Gunlake Quarry Project

Annual Review
1 July 2020 to 30 June 2021

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ANNUAL REVIEW INFORMATION

Name of Operation	Gunlake Quarry
Name of Operator	Gunlake Quarries Pty Ltd
Development Consent No.	LEC 2017/108663 now LEC 2020/00327172
Name of holder of Development Consents	Gunlake Quarries Pty Ltd
Annual Review start date	01 Jul 2020
Annual Review end date	30 Jun 2021

1. Introduction

Gunlake Quarry (the Quarry) is a hard rock quarry operated by Gunlake Quarries Pty Ltd (Gunlake) and is located approximately 7 km northwest of Marulan, off the Brayton Road as shown on Figure 1. Gunlake is an independent quarry producer and provides aggregates and manufactured sand for its own operations in Sydney as well as other markets. The defined hard rock resource contains material suitable for use in a full range of quarry products including concrete and sealing aggregates, rail ballast, manufactured sand and road base. The quarry has an expected life of over 100 years and approval under the development consent has been obtained for a 25 year period.

This Annual Review has been prepared in accordance with Schedule 5 Condition 10 of LEC Consent 2017/108663 (now LEC 2020/327172) for Gunlake Quarry and covers the operations and environmental monitoring undertaken at Gunlake Quarry for the period 1 July 2020 to 30 June 2021. This Annual Review also outlines the proposed operations for the next reporting period including additional measures that will be implemented to improve the environmental performance of the project. Monitoring locations are shown in Figure 2.

2. ANNUAL REVIEW REQUIREMENTS

By the end of September each year, or other timing as may be agreed by the Secretary, Gunlake must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the secretary. This review must:

a) describe the development (including any rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;
b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against the:
   • relevant statutory requirements, limits or performances measures/criteria; • requirements of any plan program required under this consent;
   • monitoring results of previous years; and
   • relevant predictions in the documents listed in condition 2(a) of Schedule 2;
c) identify any non-compliance over the past financial 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 development
e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

The Applicant must ensure that copies of the Annual Review are submitted to Council and the EPA and are available to the Community Consultative Committee and any interested person upon request in accordance with condition 7, Schedule 5 of the LEC Consent.

2.1 Key Personnel

Details of the management personnel at Gunlake Quarry are provided in Table 2.1 below. Additional specialist advice is provided as required by a range of environmental consultants.

Table 2.1 –Quarry Contacts

Role	Name	Contact
Quarry Manager	Vince Matthews	02 4841 1344
Project Manager	David Kelly	02 4841 1344
Director	Ed O'Neil	02 4841 1344

3. APPROVALS

3.1 Project Approval

Gunlake Quarry held Project Approval 07_0074 for the original development of the quarry which was surrendered on 6th August 2018.

3.2 Gunlake Extension Project SSD Development Consent 2017/108663

In April 2016 Gunlake submitted the EIS for the Gunlake Quarry Extension Project to the then DPE. This project was subject to assessment under Division 4.1 of Part 4 of the EP &A Act and represents a State Significant Development.

Development Consent for the Gunlake Extension Project was refused by the NSW Planning Assessment Commission in April 2017, with the determination based primarily on community impacts associated with product transportation. This determination was referred to the Land and Environment Court (LEC), and approval of the Gunlake Extension Project was granted on 30th June 2017 as an outcome of the S34 agreement (Appendix A).

3.2.1 Modification 1

A modification to the LEC Consent 2017/108663 (Mod 1) was filed with the NSW Land and Environment Court in March 2019. This modification seeks to amend Schedule 3 Condition 32 of the consent that relates to historical biodiversity areas to reduce the required area from 78.82ha to 39.6ha. It does not change the quarry layout or activities. A Statement of Environmental Effects for the proposed modification was prepared for the Department of Planning and Environment (DPE) and placed on public exhibition from 25 April 2019 to 9 May 2019. On 14 May 2019, the DPE requested the preparation of a report detailing responses to the issues raised in the submissions. A response to submissions (RTS) report was prepared in June 2019. As a result of significant delays due to Covid 19, the case was not heard until February and March 2021. Judgement is expected in the coming reporting period.

