

Grants Rd Sand



Grants Road Sand Quarry Annual Review

1 January 2018 to 31 December 2018

PROJECT APPROVAL 08_0099



April 2019

Project Summary

Name of Operation	Grants Road Sand Quarry
Name of Operator	Steven Jones
Development consent / project approval #	08_0099
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
Annual Review start date	1 January 2018
Annual Review end date	31 December 2018
Name of authorised reporting officer	Vanessa Colclough
Title of reporting officer	Environmental Planner / Director
Date	30 April 2019

Document History and Status

Project: 19_010

Client: GR & AK Jones - Grants Road Sand Quarry

Prepared by:
Peter Andrews + Associates Pty Ltd

Version	Date issued	Issue	Author
A	30 April 2019	Submission to the Department of Planning and Environment	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. The Annual Review is for the period from 1 January 2018 to 31 December 2018 (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 2018.

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.*

A request for an extension of time for the submission of the 2018 Annual Review was requested on behalf of the owners of Grants Road Sand Quarry to the Department of Planning and Environment on 22 March 2019. The Department of Planning and Environment approved the request for the extension of time with the revised submission date being 30 April 2019.



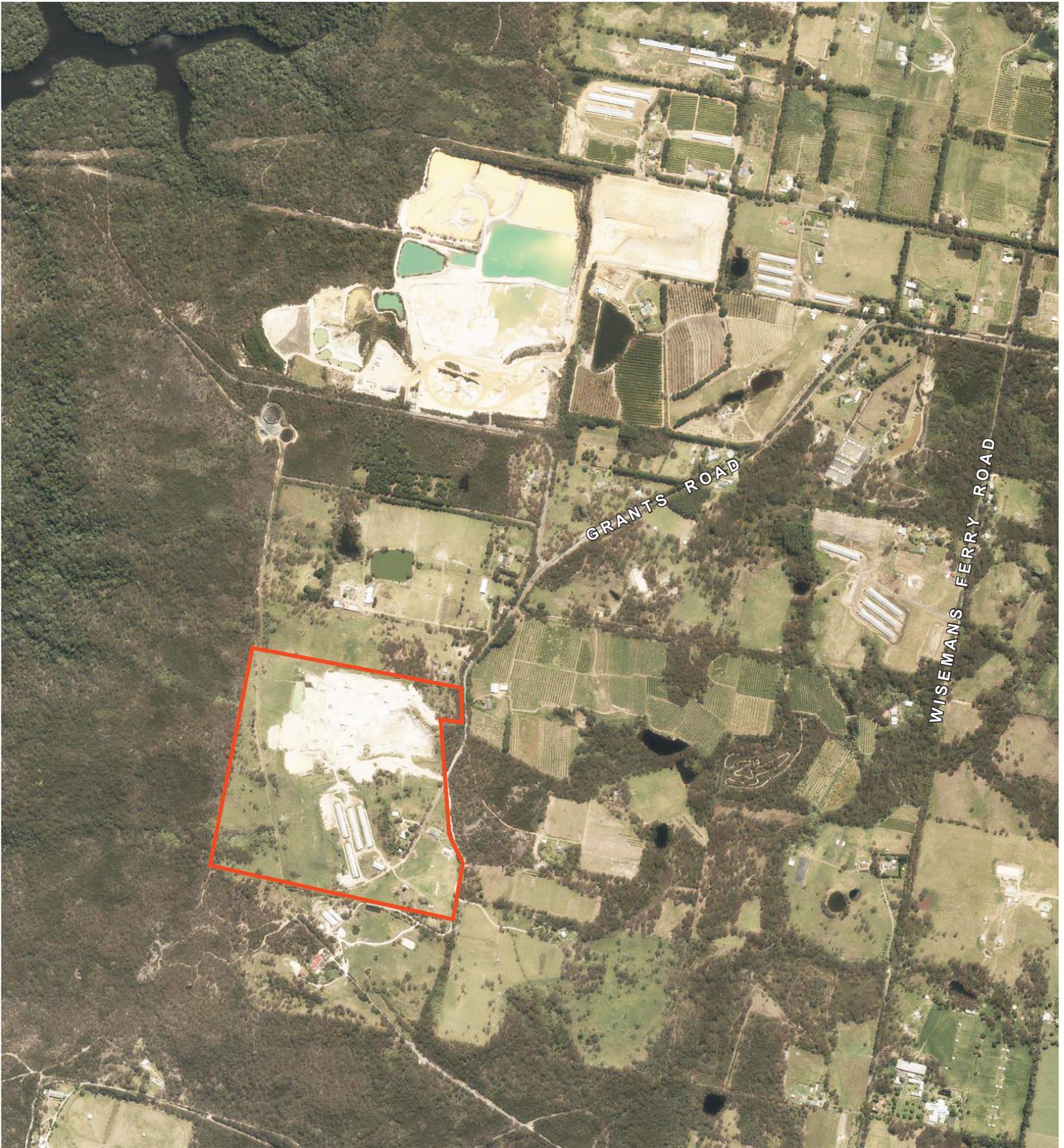
Source : Google Maps

Legend

The Site



Figure 1 - Locality Plan



Source : Sixmaps 2018

Legend

 The Site



Figure 2 - Aerial Photograph

2. Performance Requirements

2.1. Management

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

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

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

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

Website - www.grantsrdsand.com.au

Email - info@grantsrdsand.com.au

Address - 270 Grants Road, Somersby NSW 2260

2.2. Hours of operation

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

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

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

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

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

2.3. Licences

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

Table 1 – Licences

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

2.4. Approval Requirements

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

3. Activities undertaken during the Reporting Period

3.1. Site Inspection

A site visit and meeting with the Quarry Manager, Steven Jones was carried out on 30 January 2018.

3.2. Activities

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

Table 2 – Key Activities

Month	Activities
January	<ul style="list-style-type: none"> Updating the website throughout the year with relevant reports and updates. Weed management undertaken throughout the year. Maintaining equipment and implementing improvements to machinery to reduce any impacts.
February	
March	<ul style="list-style-type: none"> Preparation of the 2017 Annual Report and submission to the Department.
April	Receipt and review of draft conditions of approval for the Modification number 1.
May	<ul style="list-style-type: none"> Modification approved by the Department of Planning and Environment Direction from the Department to form a Community Consultative Committee
June	<ul style="list-style-type: none"> Appointed chair of the Grants Road Sand Community Consultative Committee.
July	
August	
September	<ul style="list-style-type: none"> Survey undertaken and areas pegged for the new biodiversity areas.
October	<ul style="list-style-type: none"> Preparation of the independent audit and submission to the Department of Planning and Environment. Set up of the Community Consultative Committee and hold first meeting.
November	
December	<ul style="list-style-type: none"> Various monitoring undertaken for the Annual Review. Preparation of the draft Landscape and rehabilitation report for the modification number 1.

Source: Grants Road Sand Quarry 2019

3.3. Quarrying and Extraction

The annual production for the quarry for the period from 1 January 2018 to 31 December 2018 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	124 235.67 tonnes	124 933.33 tonnes	130 000 to 150 000 tonnes

4. Environmental Monitoring

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

4.1. Water Quality

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

Water level monitoring is undertaken in four (4) 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 2018 to 31 December 2018.

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
G4 (BH 4)	Groundwater	Bore on NW corner of decant Pond	Water quality and automated water level
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 to near neutral 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 concentrations of Total Suspended Solids (TSS) recorded in groundwater samples were all less than the LOR with low to non-detect levels recorded in the surface water samples. Therefore, the recorded TSSs are less than the discharge level limit.
- Low levels of nutrients 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 levels recorded in shallow monitoring bores suggests relative rapid recharge of the shallow aquifer system, especially in Monitoring Bore BH 3 and to a lesser extent in BH4. This is consistent with the results of extensive groundwater investigations over the Site and surrounding district.
- The hydrographs for the relatively deeper monitoring bores also show a direct response to rainfall events but with a 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 27 November 2018 by Atkins Acoustics and Associates Pty Ltd and are attached in Appendix 5. The results of the audits are as follows.

Site inspections during the audit identified that onsite extraction and processing was established in Areas A and B.

Activities included:

- McClosky (Tricon) Screen and loader in centre portion of Area B.
- Truck loading from stockpile area south-western portion Area A.
- Saw cutting central lower portion of Area A.

Site inspection and attended noise audits were conducted between 7.20am and 12.30pm on Tuesday 27 November 2018. Weather conditions during the audit were calm to light winds from WNW to NNE (0.6-3.5m/sec), air temperature 16-24 degrees Celsius, relative humidity 52-83% and approximately 30% cloud cover.

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

The reference measurement locations are:

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

The noise measurement instrumentation selected comprised a SVAN957 Sound and Vibration Analyzer. Measurements were conducted over fifteen (15) minute periods, noise sources identified and measured during the audit where appropriate were used to assess source noise contributions from the Grants Road Sand Quarry operations. A summary of the measurement results and calculated contributions are outlined in the following table.

Table 5 – Audit Measurement Results – February 2017

Measured Ambient Sound Pressure Levels dBA				Grants Road Sand Contribution	Comments
L _{Aeq}	L _{A10}	L _{A90}	L _{A1}	L _{Aeq, 15min} *	
Location 1: Ibels Residence – 380 Somersby Falls Road					
41.1	41.9	32.4	53.6	<40	Aircraft, birds, GRS mobile plant audible at times estimated LAeq 30/4dBA.
42.5	45.9	34.5	57.6	<40	Aircraft, birds, GRS mobile plant audible at times estimated LAeq 31/4dBA.
Location 2: McGregor Residence – 239 Grants Road					
40.2	44.7	31.4	50.5	<40	Aircraft, birds, GRS onsite trucks L _{Amax} 36/7dBA, McClosky (Tricon) and loader audible at times.
43.9	46.2	33.4	55.1	<40	Aircraft, Distant road traffic, GRS onsite trucks L _{Amax} 38/9dBA, loaders and McClosky (Tricon) screen audible at times.
Location 3: Sammut Residence – 210 Grants Road					
46.3	44.2	31.8	58.1	<40	Distant road traffic, birds, aircraft.
42.2	43.8	31.5	53.9	<40	Birds, GRS onsite trucks, L _{Amax} 36/7dBA, loaders and McClosky (Tricon) screen audible at times.
Location 4: National Park					
43.3	45.0	35.9	54.7	<50	GRS onsite trucks (L _{Amax} 40/1dBA), loaders, McClosky (Tricon) screen LAeq 36/8dBA, Birds, Breeze in trees, cattle.
41.4	44.4	35.7	48.1	<50	GRS onsite trucks (L _{Amax} 40/1dBA), loaders L _{Amax} 48/9dBA, McClosky (Tricon) screen LAeq 36/8dBA, Aircraft, Birds, Cattle, Breeze in trees.

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

The audit measurements have confirmed that operational noise contributions from Grants Road Sand Quarry operations satisfies the *Approval 08_0099* dated 25 July 2014 project noise goal LAeq,15min 40dBA and the Noise Management Plan's recommended limit for the National Park LAeq,15min 50-55.

4.3. Air Quality

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

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

The dominant winds for the annual period were from the west. The average wind speed for the period was 2.1 m/s and the percentage occurrence of calm wind conditions (less than or equal to 0.5 m/s) was 1.7 %. June was the coldest month on average with January the hottest month on average. A maximum daily average of 31°C was recorded on 5 February 2018. October recorded the highest monthly rainfall of 181 mm.

The results for the available data in 2018 are of a possible sixty samples (over approximately 12 months), forty-nine samples are reported, resulting in a data recovery rate of approximately 81%. The average PM10 concentration over the recorded 12 month period was 9.0 µg/m³, which is below the annual EPA impact assessment criterion of 25 µg/m³. All reported results are well within the EPA maximum 24-hour average criterion of 50 µg/m³ for PM10, with a maximum 24-hour average of 32.2 µg/m³ recorded on 7 January 2018.

Dust deposition is measured at two locations, R1 and R4. Of a possible 12 samples, 12 samples are reported for both sites. The average monthly dust deposition level for the period of 2018 was 0.4 g/m²/month at R1 and 0.5 g/m²/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m²/month. A maximum value of 2.8 g/m²/month was recorded in April at R4; all other recorded levels were below 1 g/m²/month.

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

A crystalline silica measurement was taken on 14 December 2018, during a period of maximum throughput. The sample was measured over a period of 8 hours on a dozer operating at the site. Unfortunately, the mass of sample collected on the filter was below the limit of reporting (10 µg) and so a concentration could not be determined. We can calculate however, that based on a sample flow rate of 1.7 L/min, the limit of reporting (LOR) would be 12.3 µg/m³ and so the concentration would be less than that.

It is recommended that for the next sampling period either a higher flow rate, a longer sampling period, or an alternative analysis method with a lower LOR be used for RCS in order to obtain a measured value. Even so, levels are clearly low if they are below the LOR over an 8 hour period.

A crystalline silica content of 17% of PM10 was used for the air quality assessment in 2013 (**PAEHolmes, 2013**), and using the measured 2018 annual average PM10 concentration of 9.0 µg/m³ would therefore equate to approximately 1.53 µg/m³. However, it is noted that only the respirable fraction of PM10 is relevant for assessing respirable crystalline silica, that is, PM4. If it is conservatively assumed that 50% of PM10 is PM2.5, then the inferred annual average respirable crystalline silica concentration might be approximately 0.75 µg/m³, significantly below the annual criterion of 3 µg/m³. These low levels are consistent with the 2018 monitoring result.

4.4. Groundwater Dependent Ecosystems

A review of the Groundwater Dependent Ecosystems management protocol was undertaken by Conacher Consulting and is attached in Appendix 7.

Groundwater dependent ecosystem condition was monitored through sampling of both qualitative and quantitative variables. The following variables were measured:

i. Native Plant Composition

The dominant native flora species and projected foliage cover for each species were recorded for each plot. The dominant native flora species in each vegetation stratum were recorded.

ii. Exotic Plant Composition

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

iii. GDE Extent and Distribution

Previous GDE mapping was revised for the current monitoring period. Mapping of GDE's was informed by additional field inspections and aerial photograph analysis and interpretation.

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 of Groundwater Monitoring Data

The results for the groundwater monitoring levels for the current monitoring period were reviewed.

The current monitoring period is the first event to include full floristic plots as part of the monitoring data. This was undertaken to improve monitoring program and will allow for more detailed comparison of flora species composition and distribution between monitoring events

The review of the Groundwater Dependent Ecosystems concludes that the quarry operations for the 2018 monitoring period have not exceeded the compliance and performance measures for Groundwater Dependant Ecosystems and the implementation of mitigation and response measures in relation to the 2018 quarry operations is considered not necessary.

4.5. Somersby Mintbush Monitoring

The 2018 annual monitoring report for Somersby Mintbush *Prostanthera junonis* has been prepared by Conacher Consulting and is attached in Appendix 8.

Counts of flowering *P. junonis* plants were undertaken on 23 November 2018 and 21 December 2018 and at each of 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	2015 Count Results	2016 Count Results	2017 Count Results	2018 Count Results
3	0	2 flowering plants (several non-flowering juvenile regrowth plants observed)	3 clumps containing 18 flowering plants	24 clumps containing 42 flowering plants
4	0	No flowering plants. Several non-flowering juvenile plants observed	12 clumps containing 34 flowering plants	24 clumps containing 394 flowering plants

The report concludes:

- i. An increase in the population of Somersby Mintbush was recorded compared to the previous monitoring period.
- ii. The Somersby Mintbush population increase recorded is likely a result of reduced shading and regeneration following the 2015 hazard reduction burning operations of the NPWS.
- iii. No impacts as a result of the site operations were observed during the current monitoring period;
- iv. Suitable environmental controls should continue to be maintained for the Project.

4.6. Landscape and Rehabilitation Monitoring

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

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

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

- Installation of fauna nest boxes.
- Fencing of Biodiversity offset areas.
- Collection of initial baseline floristic monitoring data.

The long-term security of the offset is currently being addressed by Stephen Thorne and Associates Surveyors who have provided the Department of Planning and Environment with the following documents:

- Plan of Positive Covenants and Restrictions on the use of Land within Lots 1 and 2 DP 358717
- Draft Section 88B Covenant
- Draft Deposited Plan Administration Sheet

The finalisation of this matter is currently pending due to the requirement to submit a Revised Landscape and Rehabilitation Management Plan and Biodiversity Offset Area and Habitat Rehabilitation Plan to reflect the modified Biodiversity Offset Strategy. These plans have now been finalised by *Conacher Consulting* and will be forwarded to the Department of Planning and Environment for review and comment in order to resolve this matter.

A requirement for rehabilitation works has not been triggered during the 2018 monitoring period.

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 Modification 1 of the Project Approval.

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

The current Landscape and Rehabilitation Management Plan and Biodiversity Offset Management and Habitat Rehabilitation Plan documents have only recently been revised and no revisions are recommended at this stage. Any revisions required as a result of the Department of Planning and Environment's initial review of these documents can be completed separately to the annual review process.

