

# Grants Rd Sand



1 January 2021 to 31 December 2021

**PROJECT APPROVAL 08\_0099**

**paa** architecture  
planning  
urban design  
landscape architecture  
**DESIGN**  
Peter Andrews + Associates  
PTY LTD

July 2022

## 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 2021
Annual Review end date	31 December 2021
Name of authorised reporting officer	Vanessa Colclough
Title of authorised reporting officer	Environmental Planner / Director
Date	13 July 2022

## Document History and Status

Project: 22\_001

Client: GR & AK Jones - Grants Road Sand Quarry

Version	Date issued	Issue	Author
A	21 April 2022	Draft Annual Report to Client	Vanessa Colclough
B	22 April 2022	Annual Report to the NSW Department of Planning and Environment	Vanessa Colclough
C	28 June 2022	Revisions to Annual Report incorporating additional information on air quality	Vanessa Colclough
D	13 July 2022	Revisions to Appendix 4 as per NSW Department of Planning and Environment's requirements	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 2021 to 31 December 2021 (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.

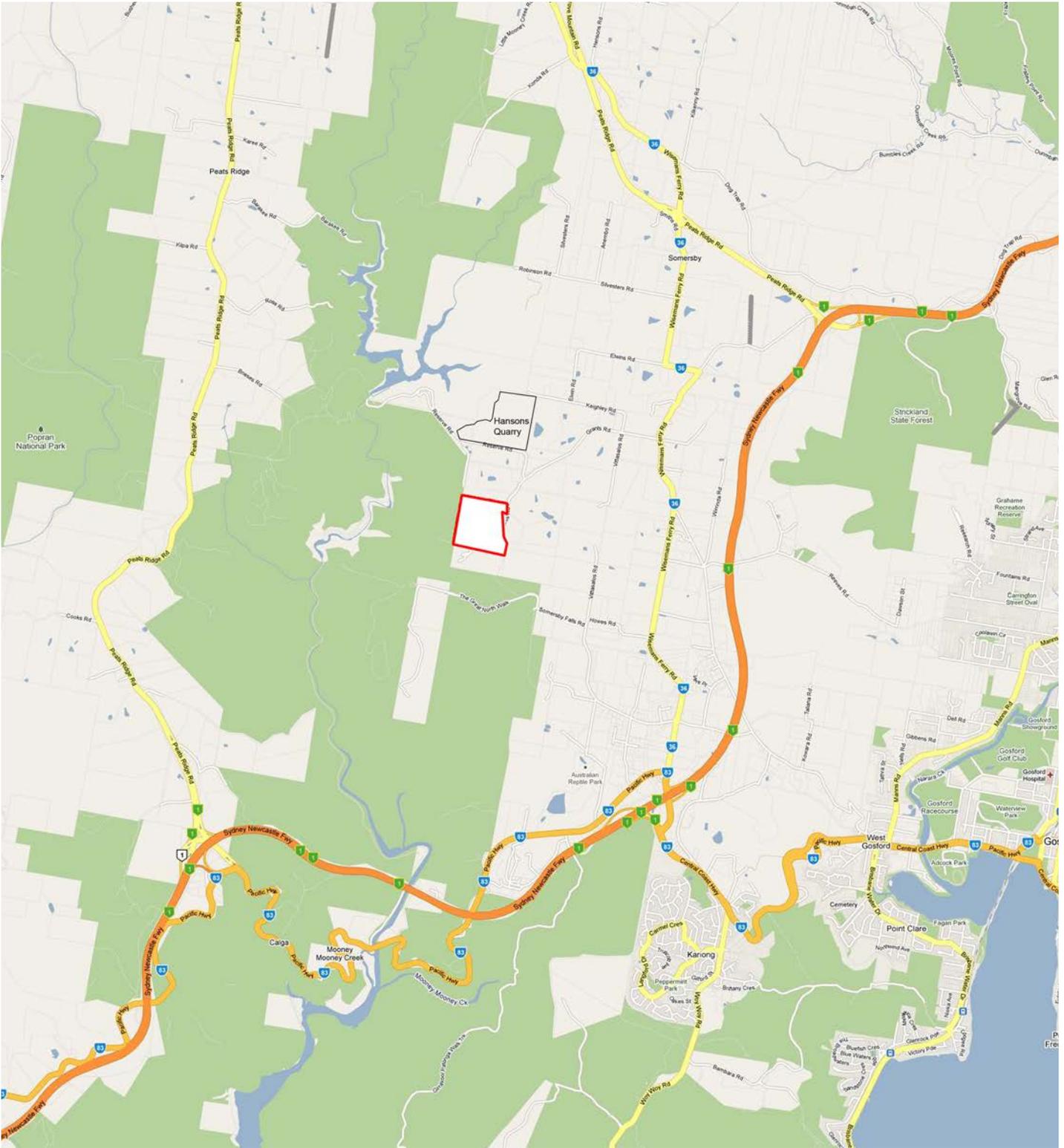
The modification to the Project Approval was for the Environmental Assessment of the project titled Section 75W Modification Application for Changes to Biodiversity Offset Area for Approved Grants Road Sand Quarry Extension 270 Grants Road Somersby, dated December 2017 and supplementary ecological survey 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 2021.

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.*

An extension for the submission of the Annual Review was requested and granted by the Department of Planning. The approved new due date for the 2021 Annual Review is 30 April 2022 as outlined in Appendix 3.



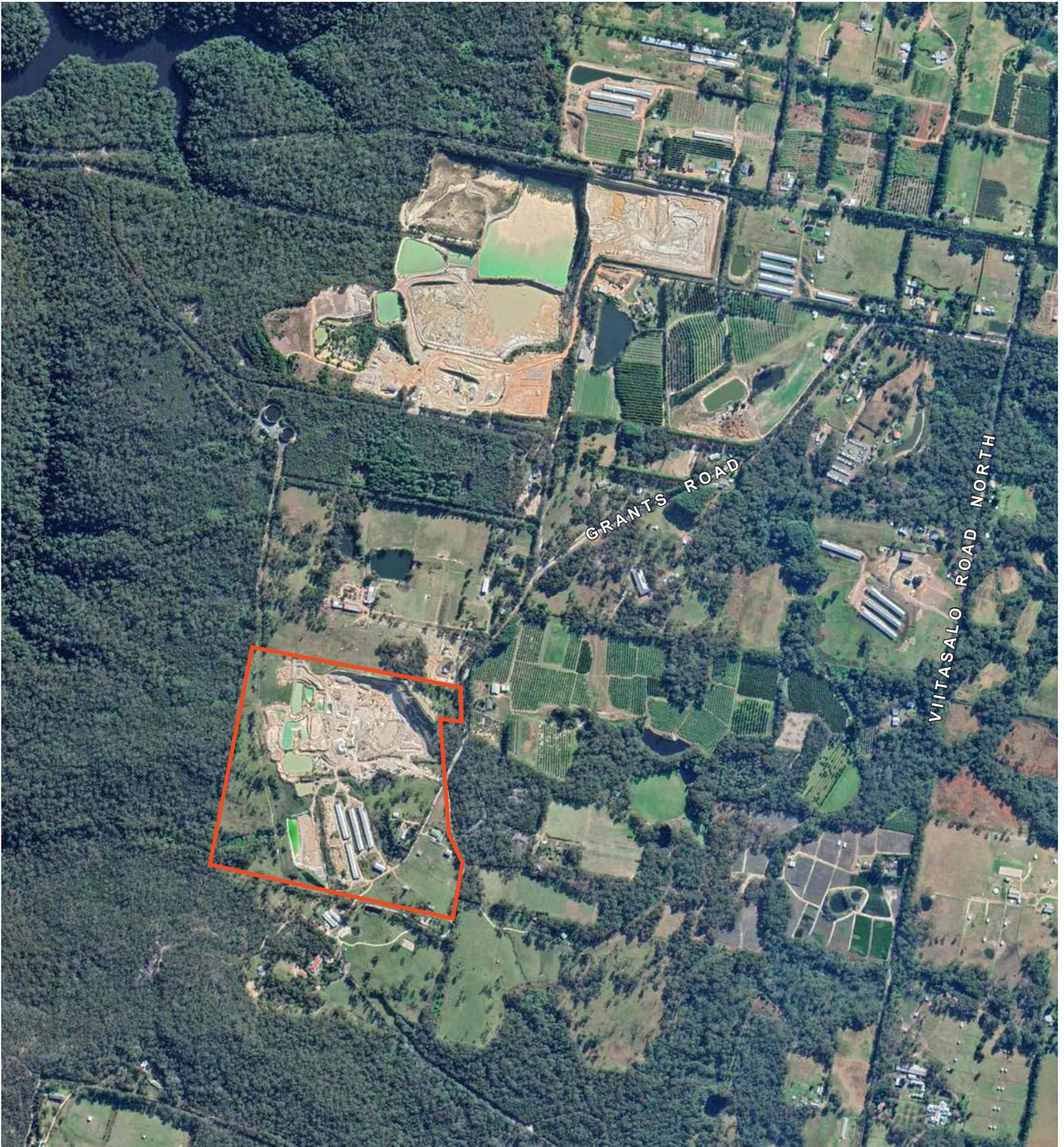
Source : Google Maps

**Legend**

 The Site



Figure 1 - Locality Plan



Source : Google 2019

### 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](http://www.grantsrdsand.com.au)  
Email - [info@grantsrdsand.com.au](mailto: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 4 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"> <li>Updating the website throughout the year with relevant reports.</li> <li>Weed management undertaken throughout the year.</li> <li>Maintaining equipment and implementing improvements to machinery to reduce any impacts.</li> </ul>
February	
March	<ul style="list-style-type: none"> <li>Submission of the 2021 Annual Report to the Department of Planning, Industry and Environment.</li> </ul>
April	
May	
June	<ul style="list-style-type: none"> <li>Community consultative meeting held. No issues were raised. Community consultative meeting to now be held annually and therefore no further meeting in 2021.</li> </ul>
July	
August	
September	<ul style="list-style-type: none"> <li>Receipt of draft revised EPA Licence, review and submission on draft. Receipt of modified EPA Licence.</li> </ul>
October	
November	<ul style="list-style-type: none"> <li>Independent Environmental Audit undertaken of the quarry site. IEA deferred from September to November due to COVID travelling restrictions.</li> </ul>
December	<ul style="list-style-type: none"> <li>Various monitoring undertaken throughout the year for the Annual Review.</li> </ul>

Source: Grants Road Sand Quarry 2021

#### 3.2. Quarrying and Extraction

The annual production for the quarry for the period from 1 January 2021 to 31 December 2021 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	103190.51 tonnes	118258.24 tonnes	100 000 to 140 000 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 5.

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 2021 to 31 December 2021.

**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	Culvert on south-west waterway	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
DDH 2	Groundwater	Southern 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 at less than the LOR with low levels 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 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 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 bores 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 15 December 2021 by Atkins Acoustics and Associates Pty Ltd and is attached in Appendix 6. 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:

- McClosky (Tricon) Screen and one loader south-east portion of Area A.
- Two excavators one with saw cutting eastern side Area A.
- Washing Plant and loader south area of Area A.
- Dam water pump Area C.

Site inspection and attended noise audits were conducted between 7.00am and 10:00pm on Tuesday 15 December 2021. Weather observations and conditions reported at the onsite weather station during the audit were light north-west breeze (1.3 - 1.8m/sec), air temperature 24°C, relative humidity 40% and clear sky.

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 – December 2021**

Measured Ambient Sound Pressure Levels dBA				Grants Road Sand Contribution	Comments
L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>A1</sub>	L <sub>Aeq, 15min</sub> *	
Location 1: Ibels Residence – 380 Somersby Falls Road					
40.2	43.2	31.6	50.3	<35	Birds, GRS mobile plant not audible.
Location 2: McGregor Residence – 239 Grants Road					
41.8	41.5	36.9	47.4	<38	Birds, distant road traffic, GRS FEL and saw cutting at times L <sub>Amax</sub> 34/5dBA.
Location 3: Sammut Residence – 210 Grants Road					
42.7	45.5	33.3	54.5	<38	Birds, distant road traffic, GRS onsite truck, FEL and saw cutting at times L <sub>Amax</sub> 36/8dBA.

Onsite measurements were also conducted to confirm sound power levels for the operating site plant and equipment.

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<sub>Aeq</sub>, 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 15 December 2021.

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 7. 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 1.7 %. July was the coldest month on average with January the hottest month on average. A maximum daily average of 28°C was recorded on 26 January 2021. July recorded the highest monthly rainfall of 9 mm.

The results for the available PM<sub>10</sub> data in 2021 are of a possible sixty samples (over approximately 12 months), forty-eight (48) samples are reported, resulting in a data recovery rate of approximately 80%. The average PM<sub>10</sub> concentration over the recorded 12-month period was 5.3 µg/m<sup>3</sup>, which is well below the annual EPA impact assessment criterion of 25 µg/m<sup>3</sup>. All reported results are below the EPA maximum 24-hour average criterion of 50 µg/m<sup>3</sup> for PM<sub>10</sub>.

As all 60 samples have not been taken this represents a non-compliance. The reasons for the missing samples are as follows:

- Between 1 and 4 January no samples were taken as the quarry was shut for the Christmas and New Year period. After 4 January there were power issues with the monitor not running. This resulted in three missed samples.
- During 20 May and 4 June, the staff member responsible for the filter changes was unavailable. This resulted in one missed sample.
- During July, the HVAS sampler would not run automatically and required a technician to fix the issue. This resulted in four missed samples.
- During August, there was an issue with the electrics, which prevented the monitor from running. This resulted in one missed sample.
- On 7 December an issue was identified with the HVAS, which required a technician to fix however due to a lack of technical availability this issue could not be fixed before the end of the calendar year. This resulted in three samples being missed.

Dust deposition is measured at two locations, R1 and R4. Of a possible 12 samples, all 12 samples are reported for both sites. The average monthly dust deposition level for the reporting period was 0.6 g/m<sup>2</sup>/month at R1 and 0.5 g/m<sup>2</sup>/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m<sup>2</sup>/month. There are two monthly results for R1 above the EPA cumulative annual average criterion of 4 g/m<sup>2</sup>/month. A maximum value of 1.6 g/m<sup>2</sup>/month was recorded in June at R1, and in July and December at R4. All other recorded levels were below 1.4 g/m<sup>2</sup>/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 20 April 2021. 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 and corrected for the number of hours worked in a shift. These are presented in the report by *WorkPlace Environment Consultants* (WEC, 2020). The results indicate that levels were below the relevant workplace health and safety standards.

#### 4.4. Groundwater Dependent Ecosystems

The Groundwater Dependent Ecosystems monitoring report was undertaken by Conacher Consulting and is attached in Appendix 8.

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 14 January 2021.

##### 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 downstream and downslope GDE patches 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 2021 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 9.

Counts of flowering *P. junonis* plants was undertaken on 16 November 2021 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
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
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

The report concludes:

- i. A decrease in the sub-populations 3 and 4 of Somersby Mintbush was recorded compared to the previous monitoring period. The reports identifies that the decreased numbers of flowering plants detected is likely to be a result of the seasonable flowering variation and counting methods.
- ii. The Somersby Mintbush population slight decrease in number recorded is likely a result of seasonal flowering occurrences at the time of survey.
- iii. 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. Additional reporting details are recommended including:
- vi.
  - Describe the procedure for counting the occurrence of flowering *P. junonis* plants present in each monitoring location.
  - Establish the field survey areas by GPS location points.
  - Analyse the previous climate and weather conditions recorded over the survey periods in relation to species growth and flowering suitability for *P. junonis*.

#### 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 10. 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:

- Management of fauna nest boxes.
- Fencing of Biodiversity offset areas.

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.

#### 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.

In general the vegetation on Howes reserve is generally becoming thicker. The engravings in the reserve remain clearly discernible and there was no evidence of dust build up or vegetation encroachment on to the engravings.

The anthropomorphic figure RE1 on the Grant Sands site has become more difficult to discern due to natural weathering. The soft nature of the sandstone of the site makes the engraving vulnerable to natural weathering processes. Darkinjung LALC and Guringai Tribal Link were going to talk to the community groups and consider what, if anything, can be done to protect or rejuvenate the site. No works will be undertaken without consultation with NPWS. Newsletters were sent to the registered Aboriginal groups in May and December 2021.

The next Heritage assessment is scheduled for 2025.

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

#### **4.8. Community Consultation**

The meeting of the Community Consultative Committee (CCC) was held on 17 June 2021. Refer to minutes of CCC meetings at Appendix 11.

The Community Consultative Committee agreed to change the meeting from biannual to annual as there were no issues, environmental concerns or complaints within the operation of the quarry. The chair will call for an extraordinary meeting should there be a need at any time. The next meeting is scheduled for June 2022.

#### **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 2021.

#### **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 12.

## 5. 2022 Reporting Period

The following identifies the measures and activities that are proposed to be undertaken during the 2022 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.
- Continue acquisition and charting of water level measurements in the revised network of three groundwater monitoring bores G3, DDH1 and DDH2.
- Carry out regular routine surface water and groundwater monitoring in the monitoring network during 2022 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 & 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 2022 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 1-2 metres.

### Air Quality

- Review and update of the Air Quality Management Plan.
- Current mitigation processes are to be sustained.
- 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.
- Preparation of the Annual report.

#### Somersby Mintbush

- Further counts of the previously identified locations of *P. junonis*.
- Continuation of suitable erosion and sedimentation controls and maintenance.
- Preparation of the Annual report.

#### Landscape and Rehabilitation

- Review of the landscape and rehabilitation bond.
- Works within the bio offset area subject to the Landscape and Rehabilitation Plan.
- Annual reporting.

#### 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 2022.

#### 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. The Community Consultative Committee met in June 2021 and will meet again in June 2022.

## 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 (2020 review)	Summary monitoring results this reporting period (2021 review)
	Location 1: <35dBA	Location 1: <35dBA
	Location 2: <40dBA	Location 2: <38dBA
	Location 3: <40dBA	Location 3: <38dBA
Air Quality	<p>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.</p> <p>However, PM10 concentrations are below the annual EPA impact assessment criterion.</p>	
Biodiversity	The Somersby Mintbush population has increased over the years however a slight decrease in numbers was recorded in 2021 and is likely a result of seasonal flowering occurrences at the time of the survey.	
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 24 hour PM10 ground level concentrations at the current location of the HVAS would be in the order of 70 µg/m<sup>3</sup>. The highest measured cumulative 24-hour PM10 concentration was 26.8 µg/m<sup>3</sup> in 2021, a value considerably lower than the conservative predictions made in the air quality assessment.</p> <p>The predicted annual average PM10 concentration in the AQA was approximately 30 µg/m<sup>3</sup> at the HVAS location, however an annual average concentration of 5.3 µg/m<sup>3</sup> was measured in 2021. 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.</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 are varied due to the economic situation created by 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
<b>2021 Independent Environmental Audit</b>					
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.	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	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 will be reviewed by 30 April 2022. Once reviewed by Grants Road Sand Quarry, a response will be provided to the Department of Planning by 15 May 2022.	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 will liaise with the EPA office as part of its submission of its annual report as part of its licence.	Open
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	Closed

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
				submitted to NOW on 21 March 2021.	
Commitments		Air Quality	been undertaken and 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 2022 will incorporate the 4 events, 3 months apart as required.	Open
<b>2018 Independent Environmental Audit</b>					
	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.
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	Air quality consultant to review and advise on ensuring machinery can incorporate the required sampling.	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.

Schedule	Condition No.	Audit Findings	Action required by Auditor	Timing	Closed /Open
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.
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

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

### **SCHEDULE 1**

<b>Application Number:</b>	08_0099
<b>Proponent:</b>	GR and AK Jones
<b>Approval Authority:</b>	Minister for Planning
<b>Land:</b>	Lot 1 and 2 DP358717
<b>Project:</b>	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"> <li>• causes, or threatens to cause, material harm to the environment; and/or</li> <li>• breaches or exceeds the limits or performance measures/criteria in this approval</li> </ul>
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	<sup>d</sup> Criterion
Total suspended particulate (TSP) matter	Annual	<sup>a</sup> 90 $\mu\text{g}/\text{m}^3$

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

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

Table 4: Long-term criteria for deposited dust

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

Table 5: Impact assessment criterion for crystalline silica

Pollutant	Averaging Period	Criterion
<sup>e</sup> Chronic Reference Exposure Level (REL) (PM <sub>4</sub> )	Annual	3 µg/m <sup>3</sup>

References to Tables 2 to 5:

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

<sup>b</sup> Incremental impact (ie. incremental increase in concentrations due to the project on its own);

<sup>c</sup> 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;

<sup>d</sup> 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

<sup>e</sup> 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"><li>negligible erosion of the surface of the GDEs;</li><li>negligible sedimentation within the GDEs;</li><li>minor changes in the size of the GDEs;</li><li>no significant change to the composition or distribution of species within the GDEs.</li></ul>
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*

<b>Area</b>	<b>Offset Criteria</b>	<b>Size (hectares)</b>
On-site Offset Area	<p>Existing vegetation to be managed and maintained as:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas.</li> </ul>	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:
- engage an independent registered surveyor to survey and permanently mark the boundaries of the offset areas;
  - submit a survey plan of these boundaries to the Secretary;
  - 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
  - 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"> <li>• Safe, stable and non-polluting.</li> <li>• Minimise the visual impact of the final landforms as far as is reasonable and feasible.</li> </ul>
Surface Infrastructure	<ul style="list-style-type: none"> <li>• To be decommissioned and removed, unless the Secretary agrees otherwise.</li> </ul>
Quarry Benches	<ul style="list-style-type: none"> <li>• Suitably landscaped and revegetated using native species.</li> </ul>
Quarry Pit Floor	<ul style="list-style-type: none"> <li>• Establish land with a level of at least Class 4 agricultural suitability over 80% of the quarry floor.</li> </ul>
Community	<ul style="list-style-type: none"> <li>• Ensure public safety.</li> <li>• Minimise the adverse socio-economic effects associated with quarry closure.</li> </ul>

### 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**:
- 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
  - 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**:
- minimise and monitor the waste generated by the project;
  - ensure that the waste generated by the project is appropriately stored, handled and disposed of;
  - manage on-site sewage treatment and disposal in accordance with the requirements of Council; and
  - 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**:
- 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.

## **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:
- (a) be **led and** conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
  - (b) include consultation with the relevant agencies **and the CCC**;
  - (c) 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);
  - (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals;
  - (e) 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**
  - (f) **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**:
- (a) 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 <b>must</b> 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"> <li>• Operation of plant and equipment</li> <li>• Environmental monitoring</li> <li>• Restrictions imposed on quarrying</li> <li>• Vegetation removal</li> <li>• Sedimentation and erosion</li> <li>• Transportation</li> </ul>	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 Dol 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"> <li>1. One 10 Megalitres (ML) Pollution Control Dam (PC Dam) to receive nitrogen rich runoff from Zones F&amp;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.</li> <li>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.</li> <li>3. Pipeline and pumps for transfer of water each way between the in-pit decant pond and out of pit PC Dam.</li> <li>4. A floating siphon in the PC Dam to maintain a 5 ML operating level.</li> </ol> <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"> <li>• Suspended solids 40mg/L</li> <li>• Oil and grease – 5 and/or none visible</li> <li>• pH – 6.0-8.0</li> </ul>	
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"> <li>• Offset Area A. 1.05 hectares of Scribbly Gum Woodland in the east of Lot 1 DP358717;</li> <li>• Offset Area B. 1.51 hectares of Scribbly Gum Woodland in the west of Lot 1 DP358717; and</li> <li>• 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.</li> </ul> <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"> <li>• Dozer 4db;</li> <li>• Trencor 3dB;</li> <li>• McCloskey 3dB; and</li> <li>• 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).</li> </ul> <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"> <li>• 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 (&lt;8m below ground level); and</li> <li>• Utilise periods of high winds &gt;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).</li> </ul>	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"> <li>• 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;</li> <li>• Log to record complaint including time of alleged noise issue, duration, description of noise, prevailing weather conditions and complainants contact details;</li> <li>• Complaints to be responded to in a timely manner. Where the noise is currently occurring, Quarry Manager <b>must</b> 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;</li> <li>• 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;</li> <li>• 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</li> <li>• 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).</li> </ul>	Prior to the commencement of the quarry extensions.
	<p>Undertake an Annual Noise monitoring program that incorporates:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• Assessment of noise audit measurement results against Conditions of Consent and any pending Licence to determine compliance;</li> <li>• Provide recommendations for ameliorative or management measures for Quarry operator where noise exceedances are identified;</li> <li>• Preparation of Annual Noise Monitoring Report for submission to Consent Authority and/or EPA.</li> </ul>	Annually
11. Air Quality	Preparation of an air quality management plan incorporating PM <sub>10</sub> 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"> <li>• Water of unsealed roads;</li> <li>• Use of wheel-wash and operation of sealed road from wheel-wash to the front gate;</li> <li>• Covering of loads during hauling;</li> <li>• Water of stockpiles when necessary;</li> <li>• Limiting vehicle speed onsite; and</li> </ul>	Annually
	<ul style="list-style-type: none"> <li>• Limiting the area of disturbed land and progressive rehabilitation of completed areas.</li> </ul>	

	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"> <li>• 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.</li> <li>• Consideration of the use of alternative fuels where economically and practically feasible.</li> <li>• Regular maintenance of diesel powered equipment to ensure operation at peak efficiency.</li> <li>• Consideration of energy efficiency for all electrical equipment, appliances, lighting and hot water system.</li> </ul>	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.