3.2.2 Modification 2

A second modification to LEC Consent 2017/108663 (Mod 2) was filed with the NSW Land and Environment Court in November 2020 which was supported by a Statement of Environmental Effects prepared by EMM Consulting. The modification sought to increase truck movements, change the truck movements averaging period, and remove the fixed annual tonnage limit to enable the transport of saleable product to be restricted by the approved truck movements only. This would allow for an increase in production efficiency through the utilisation of by-products to supply market demand and more a sustainable use of the finite rhyodacite resource.

The Mod 2 application was publicly exhibited between 14th January and 5th February 2021 and EMM Consulting prepared a Response to Submissions report in March 2021.

The case was heard in May 2021 and the LEC approved the modification on the 9th June 2021 (case number 2020/00327172). The modifications to the LEC Consent is summarised as follows:

- Allow 2.6 million tonnes of quarry product to be transported per annum instead of 2 million tonnes;
- Allow for the limit of truck movements on the Primary Transport Route to be an average of 220 inbound and 220 outbound;
- Amend the averaging period from calendar month to 3-monthly;
- Allow a maximum of 295 inbound and 295 outbound truck movements on any given day and
- No change to the number of movements on the Secondary Transport Route.

3.3 Gunlake Continuation Project SSD Development Application

In response to the increased demand for quarry products, Gunlake is lodging a new State Significant Development application with DPIE for the Gunlake Continuation Project. The application centres on an increase to tonnage of product dispatched from the Quarry which will require more truck movements than currently approved. Other than the increased production and truck movements, the Continuation Project operations would remain similar to the currently approved Gunlake Extension Project operations

A scoping report for the Gunlake Continuation Project was prepared by EMM Consulting and lodged with DPIE in December 2020. Feedback was provided to DPIE in relation to information required in the SEARs by Water NSW, Transport for NSW, Heritage NSW, Department of Regional NSW (MEG), Council, DPIE Water/NRAR, EPA and DPIE (BDC). Gunlake received the SEARs in May 2021. The EIS is being prepared to support the SSD application.

3.4 EPA Environment Protection Licence

The quarry holds Environment Protection Licence 13012 administered by the NSW Environment Protection Authority covering all scheduled activities undertaken at the Quarry (Appendix B). The licence anniversary date for EPL 13012 is 13th July each year. There were no changes to the EPL during the reporting period.

3.5 Federal Approval EPBC

Prior to its approval, the Gunlake Extension Project was referred to the Federal Department of the Environment and Energy and it was determined that the project comprised a controlled action with impact to threatened species and communities listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlled action was subsequently approved under the EPBC Act on 17th November 2017 (EPBC 2015/7557). The annual compliance report and approval document are attached as Appendix D.

3.6 Water Access Licence

Water access licence WAL42340 was issued to Gunlake on 26th April 2019 which allows for 37ML annual extraction from the Goulburn Fractured Rock Groundwater Source in the Greater Metropolitan Region Groundwater Source Water Sharing Plan.

4. OPERATIONS SUMMARY

The following sections provide a summary of the works undertaken at Gunlake Quarry during the period 1st July 2020 to 30th June 2021.

4.1 Quarry Operations

4.1.1 Land Preparation

Within the reporting period, land preparation in the approved Gunlake Extension Project pit and overburden emplacement areas continued. The majority of the vegetation cleared for this purpose during the reporting period was pasture, which was stripped and retained in the topsoil and stockpiled adjacent to the western overburden emplacement area for future use in rehabilitation. Approximately 2 ha of mature vegetation was cleared between the two pit areas in the extension area to enable streamlined convergence of these development areas into one quarry void as detailed in the EIS for the project. Following vegetation removal and soil stripping activities, overburden was removed progressively from the quarry pit area prior to blasting and subsequent resource extraction. Overburden emplacement continued in the Western Overburden Emplacement (WOE) area.

4.1.2 Drilling and Blasting

Drilling and blasting is undertaken by specialist contractor Orica. A total of 39 blasts occurred during the reporting period. All blasts were fully monitored, and neighbours notified of the blasts as outlined in the Noise and Blast Monitoring Program. Results of the blast monitoring are provided in Section 6.7.

Regular drilling and blasting will continue during the next 12 months as required to prepare quarry rock for removal to the crushing and processing plant. The information collected during blasting already undertaken will continue to be used to assist with the design of the regular blasting activities. The frequency of blasting may increase during the coming reporting period as the Gunlake Extension Project Development Consent allows for blasting twice per week.