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. Monitoring is required to be undertaken every five (5) years and will be undertaken in 2020.

Other inspections will be undertaken once biodiversity works are required.

4.8. Community Consultation

The Department of Planning and Environment requested that the Proponent establish and operate a Community Consultative Committee. Whilst there had been no concerns or complaints referred to the quarry, the Department advised it had received concerns from the local community regarding the impact of truck drivers, particularly their driver conduct and road safety concerns.

A Community Consultative Committee has been established and meets biannually. A letter from the committee is attached in Appendix 10 and outlines the work undertaken to date and that there have been no recorded complaints since the establishment of the committee.

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.

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 also is permitted to accept VENM and ENM. The quarry has received 23 788.7 tonnes of geotechnical certified VENM and/or ENM during January to December 2018.

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.

5. 2019 Reporting Period

The following identifies the measures and activities that are proposed to be undertaken during the 2019 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

- Continue acquisition and charting of water level measurements in the network of four groundwater monitoring bores.
- Continue regular routine surface water and groundwater monitoring in the monitoring network during 2019 in accordance with 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.
- Reinstate oil and grease testing at surface water sample site S1 at the frequency of one sample per month when discharge occurs.
- Submit water samples to the project laboratory 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 monitoring program and an assessment of any trends and potential impacts. This will include an ongoing assessment of hydrographs, pH, TSS and Oils and Grease.

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.
- include the continuation of the earth mounding/bunding on the north-eastern, northern and western site boundaries.
- Additionally, and dependent on product demand, it is expected that the depths of the working platforms (Areas A and B) could increase by 4-5 metres.

Air Quality

- 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.
- Preparation of the Annual report.
- It is recommended that either a higher flow rate, a longer sampling period, or an alternative analysis method with a lower LOR be used for RCS in order to obtain a measured value. Even so, levels are clearly low if they are below the LOR over an 8 hour period.

Biodiversity

Groundwater Dependent Ecosystem

- Detailed monitoring and reporting of the Groundwater dependent ecosystems.

Somersby Mintbush

- Further counts of the previously identified locations of *P. junonis*.
- Continuation of suitable erosion and sedimentation controls and maintenance.
- The trigger levels will be utilised in future monitoring to improve and assess performance for the Project in relation to Somersby Mintbush. Additional monitoring items should be added to the list in the future if deemed necessary. None of these identified triggers have occurred during the current monitoring period.

Landscape and Rehabilitation

- Prepare a revised Landscape and Rehabilitation Plan to be approved by the Department.
- Works within the bio offset area subject to approval of 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 biannually.

Waste Management and Minimisation

- Ensuring best practice is implemented throughout the quarry site.

Visual Impact

- Maintaining and improving the vegetation on the mound constructed in the north eastern portion of the site.
- Maintaining and improving the site where appropriate.

Bushfire Management

- Ensuring bushfire management practices are implemented.

6. Community + Complaints

6.1. Complaint Management

The quarry has not received any complaints during the reporting period. Further, it has not received any complaints since the approval of the Project Approval 08_0099. It is noted that the Department had received complaints in regard to truck driver behaviour and a community consultative committee has now been established for the Grants Road Sand Quarry.

6.2. Independent Environmental Audit

An independent environmental audit was carried out in October 2018 in accordance with the Planning Approval. The environmental audit concluded that the project generally complies with all of its approvals.

6.3. 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
Noise	Noise contributions have remained steady.
Somersby Mint Bush	Continuing regrowth of <i>P. junonis</i> was observed at subpopulations 3 and 4. The increased numbers of flowering plants detected compared to previous surveys is considered to be a result of regeneration following the NPWS hazard reduction burn undertaken during October 2015.

6.4. Discrepancies between the predicted and actual impacts of the project

There have been no discrepancies identified.

Appendix 1 **PROJECT APPROVAL 08_0099**

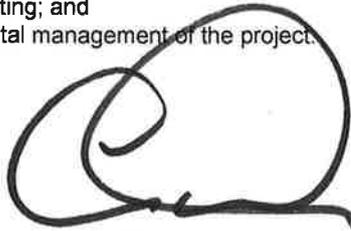
Project Approval

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

25 July

2014

SCHEDULE 1

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

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DEFINITIONS

Annual Review	The review required by condition 3 of schedule 5
BCA	Building Code of Australia
Biodiversity Offset Strategy	The conservation and management of the Proponent's offset sites on Lot 1 DP358717
CCC	Community Consultative Committee
Conditions of this approval	Conditions contained in Schedules 2 to 5 inclusive
Council	Gosford City Council
Department	Department of Planning and Environment
DRE	Division of Resources and Energy (within the Department of Trade and Investment, Regional Infrastructure and Services)
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
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	Feasible relates to engineering considerations and what is practical to build or carry out
GDEs	Groundwater Dependent Ecosystems
High Priority GDEs	GDEs listed in Schedule 5 of the <i>Water Sharing Plan for the Kulnura Mangrove Mountain Groundwater Sources 2003</i> , including <i>Hawkesbury Coastal Banksia Woodland</i> and <i>Sandstone Hanging Swamps</i>
Incident	A set of circumstances that: <ul style="list-style-type: none"> • causes, or threatens to cause, material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this approval
Land	As defined in the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this approval, where it is defined as the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
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
Negligible	Small and unimportant, such as to be not worth considering
NOW	NSW Office of Water
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 EA, including existing quarrying operations and disturbance
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	Secretary of the Department, 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 criteria established under this approval, the Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

TERMS OF APPROVAL

2. The Proponent shall carry out the project generally in accordance with the:
 - (a) EA;
 - (b) Statement of Commitments; and
 - (c) conditions of this approval.

Note: The statement of commitments is reproduced in Appendix 1.

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 shall 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 shall 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 shall 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 shall 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 4A 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 shall 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 shall:
- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the project; and
 - (b) 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 shall ensure that all the plant and equipment used at the site is:
- (a) maintained in a proper and efficient condition; and
 - (b) 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 shall:
- (a) provide annual quarry production data to DRE 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 shall:
 - (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 shall 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.

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 shall 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 shall 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 NOW, 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 shall provide alternative compensation to the satisfaction of the Secretary.

Pollution of Waters

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

Water Management Plan

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

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

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

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

Noise Impact Assessment Criteria

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

Table 1: Noise criteria

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

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

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

Operating Conditions

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

Table 2: Long-term criteria for particulate matter

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

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

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

Table 4: Long-term criteria for deposited dust

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

Table 5: Impact assessment criterion for crystalline silica

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

References to Tables 2 to 5:

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

^b Incremental impact (ie. incremental increase in concentrations due to the project on its own);

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method;

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with the EPA; and

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

Operating Conditions

11. The Proponent shall:
- 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 shall 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 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.

TRANSPORT

Monitoring of Product Transport

14. The Proponent shall:
- (a) 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
 - (b) publish these records on its website biannually.

Operating Conditions

15. The Proponent shall ensure that:
- (a) all project-related heavy vehicles enter and exit the site in a forward direction;
 - (b) all laden vehicles entering or leaving the site have their loads covered; and
 - (c) 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 shall, 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:
- (a) be undertaken by a suitably qualified, experienced and independent person(s) endorsed by the Secretary;
 - (b) be undertaken in consultation with Council;
 - (c) be submitted to the Secretary for approval by the end of March 2015;
 - (d) 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;
 - (e) 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;
 - (f) 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
 - (g) 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 shall 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 shall 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 shall ensure that the project does not cause any exceedances of the performance measures in Table 6, to the satisfaction of the Secretary.

Table 6: Biodiversity impact performance measures

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

Offsets

20. If the Proponent exceeds the performance measures in Table 6 and the Secretary determines that:
- it is not reasonable or feasible to remediate the impact or environmental consequence; or
 - remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence;
- then the Proponent shall 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 shall 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 shall be undertaken in consultation with NOW 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 shall 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 shall implement the biodiversity offset strategy described in the EA, as summarised and revised in Table 7, and shown conceptually in Appendix 3, to the satisfaction of the Secretary.

Table 7: Summary of the biodiversity offset strategy

Area	Offset Criteria	Size (hectares)
On-site Offset Area	<p>Existing vegetation to be enhanced to establish:</p> <ul style="list-style-type: none"> at least 4 ha of moderate – good quality Scribbly Gum Woodland and/or another native vegetation community commensurate with the local surroundings; and suitable habitat for threatened fauna species including the provision of at least 36 nest boxes. 	6.37

Note: See condition 26 for additional requirements relating to the management of the biodiversity offset strategy.

Long Term Security of Offset

24. The Proponent shall make suitable arrangements to provide appropriate long-term security for the offset areas prior to the commencement of extraction operations under this approval unless otherwise agreed by the Secretary, to the satisfaction of the Secretary.

LANDSCAPE

Rehabilitation Objectives

25. The Proponent shall rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EA, and comply with the objectives in Table 8.

Table 8: Rehabilitation objectives

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

Progressive Rehabilitation

26. The Proponent shall 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 shall 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:
- (a) be prepared by suitably qualified person(s) whose appointment has been approved by the Secretary;
 - (b) be prepared in consultation with OEH, DRE and Council, and submitted to the Secretary for approval by the end of July 2015;
 - (c) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
 - (d) 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; and
 - ensure compliance with the rehabilitation objectives and the progressive rehabilitation obligations in this approval;
 - (e) 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;
 - (f) 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;
 - (g) include a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria;
 - (h) 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 shall 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 shall 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 Biobanking 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), the Proponent shall 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 shall 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 shall 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 shall:
- (a) vegetate any earthen perimeter bund at the project within 3 months of establishing the bund, using appropriate flora species to minimise the visual and off-site sedimentation impacts of the project; and
 - (b) maintain this vegetation in a good condition throughout the remainder of the project, to the satisfaction of the Secretary.

WASTE MANAGEMENT

32. The Proponent shall:
- (a) minimise and monitor the waste generated by the project;
 - (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of;
 - (c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and
 - (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.

33. Prior to importing any VENM to the site, the Proponent must obtain a 'resource recovery exemption' under the POEO Act and provide evidence of this approval to the Department.

DANGEROUS GOODS

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

SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing:
 - (a) an exceedance of any relevant criteria in Schedule 3, the Proponent shall 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).

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 shall:

- (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 shall 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 shall 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 shall 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 shall 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.

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.

Community Consultative Committee

6. If directed by the Secretary, the Proponent shall 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 *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007, or its latest version).

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 on 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 shall immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Proponent shall 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 shall 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 shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
 - (a) be 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;
 - (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; and
 - (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.

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

10. Within 6 weeks of completion of this audit, or as otherwise agreed by the Secretary, the Proponent shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

11. By the end of November 2014, the Proponent shall:
 - (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 shall be carried out in accordance with the Environmental Assessment (April 2013) prepared by Peter Andrews + Associates Pty Ltd and this Addendum Report. This Addendum Report will override the Environmental Assessment where there is an inconsistency.	Ongoing
2. Staging	Staging of the development will be in accordance with the staging of works set out in the Environmental Assessment (April 2013).	Ongoing
3. Statutory Requirements	Obtain and maintain all relevant approvals and licences.	As required and continuous
	Comply with all conditional requirements in all approvals and licences.	As required
4. Hours of Operation	7.00am to 6.00pm Monday to Friday 7.00am to 1.00pm Saturday	Ongoing
5. Reporting Requirements	Undertake monitoring for the key areas as identified below.	As required
	Incorporate relevant data/monitoring information in the Annual Reports.	Annually
	Incorporate the management measures into the Environmental Management Plan. The development is to operate at all times within the terms and conditions of the Environmental Management Plan.	Prior to commencement and subject to five yearly reviews
	Update procedures manual for the operation of the quarry with regards to the quarry expansion including the following and ensure all staff are aware of procedures. <ul style="list-style-type: none"> • Operation of plant and equipment • Environmental monitoring • Restrictions imposed on quarrying • Vegetation removal • Sedimentation and erosion • Transportation 	Prior to commencement of the operations
	Provision of the annual production data to the Department of Trade and Investment	Annually
6. Soils and Land capability	Locate areas for acoustic earth mounds.	Prior to topsoil stripping operations
	Maintain topsoil for rehabilitation and minimise soil loss through erosion.	Ongoing
	Vegetate all mounds with Kikuyu grass	As required
	Implement downslope sedimentation controls as required	Until the surface of the mounds are vegetated
7. Groundwater	Undertake automatic water level measurements in water level data logger in monitoring bores	Initially 4-hourly samples. Assess data after 12 months and depending on the results, decrease frequency to 8-hourly samples
	Undertake groundwater sampling in representative monitoring bores	Initially 3 monthly. Assess data after 12 months and depending on the results, decrease frequency to 6

Subject	Commitments	Timing
		monthly samples
	Undertake automatic rainfall measurements in tipping bucket rain gauge data logger on site	Continuous logging at every 0.2mm tip with time/date stamps.
	Preparation of the Groundwater Management Plan, which incorporates the development of a water level and water quality monitoring program and the development of a set of trigger levels and mitigation measures if adverse impacts occur on the environmental and/or neighbouring water users.	Within 6 months of the project approval
	Provide a complete set of results of the production and monitoring program including a review and assessment of the statistical analysis to the <i>Senior Hydrogeologist NOW</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: <ul style="list-style-type: none"> 1. One 10 Megalitres (ML) Pollution Control Dam (PC Dam) to receive nitrogen rich runoff from Zones F&G where the existing chicken and machinery sheds are located. This dam will gravity flow via a spillway into a shallow polishing pond. Control structures such as rock 'rip rap' or similar will be required to control water runoff velocity prior to entering the PC Dam. 2. Broad shallow polishing pond/s will receive any water spilled or transferred from PC Dam and provide passive treatment through suitable wetland plant species. 3. Pipeline and pumps for transfer of water each way between the in-pit decant pond and out of pit PC Dam. 4. A floating siphon in the PC Dam to maintain a 5 ML operating level. <p>Ensure PC Dam and pond are located outside of the water pipeline easement and located generally as shown on the plans. Access to the ponds will be along the southern boundary across the water pipeline easement.</p>	Prior to the commencement of the quarry operations and ongoing
	Continue monitoring of surface water at locations W1 and W4	Monitor until stage 2 of the quarry commences.

	<p>After construction of the control pond and polishing pond, it is proposed that the quality of the treated quarry discharge released to the south west waterway is monitored at the future surface water quality monitoring location S1 shown in Appendix 2 of this report. Initially, the control pond and polishing dam will be used mainly to treat runoff from the chicken farming operations, the existing dwelling and a small area of pasture, and will only be used to treat water captured within the quarry during large rainfall events until the commencement of stage 2 of the quarry. As the quarry extends to the maximum quarry footprint in stage 2, pumping out of the quarry may occur as regularly as weekly.</p> <p>Undertake water quality monitoring by a grab sample taken during discharge downstream of the control pond and polishing pond at location S1 on a monthly</p>	Monthly water monitoring
	<p>basis. The parameters will be monitored and compared against the proposed discharge limits as follows:</p> <ul style="list-style-type: none"> • Suspended solids 40mg/L • Oil and grease – 5 and/or none visible • pH – 6.0-8.0 	
9. Biodiversity and Environmental Management	Identify the boundaries of the quarry.	Prior to clearing of vegetation
	Preparation of a detailed Biodiversity Offset Management and Habitat Rehabilitation Plan for areas to be retained as biodiversity offsets within the site.	Prior to the clearing of vegetation
	<p>Biodiversity offsetting will be undertaken to compensate for unavoidable impacts to biodiversity within the site including the removal of 1.5 hectares of Cleared Land with Remnant Trees vegetation and the loss of 18 hollow bearing trees. The areas within the site proposed for biodiversity offsetting are located in the north-eastern section of the site and along the western section of the site. The offsetting strategy proposed will result in the improvement and maintenance of biodiversity values on the site for the medium to long term.</p> <p>A total of 7.1 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"> • 0.85 hectares of Disturbed Scribbly Gum Woodland; • 3.5 hectares of Cleared Land with Remnant Trees Vegetation; and • 2.75 hectares of Cleared Land. <p>The areas proposed for offsetting will be subject to protective fencing to exclude livestock and local populations of feral Rusa Deer, intensive replanting of endemic tree and shrub species within cleared areas and weed management of noxious and environmental weeds. 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.</p>	The first 10 years of Stage 2
	All hollow-bearing trees to be removed are to be inspected and sectionally dismantled by an arborist, under the supervision and direction of an ecologist. Where possible, escaped fauna is to be caught by the consulting ecologist and transported to a suitable release area. If juvenile or injured fauna are encountered they are to be captured and transported to a wildlife carer or a veterinary surgeon as required. In the case where the arborist declares a tree or stag unsafe to climb, machine removal with a rotating grab or similar will be required.	Prior to removal of the hollow-bearing trees

