monitoring	47	48	51	36
2021 Monitoring	47	48	51	36
2022 Monitoring	47	48	51	36
Total Species Cover %				
2018 Monitoring	140	112	163	137
2019 Monitoring	140	112	163	137
2020 Monitoring	153	113	179	98
2021 Monitoring	153	113	179	98
2022 Monitoring	153	113	179	98
GPS Location	-33.38474 151.26119	-33.38700 151.26104	-33.39210 151.258900	-33.39146 151.25991

**TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS**

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
TREES							
Casuarinaceae	<i>Allocasuarina littoralis</i>	Black She-Oak		0.25		1	
Myrtaceae	<i>Angophora costata</i>	Sydney Red Gum	0.25		2		
Myrtaceae	<i>Angophora hispida</i>	Dwarf Apple				0.5	
Myrtaceae	<i>Corymbia gummifera</i>	Red Bloodwood			4		
Myrtaceae	<i>Eucalyptus haemastoma</i>	Broad-leaved Scribbly Gum			10		
Myrtaceae	<i>Eucalyptus piperita</i>	Sydney Peppermint			15		
Myrtaceae	<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	Red Mahogany	10			5	
Myrtaceae	<i>Eucalyptus scias</i>	Large-fruited Red Mahogany	15				
Myrtaceae	<i>Eucalyptus sieberi</i>	Silvertop Ash	0.3	10			
Phyllanthaceae	<i>Glochidion ferdinandi</i>	Cheese Tree		0.5			
SHRUBS							
Apiaceae	<i>Platysace linearifolia</i>		1	0.5	20		
Araliaceae	<i>Polyscias sambucifolia</i> subsp. <i>Long Leaflets</i>	Elderberry Panax		0.25	0.5		
Cunoniaceae	<i>Bauera rubioides</i>	River Rose	1	2	2		
Cunoniaceae	<i>Callicoma serratifolia</i>	Black Wattle			0.25		
Dilleniaceae	<i>Hibbertia procumbens</i>	Spreading Guinea Flower				0.1	
Ericaceae	<i>Epacris obtusifolia</i>	Blunt-leaf Heath	0.25	0.1	0.1		
Ericaceae	<i>Epacris pulchella</i>	Wallum Heath				0.2	
Euphorbiaceae	<i>Amperea xiphioclada</i>				0.25		
Euphorbiaceae	<i>Pseudanthus orientalis</i>			0.1			
Fabaceae (Faboideae)	<i>Almaleea paludosa</i>		0.1				

**TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS**

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
Fabaceae (Faboideae)	<i>Bossiaea scolopendria</i>					0.1	
Fabaceae (Faboideae)	<i>Dillwynia floribunda</i>				1	0.2	
Fabaceae (Faboideae)	<i>Pultenaea rosmarinifolia</i>		2	0.1			
Fabaceae (Faboideae)	<i>Viminaria juncea</i>	Native Broom	0.5	0.25	0.25		
Fabaceae (Mimosoideae)	<i>Acacia elata</i>	Cedar Wattle		1			
Fabaceae (Mimosoideae)	<i>Acacia linifolia</i>	White Wattle			0.1		
Fabaceae (Mimosoideae)	<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sydney Golden Wattle	0.5	0.5			
Fabaceae (Mimosoideae)	<i>Acacia myrtifolia</i>	Red-stemmed Wattle	0.1				
Fabaceae (Mimosoideae)	<i>Acacia oxycedrus</i>	Spike Wattle	15	0.1	1	0.1	
Fabaceae (Mimosoideae)	<i>Acacia parvipinnula</i>	Silver-stemmed Wattle	0.5				
Fabaceae (Mimosoideae)	<i>Acacia suaveolens</i>	Sweet Wattle	0.5			0.2	
Fabaceae (Mimosoideae)	<i>Acacia terminalis</i> subsp. <i>Long inflorescences</i>	Sunshine Wattle	0.2	0.2	0.25		
Myrtaceae	<i>Callistemon citrinus</i>	Crimson Bottlebrush	0.1	0.25			
Myrtaceae	<i>Leptospermum polygalifolium</i> subsp. <i>cismontanum</i>	Tantoon			20	10	
Myrtaceae	<i>Leptospermum polygalifolium</i> subsp. <i>polygalifolium</i>	Tantoon	1	2			
Myrtaceae	<i>Leptospermum trinervium</i>	Flaky-barked Tea-tree				0.1	
Pittosporaceae	<i>Pittosporum revolutum</i>	Rough Fruit Pittosporum				0.1	
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum				0.2	
Proteaceae	<i>Banksia ericifolia</i>	Heath-leaved Banksia	15	1	0.5	30	Regrowth observed
Proteaceae	<i>Banksia robur</i>	Swamp Banksia			0.5		
Proteaceae	<i>Grevillea sericea</i> subsp. <i>sericea</i>	Pink Spider Flower	0.1		0.25		
Proteaceae	<i>Grevillea speciosa</i>	Red Spider Flower	0.3				

**TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS**

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
Proteaceae	<i>Hakea teretifolia</i>	Needlebush	0.2	0.25			
Proteaceae	<i>Lambertia formosa</i>	Mountain Devil			0.25		
Proteaceae	<i>Persoonia isophylla</i>		0.25				
Proteaceae	<i>Persoonia lanceolata</i>	Lance Leaf Geebung	0.3				
Proteaceae	<i>Persoonia levis</i>	Broad-leaved Geebung			0.25		
Proteaceae	<i>Petrophile pulchella</i>	Conesticks				0.25	
Santalaceae	<i>Leptomeria acida</i>	Sour Currant Bush	0.1				
Thymelaeaceae	<i>Pimelea linifolia</i>	Slender Rice Flower		0.1	0.1		
Groundcovers (Forbs)							
Anthericaceae	<i>Thysanotus juncifolius</i>				0.1		
Apiaceae	<i>Actinotus minor</i>	Lesser Flannel Flower		0.5	1	1	
Apiaceae	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort		0.1			
Apiaceae	<i>Xanthosia pilosa</i>	Woolly Xanthosia	0.1	0.1			
Apiaceae	<i>Xanthosia tridentata</i>	Rock Xanthosia	0.1	0.1	0.5	0.1	
Blandfordiaceae	<i>Blandfordia grandiflora</i>	Christmas Bells	0.1				
Dilleniaceae	<i>Hibbertia procumbens</i>	Spreading Guinea Flower	0.1				
Droseraceae	<i>Drosera binata</i>	Forked Sundew		0.1			
Droseraceae	<i>Drosera peltata</i>	A Sundew		0.1			
Euphorbiaceae	<i>Monotaxis linifolia</i>			0.25	0.1		
Goodeniaceae	<i>Dampiera stricta</i>		0.1	0.2			
Goodeniaceae	<i>Goodenia hederacea</i>	Forest Goodenia	0.1				
Goodeniaceae	<i>Goodenia paniculata</i>			0.1			
Haemodoraceae	<i>Haemodorum corymbosum</i>		0.1				
Haloragaceae	<i>Gonocarpus micranthus</i>			0.1			

**TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS**

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
Haloragaceae	<i>Gonocarpus tetragynus</i>	Poverty Raspwort			0.25		
Haloragaceae	<i>Gonocarpus teucrioides</i>	Germander Raspwort	0.1		0.5		
Orchidaceae	<i>Cryptostylis erecta</i>	Bonnet Orchid		0.1			
Phormiaceae	<i>Dianella caerulea</i> var. <i>producta</i>	Blue Flax-lily	0.1	0.1		0.25	
Phormiaceae	<i>Dianella prunina</i>	Blue Flax-lily				0.25	
Groundcovers (Ferns)							
Dennstaedtiaceae	<i>Histiopteris incisa</i>	Bat's Wing Fern		3	0.5	0.2	
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Bracken		20	5		
Gleicheniaceae	<i>Gleichenia microphylla</i>	Scrambling Coral Fern	80	60	70	0.1	Regrowth observed
Lindsaeaceae	<i>Lindsaea linearis</i>	Screw Fern			0.1	0.25	
Selaginellaceae	<i>Selaginella uliginosa</i>	Swamp Selaginella		0.1	0.1		
Groundcovers (Monocots)							
Cyperaceae	<i>Corizandra cymbaria</i> 0		1	1			
Cyperaceae	<i>Cyathochaeta diandra</i>					10	
Cyperaceae	<i>Gahnia clarkei</i>	Tall Saw-sedge	1	0.5	0.25		
Cyperaceae	<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge	2		1		
Cyperaceae	<i>Gymnoschoenus sphaerocephalus</i>	Button Grass	0.5	0.5			
Cyperaceae	<i>Lepidosperma laterale</i>					5	
Cyperaceae	<i>Ptilothrix deusta</i>					20	
Cyperaceae	<i>Schoenus apogon</i>	Fluke Bogrush	0.1				
Cyperaceae	<i>Schoenus brevifolius</i>	Zig-zag Bog-rush	0.2		0.25		
Cyperaceae	<i>Schoenus melanostachys</i>				0.5		
Lomandraceae	<i>Lomandra gracilis</i>					10	

TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
Lomandraceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush			1		
Lomandraceae	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush				0.1	
Lomandraceae	<i>Lomandra obliqua</i>					0.1	
Poaceae	<i>Entolasia marginata</i>	Bordered Panic			0.25	1	
Poaceae	<i>Entolasia stricta</i>	Wiry Panic	1	5	5		
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass		0.1			
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass				1	
Poaceae	<i>Oplismenus aemulus</i>	Basket Grass				0.1	
Poaceae	<i>Plinthanthesis paradoxa</i>				0.25		
Restionaceae	<i>Empodisma minus</i>		1	0.5	2	0.1	
Restionaceae	<i>Eurychorda complanata</i>			0.25	0.5		
Xyridaceae	<i>Xyris gracilis</i>		0.1				
Groundcovers (Other)							
Apocynaceae	<i>Parsonsia straminea</i>	Common Silkpod	0.1		0.1	0.2	
Bignoniaceae	<i>Pandorea jasminoides</i>	Bower Vine		0.1			
Dicksoniaceae	<i>Calochlaena dubia</i>	Rainbow Fern			10		
Dilleniaceae	<i>Hibbertia scandens</i>	Climbing Guinea Flower		0.25			
Doryanthaceae	<i>Doryanthes excelsa</i>	Gynea Lily			1		
Fabaceae (Faboideae)	<i>Hardenbergia violacea</i>	False Sarsaparilla				0.1	
Lauraceae	<i>Cassytha glabella</i>		0.1	0.1			
Lauraceae	<i>Cassytha pubescens</i>	Downy Dodder-laurel			0.1		
Luzuriagaceae	<i>Eustrephus latifolius</i>	Wombat Berry				0.1	
Orchidaceae	<i>Cymbidium suave</i>	Snake Orchid			0.1		

**TABLE 2.2
2022 MONITORING FLORISTIC PLOT OBSERVATIONS**

Family	Scientific Name	Common Name	Plant Cover Percentage				Browning / Dieback Observations
			Plot 1	Plot 2	Plot 3	Plot 4	
Pittosporaceae	<i>Billardiera scandens</i>	Hairy Apple Berry	0.1	0.1	0.1		
Rubiaceae	<i>Gynochthodes jasminoides</i>	Sweet Morinda		0.1	0.1	0.5	
Vitaceae	<i>Cissus hypoglauca</i>	Giant Water Vine			0.25		
Xanthorrhoeaceae	<i>Xanthorrhoea arborea</i>		0.25	0.25			
Exotics							
Verbenaceae	<i>Lantana camara</i>	Lantana	0.1				
+Shading: INDICATIVE SPECIES FOR GROUNDWATER DEPENDENT ECOSYSTEM							

2.3 QUALITATIVE MONITORING RESULTS

i. GDE Surface Erosion and Sedimentation

No surface erosion or sediment deposition attributable to the quarry operations was observed within any of the GDE monitoring areas during the monitoring surveys.

ii. Assessment of Groundwater Monitoring Data

The Water Monitoring results obtained by Larry Cook Consulting for the current monitoring period have been discussed with Larry Cook. These results have identified that no groundwater impacts attributable to the quarry operations have been detected during the monitoring.

iii Assessment of Extent of GDE

Sandstone Hanging Swamp

No detected decrease in the extent of this GDE due to project related impacts was observed since during the monitoring period.

Hawksbury Banksia Wet Scrub

No detected decrease in the extent of this GDE due to project related impacts was observed since during the monitoring period.

iv GDE Photo Point Results

The results of the photo point surveys are provided in Appendix 2.

2.4 ANNUAL RAINFALL DETAILS

Monthly records from Mangrove Mountain weather station (Bureau of Meteorology Weather Station N° 061375) for the monitoring period were utilized because this weather station has been in continuous operation since 1994 and provides good reference data for the locality.

Monthly rainfall data for the Mangrove Mountain Bureau of Meteorology weather station, located 10 kilometres to the north is provided in Table 2.3. A brief analysis of the data identifies that the 2022 rainfall (1784mm) exceeded the average annual rainfall (1127mm) by 53%. July was the wettest month with 549mm of rain recorded, as compared to the July average of 64mm.

**TABLE 2.3
RAINFALL DETAILS 2022
MANGROVE MOUNTAIN (BOMWS 061375)**

MONTH	AMOUNT(mm)	AVERAGE (mm)	COMMENT
January	73	100	27 mm Below Avg
February	36	148	104 mm Below Avg
March	443	159	284 mm Above Avg
April	146	79	68 mm Above Avg
May	88	78	10 mm Above Avg
June	7	106	99 mm Below Avg
July	549	64	485 mm Above Avg
August	42	61	19 mm Below Avg
September	160	67	93 mm Above Avg
October	196	81	115 mm Above Avg
November	22	93	71 mm Below Avg
December	22	87	55 mm Below Avg
Total	1784mm	1127mm	657 mm Above Avg 53%

SECTION 3

COMPLIANCE WITH PERFORMANCE MEASURES

3.1 EROSION

The performance target requires negligible erosion of the surface within the GDEs as a result of adverse impacts attributable to the quarry operations authorised under the project approval. The trigger level for management intervention is observable erosion of the surface within the GDEs, directly attributable to the quarry operations authorised under the project approval.

No surface erosion within GDE areas attributable to the quarry operations was observed and no management intervention is required.

3.2 SEDIMENTATION

The performance target for sedimentation is that negligible sedimentation within the GDEs occurs as a result of adverse impact attributable to the quarry operations authorised under the project approval.

The trigger level for management intervention is observable sedimentation within the GDEs, attributable to the quarry operations authorised under the project approval.

No sedimentation within high priority GDE vegetation, attributable to the quarry operations was observed.

3.3 HIGH PRIORITY GROUND WATER DEPENDANT ECOSYSTEM EXTENT

The performance target for High Priority GDE area extent is for only minor changes in the sizes of the GDEs as a result of adverse impact attributable to the quarry operations authorised under the project approval.

The high priority GDEs within 1km of the site are likely to form a continuum across the landscape in response to fire and soil moisture availability (Bell 2013).

The trigger level for management intervention is adverse change in size of the GDEs of greater than 20% mappable extent, directly attributable to the quarry operations authorised under the project approval.

In order to determine that a reduction in the extent of a High Priority GDE was attributable to the quarry operations a correlation with reduced GDE patch size or dieback and groundwater levels would be required. No reduction in GDE patch size has been determined for the current monitoring period.

3.4 GROUND WATER DEPENDANT ECOSYSTEM SPECIES COMPOSITION & DISTRIBUTION

The performance target for species composition and distribution is for no significant change to the composition or distribution of species within the GDEs, as a result of adverse impact attributable to the quarry operations authorised under the project approval.

The trigger level for management intervention is adverse change in composition or distribution of the dominant species, directly attributable to the quarry operations authorised under the project approval.

The GDE areas were burnt prior to site inspections undertaken in 2015 and are currently regenerating. Further changes between monitoring events are expected within monitoring plots 1 & 2 as these areas continue to regenerate. These changes are not related to the quarry operations at the subject site.

For the current monitoring period there was no significant adverse species composition or distribution changes within the GDEs, as a result of the project. The previous browning of *Gleichenia microphylla* detected was not observed during the current monitoring period.

3.5 MITIGATION AND RESPONSE MEASURES

Monitoring has identified that all performance targets have been met for GDEs and it is determined that a requirement for mitigation or response measures has not been triggered in relation to the impact of quarry operations on Groundwater Dependant Ecosystems.

SECTION 4

CONCLUSIONS & RECOMMENDATIONS

4.1 CONCLUSIONS

The impacts from the quarry operations for the current monitoring period have not exceeded the compliance and performance measures for High Priority Groundwater Dependant Ecosystems as summarised in the compliance tables provided in Appendix 1.

4.2 RECOMMENDATIONS

Based on the results of annual monitoring and details provided in this report the following recommendations are provided.

- I. The implementation of mitigation and response measures in relation to High Priority Groundwater Dependant Ecosystems and the current quarry operations is considered not necessary.
- II. The 2024 GDE Monitoring Report is to include a review of the current GDE monitoring process to determine if any improvements in monitoring and recording procedures can be implemented to improve reporting outcomes for the project.

5. REFERENCES

- Bell (2007) *Review of Flora and Fauna Information for Grants Road Sands*, Gosford LGA.
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- Bell, S.A.J. (2013) *Review of vegetation mapping, Gosford LGA: addressing vegetation loss since 2004*. Unpublished Report to Gosford City Council. November 2013. Eastcoast Flora Survey.
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- Larry Cook Consulting P/L (2021) Water Monitoring Period 1.1.20-31.12.20 Grants Road Sand Quarry. Unpublished Report prepared for Grants Road Sand.
- NSW Scientific Committee 2012, Coastal Upland Swamp in the Sydney Basin Bioregion – endangered ecological community listing, NSW Scientific Committee Final Determination. Available Online:
<http://www.environment.nsw.gov.au/determinations/coastaluplandswampfd.htm>
- Water Sharing Plan for the Kulnura Mangrove Mountain Groundwater Sources 2003. New South Wales Government.

APPENDIX 1
ENVIRONMENTAL PERFORMANCE & COMPLIANCE STATUS SUMMARY

Details on the Environmental Performance and Compliance Status in relation to High Priority GDEs have been compiled for the Annual Reporting. This information is provided in Tables A1.1 and A1.2.

TABLE A1.1 ENVIRONMENTAL PERFORMANCE SUMMARY				
Environmental Aspect	Approval Criteria	Summary of Monitoring Results in the Previous Monitoring Period	Summary of Monitoring Results in this Monitoring Period	Improvement Measures to be Implemented
High Priority Groundwater Dependant Ecosystems within 1km	<p>The proponent must ensure that the project does not cause exceedances of the following performance measures:</p> <ul style="list-style-type: none"> • Negligible erosion of the surface of GDEs • Negligible sedimentation within the GDEs • Minor changes in the size of the GDEs • No Significant change to the composition or distribution of species within the GDEs 	No exceedances	No exceedances	Ensure appropriate erosion and sediment controls are maintained.

**TABLE A1.2
COMPLIANCE STATUS**

Unique ID	Compliance Requirement	Development Phase	Monitoring Methodology	Evidence & Comments
Condition 19.	Negligible erosion of the surface of GDEs	Operations	Visual monitoring Annual Monitoring Reports	No surface soil erosion observed
	Negligible sedimentation within the GDEs	Operations	Visual monitoring Annual Monitoring Reports	No sedimentation observed
	Minor changes in the size of the GDEs	Operations	Aerial photograph and ground assessment Annual Monitoring Reports	No changes to the size of GDE observed
	No Significant change to the composition or distribution of species within the GDEs	Operations	Plot surveys Annual Monitoring Reports	No significant change to species composition/distribution

APPENDIX 2
MONITORING PLOT PHOTOGRAPHS



Photo 1.1 – Plot 1 Photo-monitoring point north direction



Photo 1.2 - Plot 1 Photo-monitoring point east direction



Photo 1.3 - Plot 1 Photo-monitoring point south direction



Photo 1.4 - Plot 1 Photo-monitoring point west direction



Photo 2.1 – Plot 2 Photo-monitoring point north direction



Photo 2.2 - Plot 2 Photo-monitoring point east direction



Photo 2.3 - Plot 2 Photo-monitoring point south aspect



Photo 2.4 - Plot 2 Photo-monitoring point west aspect



Photo 3.1 – Plot 3 Photo-monitoring point north direction



Photo 3.2 - Plot 3 Photo-monitoring point east direction



Photo 3.3 - Plot 3 Photo-monitoring point south direction



Photo 3.4 - Plot 3 Photo-monitoring point west direction



Phot 4.1 – Plot 4 Photo-monitoring point north direction



Photo 4.2 - Plot 4 Photo-monitoring point east direction



Photo 4.3 - Plot 4 Photo-monitoring point south direction



Photo 4.4 - Plot 4 Photo-monitoring point west direction

Appendix 8
SOMERSBY MINTBUSH
Conacher Consulting



**SOMERSBY MINTBUSH
2022 ANNUAL MONITORING REPORT**

**GRANTS ROAD
SAND QUARRY**

**JANUARY 2023
REF: 23004**

**SOMERSBY MINTBUSH
2022 ANNUAL MONITORING REPORT**

**GRANTS ROAD
SAND QUARRY**

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PREFACE

This report has been prepared by *Conacher Consulting* to address the 2022 annual monitoring and reporting requirements for Somersby Mintbush for the Grants Road Sand Quarry at Somersby.

REPORT PREPARED BY:

PHILLIP ANTHONY CONACHER B.Sc.(Hons), Dip.Urb Reg Planning, M.Nat.Res.
NPWS Scientific Licence Number: SL100361
Project Director

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APPENDIX 1 ENVIRONMENTAL PERFORMANCE & COMPLIANCE STATUS SUMMARY

SECTION 1

INTRODUCTION

1.1 DOCUMENT INTENT

This report has been prepared by *Conacher Consulting* to address the monitoring requirements of Condition 22 “Somersby Mintbush Monitoring and Management Program” of the Schedule 3 Environmental Performance Conditions specified within the Project Approval for the Grants Road Sand Quarry Extension project (Project Approval No. 08_0099 Mod 1).

1.2 PROJECT SITE DETAILS

The quarry site is located within Lots 1 & 2 DP 358717, Grants Road Somersby. The monitoring sites for the Somersby Mintbush are located in the adjoining area of the Brisbane Water National Park located approximately 200 metres (population 3) to 400 metres (population 4) to the west of the quarry, as shown in Figure 2.1.

1.3 PREVIOUS MONITORING RESULTS

2015 Monitoring Surveys

These surveys included a baseline assessment of the Somersby Mintbush (*Prostanthera junonis*) locations previously identified adjacent to the site and described as Population 7 Reservoir Road Brisbane Water National Park. They were undertaken on 23 October 2015 and 7 November 2015.

No specimens of *P. junonis* were observed during the baseline surveys as the locations where this species was previously identified had been subject to a controlled burn undertaken by NPWS.