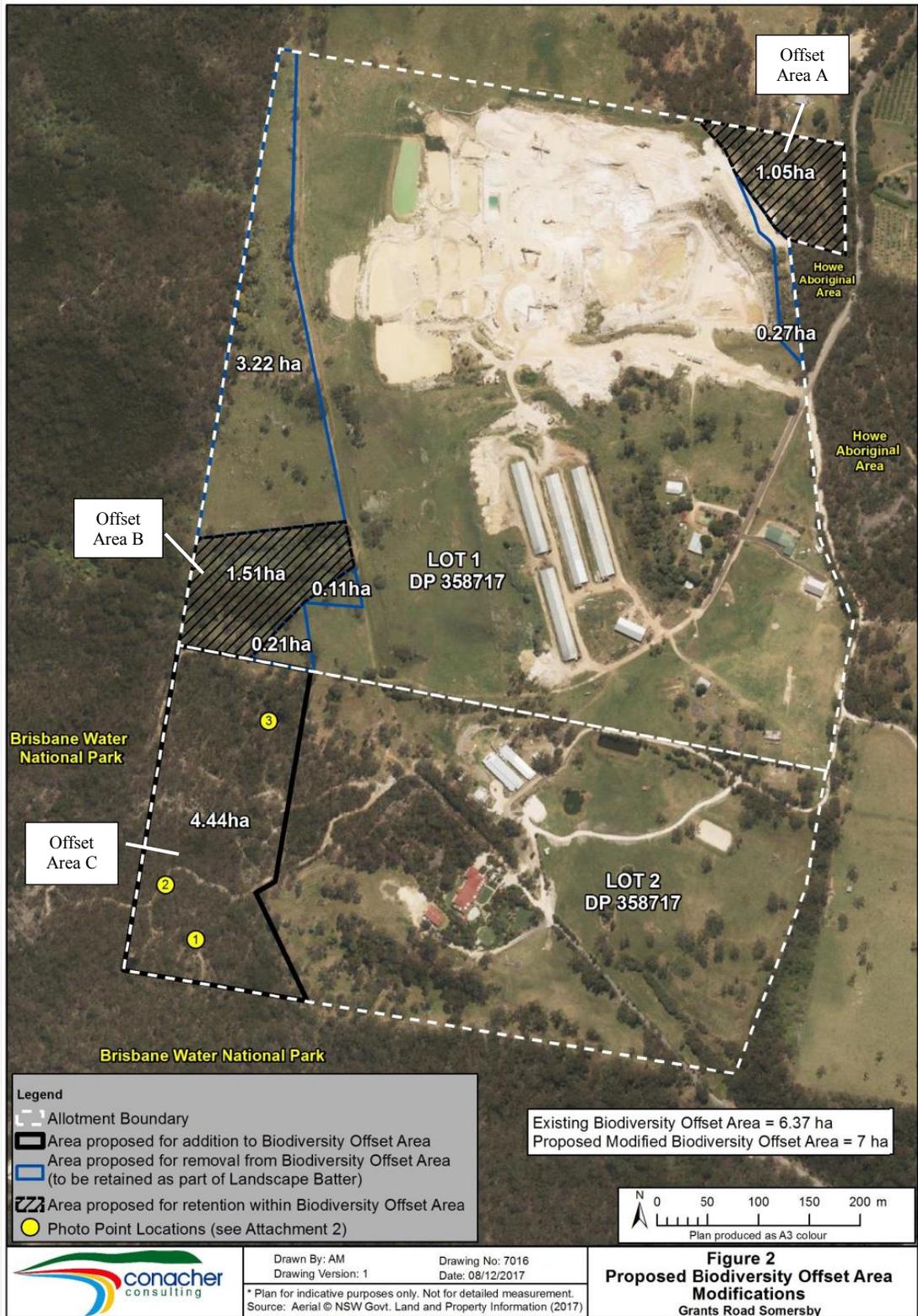
### Determination of Meteorological Conditions

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

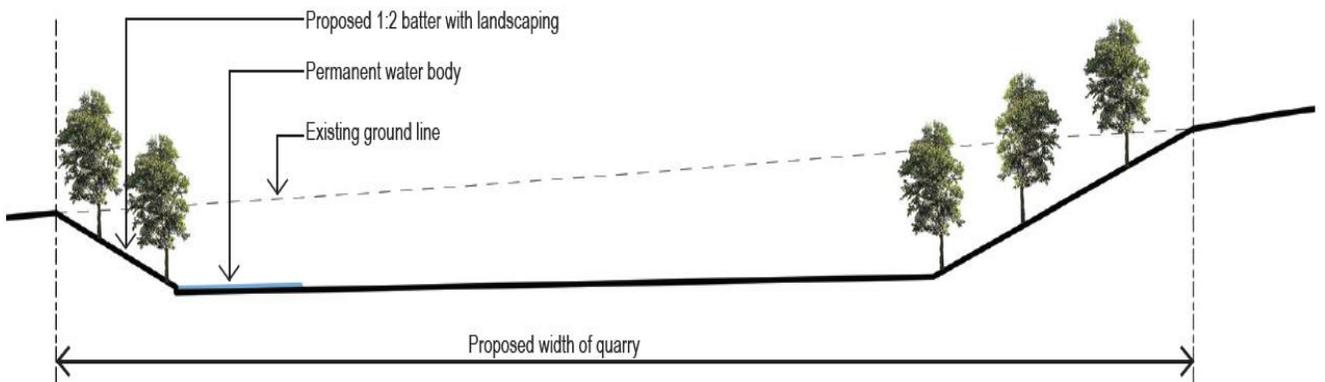
3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (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"> <li>• 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</li> <li>• suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas.</li> </ul>	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:
- before the words "would be integrated" in sub-paragraph (c), insert the words "and Statement of Commitment Number 9";
  - delete the word "and" at the end of the second bullet point in sub-paragraph (d); and
  - 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:
- before the words "strategies, plans and programs", insert the words "suitability of all";
  - 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:
- consult with the relevant party prior to submitting the subject document to the Secretary for approval; and
  - 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:
- 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
  - in the second bullet point of the Notes, delete the word "on", and replace with "of".
22. In condition 9 of Schedule 5:
- after the word "be" in sub-paragraph (a), insert the words "led and";
  - after the words "relevant agencies" in sub-paragraph (b), insert the words "and the CCC";
  - delete the word "and" at the end of sub-paragraph (d);
  - delete the full stop at the end of sub-paragraph (e) and replace with "; and"; and
  - insert the following sub-paragraph:
    - 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:
- delete the number "7.1" after the words "A total of", and replace with "7";
  - 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

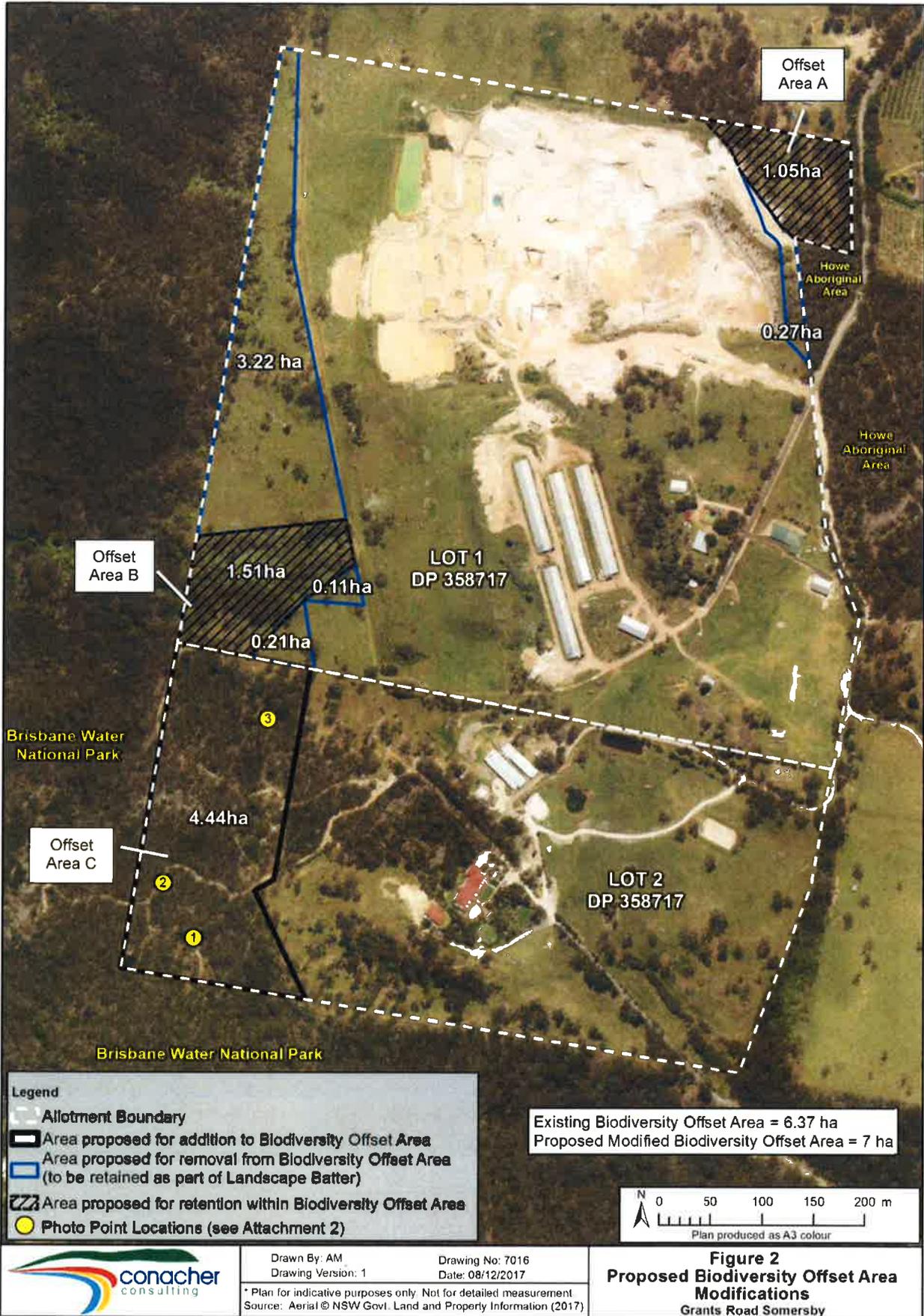
- Offset Area C. 4.44 hectares of Red Bloodwood - Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion in the west of Lot 2 DP358717.

- (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

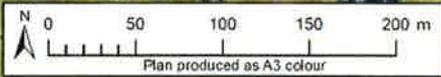
BIODIVERSITY OFFSET AND LANDSCAPE BUFFER AREAS





**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 FOR EXTENSION OF TIME  
ANNUAL REVIEW**

**From:** Julia Pope Julia.Pope@planning.nsw.gov.au   
**Subject:** Grants Road Quarry MP08\_0099 Annual Review  
**Date:** 31 March 2022 at 7:10 pm  
**To:** vanessa.c@paadesign.com.au



Dear Vanessa,

I refer to your request for an extension to submit Grant's Road Sand Quarry's Annual Review, required under Schedule 5, Condition 4 of MP08 0099.

As a nominee of the Planning Secretary, I agree to an extension until **30 April 2022**.

If you have any enquiries, please do not hesitate to contact Laura Papoulias on 02 8289 6879.

**Julia Pope**  
**Team Leader Compliance - Metro**

Compliance | Department of Planning and Environment  
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*The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.*  
*All post approval and compliance documents are to be submitted online, via the Major Projects Website. To do this, please refer to the instructions available [here](#).*

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**From:** Vanessa Colclough <[vanessa.c@paadesign.com.au](mailto:vanessa.c@paadesign.com.au)>  
**Sent:** Thursday, 31 March 2022 2:43 PM  
**To:** Laura Papoulias <[Laura.Papoulias@planning.nsw.gov.au](mailto:Laura.Papoulias@planning.nsw.gov.au)>  
**Cc:** Grants Road Sand <[admin@grantsrdsand.com.au](mailto:admin@grantsrdsand.com.au)>  
**Subject:** Grants Road Quarry MP08\_0099 Annual Review

Hi Laura,

We have requested an extension of time for the Annual Review. Copy of request attached for your information. We did upload this onto the major projects website but I am just checking to make sure that the Department is in receipt of the request.

Thanks + regards

**Vanessa Colclough**  
Managing Director

## Appendix 4 **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
<b>Schedule 2 Administrative Conditions</b>				
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 2021 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 2021 was 118258.24 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.
<b>Schedule 3 Environmental Performance Conditions</b>				
<b>Soil and Water</b>				
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.					
<b>Noise</b>								
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"> <tr> <td>Receiver Location</td> <td>LAeq,15min dB(A)</td> </tr> <tr> <td>All privately owned residences</td> <td>40</td> </tr> </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.									
<b>Air Quality</b>													
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><sup>a</sup> 90 µg/m<sup>3</sup></td> </tr> <tr> <td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td> <td>Annual</td> <td><sup>a</sup> 30 µg/m<sup>3</sup> Note 1</td> </tr> </tbody> </table> <p>Note 1: 30 µg/m<sup>3</sup> criterion has been amended to 25 µg/m<sup>3</sup></p>	Pollutant	Averaging Period	d Criterion	Total suspended particulate (TSP) matter	Annual	<sup>a</sup> 90 µg/m <sup>3</sup>	Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	<sup>a</sup> 30 µg/m <sup>3</sup> Note 1	Extent of project	<p>Dust deposition sampling and PM<sub>10</sub> monitoring measurements undertaken. No exceedances in reporting period for PM<sub>10</sub> or deposited dust.</p> <p>The average PM<sub>10</sub> concentration over the recorded 12 month period was 5.3 µg/m<sup>3</sup>, which is well below the annual EPA impact assessment criterion of 25 µg/m<sup>3</sup></p>	Compliant.
Pollutant	Averaging Period	d Criterion											
Total suspended particulate (TSP) matter	Annual	<sup>a</sup> 90 µg/m <sup>3</sup>											
Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	<sup>a</sup> 30 µg/m <sup>3</sup> Note 1											

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status								
	<p><b>Short-term criteria for particulate matter</b></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td> <td>24 hours</td> <td>a 50 µg/m<sup>3</sup></td> </tr> </tbody> </table>	Pollutant	Averaging Period	d Criterion	Particulate matter < 10 µm (PM <sub>10</sub> )	24 hours	a 50 µg/m <sup>3</sup>	Extent of project	Reported results are well within the EPA maximum 24-hour average criterion of 50 µg/m <sup>3</sup> .	Compliant.		
Pollutant	Averaging Period	d Criterion										
Particulate matter < 10 µm (PM <sub>10</sub> )	24 hours	a 50 µg/m <sup>3</sup>										
	<p><b>Long-term criteria for deposited dust</b></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><sup>c</sup> Deposited Dust</td> <td>Annual</td> <td><sup>b</sup> 2 g/m<sup>2</sup>/month</td> <td><sup>a</sup> 4 g/m<sup>2</sup>/month</td> </tr> </tbody> </table>	Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level	<sup>c</sup> Deposited Dust	Annual	<sup>b</sup> 2 g/m <sup>2</sup> /month	<sup>a</sup> 4 g/m <sup>2</sup> /month	Extent of project	The average dust deposition level over the recorded period was 0.6 g/m <sup>2</sup> /month at R1 and 0.5 g/m <sup>2</sup> /month at R4, which are well below the EPA cumulative annual average criterion of 4 µg/m <sup>3</sup> .	Compliant.
Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level									
<sup>c</sup> Deposited Dust	Annual	<sup>b</sup> 2 g/m <sup>2</sup> /month	<sup>a</sup> 4 g/m <sup>2</sup> /month									
	<p><b>Impact assessment criterion for crystalline silica</b></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td><sup>e</sup> Chronic Reference Exposure Level (REL) (PM<sub>4</sub>)</td> <td>Annual</td> <td>3 µg/m<sup>3</sup></td> </tr> </tbody> </table>	Pollutant	Averaging Period	d Criterion	<sup>e</sup> Chronic Reference Exposure Level (REL) (PM <sub>4</sub> )	Annual	3 µg/m <sup>3</sup>	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										
<sup>e</sup> Chronic Reference Exposure Level (REL) (PM <sub>4</sub> )	Annual	3 µg/m <sup>3</sup>										
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	60 samples are required from the HVAS sampler across a 12 month period. 48 samples were taken representing 80% of the required samples. The reasons for the reduced number of samples taken are outlined in Section 4.3 of this Annual	Non-compliant.								

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
			Review. GRSQ has now been able to obtain technical assistance in maintaining the HVAS sampler. Technical assistance was not available due to a number of reasons particularly the lack of technical staff. Whilst only 80% of the samples have been taken, the average PM <sub>10</sub> 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.

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
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 be undertaken in accordance with the AQMP as outlined in 11(b) above.	Non-compliant.
<b>Meteorological Monitoring</b>				
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.
<b>Transport</b>				
14.	Keep accurate records of the: <ul style="list-style-type: none"> <li>Amount of quarry products transported from the site (per calendar month and year) and</li> <li>Number of laden vehicle movements from the site (per hour, day, week, calendar month and year).</li> </ul>	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"> <li>Project related heavy vehicles enter and exit the site in a forward manner.</li> <li>All loads will be covered entering or leaving the site.</li> <li>All laden vehicles leaving the site are cleaned of sand and other material that may fall on the road, before leaving the site.</li> </ul>	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						
<b>Biodiversity</b>										
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"> <li>• negligible erosion of the surface of the GDEs;</li> <li>• negligible sedimentation within the GDEs;</li> <li>• minor changes in the size of the GDEs;</li> <li>• no significant change to the composition or distribution of species within the GDEs.</li> </ul> </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"> <li>• negligible erosion of the surface of the GDEs;</li> <li>• negligible sedimentation within the GDEs;</li> <li>• minor changes in the size of the GDEs;</li> <li>• no significant change to the composition or distribution of species within the GDEs.</li> </ul>	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"> <li>• negligible erosion of the surface of the GDEs;</li> <li>• negligible sedimentation within the GDEs;</li> <li>• minor changes in the size of the GDEs;</li> <li>• no significant change to the composition or distribution of species within the GDEs.</li> </ul>									
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 Dol 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"> <li>• 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</li> <li>• suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas.</li> </ul> </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"> <li>• 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</li> <li>• suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas.</li> </ul>	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"> <li>• 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</li> <li>• suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas.</li> </ul>	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"> <li>- manage the offset areas for conservation in perpetuity;</li> <li>- implement the Landscape and Rehabilitation Management Plan;</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>- permit ongoing access to the offset areas by the Department and other relevant public authorities for the purposes of monitoring.</li> </ul>	<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.
<b>Landscape</b>				
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"> <li>• Safe, stable and non-polluting.</li> <li>• Minimise the visual impact of the final landforms as far as is reasonable and feasible.</li> <li>• Surface infrastructure to be decommissioned and removed, unless the Secretary agrees otherwise.</li> <li>• Quarry benches suitably landscaped and revegetated using native species.</li> <li>• Establish land with a level of at least Class 4 agricultural suitability over 80% of the quarry floor.</li> <li>• Ensure public safety.</li> <li>• Minimise the adverse socio-economic effects associated with quarry closure.</li> </ul>	<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.	Not triggered.
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 is to be undertaken.	Non-compliant.
<b>Heritage</b>				
30.	Prepare Heritage Management Plan	30 November 2014	Heritage Management Plan prepared and approved by the Department.	Compliant.
<b>Visual</b>				
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.
<b>Waste Management</b>				
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.
<b>Dangerous Goods</b>				
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.
<b>Bushfire</b>				
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.
<b>Schedule 4 Additional Procedures</b>				

Condition of consent number	Compliance requirement	Development phase	Evidence and comments	Compliance status
1.	Notification of monitoring results to landowners where: (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 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).	As soon as practicable after obtaining monitoring results	No exceedances have been determined as part of the monitoring results.	Compliant.
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 the Proponent must: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to: <ul style="list-style-type: none"> <li>• consult with the landowner to determine his/her concerns;</li> <li>• conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and</li> <li>• if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and</li> </ul> (b) give the Secretary and landowner a copy of the independent review.	Within 2 months of the Secretary's decision.	Not required at this time of the review.	Not triggered.
<b>Schedule 5 Environmental Management, Reporting and Auditing</b>				
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 2021.	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"> <li>• the documents referred to in condition 2 of Schedule 2;</li> <li>• all current statutory approvals for the project;</li> <li>• all approved strategies, plans and programs required under the conditions of this approval;</li> <li>• 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;</li> <li>• a complaints register, updated monthly;</li> <li>• the annual reviews of the project;</li> <li>• any independent environmental audit, and the Proponent's response to the recommendations in any audit;</li> <li>• minutes of CCC meetings;</li> <li>• any other matter required by the Secretary; and</li> </ul> <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"> <li>• Modification to The Project Approval</li> <li>• The Project Approval</li> <li>• Environmental Assessment</li> <li>• The Environmental Strategy</li> <li>• Plans of Management</li> <li>• Complaints Register</li> <li>• Truck movements</li> <li>• Independent Audit</li> <li>• Annual Reviews</li> <li>• Minutes of the CCC meetings</li> </ul>	Compliant.

Appendix 5  
**WATER QUALITY MONITORING**  
Larry Cook Consulting Pty Ltd

# *Larry Cook Consulting Pty Ltd*

## **SURFACE WATER AND GROUNDWATER MONITORING PERIOD 1.1.21 – 31.12.21**

## **GRANTS ROAD SAND QUARRY**

Grants Road Sand  
Lot 1 in DP358717  
270 Grants Road Somersby

**PREPARED FOR:           GRANTS ROAD SAND**

**PROJECT NUMBER:       22005**

**DATE:                      25<sup>TH</sup> JANUARY 2022**

*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 12<sup>th</sup> 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**. 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. It is noted that Monitoring Site G4 (BH4) was removed during the reporting period due to the expanding pond system.

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	Culvert on south-west waterway	33.392330416	151.261846304	Water quality
S1	Surface Water	South-west waterway on western boundary of Lot 1	33.392487740	151.260202612	Water quality
G4 (BH 4)	Groundwater	Removed during the reporting period due to pond expansion.			
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	33.389981712	151.263173542	Automated

		central part of Lot 1			water level
DDH 2	Groundwater	Southern central part of Lot 1	33.392257008	151.263539664	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 reporting period due to pond expansion in this area.

## 5.2 WATER LEVEL MONITORING RESULTS

Composite hydrographs generated during the reporting period are presented in **Figure 4**. The following observations and comments are provided:

- The composite hydrographs reveal a general decline in the water table between the installation of new water level sensors in early April and late October 2021 followed by a commensurate rise to the end of the reporting period (31<sup>st</sup> December 2021). The exceptions are two rises (spikes) in the water table in G3 (BH3) observed between 23<sup>rd</sup> April and 13<sup>th</sup> May.
- Significant fluctuations were recorded in the water table recorded in the Control Monitoring Bore G3 (BH3) between 9<sup>th</sup> November and the end of the reporting period (31<sup>st</sup> December 2021). These fluctuations (spikes) correlate with district-significant rainfall events.

The fluctuations recorded in monitoring bores DDH1 and DDH2 can be correlated with G3 (BH3) but are relatively subdued due to the relatively deeper semi-confined sandstone-hosted aquifers in DDH1 and DDH2. The relatively unconfined aquifer hosted by G3 (BH3) rapidly responds to rainfall recharge events.

- 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 1.1.21 through 31.12.21. One campaign of sampling and testing was undertaken: in May 2021. A planned second sampling campaign later in the reporting period was repeatedly cancelled due to ongoing Covid-19 issues including restricted personnel access to the Site and significant courier collection constraints. It is understood that one of the surface water monitoring sites (S1) was dry during the May sampling period.

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.

<b>Table 4 List of Analytes and Tests</b>
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**.

<b>Table 5 Data Quality Objectives</b>	
<b>DQO</b>	<b>Evaluation Criteria</b>
<b>Documentation completeness</b>	Completion of calibration records, chain of custody documentation, laboratory test certificates from NATA-accredited laboratory
<b>Data comparability</b>	Use of appropriate techniques for the sampling, storage and transportation of samples. Use of NATA accredited laboratory.
<b>Data representativeness</b>	Adequate sampling coverage dictated by distribution of pre-selected monitoring bores, and selection of representative samples
<b>Precision and accuracy for sampling and analysis</b>	Use properly trained and qualified field personnel. Achieve laboratory QC criteria.

### 7.2 FIELD QA/QC

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

<b>Table 6 Field QA/QC</b>	
<b>Protocol</b>	<b>Description</b>
<b>Sampling Team</b>	The fieldwork was managed and carried out by an experienced technician or suitably trained staff member.
<b>QA/QC System</b>	All fieldwork was conducted in accordance with Industry Standard Sampling Procedure.
<b>Chain of</b>	All samples were logged and transferred under appropriately

<b>Table 6 Field QA/QC</b>	
<b>Protocol</b>	<b>Description</b>
<b>Custody Forms</b>	completed Chain of Custody (COC) Forms.
<b>Preservation</b>	All samples were delivered to the project laboratory in appropriately preserved containers, with preservation consisting of packing samples in eskies with ice.
<b>Blind Field Duplicates</b>	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 2021 is NATA accredited for the selected tests and analysis.

## 8.0 RESULTS

Laboratory results are summarised in **Table 7**. A copy of the laboratory certificate 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 a sample in May 2021.
- Water sampling was successfully undertaken on 16<sup>th</sup> May 2021.
- The **pH of the surface water** (W1 and W4) was reported as slightly acidic (6.69 and 6.71 respectively) in the May 2021 sampling campaign which is consistent with previous measurements.
- The **pH of groundwater** (G3 and G4) tested in May 2021 is moderately acidic (4.98 and 4.51 respectively) which is consistent with previous measurements.
- The concentrations of **Total Suspended Solids (TSS)** recorded in the two **surface water** monitoring sites (W1 and W2) were 79 and 69 mg/L respectively in the May sampling.
- The concentrations of **Total Suspended Solids (TSS)** recorded in the two **groundwater** monitoring bores (G3 and G4) were all less than the LOR for the May sampling round.
- The concentrations of **Total Dissolved Solids (TDS)** recorded in the two **surface water** samples W1 and W4 were between 79 and 69 mg/L for the May sampling. These levels indicate low salinity.
- Levels of **TDS** between 119 and 120 mg/L were recorded in **groundwater** samples G3 and G4 for the May round of sampling. These levels also indicate low salinity.
- The concentrations of **Nitrate plus Nitrite** in the two surface water samples collected in May were all less than the LOR. The levels recorded in the groundwater monitoring bores G4 and G3 are between 5.26 and 5.22 mg/L respectively. Relative soluble nitrate is likely associated with the 100-year agricultural history of the area.

Table 7 Composite Analytical Results

SAMPLE DESCRIPTION	UNIT	G4 Monitoring Bore (Groundwater)																	
		G3 Monitoring Bore (Groundwater)						G4 Monitoring Bore (Groundwater)											
		14/3/18	18/6/18	25/9/18	1/12/18	12/8/19	17/12/19	22/5/20	15/12/2020	12/5/21	14/3/18	18/6/18	25/9/18	1/12/18	12/8/19	17/12/19	22/5/20	15/12/2020	12/5/21
pH	pH Units	5.83	4.46	4.35		5.25	5.1	5.45	5.34	4.96	5.91	4.68	4.4	5.24	5.2	5.32	4.96	4.51	
Total Suspended Solids	mg/L	<5	<5	<5		<5	<5	<5	86	119	74	106	101	100	93	99	98	<5	
Total Dissolved Solids	mg/L	113	189	99		100	82	52	96	119	74	106	101	100	93	99	98	<5	
Nitrate-Nitrite as N	mg/L	4.37	4.63	4.64		4.88	5.12	5.06	5.28	4.69	4.28	4.66	4.66	4.66	2.00	2.00	3.06	3.22	
Total Nitrogen as N	mg/L	4.8	5.2	5.1		5.1	6.7	5.9	6.1	5.7	4.9	5.2	5.3	5.3	7.1	7.1	8.7	8.7	
Total Kjeldahl Nitrogen	mg/L	0.4	0.6	0.5		0.5	0.8	0.7	0.8	0.7	0.7	0.5	0.8	0.8	2	2	0.8	0.8	
Total Phosphorus as P	mg/L	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

SAMPLE DESCRIPTION	UNIT	W1 Surface Water Monitoring Site												W4 Surface Water Monitoring Site						S1 Surface Water Monitoring Site								
		W1 Surface Water Monitoring Site						W4 Surface Water Monitoring Site						S1 Surface Water Monitoring Site														
		14/3/18	18/6/18	25/9/18	1/12/18	12/8/19	17/12/19	22/5/20	15/12/2020	12/5/21	14/3/18	18/6/18	25/9/18	1/12/18	12/8/19	17/12/19	22/5/20	15/12/2020	12/5/21	14/3/18	18/6/18	25/9/18	1/12/18	12/8/19	17/12/19	22/5/20	15/12/2020	12/5/21
pH	pH Units	6.67	6.72			7.17	6.41	7.33	6.69	6.67	6.74			6.91		6.43	6.99	6.71	6.05	6.51				6.41				
Total Suspended Solids	mg/L	15	<5			<5	<5	9	8	12	<5			7		<5	10	11	<5	<5				<5				
Total Dissolved Solids	mg/L	97	178			71	44	71	79	105	174			72		49	68	69	253	159				72				
Nitrate-Nitrite as N	mg/L	0.04	0.05			0.08	0.03	0.04	<0.01	0.05	0.05			0.09		0.02	0.04	<0.01	0.04	0.05				0.09				
Total Nitrogen as N	mg/L	1.6	1.0			0.9	0.9	1	0.9	1.6	1.0			0.8		0.6	0.9	0.9	1.0	1.00				0.60				
Total Kjeldahl Nitrogen	mg/L	1.6	1.0			0.8	0.9	1	0.9	1.5	1.0			0.7		0.6	0.9	0.9	1.0	1.00				0.50				
Total Phosphorus as P	mg/L	0.12	0.08			0.02	0.02	0.06	0.07	0.1	0.08			0.04		0.02	0.07	0.11	0.07	0.08				0.01				

<sup>1</sup> Drinking Water Guidelines: National Water Quality Management Strategy 2011 Version 3.1 updated March 2015

<sup>2</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality: National Water Quality Management Strategy (ANZECC 2000)

Note: ISD denotes insufficient data to set a guideline value based on health considerations

- The concentrations of **Total Kjeldahl Nitrogen** (TKN) were 0.9 mg/L in surface water samples to between 6.0 and 6.1 mg/L in the two groundwater samples.
- Levels of **Total Phosphorus** were recorded at less than the LOR in the two groundwater samples and between 0.07 and 0.11 mg/L mg/L in surface water samples. Phosphorus is likely associated with the agricultural history of the area.
- No potential 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 May 2021 sampling round, the following discussion, conclusions and recommendations are provided.