10. Noise	<p>Incorporate noise reducing measures (upgraded exhausts, enclosures/panels to engines, or localised plant specific shielding*) to achieve the following noise reductions:</p> <ul style="list-style-type: none"> • Dozer 4db; • Trencher 3dB; • McCloskey 3dB; and • Sandwash Plant 8dB for air cooled 6 cylinder engine* (Smaller 4 cylinder engine is now operating with a purpose designed enclosure and exhaust resulting in an 8dB reduction and does not require further attenuation). <p>All reversing alarms replaced with level varying or broadband "quacker" type alarms.</p>	Prior to the use of the plant equipment.
	Plant and equipment to be maintained to ensure acoustic performance is not degraded 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, Trencher and McCloskey do not operate simultaneously.	Throughout the life of the quarry.
	Provision of an earth mounds 3-4 metres high along the southern and south-eastern quarry boundaries as shown on Figure 14 of the Environmental Assessment before commencing Precincts E, F and G.	Prior to quarrying of stage 2.
	The SOMP to document procedures to maximise site shielding and minimise number of plant and equipment on exposed locations, particularly on the eastern and southern portions of the quarry (areas B, C, F and G). That is, where practical and feasible only one (1) item of plant would operate at an exposed level (<8m below ground level) at any one time and extraction to proceed against a working face where practical.	During quarrying of the stage 2.
	<p>A site weather station will be installed and continually monitor ambient weather conditions including wind speed and direction at a height of ten (10) metres above ground level. The current weather conditions would be utilised to manage day to day quarry operations, and the SOMP incorporate strict protocols including:</p> <ul style="list-style-type: none"> • Cease operations within Precinct F and G during north-north-west or west wind conditions up to 3m/s with respect to the operation of the dozer, Trencher and McCloskey in exposed locations (<8m below ground level); and • Utilise periods of high winds >5m/s (particularly east and south-east winds) and/or rain with elevated background noise levels to extract material within exposed locations (Areas B, F and G). 	During quarrying of the relevant precincts.
	<p>A Complaints Management Procedure (CMP) be prepared to deal with any noise complaints as follows and include:</p> <ul style="list-style-type: none"> • Site contact telephone number during business hours to lodge complaints or seek additional information (and message service for out of hours). If phone unattended it should divert to mobile phone of site quarry manager; • Log to record complaint including time of alleged noise issue, duration, description of noise, prevailing weather conditions and complainants contact details; • Complaints to be responded to in a timely manner. Where the noise is currently occurring, Quarry Manager shall investigate and determine noise source is noise is likely to be exceeding Approval Noise Limits. If exceedance is occurring, operations to be amended or ceased; • Audits at sensitive receiver locations to identify noise contributions, compliance and determine if additional procedures or controls to minimise noise from the site are required; • A record of noise investigations to be maintained on site and complainants informed of outcomes of investigations and actions implemented following any noise complaints; and • All site plant including trucks to be regularly inspected and maintained to ensure that the equipment is operating in accordance with specifications and satisfied the noise limits referenced in the NIA (min Annually). 	Prior to the commencement of the quarry extensions.

	<p>Undertake an Annual Noise monitoring program that incorporates:</p> <ul style="list-style-type: none"> • Site attended noise measurements at the three (3) reference locations and record aural observations, statistical noise levels (LA90, LAeq), weather conditions and quarry operations. Typically measurement considering of two (2) 15 minute measurement periods at each receiver; • Attended nearfield or midfield measurements to confirm operating noise levels and determine sound power levels of individual plant and equipment for comparison with source noise data utilised in the EIS Noise Impact Assessment; • Assessment of noise audit measurement results against Conditions of Consent and any pending Licence to determine compliance; • Provide recommendations for ameliorative or management measures for Quarry operator where noise exceedances are identified; • Preparation of Annual Noise Monitoring Report for submission to Consent Authority and/or EPA. 	Annually
11. Air Quality	Preparation of an air quality management plan incorporating PM ₁₀ monitoring at the most affected off-site sensitive location.	Annually
	<p>Minimise dust impacts at sensitive residences through the following onsite management procedures. These procedures to meet the KPIs outlined in this report and be reviewed.</p> <ul style="list-style-type: none"> • Water of unsealed roads; • Use of wheel-wash and operation of sealed road from wheel-wash to the front gate; • Covering of loads during hauling; • Water of stockpiles when necessary; • Limiting vehicle speed onsite; and 	Annually
	<ul style="list-style-type: none"> • Limiting the area of disturbed land and progressive rehabilitation of completed areas. 	
	Carry out campaign monitoring for respirable crystalline silica. The monitoring would assess the exposure of quarry workers to respirable crystalline silica (in accordance with Australian Standard (AS 2985-2009) - Workplace atmospheres - Method for sampling and gravimetric determination of respirable dust.	First year of the quarry extension (on a day of maximum throughput). Monitoring to be repeated quarterly in the first year and if more than two consecutive results demonstrate low risk, monitoring would be discontinued.
	<p>Incorporate greenhouse gas reduction measures for the operation of the project including:</p> <ul style="list-style-type: none"> • Opportunities to increase energy efficiency will be continuously reviewed including opportunities to minimise haul distances for quarry material, ensuring trucks are fully loaded to maximise productivity and efficiency, reducing trips by coordinating delivery and removal of materials. • Consideration of the use of alternative fuels where economically and practically feasible. • Regular maintenance of diesel powered equipment to ensure operation at peak efficiency. • Consideration of energy efficiency for all electrical equipment, appliances, lighting and hot water system. 	Throughout the life of the quarry
12. Roadworks and Traffic Management	All vehicles leaving the site with loads of extracted material are to be sufficiently covered to prevent windblown dust.	Ongoing
13. Heritage	Grants Rd RE1 and RE2 sites are to be preserved.	Continuous
	Incorporate a ten (10) metre buffer on the southern, eastern and western boundary of the anthropomorphic figure (Grants Rd RE1).	For the life of the quarry

	The bund wall for the quarry extension in the area of Grants Rd RE1 to be constructed of block wall rather than earth in between the engraving and the boundary.	Prior to the quarrying of Precinct C
	The engraving (Grants Rd RE1) is incorporated into the monitoring programme currently in place for the adjacent Howes Aboriginal Reserve.	Five yearly
	A protective fence is constructed 8 metres around each side of the Grants Rd RE 1 site to prevent inadvertent damage. The fence should incorporate appropriate signage to ensure the access within the fenced zone is limited to maintenance activities such as grass cutting.	Prior to the quarrying of Precinct C
	Traffic is to be directed around the small mound at the Grants Rd RE 2 site to ensure minimal disturbance.	Continuous
	An additional monitoring site visit be undertaken to review the recommendations effectiveness to protect the site.	12 months after the project approval
	The quarry operator to develop and implement an Aboriginal Cultural Heritage Induction Program for all personnel associated with the quarry operations. A register is to be kept of 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.

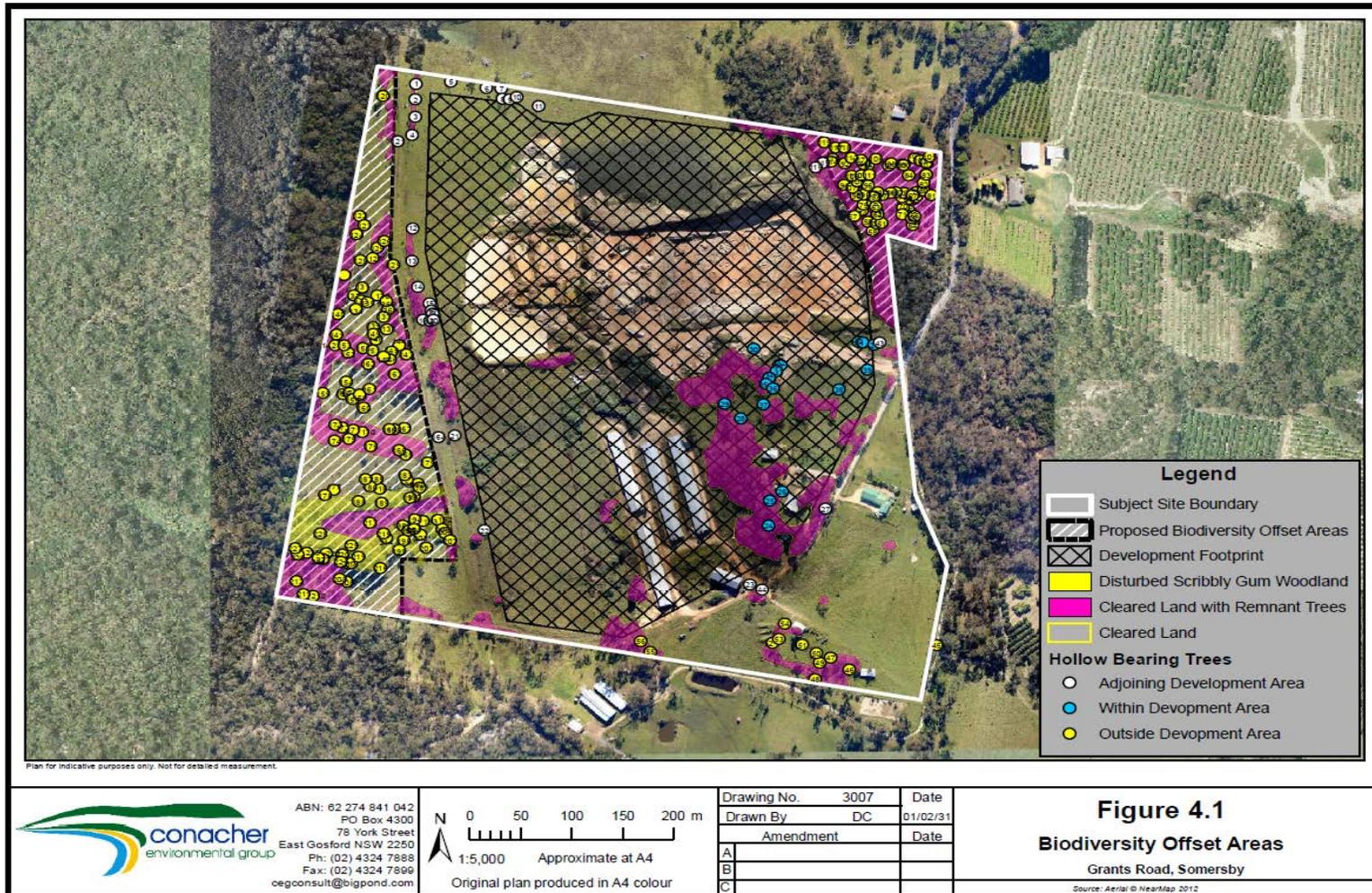
Determination of Meteorological Conditions

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

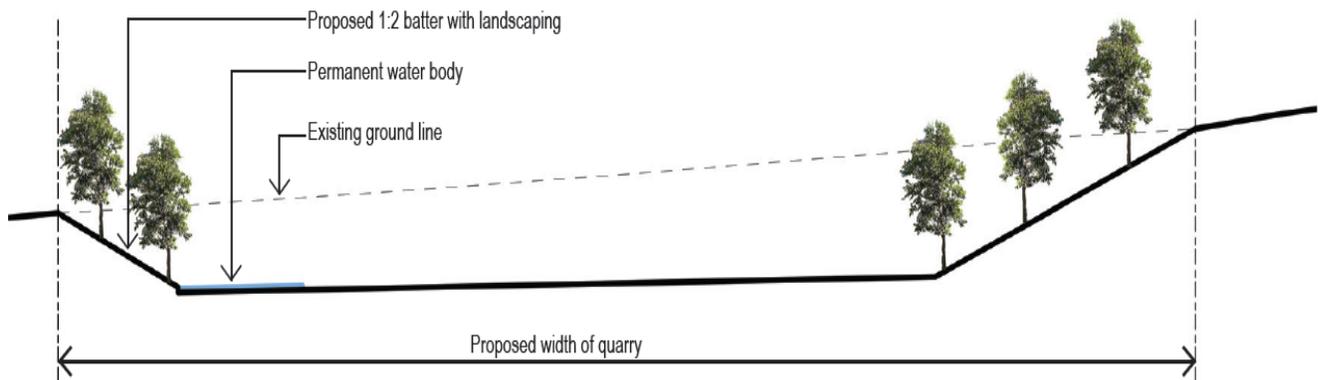
Compliance Monitoring

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 STRATEGY



**APPENDIX 4
CONCEPTUAL FINAL LANDFORM**



Appendix 2 **NOTICE OF MODIFICATION**

Notice of Modification

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

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



Howard Reed
Director
Resource Assessments

Sydney

04 May

2018

SCHEDULE 1

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

SCHEDULE 2

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

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

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

COMPLIANCE

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

Table 7: Summary of the Biodiversity Offset Strategy

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

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

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

- (b) after the term "EA,", insert the words "EA (MOD 1) and Landscape and Rehabilitation Management Plan".
16. In condition 27 of Schedule 3:
- 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

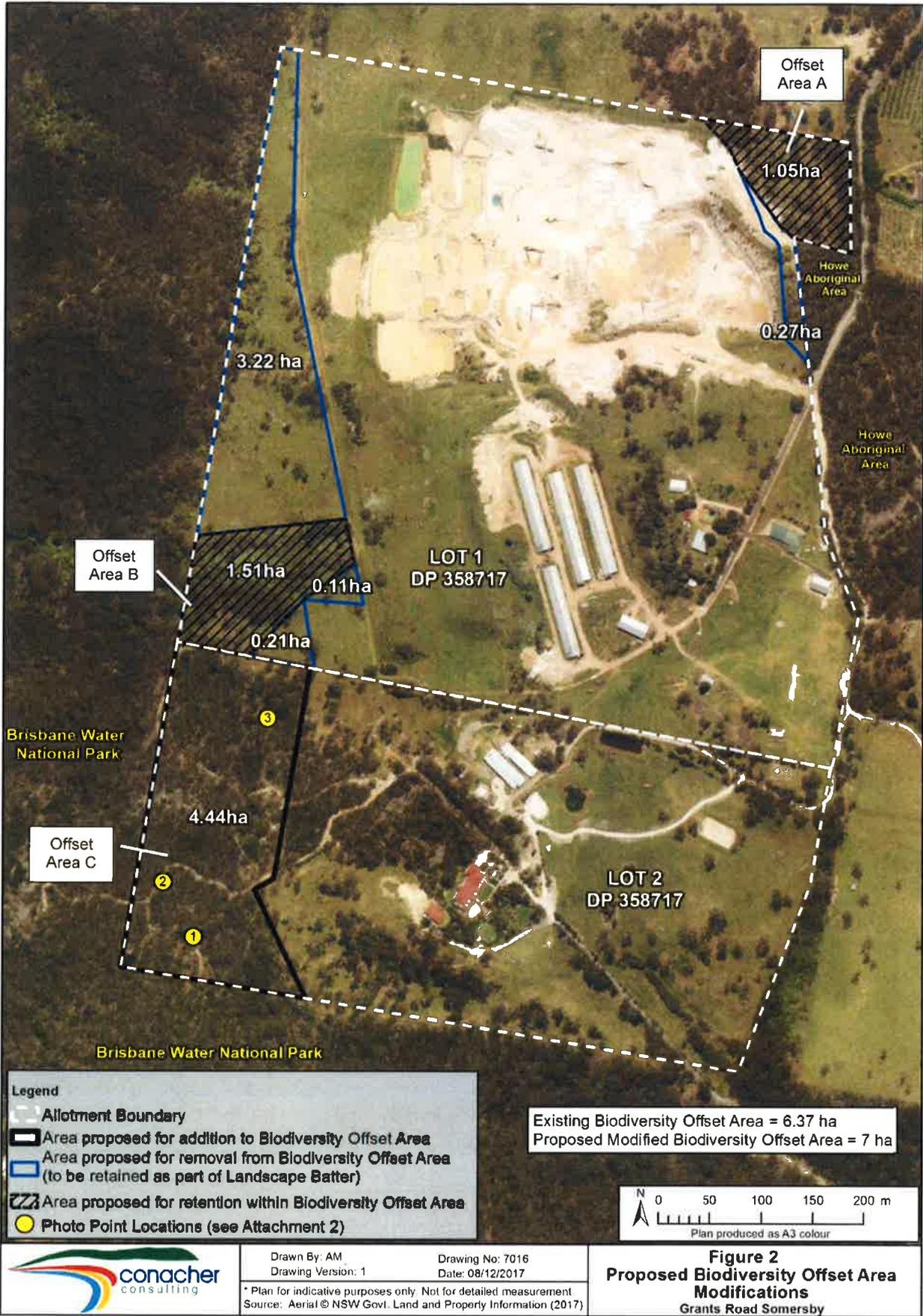
- Offset Area C. 4.44 hectares of Red Bloodwood - Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin Bioregion in the west of Lot 2 DP358717.

- (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

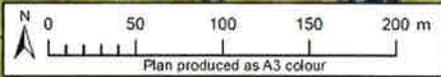
BIODIVERSITY OFFSET AND LANDSCAPE BUFFER AREAS





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 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 25 July 2014.