During the baseline surveys, the previous location of *P. junonis* identified along the Great North Walk track showed noticeable signs of erosion caused by poor track maintenance and design.

2016 Monitoring Surveys

Regrowth of *P. junonis* was observed at subpopulations 3 and 4. Two flowering plants were detected at sub-population 3 where none were detected in recent years, the presence of several juvenile non-flowering plants were also noted.

No flowering plants and several juvenile non-flowering plants were observed at the location of sub-population 4.

The low numbers of flowering plants detected and evidence of regrowth plants was considered to be a result of the NPWS hazard reduction burn undertaken during October 2015.

2017 Monitoring Surveys

Regrowth of *P. junonis* was observed at subpopulations 3 and 4. Flowering plants were detected at sub-population 4 which were not detected in recent years.

The increasing numbers of flowering plants detected and evidence of several regrowth non-flowering plants was considered to be a result of regeneration following the NPWS hazard

reduction burn undertaken during October 2015 and the reduced shade from tall shrub cover.

2018 Monitoring Surveys

P. junonis was observed at subpopulations 3 and 4. Large numbers of plants were detected at sub-population 4 which were not detected in previous years.

The ongoing trend of increasing numbers of flowering plants detected is considered to be a result of regeneration following the NPWS hazard reduction burn undertaken during October 2015 and the reduced shade levels from tall shrub cover.

2019 Monitoring Surveys

P. junonis was observed at subpopulations 3 and 4. An increase in the number of plants was observed at sub-population 4 and a slight decrease in the number of flowering plants was counted as sub-population 3.

2020 Monitoring Surveys

P. junonis was observed at subpopulations 3 and 4. Surveys completed on 30 November and 21 December 2020. An increase in the number of plants was observed at both sub-populations.

2021 Monitoring Surveys

P. junonis was observed at subpopulations 3 and 4. Surveys completed on 30 November and 21 December 2020. An increase in the number of plants was observed at both sub-populations.

1.4 PREVIOUS MONITORING REPORT RECOMMENDATIONS

The 2022 Annual Report identified three measures for monitoring and reporting which may improve the monitoring and project performance.

These three matters are identified and addressed below:

- 1) Describe plant counting procedures (included in Section 2.1)
- 2) Establish plot location by GPS co-ordinates (included in Table 2.1)
- 3) Analyse annual climate/rainfall conditions relevant to growth of the Somersby Mintbush (included in Section 2.2.7).

SECTION 2

ANNUAL MONITORING RESULTS

2.1 ANNUAL SOMERSBY MINTBUSH COUNT RESULTS

Counts of flowering *P. junonis* plants were undertaken on 15 and 16 November 2022 at the Somersby Mintbush subpopulation locations 3 and 4. Some plants were observed still flowering on 24 January 2023, but are not included in the annual monitoring results.

Flowering plants were identified and counted. Plants were defined as any flowering *P. junonis* plants in a clump with a separation distance of $\geq 30\text{cm}$ from the nearest *P. junonis* plant. This method of counting plants, based on a minimum separation distance of 300mm, is likely to result in a general decrease in plant numbers as the growth area of the plants extends into the 300mm separation area. It may be more appropriate to mark and measure the outer edge of each subpopulation to determine if the area occupied by *P. junonis* is actually increasing or decreasing. This method of determining plant clumps follows the methods for counting *Tetrathecea juncea* (Lake Macquarie City Council, 2014). This plant is also a threatened species which has a similar growth habit to *P. junonis*.

This approach can be investigated during the next monitoring event. The results of the counts are provided in Table 2.1 and the locations of the sub-populations are shown in Figure 2.1.

TABLE 2.1 SOMERSBY MINT BUSH ANNUAL MONITORING COUNT RESULTS								
Sub-Population/ Location	Count Results Flowering Plants							
	2015	2016	2017	2018	2019	2020	2021	2022
3 (33.3870/ 151.26104)	0	2	18	42	29	46	41	43
4 (33.39146/ 151.25991)	0	0	34	394	484	498	472	485

The above data indicates a slight increase in numbers of *P. junonis* observed between the 2021 and 2022 monitoring surveys. This increase is most likely the result of variation to the seasonal flowering conditions. Additionally, the above average rainfall in the autumn and winter months (Table 2.2) may have influenced favourable growing conditions which are reflected by increased flowering recordings.

2.2 QUALITATIVE MONITORING OBSERVATIONS

2.2.1 Signs of Surface Erosion

No signs of surface erosion attributable to the quarry were observed. While the monitoring plots are located at a lower elevation than the quarry, runoff water from the quarry area does not flow over the vegetation of the monitoring plots.

Some soil erosion from the Great North Walk track was observed.

2.2.2 Signs of Sedimentation

No signs of sedimentation at the monitoring locations attributable to the quarry were observed.

2.2.3 Density of Surrounding Vegetation

The density of the surrounding vegetation has been increasing since the NPWS hazard reduction burn completed in October 2015.

Dieback and decomposition of the *Banksia ericifolia* is still evident. Ongoing regrowth was evident at sub-population 3. The following estimates of the vegetation density for both sub-populations are provided:

Sub-population 3

Tree Cover: Approximately 10% to 10m tall
Shrub Cover: Open with approximately 80% cover to 2-3m tall with vigorously regenerating heath.
Groundlayer: Approximately 80% cover to 1m.

Sub-population 4

Tree Cover: Approximately 20% to 8m tall
Shrub Cover: Approximately 20-60% cover to 4m tall, with dieback of tall shrub cover observed.
Groundlayer: Approximately 80% cover to 1.5m.

2.2.4 Fire Disturbance

No signs of fire disturbance attributable to the project were observed. No fire disturbance within the current monitoring period was observed.

2.2.5 Herbivory

No signs of herbivory were observed. However, scats from feral deer and swamp wallaby were observed within the survey plots.

2.2.6 Other Disturbances

No ongoing disturbances were observed during the current monitoring period.

2.2.7 Annual Rainfall Details

Monthly rainfall data for the Mangrove Mountain Bureau of Meteorology weather station, located 10 kilometres to the north is provided in Table 2.2. A brief analysis of the data identifies that the 2022 rainfall (1784mm) exceeded the average annual rainfall (1127mm) by 53%. July was the wettest month with 549mm of rain recorded, as compared to the July average of 64mm.

Records from Mangrove Mountain weather station (Bureau of Meteorology Weather Station N° 061375) were utilized because this weather station has been in continuous operation since 1994 and provides good reference data for the locality.

**TABLE 2.2
RAINFALL DETAILS 2023**

MONTH	AMOUNT(mm)	AVERAGE (mm)	COMMENT
January	73	100	Below Avg
February	36	148	Below Avg
March	443	159	Above Avg
April	146	79	Above Avg
May	88	78	Above Avg
June	7	106	Below Avg
July	549	64	Above Avg
August	42	61	Below Avg
September	160	67	Above Avg
October	196	81	Above Avg
November	22	93	Below Avg
December	22	87	Below Avg
Total	1784mm	1127mm	Above Avg 53%

2.3 MONITORING TRENDS

A slight increase in the total number of plants was recorded at both subpopulations compared to the previous monitoring data.

The increased numbers of flowering plants detected at both sub-populations is likely to be a result of the seasonal flowering variation and counting methods.

Vigorous regrowth of the shrub cover for sub-population 3 has been observed over the last few monitoring events and it is expected that shading of *P. junonis* by a dense shrub cover may eventually cause the population numbers to decline.

Continuing regrowth of *P. junonis* was observed at subpopulation 4. The tall shrub cover at sub-population 4 has died back since the hazard reduction burn and the levels of tall shrub regrowth at this location are not as vigorous as sub-population 3.

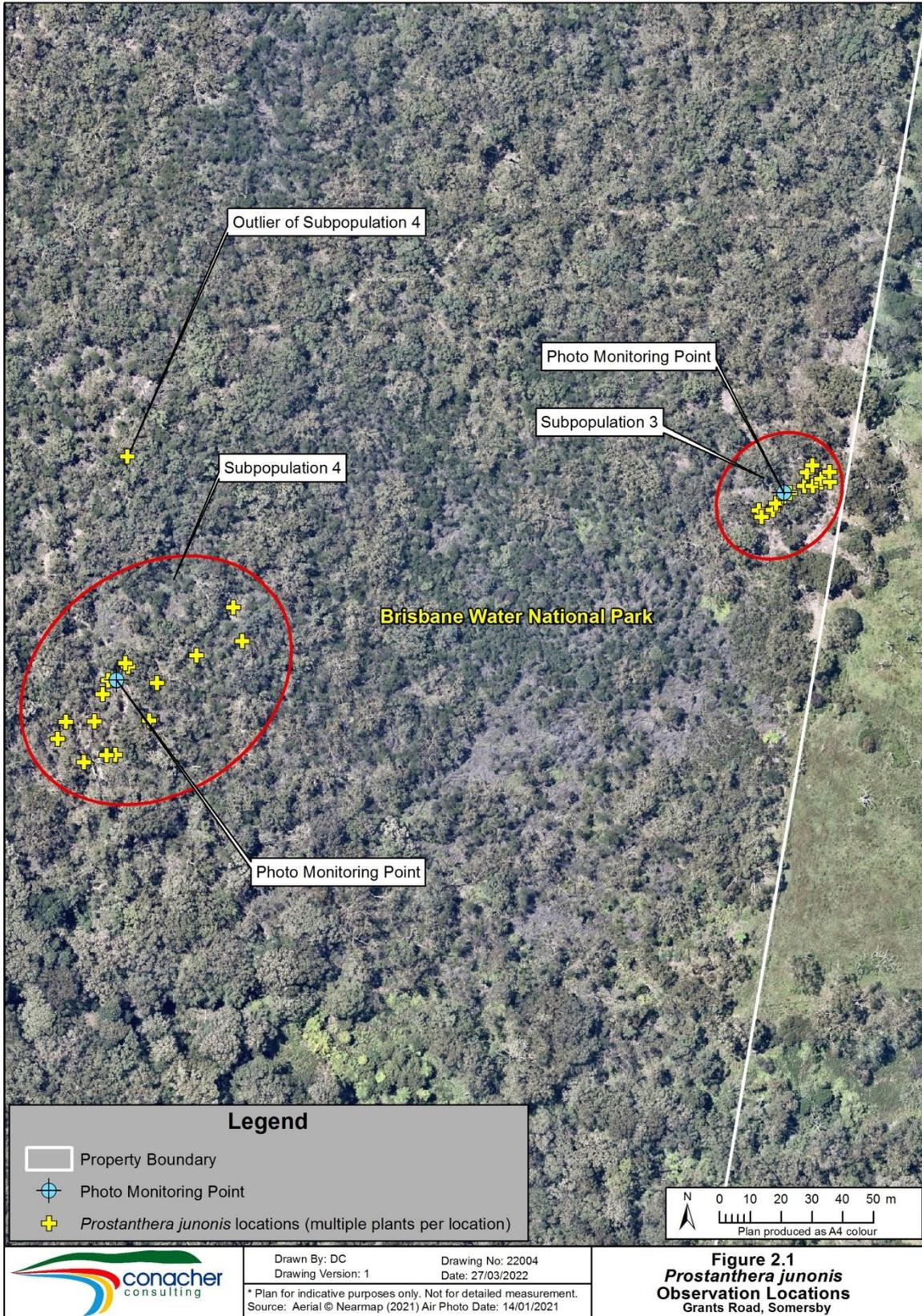
2.4 PROJECT IMPACT DISCREPANCIES

No project impact discrepancies between the predicted and actual impacts of the project were observed for the current monitoring period regarding Somersby Mintbush.

2.5 MEASURES TO IMPROVE PROJECT PERFORMANCE

The annual surveys for *P. junonis* have been undertaken annually since 2015. To increase the reporting performance and outcomes of the plant data collected the following procedures should be incorporated into the next monitoring event and reporting process:

1. Provide an identifiable survey peg, with GPS location identifier recorded for each subpopulation.
2. Identify a specific clump of *P. junonis* for photographic monitoring comparison recording within each survey area.
3. Investigate the outer edge of each subpopulation for recording purposes.



SECTION 3

CONCLUDING COMMENTS

3.1 PROJECT COMPLIANCE ASSESSMENT

An assessment of the project performance indicators and responses required is provided in Table 3.1. This analysis has determined that there are no issues relating to Low/Moderate/High impacts of the quarrying operations on the populations to the Somersby Mintbush for the reporting period.

Appendix 1 contains a further summary of the Environmental Performance and Compliance Status in relation to the implementation of Condition 19 for the Somersby Mintbush.

However, it has been identified that there continues to be an ongoing requirement to maintain the boundary fence between the National Park and the quarry site as a result of damage by feral deer entering from the National Park.

3.2 CONCLUDING COMMENTS

Based on the results of the ongoing Mintbush monitoring and site condition reporting the following concluding comments are provided:

- i. An increase in the sub-populations 3 and 4 of Somersby Mintbush was recorded compared to the previous monitoring period.
- ii. A slight increase in the Somersby Mintbush population recorded is likely a result of seasonal flowering occurrences at the time of survey.
- iii. Ongoing maintenance of the northern section of the western property boundary fence is required.
- iv. Suitable environmental controls should continue to be maintained for the Project.
- v. The additional reporting details recommended in the 2021 Annual Report have been incorporated into this Report.

**TABLE 3.1
SOMERSBY MINTBUSH COMPLIANCE ASSESSMENT FOR 2022 MONITORING PERIOD**

Trigger Levels	1 - Erosion and Sedimentation		2 - Fire Impacts		3 - Stock Herbivory		4 - Other Disturbances		5 - Population Decline	
	Trigger	Response	Trigger	Response	Trigger	Response	Trigger	Response	Trigger	Response
Low Impact	Sediment / erosion event offsite within 5m of Somersby Mintbush Population	-Report to GRSQ -Include in Annual Report -Immediately correct /improve erosion and sediment control - Consult with OEH to rehabilitate area	Fire outbreak on quarry site within vicinity of Somersby Mintbush Population	-Report to GRSQ -Include in Annual Report -Extinguish fire and improve controls to prevent reoccurrence.	One-off herbivory event from stock on site resulting in minor grazing on Somersby Mintbush Habitat	-Report to GRSQ -Include in Annual Report -Immediately repair / improve fences - Remove any manure	NA	NA	Somersby Mintbush dieback in excess of 10%	-Report to GRSQ -Include in Annual Report - Assess whether natural shading has reduced population - Identify whether attributable to the project -Provide offsets if attributable to the project and recovery does not occur
Moderate	Sediment / erosion event which directly impacts on Somersby Mintbush Population but does not result in population dieback	-Immediately Report to GRSQ - Immediately Report to DPE -Include in Annual Report -Immediately correct /improve erosion and sediment controls - Consult with OEH to rehabilitate area	Fire outbreak from quarry site which impacts habitats of Somersby Mintbush Population but does not result in Somersby Mintbush dieback	-Immediately Report to GRSQ & DPE -Include in Annual Report -Extinguish fire and improve controls to prevent reoccurrence. - Monitor and provide offsets if recovery does not occur	Repeat herbivory events from stock on site resulting in grazing on Somersby Mintbush Habitat	-Report to GRSQ -Include in Annual Report -Immediately repair / improve fences -Remove any manure - Report to DPE	NA	NA	Somersby Mintbush dieback in excess of 25%	-Report to GRSQ -Include in Annual Report - Assess whether natural shading has reduced population - Identify whether attributable to the project -Consult with DPE/OEH -Provide offsets if attributable to the project and recovery does not occur
High Impact	Sediment / erosion event which directly impacts on Somersby Mintbush Population resulting in population dieback	-Immediately Report to GRSQ - Immediately Report to DPE -Include in Annual Report -Immediately correct /improve erosion and sediment control - Consult with OEH to rehabilitate area	Fire outbreak from quarry site which impacts habitats of Somersby Mintbush Population & results in Somersby Mintbush dieback	-Immediately Report to GRSQ & DPE -Include in Annual Report -Extinguish fire and improve controls to prevent reoccurrence. - Monitor and provide offsets if recovery does not occur	Repeat herbivory events from stock on site resulting in grazing on Somersby Mintbush Habitat and noticeable physical habitat damage	-Report to GRSQ -Include in Annual Report -Immediately repair / improve fences - Remove any manure - Report to DPE	Disturbance event from quarry operations associated with machinery or soil movements	-Report to GRSQ - Report to DPIE -Include in Annual Report -Improve operational procedures - Provide offsets if attributable to the project and recovery does not occur	Somersby Mintbush dieback in excess of 50%	-Report to GRSQ -Include in Annual Report - Identify whether attributable to the project -Consult with DPIE - Assess whether natural shading has reduced population -Provide offsets if attributable to the project and recovery does not occur
2022 Monitoring Period Results	No impact observed	No response required	No impact observed	No response required	No impact observed	Fence maintenance required	No impact observed	No response required	Population increase observed at both sub-populations	No response required

REFERENCES

- Australian Government Bureau of Meteorology 2022 Mangrove Mountain (Station 061375) Daily Weather Observation (Jun-Dec 2022).
- Conacher Consulting (2016) Somersby Mintbush 2015 Monitoring Report, Grants Road Sand Quarry Extension Lot 1 DP 358717 270 Grants Road Somersby.
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- Lake Macquarie City Council (2014) Lake Macquarie *Tetrathecea juncea* Planning and Management Guidelines

APPENDIX 1
ENVIRONMENTAL PERFORMANCE & COMPLIANCE STATUS SUMMARY

Details on the Environmental Performance and Compliance Status in relation to Somersby Mintbush have been requested for the Annual Reporting. This information is provided in Tables A1.1 and A1.2.

TABLE A1.1 ENVIRONMENTAL PERFORMANCE				
Environmental Aspect	Approval Criteria	Summary of Monitoring Results in the Previous Monitoring Period	Summary of Monitoring Results in this Monitoring Period	Improvement Measures to be Implemented
Somersby Mintbush	Negligible Environmental Consequences	Sub Pop 3. 41 plants Sub Pop 4 472 plants No erosion, sedimentation observed.	Sub Pop 3. 43 plants Sub Pop 4 485 plants No erosion, sedimentation, bushfire or grazing observed.	Undertake maintenance to western boundary fence.

A compliance status table is provided in Table A1.2.

TABLE A1.2 COMPLIANCE STATUS				
Unique ID	Compliance Requirement	Development Phase	Monitoring Methodology	Evidence & Comments
Condition 19.	Negligible environmental consequences	Operations	Direct population counts and qualitative observation of impacts	Annual Monitoring Reports

Appendix 9
LANDSCAPE & REHABILITATION MONITORING
Conacher Consulting



**LANDSCAPE, REHABILITATION
&
BIODIVERSITY OFFSET AREA**

2022 ANNUAL MONITORING REPORT

**GRANTS ROAD
SAND QUARRY**

**JANUARY 2023
REF: 23002**

**LANDSCAPE, REHABILITATION
&
BIODIVERSITY OFFSET AREA**

2022 ANNUAL MONITORING REPORT

**GRANTS ROAD
SAND QUARRY**

Conacher Consulting Pty Ltd

Environmental and Land Management Consultants

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PREFACE

This Report has been prepared by *Conacher Consulting* to address the annual monitoring and reporting requirements under the Landscape & Rehabilitation Management Plan and Biodiversity Offset Management & Habitat Rehabilitation Plan for the Grants Road Sand Quarry at Somersby.

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SECTION 1

INTRODUCTION & BACKGROUND

1.1 INTRODUCTION

This Landscape, Rehabilitation & Biodiversity Offset Area 2022 Annual Monitoring Report has been prepared by *Conacher Consulting* for the Grants Road Sand Quarry (Application No. 08-0099 / Mod 1).

This Report provides details on the compliance with the Landscape & Rehabilitation Management and Biodiversity Offset Management requirements for the Grants Road Sand Quarry at Somersby. The quarry is managed and operated by Grant's Rd Sand Pty Ltd.

1.2 DETAILS ON CURRENT MANAGEMENT PLANS

A Landscape and Rehabilitation Management Plan (LRMP) (Conacher Consulting 2019) and a Biodiversity Offset Management & Habitat Rehabilitation Plan (BOMHRP)(Conacher Consulting 2019) have been approved to meet the current project approval and commitment requirements.

This Report provides details on the works and performance of the Project in relation to these documents and the following Project Approval Conditions and Commitments:

i. **Schedule 3 Environmental Performance Conditions**

- Condition 23 Biodiversity Offset Strategy
- Condition 24 Long Term Security of Offset
- Condition 25 Rehabilitation Objectives
- Condition 26 Progressive Rehabilitation
- Condition 27 Landscape & Rehabilitation Management Plan
- Condition 28 Conservation & Rehabilitation Bond

ii. **Statement of Commitments**

- No. 6 Soils and Land Capability
- No. 9 Biodiversity & Environmental Management

SECTION 2

BIODIVERSITY OFFSET STRATEGY REPORTING

2.1 BACKGROUND

Details on the implementation of the current approved Biodiversity Offset Strategy is outlined within the Biodiversity Offset Management & Habitat Rehabilitation Plan (BOMHRP) (Conacher Consulting 2019). The annual monitoring and compliance requirements and results are addressed in Table 2.1. All figures referenced are provided in Appendix 1.

2.2 BIODIVERSITY OFFSET AREA WORKS COMPLETED

The following works have been completed during the reporting period in accordance with the Biodiversity Offset Strategy requirements for the Project:

i. **Collection of Initial Baseline Floristic Monitoring Data**

Floristic monitoring data within plots established within each of the Biodiversity Offset Areas was undertaken during the establishment period. This data is provided in Appendix 4 of this Report.

ii. **Fencing of Biodiversity Offset Areas**

The Biodiversity Offset Areas A & B are protected with deer and livestock proof fencing. The fencing was inspected during the current monitoring period and found to be compliant, with no maintenance required. The location of Biodiversity Offset Area fencing is shown in Figure 2.1.

iii. **Long term security of Offset**

The land covered by the Offset Strategy was registered on title on 5/9/2022 (Plan N° DP 1284368) as required in Condition 24 (Schedule 3) of the Project Approval.

iv. **Installation of Fauna Nest Boxes**

The nest box locations are shown in Figure 2.1. The results of the nest box monitoring are provided in Appendix 3. Fauna nest boxes were installed within the Biodiversity Offset Areas in 2015. Several of the nest boxes were installed in parts of the site which are now designated as a Landscape Buffer Area. All boxes within the site are to continue to be maintained, however where nest box relocation is required, some nest boxes may be relocated to the current Biodiversity Offset Areas of the site.

The following actions have been undertaken for the nest boxes during the current reporting period:

- 6 nest boxes replaced
- 3 nest boxes repaired
- 5 new boxes purchased for replacement, not yet installed.

Ongoing nest box condition and fauna use assessments are to be undertaken during May to July, during the monitoring period. Any repairs or replacement necessary are to be undertaken in July – August of the monitoring period.