### 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 at less than the LOR with low levels 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 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) s 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 bores 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

- Continue acquisition and charting of water level measurements in the revised network of three groundwater monitoring bores G3, DDH1 and DDH2.
- Carry out regular routine surface water and groundwater monitoring in the monitoring network during 2022 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 2022 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 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 1/1/21-31/12/21	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"> <li>• Undertake automated water level measurements in four nominated monitoring bores G3 (BH3), G4 (BH4), DDH1 &amp; DDH2. Minimum 4 hourly readings.</li> <li>• Undertake groundwater sampling in representative monitoring bores G3 &amp; G4. Six monthly sampling</li> <li>• Undertake automated rainfall measurements – tipping bucket rain gauge.</li> </ul>	<ul style="list-style-type: none"> <li>• G4 (BH4) removed due to pond expansion</li> <li>• Hydrographs for the remaining 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).</li> <li>• No impacts from quarrying activities on the aquifer system were detected</li> <li>• Automated daily rainfall collected</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the integrity of the installed sampling equipment and full suite of analytes is tested.</li> <li>• Maintain and calibrate water level sensors</li> </ul>
Surface Water	<p>Section 4 - Schedule 3 of Project Approval and Appendix 1 - Statement of Commitments.</p> <ul style="list-style-type: none"> <li>• Undertake surface water sampling at representative sampling sites W1, W4 - six monthly sampling and testing when ponds discharging, and monthly testing for site S1 when discharging.</li> </ul>	<ul style="list-style-type: none"> <li>• Late 2021 sampling cancelled due to Covid-19 constraints</li> <li>• Results of pH, TDS, TSS, N compounds, TKN, TP</li> <li>• No exceedances or impacts from quarrying activities on the aquifer system were detected</li> </ul>	<ul style="list-style-type: none"> <li>• Continue oil &amp; grease testing at site S1 when discharge occurring</li> </ul>

## 11.0 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"> <li>Water level measurements</li> </ul>	<ul style="list-style-type: none"> <li>At all times</li> </ul>	<ul style="list-style-type: none"> <li>Automated real time measurements in water level sensors, data loggers with telemetry</li> </ul>	<ul style="list-style-type: none"> <li>Real time minimum 4-hourly measurements downloaded as required. Data stored/archived in a dedicated data base and hydrographs constructed</li> </ul>
	<ul style="list-style-type: none"> <li>Water sampling and testing</li> </ul>	<ul style="list-style-type: none"> <li>At all times</li> </ul>	<ul style="list-style-type: none"> <li>Regular prescribed sampling (6 monthly for G3).</li> </ul>	<ul style="list-style-type: none"> <li>COCs and laboratory certificates</li> </ul>
	<ul style="list-style-type: none"> <li>Rainfall monitoring</li> </ul>	<ul style="list-style-type: none"> <li>At all times</li> </ul>	<ul style="list-style-type: none"> <li>Automated real time measurements of rainfall with telemetry</li> </ul>	<ul style="list-style-type: none"> <li>Real time 4-hourly measurements downloaded as required. Data stored/archived in a dedicated data base</li> </ul>
	<ul style="list-style-type: none"> <li>Compile results of the monitoring program including a review and assessment of trends, exceedances and impacts</li> </ul>	<ul style="list-style-type: none"> <li>Annually</li> </ul>	<ul style="list-style-type: none"> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Annual report</li> </ul>

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

## 12.0 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**

**Sampling May 2021**  
**Ref. ES2118350**



**ALS** Environmental

## CERTIFICATE OF ANALYSIS

**Work Order** : ES2118350  
**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** : 17-May-2021 08:35  
**Date Analysis Commenced** : 17-May-2021  
**Issue Date** : 24-May-2021 15:09



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*

Ankit Joshi

*Position*  
Inorganic Chemist

*Accreditation Category*

Sydney Inorganics, Smithfield, NSW



Page : 2 of 2  
 Work Order : ES2118350  
 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 Contact 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.

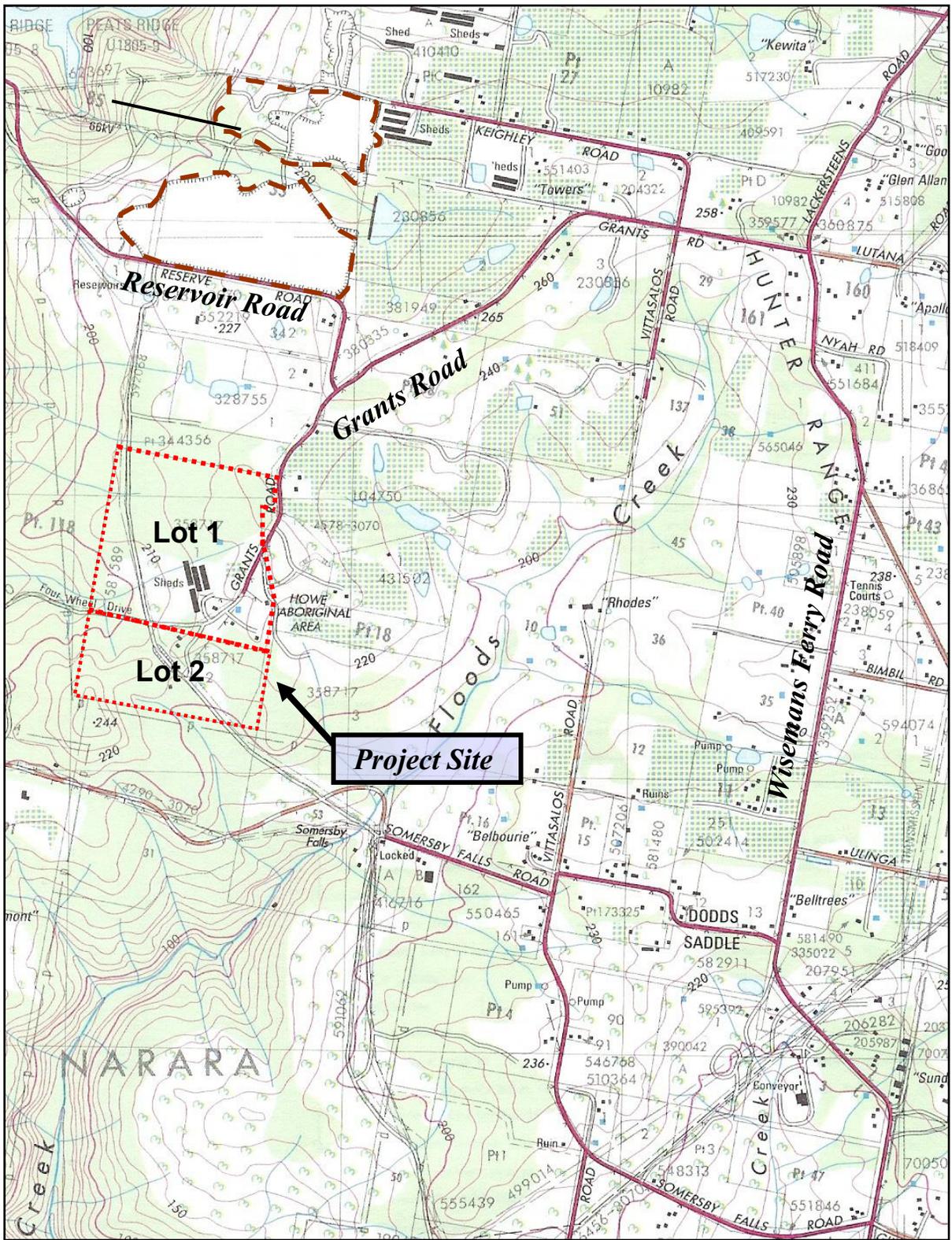
~ = Indicates an estimated value.

- TDS by method EA-015 may bias high for sample 1 and 2 due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.

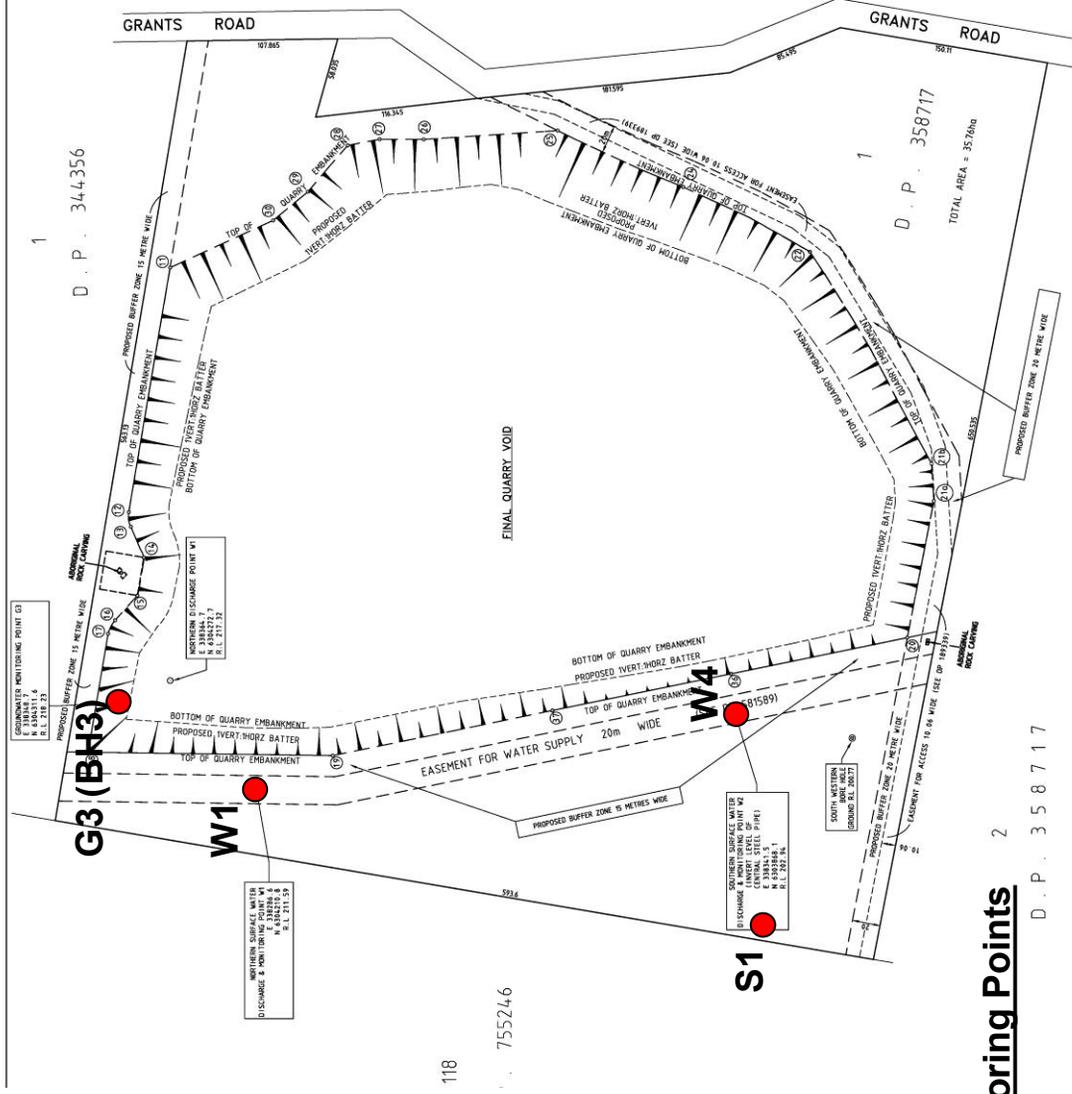
### Analytical Results

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	6.69	6.71	4.98	4.51
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Total Dissolved Solids @180°C	----	10	mg/L	79	69	-----	-----
Total Dissolved Solids @180°C	----	10	mg/L	-----	-----	119	120
EA025: Total Suspended Solids dried at 104 ± 2°C							
Suspended Solids (SS)	----	5	mg/L	8	11	<5	<5
EK059C: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	5.26	5.22
EK061C: Total Kjeldahl Nitrogen By Discrete Analyser							
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.9	0.8	0.8
EK062C: Total Nitrogen as N (TKN + NOx) by Discrete Analyser							
Total Nitrogen as N	----	0.1	mg/L	0.9	0.9	6.1	6.0
EK067C: Total Phosphorus as P by Discrete Analyser							
Total Phosphorus as P	----	0.01	mg/L	0.07	0.11	<0.01	<0.01

# FIGURES



<p><b>Larry Cook Consulting</b>          PO Box 8146          Tumby Umbi NSW 2261          Ph: 02 4340 0193</p>	<p><b>Grants Road Sand Quarry</b></p>	<p>Scale: As shown</p>
	<p>Location of Project Site</p>	<p><b>FIGURE 1</b></p>



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

**Groundwater Monitoring Points  
G3**

Modified after Stephen Thorne & Associates (2015)

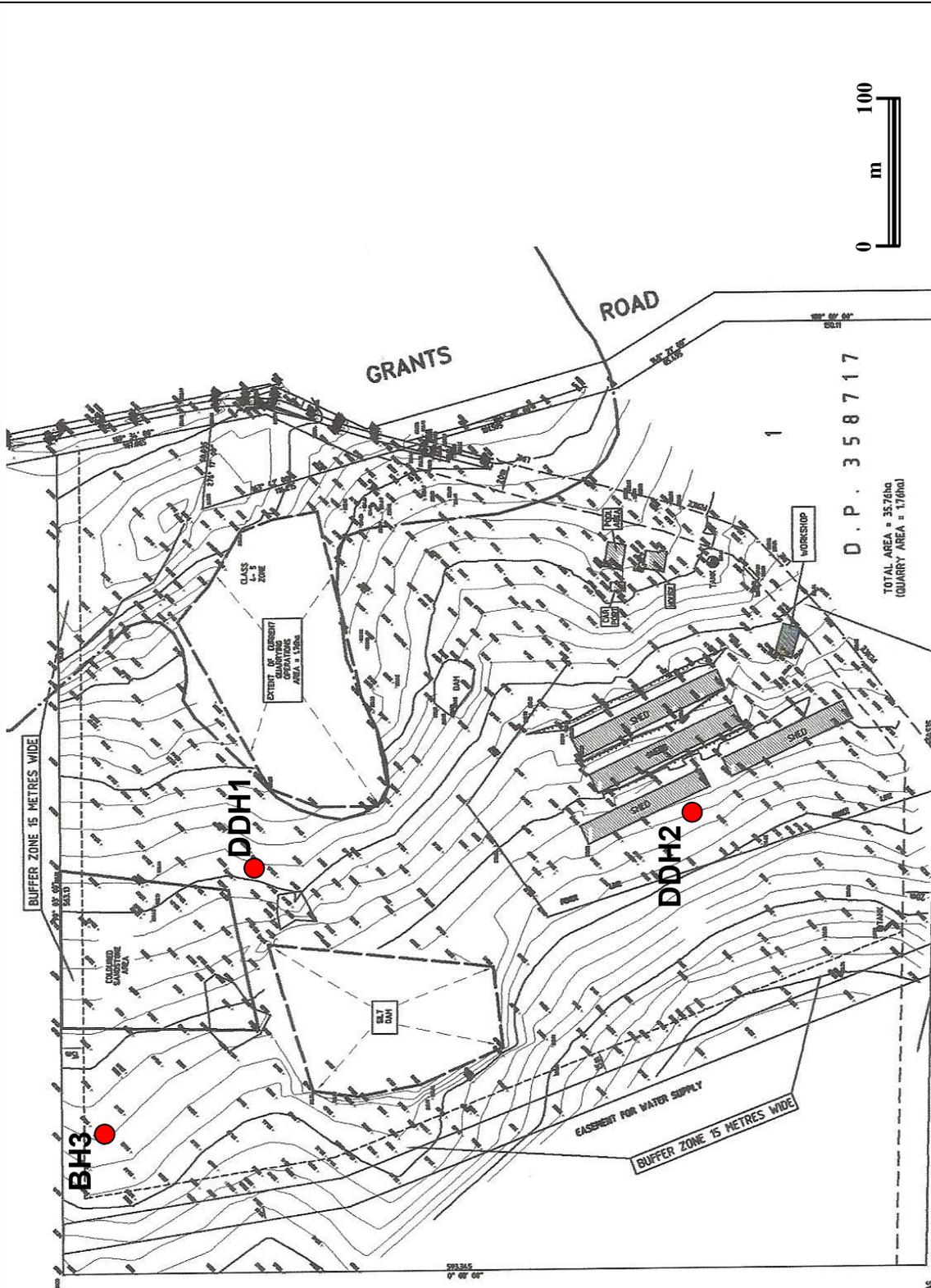
Larry Cook Consulting  
PO Box 8146  
Tumbi Umbi NSW 2261  
Ph 02 4340 0193

**Grants Road Sand Quarry**  
Locations of Monitoring Sites



Scale: As shown

**FIGURE 2**

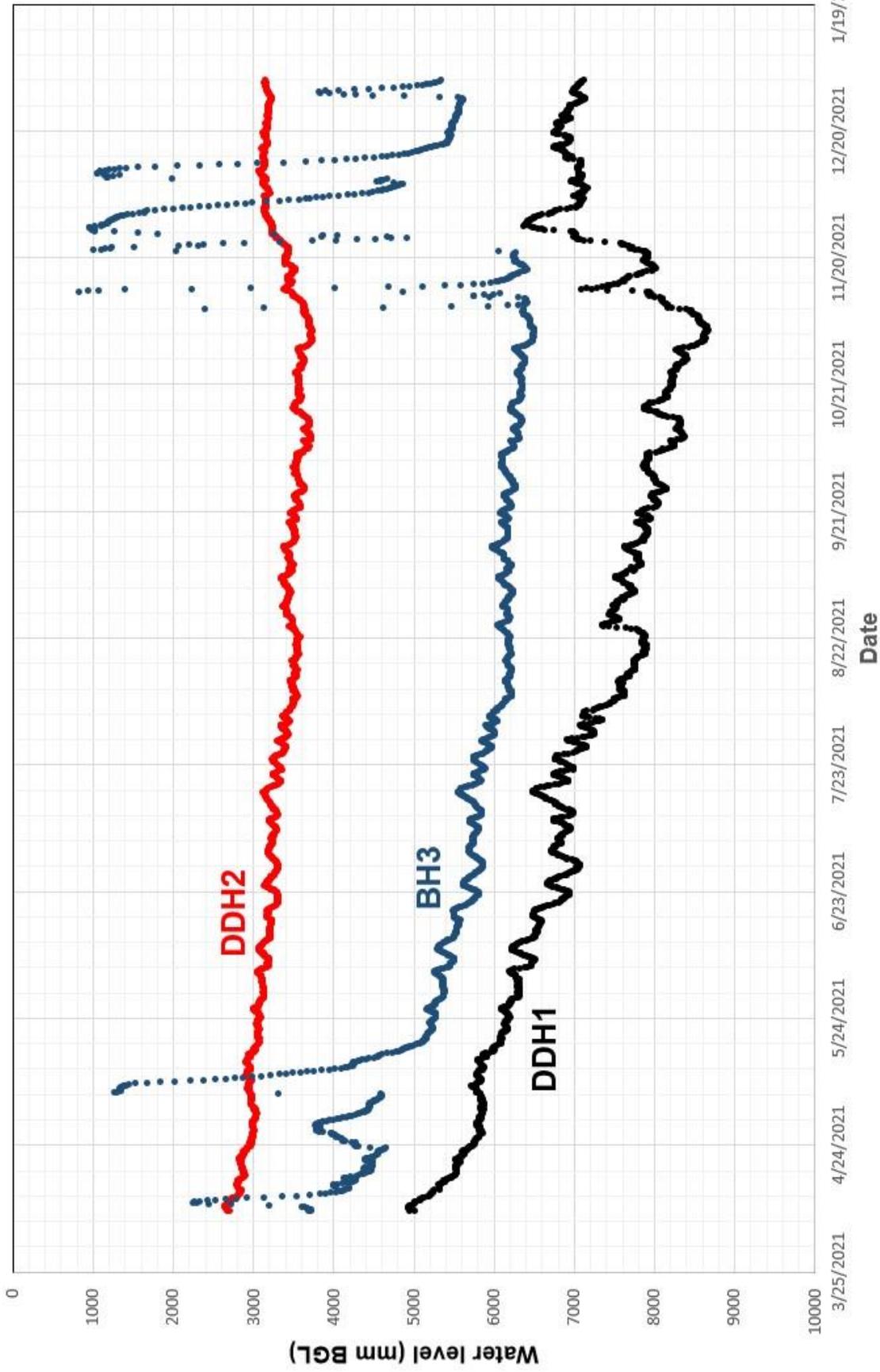


● Existing Monitoring Bore

Scale: As shown  
**FIGURE 3**

**Grants Road Sand Quarry**  
 Site Plan and Locations of Monitoring Bores

*Larry Cook Consulting*  
 PO Box 8146  
 Tumbi Umbi NSW 2261  
 Ph 02 4340 0193



Larry Cook Consulting  
 PO Box 8146  
 Tumbi Umbi NSW 2261  
 Ph 02 4340 0193

**Grants Road Sand Quarry**  
 Composite Hydrographs



Scale: As shown  
**FIGURE 4**

Appendix 6  
**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](mailto:AtkinsAcoustics@bigpond.com.au)

**Attention:** Steve Jones

16 December 2021

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

**ENVIRONMENTAL NOISE AUDIT**  
**GRANTS ROAD SAND QUARRY. SOMERSBY**  
**ENVIRONMENTAL PROTECTION LICENCE 11240**  
**DECEMBER 2021**

## 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 is from 1 January 2021 to 15 December 2021. 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 interviews 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:
- between 7.00 am and 6.00 pm, Monday to Friday;
  - between 7.00 am and 1.00 pm, Saturday; and
  - 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:
- delivery or dispatch of materials as requested by 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.

#### 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	Noise Level dBA
All	LAeq 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

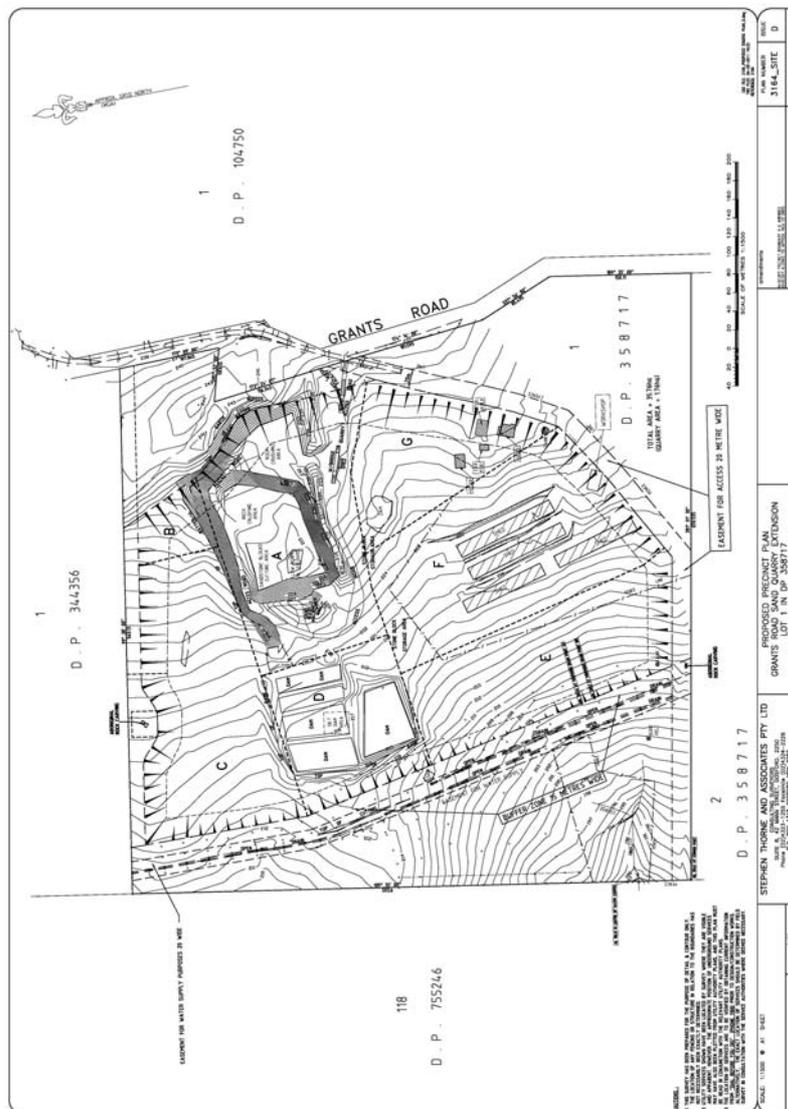
Time Period	Measurement Parameter	Measurement Frequency	Noise Level dBA
All	LAeq 15minute	n/a	40

### 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:

- McClosky (Tricon) Screen and loader south-east portion of Area A.
- Two excavators one with saw cutting eastern side Area A.
- Washing Plant and loader south area of 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 15 December 2021.

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  $\pm 0.5$  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 north-west breeze (1.3 - 1.8m/sec), air temperature 24°C, relative humidity 40% and clear sky.

### 4.3 Review of Noise Related Incidents

The Site Quarry Manager confirmed that no noise related incidents were reported during the period from 1 January 2021 to 15 December 2021.

## 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 x 10<sup>-6</sup> Pa

Measured Ambient Sound Pressure Levels dBA				Estimated Grants Road Sand Contribution L <sub>Aeq, 15min</sub>	Comments
L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>A1</sub>		
<b>Location 1: Ibels Residence – 380 Somersby Falls Road</b>					
40.2	43.2	31.6	50.3	<35	Birds, GRS mobile plant not audible
<b>Location 2: McGregor Residence – 239 Grants Road</b>					
41.8	41.5	36.9	47.4	<38	Birds; Distant road traffic, GRS FEL and saw cutting at times L <sub>Amax</sub> 34/5dBA.
<b>Location 3: Sammut Residence – 210 Grants Road</b>					
42.7	45.5	33.3	54.5	<38	Birds; Distant road traffic: GRS onsite truck, FEL and saw cutting at times L <sub>Amax</sub> 36/8dBA

### 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<sub>Aeq, 15min</sub> 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 <sub>Aeq, 15min</sub> 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: <38dBA	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 1-2 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 15 December 2021.

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 1 January 2021 to 15 December 2021

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 1-2 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"> <li>Continue to undertake noise monitoring to determine whether the project is complying with the relevant conditions of Approval.</li> <li>Maintain the effectiveness of noise suppression equipment on plant and equipment</li> </ul>

### 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"> <li>Continue to undertake noise monitoring.</li> <li>Continue onsite inspections of plant and equipment to ensure noise mitigations are operational and effective</li> </ul>

## ATTACHMENT 2: ASSESSMENT MONITORING LOCATIONS

(Reference Source: Six Maps)



## ATTACHMENT 3: Svan Certificate of Calibration.

**CERTIFICATE OF CALIBRATION**

CERTIFICATE NO.: **SLM 42246 & FILT 5696**

**Equipment Description:** Sound & Vibration Analyzer

**Manufacturer:** Svantek

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

**Microphone Type:** 7052E      **Serial No:** 48484

**Preamplifier Type:** SV12L      **Serial No:** 22940

**Filter Type:** 1/3 Octave      **Serial No:** 9713

**Comments:** All tests passed for type 1.  
(See over for details)

**Owner:** Atkins Acoustics  
21 Ernest Street  
Hunters Hill NSW 2110

**Ambient Pressure:** 1005 hPa  $\pm 1.5$  hPa

**Temperature:** 23 °C  $\pm 2^\circ$  C      **Relative Humidity:** 59%  $\pm 5\%$

**Date of Calibration:** 18/03/2020      **Issue Date:** 18/03/2020

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

**CHECKED BY:** *IKB*      **AUTHORISED SIGNATURE:** *[Signature]*  
Hein Soc

Accredited for compliance with ISO/IEC 17025 - Calibration  
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Appendix 7  
**BASELINE AIR QUALITY MONITORING**  
Environmental Resources Management (ERM)



## Compliance Monitoring Annual Report 2021

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

24 March 2022

Project No.: 0476648

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## Signature Page

24 March 2022

# Compliance Monitoring Annual Report 2021

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



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## Acronyms and Abbreviations

<b>Name</b>	<b>Description</b>
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 <sub>10</sub>	airborne particulate matter with an aerodynamic diameter of less than 10 µm
PM <sub>2.5</sub>	airborne particulate matter with an aerodynamic diameter of less than 2.5 µm
µg/m <sup>3</sup>	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 2021. Dust parameters measured were particulate matter (PM<sub>10</sub>), deposited dust and, respirable crystalline silica (RCS).

No exceedances of the air quality criteria were measured during the 2021 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 is 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. The required monitoring locations are shown in **Figure 2** Figure .

The results of the monitoring programs are provided on an annual basis. This report summarises the data collected during the January to December 2021 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)<sup>1</sup> “*Approved methods for the sampling and analysis of air pollutants in NSW*” (NSW DEC 2005).