Item	Control Measure	Timing / Frequency	Compliance
Schedule 2 Administrative Conditions			
1.	In addition to meeting the specific performance criteria established under this approval, the Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Extent of the project	Complies. Refer to Section 4.0 for monitoring results.
2.	The Proponent shall carry out the project generally in accordance with the: (a) EA; (b) Statement of Commitments; and (c) conditions of this approval.	Extent of the project	Complies.
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.
4.	The Proponent shall 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.	Extent of the project	Complies.
5.	If the project has not been physically commenced within 5 years of the date of this approval, then this project approval shall lapse.	25 July 2019	Complies. Project has been physically commenced and therefore condition no longer applies.
6.	The Proponent may carry out quarrying operations on the site until 30 June 2044.	30 Jun 2044	Complies. Consent still operational.
7.	Production shall not extract process and transport more than 250,000 tonnes of quarry products.	Per calendar year	Complies. The annual production for the quarry for 2018 was 124 933.33 tonnes.
8.	Surrender of existing development consent for the quarry	By the end of December 2015	Complies. The existing development consent was surrendered by notification to the then Gosford City Council (now Central Coast Council).
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.
10.	All new and upgraded structures to comply with the relevant requirements of the BCA	Prior to construction	Complies – no new or upgraded structures undertaken to date.

Item	Control Measure	Timing / Frequency	Compliance				
11.	Demolition work carried out in accordance with the relevant Australian Standard	At demolition	Complies – no demolition works undertaken to date.				
12.	Protection of public infrastructure	At all times	Complies – no impact on public infrastructure.				
13.	All plant and equipment maintained and operated in a proper and efficient manner	At all times	Complies.				
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	Complies – no action required.				
15.	Provide quarry production data to DRE and report as part of the Annual Review.	Annually	Complies. Production data provided to DRE. Production data recorded in the Annual Review.				
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.				
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.				
Schedule 3 Environmental Performance Conditions							
Soil and Water							
1.	Ensure sufficient water for the project	Extent of quarrying operations.	Sufficient water is available for the project.				
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.				
3.	Compliance with s120 of the POEO Act.	Extent of the project	Complies.				
4.	Preparation of the Water Management Plan	30 November 2014	Water Management Plan prepared and approved by the Department.				
Noise							
5.	Construction activities and quarrying operations on the site to only occur: (a) between 7.00 am and 6.00 pm, Monday to Friday; (b) between 7.00 am and 1.00 pm, Saturday; and (c) at no time on Sunday or public holidays.	Extent of the project	Complies.				
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	Complies.				
7.	The Proponent shall 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"> <thead> <tr> <th>Receiver Location</th> <th>LAeq,15min dB(A)</th> </tr> </thead> <tbody> <tr> <td>All privately owned residences</td> <td>40</td> </tr> </tbody> </table>	Receiver Location	LAeq,15min dB(A)	All privately owned residences	40	Extent of the project	Complies. The Noise monitoring reports show that operational noise on private residences does not exceed 40 dB(A).
Receiver Location	LAeq,15min dB(A)						
All privately owned residences	40						

Item	Control Measure	Timing / Frequency	Compliance									
	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.											
8.	The Proponent shall: (a) implement best management practice to minimise the construction, operational and road noise of the project; (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; (c) maintain the effectiveness of noise suppression equipment on plant and equipment on site; (d) minimise the noise impacts of the project during meteorological conditions under which the noise limits in this approval do not apply; (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	Complies. Refer to Section 4.0 below.									
9.	Preparation of the Noise Management Plan	30 November 2014	Noise Management Plan prepared and approved by the Department.									
Air Quality												
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 listed below at any residence on privately-owned land											
	<p>Long-term criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>^a 90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>Annual</td> <td>^a 30 µg/m³ Note 1</td> </tr> </tbody> </table> <p>Note 1: 30 µg/m³ criterion has been amended to 25 µg/m³</p>	Pollutant	Averaging Period	Criterion	Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³ Note 1	Extent of project	Complies. The average PM ₁₀ concentration over the recorded 1-year period was 6.8 µg/m ³ , which is well below the annual EPA impact assessment criterion of 25 µg/m ³
Pollutant	Averaging Period	Criterion										
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³										
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³ Note 1										
	<p>Short-term criteria for particulate matter</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>24 hour</td> <td>^a 50 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging Period	Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³	Extent of project	Complies. All reported results are well within the EPA maximum 24-hour average criterion of 50 µg/m ³ for PM ₁₀ , with a maximum 24-hour average of 21.2 µg/m ³ recorded on 17 February 2017.			
Pollutant	Averaging Period	Criterion										
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³										
	<p>Long-term criteria for deposited dust</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td>^c Deposited Dust</td> <td>Annual</td> <td>^b 2 g/m²/month</td> <td>^a 4 g/m²/month</td> </tr> </tbody> </table>	Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level	^c Deposited Dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month	Extent of project	Complies. The average dust deposition level over the recorded period was 0.6 g/m ² /month at R1 and 0.9 g/m ² /month at R4, which are well below the EPA cumulative annual average criterion of 4 µg/m ³ .	
Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level									
^c Deposited Dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month									

Item	Control Measure	Timing / Frequency	Compliance									
	<table border="1"> <tr> <td colspan="3">Impact assessment criterion for crystalline silica</td> </tr> <tr> <td>Pollutant</td> <td>Averaging Period</td> <td>Standard Criterion</td> </tr> <tr> <td>e Chronic Reference Exposure Level (REL) (PM₄)</td> <td>Annual</td> <td>3 µg/m³</td> </tr> </table>	Impact assessment criterion for crystalline silica			Pollutant	Averaging Period	Standard Criterion	e Chronic Reference Exposure Level (REL) (PM ₄)	Annual	3 µg/m ³	Undertake monitoring at maximum throughput. Monitoring will be repeated quarterly and if two consecutive results demonstrate low risk the monitoring will be discontinued.	The assessment will be undertaken in the 2018 production year as the quarry production is at its full approved production.
Impact assessment criterion for crystalline silica												
Pollutant	Averaging Period	Standard Criterion										
e Chronic Reference Exposure Level (REL) (PM ₄)	Annual	3 µg/m ³										
11	The Proponent shall: (a) implement best practice management to minimise the dust emissions of the project; (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; (c) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d under Table 5); (d) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site; and (e) minimise the area of surface disturbance and maximise progressive rehabilitation of the site; and (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	Complies. Air quality monitoring is carried out regularly and shows compliance with the air quality criteria. Equipment is monitored to minimise the release of greenhouse gas emissions.									
12.	Prepare the Air Quality Management Plan	30 November 2014	The Air Quality Management Plan has been prepared and approved by the Department.									
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	Complies. A suitable meteorological station has been placed on site.									
Transport												
14.	Keep accurate records of the: <ul style="list-style-type: none"> Amount of quarry products transported from the site (per calendar month and year) and Number of laden vehicle movements from the site (per hour, day, week, calendar month and year). 	Publish the records on the website biannually	Complies.									
15.	Ensure that: <ul style="list-style-type: none"> Project related heavy vehicles enter and exit the site in a forward manner. All loads will be covered entering or leaving the site. All laden vehicles leaving the site are cleaned of sand and other material that may fall on the road, before leaving the site. 	Extent of the project	Complies.									
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	Complies. Grants Road assessment and maintenance report prepared and approved by the Department.									

Item	Control Measure	Timing / Frequency	Compliance						
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.						
18.	Prepare a Traffic Management Plan including a drivers' code of conduct.	30 November 2014	Traffic Management Plan prepared and approved by the Department.						
Biodiversity									
19.	<p>Ensure that the project does not cause any exceedances of the performance measures in the following table, to the satisfaction of the Secretary</p> <table border="1"> <thead> <tr> <th>Feature</th> <th>Measure</th> </tr> </thead> <tbody> <tr> <td>High priority GDEs located within 1 kilometre of extraction operations</td> <td>Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. </td> </tr> <tr> <td>Somersby Mintbush</td> <td>Negligible environmental consequences</td> </tr> </tbody> </table>	Feature	Measure	High priority GDEs located within 1 kilometre of extraction operations	Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. 	Somersby Mintbush	Negligible environmental consequences	Annually	Complies. Monitoring shows that there have been no exceedances.
Feature	Measure								
High priority GDEs located within 1 kilometre of extraction operations	Major environmental consequences including: <ul style="list-style-type: none"> • negligible erosion of the surface of the GDEs; • negligible sedimentation within the GDEs; • minor changes in the size of the GDEs; • no significant change to the composition or distribution of species within the GDEs. 								
Somersby Mintbush	Negligible environmental consequences								
20.	<p>If the performance measures in Condition 19 are exceeded and the Secretary determines that:</p> <p>(a) it is not reasonable or feasible to remediate the impact or environmental consequence; or</p> <p>(b) remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence;</p> <p>then the Proponent shall provide a suitable offset to compensate for the impact or environmental consequence, to the satisfaction of the Secretary.</p>	As required	Not applicable.						
21.	Undertake additional studies on the high priority GDEs located within 1 kilometer of extraction operations under the approval and potentially impacted by the project. The studies shall be undertaken in consultation with NOW.	Annually	Complies. Monitoring undertaken and outlined in Section 4.0.						
22.	The Proponent shall 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	Complies. Monitoring of Somersby Mintbush undertaken annually.						

Item	Control Measure	Timing / Frequency	Compliance						
23.	<p>Implement the biodiversity offset strategy described in the EA (EA Mod 1) and Landscape and Rehabilitation Management Plan and as summarised and revised in the following table:</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Offset Criteria</th> <th>Size (ha)</th> </tr> </thead> <tbody> <tr> <td>On-site offset area</td> <td> Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. </td> <td>7.0</td> </tr> </tbody> </table>	Area	Offset Criteria	Size (ha)	On-site offset area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0		<p>Complies. The on-site offset area has been set aside. 36 nest boxes have been placed within the area.</p>
Area	Offset Criteria	Size (ha)							
On-site offset area	Existing vegetation to be managed and maintained as: <ul style="list-style-type: none"> • Scribbly Gum Woodland and/or other native vegetation community commensurate with the local surroundings, including at least 4.44 ha in moderate to good condition; and • suitable habitat for threatened fauna species including the provision of at least 36 nest boxes in the biodiversity offset and landscape buffer areas. 	7.0							
24.	<p>The Proponent must:</p> <ul style="list-style-type: none"> (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 <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: <ul style="list-style-type: none"> - manage the offset areas for conservation in perpetuity; - implement the Landscape and Rehabilitation Management Plan; and - permit ongoing access to the offset areas by the Department and other relevant public authorities for the purposes of monitoring compliance with the covenants and Landscape and Rehabilitation Management Plan, to the satisfaction of the Secretary. 	<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 and Environment. The surveyor is also working with the Department to prepare the covenants. Once this is completed the revised Landscape and Rehabilitation Plan is to be finalised and submitted to the Department.</p>						

Item	Control Measure	Timing / Frequency	Compliance
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 comply with the following objectives:</p> <ul style="list-style-type: none"> • Safe, stable and non-polluting. • Minimise the visual impact of the final landforms as far as is reasonable and feasible. • Surface infrastructure to be decommissioned and removed, unless the Secretary agrees otherwise. • Quarry benches suitably landscaped and revegetated using native species. • Establish land with a level of at least Class 4 agricultural suitability over 80% of the quarry floor. • Ensure public safety. • Minimise the adverse socio-economic effects associated with quarry closure. 	At the end of the quarry project.	Not applicable at this time of review.
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.
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	Landscape and Rehabilitation Management Plan prepared and approved by the Department.
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.
29.	Review, and if necessary revise, the sum of the Conservation and Rehabilitation Bond to the satisfaction of the Secretary. This review must: <ul style="list-style-type: none"> (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	Not required at this time of the review.
30.	Prepare Heritage Management Plan	30 November 2014	Heritage Management Plan prepared and approved by the Department.
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.	Complies.

Item	Control Measure	Timing / Frequency	Compliance
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	Complies. Perimeter bunds vegetated.
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.	Complies.
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.
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.	Complies.
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.	Complies.

Schedule 4 Additional Procedures

1.	Notification of monitoring results to landowners where: (a) An exceedance of any relevant criteria in Schedule 3, the Proponent shall 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	Complies. No exceedances have been determined as part of the monitoring results.
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Item	Control Measure	Timing / Frequency	Compliance
2.	<p>If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land.</p> <p>If the Secretary is satisfied that an independent review is warranted, then the Proponent shall:</p> <p>(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:</p> <ul style="list-style-type: none"> • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and • if the project is not complying with these criteria, then identify measures that could be implemented to ensure compliance with the relevant criteria; and <p>(b) give the Secretary and landowner a copy of the independent review.</p>	Within 2 months of the Secretary's decision.	Not required at this time of the review.
Schedule 5 Environmental Management, Reporting and Auditing			
1.	The Proponent shall 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.
2.	The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines	Annually	Complies.
3.	<p>Assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedule 3.</p> <p>Where any exceedance of these criteria and/or performance measures has occurred, the Proponent must, at the earliest opportunity:</p> <p>(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur;</p> <p>(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</p> <p>(c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.</p>	Extent of Project.	Assessed as part of the monitoring and annual review. No exceedances have occurred.
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.	Complies. Annual Review to be submitted by end of March 2018.

Item	Control Measure	Timing / Frequency	Compliance
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,	Strategies will be assessed as part of the Annual Review and amended and resubmitted if required.
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: <ul style="list-style-type: none"> • 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.	Extent of Project.	Not required to date.
6.	Establish and operate a Community Consultative Committee (CCC) to the satisfaction of the Secretary.	If directed by the Secretary.	The Department of Planning and Environment required the quarry to operate under the existing Community Consultative Committee. Currently operational.
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.	Not required at this time of the review.
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.

Item	Control Measure	Timing / Frequency	Compliance
9.	<p>Commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:</p> <ul style="list-style-type: none"> (a) be 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; (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; and (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. 	<p>By 30 June 2015 and every 3 years thereafter, unless the Secretary directs otherwise.</p>	<p>Initial Independent Environmental audit undertaken in 2015. Environmental audit prepared in 2018.</p>
10.	<p>Submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.</p>	<p>Within 3 months of completion of the audit, or as otherwise agreed by the Secretary.</p>	<p>2018 Environmental Audit submitted to the Department in October 2018. Extension for the submission of the Environmental Audit was granted by the Department of Planning and Environment.</p>
11.	<p>Make copies of the following publicly available on its website:</p> <ul style="list-style-type: none"> • the documents referred to in condition 2 of Schedule 2; • all current statutory approvals for the project; • all approved strategies, plans and programs required under the conditions of this approval; • a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; • a complaints register, updated monthly; • the annual reviews of the project; • any independent environmental audit, and the Proponent's response to the recommendations in any audit; • minutes of CCC meetings; • any other matter required by the Secretary; and <p>keep this information up to date, to the satisfaction of the Secretary.</p>	<p>Extent of project</p>	<p>Complies. The Grants Road Sand Quarry website incorporates:</p> <ul style="list-style-type: none"> • The Project Approval • Environmental Assessment • The Environmental Strategy • Plans of Management • Complaints Register • Truck movements • Independent Audit • Annual Reviews

Appendix 4
WATER QUALITY MONITORING
Larry Cook Consulting Pty Ltd

Larry Cook Consulting Pty Ltd

**WATER MONITORING
PERIOD 1.1.18 – 31.12.19**

GRANTS ROAD SAND QUARRY

Grants Road Sand
Lot 1 in DP358717
270 Grants Road Somersby

PREPARED FOR: GRANTS ROAD SAND

PROJECT NUMBER: 19020

DATE: 24TH FEBRUARY 2019

Larry Cook Consulting
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1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Grants Road Sand has 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).

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 Lot 1 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	Lot 1 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 is undertaken in four 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 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	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 Lot 1	Water quality
G4 (BH 4)	Groundwater	Bore on NW corner of decant Pond	Water quality and automated water level
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

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

Automated water level measurements were collected in water level sensors installed in the network of four monitoring bores.

A composite set of hydrographs is presented in **Figure 3**. The following observations and comments are provided:

- The composite hydrographs reveal a general rise in the water table between June and mid-September 2016 followed by a commensurate decline to about February 2017.

A rise in the water levels between February 2017 and mid April 2017 is in response to significant rainfall events between about late February and late March. The recharge response to rainfall is most noted in Monitoring Bore BH3.

With the exception of a small rise (spike) in water levels recorded in mid June 2017 in response to a rain event at the same time, water levels in all four monitoring bores has shown a gradual decline to levels recorded in mid February 2017.

The water levels in all four monitoring bores are observed to rise between March and April 2018 then plateau with a hint of water level decline through to about October 2018. Communication problems with sensors in BH 3 and DDH 2 are presently being assessed and reinstated.

A gentle increase in water level is noted in DDH1 between October and November 2018 with sharp spikes observed during the same period in BH 4. The water levels are noted to gently fall through to the end of 2018.