2.3 BIODIVERSITY OFFSET STRATEGY COMPLIANCE DETAILS

A compliance assessment for the Biodiversity Offset Strategy requirements for the current monitoring period is provided in Table 2.1.

**TABLE 2.1
BIODIVERSITY OFFSET STRATEGY MONITORING COMPLIANCE DETAILS**

Approval N° Table 3.1	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
Condition 27 (f) Commitment 9 BOMHRP-1	Soil Management	Install erosion and sediment controls to protect offset areas and prevent soil loss during weed control and rehabilitation activities	Operation 1-3 years	Project ecologist inspection Works records	Annual Monitoring Report -Photographs	Existing grassed areas left downslope of the works are providing erosion and sediment control. Water quality pond created in offset area.	Monitor regularly and ensure any additional measures are implemented as necessary
Condition 27 (f) Commitment 9 BOMHRP-2	Soil Management	Undertake soil and landform remediation and stabilisation works for heavily disturbed areas	Operation 1-3 years	Project ecologist inspection works records	Annual Monitoring Report -Photographs -Mapping	No soil management works have been undertaken in offset areas during monitoring period.	Monitor and progressively implement over additional areas where required.
Condition 27 (f) Commitment 9 BOMHRP-3	Weed Management	Undertake Primary Weed Control Works	Operation 1-3 years	Project ecologist inspection Works records	Annual Monitoring Report -Monitoring Plot Data -Mapping	Primary weed control has been commenced in Biodiversity Offset Area A and B. Physical removal of Lantana camara and Pampas Grass undertaken and spraying of Crofton Weed and Blackberry commenced. See Figures 2.2 to 2.4 for weed mapping.	Continue works progressively.

**TABLE 2.1
BIODIVERSITY OFFSET STRATEGY MONITORING COMPLIANCE DETAILS**

Approval N° Table 3.1	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
Condition 27 (f) Commitment 9 BOMHRP-4	Weed Management	Undertake Secondary Weed Control Works	Operation 4-10 years	Project ecologist inspection Works records	Annual Monitoring Report -Monitoring Plot Data -Mapping	Not commenced.	Follow up primary weed control with secondary weed control.
Condition 27 (f) Commitment 9 BOMHRP-5	Revegetation	Obtain planting material (seeds / plant stock)	Operation 1-6 years	Tax invoice records	Annual Monitoring Report -Tax Invoices	Initial brush matting trials have commenced over capping areas. Further tube stock planting or seeding will be required if brush matting is not successful. Works complete by quarry, tax invoices not relevant.	Continue to monitor.
Condition 27 (f) Commitment 9 BOMHRP-6	Revegetation	Undertake seeding and planting works	Operation 1-6 years	Project ecologist inspection Works records	Annual Monitoring Report -Plot data -Photos -Mapping	As above. Plot data not relevant, further time required to observe works results.	None required at this stage.
Condition 27 (f) Commitment 9 BOMHRP-7	Revegetation	Maintain plantings	Operation 1-6 years	Project ecologist inspection Works records	Plot data -Photos -Mapping	No plantings require maintenance at this time.	None required.

**TABLE 2.1
BIODIVERSITY OFFSET STRATEGY MONITORING COMPLIANCE DETAILS**

Approval N° Table 3.1	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
Condition 27 (f) Commitment 9 BOMHRP-8	Access Control	Install fencing to exclude livestock and deer from Offset Areas A & B	Operation 1-3 years	Project ecologist inspection	Annual Monitoring Report -Fence mapping -Photos	See fence locations in Figure 2.1. No maintenance required for current monitoring period.	None required.
Condition 27 (f) Commitment 9 BOMHRP-9	Access Control	Maintain fencing to exclude livestock from Offset Area C	Operation 1-26 years	Project ecologist inspection	Annual Monitoring Report	No maintenance required for current monitoring period.	None required.
Condition 27 (f) Commitment 9 BOMHRP-10	Access Control	Maintain all exclusion fencing in working condition	Operation 1-26 years	Project ecologist inspection	Annual Monitoring Report	No maintenance required for current monitoring period.	None required.
Condition 27 (f) Commitment 9 BOMHRP-11	Habitat Enhancement	Install nest boxes and hollow logs to meet hollow tree offset requirement as clearing occurs	Operation 1-6 years	Project ecologist inspection	Annual Monitoring Report	Three nest boxes identified as requiring replacement for current monitoring period.	Ongoing maintenance/ replacement works.
Condition 27 (f) Commitment 9 BOMHRP-12	Habitat Enhancement	Salvage environmental/habitat resources where available from quarry footprint and transfer to Offset Areas A & B	Operation 1-10 years	Project ecologist inspection Works records	Annual Monitoring Report -Photos	Not required during 2018. Undertake progressively as footprint clearing is undertaken.	None required.
Condition 27 (f) Commitment 9 BOMHRP-13	Bushfire Management	Protect non-established plantings from bushfire	Operation 1-6 years	Project ecologist inspection	Annual Monitoring Report	Not applicable for current monitoring period.	None required.

**TABLE 2.1
BIODIVERSITY OFFSET STRATEGY MONITORING COMPLIANCE DETAILS**

Approval N° Table 3.1	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
Condition 27 (f) Commitment 9 BOMHRP-14	Bushfire Management	Allow natural bushfire disturbance and revegetation for areas containing established vegetation	Operation 1-26 years	Project ecologist inspection	Annual Monitoring Report -Monitoring Plot data -Photographs	No fire events detected during current monitoring period.	None required.
Condition 27 (f) Commitment 9 BOMHRP-15	Bushfire Management	Protect nest boxes from fire and/or replace if burnt out	Operation 1-10 years	Project ecologist inspection	Annual Monitoring Report	No fire events detected during current monitoring period.	None required.
Condition 27 (f) Commitment 9 BOMHRP-16	Monitoring Evaluation & Reporting	Undertake Annual Monitoring as per the Monitoring Strategy	Operation 1-26 years	Project ecologist inspection	Annual Monitoring Report	This report has been prepared to address this requirement.	None required.
Condition 27 (f) Commitment 9 BOMHRP-17	Monitoring Evaluation & Reporting	Re-assess risks to implementation of actions	Operation 1-10 years	NA	Annual Monitoring Report	No risks identified	None required.
Condition 27 (f) Commitment 9 BOMHRP-18	Monitoring Evaluation & Reporting	Implement adaptive response strategies	Operation 1-10 years	NA	Annual Monitoring Report	Not applicable	None required.
Condition 27 (f) Commitment 9 BOMHRP-19	Monitoring Evaluation & Reporting	Prepare annual monitoring reports	Operation 1-26 years	Project ecologist reporting	Annual Monitoring Report	This report has been prepared to address this requirement.	None required.

Action from Table 3.1 BOMHRP

SECTION 3

LANDSCAPE & REHABILITATION MANAGEMENT PLAN REPORTING

The details of the results of annual monitoring for the actions identified in Table 2.1 of the Landscape & Rehabilitation Management Plan (LRMP) are provided in Table 3.1. Details on the compliance with specific approval conditions are documented in this Section.

3.1 LANDSCAPE REHABILITATION OBJECTIVES (CONDITION 25)

A requirement for rehabilitation works has not been triggered during the current monitoring period. The final rehabilitation objectives are outlined in Section 4.1 of the LRMP and summarised in Table 3.2.

3.2 PROGRESSIVE REHABILITATION (CONDITION 26)

A requirement for rehabilitation works has not been triggered during the current monitoring period. An analysis of disturbed areas and rehabilitation or revegetation needs will be completed during the next monitoring period.

3.3 LANDSCAPE & REHABILITATION MANAGEMENT PLAN (CONDITION 27)

A Landscape and Rehabilitation Management Plan has been prepared to address Condition 27 of the project approval under Modification 1. The requirement for Landscape and Rehabilitation works was not triggered during the current monitoring period. An analysis for areas for Landscape Rehabilitation works will be completed during the next monitoring period.

3.4 CONSERVATION & REHABILITATION BOND (CONDITION 28)

The Conservation and Rehabilitation Bond Calculation Review Report (Conacher Consulting September 2022) was prepared to address Condition No. 28 of Schedule 3 of the approval. This Report calculated that the Conservation and Rehabilitation Bond be set at \$335,000.00. This figure has been accepted by the Department of Planning and Environment. The financial arrangements for the rehabilitation bond have been finalised.

**TABLE 3.1
LANDSCAPE & REHABILITATION MANAGEMENT PLAN COMPLIANCE DETAILS**

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Action					
LRMP (v2 - 2019) Landscape Buffer Area Management Actions No.1-4	Earth Mound & Bund Construction & Management	1.Progressively construct bund and earth mound around quarry pit	Operational / progressive as quarrying occurs	Visual site inspection and aerial photograph inspection	Annual mapping of bund and earth mound locations	Western mound construction underway.	Revegetation to be monitored.
		2.Vegetate bund and mound areas with Kikuyu Grass or other suitable species	Operational / progressive as bunds and mounds are constructed	Visual inspection by Project Environmental Consultant	Documentation in monitoring reports	Revegetation commenced & ongoing	Control weeds on mounds to assist further revegetation
		3.Construct and maintain sandstone block bund around Aboriginal archaeological site RE1	Prior to operation	Subject to monitoring by the project Archaeologist.	Refer to Environmental Plan of Management & Aboriginal Cultural Heritage Management Plan	Block placement underway.	Monitor and report.
		4.Implement downslope sediment controls for bunds and mounds until they are vegetated	Operational / progressive as bunds and mounds are constructed	Visual inspection	Annual monitoring reporting	Bunds are vegetated or in process of construction.	Monitor and report.
LRMP (v2 - 2019) Landscape Buffer Area Management Action No. 5-6	Tree Protection	5.Survey trees to be retained within the Landscape Buffer Area in close proximity to earth mounds	Operational / Years 4-6	Initial survey and further visual inspection	Initial mapping of tree locations and monitoring reporting	Trees to be retained which are not protected by existing site fencing are shown in Figure 3.1.	Monitor and report.

**TABLE 3.1
LANDSCAPE & REHABILITATION MANAGEMENT PLAN COMPLIANCE DETAILS**

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Action					
		6. Provide protection for trees to be retained in the landscape buffer during bund construction	Operational / for life of the quarry	Visual inspection by Project Environmental Consultant	Annual Reporting	Trees to be retained which are not protected by existing site fencing are shown in Figure 3.1.	None required.
LRMP (v2 - 2019) Landscape Buffer Area Management Actions No. 7-9	Aboriginal Archaeological Site Management	7. Maintain fencing and sandstone bund around Aboriginal archaeological site RE1	Operational / for the life of the quarry	Subject to monitoring by the project Archaeologist.	Refer to Environmental Plan of Management & Aboriginal Cultural Heritage Management Plan	NA	NA
		8. Maintain vehicle access diversion around Aboriginal archaeological site RE2	Operational / for the life of the quarry	As above.	As above.	NA	NA
		9. Implement Aboriginal Cultural Heritage Program	Operational / for the life of the quarry	As above.	As above.	NA	NA

**TABLE 3.1
LANDSCAPE & REHABILITATION MANAGEMENT PLAN COMPLIANCE DETAILS**

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Action					
LRMP (v2 - 2019) Landscape Buffer Area Management Action No. 10	Access Management	10.Ensure that common boundary fencing adjoining the Biodiversity Offset Areas and Aboriginal archaeological heritage sites is maintained	Operational for the life of the quarry	Project Ecologist inspection and annual monitoring reporting	Annual reporting	Compliant for Biodiversity Offset Areas. Refer to separate monitoring by Project Archaeologist for protection of Aboriginal Heritage Sites	None required
LRMP (v2 - 2019) Landscape Buffer Area Management Action No. 11	Bushfire Hazard Reduction & Weed Management	11. Undertake bushfire hazard reduction and weed management through grazing and slashing of the landscape buffer.	Operational for the life of the quarry	Project Ecologist inspection and annual monitoring reporting	Annual reporting	Compliance, the landscape buffer has been slashed and grazed by cattle.	Continue ongoing grazing and slashing program
LRMP (v2 - 2019) Landscape Buffer Area Management Action No. 12	Rubbish Management	12.Monitor for rubbish accumulations and remove as necessary	Operational for the life of the quarry	Visual inspection by Project Environmental Consultant	Annual reporting	Compliant	None required

**TABLE 3.2
QUARRY REHABILITATION OBJECTIVES**

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Objective					
Quarry Area Rehabilitation Plan Actions 1-4	Site	-Safe, stable and non-polluting -Minimise the visual impact of the final landforms as far as is reasonable and feasible	Operation / progressive and post operation	-Land survey -Observation by suitably qualified Environmental Consultant	Record within quarry operation procedures and annual monitoring reports	Rehabilitation not required during current monitoring period	None required.
	Surface Infrastructure	To be decommissioned and removed unless the Secretary agrees otherwise	Post operation	-Observation by suitably qualified Environmental Consultant	As above	As above	None required.
	Quarry Benches	Suitably landscaped and revegetated using native species	Operation / progressive and post operation	-Observation by suitably qualified Environmental Consultant	As above	As above	None required.
	Quarry Pit Floor	Establish land with a level floor of at least Class 4 agricultural suitability over 80% of the quarry floor	Operation / progressive and post operation	-Observation by suitably qualified Environmental Consultant	As above	As above	None required.

SECTION 4

CONCLUSIONS & RECOMMENDATIONS

4.1 CONCLUDING COMMENTS

The Project is compliant with the requirements of the current Landscape and Rehabilitation Management Plan and Biodiversity Offset Management & Habitat Rehabilitation Plan prepared in compliance with the Conditions for the current Project Approval.

The progressive implementation of these plans is being undertaken as required.

No revisions to the current Landscape and Rehabilitation Management Plan and Biodiversity Offset Management & Habitat Rehabilitation Plan documents are recommended this stage.

A qualified bush regeneration company has been engaged to undertake ongoing weed removal and weed suppression within the landscape and rehabilitation areas. It is expected that these contractual arrangements will be finalised and commenced by June 2023.

The 2023 Annual Report is to provide an analysis of the revegetation and weed management works undertaken as identified in the BOMHRP and LRMP.

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REFERENCES

Conacher Consulting (November 2019 Ref 9045/V2) Biodiversity Offset Management & Habitat Rehabilitation Plan, Grants Road Sand Quarry Extension. Unpublished Report.

Conacher Consulting (November 2019 Ref 9020V1) Landscape and Rehabilitation Management Plan Version 2 Grants Road Sand Quarry Extension. Unpublished Report.

Conacher Consulting (September 2022 Ref 22001/2) Conservation and Rehabilitation Bond (2022 Review) Grants Road Sand Quarry

APPENDIX 1
FIGURES

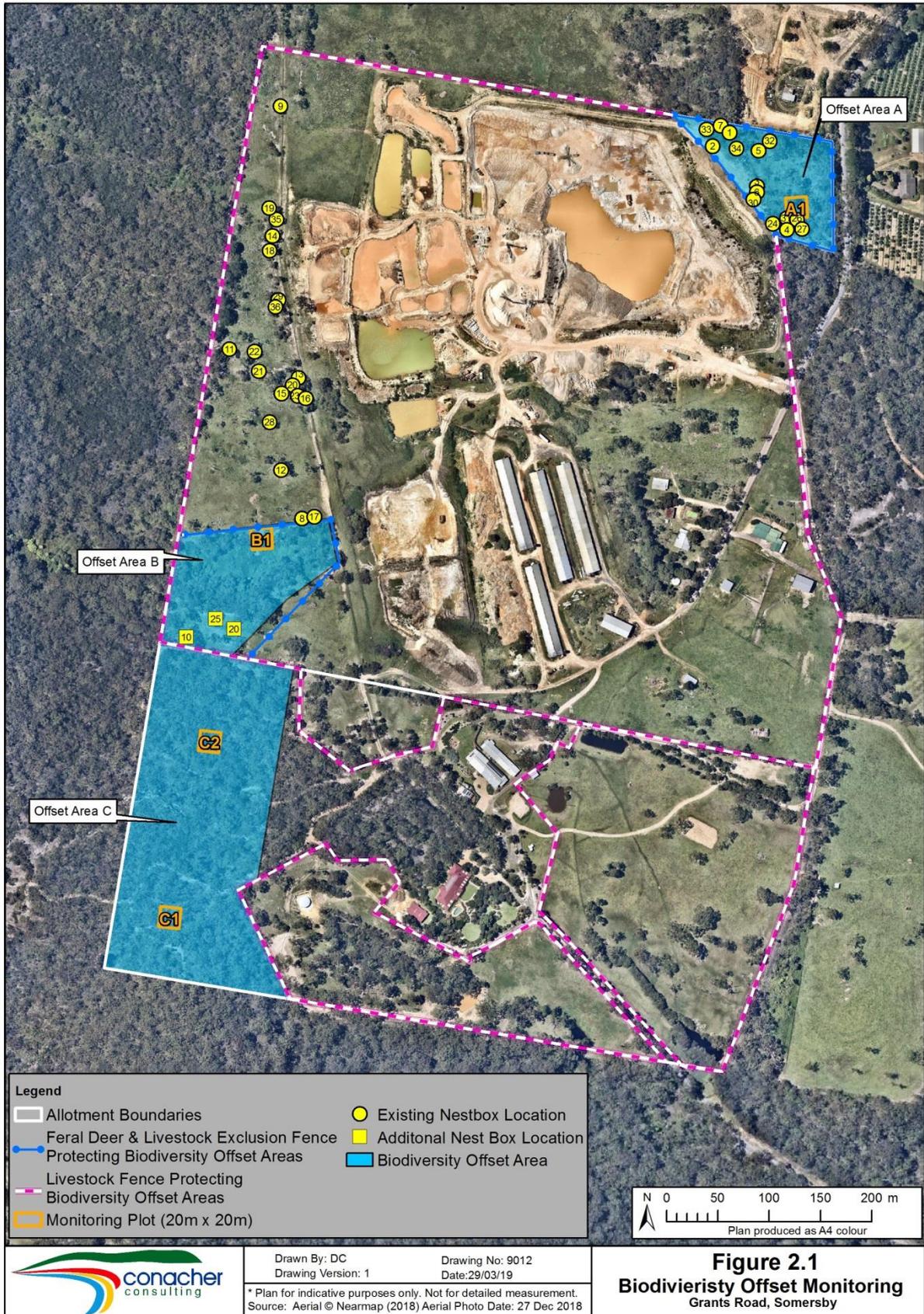
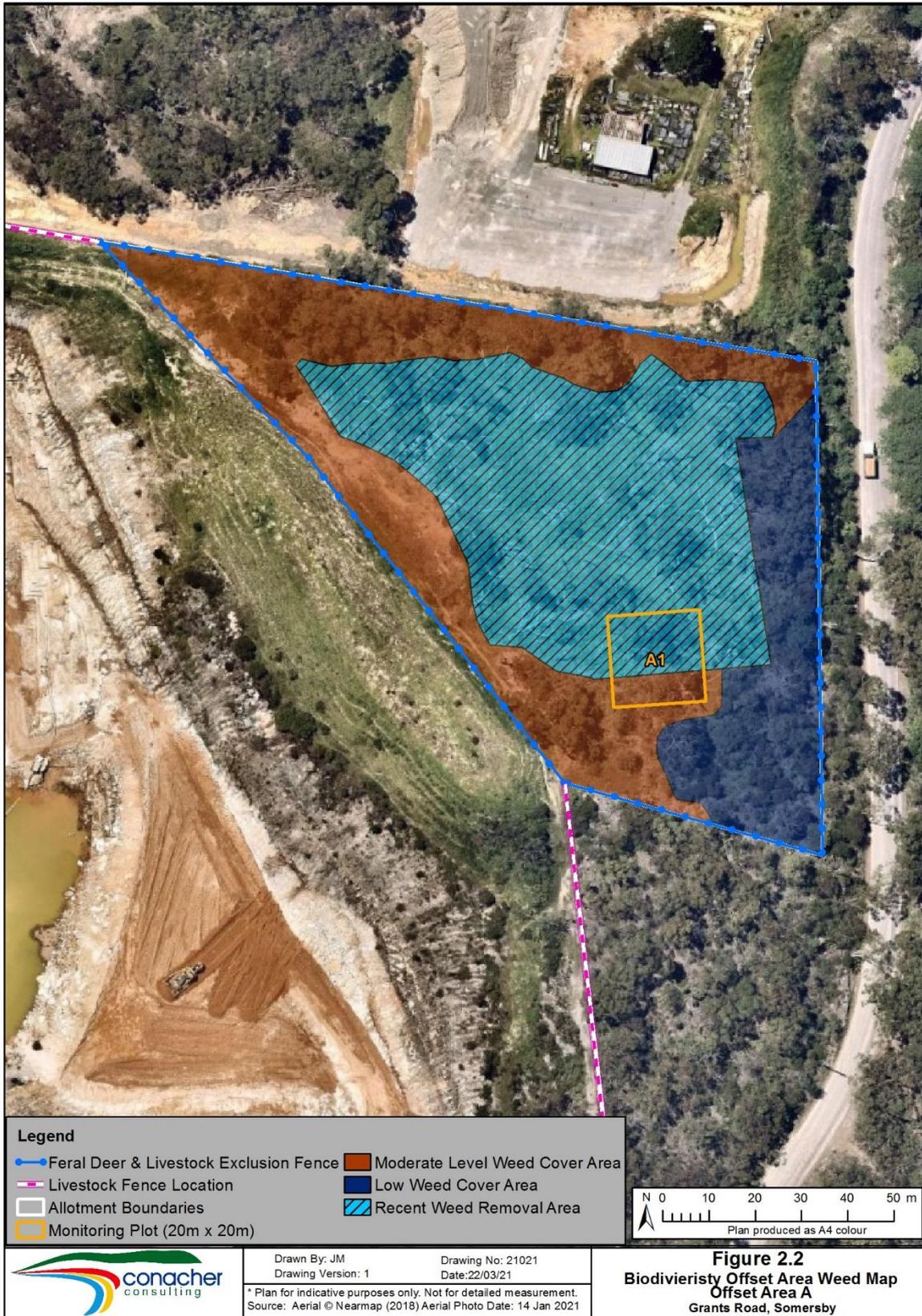
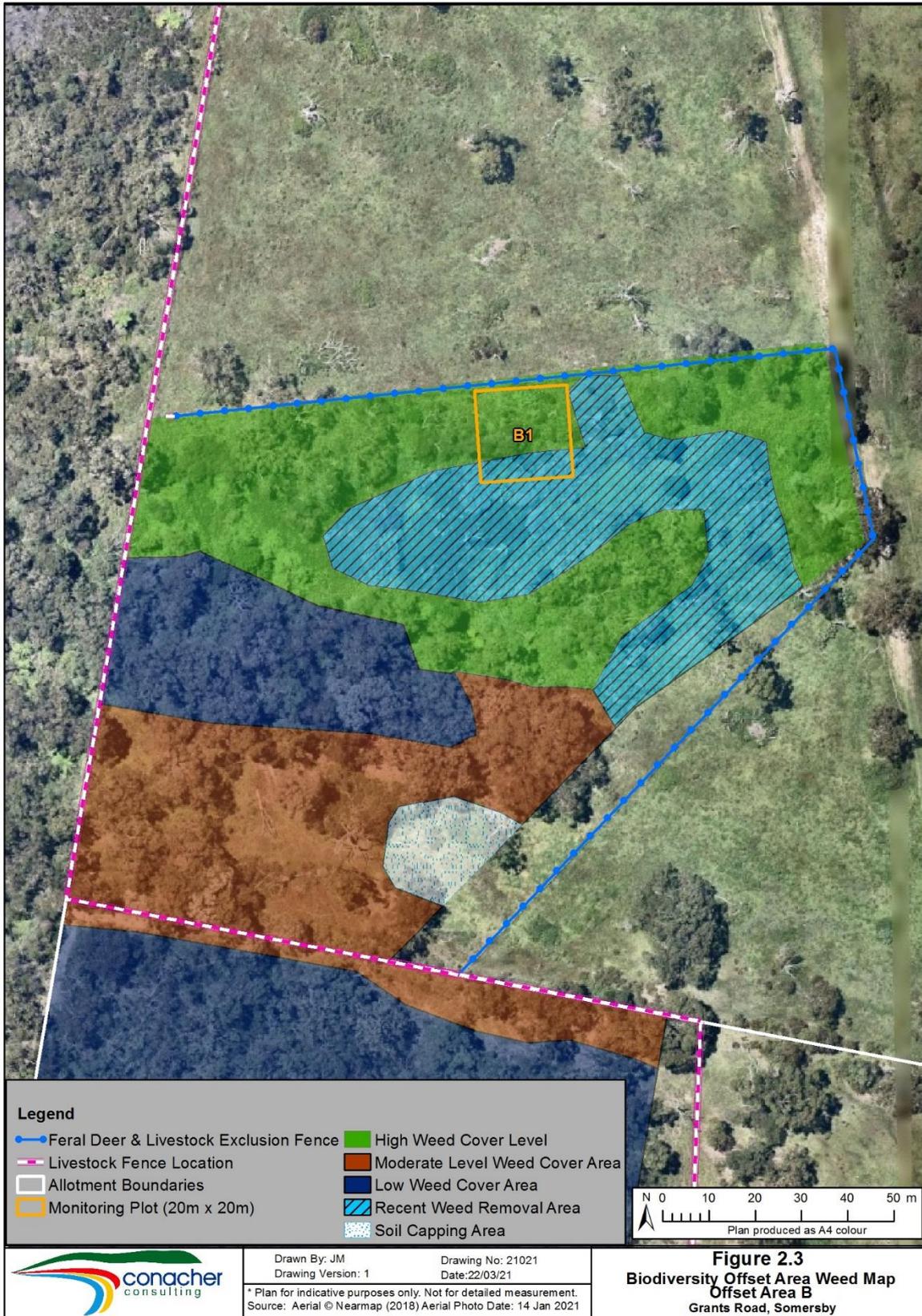
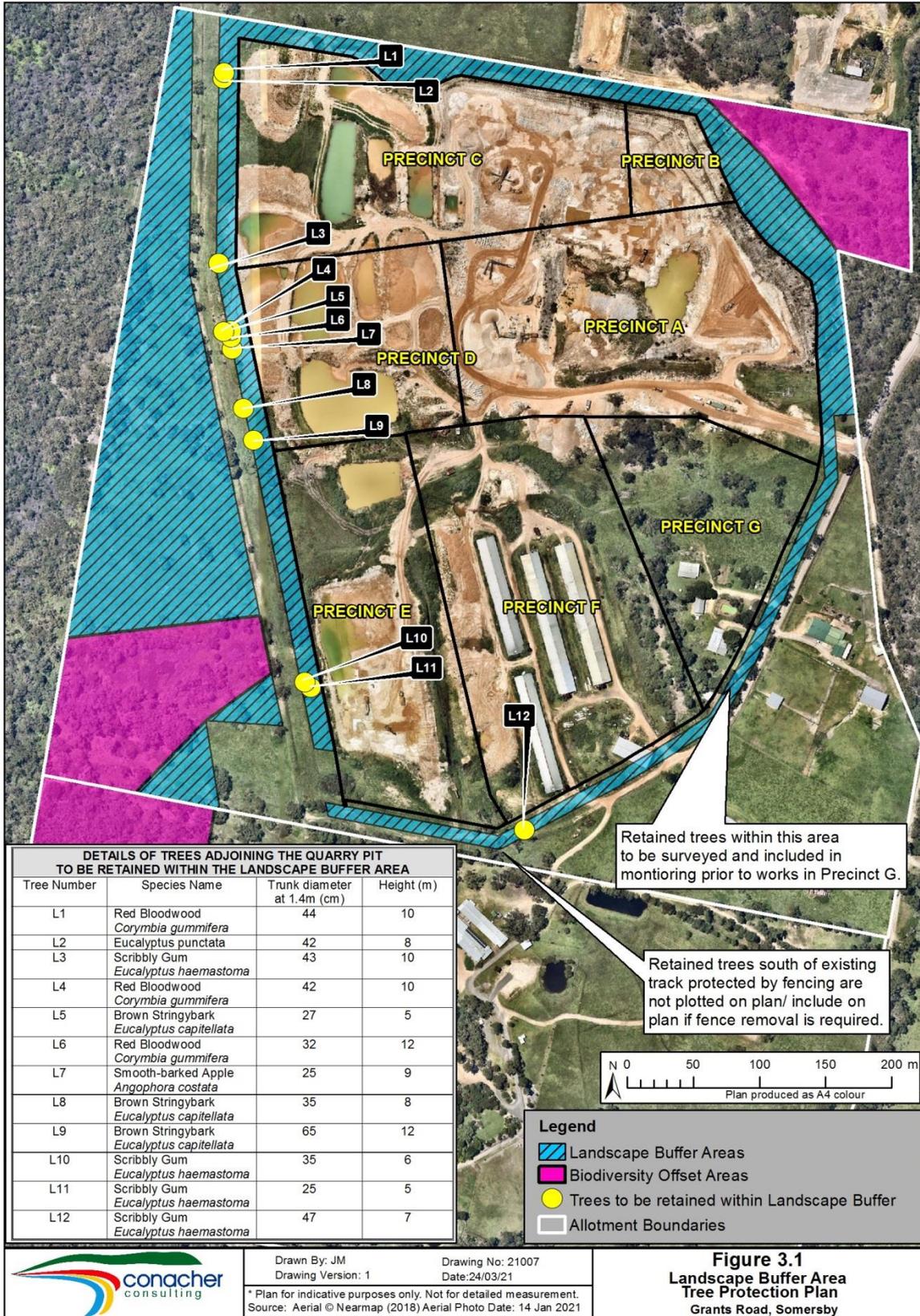