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 – PM<sub>10</sub> – 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 3580.1.1:2007 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 3580.1.1:2007. 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.

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<sup>1</sup> 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

<b>Project name</b>	<b>Grants Road Sand Quarry Extension</b>
Application Number	08_0099
Address	270 Grants Road, Somersby NSW 2250 ( <b>Figure 2</b> )
Project Phase	Operational Compliance Report
Compliance Reporting Period	1 January 2021 to 31 December 2021
Project Activity Summary	Measurements for Respirable Crystalline Silica (RCS), PM <sub>10</sub> , 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 PM <sub>10</sub> monitoring measurement as described in Section 1.	No exceedances in reporting period for PM <sub>10</sub> or deposited dust.
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.	Remote access to the weather station to enable SMS alerts.
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, PM <sub>10</sub> monitoring and meteorological measurement as described in Section 1.	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, PM <sub>10</sub> monitoring and meteorological measurement as described in Section 1.	No exceedances in reporting period for PM <sub>10</sub> or deposited dust.
Schedule 3, Condition 13	For the life of the project, the Proponent shall 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 for 2021 was above the required 90%
Schedule 4, 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	PM <sub>10</sub> monitoring as described in Section 1.	No incidents recorded.

## 4. NON-COMPLIANCES

A non-compliance was recorded during the 2021 reporting period. The non-compliance occurred as only 48 out of 60 PM<sub>10</sub> samples were taken from the high volume air sampler (HVAS). Further detail around the non-compliance is provided in **Section 8.2.1**. 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/m<sup>3</sup>. Given the introduction of this requirement near the end of the annual reporting period, insufficient data is available for evaluation of an annual average TSP concentration. This monitoring should be conducted so that the TSP concentration can be evaluated for the 2022 calendar year.

## 5. PREVIOUS REPORT ACTIONS

No outstanding action items from previous reporting period (2021).

## 6. INCIDENTS

No incidents were notified from Grants Road Sand Quarry during the 2021 reporting period.

## 7. COMPLAINTS

No complaints arising from Grants Road Sand Quarry were received during the 2021 reporting period.

## 8. MONITORING DATA SUMMARIES

### 8.1 Meteorology

The valid data recovery rate for each meteorological parameter during the reporting period is 100%.

#### 8.1.1 Wind data

A wind rose for the annual period 2021 is presented in **Figure 3**. 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 1.7%.

#### 8.1.2 Temperature

A plot of the daily average temperature, recorded at 2 m and 10 m, is shown in **Figure 4**. The maximum daily average of 28°C was recorded on 26 January 2021. The monthly average temperature is shown in **Table 2**. July was the coldest recorded month on average and January was the hottest month on average.

#### 8.1.3 Rainfall

A plot of the daily total rainfall is shown in **Figure 5** and the total monthly rainfall is shown in **Figure 6**. July recorded the highest monthly total rainfall of 9 mm.

### 8.2 Air Quality

The NSW EPA specifies air quality assessment criteria relevant for assessing impacts from air pollution (**NSW DEC, 2005**). 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 Ambient Air-NEPM) (**NEPC, 1998, NEPC, 2003**). In January 2017, the NSW EPA released their updated Approved Methods (**EPA, 2016**) to amend the annual average PM<sub>10</sub> criterion from 30 µg/m<sup>3</sup> down to 25 µg/m<sup>3</sup>. The data for this report is referenced to the 25 µg/m<sup>3</sup> criteria only.

**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. That is, the criteria stated form the basis for the standards to be achieved at the quarry.

#### 8.2.1 Particulate matter (PM<sub>10</sub>)

The results for the available PM<sub>10</sub> data are presented in **Figure 7**. Of a possible 60 samples (over approximately 12 months), forty-eight (48) samples are reported, resulting in a data recovery rate of approximately 80%. As indicated in Section 4, as all 60 samples have not been taken this represents a non-compliance. The reasons for the missing samples are as follows:

- Between 1<sup>st</sup> and 4<sup>th</sup> January no samples were taken as the quarry was shut for the Christmas and New Year period. After 4<sup>th</sup> January there were power issues with the monitor not running. This resulted in three missed samples.
- During 20<sup>th</sup> May and 4<sup>th</sup> June, the staff member responsible for filter changes was unavailable. This resulted in one missed sample.
- During July, the HVAS sampler would not run automatically and required a technician to fix the issue. This resulted in four missed samples.
- During August, there was an issue with the electrics which prevented the monitor from running. This resulted in one missed sample.

- On 7 December an issue was identified with the HVAS which required a technician to fix however due to a lack of technical availability this issue could not be fixed before the end of the calendar. This resulted in three samples being missed.

The average PM<sub>10</sub> concentration over the recorded 12-month period was 5.3 µg/m<sup>3</sup>, which is well below the annual EPA impact assessment criterion of 25 µg/m<sup>3</sup>. All reported results are below the EPA maximum 24-hour average criterion of 50 µg/m<sup>3</sup> for PM<sub>10</sub>.

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, PM<sub>10</sub> levels are considerably below their respective 24-hour and annual criterion. Even though recorded PM<sub>10</sub> levels are below criteria, throughout 2021 there were local hazard reduction burns conducted by the Rural Fire Service and instances of burn off by local land holders. The dates for these events are as follows:

- 20 April;
- 26 April;
- 2 May;
- 20 May;
- 29 May;
- 3 August;
- 15 August;
- 25 August;
- 11 September; and
- 23 September.

Annual average PM<sub>10</sub> concentrations for 2016 to 2021 are shown in **Table 5** and **Figure 8**. **Figure 9** presents the individual monitoring results from 2016 to 2021. It can be seen that PM<sub>10</sub> 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 2**. The results for the available dust deposition data are presented in **Figure 10**. Of a possible 12 samples, all 12 samples were measured and reported for both sites. The annual average monthly dust deposition level for the period of 2021 was 0.6 g/m<sup>2</sup>/month at R1 and 0.5 g/m<sup>2</sup>/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m<sup>2</sup>/month. A maximum value of 1.6 g/m<sup>2</sup>/month was recorded in June at R1, and in July and December at R4; all other recorded levels were below 1.4 g/m<sup>2</sup>/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 2021 are shown in **Table 6** and **Figure 11**. Monthly dust deposition measurements at R1 and R4 from January 2017 to December 2021 are shown in **Figure 12**.

### 8.2.3 Respirable crystalline silica

A number of crystalline silica measurements were taken on 20 April 2021. 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 and corrected for the number of hours worked in a shift. These are presented in the report by *WorkPlace Environment Consultants (WEC, 2021)*.

A summary of the results is shown **Figure 1** below indicating that levels were below the relevant workplace health and safety standards.

Job	Test	Time	Result	Standard
Bulldozer Operator Mark Barber Komatsu 375	respirable dust respirable silica	7:15-14:13 20 Apr 2021	0.011 mg/m <sup>3</sup> <0.011 mg/m <sup>3</sup>	2.100 mg/m <sup>3</sup> (10-hr) 0.035 mg/m <sup>3</sup> (10-hr)
	Ripping (2 hours) & pushing			
Excavator-Hammer Bryan Baldwin Cat 336D	respirable dust respirable silica	7:18-13:49 20 Apr 2021	0.035 mg/m <sup>3</sup> <0.010 mg/m <sup>3</sup>	2.100 mg/m <sup>3</sup> (10-hr) 0.035 mg/m <sup>3</sup> (10-hr)
	Cutting blocks from base – Adjusting hoses (30 min) – Loader for 1 hr			
Excavator Ben McGowan Cat 336E	respirable dust respirable silica	7:25-13:49 20 Apr 2021	0.036 mg/m <sup>3</sup> 0.024 mg/m <sup>3</sup>	2.100 mg/m <sup>3</sup> (10-hr) 0.035 mg/m <sup>3</sup> (10-hr)
	Setting up pads – Moving soft material – Adjusting hoses (20 min)			
Excavator-Single Blade Xander Patterson Cat 330F	respirable dust respirable silica	7:37-14:00 20 Apr 2021	0.060 mg/m <sup>3</sup> 0.024 mg/m <sup>3</sup>	2.100 mg/m <sup>3</sup> (10-hr) 0.035 mg/m <sup>3</sup> (10-hr)
	Also Cat 972 loader for 1 hr			
<b>Comments</b> Light winds, last rains 35 mm 8-10 Apr then 1.4 mm 17-18 Apr (Gosford)				

**Figure 1: Crystalline Silica Measurement Results Summary (WEC, 2021).**

## 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 (PM<sub>10</sub>), deposited dust and, respirable crystalline silica (RCS) were measured during the reporting period. No exceedances of the air quality criteria were measured during the 2021 reporting period. There were also no reported incidents or complaints received.

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 monitoring requirement was introduced into EPL 11240 on 12 October 2021. The annual report for 2022 should also include a summary of compliance with the EPL 11240 air quality monitoring requirements and air quality criteria.

## 10. LIMITATIONS

1. This report is based solely on the scope of work described in proposal '0476648 Grant Road 2021 Annual Report 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 2021 and January 2022 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 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 - PM<sub>10</sub> high volume sampler with size-selective inlet - Gravimetric method. AS 3580.9.6:2015.

Australian Standard / New Zealand Standard (2007). Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment. AS 3580.1.1:2007

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NSW EPA (2016). "Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales". NSW Environment Protection Authority. December 2016.

PAEHolmes (2013). "Air Quality Impact Assessment – Extension of Grants Road Quarry".

VEPA (2007). "Protocol for Environmental Management: Mining and Extractive Industries", Prepared by the Victorian EPA, December 2007.

WEC (2021). "*Exposure to Dust and Crystalline Silica Dust (Apr 2021), Grants Rd Sands*", report prepared by WorkPlace Environment Consultants, 30 April 2021.

## **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/m <sup>2</sup>			AM-4

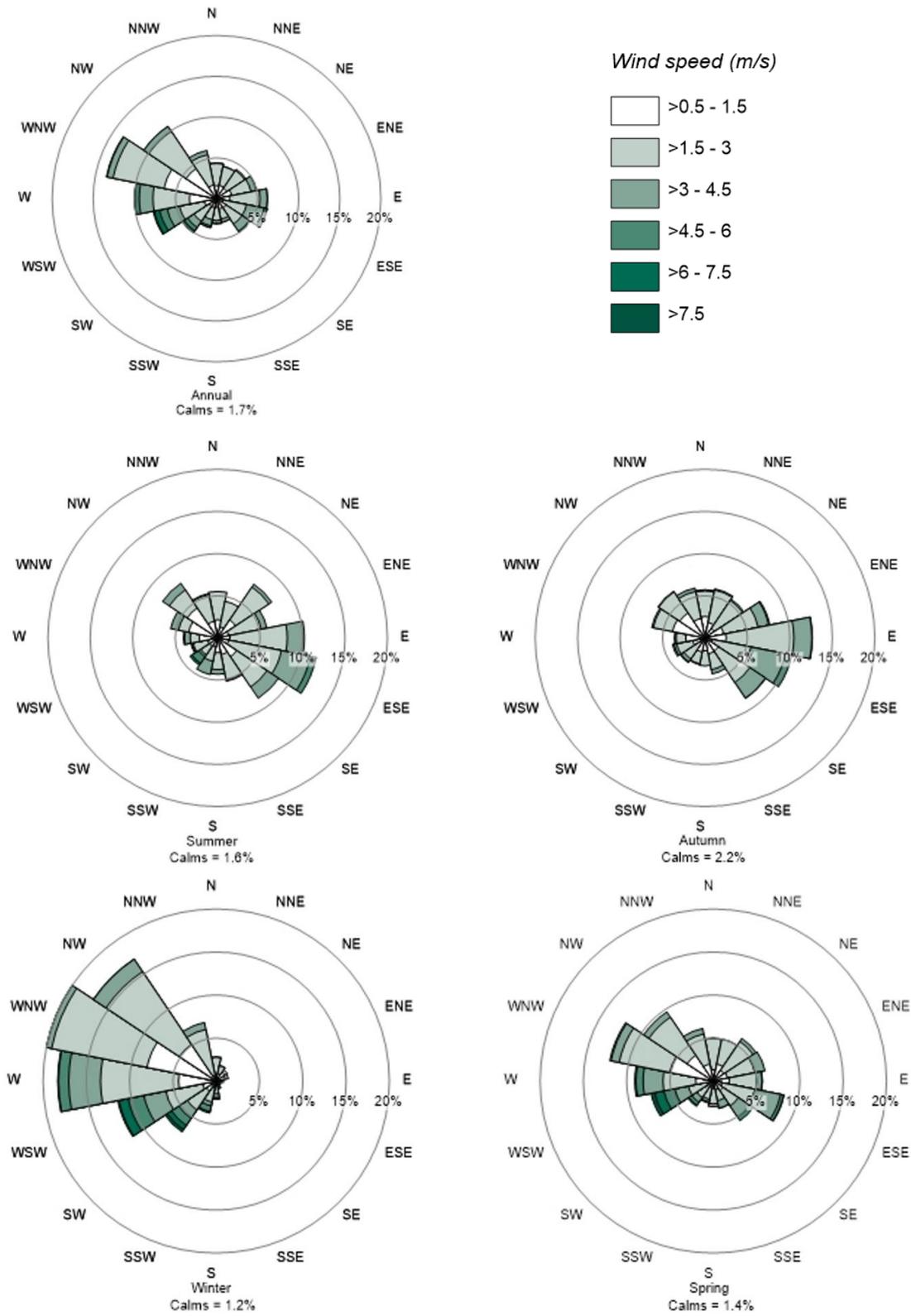
## Monitoring Locations

The Grants Road Sand Quarry compliance monitoring locations are shown in **Figure 2**. Featured are the automatic weather station (AWS), the High Volume Air Sampler (HVAS) and two dust deposition gauges (R1 and R4).



**Figure 2: Monitoring Locations at Grants Road Quarry**

### Wind Data

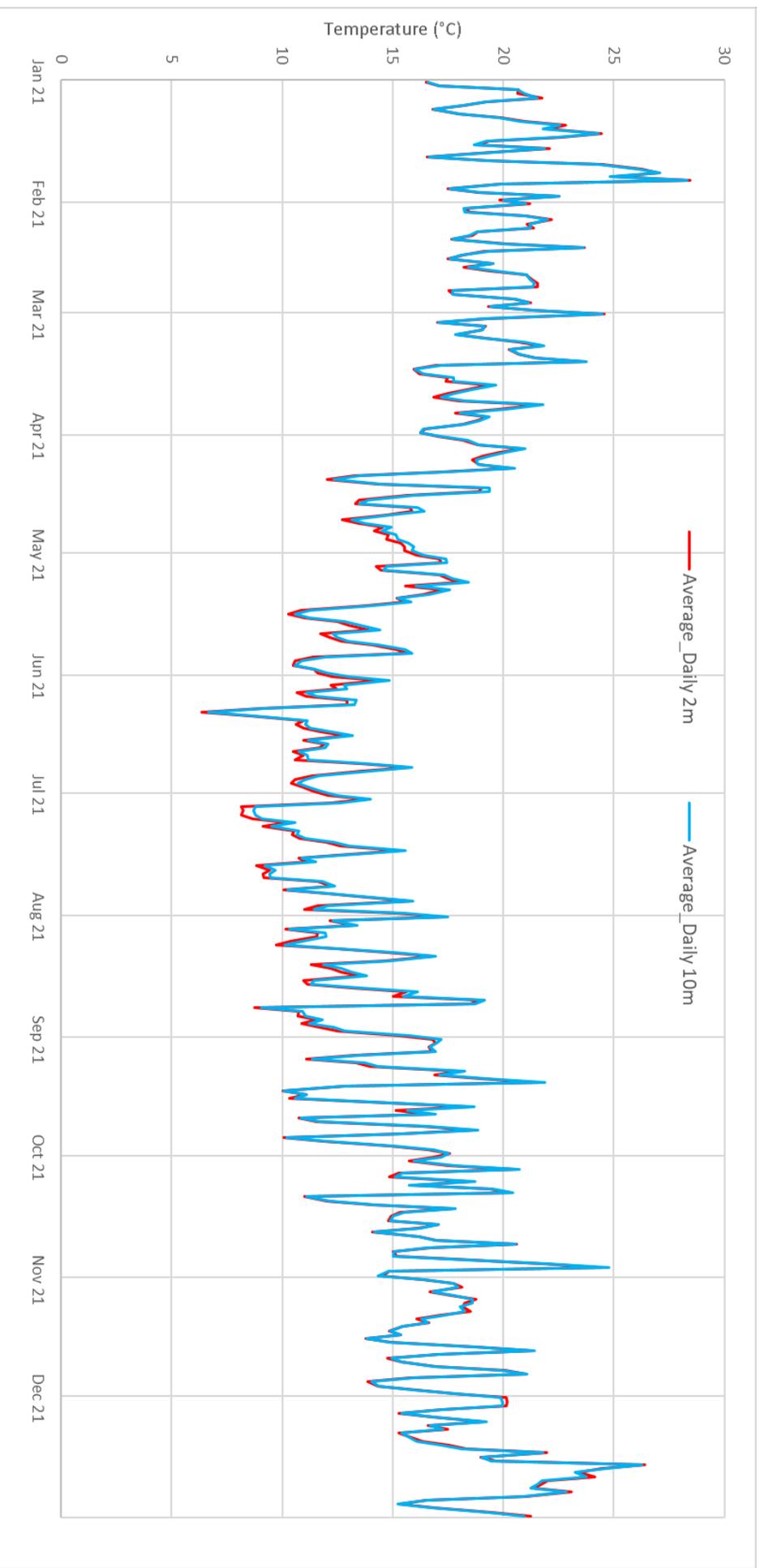


**Figure 3: Grants Road Sand Wind Rose, 2021**

## Temperature

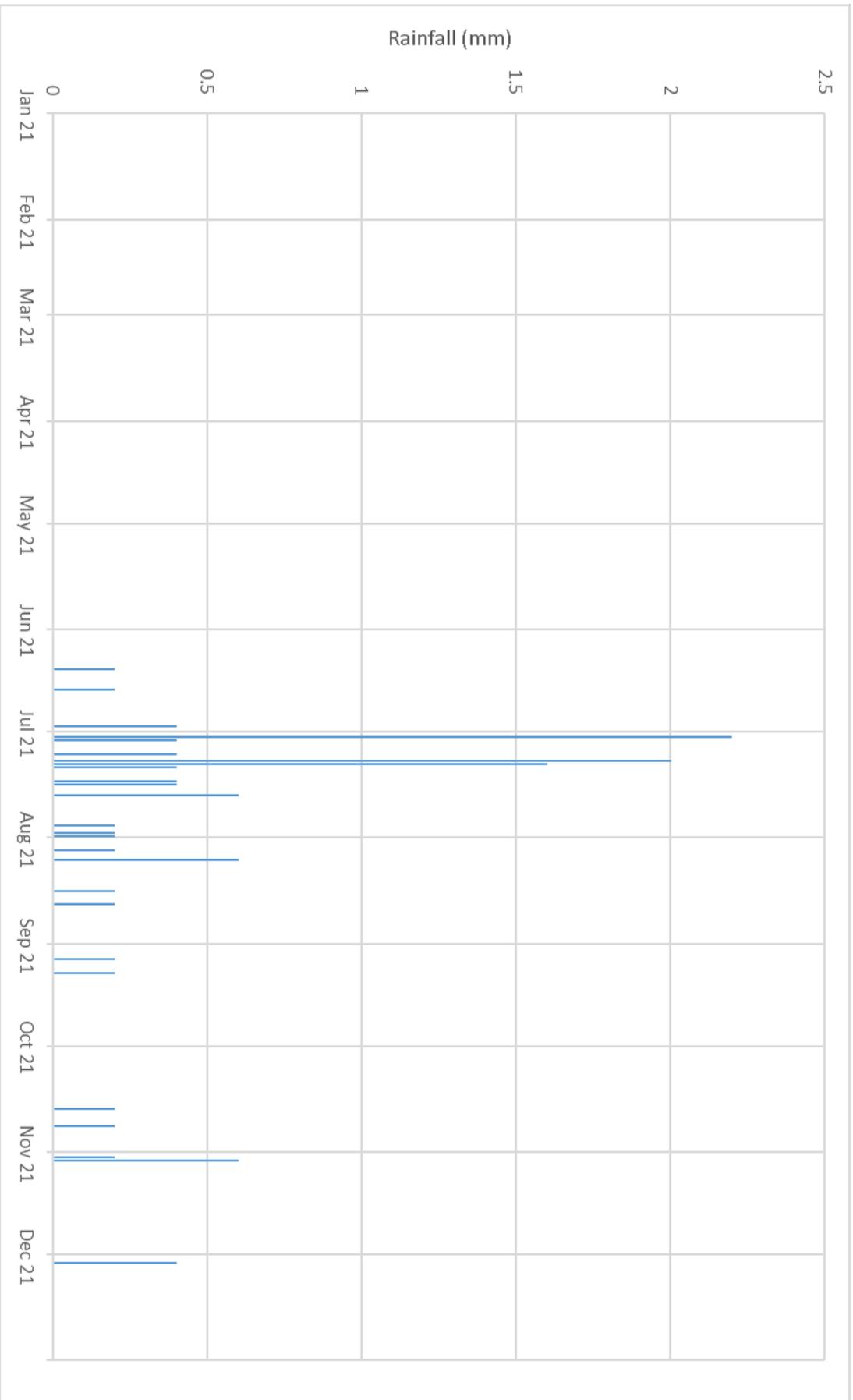
**Table 2: Monthly Average Temperature, 2021**

Month	Monthly Average Temperature at 2m (°C)	Monthly Average Temperature at 10m (°C)
January	20.9	20.8
February	19.9	19.9
March	18.9	19.1
April	16.2	16.5
May	14.0	14.3
June	11.5	11.8
July	11.2	11.5
August	12.9	13.2
September	14.9	15.1
October	16.7	16.8
November	16.9	17.0
December	19.5	19.4

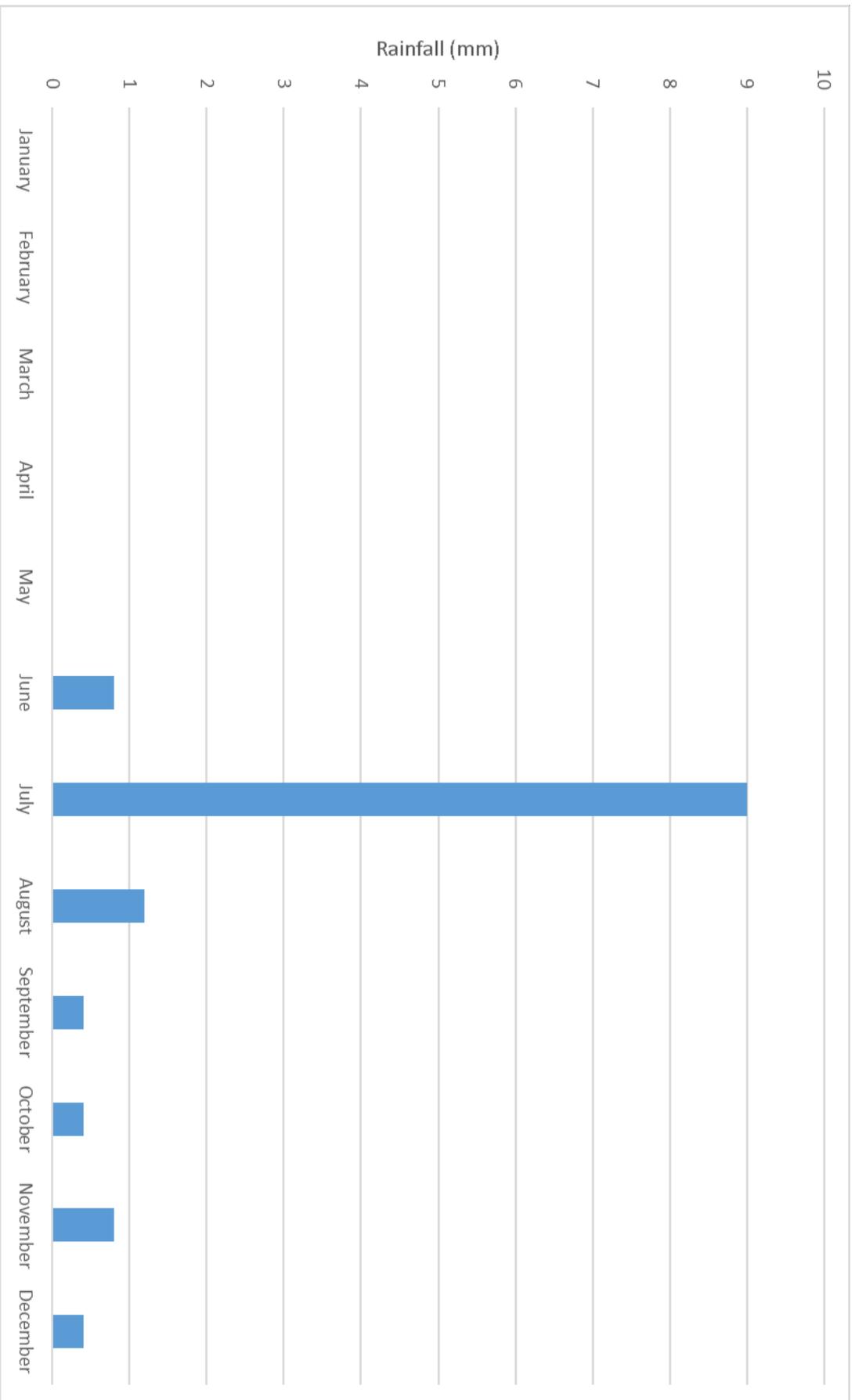


**Figure 4: Average Daily Temperature, 2021**

## Rainfall



**Figure 5: Daily Rainfall, 2021**



**Figure 6: Monthly Rainfall Total, 2021**

## Air Quality

The NSW EPA specifies air quality assessment criteria relevant for assessing impacts from air pollution (NSW DEC, 2005). 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 Ambient Air-NEPM) (NEPC, 1998, NEPC, 2003). In January 2017, the NSW EPA released their updated Approved Methods (EPA, 2016) to amend the annual average PM<sub>10</sub> criterion from 30 µg/m<sup>3</sup> down to 25 µg/m<sup>3</sup>. The data for this report is referenced to the 25 µg/m<sup>3</sup> criteria only.

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. That is, the criteria stated form the basis for the standards to be achieved at the quarry.

**Table 3: Air Quality Standards / Goals for Particulate Matter**

Pollutant	Averaging Period	Standard / Goal	Agency
Particulate matter with an equivalent aerodynamic diameter less than 10 µm (PM <sub>10</sub> )	24-hour maximum	50 µg/m <sup>3</sup>	EPA impact assessment criteria; NEPM reporting goal (allows five exceedances per year for bushfires)
	Annual mean	25 µg/m <sup>3</sup>	EPA impact assessment criteria

Notes: µg/m<sup>3</sup> – micrograms per cubic metre, µm – micrometre.