- The character of the hydrographs for monitoring bores DDH 1 and DDH 2 is consistent with predictions that the relative deeper sub-horizontal sandstone aquifers that can be effectively separated and semi-confined (and sometimes confined) by interbedded relatively massive sandstone units that possess lower hydraulic conductivities. Although this relatively deeper set of aquifers in DDH 1 and DDH 2 show a direct response to rainfall events, they do not usually respond as rapidly or in magnitude (amount of water level fluctuations) to the shallower aquifer intersected in the relatively shallow monitoring bores BH 3 and BH 4.
- No potential impacts from current approved quarrying activities on this 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 1.1.18 through 31.12.18. Three campaigns of sampling and testing were undertaken; in March, June and September 2018. A fourth sampling round planned in December 2018 was not undertaken due to the unavailability of a suitable field analyser. The equipment has been, in past years, rented from Thermo Fisher Scientific in Sydney. However, Thermo Fisher Scientific closed their rental division Australia wide in late 2019. A suitable calibrated instrument could not be acquired in time.

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** in order to reveal any trends in the results and any potential contamination from quarrying and sand washing activities. The samples were transported to the project laboratory under Chain of Custody (COC) protocol.

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

7.0 QUALITY ASSURANCE & QUALITY CONTROL

7.1 DATA QUALITY OBJECTIVES

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

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

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

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

7.2 FIELD QA/QC

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

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

7.3 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

The project laboratory (ALS) used for the tests and chemical analysis of samples during 2018 is NATA accredited for the selected tests and analysis.

8.0 RESULTS

Laboratory results are summarised in **Table 7**. Copies of the laboratory certificates supplied by Grants Road Sand are 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 between September and December 2018.
- Monitoring sites W1 and W4 were also noted to be dry during attempts to sample between September and December 2018.
- The **pH** of the surface water (W1 and W4) is slightly acidic to near neutral. The pH of groundwater (G3 and G4) is moderately acidic that reflects rainwater recharge (carbonic acid) and retention of water within Hawkesbury Sandstone. The pH values are typical of groundwater hosted by the Hawkesbury Sandstone on Mangrove Mountain.
- The concentrations of **Total Suspended Solids (TSS)** recorded in the two groundwater monitoring bores (G3 and G4) were all less than the LOR. The concentration of TSS recorded in the three surface water samples were at low concentrations (12 to 15 mg/L in two samples) or less than the LOR.
- The concentrations of **Total Dissolved Solids (TDS)**, range from 99 and 124 mg/L in groundwater samples to between 97 and 253 mg/L in surface water samples. These levels indicate low salinity.

Table 7 Composite Analytical Results

SAMPLE		Guidelines		Limit of Reporting	G3				G4			
DESCRIPTION		Drinking Water - Health Guidelines ¹	Trigger Value for the Protection of Freshwater Aquatic Ecosystems ² (95% level protection)		Monitoring Bore (Groundwater)				Monitoring Bore (Groundwater)			
DATE					14/3/18	18/6/18	25/9/18	1/12/18	14/3/18	18/6/18	25/9/18	1/12/18
ANALYTE	UNIT											
pH	pH Units	ISD		0.01	5.83	4.46	4.35		5.91	4.68	4.4	
Total Suspended Solids	mg/L			5.0	<5	<5	<5		<5	<5	<5	
Total Dissolved Solids	mg/L			10.0	113	109	99		124	106	101	
Nitrate + Nitrite as N	mg/L			0.0	4.37	4.63	4.64		4.99	4.24	4.66	
Total Nitrogen as N	mg/L			0.1	4.8	5.2	5.1		5.7	4.9	5.2	
Total Kjeldahl Nitrogen	mg/L			0.1	0.4	0.6	0.5		0.7	0.7	0.5	
Total Phosphorus as P	mg/L			0.01	<0.01	<0.01	<0.01		<0.01	0.01	0.01	

SAMPLE		Guidelines		Limit of Reporting	W1				W4				S1			
DESCRIPTION		Drinking Water - Health Guidelines ¹	Trigger Value for the Protection of Freshwater Aquatic Ecosystems ² (95% level protection)		Surface Water Monitoring Site				Surface Water Monitoring Site				Surface Water Monitoring Site			
DATE					14/3/18	18/6/18	25/9/18	1/12/18	14/3/18	18/6/18	25/9/18	1/12/18	14/3/18	18/6/18	29/6/17	1/12/18
ANALYTE	UNIT															
pH	pH Units	ISD		0.01	6.67	6.72			6.67	6.74			6.05	6.51		
Total Suspended Solids	mg/L			5.0	15	<5			12	<5			<5	<5		
Total Dissolved Solids	mg/L			10.0	97	178			105	174			253	159		
Nitrate + Nitrite as N	mg/L			0.0	0.04	0.05		DRY	0.05	0.05		DRY	0.04	0.05		DRY
Total Nitrogen as N	mg/L			0.1	1.6	1.0		DRY	1.6	1.0		DRY	1.0	1.00		DRY
Total Kjeldahl Nitrogen	mg/L			0.1	1.6	1.0		DRY	1.5	1.0		DRY	1.0	1.00		DRY
Total Phosphorus as P	mg/L			0.01	0.12	0.08		DRY	0.1	0.08		DRY	0.07	0.08		DRY

¹ **Drinking Water Guidelines:** National Water Quality Management Strategy 2011 Version 3.1 updated March 2015

² **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 **Nitrate plus Nitrite** range from 4.24 and 4.99 mg/L in groundwater samples to less than 0.05 mg/L in surface water samples. Relative soluble nitrate is likely associated with the agricultural history of the area.
- The concentrations of **Total Kjeldahl Nitrogen** range from 0.40 and 0.70 mg/L in groundwater samples to between 1.0 to 1.6 mg/L in surface water samples.
- Levels of **Total Phosphorus** were recorded at less than 0.01 mg/L or less than the LOR in the two groundwater samples and between 0.07 and 1.10 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 aquifer system were detected.

9.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of surface water and groundwater testing obtained during the period 1.1.18 through 31.12.18, the following discussion, conclusions and recommendations are provided.

GEOCHEMISTRY

- The pH of the surface water sampled is slightly acidic to near neutral 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 concentrations of Total Suspended Solids (TSS) recorded in groundwater samples were all less than the LOR with low to non-detect levels recorded in the surface water samples. Therefore, the recorded TSSs are less than the discharge level limit.
- Low levels of nutrients 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 levels recorded in shallow monitoring bores suggests relative rapid recharge of the shallow aquifer system, especially in Monitoring Bore BH 3 and to a lesser extent in BH 4. This is consistent with the results of extensive groundwater investigations over the Site and surrounding district.
- The hydrographs for the relatively deeper monitoring bores also show a direct response to rainfall events but with a 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 network of four groundwater monitoring bores.
- Continue regular routine surface water and groundwater monitoring in the monitoring network during 2019 in accordance with 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.
- Reinstate oil & grease testing at surface water sample site S1 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 2019 monitoring program and an assessment of any trends and potential impacts. This will include an ongoing assessment of hydrographs, pH, TSS, 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 1/1/17-31/12/17	Summary Monitoring Results Period 1/1/18-31/12/18	Proposed Improvement Measures
Groundwater	<p>Section 4 - Schedule 3 of Project Approval and Appendix 1 - Statement of Commitments.</p> <ul style="list-style-type: none"> • Undertake automated water level measurements in four nominated monitoring bores G3 (BH3), G4 (BH4), DDH1 & DDH2. Minimum 4 hourly readings. • Undertake groundwater sampling in representative monitoring bores G3 & G4. Three monthly sampling 	<ul style="list-style-type: none"> • Hydrographs for the four monitoring bores reveals fluctuations in water level associated with climate changes. Shallow monitoring bores show sharp rises due to rainfall recharge events. • No impacts from quarrying activities on the aquifer system were detected 	<ul style="list-style-type: none"> • Hydrographs for the four monitoring bores reveals fluctuations in water level associated with climate changes. Shallow monitoring bores show sharp rises due to rainfall recharge events. • No impacts from quarrying activities on the aquifer system were detected 	<ul style="list-style-type: none"> • Apart from regular maintenance and integrity checks, loggers are performing satisfactorily • Possibly improve phone communications on the Site for loggers. • Ensure the installed sampling equipment is satisfactory and full suite of analytes is tested. • Acquire another suitable field analyser to replace initial rented unit no longer available.

	<ul style="list-style-type: none"> Undertake automated rainfall measurements – tipping bucket rain gauge. 	<ul style="list-style-type: none"> Automated daily rainfall collected 	<ul style="list-style-type: none"> Automated daily rainfall collected 	
Surface Water	<p>Section 4 - Schedule 3 of Project Approval and Appendix 1 - Statement of Commitments.</p> <ul style="list-style-type: none"> Undertake surface water sampling at representative sampling sites W1, W4 - three monthly sampling and testing when ponds discharging, and monthly testing for site S1 when discharging. 	<ul style="list-style-type: none"> Results of pH, TDS, TSS, N compounds, TKN, TP No exceedances or impacts from quarrying activities on the aquifer system were detected 	<ul style="list-style-type: none"> Results of pH, TDS, TSS, N compounds, TKN, TP No exceedances or impacts from quarrying activities on the aquifer system were detected 	<ul style="list-style-type: none"> Reinstate oil & grease testing at site S1

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"> • Water level measurements • Water sampling and testing • Rainfall monitoring • Compile results of the monitoring program including a review and assessment of trends, exceedances and impacts 	<ul style="list-style-type: none"> • At all times • At all times • At all times • Annually 	<ul style="list-style-type: none"> • Automated real time measurements in water level sensors, data loggers with telemetry • Regular prescribed sampling (3 monthly for G3 and G4). • Automated real time measurements of rainfall with telemetry • Reporting 	<ul style="list-style-type: none"> • Real time 4-hourly measurements downloaded as required. Data stored/archived in a dedicated data base and hydrographs constructed • COCs and laboratory certificates • Real time 4-hourly measurements downloaded as required. Data stored/archived in a dedicated data base • Annual report

<p>Section 8 in Appendix 1 - Statement of Commitments – Surface Water</p>	<ul style="list-style-type: none"> • Water sampling and testing • Compile results of the monitoring program including a review and assessment of trends, exceedances and impacts 	<ul style="list-style-type: none"> • At all times • Annually 	<ul style="list-style-type: none"> • Regular prescribed sampling (3 monthly for W1 and W4 and 1 monthly for S1) • Reporting 	<ul style="list-style-type: none"> • COCs and laboratory certificates • Annual report
---	--	--	---	---

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 Certificates

Sampling March 2018

CERTIFICATE OF ANALYSIS

Work Order : **ES1807666**
Client : **GR & AK Jones**
Contact : Ms Leanne Jones
Address : 270 Grants Rd
 Somersby NSW 2350
Telephone : ----
Project : WATER MONITORING
Order number : ----
C-O-C number : ----
Sampler : STEVEN JONES
Site : ----
Quote number : NE/058/16
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Hayley Worthington
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +612 4014 2500
Date Samples Received : 14-Mar-2018 08:45
Date Analysis Commenced : 14-Mar-2018
Issue Date : 20-Mar-2018 14:39



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. 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				W1	W4	G3	G4	S1
Client sampling date / time				12-Mar-2018 09:40				
Compound	CAS Number	LOR	Unit	ES1807666-001	ES1807666-002	ES1807666-003	ES1807666-004	ES1807666-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.67	6.67	5.83	5.91	6.05
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	97	105	113	124	253
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	15	12	<5	<5	<5
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.05	4.37	4.99	0.04
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.5	0.4	0.7	1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.6	1.6	4.8	5.7	1.0
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.12	0.10	<0.01	<0.01	0.07

Sampling June 2018

CERTIFICATE OF ANALYSIS

Work Order : **ES1817445**
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 : 5
No. of samples analysed : 5

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 : 15-Jun-2018 09:15
Date Analysis Commenced : 18-Jun-2018
Issue Date : 21-Jun-2018 16:36



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This Certificate of Analysis contains the following information:

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- Analytical Results

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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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				W1	W4	G3	G4	S1
Client sampling date / time				14-Jun-2018 09:20				
Compound	CAS Number	LOR	Unit	ES1817445-001	ES1817445-002	ES1817445-003	ES1817445-004	ES1817445-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.72	6.74	4.46	4.68	6.51
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	178	174	109	106	159
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	<5	<5	<5
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.05	4.63	4.24	0.05
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.6	0.7	1.0
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.0	1.0	5.2	4.9	1.0
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.08	0.08	<0.01	0.01	0.08

Sampling September 2018

CERTIFICATE OF ANALYSIS

Work Order : **ES1828282**
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 : 2
No. of samples analysed : 2

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 : 25-Sep-2018 08:30
Date Analysis Commenced : 25-Sep-2018
Issue Date : 28-Sep-2018 10:49



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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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.

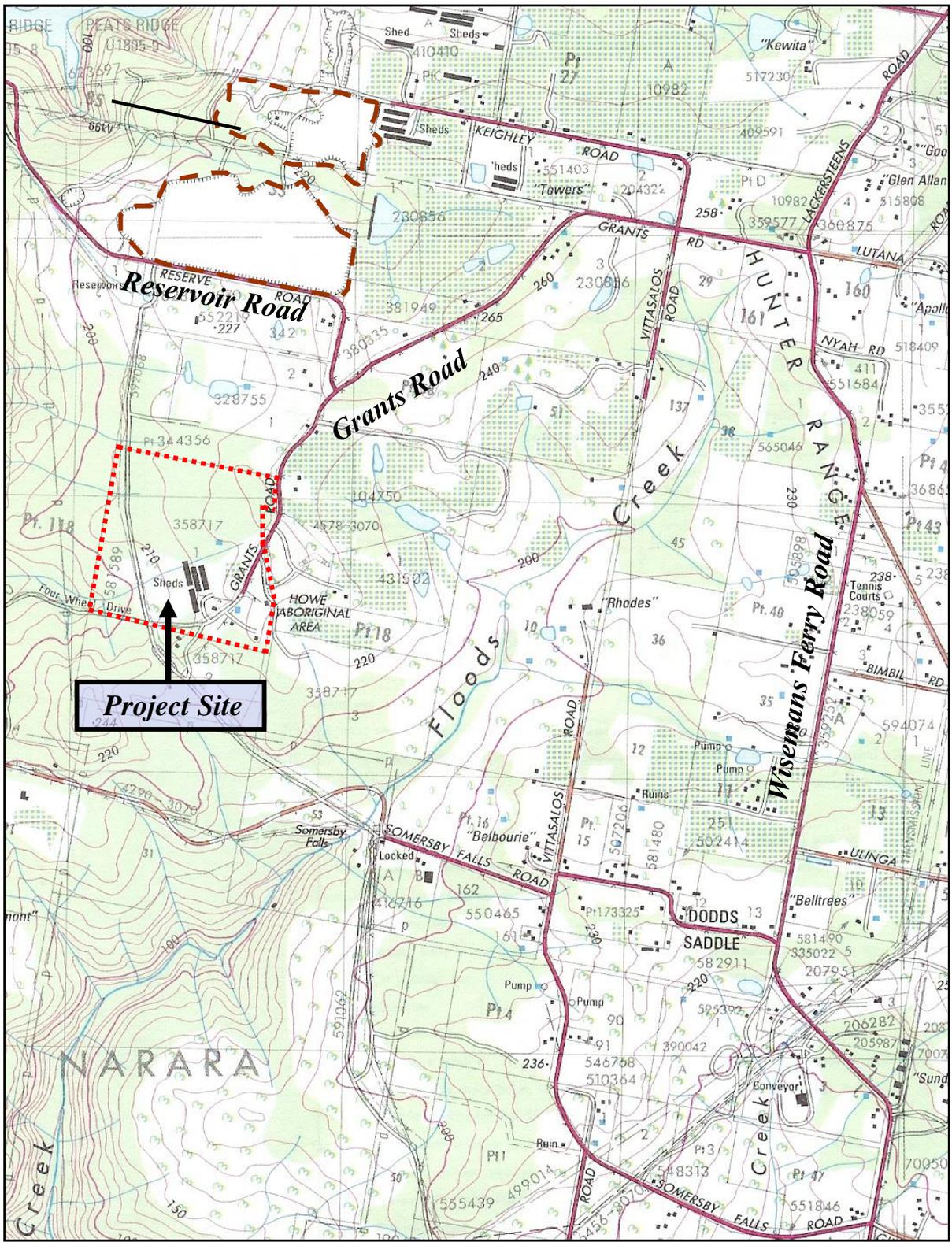
Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				G3	G4	----	----	----
Client sampling date / time				24-Sep-2018 09:00	24-Sep-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1828282-001	ES1828282-002	-----	-----	-----
				Result	Result	---	---	---
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.35	4.40	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	99	101	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	4.64	4.66	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	5.1	5.2	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.01	----	----	----