4.1.3 Crushing and Processing

Crushing and processing continued during the reporting period within the processing area. A heavy vehicle haul road connects the quarry pit and the processing area, allowing quarried rock to be transported by dump trucks from the extraction area to the primary and secondary crushers and screens. Product is conveyed to the tertiary and quaternary crushers and screens for further crushing, screening and shaping. The processing plant features atomised water dust suppression systems at all of the discharge points, as well as the tipping point into the apron feeder and at the primary crusher input.

A front end loader is used to load various products into road registered trucks for transport to various market destinations. The processing equipment and saleable products stockpiles area acoustically and visually screened by the overburden emplacement bund wall and also by the nature of the existing topography.

4.1.4 Quarrying and processing activities will continue during the coming reporting period. Maintenance and Rehabilitation

Maintenance on plant and equipment is scheduled and carried out on a regular basis. Rehabilitation is undertaken on a progressive basis. During the reporting period, rehabilitation continued on the completed areas at the northern end of the WOE with the planting of tubestock. Other rehabilitation activities were associated with infill planting and maintenance to drainage structures on the northern side of the noise bund emplacement area. Weed spraying of tussock and blackberry was undertaken in the biodiversity offset areas.

4.1.5 Hours of Operation

Table 4.1 Hours of Operation

Activity	Permissible Hours
Construction	7am to 6pm Monday to Friday 8am to 1pm Saturday At no time on Sunday or Public Holidays
Blasting	9am to 5pm Monday to Friday At no time on Saturday, Sunday or Public Holidays
Quarrying Operations (excluding overburden removal/ emplacement and drilling)	24 hours a day but not between 6pm Saturday and 2am Monday At no time on Sunday or Public Holidays
Overburden removal/ emplacement and drilling	7am to 6pm Monday to Saturday At no time on Sunday or Public Holidays
Loading and Dispatching	24 hours a day but not between 6pm Saturday and 2am Monday At no time on Sunday or Public Holidays
Transportation on the primary transport route	24 hours a day but not between 6pm Saturday and 2am Monday At no time on Sunday or Public Holidays
Transportation on the secondary transport route	6am to 7pm Monday to Saturday At no time on Sunday or Public Holidays
Maintenance	At any time provided that the activity is not audible at any privately-owned residence

4.2 Traffic and Transportation

Gunlake Quarry operates under an approved Traffic Management Plan (TMP) which was reviewed and updated in March 2020 as required following the first Independent Environmental Audit under LEC Consent 2017/108663.

In accordance with the TMP, all drivers (both quarry staff and contractors) are made aware of and trained in the requirements of the TMP and the Driver Code of Conduct. This is done as part of the induction required to be undertaken prior to entry to the site.

Saleable products are transported by truck from the quarry direct to the Sydney market and to other markets north and south of Marulan. South bound trucks use the Brayton Road to access the purpose built and grade separate Hume Highway interchange at Marulan, and trucks returning from the south continue north along the highway past the Marulan interchange and turn left onto Red Hills Road intersection to use Ambrose Road to Brayton Road. Trucks heading north use Ambrose Road exiting onto the Hume Highway at the Red Hills Road intersection. Trucks returning from the north cannot make a right hand turn from the Highway at Red Hills Road. They travel further south to the South Marulan Interchange on the Highway and use the grade-separated roundabout intersection to U turn and access the northbound lane in the Hume Highway and return to make a left hand turn into Red Hills Road, and then use Red Hills Road, Ambrose Road and Brayton Road back to the Quarry. Trucks returning from the southern customers travel north along the Hume Highway and utilise Red Hills Road, Ambrose Road and Brayton Road.

4.2.1 Product Transport

The majority of the product from the quarry is transported north towards Sydney. During the reporting period daily truck movements were limited to an average of 370, including an average of 25 movements on the secondary transport route and a daily maximum of 440 including a maximum of 38 outbound laden truck movements on the secondary transport route. Summaries of truck movements are published on the Gunlake website.

Gunlake previously upgraded the Primary Transport Route in accordance with the Austroads design standards, with works being undertaken on Brayton Road, Ambrose Road, and a new acceleration lane at the junction of Red Hills Road and the Hume Highway to NSW RMS standards. These works were completed in the 2018/2019 reporting period.

4.2.2 Council Contributions

Goulburn Mulwaree Council will receive a S94 contribution of over $400,000 for the financial year ending 30th June 2021 from Gunlake. This S94 contribution is for maintenance of the Council roads on the Primary and Secondary Transport Routes. Council has a fully funded road maintenance plan and budget using Gunlake contributions.