Figure 2.1
Biodiversity Offset Monitoring
Grants Road, Somersby









APPENDIX 2
MONITORING PHOTOGRAPHS

APPENDIX 3
NEST BOX ANNUAL MONITORING RESULTS

TABLE A3.1 NEST BOX MONITORING RESULTS				
Nest Box Number	Type	Maintenance Required	Easting	Northing
1	Side Entry Very Small Bird / Mammal	Repaired	338720	6304269
2	Side Entry Very Small Bird / Mammal	Box Replaced	338704	6304256
3	Side Entry Small Bird / Mammal (narrow box)	None	338747	6304216
4	Side Entry Small Bird / Mammal	Box Replaced None	338795	6304164
5	Front Entry Small Bird / Mammal (short box)	None	338746	6304252
6	Front Entry Small Bird / Mammal (short box)	Box Replaced	338747	6304211
7	Front Entry Small Bird / Mammal (short box)	None	338711	6304276
8	Front Entry Small Bird / Mammal (short box)	None	338303	6303890
9	Front Entry Small Bird / Mammal	None	338282	6304295
10	Front Entry Small Bird / Mammal	Box Replaced None	338756	6304320
11	Front Entry Small Bird / Mammal	None	338232	6304056
12	Front Entry Small Bird / Mammal	None	338283	6303937
13	Front Entry Small Bird / Mammal	Repaired	338300	6304028
14	Front Entry Small Bird / Mammal	None	338274	6304168
15	Front Entry Small Bird / Mammal	Replace	338294	6304021
16	Front Entry Small Bird / Mammal	None	338307	6304008
17	Front Entry Small Bird / Mammal	None	338303	6303890
18	Side Entry Small Bird / Mammal	None	338272	6304153
19	Side Entry Small Bird / Mammal	None	338278	6304184
20	Side Entry Small Bird / Mammal	Replace	338294	6304021
21	Side Entry Small Bird / Mammal	None	338261	6304035
22	Side Entry Small Bird / Mammal	None	338257	6304054
23	Side Entry Small Bird / Mammal	Replace	338299	6304011

**TABLE A3.1
NEST BOX MONITORING RESULTS**

Nest Box Number	Type	Maintenance Required	Easting	Northing
24	Side Entry Very Small Bird / Mammal	None	338769	6304184
25	Front Entry Small Bird / Mammal	Box replaced None	338760	6304210
26	Side Entry Very Small Bird / Mammal	None	338786	6304184
27	Front Entry Small Bird / Mammal	Box replaced None	338786	6304184
28	Side Entry Small Bird / Mammal	None	338272	6303985
29	Side Entry Small Bird / Mammal	None	338280	6304105
30	Front Entry Small Bird / Mammal	None	338743	6304203
31	Side Entry Very Small Bird / Mammal (Horizontal mount)	Repaired	338776	6304185
32	Side Entry Very Small Bird / Mammal (Horizontal mount)	None	338759	6304261
33	Side Entry Very Small Bird / Mammal (Horizontal mount)	None	338697	6304272
34	Side Entry Very Small Bird / Mammal (Horizontal mount)	None	338727	6304253
35	Natural Log Rear Entry Bat box	None	338278	6304184
36	Natural Log Rear Entry Bat box	None	338277	6304098

APPENDIX 4
BIODIVERSITY OFFSET MONITORING PLOT DATA

The floristic plot data for each of the Biodiversity Offset Areas (A-C) is provided in Table A4.1 (Areas A & B) and Table A4.2 (Area C).

TABLE A4.1 BASELINE FLORISTIC DATA FOR BIODIVERSITY OFFSET AREAS A & B				
Family	Scientific Name	Common Name	Plot A1 Cover	Plot B1 Cover
Trees				
Myrtaceae	<i>Corymbia gummifera</i>	Red Bloodwood	3.00	
Myrtaceae	<i>Eucalyptus capitellata</i>	Brown Stringybark	5.00	
Myrtaceae	<i>Eucalyptus haemastoma</i>	Broad-leaved Scribbly Gum		2.00
Myrtaceae	<i>Eucalyptus sieberi</i>	Silvertop Ash	2.00	
Phyllanthaceae	<i>Glochidion ferdinandi</i>	Cheese Tree	0.1	
Proteaceae	<i>Banksia serrata</i>	Old-man Banksia	3.00	
Shrubs				
	<i>Polyscias sambucifolia</i> subsp. <i>Long Leaflets</i>	Elderberry Panax	0.10	
Araliaceae				
Asteraceae	<i>Ozothamnus diosmifolius</i>	White Dogwood	10.00	
Dilleniaceae	<i>Hibbertia linearis</i>		0.10	
Fabaceae (Faboideae)	<i>Bossiaea heterophylla</i>	Variable Bossiaea	0.10	
Fabaceae (Faboideae)	<i>Bossiaea obcordata</i>	Spiny Bossiaea	0.10	
Fabaceae (Mimosoideae)	<i>Acacia fimbriata</i>	Fringed Wattle	0.50	
Fabaceae (Mimosoideae)	<i>Acacia floribunda</i>	White Sally	0.25	
Myrtaceae	<i>Kunzea ambigua</i>	Tick Bush	0.25	
Myrtaceae	<i>Leptospermum polygalifolium</i> subsp. <i>polygalifolium</i>	Tantoon		20.00
Phyllanthaceae	<i>Breynia oblongifolia</i>	Coffee Bush	0.10	
		Heath-leaved Banksia		1.00
Proteaceae	<i>Banksia ericifolia</i>			
Proteaceae	<i>Banksia oblongifolia</i>	Fern-leaved Banksia		0.50
Proteaceae	<i>Lomatia silaifolia</i>	Crinkle Bush	0.10	
Thymelaeaceae	<i>Pimelea linifolia</i>	Slender Rice Flower	0.10	
Forbs				
Amaranthaceae	<i>Alternanthera denticulata</i>	Lesser Joyweed		0.20
Apiaceae	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort	0.10	
Asteraceae	<i>Euchiton sphaericus</i>	Star Cudweed	0.10	
		Native Wandering Jew	0.10	
Commelinaceae	<i>Commelina cyanea</i>			
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	0.10	
Plantaginaceae	<i>Veronica plebeia</i>	Trailing Speedwell	0.10	
Polygonaceae	<i>Persicaria lapathifolia</i>	Pale Knotweed		20.00
Dennstaedtiaceae	<i>Hypolepis muelleri</i>	Harsh Ground Fern	0.50	0.25
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Bracken	0.25	
Monocots				
Cyperaceae	<i>Cyathochaeta diandra</i>		0.25	
Cyperaceae	<i>Cyperus polystachyos</i>		1.00	2.00
Cyperaceae	<i>Gahnia clarkei</i>	Tall Saw-sedge	0.10	
Juncaceae	<i>Juncus usitatus</i>		0.20	
Lomandraceae	<i>Lomandra gracilis</i>		0.10	

**TABLE A4.1
BASELINE FLORISTIC DATA FOR BIODIVERSITY OFFSET AREAS A & B**

Family	Scientific Name	Common Name	Plot A1 Cover	Plot B1 Cover
Poaceae	<i>Cynodon dactylon</i>	Common Couch	20.00	
Poaceae	<i>Echinopogon caespitosus</i>	Bushy Hedgehog-grass	0.25	
Poaceae	<i>Entolasia marginata</i>	Bordered Panic	0.10	10.00
Poaceae	<i>Entolasia stricta</i>	Wiry Panic	2.00	
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass	10.00	
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass	10.00	
Poaceae	<i>Oplismenus imbecillis</i>	Creeping Beard Grass	0.20	
Poaceae	<i>Sacciolepis indica</i>	Indian Cupscale Grass		0.50
Other Native Plants				
Rubiaceae	<i>Gynochthodes jasminoides</i>	Sweet Morinda		0.25
Vitaceae	<i>Cissus hypoglauca</i>	Giant Water Vine		0.25
Exotic Plants				
Araceae	<i>Zantedeschia aethiopica</i>	Arum Lily		5.00
Asteraceae	<i>Ageratina adenophora</i>	Crofton Weed	1.00	30.00
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs	0.10	
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	0.10	
Asteraceae	<i>Conyza sumatrensis</i>	Tall fleabane	1.00	0.10
Asteraceae	<i>Gamochaeta americana</i>	Cudweed	0.10	
Asteraceae	<i>Hypochaeris radicata</i>	Catsear	0.10	
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	0.25	0.10
Asteraceae	<i>Sonchus asper</i>	Prickly Sowthistle		0.10
Brassicaceae	<i>Rorippa microphylla</i>	One-rowed Watercress		0.10
Cyperaceae	<i>Cyperus aggregatus</i>		0.10	
Cyperaceae	<i>Cyperus congestus</i>		0.10	1.00
Poaceae	<i>Andropogon virginicus</i>	Whiskey Grass	15.00	
Poaceae	<i>Axonopus fissifolius</i>	Narrow-leafed Carpet Grass	20.00	
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu Grass	5.00	
Poaceae	<i>Digitaria sanguinalis</i>	Crab Grass	0.10	0.25
Poaceae	<i>Echinochloa crus-galli</i>	Barnyard Grass		0.20
Poaceae	<i>Paspalum dilatatum</i>	Paspalum	5.00	
Poaceae	<i>Paspalum notatum</i>	Bahia Grass	1.00	
Poaceae	<i>Setaria parviflora</i>	Pigeon Grass	0.10	
Poaceae	<i>Setaria pumila</i>	Pale Pigeon Grass		1.00
Polygonaceae	<i>Acetosella vulgaris</i>	Sheep Sorrel	0.10	
Rosaceae	<i>Rubus fruticosus</i> sp. agg.	Blackberry complex	5.00	0.1
Solanaceae	<i>Solanum mauritianum</i>	Wild Tobacco Bush	1.00	0.50
Solanaceae	<i>Solanum nigrum</i>	Black-berry Nightshade	0.10	0.10
Verbenaceae	<i>Lantana camara</i>	Lantana	0.50	1.00
Verbenaceae	<i>Verbena bonariensis</i>	Purpletop	0.10	0.10



Monitoring Plot A1 – View to the north



Monitoring Plot A1 – View to the east



Monitoring Plot A1 – View to the south



Monitoring Plot A1 – View to the west



Monitoring Plot B1 - View to the north.



Monitoring Plot B1 - View to the east.



Monitoring Plot B1 - View to the south.



Monitoring Plot B1 - View to the west.

**TABLE A4.2
BASELINE FLORISTIC DATA FOR BIODIVERSITY OFFSET AREA C**

Family	Scientific Name	Common Name	Plot C1 Cover	Plot C2 Cover
Canopy				
Myrtaceae	<i>Corymbia gummifera</i>	Red Bloodwood	5	10
Myrtaceae	<i>Eucalyptus haemastoma</i>	Scribbly Gum	10	
Myrtaceae	<i>Eucalyptus piperita</i>	Sydney Peppermint		15
Myrtaceae	<i>Eucalyptus sieberi</i>	Silvertop Ash	20	10
Sub-canopy				
Myrtaceae	<i>Angophora costata</i>	Smooth-barked Apple	5	1
Proteaceae	<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	Heath-leaved Banksia	3	2
Proteaceae	<i>Banksia serrata</i>	Old Man Banksia	1	1
Shrubs				
Apiaceae	<i>Platysace linearifolia</i>		15	2
Apiaceae	<i>Xanthosia pilosa</i>	Woolly Xanthosia		0.3
Apiaceae	<i>Xanthosia tridentata</i>	Rock Xanthosia		1
Dilleniaceae	<i>Hibbertia bracteata</i>			1
Dilleniaceae	<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>		0.1	0.2
Dilleniaceae	<i>Hibbertia linearis</i>		5	
Dilleniaceae	<i>Hibbertia procumbens</i>			0.2
Euphorbiaceae	<i>Amperea xiphoclada</i> var. <i>xiphoclada</i>	Broom Spurge	1	0.5
Ericaceae	<i>Leucopogon ericoides</i>	Pink Beard-heath	2	
Ericaceae	<i>Woolisia pungens</i>			3
Fabaceae (Faboideae)	<i>Bossiaea heterophylla</i>	Variable Bossiaea	2	0.5
Fabaceae (Faboideae)	<i>Bossiaea obcordata</i>	Spiny Bossiaea	0.25	0.5
Fabaceae (Faboideae)	<i>Bossiaea scolopendria</i>		0.1	
Fabaceae (Faboideae)	<i>Dillwynia rudis</i>		3	4
Fabaceae (Faboideae)	<i>Hovea linearis</i>			0.1
Fabaceae (Faboideae)	<i>Pultenaea rosmarinifolia</i>	Rosemary Bush-pea		2
Fabaceae (Mimosoideae)	<i>Acacia linifolia</i>	White Wattle	3	3
Fabaceae (Mimosoideae)	<i>Acacia myrtifolia</i>	Myrtle Wattle		0.2
Fabaceae (Mimosoideae)	<i>Acacia oxycedrus</i>	Spike Wattle	0.1	0.25
Fabaceae (Mimosoideae)	<i>Acacia suaveolens</i>	Sweet Wattle	0.2	1
Fabaceae (Mimosoideae)	<i>Acacia terminalis</i> subsp. <i>Bright yellow flower</i>	Sunshine Wattle		0.25
Lamiaceae	<i>Hemigenia purpurea</i>		0.25	
Myrtaceae	<i>Leptospermum parvifolium</i>			1
Myrtaceae	<i>Leptospermum polygalifolium</i> subsp. <i>cismontanum</i>	Tantoon		5
Myrtaceae	<i>Leptospermum trinervium</i>	Flaky-barked Tea-tree	10	10
Phyllanthaceae	<i>Phyllanthus hirtellus</i>	Thyme Spurge	0.3	0.2
Proteaceae	<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	Heath-leaved Banksia	1	5

**TABLE A4.2
BASELINE FLORISTIC DATA FOR BIODIVERSITY OFFSET AREA C**

Family	Scientific Name	Common Name	Plot C1 Cover	Plot C2 Cover
Proteaceae	<i>Banksia oblongifolia</i>	Fern-leaved Banksia		0.5
Proteaceae	<i>Banksia serrata</i>	Old Man Banksia	2	
Proteaceae	<i>Conospermum longifolium</i> subsp. <i>longifolium</i>	Long Leaf Smoke Bush	2	2
Proteaceae	<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	Grey Spider Flower	5	1
Proteaceae	<i>Grevillea sericea</i> subsp. <i>sericea</i>	Pink Spider Flower	5	10
Proteaceae	<i>Hakea sericea</i>	Needlebush		3
Proteaceae	<i>Isopogon anemonifolius</i>	Broad-leaf Drumsticks	0.5	0.25
Proteaceae	<i>Lambertia formosa</i>	Mountain Devil	0.1	0.5
Proteaceae	<i>Lomatia silaifolia</i>	Crinkle Bush Pine-leaved		0.25
Proteaceae	<i>Persoonia isophylla</i>	Geebung Broad-leaved	10	1
Proteaceae	<i>Persoonia levis</i>	Geebung	0.5	1
Proteaceae	<i>Petrophile pulchella</i>		0.25	0.25
Rutaceae	<i>Boronia ledifolia</i>	Showy Boronia	0.5	4
Rutaceae	<i>Boronia pinnata</i>			0.2
Rutaceae	<i>Philotheca hispidula</i>		0.5	0.25
Santalaceae	<i>Leptomeria acida</i>	Sour Currant Bush		1
Thymelaeaceae	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	Slender Rice Flower	5	2
Ground Layer				
Ferns and Allies				
Schizaeaceae	<i>Schizaea bifida</i>	Comb Fern		0.1
Lindsaeaceae	<i>Lindsaea linearis</i>	Screw Fern		0.1
Herbs - Climbers				
Smilacaceae	<i>Smilax australis</i>	Native Sarsparilla		0.2
Dicots (Herbs)				
Apiaceae	<i>Actinotus helianthi</i>	Flannel Flower Lesser Flanner	5	
Apiaceae	<i>Actinotus minor</i>	Flower	0.2	10
Goodeniaceae	<i>Dampiera stricta</i>			0.2
Goodeniaceae	<i>Scaevola ramosissima</i>	Snake Flower	0.2	
Rubiaceae	<i>Pomax umbellata</i>		0.2	
Monocots (Grasses)				
Poaceae	<i>Anisopogon avenaceus</i>	Oat Speargrass	5	20
Poaceae	<i>Entolasia stricta</i>	Wiry Panic	15	15
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass		0.2
Monocots (Others)				
Anthericaceae	<i>Caesia parviflora</i>	Pale Grass-lily	0.1	
Anthericaceae	<i>Thysanotus tuberosus</i>	Common Fringe Lilly	0.1	
Cyperaceae	<i>Caustis flexuosa</i>	Curly Wig	0.2	1
Cyperaceae	<i>Caustis pentandra</i>	Thick Twist Rush		0.2
Cyperaceae	<i>Cyathochaeta diandra</i>		1	10

TABLE A4.2
BASELINE FLORISTIC DATA FOR BIODIVERSITY OFFSET AREA C

Family	Scientific Name	Common Name	Plot C1 Cover	Plot C2 Cover
Cyperaceae	<i>Lepidosperma laterale</i>			0.1
Cyperaceae	<i>Schoenus melanostachys</i>	Black Bog-rush		5
Doryanthaceae	<i>Doryanthes excelsa</i>	Gynea Lily		5
Haemodoraceae	<i>Haemodorum planifolium</i>		1	0.4
Iridaceae	<i>Patersonia sericea</i>	Silky Purple-flag	0.1	
Lomandraceae	<i>Lomandra glauca</i>	Pale Mat-rush	0.1	
Lomandraceae	<i>Lomandra obliqua</i>		0.1	0.1
Orchidaceae	<i>Cryptostylis erecta</i>	Bonnet orchid	0.1	
Phormiaceae	<i>Dianella prunina</i>		0.1	0.1
Restionaceae	<i>Empodisma minus</i>	Wire Rush		0.3
Restionaceae	<i>Lepyrodia scariosa</i>		0.1	1
Xanthorrhoeaceae	<i>Xanthorrhoea media</i>		4	0.4
Xyridaceae	<i>Xyris gracilis</i>			0.3
Exotics				
Poaceae	<i>Andropogon virginicus*</i>	Whisky Grass		0.1



Monitoring Plot C1 View to the north.