**Table 4: Air Quality Standards / Goals for Deposited Dust**

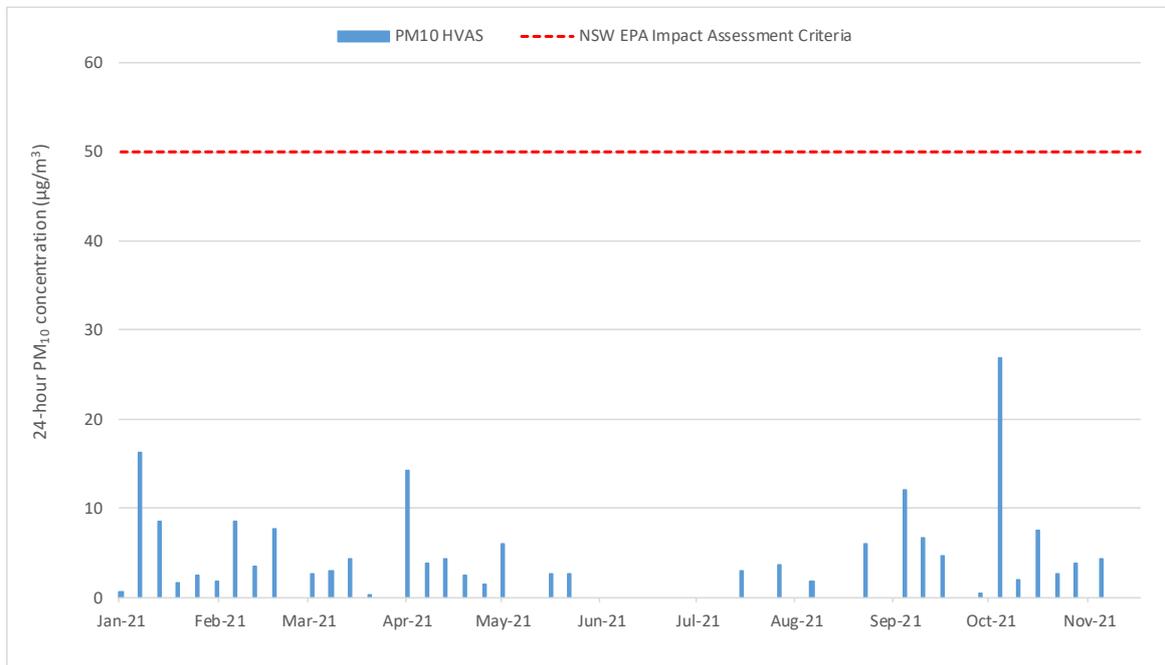
Pollutant	Averaging Period	Standard / Goal	Agency
Deposited dust (insoluble solids)	Annual mean	2 g/m <sup>2</sup> /month (Incremental)	EPA impact assessment criteria
	Annual mean	4 g/m <sup>2</sup> /month (Cumulative)	EPA impact assessment criteria

Notes: g/m<sup>2</sup>/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 (PM<sub>10</sub>)

### Measured Results



**Figure 7: HVAS monitoring results for PM<sub>10</sub>, 2021**

### 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 PM<sub>10</sub> ground level concentrations at the current location of the HVAS would be in the order of 70 µg/m<sup>3</sup>. The highest measured cumulative 24-hour PM<sub>10</sub> concentration was 26.8 µg/m<sup>3</sup> in 2021, a value considerably lower than the conservative predictions made in the air quality assessment.

The predicted annual average PM<sub>10</sub> concentration in the AQA was approximately 30 µg/m<sup>3</sup> at the HVAS location, however an annual average concentration of 5.3 µg/m<sup>3</sup> was measured in 2021. 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.

### Trend analysis for PM<sub>10</sub>

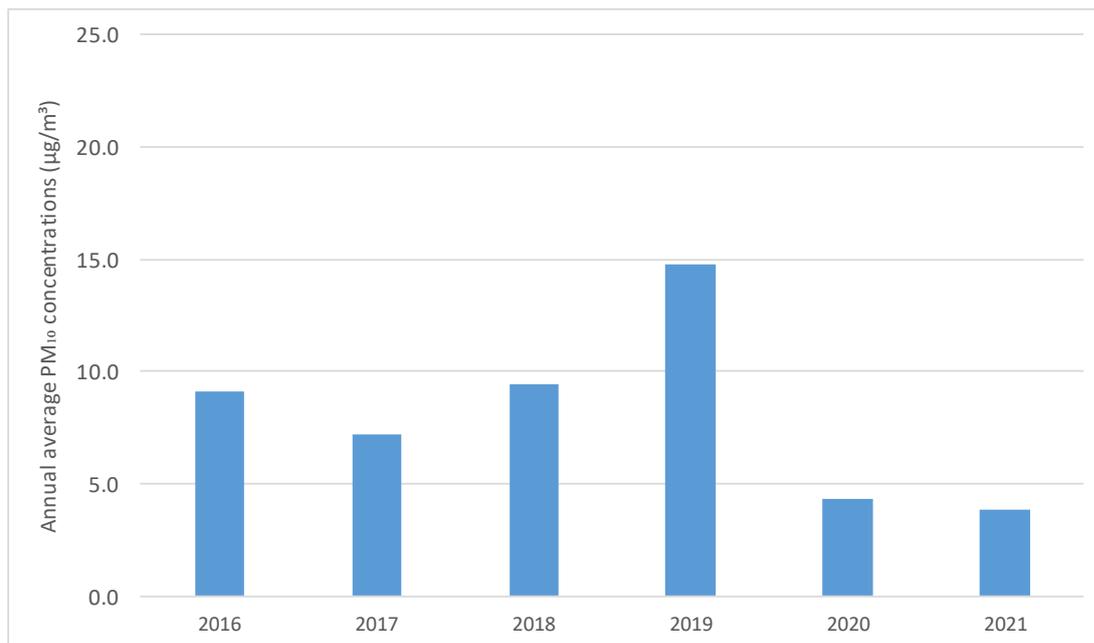
HVAS PM<sub>10</sub> monitoring results have been gathered from January 2016 to December 2021. **Table 5** and **Figure 8** present the annual average PM<sub>10</sub> concentrations from 2016 to 2021. **Figure 9** presents the individual monitoring results from 2016 to 2021.

It can be seen that PM<sub>10</sub> 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.

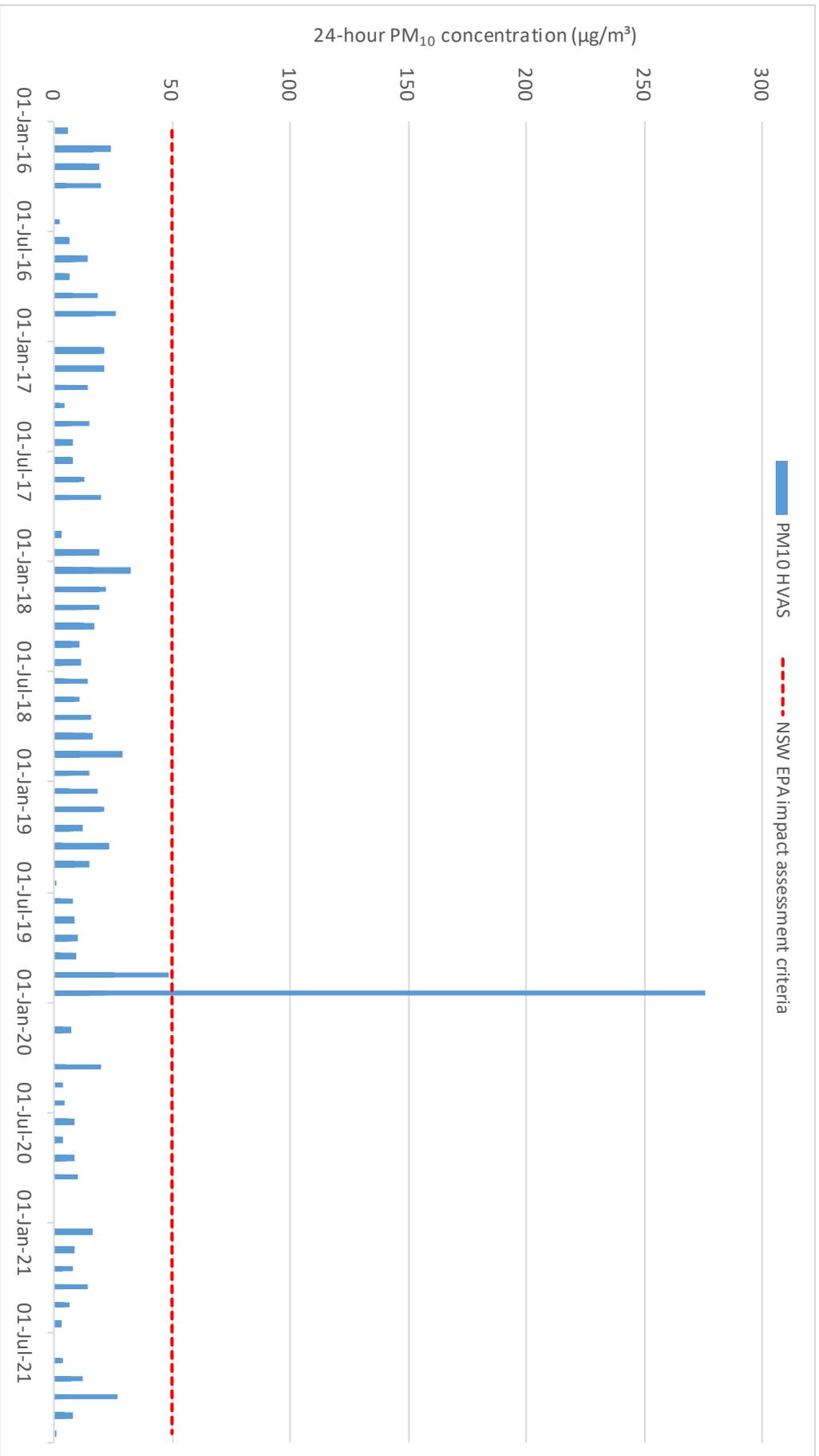
**Table 5: Annual average PM<sub>10</sub> concentrations from HVAS from 2016 to 2021**

Year	Annual average PM <sub>10</sub> concentrations (µg/m <sup>3</sup> )
2016	9.1
2017	7.2
2018	9.4
2019	14.8
2020*	4.3
2021	3.9

Notes: \*Only 9 months of data captured in 2020.



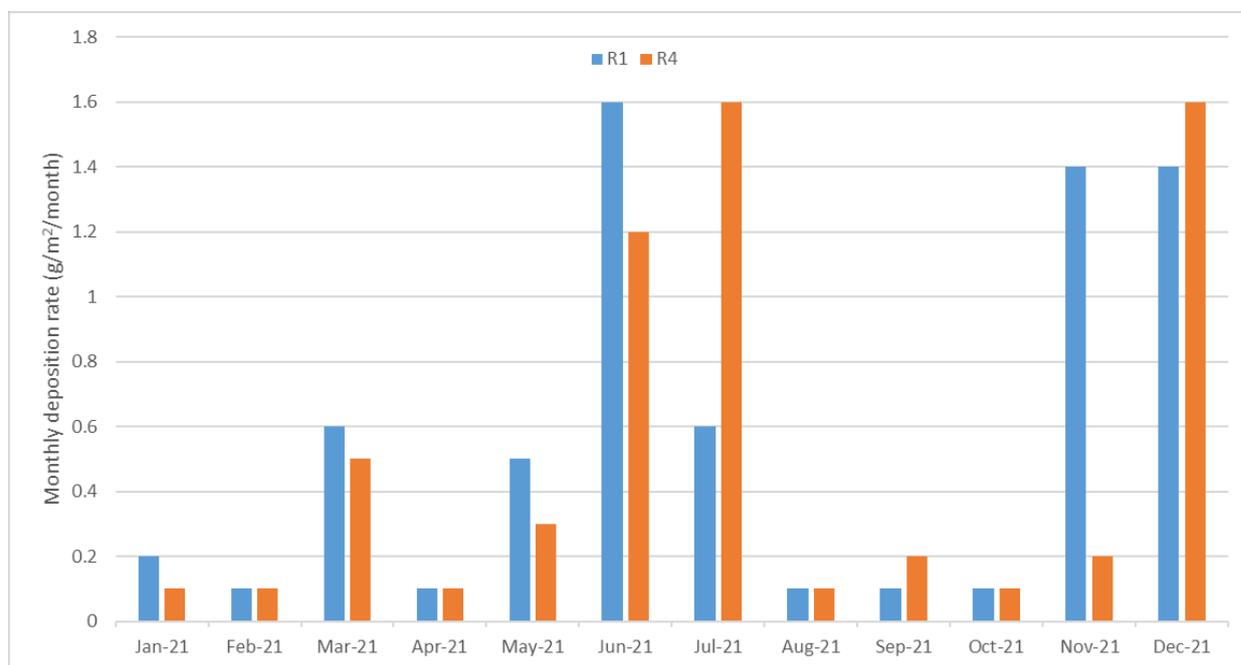
**Figure 8: Annual average PM<sub>10</sub> concentrations from HVAS for 2016 to 2021**



**Figure 9: 2016 – 2021 HVAS monitoring results for PM<sub>10</sub>**

## Dust Deposition

### Measured Results



**Figure 10: Dust deposition (total insoluble solids) monitoring results for 2021**

### 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/m<sup>2</sup>/month at R1 and 1.9 g/m<sup>2</sup>/month at R4. The measured annual average dust deposition rates are 0.6 g/m<sup>2</sup>/month and 0.5 g/m<sup>2</sup>/month at 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

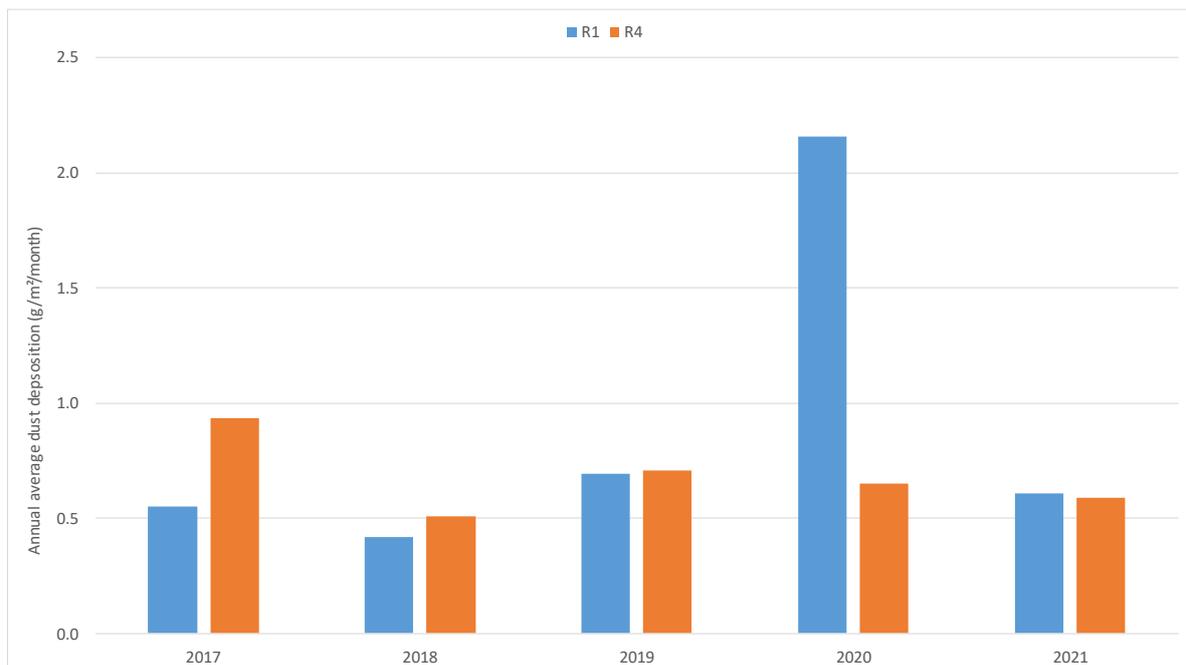
Dust deposition measurements at R1 and R4 have been gathered from January 2017 to December 2021. **Table 6** and **Figure 11** present the annual average dust deposition levels at R1 and R4. There is no clear trend in the data.

**Figure 12** presents the monthly dust deposition results from 2017 to 2021.

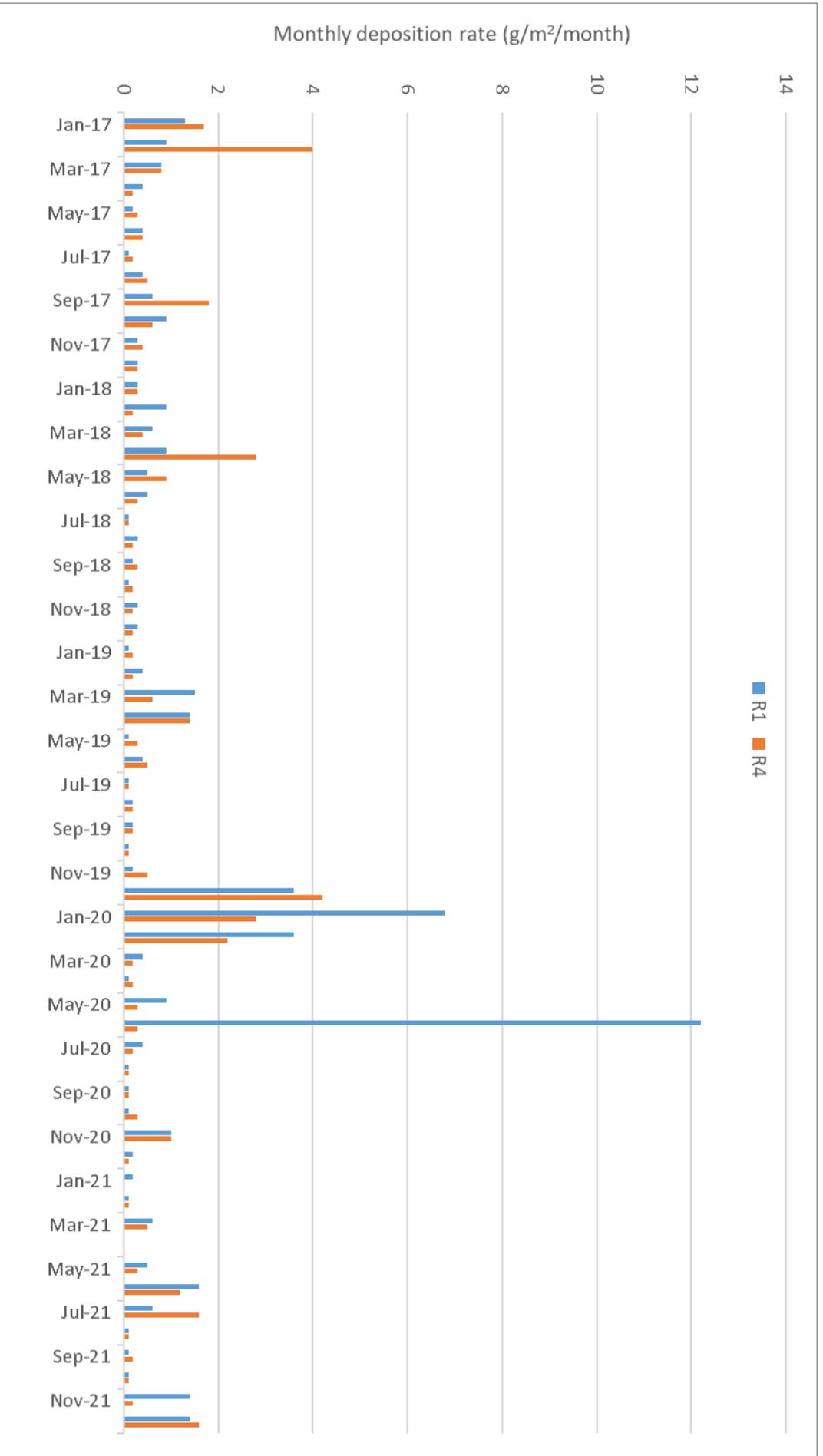
**Table 6: Annual average dust deposition levels (g/m<sup>2</sup>/month)**

Year	R1	R4
2017	0.6	0.9
2018	0.4	0.5
2019	0.7	0.7
2020*	2.2	0.7
2021	0.6	0.6

Notes: \*Only 9 months of data captured in 2020.



**Figure 11: Annual average dust deposition levels for 2017 to 2021**



**Figure 12: 2017 – 2021 dust deposition monitoring results**

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Appendix 8  
**GROUNDWATER DEPENDENT ECOSYSTEM**  
Conacher Consulting



**GROUNDWATER DEPENDANT ECOSYSTEMS  
2021 ANNUAL MONITORING REPORT**

**GRANTS ROAD  
SAND QUARRY**

**JANUARY 2022  
REF: 22003**

**GROUNDWATER DEPENDANT ECOSYSTEMS  
2021 ANNUAL MONITORING REPORT**

**GRANTS ROAD**

**SAND QUARRY**

**JANUARY 2022**

**Conacher Consulting Pty Ltd**

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## PREFACE

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This report has been prepared by *Conacher Consulting* to address the 2020 annual reporting requirements for High Priority Groundwater Dependant Ecosystems for the Grants Road Sand Quarry at Somersby.

### **REPORT PREPARED BY:**

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# SECTION 1

## INTRODUCTION & METHODS

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### 1.1 DOCUMENT INTENT

This report has been prepared by *Conacher Consulting* to address the 2021 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). An Environmental Performance Table and Compliance Status Table is provided in Appendix 1.

This version of the annual monitoring report is an adjustment version based on the 2021 calendar year rather than the previous April to March twelve month period covered in previous monitoring reports. The date adjustment was considered necessary to more accurately align with the annual reporting timeframes required for this project.

The information and data contained in this version of the monitoring report is an edited version of the 2020 report which was dated March 2021. No new vegetation plot data could be included in this report because the regular monitoring of the four floristic plots is not programmed to be completed until March 2022. Therefore, the next monitoring report will include the data obtained from the same year as the report is completed. The data will retain seasonal and annual continuity which will be more appropriate for comparative analysis purposes in later reports.

### 1.2 PROJECT SITE DETAILS

The site is located within Lots 1 & 2 DP 358717, Grants Road Somersby.

### 1.3 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 monitoring survey was undertaken on 10 March 2021. The following monitoring variables were assessed:

#### 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 14 January 2021.

**iv. Vegetation Photo Point Monitoring**

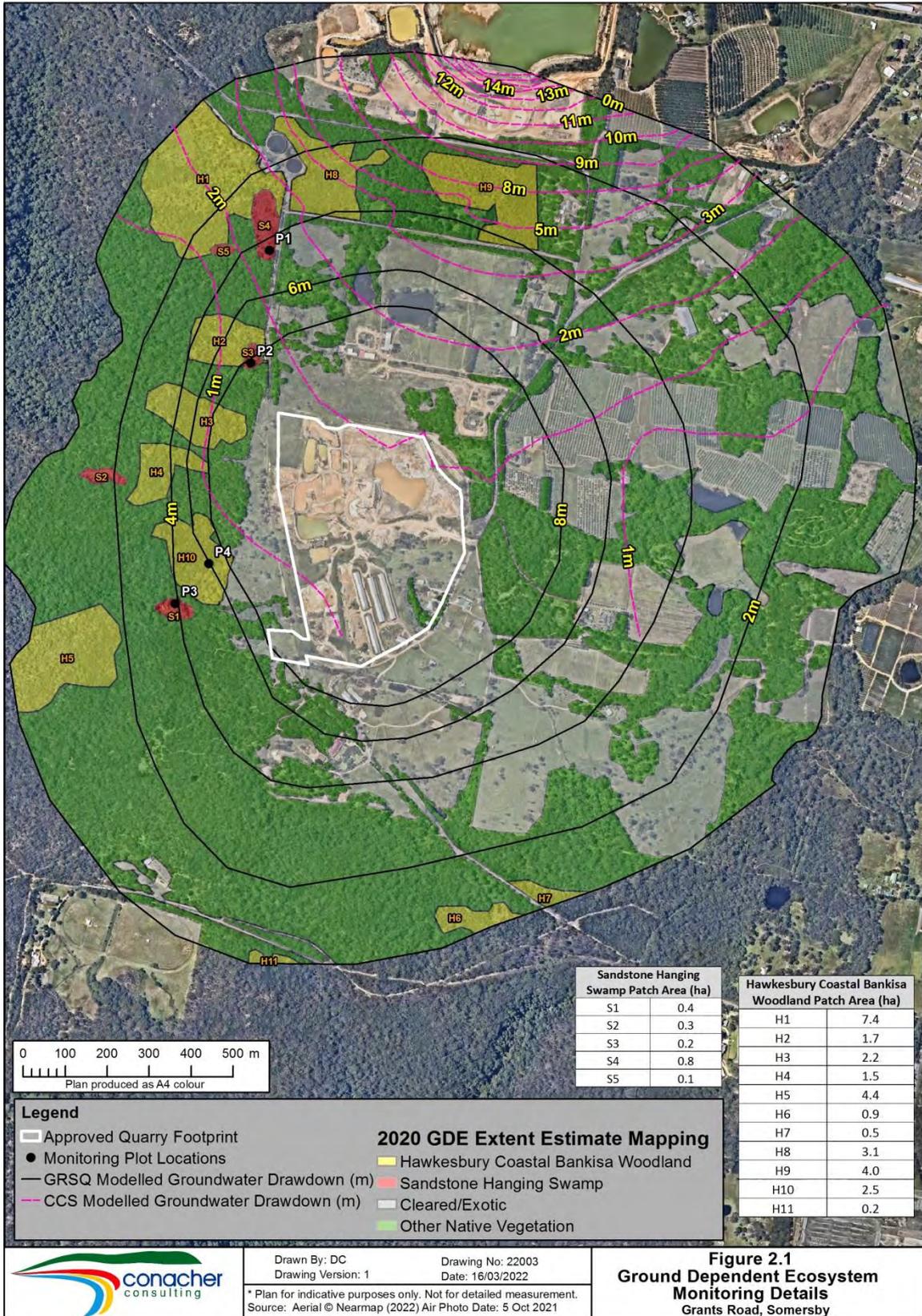
Photographs were taken for each monitoring quadrat from each cardinal point during the monitoring survey.

**v. Surface Erosion and Sedimentation Monitoring**

A visual inspection of the downstream and downslope GDE patches 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.



**Figure 2.1**  
**Ground Dependent Ecosystem**  
**Monitoring Details**  
Grants Road, Somersby

## SECTION 2

### MONITORING RESULTS

---

#### 2.1 GROUNDWATER DEPENDANT ECOSYSTEMS WITHIN 1KM

High Priority Groundwater Dependiant 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 House (2003) which has been superseded by Council's current vegetation mapping prepared by Bell (2019). Further updated 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.

No detected decrease in the extent of this GDE has occurred due to project related impacts since the previous monitoring period.

##### **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.

No decrease in the previously mapped extent of this GDE has been detected since the previous monitoring period.

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 Coastal Banksia Woodland**

The floristic composition of this vegetation type indicates that it is likely to be either a low-dependence facultative GDE or not a GDE.

The current estimated extent of Hawkesbury Banksia Scrub Woodland within the modelled drawdown area is 28.6 hectares. The sizes of individual patches are mapped and listed in Figure 1.1.

#### 2.2 FLORISTIC MONITORING RESULTS

Full floristic plots were sampled for the current monitoring period, a total of four plots were surveyed. 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.

Indicator species were determined from the floristic plot results, these species occur in moist or swamp environments such as coastal upland swamps. There are several other species characteristic of Hawkesbury Coastal Banksia Woodland and Sandstone Hanging Swamp within the plots sampled, however these 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.

An increase in indicator species richness and cover was observed for monitoring plots 1 and 2. The species richness remained the same for indicator species in monitoring plot 3, with an increase in indicator species cover. The values for indicator species remained unchanged for monitoring plot 4. There was a decline in total species cover for monitoring plot 4 as a result of the *Banksia ericifolia* (Swamp Banksia) thinning event that occurred during the monitoring period. Previous browning of *Gleichenia microphylla* observed for the 2019 monitoring period was not evident during the current surveys.