4.3 Employment

The workforce at Gunlake Quarries has continued to grow through the reporting period in accordance with the requirements of quarry development.

4.4 Next Reporting Period

During the coming reporting period quarrying will continue in the Gunlake Extension Project extraction area with further bench development combining the south-east and south-west pits in the approved extraction area. General quarrying operations will continue with:

- pre-stripping of topsoil;
- overburden removal and emplacement;

- drill and blast activities;
- resource extraction and hauling;
- crushing, screening and stockpiling operations; and
- maintenance and rehabilitation activities.

Due to the approval of Mod 2 in June 2021, production is expected to increase. There will be no changes to any other aspects of the quarrying operations.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

This Annual Review represents the third Annual Review as required under the LEC Consent 2017/108663 (now 2020/00327172). The Previous Annual Review was provided to DPIE, Goulburn Mulwarree Council and EPA and provided on the company's website on 30th September 2020. No actions were required from the previous Annual Review.

6. ENVIRONMENTAL PERFORMANCE

6.1 Environmental Management

Gunlake operates under a series of environmental management plans and monitoring programs to minimise and manage the identified potential environmental impacts associated with the project. These plans include:

- Noise and Blast Management Plan;
- Air Quality Management Plan;
- Soil and Water Management Plan;
- Rehabilitation and Biodiversity Offset Management Plan;
- Aboriginal Heritage Management Plan; and
- Traffic Management Plan.

This section addresses the EIS predictions, performance criteria, operational measures, commitments and management activities that have been defined as relevant for the Gunlake Quarry Extension Project.

The above-mentioned management plans were updated in accordance with the Gunlake Extension Project SSD LEC Consent and reviewed in March 2020 following the first Independent Environmental Audit under LEC Consent 2017/108663. The RBOMP was not updated as this is awaiting determination of Mod1 of the LEC Consent. The Biodiversity and Rehabilitation Management Plan (BRMP) prepared under Project Approval 07_0074 remains the approved management plan until the RBOMP is finalised and approved.

6.2 Environmental Constraints

Large parts of NSW experienced extreme drought conditions which began in early 2017 and broke in early 2020, with the peak drought conditions impacting regionally from October 2019 to early February 2020. This timeframe was characterised by regionally hot dusty and windy conditions and a catastrophic bushfire season due to areas of extremely dry vegetation. The poor air quality and dusty conditions were exacerbated by land degradation, soil erosion and the driest 36 month period on record in Australia.

These extreme conditions resulted in regional and site elevated dust levels during the previous reporting period as detailed in Section 6.4 and also resulted in limited rehabilitation opportunities and success in that time period as described in Section 6.5.3.

Following on from the initial rains in February 2020, the region has experienced higher-than-average rainfall which has led to increased vegetation growth which has resulted in generally less dusty conditions. There have been no major bushfires in the region since then but localised backburning has been undertaken by RFS in key locations across the state.