Monitoring Plot C1 View to the east.



Monitoring Plot C1 View to the south.



Monitoring Plot C1 View to the west.



Monitoring Plot C2 View to the north.



Monitoring Plot C2 View to the east.



Monitoring Plot C2 View to the south.



Monitoring Plot C2 View to the west.

Appendix 10
COMMUNITY CONSULTATION
The Department of Planning, Industry and Environment

CCC Requirements



Lisa Andrews <lisaandrews.ic@gmail.com>

To Grants Road Sand

 This is the most recent version, but you made changes to another copy. [Click here to see the other versions.](#)
You forwarded this message on 13/01/2023 2:32 PM.



Fri 13/01/2023 2:13 PM

Hi Leanne

I confirm that we were unable to hold a Community Consultative Committee meeting for 2022 due to COVID restrictions.

As you know the Grants Rd CCC meets on an annual basis and some members did not have the technology to allow for a video-conference meeting. Accordingly, as there were no issues to raise either from the Grants Rd project, community representatives or the public, it was decided to postpone the meeting.

Best regards

Lisa

Lisa Andrews
Independent Chairperson &
Director
Articulate Solutions Pty Ltd
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Appendix 11
PRODUCT TRANSPORT RECORDS
Grants Road Sand Quarry

Date	Time	Tonne	Docket Number	Total Tonnes
January				
4/1/22	7.00	33.56	58001	7,636.51
	7.40	33.64	58002	
	8.20	33.52	58003	
	9.00	33.52	58004	
	10.20	5.00	8776	
5/1/22	7.05	33.60	58005	
	7.45	33.65	58006	
	8.20	33.70	58007	
	9.00	32.50	58008	
	11.50	38.88	58599	
	13.35	33.00	8777	
6/1/22	7.00	33.60	58010	
	7.30	33.70	58011	
	8.05	33.65	58012	
	14.60	38.24	57938	
	14.50	39.10	57939	
7/1/22	7.05	33.55	58013	
	9.08	12.00	8778	
	10.02	1.20	8779	
	10.07	12.00	8780	
10/1/22	14.30	31.64	57940	
	15.00	38.40	57941	
	7.00	33.50	58674	
	7.30	33.60	58675	
	8.15	33.65	58676	
	8.45	33.70	58677	
	9.15	33.70	58678	
	9.50	33.75	58679	
11/1/22	10.25	32.00	57942	
	11.00	7.20	57943	
	12.00	14.06	57944	
	7.00	33.54	58680	
	7.40	33.62	58681	
	8.20	33.58	58682	
	9.00	33.56	58683	
	9.40	33.56	58684	
	10.20	33.60	58685	
	7.01	3.84	8781	
	10.49	27.00	8782	
	11.06	12.00	8783	
	11.08	10.00	8784	
12/1/22	7.00	12.50	57945	
	7.40	31.38	57946	
	9.00	39.10	57947	
	10.10	6.00	57948	
	10.20	38.70	57949	
	11.40	38.50	57950	
	7.00	33.50	58686	
	7.40	33.56	58687	
	8.20	33.52	58688	
	9.00	33.48	58689	
	9.40	33.58	58690	
	10.20	33.50	58691	
	12.50	32.42	57463	
	13.16	6.40	57464	
	13.35	17.80	57465	
	14.25	7.20	57466	
	15.00	32.60	57467	
	15.55	37.94	57468	
	8.03	5.76	8785	
	13.26	1.00	8786	
13/1/22	7.00	33.54	58692	
	7.50	33.60	58693	
	8.30	33.52	58694	
	9.10	33.54	58695	
	9.40	33.50	58696	
	10.20	33.54	58697	
	11.00	33.56	58698	
	7.15	35.38	57469	
	7.30	24.00	57470	
	8.45	11.00	57471	
	9.00	7.20	57472	
	11.15	12.00	57473	
	11.45	35.32	57474	
	12.10	12.00	57475	
	15.20	35.42	57476	
	16.00	32.20	57477	
	14.00	12.00	57478	
	10.10	6.24	8787	
	11.02	8.64	8788	
	12.43	11.42	8789	
	13.36	7.88	8790	
	17.00	10.00	8791	
14/1/22	7.00	33.46	58699	
	7.40	33.58	58700	
	7.55	5.00	58051	
	8.40	38.70	58052	
	10.10	12.00	58053	
	12.30	38.94	58054	
	14.50	39.10	58055	

Date	Time	Tonne	Docket Number	Total Tonnes
February				
1/2/22	7.00	33.50	57953	10,069.83
	7.40	33.52	57954	
	8.20	33.58	57955	
	9.00	33.58	57956	
	9.40	33.54	57957	
	10.20	33.56	57958	
	11.00	33.56	57959	
	10.05	39.59	58648	
	8.15	8.50	58135	
	8.50	32.96	58136	
	10.30	32.18	58137	
	11.00	39.00	58138	
	12.00	32.16	58139	
	7.42	7.20	8794	
	7.53	30.00	8795	
	11.31	33.00	8796	
2/2/22	7.00	33.56	57960	
	7.40	33.52	57961	
	8.20	33.54	57962	
	9.00	33.50	57963	
	9.40	33.54	57964	
	10.20	33.64	57965	
	11.00	33.54	57966	
	11.40	33.52	57967	
	14.50	39.20	58649	
	7.10	35.00	58140	
	7.50	9.00	58141	
	11.38	6.20	58142	
	12.00	38.20	58143	
	13.45	6.00	58144	
	9.00	11.80	8797	
	10.55	12.00	8797	
	13.10	11.80	8797	
	9.06	11.50	8798	
	10.11	10.80	8798	
	11.22	11.00	8798	
	12.01	11.00	8798	
	13.12	11.00	8798	
	14.20	11.40	8798	
	7.00	6.00	8877	
	15.46	4.80	8878	
3/2/22	7.00	33.58	57968	
	7.40	33.46	57969	
	8.20	33.56	57970	
	9.00	33.54	57971	
	9.40	33.54	57972	
	10.20	33.50	57973	
	11.00	33.58	57974	
	11.40	33.58	57975	
	14.30	32.26	58650	
	7.00	32.10	58145	
	8.35	32.26	58147	
	11.20	32.38	58148	
	11.50	3.00	58149	
	12.15	33.26	58150	
	15.40	38.92	57484	
	14.34	3.00	58156	
	15.00	32.00	58157	
	7.00	24.00	8879	
	7.07	1.08	8880	
	10.33	9.00	8881	
4/2/22	7.00	33.48	57976	
	7.33	27.50	8799	
	7.40	33.56	58092	
	8.20	33.56	58093	
	9.00	33.58	58094	
	9.40	33.52	58095	
	10.20	33.58	58096	
	11.00	33.58	58097	
	11.40	33.50	58098	
	12.20	33.52	58099	
	13.00	33.48	58100	
	12.00	17.76	58201	
	13.55	32.72	58202	
	14.50	32.00	58203	
	15.40	32.20	58204	
5/2/22	8.20	12.00	58205	
	10.00	32.00	58206	
	10.40	39.10	58207	
7/2/22	7.00	36.00	58208	
	12.20	6.00	58209	
	7.00	33.64	58701	
	7.40	33.46	58702	
	8.20	33.52	58703	
	9.00	33.54	58704	
	9.40	33.50	58705	
	10.20	33.54	58706	
	8.44	0.32	8828	
	15.37	4.80	8829	
8/2/22	7.00	33.56	58707	

Date	Time	Tonne	Docket Number	Total Tonnes
March				
1/3/22	7.00	33.56	57607	10,340.18
	7.40	33.52	57608	
	7.45	34.28	57496	
	12.40	8.50	57185	
	12.35	33.34	57186	
	15.30	35.38	57187	
	8.20	33.64	58181	
	9.00	33.48	58182	
	9.40	33.58	58183	
	10.20	33.52	58184	
	11.00	33.50	58185	
	11.50	33.52	58186	
	12.20	33.50	58187	
	8.56	12.00	8845	
	9.20	7.50	8845	
	10.15	11.74	8845	
	10.55	7.48	8845	
2/3/22	7.00	33.54	58188	
	7.40	33.54	58189	
	8.20	33.60	58190	
	9.00	33.58	58191	
	9.40	33.58	58192	
	10.20	33.50	58193	
	11.00	33.56	58194	
	7.30	23.70	57188	
	8.30	23.40	57189	
	8.45	11.00	57190	
	10.07	23.00	57191	
	10.00	12.00	57192	
	11.10	21.84	57193	
	12.12	21.70	57194	
3/3/22	7.30	22.90	57195	
	11.30	12.00	57196	
	12.50	24.74	57197	
	7.20	33.68	58195	
	8.00	33.54	58196	
	8.40	33.54	58197	
	9.20	33.52	58198	
	10.00	33.52	58199	
	10.40	33.58	58200	
	11.30	33.58	57395	
	12.30	33.60	57396	
	7.49	8.00	8846	
4/3/22	7.00	33.54	57397	
	7.40	33.46	57398	
	8.20	33.56	57399	
	9.00	33.60	57400	
	10.00	23.00	57505	
	9.40	33.50	57578	
	10.20	33.50	57579	
	11.00	33.52	57580	
7/3/22	7.00	33.56	58801	
	7.40	33.50	58802	
	8.20	33.50	58803	
	9.00	33.58	58804	
	9.40	33.56	58805	
	10.20	33.52	58806	
	11.00	33.58	58807	
	9.00	31.20	58235	
	12.45	12.00	58236	
	12.30	32.18	58237	
	8.36	0.75	8951	
	13.22	22.50	8952	
	15.26	3.40	8953	
	15.31	11.00	8954	
8/3/22	7.00	33.62	58808	
	7.40	33.54	58809	
	8.20	33.54	58810	
	9.00	33.56	58811	
	9.40	33.58	58812	
	10.20	33.48	58813	
	7.30	35.00	58238	
9/3/22	7.00	33.54	58814	
	7.40	33.58	58815	
	8.20	33.58	58816	
	9.00	33.52	58817	
	9.40	33.56	58818	
	7.55	33.42	58239	
	8.00	32.50	58240	
	8.20	6.00	58241	
	12.00	35.00	58242	
	12.25	24.86	58243	
	13.20	24.24	58244	
	7.22	3.70	8955	
	11.03	14.40	8956	
10/3/22	7.00	33.50	58819	
	7.40	33.54	58820	
	8.20	33.50	58821	
	9.00	33.60	58822	
	9.40	33.54	58823	

Date	Time	Tonne	Docket Number	Total Tonnes
April				
1/4/22	7.00	33.52	57688	9,000.29
	7.40	33.54	57689	
	8.20	33.64	57690	
	9.00	33.58	57691	
	9.40	33.56	57692	
	11.53	2.98	8896	
	11.16	5.64	57401	
2/4/22	11.37	3.00	8847	
4/				

	16.15	38.70	58056
	16.20	38.70	58057
	16.30	32.44	58058
	8.20	33.50	58151
	9.00	33.52	58152
	9.40	33.58	58153
	10.20	33.56	58154
	16.35	12.00	8867
17/1/22	7.40	35.00	58059
	12.30	12.10	58060
	16.20	36.44	58061
	7.00	33.64	58615
	7.40	33.58	58616
	8.20	33.54	58617
	9.00	33.54	58618
	9.40	33.50	58619
	10.20	33.52	58620
	11.00	33.50	58621
	7.07	11.24	8868
	7.12	12.00	8869
	7.52	4.00	8870
	7.40	12.00	8871
	7.45	12.50	8871
	8.44	11.91	8871
	11.00	12.21	8872
	13.10	12.50	8872
18/1/22	7.00	33.54	58622
	7.40	33.56	58623
	8.20	33.48	58624
	9.00	33.54	58625
	9.40	33.50	58626
	10.20	33.50	58627
	11.00	33.50	58628
	10.42	21.90	58063
	10.47	23.30	58064
	15.20	18.20	58065
	15.30	5.00	58066
	7.55	12.80	8872
	8.00	12.80	8872
	10.10	12.00	8872
	11.50	11.50	8872
	7.33	12.50	8873
	7.40	12.80	8873
	8.30	12.25	8873
	8.35	12.10	8873
	10.20	11.80	8873
	7.11	5.48	8818
	7.15	4.00	8819
	8.08	6.72	8820
	8.10	3.84	8821
	9.09	11.00	8822
	12.09	3.84	8823
19/1/22	7.00	33.54	58629
	7.40	33.50	58630
	8.20	33.50	58631
	9.00	33.56	58632
	9.40	33.48	58633
	10.20	33.52	58634
	11.00	33.54	58635
	11.30	33.52	58636
	7.20	21.24	58067
	10.00	31.00	58068
	13.15	6.12	58069
	13.05	2.88	8874
20/1/22	7.00	33.56	58637
	7.40	33.46	58638
	8.20	33.54	58639
	9.00	33.60	58640
	9.40	33.54	58641
	10.20	33.54	58642
	11.00	33.48	58643
	7.20	38.50	58070
	7.50	32.10	58071
	8.37	2.96	58072
	8.40	12.00	58073
	8.47	11.30	58074
	8.50	39.50	58075
	9.15	32.24	58076
	10.00	4.53	58077
	10.10	31.50	58078
	10.40	32.02	58079
	13.00	38.70	58080
	11.40	32.00	58081
	12.00	32.48	58082
	14.35	32.00	58083
	15.15	38.60	58084
	7.49	4.20	8875
21/1/22	7.00	33.58	58644
	7.40	33.50	58645
	8.20	33.50	58646
	9.00	33.56	58647
	9.40	33.54	58101
	10.20	33.56	58102

	7.40	33.56	58708
	8.20	33.50	58709
	9.00	33.48	58710
	9.30	33.54	58711
	10.10	33.58	58712
	7.30	23.08	58210
	10.30	32.00	58211
	13.30	24.24	58212
	8.00	12.00	8830
	9.55	12.50	8830
	11.10	12.00	8830
	13.30	12.00	8830
9/2/22	7.25	12.00	8830
	9.35	12.00	8830
	11.00	11.50	8830
	7.00	33.52	58713
	7.30	33.50	58714
	8.30	33.50	58715
	9.10	33.54	58716
	9.50	33.50	58717
	10.30	33.56	58718
	11.10	33.48	58719
	11.50	33.56	58720
	12.30	33.50	58721
	12.30	13.00	58722
	13.30	12.00	58723
	13.50	12.00	58724
	8.30	12.00	58213
	8.50	13.00	58214
	8.55	13.00	58215
	9.25	12.20	58216
	9.15	13.10	58217
	10.20	13.00	58218
	10.40	12.72	58219
	11.15	13.00	58220
	11.20	13.00	58221
	12.10	13.00	58222
	12.15	13.00	58223
	12.30	11.20	58224
	12.30	20.10	58225
	12.49	1.20	58226
	13.00	32.10	58227
	13.30	13.00	58228
	13.35	13.00	58229
	15.05	32.10	58230
	16.25	39.37	58231
	9.15	14.40	8910
	10.20	14.60	8910
	11.00	14.60	8910
	11.45	14.30	8910
	14.50	9.20	8911
10/2/22	9.26	14.50	8915
	10.43	14.50	8915
	11.45	14.50	8915
	8.18	1.00	8912
	8.33	0.43	8913
	11.04	4.80	8914
	13.40	6.50	58232
	7.00	33.54	58725
	7.40	33.64	58726
	8.20	33.54	58727
	9.00	33.52	58728
	9.40	33.48	58729
	10.20	33.54	58730
	10.40	33.50	58731
	13.00	33.50	58732
	13.30	33.50	58733
11/2/22	7.20	35.35	58233
	14.35	11.00	58234
	7.00	33.52	58734
	7.40	33.56	58735
	8.20	33.48	58736
	9.00	33.48	57485
	9.30	33.50	57486
	10.50	33.50	57487
	12.00	33.50	57488
	13.00	32.50	57489
	14.23	24.00	8882
	13.00	12.20	57977
12/2/22	8.34	4.20	8883
14/2/22	10.54	21.60	8884
	14.24	13.00	8885
	16.47	30.00	8886
	16.50	30.00	8886
	8.00	12.32	57978
	8.30	7.20	57979
	9.40	58.80	57980
	10.30	14.70	57981
	12.40	7.20	57982
	13.40	32.00	57983
	15.05	32.00	57984
	7.00	33.54	57351
	7.40	33.58	57352

	10.20	33.48	58824
	11.00	33.56	58825
	11.40	33.54	58826
	9.40	12.00	58245
	9.55	8.50	58246
	15.15	36.08	58247
	15.45	32.00	58248
	15.50	32.14	58249
	11.51	13.00	8957
	11.54	5.50	8958
11/3/22	8.30	38.96	58250
	7.00	33.58	58827
	7.40	33.50	58828
	8.20	33.64	58829
	9.00	23.86	57581
	9.30	6.00	57582
	9.00	33.54	58751
	9.40	33.54	58752
	10.20	33.52	58753
	11.00	33.56	58754
	11.40	13.00	58755
	13.00	39.70	57497
	13.30	22.86	57499
	14.00	6.00	57500
	15.20	38.78	57198
	9.11	5.76	10251
	11.42	40.00	10252
	15.14	24.50	10253
12/3/22	8.15	40.00	57199
	11.25	38.52	57200
	8.45	38.56	57506
	10.45	32.00	57507
	11.30	39.00	57583
14/3/22	7.00	33.56	57508
	7.40	33.52	57509
	8.20	33.52	57510
	9.00	33.54	57511
	9.40	33.50	57512
	10.20	33.50	57513
	7.30	6.00	57584
	7.45	35.24	57585
	8.35	38.80	57586
	8.40	21.60	57587
	12.10	7.20	57588
	13.30	12.00	57589
	15.20	32.00	57590
	16.50	39.64	57591
	10.28	33.00	10254
	10.50	33.00	10254
15/3/22	7.00	33.58	57514
	7.40	33.48	57515
	8.20	33.52	57516
	9.00	33.56	57517
	9.40	33.56	57518
	10.20	33.50	57519
	11.40	12.00	57520
	12.00	13.50	57521
	12.20	33.48	57522
	13.00	33.54	57523
	13.40	33.56	57524
	7.44	10.20	57592
	9.15	32.00	57593
	13.00	1.56	57594
	11.00	24.00	10255
16/3/22	7.00	33.58	57525
	7.40	33.50	57526
	8.20	33.54	57527
	9.00	33.50	57528
	9.40	33.56	57529
	10.20	33.56	57530
	11.00	33.48	57531
	7.40	34.90	57595
	8.40	38.58	57596
	9.45	39.00	57597
	11.40	38.70	57598
	12.10	34.86	57599
	12.20	38.50	57600
	11.01	13.00	10256
	11.30	23.42	10257
	12.06	38.80	10258
	14.00	30.80	58830
	14.25	5.96	58831
	14.30	8.00	58832
	15.00	23.64	58833
	15.05	38.39	58834
	15.10	38.50	58835
17/3/22	7.00	33.50	57532
	7.40	33.52	57533
	8.20	33.50	57534
	9.00	33.56	57535
	9.40	33.56	57536
	10.20	33.52	57537
	11.00	33.54	57538

	11.10	6.00	57698
	13.30	32.00	57699
	16.30	33.00	57700
	15.30	3.02	57648
	16.40	39.68	58525
	14.49	8.50	10265
	8.10	23.00	10266
	9.00	20.90	10266
	9.35	21.80	10266
	7.00	33.46	58934
	7.40	33.58	58935
	8.20	33.58	58936
	9.00	33.50	58937
	9.40	33.56	58938
	10.20	33.56	58939
	11.00	33.50	58940
	11.30	33.54	58941
12/4/22	9.40	13.10	58526
	10.15	36.72	58527
	11.00	35.22	58528
	11.00	14.10	58529
	11.30	36.40	58530
	12.45	22.78	58531
	16.00	32.50	58532
	7.00	33.50	58942
	7.40	33.56	58943
	8.20	33.54	58944
	9.00	33.60	58945
	9.40	33.58	58946
	10.20	33.50	58947
	11.00	33.56	58948
	12.16	8.50	10267
	12.52	21.00	8925
13/4/22	7.00	6.00	58533
	7.10	32.65	58534
	8.00	1.00	58535
	9.00	32.50	58536