<b>TABLE 2.1 FLORISTIC PLOT RESULT SUMMARY</b>				
<b>Variables</b>	<b>Plot 1 Sandstone Hanging Swamp</b>	<b>Plot 2 Sandstone Hanging Swamp</b>	<b>Plot 3 Sandstone Hanging Swamp</b>	<b>Plot 4 Hawkesbury Coastal Banksia Woodland</b>
<b>Indicator Species Richness</b>				
2019 Monitoring	9	11	13	4
2020 Monitoring	9	11	13	4
2021 Monitoring	12	13	13	4
<b>Indicator Species Cover</b>				
2019 Monitoring	84.1	63	74.15	0.75
2020 Monitoring	79.1	63	69.15	0.75
2021 Monitoring	85.3	66.1	74.15	0.75
<b>Total Species Richness</b>				
2019 Monitoring	39	40	50	35
2020 Monitoring	39	40	50	35
2021 Monitoring	47	48	51	36
<b>Total Species Cover</b>				
2019 Monitoring	140.3	112.55	163.45	137.65
2020 Monitoring	140.3	112.55	163.45	137.65
2021 Monitoring	153	113	179	98.5

**TABLE 2.2  
2021 MONITORING FLORISTIC PLOT RESULTS**

Family	Scientific Name	Common Name	Plot 1	Plot 2	Plot 3	Plot 4	Browning / Dieback Observations
<b>TREES</b>							
Casuarinaceae	<i>Allocasuarina littoralis</i>	Black She-Oak		0.25		1	
Myrtaceae	<i>Angophora costata</i>	Sydney Red Gum			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			
<b>SHRUBS</b>							
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  
2021 MONITORING FLORISTIC PLOT RESULTS**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot 1</b>	<b>Plot 2</b>	<b>Plot 3</b>	<b>Plot 4</b>	<b>Browning / Dieback Observations</b>
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	Dieback evident in plots 1 & 2 from previous fire event. Thinning / tree fall event observed for plot 4
Proteaceae	<i>Banksia robur</i>	Swamp Banksia			0.5		

**TABLE 2.2  
2021 MONITORING FLORISTIC PLOT RESULTS**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot 1</b>	<b>Plot 2</b>	<b>Plot 3</b>	<b>Plot 4</b>	<b>Browning / Dieback Observations</b>
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				
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		
<b>Groundcovers (Forbs)</b>							
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			

**TABLE 2.2  
2021 MONITORING FLORISTIC PLOT RESULTS**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot 1</b>	<b>Plot 2</b>	<b>Plot 3</b>	<b>Plot 4</b>	<b>Browning / Dieback Observations</b>
Haemodoraceae	<i>Haemodorum corymbosum</i>		0.1				
Haloragaceae	<i>Gonocarpus micranthus</i>			0.1			
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	
<b>Groundcovers (Ferns)</b>							
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	Previous browning not evident
Lindsaeaceae	<i>Lindsaea linearis</i>	Screw Fern			0.1	0.25	
Selaginellaceae	<i>Selaginella uliginosa</i>	Swamp Selaginella		0.1	0.1		
<b>Groundcovers (Monocots)</b>							
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		

**TABLE 2.2  
2021 MONITORING FLORISTIC PLOT RESULTS**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot 1</b>	<b>Plot 2</b>	<b>Plot 3</b>	<b>Plot 4</b>	<b>Browning / Dieback Observations</b>
Cyperaceae	<i>Schoenus melanostachys</i>				0.5		
Lomandraceae	<i>Lomandra gracilis</i>					10	
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				
<b>Groundcovers (Other)</b>							
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		

**TABLE 2.2  
2021 MONITORING FLORISTIC PLOT RESULTS**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot 1</b>	<b>Plot 2</b>	<b>Plot 3</b>	<b>Plot 4</b>	<b>Browning / Dieback Observations</b>
Luzuriagaceae	<i>Eustrephus latifolius</i>	Wombat Berry				0.1	
Orchidaceae	<i>Cymbidium suave</i>	Snake Orchid			0.1		
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			
<b>Exotics</b>							
Verbenaceae	<i>Lantana camara</i>	Lantana	0.1				
	<i>Ageratina adenophora</i>	Crofton Weed			x		Observed adjacent to Plot 3 / was evident in baseline surveys

## **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 areas shown in Figure 1.1 during the monitoring surveys.

### **ii. Assessment of Groundwater Monitoring Data**

The Water Monitoring Reports prepared by Larry Cook Consulting (2019, 2020, 2021) for the 2018-2020 monitoring periods have been reviewed. These reports have identified that no groundwater impacts attributable to the quarry operations have been detected during the monitoring.

### **iii. GDE Photo Point Results**

The results of the photo point surveys are provided in Figures 2.1 to 2.4.

## 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 size 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 2019 monitoring period there was no significant adverse species composition or distribution changes within the GDEs, as a result of the project. Some browning of vegetation, particularly *Gleichenia microphylla*, however this is considered to be related to hot and dry climatic conditions experienced during the spring and early summer directly prior to monitoring. The previous browning detected was not observed during the current monitoring period.

During the current monitoring period thinning of *Melaleuca ericifolia* (Swamp Paperbark) was observed, particularly within Hawkesbury Coastal banksia Woodland Patch H10 including within GDE Monitoring Plot 4 where many Swamp Paperbarks have recently fallen over. Further analysis of current and historical aerial photographs has identified that dieback of Swamp Paperbark within patch H10 commenced following the 2015 back burning operations of the NPWS. The recent thinning event is likely due to landscape changes such as increased wind loading and altered surface water runoff patterns associated with the previous back burning in 2015.

No evidence was observed indicating that the recent thinning of Swamp Paperbark was caused by the operation of the quarry.

### **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 2021 site operations.

## SECTION 4

### CONCLUSIONS & RECOMMENDATIONS

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#### 4.1 CONCLUSIONS

The quarry operations for the current monitoring period have not exceeded the compliance and performance measures for High Priority Groundwater Dependant Ecosystems.

#### 4.2 RECOMMENDATIONS

The implementation of mitigation and response measures in relation to High Priority Groundwater Dependant Ecosystems and the current quarry operations is considered not necessary.

## 5. REFERENCES

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- 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.



**Figure 2.1a – Plot 1 Photo-monitoring point north aspect**



**Figure 2.1b - Plot 1 Photo-monitoring point east aspect**



**Figure 2.1c - Plot 1 Photo-monitoring point south aspect**



**Figure 2.1d - Plot 1 Photo-monitoring point west aspect**



**Figure 2.2a – Plot 2 Photo-monitoring point north aspect**



**Figure 2.2b - Plot 2 Photo-monitoring point east aspect**



**Figure 2.2c - Plot 2 Photo-monitoring point south aspect**



**Figure 2.2d - Plot 2 Photo-monitoring point west aspect**



**Figure 2.3a - Plot 3 Photo-monitoring point north aspect**



**Figure 2.3b - Plot 3 Photo-monitoring point east aspect**



**Figure 2.3c - Plot 3 Photo-monitoring point south aspect**



**Figure 2.3d - Plot 3 Photo-monitoring point west aspect**



**Figure 2.4a – Plot 4 Photo-monitoring point north aspect**



**Figure 2.4b - Plot 4 Photo-monitoring point east aspect**



**Figure 2.4c - Plot 4 Photo-monitoring point south aspect**



**Figure 2.4d - Plot 4 Photo-monitoring point west aspect**

**APPENDIX 1**  
**ENVIRONMENTAL PERFORMANCE & COMPLIANCE STATUS SUMMARY**

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

<b>TABLE A1.1 ENVIRONMENTAL PERFORMANCE TABLE</b>				
<b>Environmental Aspect</b>	<b>Approval Criteria</b>	<b>Summary of Monitoring Results in the Previous Monitoring Period</b>	<b>Summary of Monitoring Results in this Monitoring Period</b>	<b>Improvement Measures to be Implemented</b>
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"> <li>• Negligible erosion of the surface of GDEs</li> <li>• Negligible sedimentation within the GDEs</li> <li>• Minor changes in the size of the GDEs</li> <li>• No Significant change to the composition or distribution of species within the GDEs</li> </ul>	No exceedances	No exceedances	Ensure appropriate erosion and sediment controls are maintained.

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

<b>TABLE A1.2 COMPLIANCE STATUS TABLE</b>				
<b>Unique ID</b>	<b>Compliance Requirement</b>	<b>Development Phase</b>	<b>Monitoring Methodology</b>	<b>Evidence &amp; Comments</b>
Condition 19.	Negligible erosion of the surface of GDEs	Operations	Visual monitoring	Annual Monitoring Reports
	Negligible sedimentation within the GDEs	Operations	Visual monitoring	Annual Monitoring Reports
	Minor changes in the size of the GDEs	Operations	Aerial photograph and ground assessment	Annual Monitoring Reports
	No Significant change to the composition or distribution of species within the GDEs	Operations	Plot surveys	Annual Monitoring Reports

Appendix 9  
**SOMERSBY MINTBUSH**  
Conacher Consulting



**SOMERSBY MINTBUSH  
2021 ANNUAL MONITORING REPORT**

**GRANTS ROAD  
SAND QUARRY EXTENSION**

**JANUARY 2022  
REF: 22004**

**SOMERSBY MINTBUSH  
2021 ANNUAL MONITORING REPORT**

**GRANTS ROAD  
SAND QUARRY EXTENSION**

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## **PREFACE**

This report has been prepared by *Conacher Consulting* to address the 2021 annual monitoring and reporting requirements for Somersby Mintbush for the Grants Road Sand Quarry Extension Project at Somersby.

### **REPORT PREPARED BY:**

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Project Director

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# SECTION 1

## INTRODUCTION

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### 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). An Environmental Performance Table and Compliance Status Table is provided in Appendix 1.

### 1.2 PROJECT SITE DETAILS

The site is located within Lots 1 & 2 DP 358717, Grants Road Somersby.

### 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.

## SECTION 2

### ANNUAL MONITORING RESULTS

#### 2.1 ANNUAL SOMERSBY MINTBUSH COUNT RESULTS

Counts of flowering *P. junonis* plants were undertaken on 16 November 2021 at the Somersby Mintbush subpopulation locations adjacent to the quarry allotment identified by NSW NPWS (2000). Both sub-populations are located within Brisbane Water National Park.

Flowering plants were identified and counted. Plants were defined as any flowering *P. junonis* plants in a patch with a separation distance of  $\geq 30$ cm from the nearest *P. junonis* plant. The results of the counts are provided in Table 2.1 and the locations of the sub-populations are shown in Figure 2.1. An Environmental Performance Table is provided in Appendix 1.

TABLE 2.1 SOMERSBY MINT BUSH ANNUAL MONITORING COUNT RESULTS							
Sub-Population Number	Count Results Flowering Plants						
	2015	2016	2017	2018	2019	2020	2021
3	0	2	18	42	29	46	41
4	0	0	34	394	484	498	472

The above data indicates a slight decrease in numbers of *P. junonis* observed between the 2020 and 2021 monitoring surveys. This decrease is most likely the result of variation to the seasonal flowering conditions and observation/counting methods used to distinguish between individuals or clumps of flowering plants.

#### 2.2 QUALITATIVE MONITORING RESULTS

##### 2.2.1 Signs of Surface Erosion

No signs of surface erosion attributable to the project were observed.

Some soil erosion from the track was observed.

##### 2.2.2 Signs of Sedimentation

No signs of sedimentation at the monitoring locations attributable to the project 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 5% to 10m tall  
Shrub Cover: Open with approximately 70% cover to 2-3m tall with vigorously regenerating heath.  
Groundlayer: Approximately 50% cover to 1m.

### **Sub-population 4**

Tree Cover: Approximately 20% to 8m tall  
Shrub Cover: Approximately 5-60% cover to 4m tall, with dieback of tall shrub cover observed.  
Groundlayer: Approximately 60% cover to 1.5m.

It is considered that the current reduced density of shrub cover has provided ongoing favourable conditions for Somersby Mintbush growth of both sub-populations, however the shrub cover is rapidly regenerating and increasing in both density and height at Sub-population 3.

#### **2.2.4 Fire Disturbance**

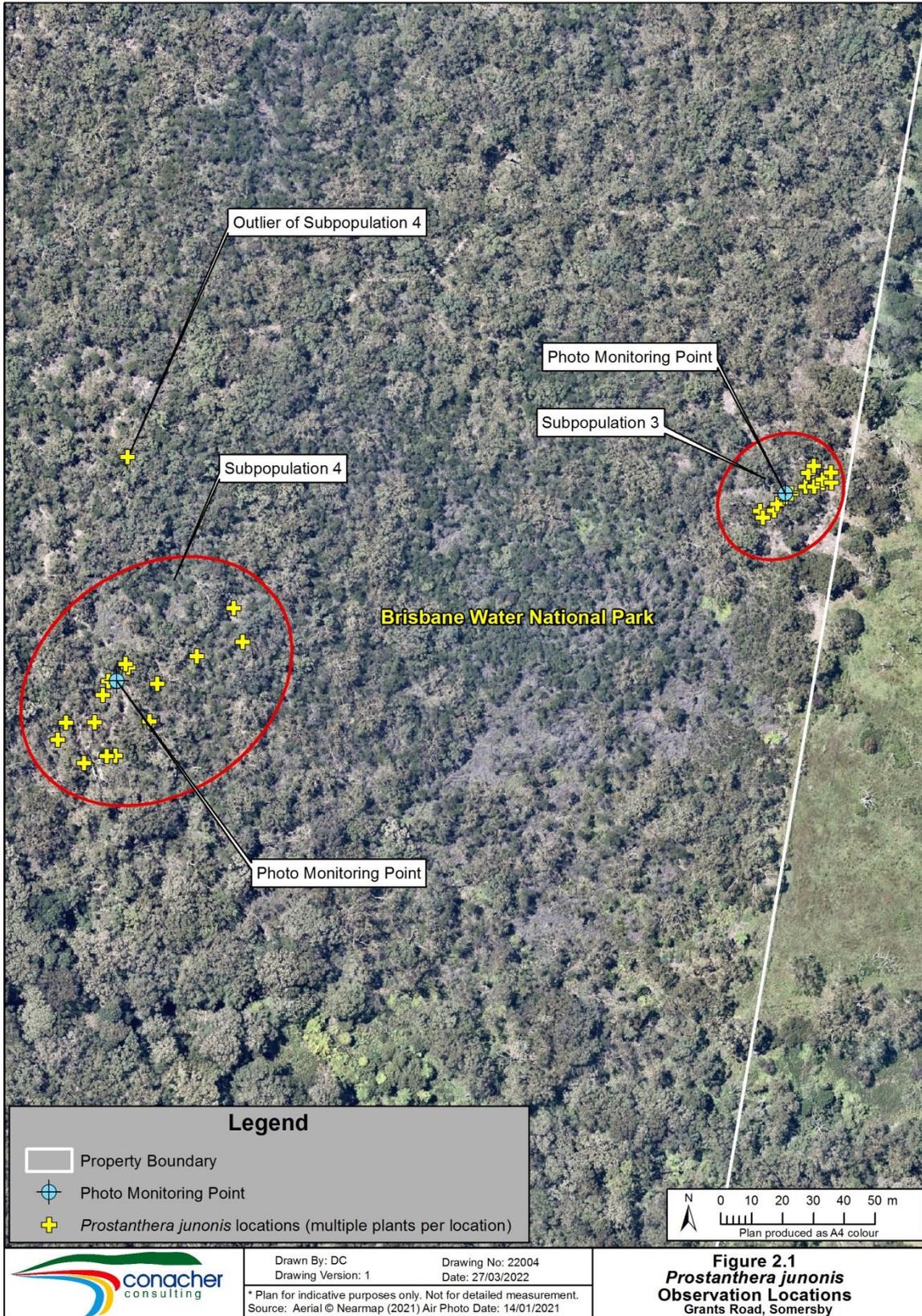
No signs of fire disturbance attributable to the project were observed. No fire disturbance within the current monitoring period was observed.

#### **2.2.5 Herbivory**

No signs of herbivory were observed.

#### **2.2.6 Other Disturbances**

No ongoing disturbances were observed during the current monitoring period.



### 2.3 DETAILS OF NON-COMPLIANCE MATTERS

An assessment of the project performance indicators and responses required is provided in Table 2.2.

TABLE 2.2 SOMERSBY MINTBUSH COMPLIANCE ASSESSMENT FOR 2019 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 OEHL 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 OEHL 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/OEHL -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 OEHL 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
<b>2021 Monitoring Period Results</b>	<b>No impact observed</b>	<b>No response required</b>	<b>No impact observed</b>	<b>No response required</b>	<b>No impact observed</b>	<b>Fence maintenance required</b>	<b>No impact observed</b>	<b>No response required</b>	<b>Population decreases observed at both sub-populations</b>	<b>No response required</b>

## **2.4 MONITORING TRENDS**

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

The decreased 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 will 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.

## **2.5 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.

## **2.6 MEASURES TO IMPROVE PROJECT PERFORMANCE**

The annual surveys for *P. junonis* have been undertaken annually for seven consecutive years. 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. Describe the procedure for counting the occurrence of flowering *P. junonis* plants present in each monitoring location.
2. Establish the field survey areas by GPS location points.
3. Analyse the previous climate and weather conditions recorded over the survey periods in relation to species growth and flowering suitability for *P. junonis*.

## SECTION 3

### CONCLUDING COMMENTS

---

#### 3.1 CONCLUDING COMMENTS

The following concluding comments are provided:

- i. A decrease in the sub-populations 3 and 4 of Somersby Mintbush was recorded compared to previous monitoring period.
- ii. The Somersby Mintbush population slight decrease in number recorded is likely a result of seasonal flowering occurrences at the time of survey.
- iii. 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 Section 2.6 should be incorporated into the next annual report.

## REFERENCES

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**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.

<b>TABLE A1.1 ENVIRONMENTAL PERFORMANCE TABLE</b>				
<b>Environmental Aspect</b>	<b>Approval Criteria</b>	<b>Summary of Monitoring Results in the Previous Monitoring Period</b>	<b>Summary of Monitoring Results in this Monitoring Period</b>	<b>Improvement Measures to be Implemented</b>
Somersby Mintbush	Negligible Environmental Consequences	<b>Sub Pop 3.</b> 49 plants  <b>Sub Pop 4</b> 498 plants  No erosion, sedimentation observed.	<b>Sub Pop 3.</b> 41 plants  <b>Sub Pop 4</b> 472 plants	Undertake maintenance to western boundary fence.

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

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

Appendix 10  
**LANDSCAPE & REHABILITATION MONITORING**  
Conacher Consulting



**LANDSCAPE REHABILITATION  
&  
BIODIVERSITY OFFSET AREA**

**2021 ANNUAL MONITORING REPORT**

**GRANTS ROAD  
SAND QUARRY**

**JANUARY 2022  
REF: 22002**

## **PREFACE**

This Report has been prepared by *Conacher Consulting* to address the 2020 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.

### **REPORT PREPARED BY:**

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NPWS Scientific Licence Number: SL100361  
Project Director

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## APPENDIX 4 MONITORING RESULTS

## SECTION 1

### INTRODUCTION & BACKGROUND

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#### 1.1 INTRODUCTION

This Landscape Rehabilitation & Biodiversity Offset Area 2021 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.

#### 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 (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 2 Environmental Performance Conditions**

- Condition 23 Biodiversity Offset Strategy
- Condition 24 Long Term Security of Offset
- Condition 25 Landscape 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 ANNUAL 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.

#### 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. Installation of Fauna Nest Boxes

The nest box locations are shown in Figure 2.1 (Appendix 1). The results of the nest box monitoring are provided in Appendix 3. Fauna nest boxes were initially installed within the Biodiversity Offset Areas in 2015. The nest box locations are shown in Figure 2.1. 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 previous monitoring report identified:

- 3 nest boxes requiring maintenance
- 9 nest boxes requiring replacement

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

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

##### ii. Fencing of Biodiversity Offset Areas

The Biodiversity Offset Areas A & B are required to be 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. Collection of Initial Baseline Floristic Monitoring Data

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

#### 2.3 BIODIVERSITY OFFSET STRATEGY COMPLIANCE DETAILS

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

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

Unique ID	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 soil capping works are providing erosion and sediment control.	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	Soil capping has commenced in the southern part of offset area B	Monitor and progressively implement over additional areas where required.

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

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
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 undertaken 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.
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 during 2021.

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

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
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 during 2021.
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.
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**

Unique ID	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.	Complete maintenance/replacement works for three nest boxes during 2022 period.
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.

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

Unique ID	Compliance Requirement		Development Phase	Monitoring Methodology	Evidence Required	Monitoring Results	Improvement Measures Required
	Task	Description					
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.
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.

## SECTION 3

### **LANDSCAPE & REHABILITATION MANAGEMENT PLAN ANNUAL REPORTING**

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

#### **3.1 LANDSCAPE REHABILITATION OBJECTIVES (CONDITION 25)**

A requirement for rehabilitation works has not been triggered during the current monitoring period.

#### **3.2 PROGRESSIVE REHABILITATION (CONDITION 26)**

A requirement for rehabilitation works has not been triggered during the current monitoring period.

#### **3.3 LANDSCAPE & REHABILITATION MANAGEMENT PLAN (CONDITION 27)**

A Revised Landscape and Rehabilitation Management Plan has been prepared to address this condition of the current project approval under Modification 1. The implementation of the Biodiversity Offset Strategy Component is addressed in Section 2.1 of this Report. The requirement for physical Landscape Rehabilitation works was not triggered during the current monitoring period.

#### **3.4 CONSERVATION & REHABILITATION BOND (CONDITION 28)**

The Conservation and Rehabilitation Bond Calculation Report (Conacher Consulting December 2016 Ref: 4143/6) 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 \$306,000.00. 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	Description					
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	Initial mound construction has occurred	None required.
		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	NA	NA
		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	Existing bunds are vegetated.	None required
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.	None required.

**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	Description					
		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	Description					
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
LRMP (v2 - 2019) Quarry Area Biodiversity Management Plan Actions.	Habitat Clearing Management	Implement pre-clearing, clearing and reporting requirements	Operational prior to and during clearing works	Project Ecologist Reporting	Annual reporting	Compliant / no habitat tree clearing undertaken within Quarry Footprint	None required

**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	Description					
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

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#### 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.

Negotiations are currently underway with a qualified bush regeneration company to obtain pricing and contract documentation for engagement to undertake ongoing weed removal and weed suppression within the landscape and rehabilitation areas. It is expected that these contractual arrangements will be finalised in early 2022 and commenced by June 2022.

The 2022 Annual Report is to provide details of the revegetation and weed management works undertaken through the reporting period.

It is recommended that a six monthly interval be completed to record on-site progress with the works undertaken within the areas covered by the Landscape Rehabilitation and Biodiversity Offset Management Plan.

## REFERENCES

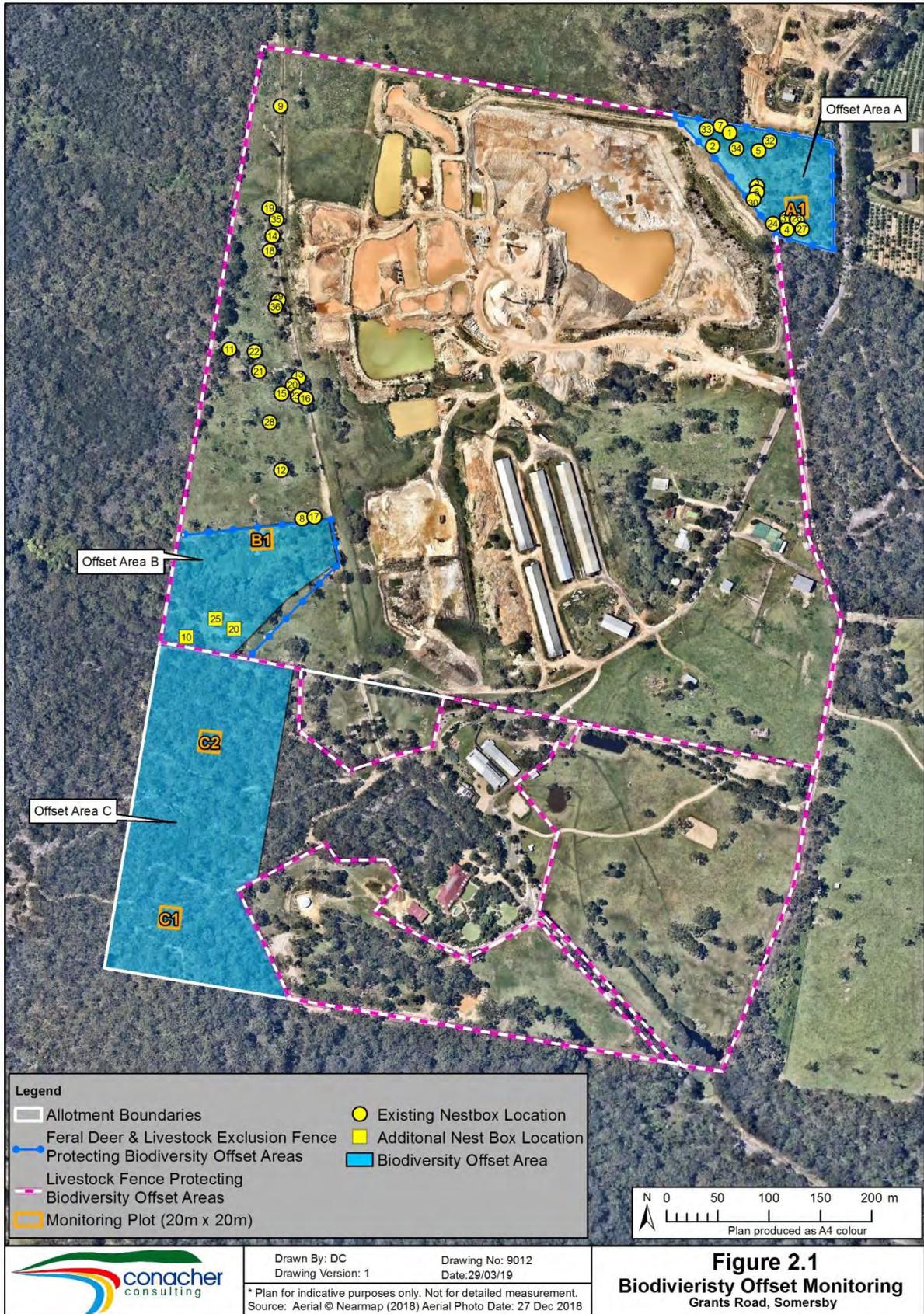
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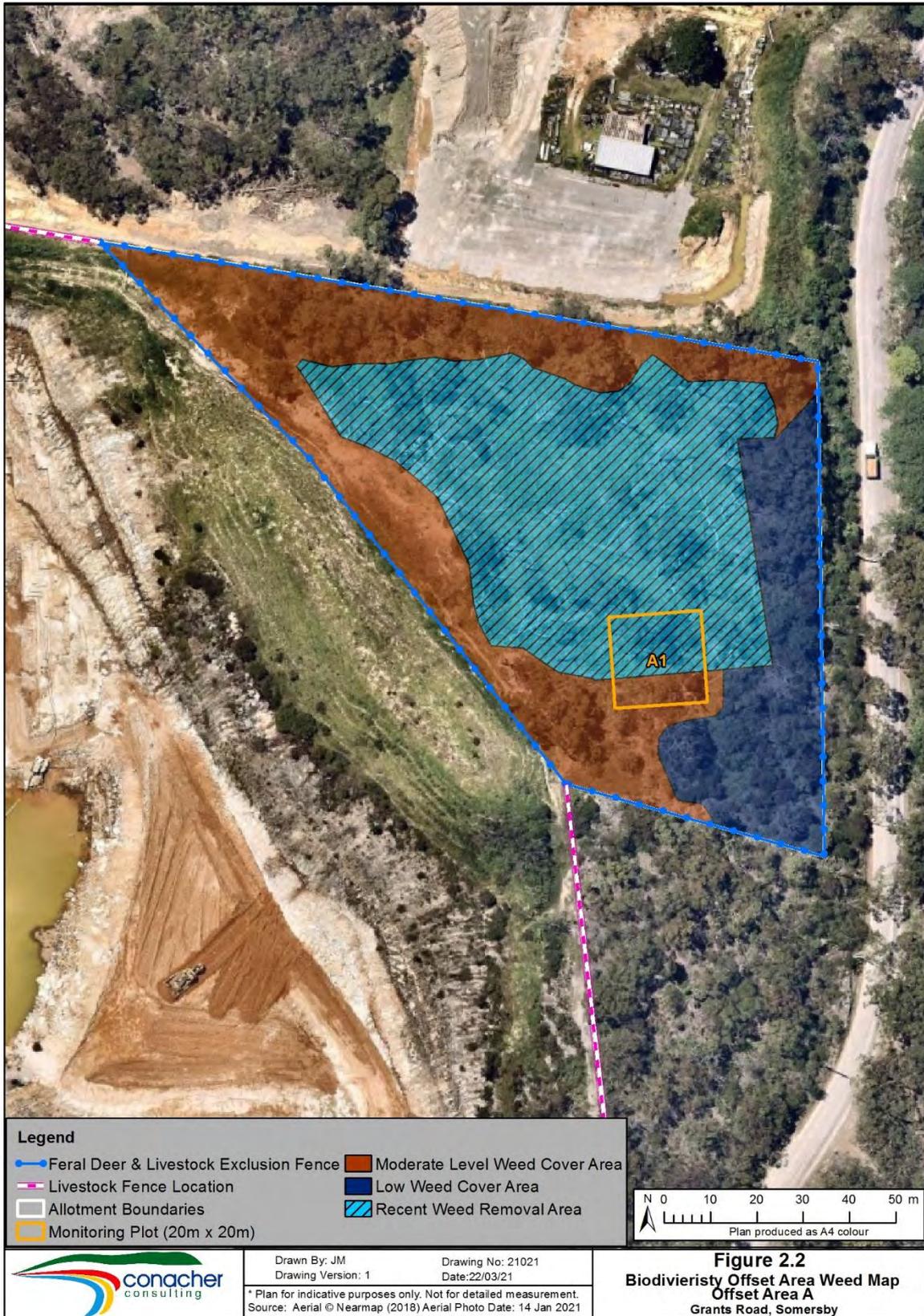
Conacher Consulting (November 2019) Biodiversity Offset Management & Habitat Rehabilitation Plan, Grants Road Sand Quarry Extension. Unpublished Report.