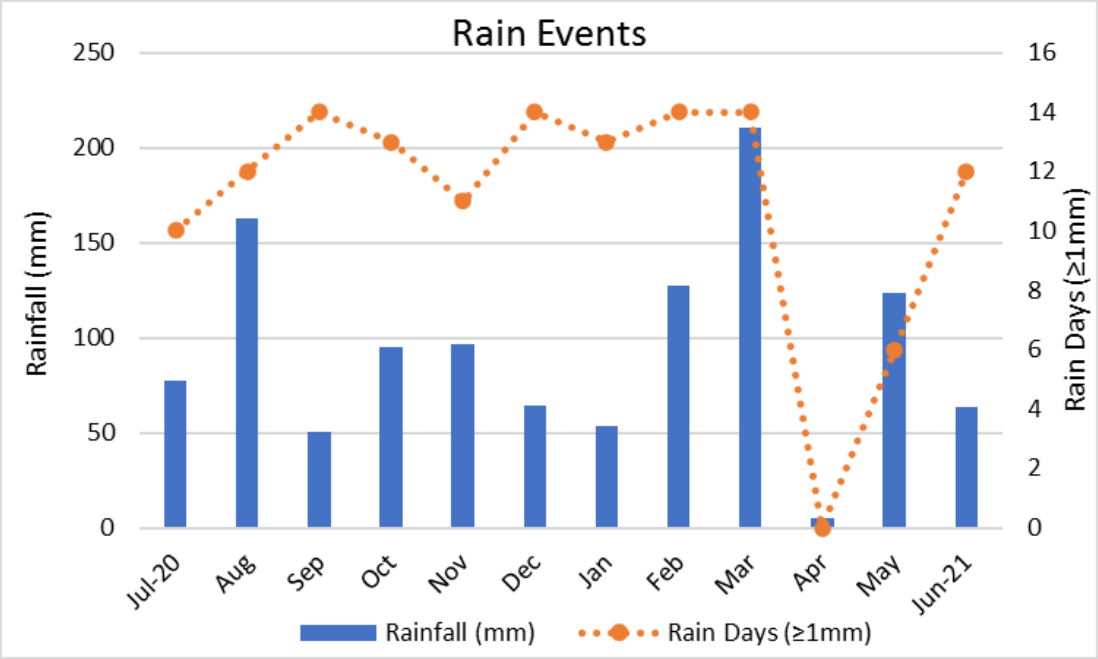
6.3 Meteorological Monitoring

Gunlake Quarry operates a weather station at site in accordance with condition 18 of Schedule 3 of the LEC Consent. The station provides data for day to day operations and environmental management.

6.3.1 Rainfall

Table 6.1– Total Monthly Rainfall (mm)

Rainfall 2019/2020												
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**Tot**
10.8	22.4	56.2	22.2	20.0	2.6	50.8	257.2	58.2	54.6	50.4	16.4	621.8
Number of Rain Days (≥1mm)												
6	8	6	6	6	2	3	15	11	8	8	6	85
Rainfall 2020/2021												
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Tot
77.2	163	50.2	95.4	96.8	64.6	53.8	127.2	210.2	5	123.6	63.8	1130.8
Number of Rain Days (≥1mm)												
10	12	14	13	11	14	13	14	14	0	6	12	133



Graph 6.1 – Monthly Rainfall and Number of Rain Days

The 2020-2021 reporting period experienced a significant increase in rainfall and greater number of rain days compared to the previous reporting period, with almost double the rainfall for the year. March 2021 recorded the heaviest rain, with a total of 210.2mm and 14 days of rain above 1mm/day (Graph 6.1). The average monthly rainfall was 94.2mm which was

reflective of the months October and November 2020. Meanwhile, April 2021 had the lowest rainfall, with only 5.0mm over the duration of the month.

6.3.2 Temperature

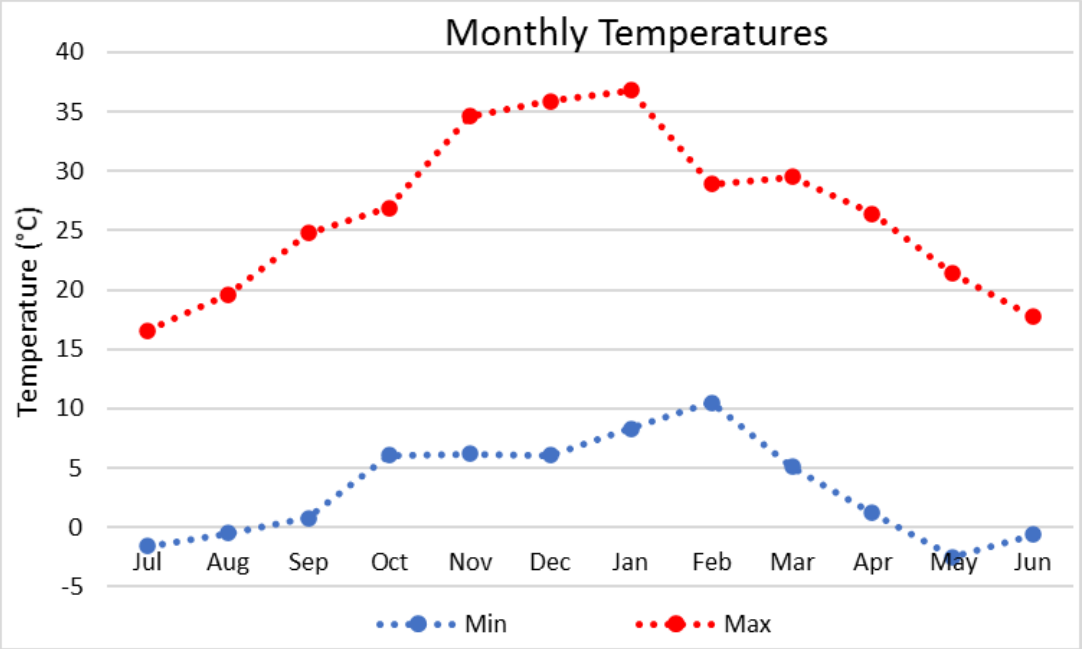
Table 6.2 - Minimum and Maximum Monthly Temperatures (°C)