FIGURES



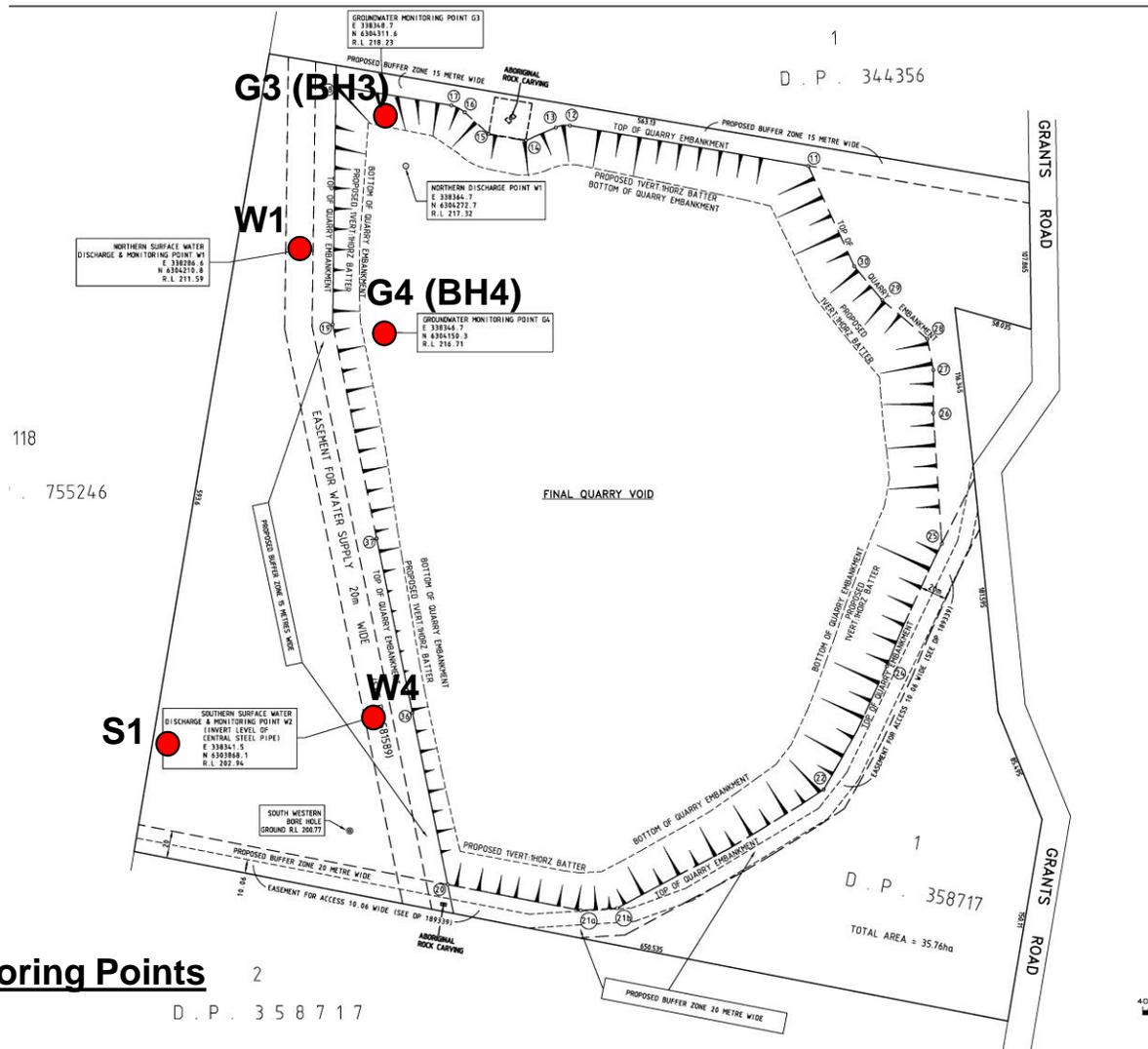
Larry Cook Consulting
 PO Box 8146
 Tumby Umbi NSW 2261
 Ph: 02 4340 0193

Grants Road Sand Quarry

Location of Project Site

Scale: As shown

FIGURE 1

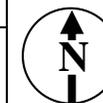


**Surface Water
Monitoring Points
W1, W4 & S1**

**Groundwater Monitoring Points
G3 & G4**

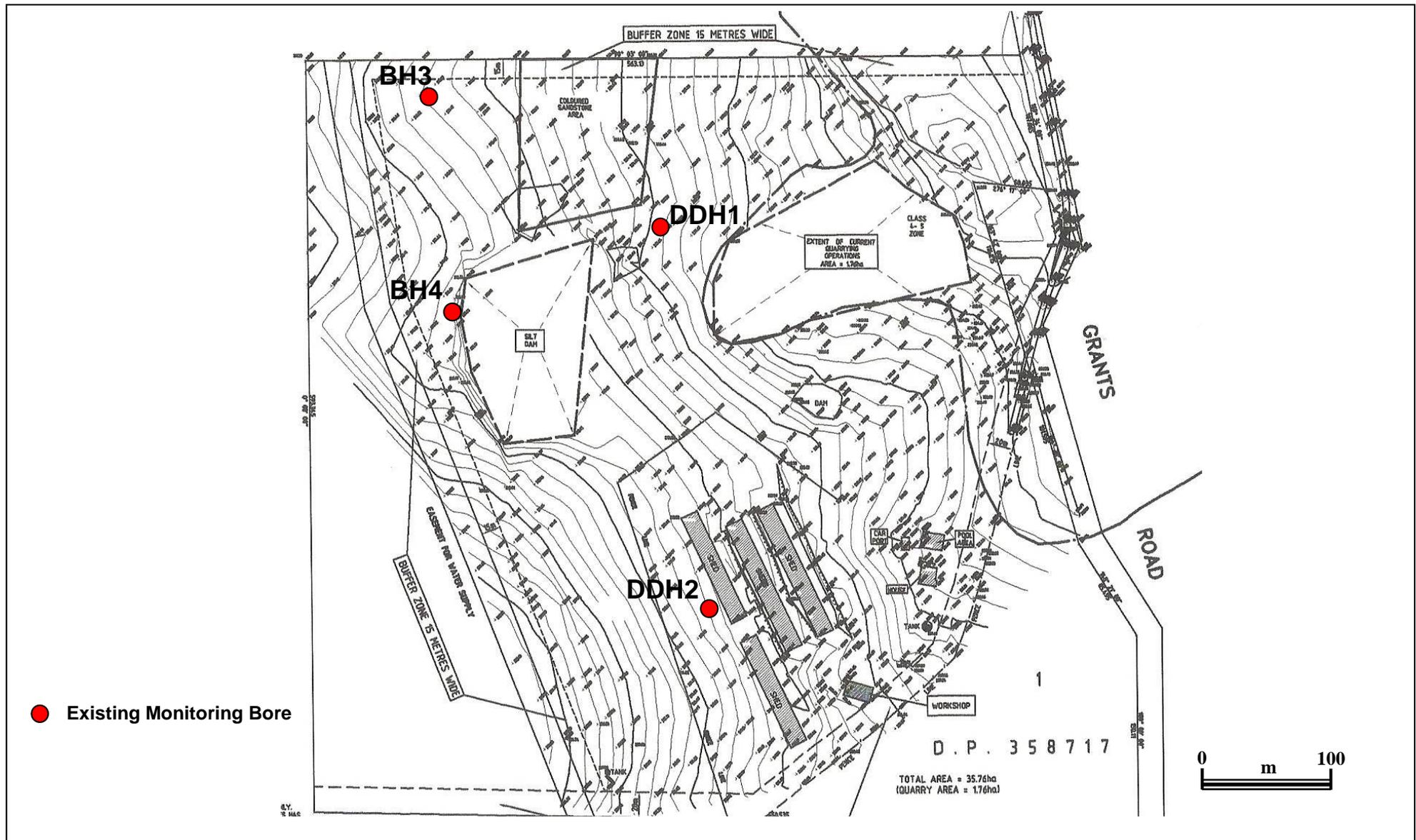
Larry Cook Consulting
PO Box 8146
Tumbi Umbi NSW 2261
Ph 02 4340 0193

Grants Road Sand Quarry
Locations of Monitoring Sites



Scale: As shown

FIGURE 2



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

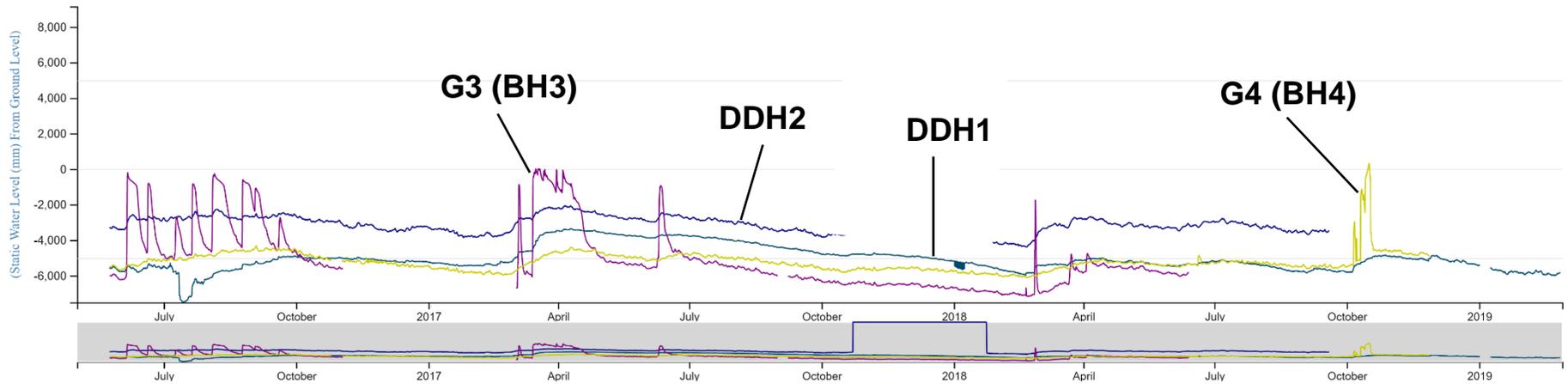
Grants Road Sand Quarry

Site Plan and Locations of Monitoring Bores



Scale: As shown

FIGURE 3



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 5
NOISE AUDIT NOVEMBER 2018
Atkins Acoustic

Grants Road Sand Pty Ltd.
Grants Road
SOMERSBY NSW 2250

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

Attention: Steve Jones

28 November 2018

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

ENVIRONMENTAL NOISE AUDIT
GRANTS ROAD SAND QUARRY
SOMERSBY
NOVEMBER 2018

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 operations. The audit was conducted by Graham Atkins. Grahams qualifications and membership include BE, MAAS, MIEAust and CPEng. Graham is employed by Atkins Acoustics and Associates Pty Ltd a Member Firm of the AAAC.

The quarry currently operates under approval from DoPE dated 25 July 2014 (08_0099). 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 (*Approval 08_0099*) dated 25 July 2014 – 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	$L_{Aeq(15min)}$ 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.

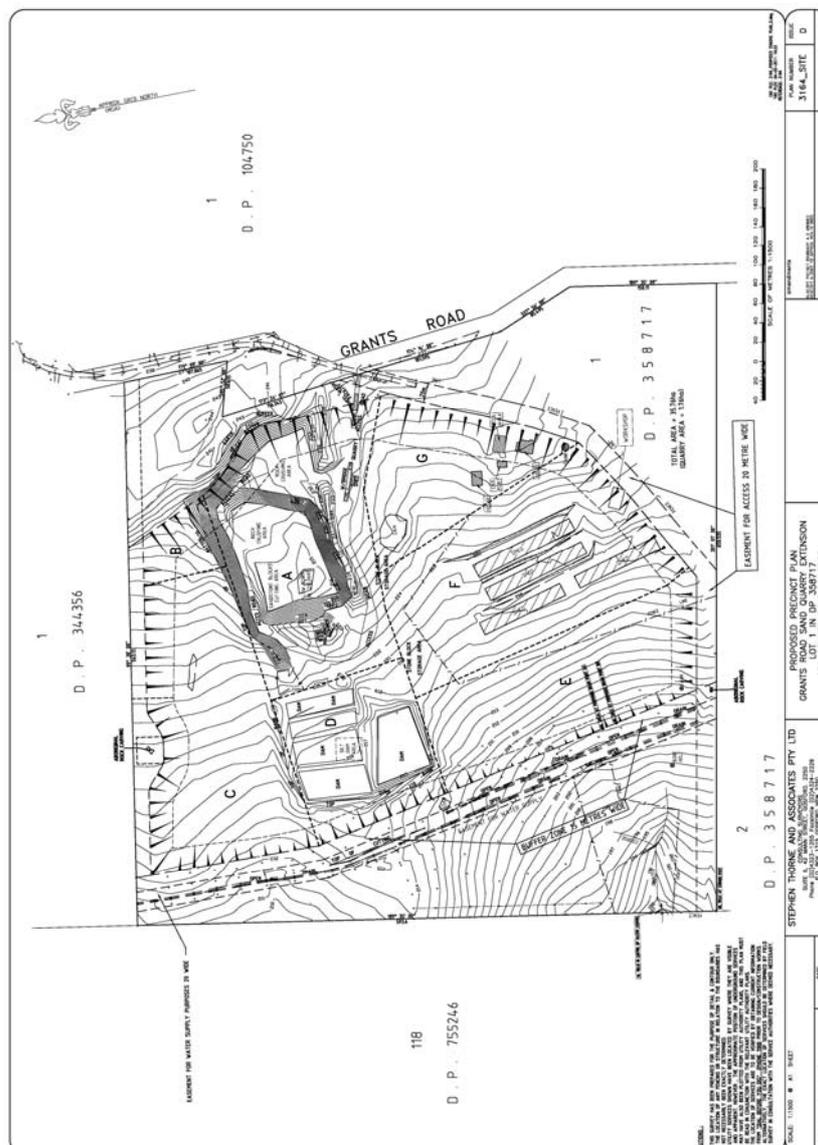
It is noted that no noise limits are provided in *Schedule 3 – Condition 7* for the National Park to the west of the quarry. Referenced to the EA Noise Assessment and the *NSW, INP* a target noise goal of $L_{Aeq, 15min}$ 50-55dB(A) is recommended for assessing noise at the National Park boundary.

3.0 DESCRIPTION OF SITE ACTIVITIES

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

- McClosky (Tricon) Screen and loader in centre portion of Area B.
- Truck loading from stockpile area south-western portion Area A.

Figure 1. Quarry Precinct Layout



4.0 OVERVIEW

The noise audit was undertaken between 7.20am and 12.30pm, Tuesday 27 November 2018.

In accordance with the NMP noise measurements were conducted at three (3) reference locations nominated to represent residential receivers.

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 Svan957 Sound and Vibration Analyzer. The meter was programmed to calculate and record 15 minute statistical levels. The reference calibration level of the meter was checked prior to and after the measurements with a Bruel & Kjaer Sound Level Calibrator Type 4230 and remained within ± 0.5 dBa. The meter carried appropriate and current NATA calibration (*Attachment 2*).

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 from the onsite weather station during the audit were calm to light WNW to NNE wind (0.6- 3.5m/sec), air temperature 16-24°C , relative humidity 52-83% and cloud cover approx. 30% .

4.3 Review of Noise Related Incidents

The Site Quarry Manager confirmed that no noise related incidents were reported or recorded at the site during the period from 18 December 2017 to 26 November 2018.

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*. Measurements at all reference assessment locations was dominated by cicada and insect noise

Table 1: Audit Measurement Results
dBA re: 20×10^{-6} Pa

Measured Ambient Sound Pressure Levels dBA				Estimated Grants Road Sand Contribution L _{Aeq, 15min}	Comments
L _{Aeq}	L _{A10}	L _{A90}	L _{A1}		
Location 1: Ibels Residence – 380 Somersby Falls Road					
41.1	41.9	32.4	53.6	<40	Aircraft, birds, GRS mobile plant audible at times estimated LAeq 30/4dBA.
42.5	45.9	34.5	57.6	<40	Aircraft, birds, GRS mobile plant audible at times estimated LAeq 31/4dBA
Location 2: McGregor Residence – 239 Grants Road					
40.2	44.7	31.4	50.5	<40	Aircraft, birds, GRS onsite trucks L _{Amax} 36/7dBA, McClosky (Tricon) and loader audible at times.
43.9	46.2	33.4	55.1	<40	Aircraft, Distant road traffic, GRS onsite trucks L _{Amax} 38/9dBA, loaders and McClosky (Tricon) screen audible at times.
Location 3: Sammut Residence – 210 Grants Road					
46.3	44.2	31.8	58.1	<40	Distant road traffic, Birds. Aircraft
42.2	43.8	31.5	53.9	<40	Birds, GRS onsite trucks L _{Amax} 36/7dBA, Loaders and McClosky (Tricon) screen audible at times
Location 4: National Park					
43.3	45.0	35.9	54.7	<50	GRS onsite trucks (L _{Amax} 40/1dBA), loaders, McClosky (Tricon) screen LAeq 36/8dBA, Birds, Breeze in trees, Cattle.
41.4	44.4	35.7	48.1	<50	GRS onsite trucks L _{Amax} 40/1dBA, loader L _{Amax} 48/9dBA, McClosky (Tricon) screen LAeq 36/8dBA, Aircraft, Birds, Cattle, Breeze in trees

5.2 Site Audit Results

In addition to the offsite noise measurements *Table 2* presents a summary of sound power levels for the operating site plant and equipment.