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

**APPENDIX 1**  
**FIGURES**

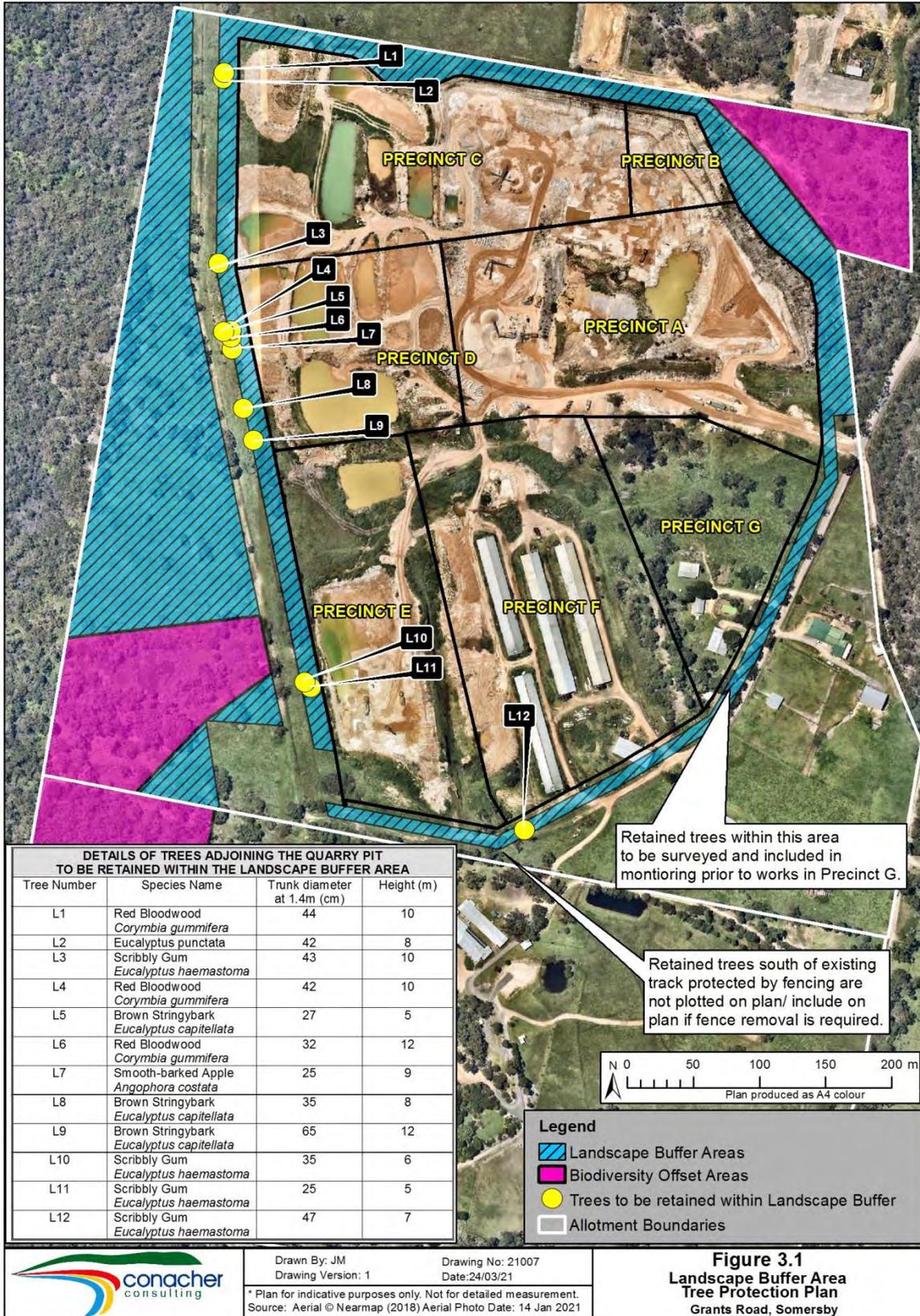
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**APPENDIX 2**  
**MONITORING PHOTOGRAPHS**

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**APPENDIX 3**  
**NEST BOX ANNUAL MONITORING RESULTS**

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<b>TABLE A3.1 NEST BOX MONITORING RESULTS</b>				
<b>Nest Box Number</b>	<b>Type</b>	<b>Maintenance Required</b>	<b>Easting</b>	<b>Northing</b>
1	Side Entry Very Small Bird / Mammal	None	338720	6304269
2	Side Entry Very Small Bird / Mammal	None	338704	6304256
3	Side Entry Small Bird / Mammal (narrow box)	None	338747	6304216
4	Side Entry Small Bird / Mammal	New box purchased. To be installed		
5	Front Entry Small Bird / Mammal (short box)	None	338746	6304252
6	Front Entry Small Bird / Mammal (short box)	None	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		New box purchased. To be installed		
11	Front Entry Small Bird / Mammal	None	338232	6304056
12	Front Entry Small Bird / Mammal	None	338283	6303937
13	Front Entry Small Bird / Mammal	None	338300	6304028
14	Front Entry Small Bird / Mammal	Box replaced	338274	6304168
15	Front Entry Small Bird / Mammal	Box replaced	338294	6304021
16	Front Entry Small Bird / Mammal	None	338307	6304008
17	Front Entry Small Bird / Mammal	Box replaced	338303	6303890
18	Side Entry Small Bird / Mammal	Box replaced	338272	6304153
19	Side Entry Small Bird / Mammal	None	338278	6304184
20	Side Entry Small Bird / Mammal	Box replaced	338294	6304021
21	Side Entry Small Bird / Mammal	None	338261	6304035
22	Side Entry Small Bird / Mammal	Box maintenance completed	338257	6304054
23	Side Entry Small Bird / Mammal	Box maintenance completed	338299	6304011

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

<b>Nest Box Number</b>	<b>Type</b>	<b>Maintenance Required</b>	<b>Easting</b>	<b>Northing</b>
24	Side Entry Very Small Bird / Mammal	None	338769	6304184
25		Box purchased. To be installed		
26	Side Entry Very Small Bird / Mammal	None	338786	6304184
27	Front Entry Small Bird / Mammal	Box maintenance completed	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)	None	338776	6304185
32	Side Entry Very Small Bird / Mammal (Horizontal mount)	Box replaced	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**

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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
<b>Trees</b>				
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	
<b>Shrubs</b>				
	<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	
<b>Forbs</b>				
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	
<b>Monocots</b>				
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**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot A1 Cover</b>	<b>Plot B1 Cover</b>
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
<b>Other Native Plants</b>				
Rubiaceae	<i>Gynochthodes jasminoides</i>	Sweet Morinda		0.25
Vitaceae	<i>Cissus hypoglauca</i>	Giant Water Vine		0.25
<b>Exotic Plants</b>				
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**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot C1 Cover</b>	<b>Plot C2 Cover</b>
<b>Canopy</b>				
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
<b>Sub-canopy</b>				
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
<b>Shrubs</b>				
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**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot C1 Cover</b>	<b>Plot C2 Cover</b>
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
<b>Ground Layer</b>				
<b>Ferns and Allies</b>				
Schizaeaceae	<i>Schizaea bifida</i>	Comb Fern		0.1
Lindsaeaceae	<i>Lindsaea linearis</i>	Screw Fern		0.1
<b>Herbs - Climbers</b>				
Smilacaceae	<i>Smilax australis</i>	Native Sarsparilla		0.2
<b>Dicots (Herbs)</b>				
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	
<b>Monocots (Grasses)</b>				
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
<b>Monocots (Others)</b>				
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**

<b>Family</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Plot C1 Cover</b>	<b>Plot C2 Cover</b>
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
<b>Exotics</b>				
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 11  
**COMMUNITY CONSULTATION**  
The Department of Planning, Industry and Environment



**COMMUNITY CONSULTATIVE COMMITTEE  
MINUTES OF THE MEETING HELD THURSDAY 17<sup>TH</sup> JUNE 2021  
AT SOMERSBY GARDENS ESTATE**

<b>PRESENT</b>	<b>NAME</b>	<b>ORGANISATION</b>
	Lisa Andrews (LA)	Independent Chairperson
	Steven Jones (SJ)	Grants Rd Quarry
	Leanne Jones (LJ)	Grants Rd Quarry
	John Birkett (JB)	Community Representative
	Brett Eddy (BE)	Central Coast Council representative
	Jeffrey Gay (JG)	Community Representative
	Charles Summut (CS)	Community Representative

<b>WELCOME &amp; INTRODUCTIONS</b>	The chair opened the meeting at 11.34am, welcomed all present and thanked them for accommodating the change in start time.										
<b>APOLOGIES</b>	Nil.										
<b>DECLARATION OF INTEREST</b>	LA declared that she is an approved Independent Chairperson with the Department of Planning, appointed by the Secretary to chair this CCC and engaged by Grants Rd Sand.	<b>No changes to members' previous declarations.</b>									
<b>BUSINESS ARISING</b>	<p>There were 2 actions items from the previous meeting:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>ITEM</th> <th>ISSUE</th> <th>RESPONSIBILITY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Look at surface at the intersection of Keighley Rd &amp; Vitasalo Rd.</td> <td>BE</td> </tr> <tr> <td>2</td> <td>Send copy of Central Coast Council's response to the CCC regarding the Piles Rd design and roadworks. <i>Complete – sent 21/12/20 with the draft minutes.</i></td> <td>LA</td> </tr> </tbody> </table> <p>JG thanked BE for investigating the surface at the intersection of Keighley Rd &amp; Vitasalo Rd.</p> <p>No other business arising.</p>	ITEM	ISSUE	RESPONSIBILITY	1	Look at surface at the intersection of Keighley Rd & Vitasalo Rd.	BE	2	Send copy of Central Coast Council's response to the CCC regarding the Piles Rd design and roadworks. <i>Complete – sent 21/12/20 with the draft minutes.</i>	LA	<b>BE advised that he contacted the area overseer (Richard (Dick) Irving [T: 43044338] who undertook an inspection of the area. Dick has advised that the intersection has not reached the intervention level for maintenance work to be undertaken, however, he will undertake inspections in the future.</b>
ITEM	ISSUE	RESPONSIBILITY									
1	Look at surface at the intersection of Keighley Rd & Vitasalo Rd.	BE									
2	Send copy of Central Coast Council's response to the CCC regarding the Piles Rd design and roadworks. <i>Complete – sent 21/12/20 with the draft minutes.</i>	LA									
<b>CORRESPONDENCE</b>	<p>As per correspondence report sent out with the meeting notice on 10/6/21:</p> <ul style="list-style-type: none"> <li>• 21/12/20 - Email to members with the draft minutes for review and the correspondence from CC Council regarding the Piles Rd design and roadworks.</li> <li>• 31/12/20 – Email to members with the finalised minutes.</li> <li>• 31/12/20 – Same information posted to JB.</li> <li>• 22/4/21 – Email to DPIE with chair's annual report on the operations of the CCC from 2020-2021.</li> </ul>	<b>Accepted.</b>									

	<ul style="list-style-type: none"> <li>10/6/21 – Email to members with the meeting notice, agenda and correspondence report for this CCC.</li> <li>10/6/21 – Letter to JB with the same information.</li> </ul>	
<b>REPORT/PROJECT UPDATE</b>	<ul style="list-style-type: none"> <li>SJ advised that the quarry continues to operate in accordance with its approval.</li> <li>There has been a decline in business due to the impact of COVID and Central Coast Council's change in direction regarding maintenance. Accordingly there has not been as many orders as previously taken.</li> <li>No complaints have been received or concerns raised by the community.</li> <li>No environmental issues.</li> <li>JG commented that road users appear to be getting used to the speed limit on Grants Road and that people are doing the right thing.</li> <li>SJ advised that he contacted Central Coast Council regarding payment of the contributions from Grants Road to Council as part of its consent condition. Council will invoice Grants Road for the payment to be made.</li> <li>SJ informed the CCC that consultant, James McMahon has been approved by DPIE to undertake the three yearly Independent Environmental Audit (IEA) of Grants Road Quarry.</li> <li>The IEA process was explained to members.</li> <li>LA asked attendees to advise her of any items that they may wish the IEA to include in his audit.</li> <li>LA requested that SJ provide a link to CCC members when IEA has been completed and submitted to DPIE. <b>Action.</b></li> </ul>	<b>Action: SJ to provide a link of the IEA to chair for distribution to CCC.</b>
<b>GENERAL BUSINESS</b>	<ul style="list-style-type: none"> <li>JG enquired whether the sandstone blocks have less dust. SJ responded that they are a "wet cut" therefore there is less sand particles in the air.</li> </ul>	
<b>MEETING SCHEDULE MOVING FORWARD</b>	<p>Given there are no issues, environmental concerns or complaints with the operation of the quarry and following discussions with the committee, it was agreed to move to an annual CCC meeting.</p> <p>Of course, should there be any need to convene the CCC at any time, the chair will call an extraordinary meeting at the request of any community member, stakeholder group or the proponent.</p> <p>The next meeting of the CCC was scheduled for Thursday 16 June 2022, commencing at 2pm.</p>	<b>Agreed</b>

**Meeting closed at 11.47am with LA thanking all for their attendance.**

#### **ACTION ITEM**

<b>ITEM</b>	<b>ISSUE</b>	<b>RESPONSIBILITY</b>
1	SJ to provide a link to the IEA when submitted to DPIE.	SJ/LA

Appendix 12  
**PRODUCT TRANSPORT RECORDS**  
Grants Road Sand Quarry

Date	Time	Tonne	Docket	Total Tonne	Date	Time	Tonne	Docket	Total Tonne	Date	Time	Tonne	Docket	Total Tonne	Date	Time	Tonne	Docket	Total Tonne	Date	Time	Tonne	Docket	Total Tonne	Annual Tonnes																			
4/21/21	11:00	21.00	55189	5,978.53	5/21/21	8:00	20.00	56228	8,846.29	6/21/21	8:00	21.00	56923	8,946.14	7/21/21	8:00	21.00	57618	9,046.00	8/21/21	8:00	21.00	58313	9,145.85	9/21/21	8:00	21.00	59008	9,245.70	10/21/21	8:00	21.00	59703	9,345.55	11/21/21	8:00	21.00	60398	9,445.40	12/21/21	8:00	21.00	61093	9,545.25
9:00	21.00	55190	5,979.00	9:00	21.00	56230	8,846.70	9:00	21.00	56925	8,946.65	9:00	21.00	57621	9,046.45	9:00	21.00	58315	9,146.05	9:00	21.00	59010	9,246.10	9:00	21.00	59705	9,346.00	9:00	21.00	60400	9,446.00	9:00	21.00	61095	9,546.00	9:00	21.00	61790	9,646.00					
10:00	21.00	55191	5,979.50	10:00	21.00	56231	8,847.10	10:00	21.00	56926	8,947.10	10:00	21.00	57622	9,046.90	10:00	21.00	58316	9,146.30	10:00	21.00	59011	9,246.35	10:00	21.00	59706	9,346.10	10:00	21.00	60401	9,446.10	10:00	21.00	61096	9,546.10	10:00	21.00	61791	9,646.10					
11:00	21.00	55192	5,980.00	11:00	21.00	56232	8,847.60	11:00	21.00	56927	8,947.60	11:00	21.00	57623	9,047.10	11:00	21.00	58317	9,146.60	11:00	21.00	59012	9,246.40	11:00	21.00	59707	9,346.20	11:00	21.00	60402	9,446.20	11:00	21.00	61097	9,546.20	11:00	21.00	61792	9,646.20					
12:00	21.00	55193	5,980.50	12:00	21.00	56233	8,848.10	12:00	21.00	56928	8,948.10	12:00	21.00	57624	9,047.20	12:00	21.00	58318	9,146.90	12:00	21.00	59013	9,246.50	12:00	21.00	59708	9,346.30	12:00	21.00	60403	9,446.30	12:00	21.00	61098	9,546.30	12:00	21.00	61793	9,646.30					
1:00	21.00	55194	5,981.00	1:00	21.00	56234	8,848.60	1:00	21.00	56929	8,948.60	1:00	21.00	57625	9,047.30	1:00	21.00	58319	9,147.20	1:00	21.00	59014	9,246.60	1:00	21.00	59709	9,346.40	1:00	21.00	60404	9,446.40	1:00	21.00	61099	9,546.40	1:00	21.00	61794	9,646.40					
2:00	21.00	55195	5,981.50	2:00	21.00	56235	8,849.10	2:00	21.00	56930	8,949.10	2:00	21.00	57626	9,047.40	2:00	21.00	58320	9,147.50	2:00	21.00	59015	9,246.70	2:00	21.00	59710	9,346.50	2:00	21.00	60405	9,446.50	2:00	21.00	61100	9,546.50	2:00	21.00	61795	9,646.50					
3:00	21.00	55196	5,982.00	3:00	21.00	56236	8,849.60	3:00	21.00	56931	8,949.60	3:00	21.00	57627	9,047.50	3:00	21.00	58321	9,147.80	3:00	21.00	59016	9,246.80	3:00	21.00	59711	9,346.60	3:00	21.00	60406	9,446.60	3:00	21.00	61101	9,546.60	3:00	21.00	61796	9,646.60					
4:00	21.00	55197	5,982.50	4:00	21.00	56237	8,850.10	4:00	21.00	56932	8,950.10	4:00	21.00	57628	9,047.60	4:00	21.00	58322	9,148.10	4:00	21.00	59017	9,246.90	4:00	21.00	59712	9,346.70	4:00	21.00	60407	9,446.70	4:00	21.00	61102	9,546.70	4:00	21.00	61797	9,646.70					
5:00	21.00	55198	5,983.00	5:00	21.00	56238	8,850.60	5:00	21.00	56933	8,950.60	5:00	21.00	57629	9,047.70	5:00	21.00	58323	9,148.40	5:00	21.00	59018	9,247.00	5:00	21.00	59713	9,346.80	5:00	21.00	60408	9,446.80	5:00	21.00	61103	9,546.80	5:00	21.00	61798	9,646.80					
6:00	21.00	55199	5,983.50	6:00	21.00	56239	8,851.10	6:00	21.00	56934	8,951.10	6:00	21.00	57630	9,047.80	6:00	21.00	58324	9,148.70	6:00	21.00	59019	9,247.10	6:00	21.00	59714	9,346.90	6:00	21.00	60409	9,446.90	6:00	21.00	61104	9,546.90	6:00	21.00	61799	9,646.90					
7:00	21.00	55200	5,984.00	7:00	21.00	56240	8,851.60	7:00	21.00	56935	8,951.60	7:00	21.00	57631	9,047.90	7:00	21.00	58325	9,149.00	7:00	21.00	59020	9,247.20	7:00	21.00	59715	9,347.00	7:00	21.00	60410	9,447.00	7:00	21.00	61105	9,547.00	7:00	21.00	61800	9,647.00					
8:00	21.00	55201	5,984.50	8:00	21.00	56241	8,852.10	8:00	21.00	56936	8,952.10	8:00	21.00	57632	9,048.00	8:00	21.00	58326	9,149.30	8:00	21.00	59021	9,247.30	8:00	21.00	59716	9,347.10	8:00	21.00	60411	9,447.10	8:00	21.00	61106	9,547.10	8:00	21.00	61801	9,647.10					
9:00	21.00	55202	5,985.00	9:00	21.00	56242	8,852.60	9:00	21.00	56937	8,952.60	9:00	21.00	57633	9,048.10	9:00	21.00	58327	9,149.60	9:00	21.00	59022	9,247.40	9:00	21.00	59717	9,347.20	9:00	21.00	60412	9,447.20	9:00	21.00	61107	9,547.20	9:00	21.00	61802	9,647.20					
10:00	21.00	55203	5,985.50	10:00	21.00	56243	8,853.10	10:00	21.00	56938	8,953.10	10:00	21.00	57634	9,048.20	10:00	21.00	58328	9,149.90	10:00	21.00	59023	9,247.50	10:00	21.00	59718	9,347.30	10:00	21.00	60413	9,447.30	10:00	21.00	61108	9,547.30	10:00	21.00	61803	9,647.30					
11:00	21.00	55204	5,986.00	11:00	21.00	56244	8,853.60	11:00	21.00	56939	8,953.60	11:00	21.00	57635	9,048.30	11:00	21.00	58329	9,150.20	11:00	21.00	59024	9,247.60	11:00	21.00	59719	9,347.40	11:00	21.00	60414	9,447.40	11:00	21.00	61109	9,547.40	11:00	21.00	61804	9,647.40					
12:00	21.00	55205	5,986.50	12:00	21.00	56245	8,854.10	12:00	21.00	56940	8,954.10	12:00	21.00	57636	9,048.40	12:00	21.00	58330	9,150.50	12:00	21.00	59025	9,247.70	12:00	21.00	59720	9,347.50	12:00	21.00	60415	9,447.50	12:00	21.00	61110	9,547.50	12:00	21.00	61805	9,647.50					
1:00	21.00	55206	5,987.00	1:00	21.00	56246	8,854.60	1:00	21.00	56941	8,954.60	1:00	21.00	57637	9,048.50	1:00	21.00	58331	9,150.80	1:00	21.00	59026	9,247.80	1:00	21.00	59721	9,347.60	1:00	21.00	60416	9,447.60	1:00	21.00	61111	9,547.60	1:00	21.00	61806	9,647.60					
2:00	21.00	55207	5,987.50	2:00	21.00	56247	8,855.10	2:00	21.00	56942	8,955.10	2:00	21.00	57638	9,048.60	2:00	21.00	58332	9,151.10	2:00	21.00	59027	9,247.90	2:00	21.00	59722	9,347.70	2:00	21.00	60417	9,447.70	2:00	21.00	61112	9,547.70	2:00	21.00	61807	9,647.70					
3:00	21.00	55208	5,988.00	3:00	21.00	56248	8,855.60	3:00	21.00	56943	8,955.60	3:00	21.00	57639	9,048.70	3:00	21.00	58333	9,151.40	3:00	21.00	59028	9,248.00	3:00	21.00	59723	9,347.80	3:00	21.00	60418	9,447.80	3:00	21.00	61113	9,547.80	3:00	21.00	61808	9,647.80					
4:00	21.00	55209	5,988.50	4:00	21.00	56249	8,856.10	4:00	21.00	56944	8,956.10	4:00	21.00	57640	9,048.80	4:00	21.00	58334	9,151.70	4:00	21.00	59029	9,248.10	4:00	21.00	59724	9,347.90	4:00	21.00	60419	9,447.90	4:00	21.00	61114	9,547.90	4:00	21.00	61809	9,647.90					
5:00	21.00	55210	5,989.00	5:00	21.00	56250	8,856.60	5:00	21.00	56945	8,956.60	5:00	21.00	57641	9,048.90	5:00	21.00	58335	9,152.00	5:00	21.00	59030	9,248.20	5:00	21.00	59725	9,348.00	5:00	21.00	60420	9,448.00	5:00	21.00	61115	9,548.00	5:00	21.00	61810	9,648.00					
6:00	21.00	55211	5,989.50	6:00	21.00	56251	8,857.10	6:00	21.00	56946	8,957.10	6:00	21.00	57642	9,049.00	6:00	21.00	58336	9,152.30	6:00	21.00	59031	9,248.30	6:00	21.00	59726	9,348.10	6:00	21.00	60421	9,448.10	6:00	21.00	61116	9,548.10	6:00	21.00	61811	9,648.10					
7:00	21.00	55212	5,990.00	7:00	21.00	56252	8,857.60	7:00	21.00	56947	8,957.60	7:00	21.00	57643	9,049.10	7:00	21.00	58337	9,152.60	7:00	21.00	59032	9,248.40	7:00	21.00	59727	9,348.20	7:00	21.00	60422	9,448.20	7:00	21.00	61117	9,548.20	7:00	21.00	61812	9,648.20					
8:00	21.00	55213	5,990.50	8:00	21.00	56253	8,858.10	8:00	21.00	56948	8,958.10	8:00	21.00	57644	9,049.20	8:00	21.00	58338	9,152.90	8:00	21.00	59033	9,248.50	8:00	21.00	59728	9,348.30	8:00	21.00	60423	9,448.30	8:00	21.00	61118	9,548.30	8:00	21.00	61813	9,648.30					
9:00	21.00	55214	5,991.00	9:00	21.00	56254	8,858.60	9:00	21.00	56949	8,958.60	9:00	21.00	57645	9,049.30	9:00	21.00	58339	9,153.20	9:00	21.00	59034	9,248.60	9:00	21.00	59729	9,348.40	9:00	2															