	11.00	33.52	58103
	11.30	33.58	58104
	12.10	33.54	58105
	12.50	33.52	58106
	15.20	39.02	58014
	12.50	30.00	8901
	13.20	30.00	8901
24/1/22	7.02	12.00	8902
	8.32	1.92	8903
	11.57	27.00	8904
	12.10	0.93	8905
	12.32	13.68	8906
	13.04	13.50	8907
	7.25	38.70	58015
	8.30	39.60	58016
	9.15	39.70	58017
	12.15	12.06	58018
	13.50	32.40	58019
	15.15	32.40	58020
	7.00	33.64	58107
	7.40	33.58	58108
	8.20	33.58	58109
	9.00	33.54	58110
	9.40	33.50	58111
	10.20	33.52	58112
	11.00	33.50	58113
25/1/22	7.15	12.50	58021
	7.30	12.94	58022
	7.35	5.28	58023
	8.40	12.76	58024
	13.05	32.36	58026
	10.20	12.74	58027
	10.30	32.20	58028
	11.40	17.72	58029
	12.00	32.22	58030
	15.58	6.60	58031
	14.24	23.64	58032
	14.47	23.60	58033
	15.44	23.12	58034
	16.20	24.46	58035
	7.00	33.52	58114
	7.40	33.54	58115
	8.20	33.54	58116
	9.00	33.58	58117
	9.40	33.50	58118
	10.20	33.54	58119
	11.00	33.56	58120
	7.12	12.00	8792
	9.19	24.00	8793
27/1/22	7.30	16.70	58036
	8.30	16.20	58037
	10.06	17.05	58038
	11.30	17.05	58039
	12.10	9.50	58040
	12.10	16.80	58041
	13.20	17.10	58042
	14.40	17.15	58043
	15.15	22.92	58044
	15.35	32.00	58045
	15.35	16.85	58046
	7.00	33.70	58121
	7.30	33.60	58122
	8.00	33.55	58123
	8.30	33.70	58124
	9.15	33.65	58125
	9.50	33.65	58126
	10.35	33.70	58127
	11.10	33.60	58128
	11.45	33.75	58129
	12.15	33.75	58130
28/1/22	7.49	28.72	58047
	7.55	32.22	58048
	8.00	0.22	58049
	7.00	33.70	58131
	7.30	33.75	58132
	8.00	33.70	58133
	8.35	33.65	58134
	9.15	33.55	57479
	9.45	33.75	57480
	10.20	33.60	57481
	11.00	33.50	57482
	9.00	19.20	57086
	15.30	32.66	57087
	16.15	32.00	57088
	10.29	9.60	8824
29/1/22	8.05	32.70	57089
	9.15	32.74	57090
31/1/22	7.00	35.00	57091
	7.15	32.00	57092
	7.10	7.00	57093
	8.25	38.14	57094
	8.41	23.98	57095
	10.15	32.00	57096

	8.20	33.54	57353
	9.00	33.52	57354
	9.30	33.56	57355
	10.10	33.56	57356
	10.50	33.50	57357
	11.30	33.52	57358
	12.10	33.54	57359
	12.50	33.54	57360
	13.20	33.56	57361
	13.30	13.00	57362
	7.10	35.00	58158
15/2/22	7.10	38.40	57985
	7.30	4.50	57986
	7.31	4.80	57987
	7.30	35.34	57988
	7.30	17.00	57989
	7.45	32.28	57990
	8.30	9.00	57991
	10.55	38.90	57992
	11.30	32.10	57993
	11.45	32.04	57994
	12.10	39.90	57995
	13.45	22.48	57996
	15.20	39.50	57997
	15.30	32.04	57998
	7.37	12.00	8887
	9.09	12.00	8888
	16.22	18.00	8889
	7.00	33.50	57363
	7.50	33.50	57364
	8.30	33.56	57365
	9.00	33.52	57366
	10.10	33.50	57367
	10.40	33.54	57368
	11.10	33.58	57369
	11.40	33.50	57370
	12.30	13.00	57371
16/2/22	11.52	24.00	8890
	7.00	33.62	57372
	7.40	33.54	57373
	8.20	33.50	57374
	9.00	33.50	57375
	9.40	33.54	57376
	10.20	33.50	57377
	11.00	33.50	57378
	11.30	33.52	57379
	7.20	38.28	57999
	7.45	32.10	58000
	7.05	35.00	58159
	8.45	4.50	58160
	10.50	32.10	58161
	13.55	20.94	58162
	15.45	32.48	58163
	15.55	39.60	58164
	15.10	39.20	58165
17/2/22	11.11	5.50	8891
	12.41	26.00	8892
	12.47	64.00	8893
	7.00	33.52	57380
	7.40	33.58	57381
	9.30	33.48	57382
	10.10	33.54	57383
	10.50	33.56	57384
	11.30	33.50	57385
	12.10	33.52	57386
	7.05	35.00	58166
	7.20	33.70	58167
	7.25	33.34	58168
	7.30	35.20	58169
	8.30	18.00	58170
	8.40	33.06	58171
	8.45	33.12	58172
	9.55	32.60	58173
	10.40	32.30	58174
	12.21	32.40	58175
	15.45	39.80	58176
18/2/22	7.20	32.18	58177
	7.56	39.06	58178
	8.10	6.50	58179
	8.00	36.48	58180
	7.00	33.58	57387
	7.40	33.56	57388
	8.20	33.50	57389
	9.00	33.54	57390
	9.40	33.52	57501
	10.20	33.52	57502
	11.00	33.54	57503
	11.25	11.00	58234
	10.40	4.00	8831
	11.23	31.62	8832
	11.50	32.00	8832
	10.05	38.70	58737
	10.10	32.15	58738

	7.20	36.10	58836
	8.15	39.30	58837
	9.40	22.24	58838
	12.12	36.62	58839
	12.50	32.50	58840
	13.14	23.00	58841
	15.05	39.42	58842
	16.00	32.20	58843
	16.15	39.20	58844
18/3/22	7.00	33.48	57539
	7.40	33.54	57540
	8.20	33.54	57541
	9.00	33.50	57542
	9.40	33.54	57543
	10.20	33.60	57544
	7.05	39.50	58845
	7.00	6.20	58846
	7.30	33.90	58847
	7.30	35.14	58848
	7.30	9.60	58849
	8.00	31.28	58850
	7.46	26.40	10259
	11.15	19.26	57609
	12.20	34.70	57610
	12.45	23.32	57611
	8.45	39.60	58756
	10.00	39.30	58757
	12.40	38.50	58758
	16.40	38.32	58759
	16.40	31.80	58760
	11.00	33.56	57545
	10.11	4.00	8916
	12.18	4.00	8917
	11.41	4.80	8918
19/3/22	7.20	32.00	58761
	7.45	38.80	58762
	8.15	38.22	58763
	9.00	32.00	58764
	10.20	17.76	58765
	11.30	38.00	58766
21/3/22	7.00	33.68	58901
	7.40	33.54	58902
	8.20	33.52	58903
	9.00	33.56	58904
	9.40	33.50	58905
	10.20	33.58	58906
	7.00	32.36	58767
	9.45	32.38	58768
	12.40	1.93	58770
	15.30	32.37	58771
	8.00	36.76	58772
22/3/22	10.05	39.46	58773
	11.15	39.20	58774
	11.00	6.00	58775
	11.18	3.72	58776
	12.35	39.72	58777
	13.25	3.70	58778
	14.00	32.44	58779
	14.05	38.82	58780
	14.38	3.68	58781
	15.40	39.06	58782
	7.00	33.56	58907
	7.40	33.50	58908
	8.20	33.52	58909
	9.00	33.58	58910
	9.40	33.50	58911
	10.20	33.56	58912
	11.00	33.52	58913
	8.16	13.00	8919
	8.20	42.00	8920
	10.58	26.00	8921
23/3/22	7.00	33.50	58914
	7.40	33.54	58915
	8.20	33.50	58916
	9.00	33.56	58917
	9.40	33.56	58918
	10.20	33.58	58919
	11.00	33.54	58920
	11.50	33.52	58921
	12.10	26.00	58922
	9.08	32.00	8922
	9.50	32.00	8922
	15.54	11.60	8923
24/3/22	15.40	39.30	58783
	7.00	18.00	58784
	8.05	11.66	58785
	8.30	38.18	58787
	8.50	6.00	58788
	13.10	18.40	58789
	10.10	19.76	58790
	11.20	7.20	58791
	11.30	12.00	58792
	12.05	10.12	58793

	11.15	32.16	58973
	11.30	21.14	58974
	12.00	11.50	58975
	12.12	24.50	58976
	12.20	12.48	58977
	12.40	33.14	58978
	13.00	12.44	58979
	13.10	11.16	58980
	14.12	12.18	58981
	14.42	12.00	58982
	15.00	32.12	58983
	15.43	11.98	58984
	16.05	38.06	58985
	7.00	33.60	58886
	7.35	33.65	58887
	8.10	33.70	58888
	8.40	33.55	58889
	9.50	33.70	58890
	14.04	25.00	8850
20/4/22	7.20	14.40	58986
	9.20	12.86	58987
	12.23	14.40	58988
	7.00	33.60	58891
	13.35	12.50	57743
	13.45	39.12	57744
	14.05	31.86	57745
	15.25	39.20	57746
	15.35	31.68	57747
	15.47	33.75	57748
21/4/22	7.05	33.60	58896
	7.40	33.70	58897
	8.20	33.60	58898
	8.50	33.75	58899
	9.20	33.70	58900
	10.10	33.50	58989
	11.25	33.50	58990
	12.35	33.50	58991
	13.50	33.50	58992
	15.00	33.70	58993
	15.35	33.60	58994
	7.00	39.50	57701
	8.20	39.08	57702
	10.05	39.02	57703
	9.10	13.70	57704
	12.00	30.00	57705

	12.06	24.00	10318
	11.42	14.50	10319
	12.33	24.00	10320
	13.55	24.00	10320
28/6/22	7.00	39.80	63617
	7.53	32.71	63618
	9.31	32.51	63619
	10.15	11.20	63620
	11.15	20.10	63621
	10.35	16.70	63622
	12.30	17.30	63623
	13.23	33.27	63624
	14.43	31.59	63625
	15.10	39.00	63626
	16.00	32.29	63627
	7.00	33.56	64165
	7.20	33.50	64166
	7.46	33.58	64167
	8.00	33.58	64168
	8.20	33.52	64169
	8.50	33.56	64170
	9.00	33.48	64171
	10.10	33.50	64172
	12.30	33.54	64173
	13.30	33.50	64174
	14.10	33.54	64175
	14.50	33.52	64176
	15.20	33.52	64177
	11.44	11.50	10321
	12.15	11.00	10321
	13.35	2.00	10322
	13.46	11.50	10323
29/6/22	7.00	40.00	63628
	15.14	10.00	10325
	8.15	39.50	63630
	9.50	39.50	63631
	15.10	12.00	10324
	10.40	32.24	63633
	11.10	38.92	63634
	12.35	39.48	63635
	13.20	33.50	64189
	15.10	31.95	63637
	15.45	32.08	63638
	16.15	39.60	63639
	7.00	33.58	64178
	7.20	33.56	64179
	7.40	33.50	64180
	8.00	33.54	64181
	8.20	33.50	64182
	8.20	33.50	64183
	9.30	33.50	64184
	11.30	33.46	64185
	12.20	33.60	64186
	12.50	33.52	64187
	13.20	33.50	64188
30/6/22	7.30	23.80	63640
	7.45	38.16	63641
	8.00	38.46	63642
	8.30	32.06	63643
	9.25	31.95	63644
	11.30	24.00	63645
	11.34	43.20	63646
	12.30	32.00	63647
	14.45	40.00	63648
	15.00	38.20	63649
	15.45	31.95	63650
	7.00	33.54	64190
	7.50	33.60	64191
	8.20	33.56	64192
	9.00	33.52	64193
	9.40	33.50	64194
	15.30	33.58	64195
	16.20	33.54	64196
	16.00	33.52	64197
	9.30	11.50	10326
	10.45	12.50	10326
	11.48	12.50	10326
	13.11	17.40	10327

Date	Time	Tonne	Docket Number	Total Tonnes
July				
1/7/22	7.00	33.64	64198	10,491.68
	7.40	33.50	63851	
	8.20	33.52	63852	
	9.00	33.58	63853	
	9.40	33.54	63854	
	10.20	33.50	63855	
	11.00	32.00	63858	
	12.50	32.00	63859	
	14.20	33.54	63860	
	15.00	33.52	63861	
	15.30	33.54	63862	
	7.30	18.00	64751	
	8.05	39.62	64752	
	11.15	3.00	64753	
	12.00	17.36	64754	
	13.50	12.60	64755	
2/7/22	10.00	33.50	63863	
	11.20	33.50	63864	
4/7/22	7.00	33.56	63865	
	7.40	33.58	63866	
	8.20	33.50	63867	
	9.00	33.56	63868	
	11.00	32.00	63869	
	12.50	33.62	63870	
	13.00	33.54	63871	
	14.00	23.00	63872	
5/7/22	7.00	33.54	63873	
	7.40	33.56	63874	
	8.20	33.48	63875	
	9.00	33.58	63876	
	9.40	33.52	63877	
	10.20	33.52	63878	
	11.00	33.56	63879	
	11.40	33.50	63880	
	12.10	33.50	63881	
	9.25	9.30	64756	
	9.25	13.36	64757	
6/7/22	10.06	10.80	10287	
	7.00	33.64	63882	
	7.40	33.54	63883	
	8.20	33.60	63884	
	9.00	33.54	63885	
	9.40	33.52	63886	
	10.20	33.48	63887	
	11.10	33.54	63888	
	12.00	33.58	63889	
7/7/22	11.21	31.60	10287	
	7.00	33.50	63890	
	7.40	33.56	63891	
	8.20	33.56	63892	
	9.00	33.52	63893	
	9.40	33.54	63894	
	10.20	33.58	63895	
	11.00	33.50	63896	
	11.30	33.54	63897	
	12.10	33.56	63898	
8/7/22	8.00	33.62	63856	
	8.30	33.56	63857	
	7.00	33.52	63899	
	7.40	33.50	63900	
	7.00	6.00	64758	
	9.00	10.00	10287	
	9.45	10.00	10287	
	10.20	10.00	10287	
	11.32	10.00	10287	
	12.50	10.00	10287	
	13.45	10.00	10287	
	8.20	33.54	64091	
	9.00	33.56	64092	
	9.20	33.54	64093	
	14.20	33.50	64094	
	15.00	33.54	64095	
	15.40	33.52	64096	
	7.30	31.88	63751	
	9.00	32.04	64752	
	9.20	8.50	63753	
	11.30	39.20	63754	
	14.00	32.30	63755	
11/7/22	10.45	38.80	63756	
	12.10	39.00	63757	
	7.00	33.54	64097	
	7.40	33.58	64098	
	8.20	33.50	64099	
	9.00	33.58	64100	
	9.40	33.62	64119	
	10.20	33.48	64120	
	11.00	33.54	64121	
	11.40	33.54	64122	

Date	Time	Tonne	Docket Number	Total Tonnes
August				
1/8/22	8.50	12.17	P/D	16,803.45
	9.55	11.40	P/D	
	11.04	30.42	66251	
	12.32	11.68	P/D	
	14.11	11.68	P/D	
	7.00	33.56	63951	
	7.40	33.58	63952	
	8.20	33.52	63953	
	9.00	33.52	63954	
	9.40	33.50	63955	
	10.20	33.54	63956	
	11.00	33.50	63957	
	13.00	12.00	63691	
	14.00	12.00	63692	
	14.10	11.85	63693	
	15.05	12.00	63694	
	15.10	11.50	63695	
	8.40	11.00	63747	
	9.45	12.00	63748	
	9.45	12.00	63749	
	10.52	12.00	63750	
	7.01	12.22	63788	
	8.10	12.06	63789	
	8.30	17.50	63790	
	9.10	9.00	63791	
	9.15	11.60	63792	
	10.50	11.78	63793	
	10.55	11.70	63794	
	11.46	12.22	63795	
	11.50	12.00	63796	
	11.50	12.00	63797	
	12.05	20.00	63798	
	12.50	11.70	63799	
	12.55	11.50	63800	
	8.04	7.29	10337	
	12.17	43.18	10338	
	13.15	16.80	10339	
	13.00	11.76	P/D	
2/8/22	7.00	33.46	63958	
	7.40	33.52	63959	
	8.20	33.58	63960	
	8.00	33.56	63961	
	9.40	33.52	63962	
	10.20	33.56	63963	
	11.00	33.54	63964	
	11.40	33.50	63965	
	12.20	33.50	63966	
	13.00	33.54	63967	
	7.10	35.20	63966	
	7.15	11.68	63967	
	8.25	11.20	63968	
	9.06	30.54	63969	
	10.00	11.86	63700	
	16.50	33.35	63847	
	10.00	16.80	63938	
	10.40	30.00	63939	
	11.30	11.84	63940	
	12.00	33.11	63941	
	12.40	11.26	63942	
	12.45	11.70	63943	
	11.40	11.60	63944	
	13.45	11.36	63945	
	14.00	32.00	63946	
	14.40	11.78	63947	
	14.50	11.78	63948	
	15.20	32.00	63949	
	16.00	12.10	63950	
3/8/22	7.00	33.62	63968	
	7.40	33.56	63969	
	8.20	33.52	63970	
	9.00	33.54	63971	
	9.40	33.48	63972	
	10.20	33.52	63973	
	11.00	33.50	63974	
	11.40	32.50	63975	
	13.00	32.50	63976	
	7.00	35.60	63848	
	7.00	12.10	63849	
	7.10	30.26	63850	
	7.20	23.44	64766	
	8.01	12.26	64767	
	9.30	12.08	64768	
	10.05	38.00	64769	
	10.40	11.64	64770	
	9.40	33.62	64771	
	10.20	33.48	64772	
	11.00	33.54	64773	
	11.40	33.54	64774	

Date	Time	Tonne	Docket Number	Total Tonnes
September				
1/9/22	7.30	30.50	65624	13,221.98
	7.30	30.38	65625	
	7.30	30.42	65626	
	11.20	30.50	65627	
	11.30	32.42	66253	
	11.50	38.08	66254	
	12.00	38.24	66255	
	14.05	30.04	66256	
	15.40	32.16	66257	
	7.00	33.60	65657	
	7.40	33.64	65658	
	8.20	33.54	65659	
	9.00	33.56	65660	
	9.40	33.52	65661	
	10.20	33.50	65662	
	11.00	33.48	65663	
	11.40	33.56	65664	
	12.20	33.48	65665	
	13.00	33.50	65666	
	13.40	33.60	65667	
	14.20	33.50	65668	
	9.16	8.40	8989	
	14.11	2.20	8990	
2/9/22	7.36	33.50	8991	
	9.15	10.96	66301	
	11.20	31.50	66302	
	12.00	32.00	66303	
	13.05	12.00	66304	
	13.05	20.00	66305	
	13.30	39.32	66306	
	14.40	32.00	66307	
	12.05	33.62	65701	
	7.40	33.54	65702	
	8.20	33.50	65703	
	9.00	33.54	65704	
	9.00	32.00	65705	
	9.30	32.00	65706	
	14.00	33.50	65707	
	10.15	11.00	9953	
	10.46	6.00	9954	
5/9/22	7.18	30.32	66308	
	8.50	32.05	66309	
	12.05	32.00	66310	
	12.35	29.20	66311	
	13.57	11.00	66312	
	14.00	20.00	66313	
	7.00	33.56	65708	
	7.40	33.56	65709	
	8.20	33.52	65710	
	9.00	33.54	65711	
	9.00	33.50	65712	
	9.40	33.52	65713	
	10.20	33.56	65714	
	14.40	33.56	65715	
	15.30	33.54	65716	
	14.23	21.00	9955	
	14.26	2.40	9956	
6/9/22	7.00	25.00	66314	
	7.00	27.90	66315	
	7.10	32.00	66316	
	7.30	30.00	66317	
	10.30	32.04	66318	
	7.00	33.48	65716	
	7.40	33.64	65717	
	8.20	33.56	65718	
	9.00	33.52	65719	
	9.40	33.54	65720	
	10.20	33.54	65721	
	11.00	33.50	65722	
	10.40	33.50	65723	
	12.20	33.60	65724	
	13.40	33.58	65725	
	14.20	33.52	65726	
	15.00	33.52	65727	
	8.43	32.00	9957	
	9.30	32.00	9957	
	10.45	32.00	9957	
	11.55	32.00	9957	
	12.25	22.00	9957	
	12.03	2.24	9958	
	13.00	11.00	9959	
	12.05	30.14	64901	
	13.47	30.35	64902	
	14.30	31.00	64903	
	15.18	30.15	64904	
	11.56	11.84	64771	
	13.00	6.00	64772	
	13.30	12.10	64773	
	13.45	31.55	64774	

Date	Time	Tonne	Docket Number	Total Tonnes
October				
4/10/22	7.10	28.82	64925	12,609.91
	7.20	31.20	64926	
	7.30	32.62	64927	
	7.30	30.38	64928	
	7.35	38.40	64929	
	8.30	32.70	64930	
	8.50	39.00	64931	
	9.45	9.30	64932	
	10.00	31.70	64933	
	10.10	32.50	64934	
	10.25	29.54	64935	
	10.45	30.50	64936	
	11.20	40.40	64937	
	11.30</			

	12.20	33.52	64123
	13.00	33.50	64124
	14.08	11.50	10420
12/7/22	7.00	33.50	64125
	7.40	33.54	64126
	8.20	33.52	64127
	9.00	33.54	64128
	9.40	33.54	64129
	10.20	33.62	64130
	11.00	33.58	64131
	11.40	33.54	64132
	7.50	5.00	63758
	8.00	35.88	63760
	8.10	35.06	63761
	9.10	8.00	63762
	10.45	9.20	63763
	12.15	6.00	63764
	12.40	32.80	63765
	8.08	4.46	10421
	11.01	6.00	10422
	13.38	2.00	10423
13/7/22	7.15	6.50	63766
	12.15	6.06	63767
	12.42	3.32	63768
	13.35	39.22	64133
	7.00	33.56	64133
	7.40	33.50	64134
	8.20	33.50	64135
	9.00	33.52	64136
	9.40	33.56	64137
	10.20	33.54	64138
	11.00	33.58	64139
	11.40	33.50	64140
	12.20	33.52	64141
	13.00	33.50	64142
	7.35	12.00	10424
	11.06	7.68	10425
14/7/22	7.00	33.56	64143
	7.40	33.52	64144
	8.20	33.56	64145
	9.00	33.58	64146
	9.40	33.50	64147
	10.20	33.50	64148
	11.00	33.54	64149
	11.30	33.54	64150
	7.45	38.92	63770
	9.30	17.50	63771
	13.30	33.50	63772
	16.00	39.30	64199
	7.14	0.51	10426
	8.48	1.50	10427
	11.23	5.00	10428
	16.35	32.00	10429
	15.00	32.00	10429
15/7/22	7.20	38.26	64200
	7.00	33.52	63773
	7.40	33.48	63774
	8.20	33.62	63775
	9.00	33.54	63776
	9.40	33.52	63777
	10.20	33.56	63802
	11.00	33.56	63803
	10.15	35.70	64759
	13.00	32.18	64760
	14.30	36.48	64761
	13.29	5.00	8975
	10.20	32.00	8976
	11.05	32.00	8976
	11.55	32.00	8976
	12.45	32.00	8976
	13.30	19.90	8976
	16.35	32.00	10429
16/7/22	10.55	11.50	10288
18/7/22	7.30	32.80	63652
	8.15	39.60	63653
	10.00	39.62	63654
	11.45	25.58	63655
	14.00	32.70	63656
	15.30	32.62	63657
	7.00	33.60	63701
	7.40	33.52	63702
	8.20	33.56	63703
	9.00	33.54	63704
	14.10	33.52	63705
	14.50	33.54	63706
	15.30	33.50	63707
	16.10	33.52	63708
	11.45	9.60	10290
	13.43	6.00	10291
	16.32	28.00	10292
	10.20	30.00	10293