2019/2020

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Min	-0.8	-3	-0.7	3	4.5	8.3	11.9	11	6.2	3.9	-0.6	-1.1
Max	18.4	20.9	25.4	29.9	36.9	41.1	41.5	41	30.4	25.3	21.1	16.9

2020/2021

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Min	-1.6	-0.5	0.8	6.1	6.2	6.1	8.3	10.5	5.1	1.2	-2.5	-0.6
Max	16.6	19.6	24.8	26.9	34.6	35.9	36.8	28.9	29.5	26.4	21.4	17.7



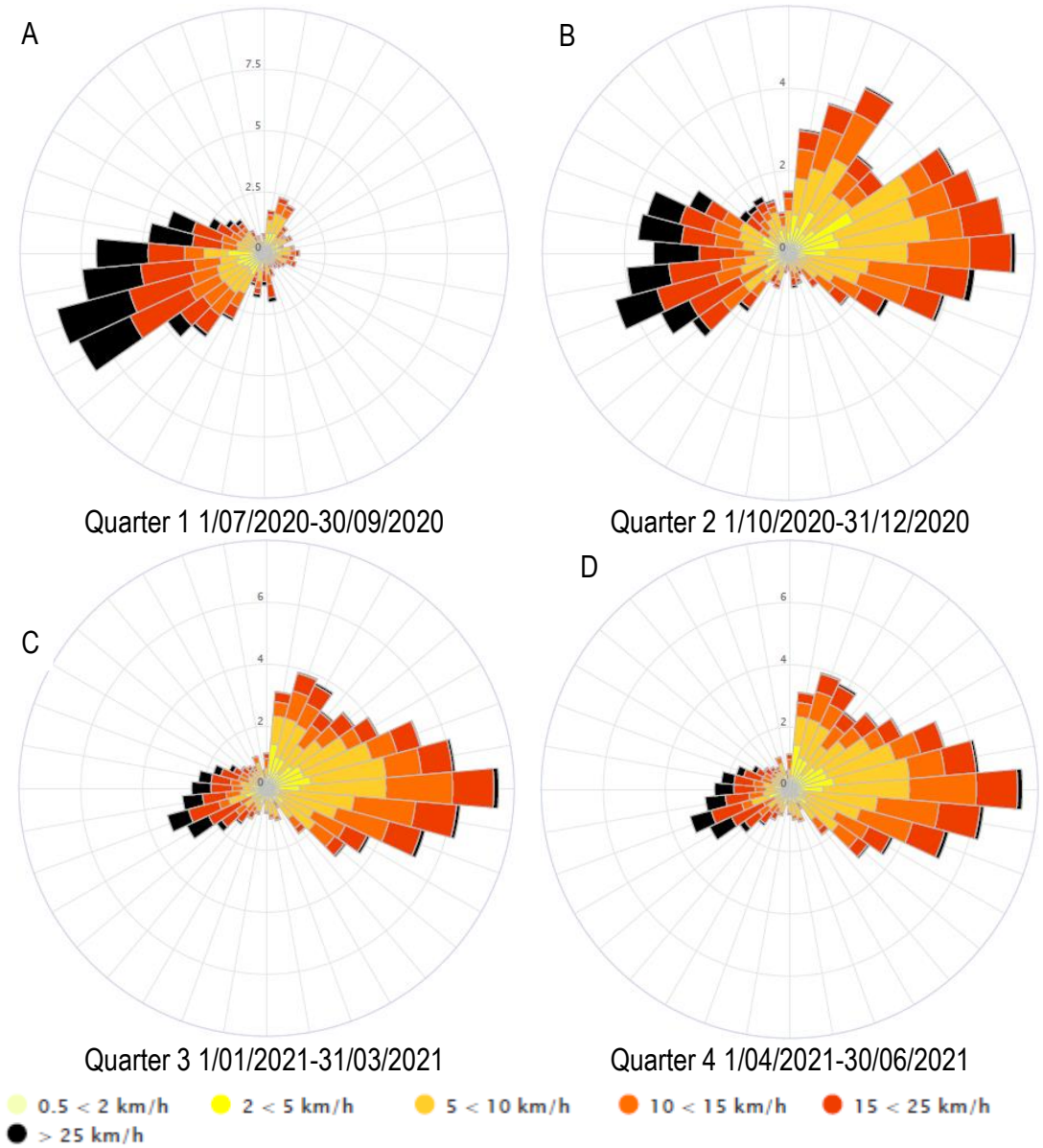
Graph 6.2 – Monthly Minimum and Maximum Temperatures