12.30	29.50	8093	12.30	33.20	5595	8.00	12.40	5549	7.00	18.30	5549	11.17	12.00	9004	8.30	7.21	6095
7.00	11.34	8094	8.00	11.30	5596	8.00	12.00	5550	7.00	18.30	5549	11.17	12.00	9004	8.30	7.21	6095
7.15	11.30	8094	7.00	11.30	5596	8.00	4.38	55478	7.45	20.12	55421	11.07	11.46	59703	11.25	12.00	6097
8.20	12.40	8094	7.40	11.30	5596	8.00	11.30	5549	7.40	20.12	55421	11.07	11.46	59703	11.25	12.00	6097
8.00	11.88	8094	8.20	11.34	5592	8.00	11.18	55480	9.00	17.00	55480	11.00	11.50	59680	11.15	11.60	6099
8.05	11.50	8094	9.00	11.52	55923	8.00	11.50	55497	9.00	17.00	55424	7.15	11.30	59881	14.20	16.20	6099
8.20	12.40	8094	8.20	11.52	55924	7.40	11.50	55498	8.20	17.00	55424	7.15	11.30	59881	14.20	16.20	6099
8.50	11.70	8094	10.20	11.58	55925	8.20	11.50	55500	10.20	17.55	55426	8.40	11.30	59883	15.40	15.00	59424
9.00	11.70	8094	11.00	11.52	55926	8.00	11.50	55501	11.00	17.55	55427	7.15	11.30	59883	15.40	15.00	59424
10.05	11.82	8094	11.40	11.46	55927	8.40	11.80	55502	11.20	18.04	55428	12.10	11.80	59885	7.31	12.00	6122
9.00	11.70	8094	12.20	11.50	55928	8.40	11.50	55503	11.45	18.05	55429	10.00	11.80	59886	7.30	12.00	6122
10.25	12.10	8094	12.60	11.50	55929	8.20	11.50	55504	11.45	18.05	55430	10.00	11.80	59886	7.30	12.00	6122
10.00	10.18	8094	9.15	7.40	55596	11.00	11.50	55509	14.45	11.82	55415	15.30	11.80	59888	7.40	11.54	60070
11.00	11.14	8094	11.00	11.40	55507	11.00	11.40	55510	11.00	11.58	60020	8.20	11.40	59889	8.20	11.54	60071
11.35	11.90	8095	7.40	11.50	55930	7.40	11.50	55931	7.40	11.50	60206	9.15	11.50	60207	9.00	11.50	60072
7.40	11.30	8095	7.40	11.52	55931	7.40	11.52	55932	7.40	11.52	60207	9.15	11.50	60207	9.00	11.50	60072
11.15	11.34	8095	8.00	11.54	55932	8.00	11.54	60518	9.00	11.52	60518	9.11	11.30	6142	8.30	12.00	60073
11.20	12.00	8095	9.00	11.50	55933	9.00	11.50	55934	9.00	11.50	60520	8.10	11.00	9008	11.00	11.52	60075
11.25	12.20	8095	9.20	11.54	55934	9.20	11.54	60521	9.20	11.54	60521	8.20	11.00	9008	11.00	11.52	60075
14.15	10.66	8095	10.10	11.54	55935	11.10	11.52	55936	11.10	11.00	9008	11.05	12.00	9008	8.00	11.50	60077
14.20	11.60	8095	10.20	11.52	55936	11.20	11.52	55937	11.20	11.50	9001	12.00	11.00	9008	10.40	11.50	60079
14.25	11.34	8095	11.20	11.50	55938	11.20	11.50	55938	11.10	12.00	9002	12.45	12.00	9008	10.40	11.50	60079
14.30	10.70	55291	12.10	11.40	55939	7.10	7.20	9115	11.45	14.30	9001	11.00	11.00	9008	7.30	20.00	59425
14.35	10.50	55291	12.40	11.34	55940	7.40	7.40	9116	11.45	14.30	9001	11.00	11.00	9008	8.40	11.50	59427
8.07	10.64	55294	8.40	7.40	55198	9.00	11.00	55481	11.27	11.00	9004	11.11	14.00	9006	7.30	12.00	6121
10.10	10.20	55295	9.10	11.20	55399	9.11	11.24	55483	11.20	12.00	9005	11.00	11.00	9008	8.40	12.00	6124
10.20	10.40	55297	7.18	11.00	55399	11.10	11.00	55486	9.11	11.74	55483	6.20	11.60	59889	11.00	12.00	6124
12.40	10.70	55298	11.60	11.40	55931	11.15	11.70	55487	10.20	11.80	55485	9.05	11.80	59892	11.50	12.00	6124
8.00	11.00	55299	12.60	11.50	55932	11.20	11.20	55488	11.20	11.84	55486	7.40	11.60	59893	11.00	12.00	6124
7.40	11.30	56116	13.45	12.50	55935	14.19	6.10	55489	10.45	11.06	55417	10.10	11.30	59894	10.00	12.00	60880
8.20	11.34	56117	13.25	11.70	55491	13.10	11.70	55491	13.10	11.70	55491	11.25	11.80	59896	8.20	12.00	60881
9.00	11.50	56118	11.40	11.50	56001	8.20	11.70	55492	10.15	11.24	55490	7.00	11.70	59705	9.10	11.58	60883
8.21	11.00	8715	7.00	11.50	55941	6.10	5.10	55493	7.00	11.50	60511	7.00	11.50	60511	7.00	11.50	60440
7.10	10.10	8716	7.40	11.38	55942	8.40	11.20	55494	7.40	11.48	60512	9.25	11.10	59707	9.25	11.10	60445
7.00	11.64	8096	8.00	11.52	55943	11.07	11.64	55495	11.20	11.52	60513	10.00	11.40	59708	10.00	11.40	60446
10.10	11.20	8096	9.00	11.48	55944	11.08	11.30	55496	8.00	11.50	60514	14.15	11.44	59709	10.25	6.02	60447
10.20	11.20	8096	8.40	11.48	55945	14.18	11.48	55497	8.40	11.48	60515	14.18	11.44	59710	11.48	11.44	60448
8.00	11.00	8096	10.20	11.54	55946	8.40	11.40	9117	10.10	11.50	60516	11.12	11.50	6143	7.04	2.10	59748
8.05	11.80	8096	10.50	11.50	55947	8.50	11.50	9118	10.10	11.52	60517	14.00	11.50	6144	7.15	12.00	6124
8.30	12.00	8096	11.38	11.40	55951	9.30	11.40	9119	9.30	11.78	55441	8.30	11.78	55441	8.30	11.78	55441
9.15	11.46	8096	12.00	11.80	55952	9.30	11.80	9120	8.40	11.78	55442	7.41	11.44	9121	9.20	12.00	6124
9.20	12.20	8096	10.20	11.70	55953	10.20	11.70	9121	10.20	11.70	55443	7.30	11.60	59895	7.30	11.60	59895
9.55	11.25	8096	16.30	10.00	8719	7.40	11.58	55956	10.30	11.74	55444	7.30	11.60	59896	7.30	11.60	59896
10.00	11.20	8096	11.10	11.40	55957	7.40	11.40	55957	10.30	11.74	55444	7.30	11.60	59896	7.30	11.60	59896
10.10	10.00	8096	11.40	11.46	55130	8.00	11.45	55952	11.45	11.05	55445	8.40	11.50	60449	8.15	11.40	60441
10.55	12.08	8096	11.00	11.40	55131	8.40	11.50	55953	11.50	12.06	55447	9.20	11.80	59304	9.20	11.70	60442
11.05	12.10	8096	11.30	11.40	55132	11.30	11.40	55954	10.20	11.90	55448	14.00	11.90	60443	14.00	11.90	60443
11.45	12.10	8097	11.25	11.70	55133	10.50	11.56	55955	11.45	11.94	55449	10.25	11.80	59306	7.50	12.12	60001
11.50	12.10	8097	11.25	11.70	55134	11.25	11.70	55956	11.25	11.70	55450	11.25	11.70	59307	8.00	12.12	60001
12.40	12.10	8097	10.00	10.30	55135	12.10	11.50	55957	12.10	11.50	60518	7.30	11.60	59282	8.40	12.00	60003
12.50	11.70	8097	10.10	11.30	55136	8.17	4.80	55450	7.40	11.50	60519	8.40	11.60	59283	9.20	12.02	60004
13.05	11.14	8097	7.00	11.54	55959	7.00	11.54	55959	7.00	11.54	60520	8.40	11.60	59284	9.20	12.02	60004
13.45	11.90	8097	7.40	11.40	55960	7.40	11.40	55960	8.00	11.52	60521	10.10	11.80	59309	10.40	12.04	60006
13.55	11.50	8097	8.20	11.52	55961	8.20	11.52	55961	8.40	11.54	60522	8.40	11.54	60522	8.40	11.54	60007
14.20	12.50	8097	9.00	11.52	55962	9.00	11.52	55962	10.20	11.50	60523	11.25	11.40	59310	11.20	11.50	59309
14.40	12.50	8097	8.40	11.54	55963	8.40	11.54	55963	8.40	11.54	60524	11.20	11.40	59311	11.20	11.50	59309
14.55	11.56	8097	10.10	11.56	55967	10.10	11.56	55967	11.30	11.53	60525	9.40	4.12	9121	7.05	10.50	60444
15.15	12.10	8097	10.50	11.50	55968	11.00	11.56	55968	10.10	11.52	60526	10.10	11.50	59309	7.30	11.80	60445
15.35	11.80	8097	11.30	11.54	55969	11.30	11.54	55969	10.55	11.90	60527	7.50	11.80	59312	7.50	11.80	60446
15.45	11.50	8097	7.00	11.50	55970	7.00	11.50	55970	10.57	12.00	59890	8.20	11.68	49427	8.20	11.68	49427
16.20	12.10	8098	7.00	11.54	55971	7.00	11.54	55971	7.00	11.54	59901	8.20	11.70	59313	8.20	11.70	59313
7.00	11.54	55980	7.40	11.54	55982	8.00	11.40	55983	11.38	11.40	59892	7.50	11.50	60292	9.15	11.46	60449
7.00	11.54	56119	8.00	11.52	55981	8.00	11.52	55981	11.40	11.52	59919	8.30	11.54	59301	8.30	11.54	60500
7.40	11.30	56120	8.20	11.54	55984	8.20	11.54	55984	11.50	11.80	59924	7.00	11.54	59302	7.00	11.54	60501
8.00	11.54	56121	8.40	11.52	55985	8.40	11.52	55985	9.40	11.50	59895	9.40	11.50	59895	7.40	12.00	60000
8.20	11.54	56122	8.00	11.52	55986	11.20	11.52	55986	11.20	11.52	59897	11.20	11.52	59897	11.20	11.52	60001
11.25	3.84	8717	12.00	12.00	55927	11.50	11.58	55998	11.45	11.50	59897	12.27	11.00	9166	10.00	10.02	60011
11.30	3.84	8717	12.00	12.00	55928	11.50	11.58	55999	11.45	11.50	59897	12.27	11.00	9166	10.00	10.02	60011
7.50	11.50	56123	7.50	11.50	56002	7.50	11.50	56002	7.50	11.50	60519	7.50	11.50	60519	7.50	11.50	60012

30/4/21			
7.00	11.54	91181	
7.40	11.50	91181	
8.20	11.50	91181	
9.00	11.56	91181	
9.30	11.52	91190	
7.50	11.72	91981	
8.20	11.74	91981	
7.05	12.00	9162	
7.21	9.36	9209	
7.21	9.00	9209	
7.21	11.00	9209	
7.21	8.00	9209	
8.10	11.58	60539	
10.11	11.20	60540	
10.15	10.00	60541	
10.40	17.00	60542	
11.15	11.74	60543	
12.15	4.00	60544	
12.50	16.40	60545	
13.20	18.10	60546	
14.41	3.88	9089	
14.41	27.00	9089	
14.41	10.00	9089	

Date	Time	Tonne	Deck	Total	Date	Time	Tonne	Deck	Total	Date	Time	Tonne	Deck	Total	Date	Time	Tonne	Deck	Total	Date	Time	Tonne	Deck	Total	Date	Time	Tonne	Deck	Total
0/2/21	8:31	12:00	888	14,421.81	0/2/21	21:27	10:00	888	9,986.41	0/2/21	7:40	8:40	11,888	21,666.17	2/2/21	12:00	11:50	888	9,986.20	2/2/21	7:41	8:40	888	9,986.20	2/2/21	7:41	8:40	888	9,986.20
8:35	20:00	6068			9:00	15:58	6071			9:00	12:00	6185			9:00	11:50	6007			8:18	24:00	6485			8:18	24:00	6485		
8:35	21:00	6089			7:40	13:56	6072			8:20	13:56	6098			8:20	13:56	6098			8:27	9:40	948			8:27	9:40	948		
8:35	21:30	6081			8:20	13:44	6073			8:20	13:44	6073			8:20	13:44	6073			8:20	13:44	6073			8:20	13:44	6073		
8:35	22:00	6012			9:00	13:54	6074			9:00	13:54	6074			9:00	13:54	6074			9:00	13:54	6074			9:00	13:54	6074		
8:35	22:30	6013			11:21	14:01	6075			11:21	14:01	6075			11:21	14:01	6075			11:21	14:01	6075			11:21	14:01	6075		
11:21	12:00	6014			11:21	15:55	6059			11:21	15:55	6059			11:21	15:55	6059			11:21	15:55	6059			11:21	15:55	6059		
11:25	26:46	6051			14:30	26:30	6060			14:30	26:30	6060			14:30	26:30	6060			14:30	26:30	6060			14:30	26:30	6060		
14:30	27:00	6056			7:00	12:00	6171			7:00	12:00	6171			7:00	12:00	6171			7:00	12:00	6171			7:00	12:00	6171		
15:20	16:00	6057			7:40	13:54	6076			7:40	13:54	6076			7:40	13:54	6076			7:40	13:54	6076			7:40	13:54	6076		
16:30	17:30	6058			8:20	13:54	6077			8:20	13:54	6077			8:20	13:54	6077			8:20	13:54	6077			8:20	13:54	6077		
7:00	13:50	5941			9:00	13:40	6078			9:00	13:40	6078			9:00	13:40	6078			9:00	13:40	6078			9:00	13:40	6078		
9:30	13:54	5942			9:20	13:54	6079			9:20	13:54	6079			9:20	13:54	6079			9:20	13:54	6079			9:20	13:54	6079		
9:30	13:56	5943			10:30	13:51	6070			10:30	13:51	6070			10:30	13:51	6070			10:30	13:51	6070			10:30	13:51	6070		
9:30	13:54	5944			10:50	13:51	6071			10:50	13:51	6071			10:50	13:51	6071			10:50	13:51	6071			10:50	13:51	6071		
9:30	13:50	5945			11:30	13:40	6072			11:30	13:40	6072			11:30	13:40	6072			11:30	13:40	6072			11:30	13:40	6072		
9:30	13:56	5946			7:50	24:18	6061			7:50	24:18	6061			7:50	24:18	6061			7:50	24:18	6061			7:50	24:18	6061		
9:30	13:52	5947			8:00	24:01	6062			8:00	24:01	6062			8:00	24:01	6062			8:00	24:01	6062			8:00	24:01	6062		
10:40	13:52	5948			9:50	23:52	6063			9:50	23:52	6063			9:50	23:52	6063			9:50	23:52	6063			9:50	23:52	6063		
13:50	7:00	9233			10:30	22:70	6064			10:30	22:70	6064			10:30	22:70	6064			10:30	22:70	6064			10:30	22:70	6064		
7:40	13:50	5949			10:50	23:00	6065			10:50	23:00	6065			10:50	23:00	6065			10:50	23:00	6065			10:50	23:00	6065		
7:40	13:56	5950			11:50	23:50	6066			11:50	23:50	6066			11:50	23:50	6066			11:50	23:50	6066			11:50	23:50	6066		
8:20	13:50	5941			12:35	23:32	6066			12:35	23:32	6066			12:35	23:32	6066			12:35	23:32	6066			12:35	23:32	6066		
8:20	13:54	5942			14:00	22:25	6067			14:00	22:25	6067			14:00	22:25	6067			14:00	22:25	6067			14:00	22:25	6067		
8:20	13:56	5943			14:50	22:48	6068			14:50	22:48	6068			14:50	22:48	6068			14:50	22:48	6068			14:50	22:48	6068		
10:20	13:48	5944			13:30	8:00	6115			13:30	8:00	6115			13:30	8:00	6115			13:30	8:00	6115			13:30	8:00	6115		
9:30	13:54	5945			13:30	36:40	6116			13:30	36:40	6116			13:30	36:40	6116			13:30	36:40	6116			13:30	36:40	6116		
9:30	13:56	5946			14:00	36:00	6117			14:00	36:00	6117			14:00	36:00	6117			14:00	36:00	6117			14:00	36:00	6117		
11:00	13:52	5947			12:00	32:00	6118			12:00	32:00	6118			12:00	32:00	6118			12:00	32:00	6118			12:00	32:00	6118		
11:00	13:50	5948			9:00	12:00	6119			9:00	12:00	6119			9:00	12:00	6119			9:00	12:00	6119			9:00	12:00	6119		
9:30	27:50	6052			10:32	3:00	6120			10:32	3:00	6120			10:32	3:00	6120			10:32	3:00	6120			10:32	3:00	6120		
11:45	29:48	6131			14:21	5:40	6121			14:21	5:40	6121			14:21	5:40	6121			14:21	5:40	6121			14:21	5:40	6121		
12:20	21:00	6132			15:15	14:50	6122			15:15	14:50	6122			15:15	14:50	6122			15:15	14:50	6122			15:15	14:50	6122		
13:00	13:05	6133			17:48	13:00	6123			17:48	13:00	6123			17:48	13:00	6123			17:48	13:00	6123			17:48	13:00	6123		
13:45	20:30	6134			17:58	7:45	6124			17:58	7:45	6124			17:58	7:45	6124			17:58	7:45	6124			17:58	7:45	6124		
14:00	20:30	6135			7:48	28:40	6125			7:48	28:40	6125			7:48	28:40	6125			7:48	28:40	6125			7:48	28:40	6125		
15:20	24:00	6136			8:20	33:56	6074			8:20	33:56	6074			8:20	33:56	6074			8:20	33:56	6074			8:20	33:56	6074		
15:25	25:00	6137			9:00	33:40	6075			9:00	33:40	6075			9:00	33:40	6075			9:00	33:40	6075			9:00	33:40	6075		
15:30	25:00	6138			9:40	33:12	6076			9:40	33:12	6076			9:40	33:12	6076			9:40	33:12	6076			9:40	33:12	6076		
16:45	31:00	6139			10:20	33:12	6077			10:20	33:12	6077			10:20	33:12	6077			10:20	33:12	6077			10:20	33:12	6077		
17:00	31:00	6140			10:21	6:01	6069			10:21	6:01	6069			10:21	6:01	6069			10:21	6:01	6069			10:21	6:01	6069		
17:00	5:00	9275			7:58	12:00	9261			7:58	12:00	9261			7:58	12:00	9261			7:58	12:00	9261			7:58	12:00	9261		
17:10	13:00	9276			10:36	30:00	9262			10:36	30:00	9262			10:36	30:00	9262			10:36	30:00	9262			10:36	30:00	9262		
18:27	8:00	9277			14:56	3:40	9263			14:56	3:40	9263			14:56	3:40	9263			14:56	3:40	9263			14:56	3:40	9263		
7:00	13:54	6101			7:00	10:00	6102			7:00	10:00	6102			7:00	10:00	6102			7:00	10:00	6102			7:00	10:00	6102		
8:00	13:12	6103			8:00	13:44	6104			8:00	13:44	6104			8:00	13:44	6104			8:00	13:44	6104			8:00	13:44	6104		
8:20	13:12	6105			11:56	6:00	6112			11:56	6:00	6112			11:56	6:00	6112			11:56	6:00	6112			11:56	6:00	6112		
8:20	13:14	6106																											

10.50	24.00	9190	8.00	6.00	61314	7.53	10.20	9319	14.30	11.56	56915	11.20	11.30	57041	16.56	4.80	5748
13.63	1.00	61311	9.23	18.32	61311	13.10	13.10	61311	13.10	13.10	61311	13.10	13.10	61311	13.10	13.10	61311
7.20	11.52	61460	10.43	32.28	61326	9.30	21.38	60797	11.53	9.00	56913	7.30	11.50	56517	7.40	11.58	57392
7.20	11.52	61461	10.43	32.28	61327	9.30	21.38	60798	11.53	9.00	56914	7.30	11.50	56518	7.40	11.58	57393
8.20	11.50	61462	12.50	32.00	61108	11.55	11.86	60796	14.05	11.00	56915	7.00	11.00	56519	7.00	11.00	56809
10.20	11.58	61463	13.30	12.50	61329	12.45	13.50	60799	14.05	10.96	56914	8.05	1.20	56520	12.00	20.00	56930
9.40	11.54	61464	14.31	12.50	61330	12.45	13.50	60800	14.05	10.96	56915	8.05	1.20	56521	12.00	20.00	56931
10.20	11.54	61465	14.30	32.43	61331	7.00	11.50	60797	11.44	22.00	9472	8.45	13.20	56522	10.00	18.04	56932
10.40	11.50	61466	14.31	32.43	61332	7.00	11.50	60798	11.44	22.00	9473	8.45	13.20	56523	10.00	18.04	56933
11.50	11.50	61467	15.45	39.18	61333	8.20	11.50	60222	10.27	11.00	9474	10.00	11.30	56524	10.00	11.30	56934
11.30	11.50	61468	7.00	11.50	61330	8.20	11.50	60223	10.27	11.00	9475	10.21	11.30	56525	14.20	20.78	56935
11.30	11.54	61469	7.40	11.52	61331	8.20	11.50	60224	10.27	11.00	9476	10.21	11.30	56526	14.20	20.78	56936
14.50	12.00	61470	8.20	11.52	61332	8.20	11.52	60225	10.27	11.00	9477	11.50	11.30	56527	15.20	21.24	56937
9.20	11.50	61441	8.00	11.54	61333	10.00	11.52	60226	10.27	11.00	9478	11.50	11.30	56528	15.20	21.24	56938
11.50	12.00	61442	9.30	11.50	61334	10.27	11.52	60227	10.27	11.00	9479	11.50	11.30	56529	15.20	21.24	56939
11.50	12.00	61443	10.27	11.50	61335	10.27	11.52	60228	10.27	11.00	9480	11.50	11.30	56530	15.20	21.24	56940
14.20	12.10	61444	11.28	11.50	61336	10.27	11.52	60229	10.27	11.00	9481	11.50	11.30	56531	15.20	21.24	56941
16.20	12.10	61445	7.48	1.94	9402	7.47	4.00	9321	8.05	14.88	56923	11.25	11.30	56532	10.00	19.21	56966
14.20	12.10	61446	7.51	6.00	9403	8.23	4.00	9322	8.05	14.88	56924	11.25	11.30	56533	10.00	19.21	56967
13.20	11.50	61447	8.20	11.50	60904	7.00	11.50	60227	11.20	17.00	56925	9.40	11.50	56534	10.00	11.30	56968
7.00	1.20	60905	10.21	12.00	61334	7.40	11.48	60228	11.20	17.00	56926	14.50	11.50	56535	10.00	11.30	56969
7.00	11.56	61471	11.20	12.00	61335	8.20	11.50	60229	11.20	17.00	56927	14.50	11.50	56536	10.00	11.30	56970
7.40	11.56	61472	11.30	12.00	61336	7.00	12.03	60247	8.09	15.00	9476	10.45	12.00	56538	16.55	14.00	56989
8.20	11.54	61473	14.25	11.30	61337	7.00	12.04	60248	8.15	14.00	9477	10.45	12.00	56539	16.55	14.00	56990
9.00	11.50	61474	16.20	16.24	61338	7.40	12.00	60249	8.15	14.00	9478	10.45	12.00	56540	16.55	14.00	56991
9.40	11.50	61475	16.20	16.24	61339	7.40	12.00	60250	8.15	14.00	9479	10.45	12.00	56541	16.55	14.00	56992
10.20	11.52	61476	8.00	11.52	61111	9.15	12.20	59857	10.40	14.00	9480	10.40	11.50	57047	13.82	7.28	61731
10.30	11.50	61477	7.40	11.50	61112	9.15	12.28	59858	10.45	17.00	56939	9.40	11.50	57048	8.20	11.50	58001
12.20	12.00	61478	8.20	11.50	61113	10.54	11.88	59859	10.45	17.00	56940	9.40	11.50	57049	8.20	11.50	58002
11.30	12.00	61479	9.00	11.54	61114	11.00	11.88	59860	10.45	17.00	56941	11.00	11.52	57050	8.20	11.54	58003
14.30	11.58	61480	9.00	11.52	61115	11.30	12.07	59861	11.45	14.00	56962	11.55	20.00	56847	10.20	11.50	58004
11.30	11.54	61481	10.20	11.52	61116	11.30	12.00	59862	11.45	17.00	56942	11.55	20.78	56848	10.20	11.50	58005
8.20	11.50	61482	10.20	12.10	9405	11.15	12.85	59863	11.45	17.00	56943	11.55	20.78	56849	10.20	11.50	58006
8.20	11.52	61483	11.45	12.10	9406	11.45	13.00	59864	11.30	17.00	56944	11.55	20.78	56850	10.20	11.50	58007
7.40	11.52	61484	11.25	12.00	9405	14.00	11.00	59865	11.45	12.22	56966	7.15	12.10	56838	8.20	11.54	58008
8.20	11.48	61485	11.50	12.00	9405	11.51	12.18	59866	11.45	12.48	56967	7.20	12.00	56839	8.20	11.54	58009
9.00	11.50	61486	12.51	11.84	61385	11.51	11.84	59867	11.45	12.48	56968	7.20	12.00	56840	8.20	11.54	58010
10.20	11.54	61487	11.20	11.30	61386	8.00	11.54	60801	11.45	12.48	56969	8.05	13.14	56841	10.20	11.54	58011
10.30	11.54	61488	11.20	11.30	61387	8.40	11.54	60802	11.45	12.48	56970	8.05	13.14	56842	10.20	11.54	58012
10.30	11.50	61489	11.58	11.50	9206	10.00	11.54	60803	10.20	11.52	56926	8.20	11.82	56843	11.00	11.58	58013
10.30	11.50	61490	11.21	11.00	9207	11.00	11.54	60804	10.20	11.52	56927	8.20	11.82	56844	11.00	11.58	58014
14.00	11.50	61491	11.05	9.44	9206	11.05	9.44	9206	10.40	11.50	56928	10.30	11.30	56845	10.30	11.30	57461
14.00	11.52	61492	11.38	12.00	9207	11.21	10.74	9218	10.20	11.50	56929	10.42	1.78	56846	7.40	12.24	57462
15.20	11.52	61493	11.38	12.00	9208	11.21	10.74	9219	10.20	11.54	56930	10.42	1.78	56847	7.40	12.24	57463
16.00	11.60	61494	7.00	11.74	61440	11.20	11.74	60230	10.00	12.00	56969	11.00	11.68	56848	8.40	11.38	57464
10.20	11.54	61495	8.20	11.50	61441	7.20	11.50	60231	10.00	12.00	56970	11.00	11.68	56849	8.40	11.38	57465
8.35	11.50	61448	11.00	12.00	61443	7.40	11.30	9453	11.40	12.08	56911	11.00	11.68	56850	9.40	11.30	57467
8.35	11.50	61449	11.00	12.00	61444	7.40	11.30	9454	11.40	12.08	56912	11.00	11.68	56851	9.40	11.30	57468
10.30	11.48	61450	11.50	12.00	61445	8.20	11.28	9455	11.20	12.00	56913	11.20	11.68	56852	11.00	11.30	57469
9.55	12.00	61300	11.20	12.00	61446	8.35	10.20	9453	11.45	12.00	56914	11.45	12.00	56853	11.45	12.00	57470
11.65	12.00	61310	7.00	11.30	61117	8.15	10.40	9452	11.45	12.00	56915	11.45	12.00	56854	11.45	12.00	57471
11.05	11.34	61311	7.40	11.34	61118	8.03	10.44	9453	11.45	12.00	56916	7.40	11.34	57054	11.30	11.30	57462
8.20	11.50	61312	8.20	11.50	61119	8.20	11.50	60232	11.45	12.00	56917	8.20	11.50	57055	11.30	11.30	57463
11.00	11.06	61313	9.00	11.54	61120	8.35	10.74	9453	11.40	11.90	56918	7.40	11.54	57056	14.40	11.08	57901
16.35	10.20	61314	9.30	11.54	61121	7.00	10.20	9453	10.15	10.32	56919	8.30	11.50	57057	14.40	11.08	57902
11.30	11.20	61315	10.30	11.52	61321	10.30	11.52	60233	10.07	11.44	9454	8.00	11.44	57058	7.20	11.50	57921
7.32	12.00	9130	10.30	11.58	61322	7.28	10.40	9453	10.15	10.30	9462	11.00	11.52	57059	8.30	11.40	57922
10.30	11.52	61324	11.40	11.54	61323	11.40	11.54	60234	11.00	11.50	60235	11.00	11.50	57060	11.00	11.50	57923
11.38	11.50	61325	11.30	11.48	61325	10.30	11.38	60236	7.20	11.48	56933	11.30	11.48	57102	9.30	11.30	57905
7.40	11.58	61495	16.35	0.84	61171	10.30	11.38	60237	7.20	11.48	56934	11.30	11.48	57103	9.30	11.30	57906
8.20	11.58	61496	10.30	11.50	9209	7.20	11.20	9209	8.00	11.58	56902	8.35	11.00	57205	10.30	11.50	57908
9.40	11.50	61497	10.45	11.50	9210	8.45	11.20	9210	8.40	11.58	56903	8.45	11.00	57206	10.30	11.50	57909
8.20	11.50	61498	10.30	11.50	9211	8.20	11.20	9211	8.20	11.58	56904	8.20	11.00	57207	10.30	11.50	57910
10.20	11.50	61499	10.20	11.50	9212	8.00	11.20	9212	8.00	11.58	56905	8.00	11.00	57208	10.20	11.50	57911
10.20	11.50	61500	11.00	11.48	9200	10.30	11.24	9200	10.30	11.58	56946	8.30	11.00	57209	12.40	11.72	57912
11.30	11.50	61501	11.30	11.48	9201	10.30	11.24	9201	10.30	11.58	56947	8.30	11.00	57210	12.40	11.72	57913
14.30	11.58	61502	11.20	11.48	9202	11.40	11.20	9202	11.40	11.58	56948	14.31	11.00	57211	14.50	12.00	57915
14.40	11.52	61503	7.00	11.30	9203	7.20	11.30	9203	7.40	11.58	56949	7.40	11.30	57212	8.20	11.44	57916
9.35	11.30	61504	7.30	11.30	9204	7.00</											

14.30	38.40	61023
7.20	20.00	61061
11.00	6.80	61087
15.30	37.80	60729
10.15	39.30	60730

11.50	6.00	61176
12.80	12.04	61177
11.30	12.00	61178
14.40	12.00	61179
14.00	12.00	61180
15.25	12.90	61181
16.30	11.90	61182
16.30	12.00	61183

16.46	11.00	60985
7.15	32.60	59487
7.45	35.38	59498
8.20	30.78	59499
8.30	11.50	59500
7.00	33.57	56560
7.40	33.56	56570
8.30	31.54	56571
9.20	33.58	56572
9.50	31.50	56573
10.00	31.52	56574
10.50	33.50	56575
11.20	37.98	56576
11.30	30.35	56577
15.30	29.00	56578
16.05	21.20	56579
16.25	38.48	56580
7.05	10.00	9424
7.57	11.00	9425
8.32	1.25	9426
9.00	12.11	60981
10.30	12.42	60982
8.30	30.48	60983
11.40	12.60	60984
12.00	12.47	60985

12.10	8.50	57205
7.15	31.70	57206
7.50	31.80	57204
8.30	31.60	57205
9.15	31.70	57206
10.00	31.50	57207
11.00	31.70	57208
11.45	31.60	57209
12.30	31.70	57210
15.24	28.93	8769
7.00	11.52	57306
7.00	7.00	57307
8.55	1.00	57308
11.10	30.60	57309
12.50	7.20	57310
7.00	31.64	57311
7.40	31.48	57312
8.20	31.50	57313
9.00	31.56	57314
9.40	31.52	57315

30/11/21