	14.50	11.20	64775
	15.20	31.63	64776
	16.40	31.48	64777
4/8/22	7.00	33.52	63977
	7.40	33.54	63978
	8.20	33.52	63979
	9.00	33.50	63980
	9.40	33.56	63981
	10.20	33.56	63982
	11.00	33.52	63983
	11.40	33.60	63984
	14.10	33.54	63985
	14.50	33.52	63986
	7.00	35.02	64778
	7.00	12.00	64779
	7.18	11.38	64780
	8.10	11.68	64781
	8.30	11.78	64782
	9.20	38.24	64783
	9.45	12.14	64784
	10.00	12.38	64785
	10.40	38.94	64786
	10.52	11.92	64787
	10.59	11.86	64789
	11.40	12.08	64790
	12.25	12.24	64791
	12.50	23.60	64792
	13.30	12.06	64793
	13.50	12.14	64794
	14.00	17.50	64795
	14.15	32.00	64796
	14.50	11.90	64797
	15.30	37.67	64798
	15.50	33.27	64799
	16.00	31.80	64800
	8.33	20.00	10340
	8.39	26.00	10341
	10.29	3.00	10342
	16.40	36.56	64851
	16.45	33.60	64301
	16.55	36.50	64302
5/8/22	7.00	33.56	63987
	7.40	33.50	63988
	9.00	37.50	64303
	9.15	9.00	64304
	9.50	31.60	64305
	10.00	32.89	64306
	10.15	37.20	64307
	14.05	31.68	64308
	8.20	33.50	64252
	9.00	33.64	64253
	9.40	33.54	64254
	10.20	33.58	64255
	11.00	33.52	64256
	14.30	37.40	64501
	14.50	5.48	64502
	15.00	33.83	64503
	15.10	37.60	64504
	15.30	31.22	64505
	7.44	14.50	10358
	10.24	15.00	10359
	7.30	31.70	64506
	10.30	39.85	64507
	11.50	38.50	64508
8/8/22	7.00	38.08	64509
	8.15	39.52	64510
	9.40	39.26	64511
	11.00	38.52	64512
	11.00	31.50	64513
	13.00	31.40	64514
	13.15	15.20	64515
	14.15	5.86	64516
	15.30	32.00	64517
	15.40	39.40	64518
	16.00	32.42	64519
	7.23	12.00	10360
	7.27	4.80	10361
	7.50	12.00	10362
	8.40	2.00	10363
	9.52	3.00	10364
	9.54	3.60	10365
	13.07	3.00	10366
	7.00	33.52	64551
	7.40	33.52	64552
	8.20	33.56	64553
	9.00	33.48	64554
	9.40	33.54	64555
	10.20	33.56	64556
	11.00	33.58	64557
	11.00	30.00	64558
	12.40	33.52	64559

	14.14	30.00	66323
7/9/22	8.50	11.80	66324
	9.20	32.18	66325
	7.00	33.50	65728
	7.40	33.56	65729
	8.20	33.54	65730
	9.00	33.50	65731
	9.40	33.64	65732
	10.20	33.52	65733
	11.00	33.48	65734
	11.40	33.56	65735
	12.20	33.52	65736
	8.09	14.50	9960
	14.44	15.97	9961
	15.32	14.00	9962
	15.50	38.98	64905
	16.00	37.58	66326
8/9/22	7.10	9.60	66327
	7.20	32.45	66328
	8.40	32.52	66329
	10.40	6.00	66330
	14.30	32.62	66331
	16.00	33.10	66332
	7.00	33.54	65737
	7.40	33.54	65738
	8.20	33.56	65739
	9.00	33.50	65740
	9.40	33.52	65741
	8.20	33.50	65742
	11.00	33.56	65743
	11.40	33.54	65744
	12.20	33.56	65745
	16.15	39.62	64906
	15.50	33.60	65746
9/9/22	7.00	33.58	65747
	8.20	33.58	65748
	8.00	33.70	65749
	8.30	33.50	65749
	9.00	33.65	65750
	10.15	33.90	64851
	10.55	33.70	64852
	11.30	33.70	64853
	12.10	33.60	64854
	12.45	33.70	64855
	9.10	6.00	65051
	10.40	32.50	65052
	13.30	24.00	65053
	15.45	33.12	65054
	15.56	11.28	8992
12/9/22	7.40	33.22	65056
	9.00	32.62	65057
	10.00	38.32	65058
	13.00	3.00	65059
	10.20	33.58	65060
	14.50	39.54	65061
	16.00	32.22	65062
	16.25	39.00	65063
	8.17	30.00	8993
	9.30	30.00	8993
	15.30	30.00	8993
	11.50	30.00	8993
	7.00	33.60	65069
	7.25	33.70	65070
	7.55	33.80	65071
	8.25	33.60	65072
	9.05	33.70	65073
	9.35	33.70	65074
	10.05	33.50	65075
	10.55	33.75	65076
	11.30	33.80	65077
13/9/22	8.00	8.00	65083
	10.15	4.48	65089
	10.20	7.50	65090
	11.15	32.80	65091
	13.00	34.20	35642
	13.00	21.60	65643
	13.00	24.00	65644
	13.30	39.08	65645
	14.45	37.32	65646
	15.00	32.42	65647
	15.30	19.20	65648
	15.50	32.88	65649
	16.35	39.28	65650
	7.00	33.64	65678
	7.40	33.52	65679
	8.20	33.52	65680
	9.00	33.56	65681
	9.40	33.54	65682
	10.20	33.56	65683
	11.00	33.50	65684
	11.40	33.54	65685
	12.20	33.52	65686

	12.30	33.50	65764
	13.00	33.50	65765
	13.00	33.54	65766
	16.30	39.24	66009
	7.20	32.08	65845
	8.20	33.50	65846
	12.00	37.40	65847
	12.15	32.50	65848
	15.05	39.62	65849
	16.20	32.42	65850
	12.57	2.40	10470
11/10/22	7.00	33.56	65767
	7.40	33.52	65768
	8.20	33.50	65769
	9.00	33.52	65770
	12.10	33.56	65771
	10.20	33.56	65772
	11.00	33.58	65773
	11.40	33.50	65774
	12.20	33.52	65775
	12.30	30.50	65776
	16.20	33.52	65777
	9.00	8.50	66010
	9.15	31.20	66011
	9.30	31.88	66012
	10.45	33.00	66013
	11.00	8.00	66014
	12.30	40.00	66015
	14.00	32.60	66016
	15.30	33.06	66017
	17.00	33.50	66018
	12.09	4.04	10471
12/10/22	7.00	33.50	66019
	7.40	33.58	66020
	8.20	33.58	66021
	9.00	33.54	66022
	9.40	33.56	66023
	10.20	33.50	66024
	11.00	33.52	66025
	11.40	33.54	66026
	12.20	33.56	66027

	11.15	31.00	10293
	12.01	32.50	10293
	12.55	32.50	10293
	13.30	32.50	10293
	14.10	32.50	10293
	14.45	23.62	10293
19/7/22	7.10	28.40	63658
	8.15	3.60	63659
	9.30	17.80	63660
	11.00	7.20	63661
	12.00	32.48	63662
	13.20	12.50	63663
	14.50	33.22	63664
	15.45	33.10	63665
	15.55	1.30	63666
	7.00	33.52	63709
	7.40	33.56	63710
	8.20	33.50	63711
	9.00	33.54	63712
	9.40	33.64	63713
	10.20	33.50	63714
	11.00	33.52	63715
	11.40	33.58	63716
	12.20	33.56	63717
	13.00	33.50	63718
	13.00	33.50	63719
	13.30	33.50	63720
	11.58	6.53	10294
	12.02	12.00	10295
20/7/22	7.10	34.00	63667
	7.10	17.98	63668
	12.18	6.28	63669
	13.15	31.88	63670
	13.40	5.72	63671
	15.12	5.98	63672
	15.50	39.62	63673
	15.30	32.00	63674
	7.10	33.60	63721
	7.50	33.52	63722
	8.30	33.52	63723
	9.10	33.58	63724
	9.40	33.48	63725
	10.20	33.56	63726
	11.00	33.54	63727
	14.40	33.54	63728
	7.26	30.00	10296
	11.06	24.00	10297
	11.00	32.00	10298
	11.30	32.00	10298
21/7/22	7.40	7.20	63675
	7.40	23.64	63676
	11.35	3.50	63677
	13.15	3.50	63678
	13.35	4.80	63679
	14.00	17.70	63680
	15.00	19.20	63681
	15.01	4.50	63682
	15.15	20.60	63683
	15.45	38.24	63684
	7.00	33.50	63729
	7.40	33.54	63730
	8.20	33.50	63731
	9.00	33.58	63732
	10.50	33.56	63733
	11.30	33.52	63734
	12.10	33.58	63735
	12.50	33.58	63736
	13.20	33.54	63737
	13.50	33.54	63738
	14.32	32.00	10299
22/7/22	7.00	33.64	63739
	10.00	31.00	64762
	15.40	33.25	64763
	7.15	19.20	64764
	10.45	7.20	64765
	7.40	33.54	63778
	8.20	33.54	63779
	9.00	33.58	63780
	9.40	33.50	63781
	10.20	33.56	63782
	11.00	33.56	63783
	11.30	33.52	63784
	14.35	32.00	63805
23/7/22	7.28	3.00	10328
25/7/22	10.20	12.00	10329
	11.28	12.00	10329
	12.10	12.00	10329
	13.00	12.00	10329
	13.46	12.00	10329
	14.32	12.00	10329
	15.15	12.00	10329

	13.20	33.56	64560
	14.00	33.62	64561
9/8/22	7.37	14.83	64520
	9.15	12.00	64521
	12.40	39.20	64522
	13.50	32.50	64523
	7.00	33.56	64562
	7.40	33.50	64563
	8.20	33.56	64564
	9.00	33.54	64565
	9.30	33.58	64566
	9.30	32.00	64567
	14.00	33.54	64568
	14.30	33.50	64569
	15.10	33.50	64570
	15.40	33.56	64571
	16.20	33.52	64572
	7.10	11.70	10367
	7.40	12.30	10367
	7.48	12.16	10367
	8.54	11.26	10367
	9.17	11.50	10367
	9.24	11.16	10367
	10.22	10.86	10367
	11.14	10.50	10367
	11.18	11.56	10367
	11.47	11.30	10367
	13.20	11.66	10367
	13.26	11.80	10367
	13.22	11.54	10367
	16.18	28.00	10368
	14.28	16.00	10369
	7.21	22.00	10490
	14.12	14.00	10491
10/8/22	8.45	22.22	64524
	10.10	32.42	64525
	11.30	32.62	64526
	16.15	32.52	64527
	7.00	33.60	64573
	7.40	33.54	64574
	8.20	33.52	64575
	9.00	33.52	64576
	9.40	33.52	64577
	14.00	33.50	64578
	14.40	33.50	64579
	15.30	33.54	64580
	16.10	33.48	64581
	16.40	33.58	64582
	8.46	2.00	10370
	8.48	3.00	10371
	12.08	5.50	10372
	12.42	39.00	10373
	14.20	9.00	10374
11/8/22	7.30	32.38	64528
	7.00	7.40	64529
	8.20	37.70	64530
	9.00	32.42	64531
	10.40	33.82	64532
	13.15	11.20	64533
	13.15	19.90	64534
	14.35	32.70	64535
	15.40	32.25	64536
	15.50	22.28	64537
	16.00	30.84	64538
	14.10	11.28	64539
	7.00	33.52	64583
	7.10	33.56	64584
	7.40	33.50	64585
	7.50	33.58	64586
	8.20	33.54	64587
	8.30	33.56	64588
	9.00	32.00	64589
	9.40	33.54	64590
	10.20	33.58	64591
	10.50	33.58	64592
	11.30	33.52	64593
	11.35	33.52	64594
	14.00	33.50	64591
	14.30	33.54	64592
	15.00	33.50	64593
	7.05	12.76	10375
	8.50	12.00	10375
	10.12	12.00	10375
	11.40	11.80	10375
	13.03	12.00	10375
	14.20	11.52	10432
	7.00	33.56	64594
	7.10	33.64	64595
	8.00	32.00	64596
	8.30	32.00	64596
	7.00	12.30	10343
	8.30	12.00	10343
	9.56	12.12	10343
	11.30	12.00	10343
	12.55	11.80	10343

	12.30	33.50	65687
	13.00	33.50	65688
	13.30	33.50	65689
	14.00	33.50	65690
	14.30	33.50	65691
	7.10	10.20	89994
	7.15	4.80	89995
	8.00	30.00	89996
	9.00	22.50	89996
	13.15	13.88	89997
14/9/22	7.00	33.50	65692
	7.40	33.56	65693
	8.20	33.58	65694
	9.00	33.54	65695
	9.40	33.56	65696
	10.20	33.50	65697
	11.00	33.52	65698
	11.40	33.54	65699
	12.20	33.48	65700
	7.15	38.40	65599
	8.30	30.00	65600
	8.30	8.02	64444
	8.40	31.00	64445
	9.20	33.18	64446
	11.14	31.00	64447
	10.45	33.20	64448
	14.00	5.30	10391
	8.33	7.70	89998
	9.49	7.50	89999
	9.44	14.50	90000
	16.18	28.00	10368
15/9/22	8.42	8.00	10392
	8.41	2.45	10393
	13.17	3.84	10394
	7.30	21.60	64449
	8.15	9.18	64450
	11.10	8.00	66333
	9.55	24.00	66334
	12.30	24.00	66335
	13.10	7.84	66336
	13.40	32.36	66337
	15.00	32.72	66338
16/9/22	7.10	4.50	66339
	7.00	21.60	66340
	8.20	33.50	66341
	9.00	32.60	66342
	10.15	32.38	66343
	10.00	24.00	66344
	11.15	3.90	64472
	13.30	7.00	64473
	7.00	33.52	64474
	7.40	33.50	64475
	8.20	33.50	64476
	9.40	33.52	64477
	9.50	33.56	64478
	10.30	33.52	64479
	11.10	33.58	64480
	11.50	33.54	64481
	7.00	33.58	64482
	7.40	33.62	64483
	8.20	33.60	64484
	9.00	33.52	64485
	9.40	33.54	64486
	10.20	33.56	64487
	11.00	33.58	64488
	11.40	33.52	64489
	12.20	33.50	64490
	13.00	33.52	64491
	12.30	11.20	64856
	12.30	20.00	64857
	13.00	24.00	64858
	7.35	11.52	9501
	10.35	7.50	9502
	13.01	8.30	9503
	15.39	14.30	9504
17/9/22	9.00	38.36	64859
	9.40	39.58	64860
19/9/22	7.16	32.90	64861
	7.30	38.32	64862
	7.00	21.60	64863
	8.00	12.00	64864
	8.15	11.40	64865
	8.20	33.15	64866
	8.30	7.00	64867
	9.06	12.40	64868
	10.00	32.52	64869
	10.00	24.00	64870
	10.15	12.10	64871
	11.15	32.50	64872
	11.20	12.40	64873
	11.30	4.20	64874
	11.45	12.20	64875

	10.00	32.00	9973
	10.52	3.20	9974
	12.02	36.50	9975
	12.46	8.00	9976
	13.03	4.60	9977
	9.13	24.00	9978
	10.49	12.00	9979
	12.51	33.00	9980
	12.35	37.72	66087
	15.35	37.06	66088
15/10/22	8.00	10.42	66089
17/10/22	7.45	12.00	66090
	9.00	12.00	66091
	10.30	38.20	66092
	13.20	32.00	66093
	15.30	38.48	66094
	11.00	33.58	65501
	7.40	33.52	65502
	8.20	33.56	65503
	9.00	33.54	65504
	9.40	33.54	65505
	15.30	33.52	65506
	16.10	33.56	65507
	17.00	33.54	65508
	7.55	8.00	9981
	10.19	1.50	9982
	10.50	2.40	9983
	12.09	15.02	9984
	15.33	3.00	9985
18/10/22	7.10	33.52	65509
	7.50	33.56	65510
	8.30	33.58	65511
	9.10	33.48	65512
	9.30	33.54	65513
	10.30	33.52	65514
	11.10	33.58	65515
	12.00	33.60	65516

	15.58	12.00	10329
	14.28	12.00	10330
	14.33	32.00	10331
	7.20	33.47	63804
	7.30	35.62	63806
	12.45	32.79	63807
	13.00	34.30	63808
	15.45	32.45	63809
	7.00	33.48	63901
	7.40	33.54	63902
	8.20	33.52	63903
	9.00	33.50	63904
	9.40	33.56	63905
	10.20	33.50	63906
	11.00	33.50	63907
	11.40	33.58	63908
	15.00	33.48	63909
26/7/22	8.28	8.00	10332
	10.29	12.00	10333
	10.32	20.00	10334
	10.51	32.00	10335
	7.00	35.14	63810
	8.00	32.00	63811
	9.45	39.68	63812
	11.35	7.20	63813
	11.40	35.21	63814
	7.00	33.54	63910
	7.40	33.54	63911
	8.20	33.50	63912
	9.00	33.52	63913
	9.40	33.50	63914
	10.20	33.50	63915
	11.00	33.58	63916
27/7/22	7.00	33.56	63917
	7.40	33.52	63918
	8.20	33.54	63919
	9.00	33.50	63920
	9.40	33.50	63921
	10.20	33.48	63922
	11.00	33.54	63923
	11.40	33.54	63924
	12.20	33.52	63925
	7.40	32.38	63816
	9.10	32.15	63817
	11.07	12.06	63818
	12.15	11.54	63819
	13.30	11.90	63820
	13.00	10.74	63821
	14.15	16.25	63822
	14.40	11.56	63823
	14.41	12.02	63824
	15.00	32.36	63825
	15.15	16.48	63826
	15.50	11.54	63827
	16.00	0.86	63828
	15.59	11.12	63829
	10.23	12.00	8977
	11.00	12.00	8977
	11.41	12.00	8977
	12.31	12.00	8977
	12.58	12.00	8977
	13.35	12.00	8977
28/7/22	7.00	33.50	63926
	7.40	33.56	63927
	8.20	33.54	63928
	9.00	33.50	63929
	9.40	33.58	63930
	10.20	33.52	63931
	11.00	33.52	63932
	14.00	33.48	63933
	14.50	33.54	63934
	15.30	33.58	63935
	7.00	32.00	63830
	7.25	11.76	63831
	8.30	12.30	63832
	9.50	39.08	63833
	10.00	12.50	63834
	11.10	3.50	63835
	11.10	38.40	63836
	11.15	31.90	63837
	11.30	11.96	63838
	11.50	31.90	63839
	13.10	12.00	63840
	14.00	11.66	63841
	15.00	11.98	63842
	15.10	37.92	63843
	15.50	31.70	63844
	16.50	38.04	63845
	11.00	12.00	8978
	11.35	12.00	8978
	12.10	12.00	8978

	8.40	32.37	64309
	10.00	12.16	64310
	10.00	32.34	64311
	10.10	32.88	64312
	11.30	12.00	64313
	11.30	32.79	64314
	11.43	11.80	64315
	12.54	11.96	64316
	14.00	12.10	64317
	9.30	32.00	64257
	7.40	33.52	64258
	7.50	33.54	64259
	8.20	33.50	64260
	8.30	33.52	64261
	9.00	33.60	64262
	9.10	33.54	64263
	9.40	33.48	64264
	9.50	33.54	64265
	10.00	33.50	64266
	11.25	33.50	64267
	12.30	33.50	64268
	13.45	33.50	64269
	15.42	10.03	10344
	15.54	27.84	10345
	15.15	33.50	64351
	7.33	5.00	8984
	7.46	3.64	8985
	13.16	3.30	8986
	14.24	19.00	8987
13/8/22	12.29	12.00	10433
	11.00	30.80	64352
	11.25	40.10	64353
	11.30	33.46	64354
15/8/22	10.04	36.00	10434
	11.35	6.00	10435
	14.27	2.00	10436
	15.09	11.00	10437
	15.15	24.00	10438
	15.27	6.00	10439
	7.30	28.50	64355
	8.50	32.32	64356
	10.00	32.80	64357
	13.15	32.00	64358
	13.45	11.74	64359
	13.55	38.10	64360
	14.30	28.84	64361
	14.30	32.00	64362
	15.20	37.80	64363
	15.30	33.00	64364
	15.30	11.40	64365
	7.00	33.58	63989
	7.40	33.64	63990
	8.20	33.52	63991
	9.00	33.54	63992
	9.40	33.60	63993
	10.20	33.48	63994
	13.30	33.50	63995
16/8/22	8.18	14.50	10440
	9.45	4.15	10441
	12.48	3.00	10442
	13.19	6.00	10443
	13.35	18.00	10444
	17.08	22.08	10445
	8.40	36.20	64366
	10.00	11.92	64367
	10.20	32.00	64368
	10.25	32.70	64369
	11.30	29.10	64370
	12.05	12.20	64270
	12.20	36.10	64271
	14.52	12.04	64272
	15.30	12.10	64273
	15.45	11.92	64274
	16.15	28.50	64275
	7.00	33.54	63996
	7.10	33.54	63997
	7.40	33.58	63998
	7.50	33.52	63999
	8.20	33.56	64000
	8.30	33.52	64540
	9.00	33.60	64541
	9.40	33.54	64542
	9.30	32.00	64545
	9.30	32.00	64546
17/8/22	7.34	3.02	10446
	8.00	38.50	10447
	11.03	3.84	10448
	11.38	9.00	10449
	8.17	14.80	10450
	9.31	14.50	10450
	11.00	14.60	10450