The area is characterised by mild to hot summers and cool to cold winters. The 2020-2021 summer was quite mild comparatively to the previous year, with a maximum summer temperature of 36.8°C (Graph 6.2). May 2021 was the coldest month with minimum daily temperatures reaching -2.5°C. Table 6.2 shows temperature for the past two reporting periods. On average, the 2020/2021 year had higher minimum mean monthly temperatures and lower maximum monthly temperatures than the previous reporting period by approximately 2°C.

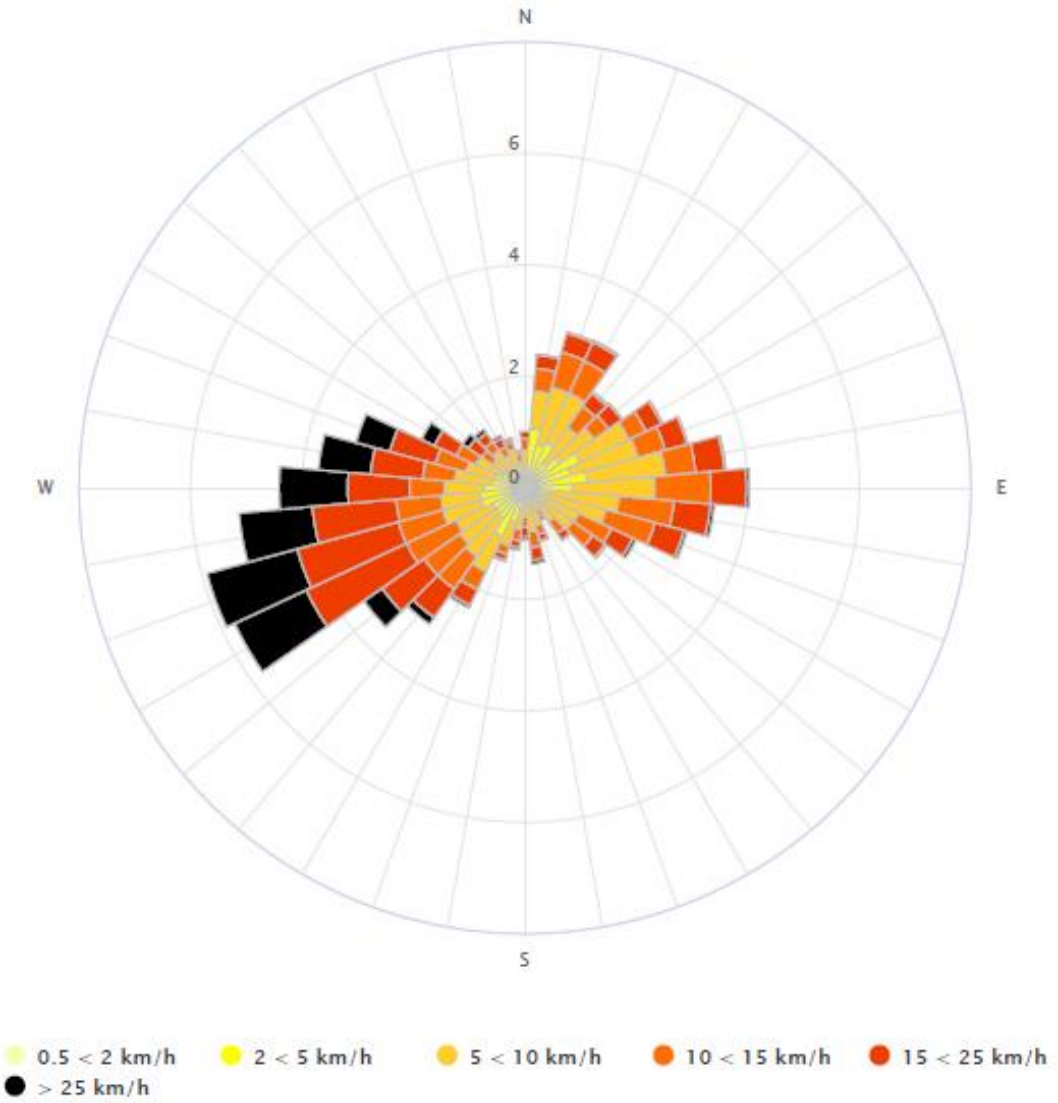
6.3.3 Wind

Quarterly wind roses representing the four seasons and an annual wind rose showing wind speed and direction data recorded by the Gunlake weather station are shown in Graph 6.3 (A-D) and Graph 6.4 respectively. The annual recorded wind pattern consists of strong, high speed west-southwest to westerly winds throughout the entire reporting period, however lower speed air flow is predominant from the east-northeast during spring and summer months (Graph 6.3 B, C)

The winter months are characterised by strong, dominant west to south-westerly winds with speeds above 25km/hr approximately 30% of the time. Winds from October through to December show a shift from the strong westerly winds to the calmer easterly and north-easterly winds which are more dominant over this period. The summer and autumn months are characterised by dominant calmer easterly winds with occasional strong west-south-west winds. The long term average recorded wind speed is 3.5 m/s, and calm conditions remain similar to the previous year with a frequency of wind speeds less than 0.5 m/s 10% of the time (Graph 6.4).



Graph 6.3 Quarterly Wind Roses from Gunlake Quarry Station 2020/21



Graph 6.4 Annual Wind Rose Gunlake Quarry Weather Station 2020/2021

6.4 Air Quality

Gunlake Quarry operates under an approved Air Quality Management Plan (AQMP), which documents the control measures and management initiatives to control dust generation from the site.

The main objectives of the AQMP are to provide a program detailing the assessment criteria, monitoring locations and procedures, reporting protocol and compliance checking procedures for air quality management at the Quarry.

There are three broad dust sources which may be measured as part of the monitoring program, which are:

- Background sources such as from traffic on unsealed local roads and agricultural activities,
- Dust generated from land disturbance such as topsoil stripping and overburden emplacement; and