Table 2: Quarry Plant and Equipment Sound Power Levels
dBA re: 10^{-12} Watts

Plant Description	Sound Power Level dB 10-12 Watts									
	dBA	31.5	63	125	250	500	1k	2k	4k	8k
Cat Loader 980G	106	92	119	103	100	100	102	96	90	89
Cat Loader 980C	107	101	107	105	103	101	103	101	95	85
McClosky (Tricon) Screen	108	98	102	95	99	100	101	95	93	83

5.3 Compliance Status

The results summarised in *Table 1* show that noise from Grants Road Sand Quarry activities complied with the *Approval 08_0099* dated July 2014 noise goal $L_{Aeq, 15min}$ 40dBA and the NMP recommended goal for the National Park $L_{Aeq, 15min}$ 50-55.

5.4 Noise Trends

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

5.5 Noise Mitigation Planning

Noise mitigation options planned for the next calendar year, include the continuation of the earth mounding/bunding on the north-eastern, northern and western site boundaries. Additionally and dependent on product demand, it is expected that the depths of the working platforms (Areas A and B) could increase by 4-5 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 DoPE dated 25 July 2014 (Approval 08_0099).

The noise audit was conducted between 7.00am and 12.10pm, Tuesday 27 November 2018.

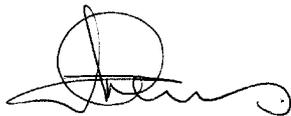
The findings of the survey show that noise from Grants Road Sand Quarry complied with the (*Approval 08_0099*) dated 25 July 2014 project noise goal $L_{Aeq, 15min}$ 40dBA and the NMP recommended goal for the National Park $L_{Aeq, 15min}$ 50-55.

No noise related incidents were reported or recorded at the site for the period between 18 December 2017 and 26 November 2018.

A review of the measurement results (Table 1) and previous reported levels 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 site boundaries and dependent on product demand, the depths of working platforms in Areas A and B, could increase by 2-5 metres.

ATKINS ACOUSTICS & ASSOCIATES PTY LTD.



Graham Atkins

ATTACHMENT 1: ASSESSMENT MONITORING LOCATIONS



ATTACHMENT 2: Svan Certificate of Calibration.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: **SLM 21044 & FILT 3942**

Equipment Description: Sound & Vibration Analyser

Manufacturer: Svantek

Model No: Svan-957 **Serial No:** 21481

Microphone Type: 7052E **Serial No:** 46490

Filter Type: 1/1 Octave **Serial No:** 21481

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

Owner: Atkins Acoustics
Suite 17, 1 Jordan Street
Gladesville NSW 2111

Ambient Pressure: 1009 hPa \pm 1.5 hPa

Temperature: 24 °C \pm 2° C **Relative Humidity:** 40% \pm 5%

Date of Calibration: 13/07/2017 **Issue Date:** 17/07/2017

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: *[Signature]* **AUTHORISED SIGNATURE:** *[Signature]*
Jack Kirt

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibration and/or measurements included in this document are traceable to
Australian/national standards.

ACU-VIB
ELECTRONICS

Accredited Lab. No. 9262
Acoustic and Vibration
Measurements

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AVCERT10 Rev. 1.2 03.02.15

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



Compliance Monitoring Annual Report

2018 Grants Road Sand

18 March 2019

Project No.: 0476648

Document details	
Document title	Compliance Monitoring Annual Report
Document subtitle	2018 Grants Road Sand
Project No.	0476648
Date	18 March 2019
Version	2.0
Author	Kyle Topfer; Jane Barnett
Client Name	Grants Road Sand

Document history

Version	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
Draft	01	Kyle Topfer	Jane Barnett	Jane Barnett	24.01.2019	Draft 1
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Final	03	Kyle Topfer	Jane Barnett	Jane Barnett	18.03.2019	Final

18 March 2019

Compliance Monitoring Annual Report

2018 Grants Road Sand



Kyle Topfer
Consultant



Jane Barnett
Partner

ERM Australia Pacific Pty Ltd

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1. 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 measured data for each of these parameters for the 2018 calendar year.

Monitoring data showed that there were no exceedances of the relevant air quality criteria. There were also no reported incidents or complaints received.

The information in this report provides a summary of the measurements of particulate matter (PM₁₀), deposited dust, respirable crystalline silica (RCS) and meteorological parameters measured at the site from 1 January to 31 December 2018.

2. INTRODUCTION

ERM Australia Pacific Pty Ltd (ERM) has been commissioned 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.

The results of the monitoring programs are provided on an annual basis. This report summarises the data collected during the January to December 2018 period.

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

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

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

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

was chosen in accordance with AS 2923 – 1987. The location is away from buildings or other obstructions that would otherwise impact on the prevailing with flow.

2.1 Project name and project application number

Project name: Grants Road Sand Quarry Extension

Application Number: 08_0099

2.2 Project address

270 Grants Road, Somersby NSW 2250. The site itself is shown in Figure 1.

2.3 Project phase

Operational Compliance Report.

2.4 Compliance reporting period

Annual reporting period includes 1 January 2018 to 31 December 2018.

2.5 Project activity summary

Measurements for Respirable Crystalline Silica (RCS), PM₁₀, deposited dust and meteorological parameters have been analysed and reported consistent with project requirements.

3. COMPLIANCE STATUS SUMMARY

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 ₁₀ monitoring measurement as described in Section 2.	No exceedances in reporting period for PM ₁₀ or deposited dust.
Schedule 3, Condition 1, 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 1, 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 ₁₀ monitoring and meteorological measurement as described in Section 2.	Analysis of data throughout the year to ensure levels below short-term criteria and on track to remain below annual criteria.
Schedule 3, Condition 1, 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 1, 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 ₁₀ monitoring and meteorological measurement as described in Section 2.	No exceedances in reporting period for PM ₁₀ 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 2.	Data capture rate for all parameters for 2018 was ≥ 90%
Schedule 4, Condition 7	Immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of	Operation	PM ₁₀ monitoring as described in Section 2.	No incidents recorded.

	the incident, provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested			
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4. NON-COMPLIANCES

No instances of non-compliance across Air Quality parameters were recorded during the 2018 reporting period. Summaries of the monitoring data through the year are shown in Appendix A.

5. PREVIOUS REPORT ACTIONS

No outstanding items from previous reporting period (2017) required action.

6. INCIDENTS

No incidents were notified from Grants Road Sand Quarry during the 2018 reporting period.

7. COMPLAINTS

No complaints arising from Grants Road Sand Quarry were received during the 2018 reporting period.

8. MONITORING DATA SUMMARIES

8.1 Meteorology

8.1.1 Wind data

A wind rose for the annual period 2018 is presented in Figure 2. 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 hourly average temperature, recorded at 2 m and 10 m, is shown in **Figure 3**. June was the coldest recorded month on average and January was the hottest month on average. The maximum daily average of 31°C was recorded on 5 February 2018. The monthly average temperature is shown in **Table 2**.

8.1.3 Rainfall

A plot of the daily average rainfall is shown in **Figure 4** and the monthly average rainfall is shown in **Figure 5**. October recorded the highest monthly total rainfall of 181 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 PM₁₀ criterion from 30 µg/m³ down to 25 µg/m³. The data for this report is referenced to the 25 µg/m³ 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 (PM₁₀)

The results for the available PM₁₀ data are presented in **Figure 6**. Of a possible 60 samples (over approximately 12 months), forty nine samples are reported, resulting in a data recovery rate of approximately 81%.

The average PM₁₀ concentration over the recorded 1-year period was 9.0 µg/m³, which is well below the annual EPA impact assessment criterion of 25 µg/m³. All reported results are well within the EPA maximum 24-hour average criterion of 50 µg/m³ for PM₁₀, with a maximum 24-hour average of 32.2 µg/m³ recorded on 7 January 2018.

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

8.2.2 Dust deposition

Dust deposition is measured at two locations, R1 and R4, as shown in Figure 1. The results for the available dust deposition data are presented in Figure 7. Of a possible 12 samples, 12 samples are reported for both sites. The average monthly dust deposition level for the period of 2018 was 0.4 g/m²/month at R1 and 0.5 g/m²/month at R4. The results are well below the EPA cumulative annual average criterion of 4 g/m²/month. A maximum value of 2.8 g/m²/month was recorded in April at R4; all other recorded levels were below 1 g/m²/month.

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

8.2.3 Respirable crystalline silica

A crystalline silica measurement was taken on December 14th 2018, during a period of maximum throughput. The sample was measured over a period of 8 hours on a dozer operating at the site. Unfortunately the mass of sample collected on the filter was below the limit of reporting (10 µg) and so a concentration could not be determined. We can calculate however, that based on a sample flow rate of 1.7 L/min, the limit of reporting (LOR) would be 12.3 µg/m³ and so the concentration would be less than that.

It is recommended that for the next sampling period either a higher flow rate, a longer sampling period, or an alternative analysis method with a lower LOR be used for RCS in order to obtain a measured value. Even so, levels are clearly low if they are below the LOR over an 8 hour period.

A crystalline silica content of 17% of PM₁₀ was used for the air quality assessment in 2013 (**PAEHolmes, 2013**), and using the measured 2018 annual average PM₁₀ concentration of 9.0 µg/m³ would therefore equate to approximately 1.53 µg/m³. However, it is noted that only the respirable fraction of PM₁₀ is relevant for assessing respirable crystalline silica, that is, PM₄. If it is conservatively assumed that 50% of PM₁₀ is PM_{2.5}, then the inferred annual average respirable crystalline silica concentration might be approximately 0.75 µg/m³, significantly below the annual criterion of 3 µg/m³. These low levels are consistent with the 2018 monitoring result.

APPENDIX A FIGURES & TABLES

Table 1: Weather Station Parameters

Parameter	Unit	Frequency	Averaging Period	Sampling Method	
Rainfall	mm	Continuous	1 Hour	AM-4	
Temperature	°C		10 Minute		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 ²				AM-4

Monitoring Locations

The Grants Road Sand Quarry compliance monitoring locations are shown in **Figure 1**. Featured are the automatic weather station (AWS), the High Volume Air Sampler (HVAS) and two dust deposition gauges (R1 and R4).



Figure 1: Monitoring Locations at Grants Road Quarry

Wind Data

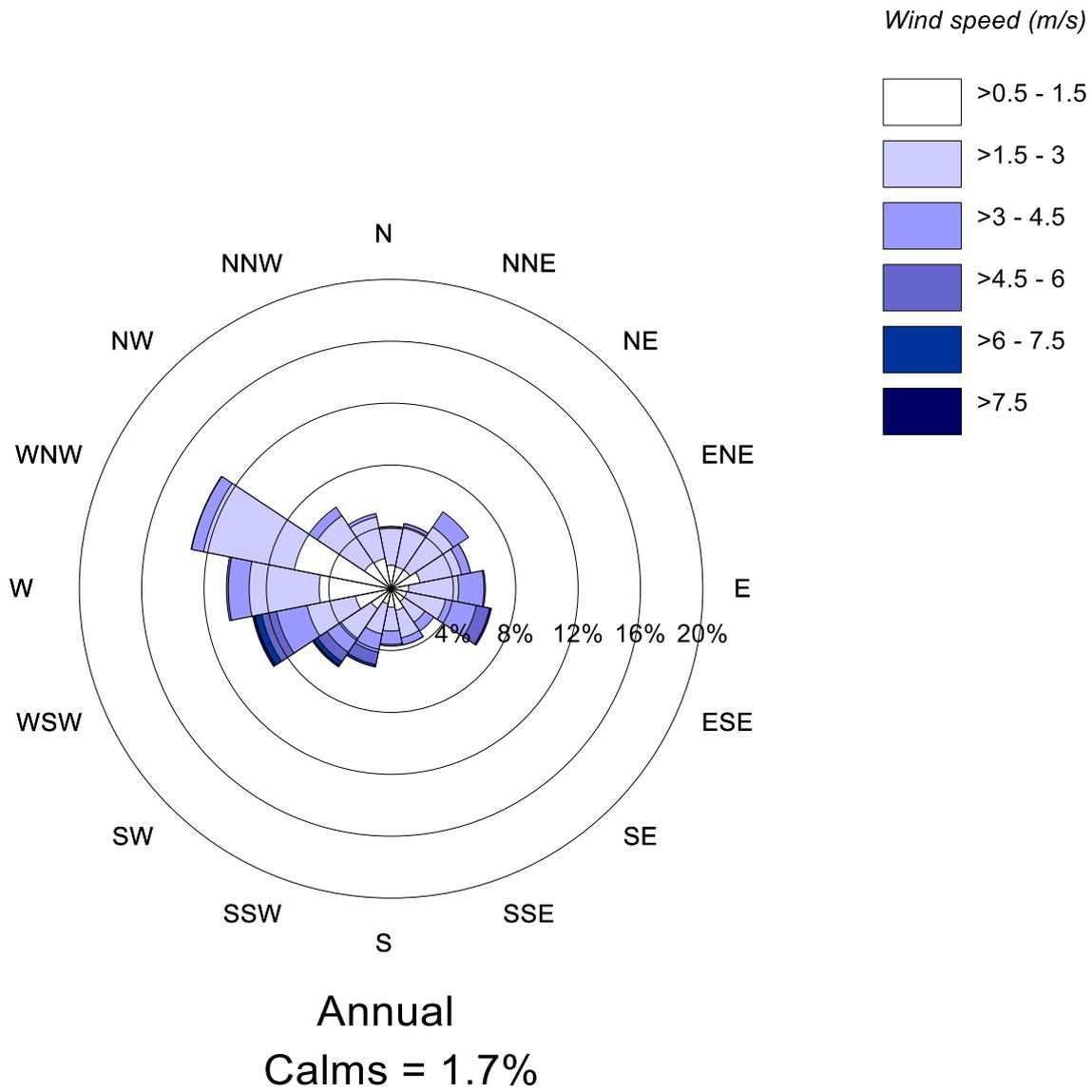


Figure 2: Grants Road Sand Wind Rose, 2018

Temperature

Table 2: Monthly Average Temperature, 2018

Month	Monthly Average Temperature at 2m (°C)	Monthly Average Temperature at 10m (°C)
January	22.3	-
February	21.2	17.5
March	20.5	20.3
April	19.3	19.2
May	14.3	14.4
June	11.2	11.3
July	12.0	12.3
August	12.1	12.2
September	14.0	14.0
October	16.2	16.1
November	18.7	18.6
December	21.4	21.2