	12.00	24.00	64876
	12.06	12.40	64877
	13.00	12.30	64878
	14.00	38.16	64879
	13.00	4.80	64880
	13.45	12.70	64881
	14.00	32.96	64882
	14.15	5.96	64883
	14.30	12.20	64884
	14.45	24.00	64885
	15.20	32.92	64886
	15.55	38.54	64887
	7.00	33.58	65001
	7.40	33.58	65002
	8.20	33.48	65003
	9.00	33.54	65004
	9.40	33.52	65005
	10.20	33.50	65006
	11.00	33.56	65007
	11.40	33.50	65008
	12.20	33.50	65009
20/9/22	7.00	33.56	65010
	7.40	33.60	65011
	8.20	33.50	65012
	9.00	33.52	65013
	9.40	33.56	65014
	10.20	33.58	65015
	11.00	33.50	65016
	11.40	33.50	65017
	12.20	33.54	65018
	16.20	13.00	65019
	16.50	13.00	65020
	17.00	13.50	65021
	7.20	5.30	64888
	7.00	21.60	64889
	8.00	12.00	64890
	8.10	39.30	64891
	8.30	7.50	64892
	9.00	30.00	64893
	9.35	39.12	64894
	9.30	24.00	64895
	10.35	32.10	64896
	12.00	32.50	64897
	14.00	32.00	64898
	14.20	32.50	64899
	14.55	33.20	64900
	15.15	32.00	64907
	16.47	32.00	64908
	8.38	27.00	9505
	10.23	18.00	9506
	11.33	7.68	9507
21/9/22	7.20	33.00	64909
	8.15	7.00	64910
	10.20	39.58	64911
	11.15	3.84	64912
	11.40	39.32	64913
	11.45	32.70	64914
	12.30	19.20	64915
	12.45	38.18	64916
	13.05	12.60	64917
	15.00	31.68	64918
	17.00	39.24	64919
	7.00	33.62	65022
	7.40	33.54	65023
	8.20	33.52	65024
	9.00	33.54	65025
	9.40	33.48	65026
	10.57	14.40	9508
23/9/22	7.30	33.52	65027
	8.00	33.48	65028
	8.40	33.58	65029
	9.10	33.54	65030
	9.40	33.56	65031
	10.20	33.58	65032
	14.00	33.52	66258
	14.40	33.56	66259
	15.20	33.52	66260
	7.15	13.50	9509
	7.50	39.58	66345
	16.35	39.34	66346
	11.00	12.00	9593
	7.00	32.24	66347
26/9/22	8.15	33.22	66348
	10.40	7.50	66349
	10.00	7.50	66350
	7.00	33.70	65033
	7.40	33.56	65034
	8.20	33.54	65035
	9.00	33.50	65036
	9.40	33.50	65037
	10.20	33.56	65038

	7.55	39.14	65778
	8.10	36.28	65779
	9.10	32.00	65780
	9.25	39.56	65781
	10.00	31.20	65782
	10.45	38.32	65783
	10.45	32.00	65784
	9.00	33.56	64962
	8.20	33.50	64963
	9.40	33.52	64964
	10.20	33.58	64965
	11.00	33.50	64966
	14.55	37.32	66038
	16.50	36.94	66039
	16.12	15.00	9513
22/10/22	7.25	39.18	66040
24/10/22	7.30	28.10	66041
	9.00	30.00	66042
	9.00	37.00	66043
	10.45	33.18	66044
	11.45	32.04	66045
	12.35	3.00	66046
	13.25	32.00	66047
	15.05	38.76	66048
	15.10	7.20	66049
	9.40	33.54	65867
	7.40	33.50	65868
	8.20	33.52	65869
	9.00	33.60	65870
	9.40	33.54	65871
	10.00	33.00	65872
	14.40	33.54	65873
	15.20	33.50	65874
25/10/22	8.35	7.10	66050
	7.00	33.58	65875
	7.40	33.58	65876
	8.20	33.52	65877
	9.00	33.50	65878
	9.40	33.56	65879
	10.20	33.54	65880
	11.00	33.54	65881
	11.40	33.56	65882

	12.45	12.00	8978
	13.21	12.00	8978
	7.18	2.18	8979
	11.07	6.00	8980
	13.17	30.00	8981
	14.00	20.00	8981
	13.27	12.00	8982
	14.51	3.00	8983
29/7/22	7.00	33.58	63936
	7.40	33.64	63937
	7.00	11.90	63846
	8.15	12.00	10300
	10.36	10.20	10356
	10.44	32.00	10357
	11.30	32.00	10357
	12.10	32.00	10357
	12.50	8.00	10357
	8.10	12.10	63740
	9.15	11.86	63741
	10.10	32.45	63742
	11.00	12.22	63743
	11.05	39.10	63744
	12.40	38.04	63745
	15.25	39.58	63746
	8.20	33.46	63685
	9.00	33.54	63686
	9.40	33.52	63687
	10.20	33.50	63688
	10.40	33.50	63689
	12.00	13.00	63690
	16.05	38.50	63785
	16.50	38.04	63786
	11.17	5.50	10336
30/7/22	8.47	17.54	63787

	7.10	11.76	64276
	7.20	32.50	64277
	7.00	33.52	64278
	7.50	33.48	64279
	8.20	33.56	64280
	9.00	33.56	64281
	9.20	33.58	64282
	9.40	33.48	64283
	10.20	33.54	64284
	9.40	32.00	64285
	10.40	28.60	64401
	10.40	32.62	64402
	10.45	11.66	64403
	11.00	11.50	64404
	11.20	38.00	64405
	11.45	6.48	64406
	12.00	12.32	64407
	12.00	11.54	64408
	12.05	32.92	64409
	13.45	11.78	64410
	13.35	11.78	64411
	14.30	6.60	64412
	14.45	11.46	64413
	14.50	11.30	64414
	16.40	29.40	64415
18/8/22	7.00	33.54	64286
	7.40	33.60	64287
	8.20	33.52	64288
	9.00	33.52	64289
	9.30	33.50	64290
	11.50	33.50	64291
	14.00	33.56	64292
	8.05	12.24	64597
	9.15	32.40	64598
	9.30	11.28	64599
	9.45	11.50	64600
	8.00	33.70	64416
	9.20	34.10	64417
	10.15	38.00	64418
	10.45	34.04	64419
	11.25	29.25	64420
	11.25	38.90	64421
	12.00	33.14	64422
	13.00	22.80	64423
	15.00	11.64	64424
	15.20	32.47	64425
	15.50	38.40	64426
	16.25	32.00	64427
	8.19	14.50	10346
	8.32	1.00	10347
	10.58	4.00	10348
	13.46	10.50	10349
	13.49	10.80	10350
	7.00	12.00	10376
	7.10	12.50	10376
	8.28	12.50	10376
	9.52	12.00	10376
	11.15	12.00	10376
	7.00	33.50	64293
	7.11	6.00	10377
	8.00	32.00	64318
	9.06	35.58	64319
	11.15	32.66	64320
	12.15	7.00	64321
	13.00	8.00	64322
	13.00	12.00	64323
	14.15	30.78	64324
	14.25	32.70	64326
	15.45	32.42	64327
	7.05	33.50	65551
	7.45	33.60	65552
	8.20	33.70	65553
	9.00	33.60	65554
	9.30	32.00	65555
	9.35	32.00	65556
	14.30	33.60	65557
	14.30	33.70	65558
	15.00	33.58	65560
	15.10	33.50	65561
	10.15	2.00	10451
	12.05	2.00	10452
	13.25	5.50	10453
20/8/22	8.04	14.40	10454
	8.08	43.50	10455
	11.05	32.00	64328
	12.00	39.22	64329
22/8/22	9.08	32.00	10457
	10.15	32.00	10457
	11.00	32.00	10457
	11.38	32.00	10457
	12.20	32.00	10457

	11.00	33.52	65039
	11.40	33.54	65040
	7.06	7.68	9964
	10.32	8.64	9965
	15.57	1.54	9967
	7.30	30.00	66261
	11.10	7.50	66262
	15.30	33.02	66263
	12.30	32.70	66264
	13.50	32.70	66265
27/9/22	7.30	32.00	66266
	7.50	39.38	66267
	9.00	32.00	66268
	9.30	38.44	66269
	10.20	32.00	66270
	11.45	32.00	66271
	13.00	31.30	66272
	13.20	32.00	66273
	13.20	33.50	66274
	14.00	33.54	66275
	14.40	33.54	66276
	7.00	33.52	65041
	7.40	33.56	65042
	8.20	33.52	65043
	9.00	33.50	65044
	9.40	33.58	65045
	10.20	33.54	65046
	11.00	33.56	65047
	11.30	33.58	65048
	12.10	33.52	65049
	12.50	33.54	65050
	14.30	32.10	65801
	15.25	32.52	65802
	9.00	33.50	65803
	9.20	33.56	65804
28/9/22	7.40	33.52	66278
	8.20	33.58	66279
	9.00	33.60	66280
	9.40	33.52	66281
	10.00	12.60	66282
	10.00	20.00	66283
	13.00	33.54	66284
	13.40	33.54	66285
	14.20	33.50	66286
	15.00	33.52	66287
	15.30	33.50	66288
	16.10	33.52	66289
	7.00	31.24	65804
	7.00	31.06	65805
	7.25	12.50	65806
	8.37	12.20	65807
	9.15	12.78	65808
	9.50	39.00	65809
	10.11	12.58	65810
	10.45	30.66	65811
	11.00	30.00	65813
	11.15	30.96	65814
	11.00	11.90	65815
	11.13	11.64	65816
	11.20	39.40	65817
	12.15	11.80	65818
	12.25	12.84	65819
	13.15	30.02	65820
	13.45	29.20	65821
	13.50	31.20	65822
	13.50	11.96	65823
	13.55	12.58	65824
	14.50	11.34	65825
	15.00	11.96	65826
	16.00	11.76	65827
	16.00	13.16	65828
	8.20	33.70	65553
	10.50	6.00	9969
29/9/22	7.00	33.52	66290
	7.40	33.54	66291
	8.20	33.56	66292
	9.00	33.48	66293
	9.40	33.54	66294
	10.00	12.50	66295
	10.00	20.00	66296
	12.20	32.00	66297
	13.58	66298	
	15.20	33.52	66299
	15.50	33.52	66300
	7.05	30.92	65829
	7.00	31.84	65830
	7.15	29.94	65831
	7.30	12.10	65832
	8.10	12.66	65833
	7.00	12.00	65834
	8.00	12.42	65835

	15.55	14.50	9525
	11.30	38.40	64667
28/10/22	7.00	32.30	65785
	8.15	36.50	65786
	8.30	32.22	65787
	8.40	38.00	65788
	9.50	32.62	65789
	13.20	32.10	65790
	13.50	33.28	65791
	14.30	32.44	65792
	14.45	10.56	65793
	14.50	40.00	65794
	15.10	33.24	65795
	15.00	10.80	65796
	16.00	33.00	65797
	16.30	33.18	65798
	7.00	33.50	65536
	7.40	33.54	65537
	8.20	33.54	65538
	9.00	33.54	65539
	9.40	33.58	65540
	10.20	33.52	65541
	11.00	33.50	65542
	11.40	33.56	65543
	12.00	33.50	65544
	14.50	33.60	65545
	15.30	33.56	65546
	16.10	33.50	65547
	11.39	28.50	10395
29/10/22	7.15	40.20	65799
	7.50	10.50	65800
31/10/22	7.20	39.10	65101
	8.00	38.74	65102
	8.00	8.00	65103
	8.15	40.00	65104
	8.30	21.60	65105
	9.40	38.96	65106
	10.20	17.66	65107
	9.50	38.02	65108
	7.30	32.46	64612
	7.00	33.52	64613
	7.40	33.56	64614
	8.20	33.52	64615
	9.00	33.54	64616
	9.40	33.58	64617
	10.20	33.58	64618
	11.00	33.50	64619
	7.08	11.00	10396
	13.35	11.00	10397
	10.15	32.00	65110
	10.00	8.00	65111
	10.27	2.80	65112
	10.40	30.00	65113
	11.00	18.02	65114
	11.30	36.44	65115
	7.00	32.50	65116
	9.30	32.20	65117
	11.30	32.80	65118
	11.40	32.00	65119
	11.50	19.00	65120
	11.50	11.00	65121
	13.05	32.50	65122
	13.30	35.62	65123
	13.30	32.00	65124
	14.00	24.00	65125
	14.30	34.17	65126
	14.30	34.82	65127
	14.50	3.00	65128
	15.15	32.66	65129
	16.00	35.76	65130
	16.20	32.80	65131

	13.50	38.80	64662
	13.55	33.00	64663
	14.10	32.00	64663
	14.30	31.68	64664
	14.00	27.60	64665
	15.15	33.64	64666
	16.00	33.22	64667
	16.20	39.38	64668
	7.00	33.56	65352
	7.40	33.52	65353
	8.20	33.54	65354
	9.00	33.54	65355
	9.40	33.48	65356
	10.20	33.56	65357
	11.00	33.58	65358
	11.20	13.00	65359
	12.22	30.00	10488
	13.50	30.00	10488
	13.37	10.00	10489
	15.17	24.00	10490
	15.21	44.00	10491
22/11/22	7.00	6.00	64669
	9.00	32.30	64671
	10.45	39.56	64672
	12.00	39.48	64673
	13.00	9.00	64674
	7.00	33.58	65360
	7.		

	13.00	32.00	10457		9.40	33.73	65836		12.00	31.98	65437
	10.23	3.50	10458		10.00	31.70	65837		12.30	33.80	65438
	11.07	0.55	10459		10.10	30.16	65839		13.40	33.96	65439
	14.06	51.00	10460		11.00	29.58	65840		15.10	34.10	65442
	16.53	50.00	10462		12.45	30.14	65841		16.40	38.46	65443
	16.55	25.20	10463		12.45	40.00	65842		8.16	18.00	10495
	7.15	28.75	64330		13.15	29.72	65843		8.26	2.16	10496
	8.30	32.98	64331		13.35	29.04	65844		8.23	11.50	10497
	12.10	38.20	64332		15.10	39.54	65751		12.01	28.00	10498
	12.11	29.62	64333		15.20	19.20	65752		13.08	0.70	10499
	12.30	32.42	64334		16.10	33.54	66001		14.08	6.00	10500
	13.00	32.00	64335		17.00	33.52	66002	25/11/22	7.00	33.70	65337
	14.30	32.64	64336		8.20	32.30	64492		7.00	33.60	65338
	14.40	32.00	64337		13.15	12.00	64493		7.35	33.60	65339
	16.20	28.60	64338		13.15	20.00	64494		7.35	33.50	65340
	7.00	33.60	65562		16.39	4.00	9970		8.20	33.60	65341
	7.40	33.54	65563		10.19	3.00	9971		7.00	39.50	65342
	8.20	33.58	65564		13.37	13.50	9972		7.00	6.00	65444
	9.30	33.56	65565	30/9/22	7.30	29.80	65753		7.05	32.90	65445
	10.30	33.50	65566		9.00	11.00	65754		7.51	3.54	65446
	11.30	33.58	65567		7.00	33.58	66003		9.05	33.70	66401
	12.10	33.64	65568		7.40	33.58	66004		9.45	33.70	66402
	13.00	33.52	65569		8.20	33.52	66005		11.35	33.60	66403
23/8/22	13.40	33.48	65570		9.00	33.54	66006		16.25	33.60	66404
	8.48	11.50	10464		9.40	33.56	66007		16.55	33.50	66405
	14.08	4.50	10465		12.10	17.28	64920		16.55	33.70	66406
	15.43	25.00	10466		14.15	33.00	64921		8.30	39.40	66451
	14.06	25.00	10466		14.40	15.36	64922		9.40	39.50	66452
	9.45	32.05	64339		15.15	32.90	64923		10.00	9.00	66453
	10.35	28.90	64340		16.05	39.62	64924		15.20	36.53	66455
	11.30	37.40	64341						16.00	38.04	66457
	13.45	32.00	64342						8.36	1.00	9542
	14.45	37.04	64343						9.00	8.00	9543
	15.00	31.82	64344						10.30	8.00	9543
	15.36	30.00	64345						11.15	8.00	9543
	7.00	33.52	65571						12.00	8.00	9543
	7.40	33.58	65572						12.50	8.00	9543
	8.20	33.54	65573						13.40	8.00	9543
	9.00	33.56	65574						14.20	8.00	9543
	9.40	33.60	65575						15.40	8.00	9543
	10.20	33.54	65576					26/11/22	7.20	33.00	66458
24/8/22	7.00	33.58	65577						7.40	39.56	66459
	7.40	33.54	65578						8.35	34.55	66460
	8.20	33.54	65579						9.05	39.58	66461
	9.00	33.50	65580					28/11/22	8.30	39.00	66462
	9.40	33.52	65581						9.20	32.94	66463
	10.20	33.60	65582						9.10	32.70	66464
	11.00	33.52	65583						10.40	32.70	66465
	11.40	33.48	65584						12.00	32.60	66466
	12.20	33.48	65585						13.45	32.50	66467
	10.20	36.94	65601						13.30	13.00	66468
	10.35	39.02	65602						16.10	32.42	66469
	11.00	31.00	65603						7.00	33.54	66407
	11.00	6.00	65604						7.40	33.54	66408
	11.10	29.60	65605						8.20	33.50	66409
	12.34	10.60	65606						9.00	33.60	66410
	16.00	29.40	65607						12.00	30.00	65451
25/8/22	7.00	33.62	65586						13.05	19.70	65452
	7.40	33.50	65587						13.30	30.00	65453
	8.20	33.54	65588						14.00	30.50	65454
	9.00	33.46	65589						14.10	2.40	65455
	9.40	33.52	65590						12.08	30.00	9544
	10.20	33.54	65591						12.40	30.00	9544
	11.00	33.52	65592						13.25	12.50	9544
	11.40	33.50	65593						14.31	6.90	9545
	7.10	11.00	65608						15.42	15.00	9546
	8.00	7.54	65609					29/11/22	15.24	38.17	65456
	9.45	37.36	65610						7.00	39.00	66470
	10.30	28.72	65611						7.00	33.05	66471
	11.00	32.22	65612						7.05	38.36	66472
	14.30	13.50	65613						7.00	9.60	66473
	15.43	29.70	65651						8.35	32.00	66474
	15.45	32.38	65652						9.45	7.20	66475
	15.48	31.98	65653						10.10	32.84	66476
	16.55	38.38	65655						11.03	3.02	66477
	12.01	20.20	9951						11.25	32.94	66478
	12.24	37.50	9952						11.30	32.90	66479
26/8/22	7.00	32.00	65656						11.30	32.12	66480
	7.00	33.54	65594						11.50	38.30	66481
	7.40	33.54	65595						9.15	32.60	66482
	8.20	33.52	65596						10.45	32.70	66483
	7.20	29.88	64547						12.45	32.82	66484
	7.30	11.58	64548						13.00	32.12	66485
	7.35	32.42	64549						13.10	32.70	66486
	7.50	22.64	64550						14.45	33.04	66487
	8.33	0.96	8988						14.58	1.98	66488
	9.00	33.48	64371						15.30	32.52	66489
	9.40	33.60	64372						16.20	38.30	66490
	10.20	33.50	64373						7.00	33.58	66411
	10.50	33.54	64374						7.20	33.52	66412
	11.00	33.54	64375						7.40	33.52	66413

	11.40	33.50	64376
	12.20	33.54	64377
	13.00	33.50	64378
	13.30	33.50	64379
	9.55	30.20	64294
	10.30	32.48	64295
	11.05	31.90	64296
	11.38	29.68	64297
	13.30	19.10	64298
	14.05	39.22	64428
	16.00	39.42	64429
	11.09	36.00	10378
	12.00	13.50	10378
27/8/22	11.10	12.50	64299
	11.50	32.60	64300
	11.49	14.40	10379
29/8/22	7.40	4.80	10380
	9.20	14.50	10381
	16.14	12.00	10382
	16.17	32.00	10383
	16.17	32.00	10383
	16.17	32.00	10383
	16.17	35.00	10383
	16.35	29.82	64430
	7.40	38.82	64431
	7.00	32.62	64432
	9.00	39.62	64433
	10.10	30.30	64434
	11.30	32.42	64435
	12.00	20.14	64436
	13.25	31.00	64437
	13.45	7.36	64438
	13.50	32.54	64439
	14.50	30.40	64440
	16.05	29.52	64441
	16.20	32.52	64442
	7.00	33.58	64380
	7.40	33.48	64381
	8.20	33.54	64382
	9.00	33.54	64383
	9.40	33.56	64384
	10.20	33.62	64385
	11.00	33.50	64386
	11.40	33.52	64387
	11.40	32.00	64388
	11.40	33.50	64389
	13.20	33.50	64390
	13.20	32.00	64391
	14.50	16.00	64392
	14.30	32.00	64393
30/8/22	10.45	38.92	64451
	8.12	0.66	10384
	8.24	14.50	10385
	8.22	9.60	10386
	9.00	43.20	10386
	9.45	5.59	10386
	10.40	33.50	10387
	17.11	17.28	10388
	7.00	33.52	64394
	7.20	33.50	64395
	7.50	33.56	64396
	8.00	33.60	64397
	8.20	33.56	64398
	8.40	32.00	64399
	9.00	33.52	64400
	7.00	12.00	64443
	8.30	32.15	64452
	8.30	11.82	64453
	9.22	8.04	64454
	9.40	39.02	64455
	9.40	33.52	64456
	10.20	33.50	64457
	10.30	33.50	64458
	11.50	33.50	64459
	13.00	33.50	64460
	10.20	29.52	64346
	12.10	32.15	64347
	13.00	32.00	64348
	14.20	32.00	64349
	15.15	30.20	64350
	14.00	19.20	65614
	15.45	32.34	65615
	16.55	37.92	65616
31/8/22	9.12	33.00	10389
	11.34	14.50	10390
	11.05	37.34	65597
	14.40	38.46	65598
	7.00	33.00	65617
	7.30	18.00	65618
	8.30	32.22	65619
	10.00	32.38	65620

	8.00	33.56	66414
	8.20	33.60	66415
	8.40	33.56	66416
	9.00	33.52	66417
	9.40	33.48	66418
	10.20	33.56	66419
	11.00	33.50	66420
	11.40	33.54	66421
	12.00	33.52	66422
	12.30	33.56	66423
	9.44	23.90	9547
	10.15	33.45	9547
	11.00	11.50	9547
	12.13	24.20	9548
	7.15	32.60	66491
	7.25	32.42	66492
	8.14	6.18	66493
	8.40	32.48	66494
	9.50	32.00	66495
	10.00	32.06	66496
	10.15	32.10	66497
	11.00	39.00	66498
	11.33	32.00	66499
	13.15	31.84	66500
	7.00	33.52	66424
	7.10	33.58	66425
	7.40	33.54	66426
	7.50	33.54	66427
	8.20	33.50	66428
	8.30	33.54	66429
	15.00	33.34	66351
	15.30	32.40	66352
	13.31	28.20	9549

30/11/22

11.00	29.20	65621
11.25	38.00	65622
15.45	32.42	65623
7.00	33.54	64461
7.40	33.54	64462
8.20	33.52	64463
9.00	33.50	64464
9.40	33.58	64465
9.20	33.50	64466
11.00	33.50	64467
12.20	33.50	64468
13.00	33.54	64469
13.40	33.54	64470
14.20	33.52	64471