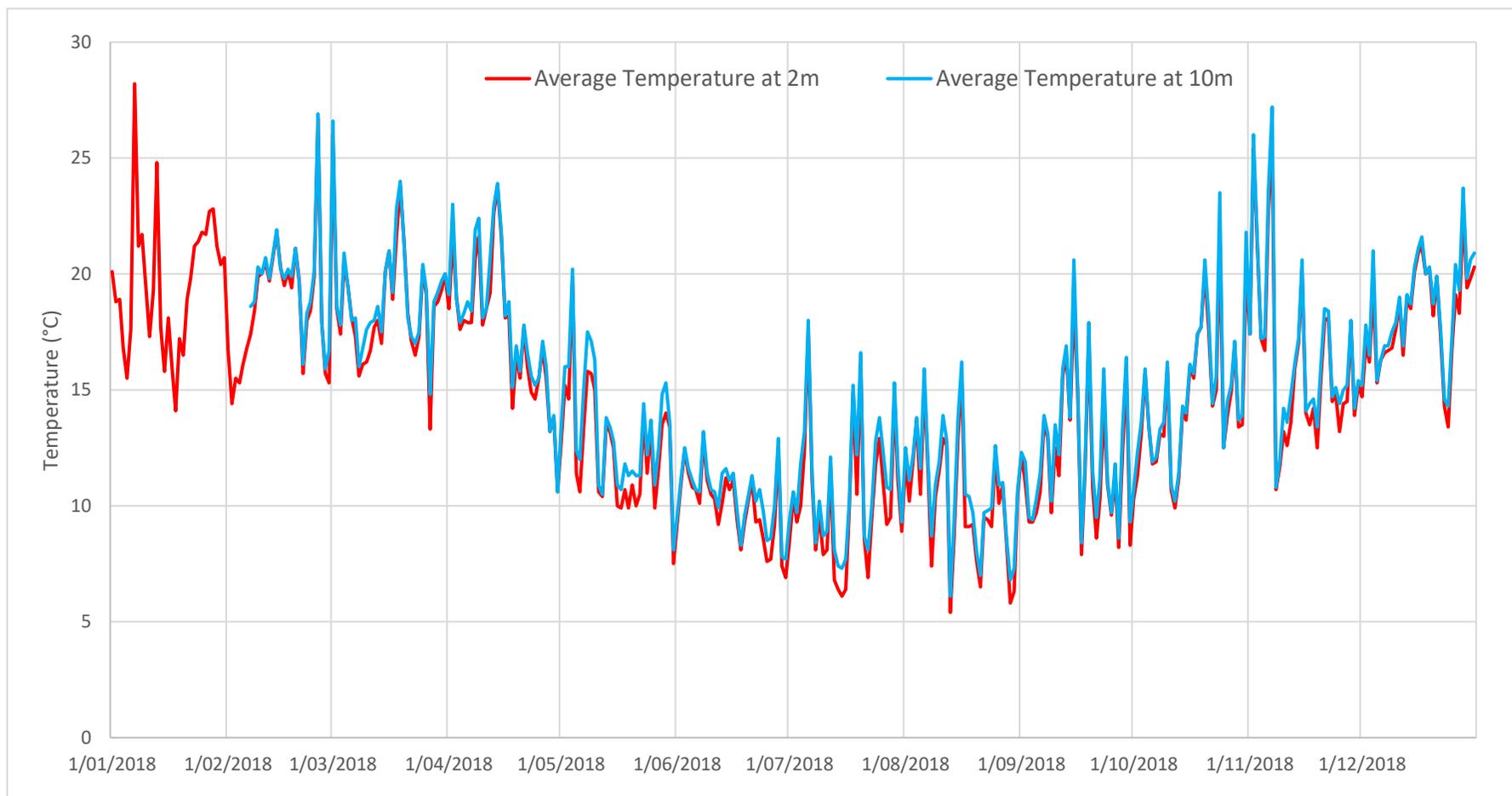


Figure 3: Average Daily Temperature, 2018

Rainfall

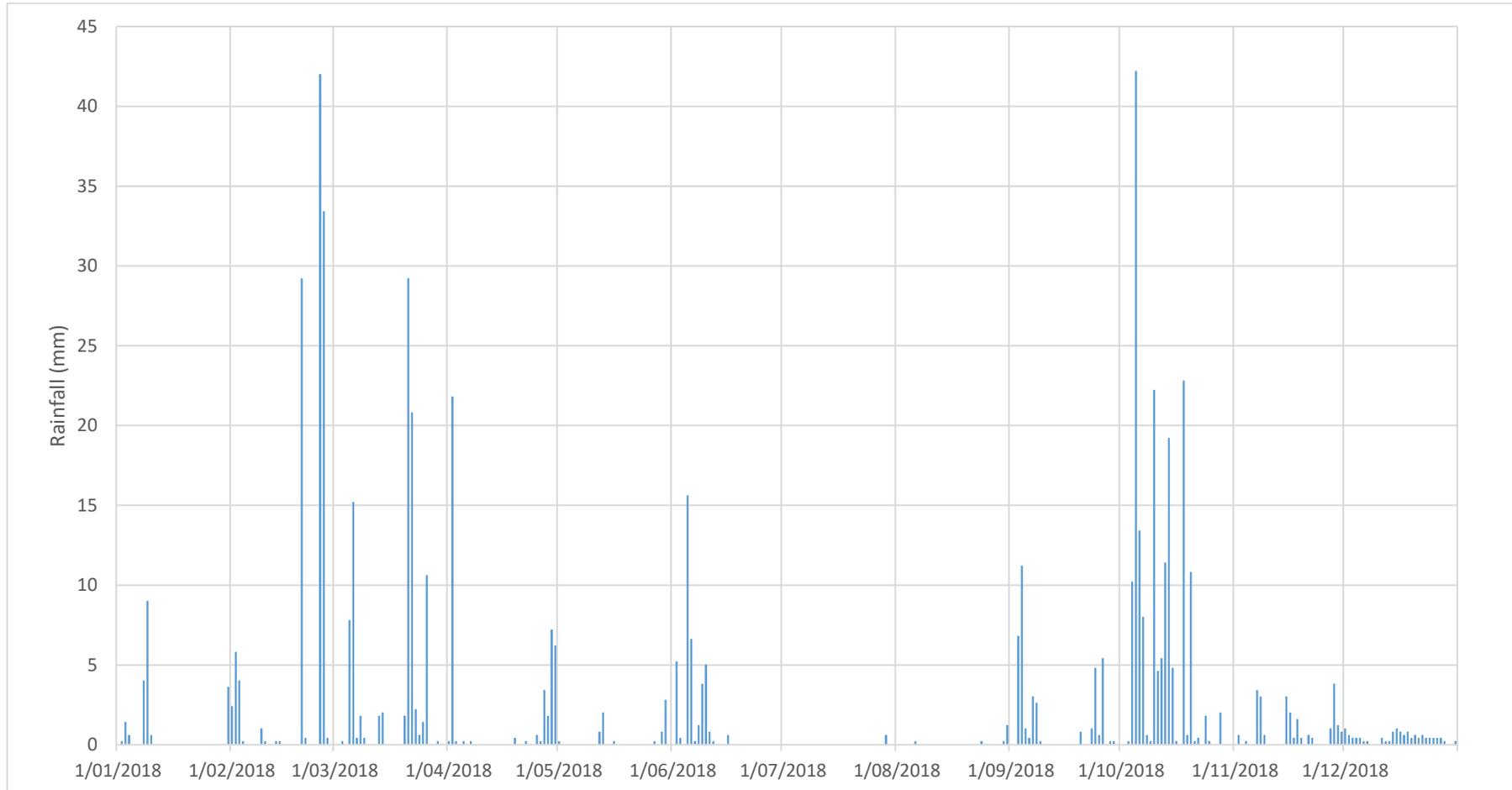


Figure 4: Daily Rainfall, 2018

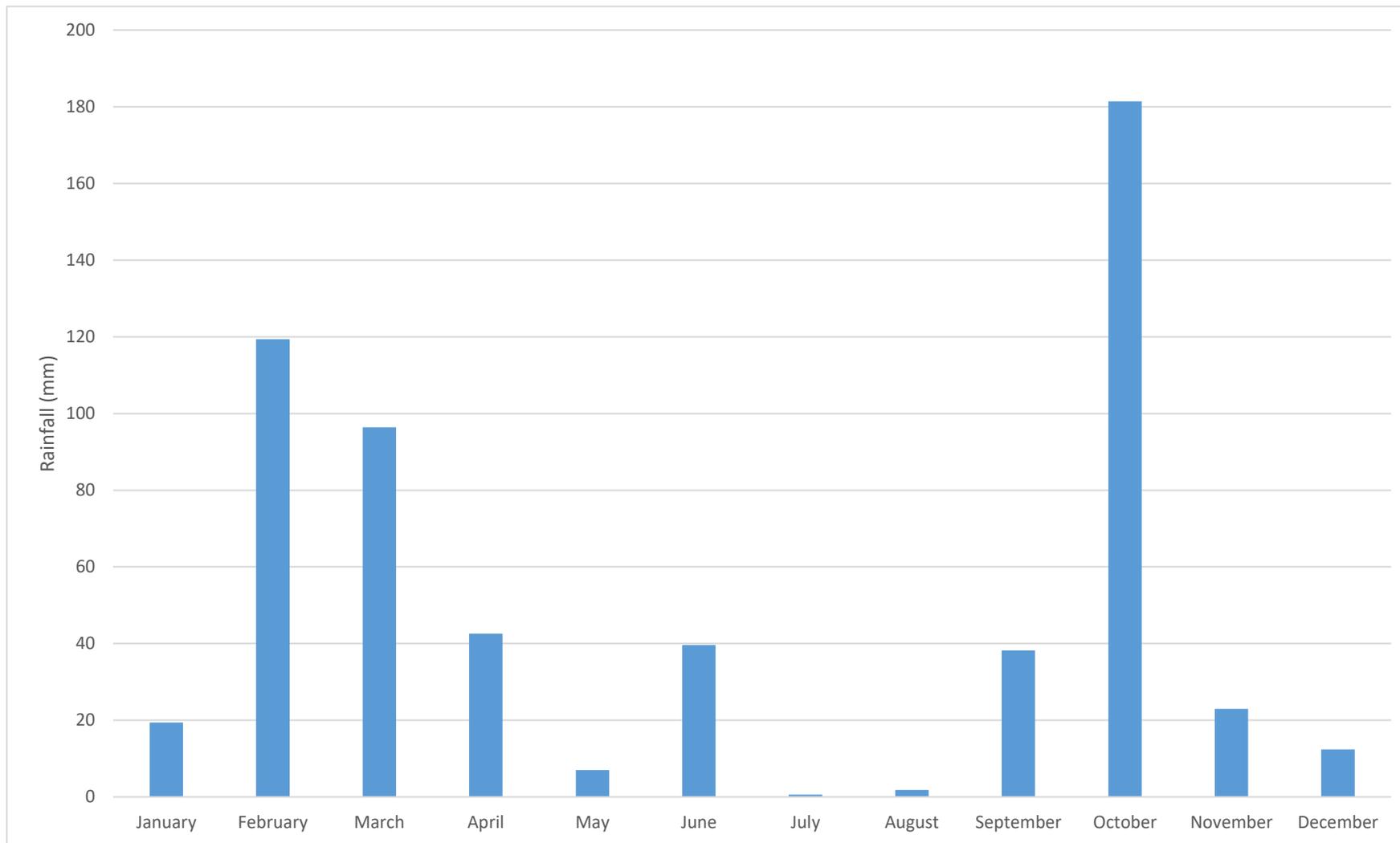


Figure 5: Monthly Rainfall Total

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 PM₁₀ criterion from 30 µg/m³ down to 25 µg/m³. The data for this report is referenced to the 25 µg/m³ 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 ₁₀)	24-hour maximum	50 µg/m ³	EPA impact assessment criteria; NEPM reporting goal (allows five exceedances per year for bushfires)
	Annual mean	25 µg/m ³	EPA impact assessment criteria

Notes: µg/m³ – 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 ² /month (Incremental)	EPA impact assessment criteria
	Annual mean	4 g/m ² /month (Cumulative)	EPA impact assessment criteria

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

NSW has not set any impact assessment criteria for crystalline silica but references the Victorian EPA ambient assessment criterion for mining and extractive industries of 3 µg/m³ (annual average as PM_{2.5}) (**VEPA, 2007**).

Particulate Matter (PM₁₀)

Measured Results

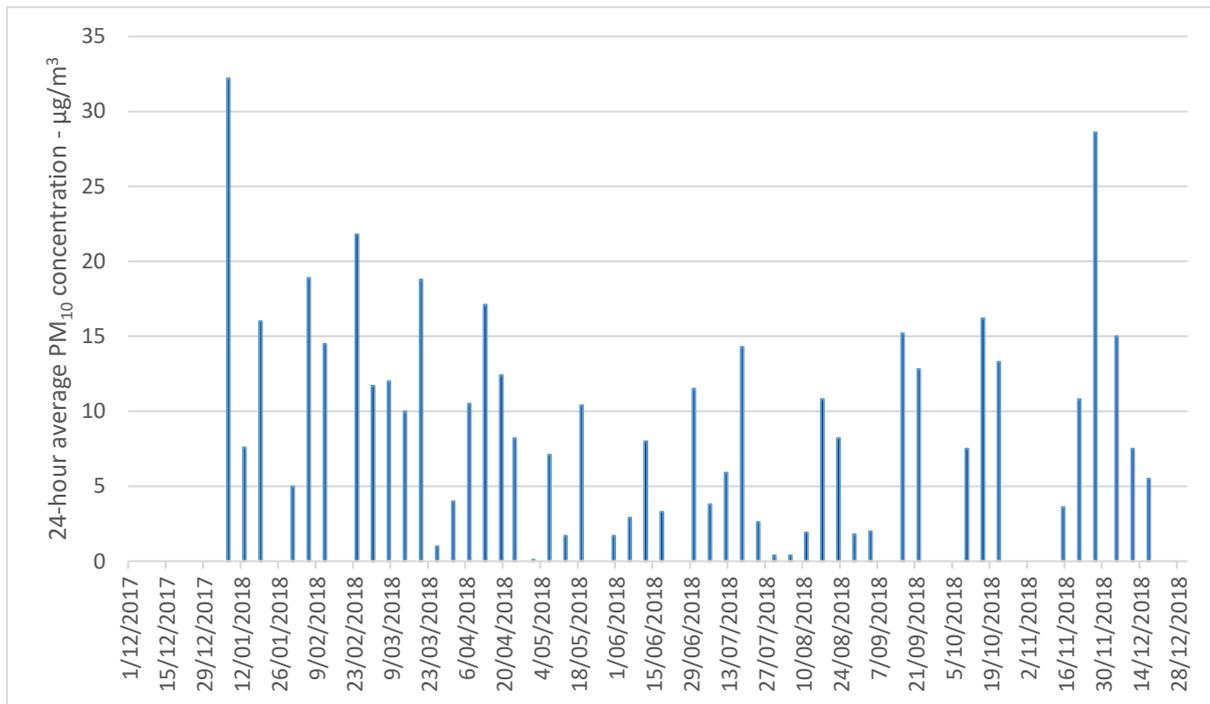


Figure 6: HVAS monitoring results for PM₁₀, 2018

Comparison to the environmental assessment predictions

The Air Quality Assessment (AQA) for the Grants Road Sand Quarry Extension was completed by PAEHolmes in 2013, Air Quality Impact Assessment – Extension of Grants Road Quarry (PAEHolmes, 2013). The cumulative results predicted in the assessment indicate that the 24 hour PM₁₀ ground level concentrations at the current location of the HVAS would be in the order of 70 µg/m³. The highest measured cumulative 24-hour PM₁₀ concentration was 32.2 µg/m³ in 2018, a value considerably lower than the conservative predictions made in the air quality assessment.

The predicted annual average PM₁₀ concentration in the AQA was approximately 30 µg/m³ at the HVAS location, however an annual average concentration of 9.0 µg/m³ was measured in 2018. 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 action is required to control environmental performance. Rather it is recommended that current mitigation processes are sustained.

Dust Deposition

Measured Results

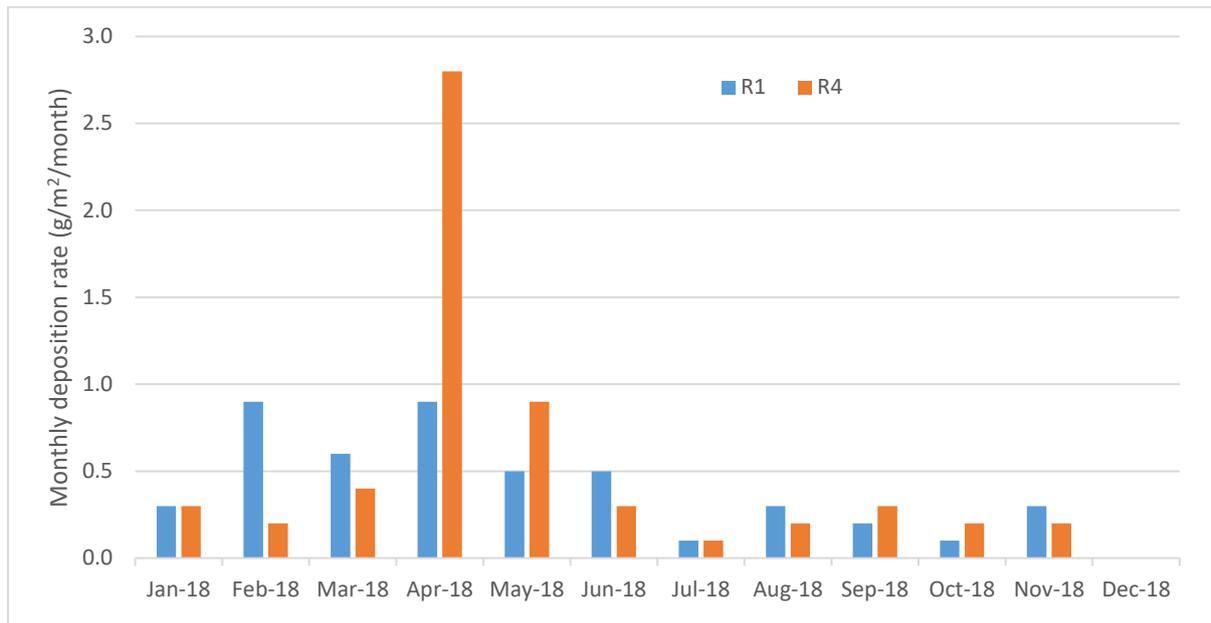


Figure 7: Dust deposition monitoring results for 2018

Comparison to environmental assessment predictions

The Air Quality Assessment (AQA) for the Grants Road Sand Quarry Extension was completed by PAEHolmes in 2013, Air Quality Impact Assessment – Extension of Grants Road Quarry (**PAEHolmes, 2013**). The cumulative results predicted in the assessment indicate that the annual dust deposition level at the locations of the deposition gauges would be in the order of 1.7 g/m²/month at R1 and 1.9 g/m²/month at R4.

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

APPENDIX B REFERENCES

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

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

NEPC (1998, 2003). "National Environment Protection (Ambient Air Quality) Measure"

NSW DEC (2005). "Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales". New South Wales EPA 59-61 Goulburn Street, Sydney, NSW August 2005.

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

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