- Dust generated from material processing and handling, such as crushing, screening and conveying product.

In June 2021 Mod 2 of the LEC Consent was approved (File 2020/00327172). The modified consent includes the requirement to monitor $PM_{2.5}$ at the quarry on a one-in-six-day cycle. This monitoring will commence early in the coming reporting period and the AQMP and EPL will be updated to reflect this. For the purposes of this Annual Review, the monitoring data, assessment criteria and predictions made in the original EIS will be compared to determine Gunlake's performance over the reporting period.

6.4.1 Dust Control Measures

A summary of the dust mitigation strategy is provided in Table 6.3. In addition to the below controls, during adverse meteorological conditions when wind speed exceeds 8m/s the Quarry Manager may limit or stop specific activities being undertaken in the Quarry in order to reduce dust emissions. During the reporting period the haul roads were upgraded with further compaction and two water carts are used at the quarry providing dust control and bushfire fighting capacity.

Table 6.3 - Air Quality and Dust Management Measures

Activity	Control
Stripping, transport, and emplacement/stockpiling of topsoil	Minimise clearing ahead of extraction activities Avoid stripping in high wind conditions Revegetation of completed surfaces
Removal, transport and placement of overburden	Water cart used on haul roads
Drilling activities	Dust apron on drill rig
Blasting activities	Blast design to minimise fine particles
Face loading	Water cart used on hardstand areas and extraction benches
Hauling raw product on internal haul roads	Water truck Speed limit
Conveyors and transfer points	Water sprays
Crushing, screening	Water sprays
Product stockpiles	Located in nominated areas with topographic shielding
Product loading and dispatch	Use of minimal heights when loading Water cart used on hardstand areas Road registered trucks equipped with automatic tarps Use of bypass road avoids residential areas of Marulan
Internal haul roads	Water truck
General on-site activities	Water truck Alarm on weather station when wind speeds exceed 8 m/s

6.4.2 Air Quality Monitoring Program

The Gunlake AQMP contains assessment criteria, reporting protocol and compliance checking procedures and monitoring program to enhance the management of any potential air quality impacts associated with the Project. In addition to the assessment criteria, Gunlake have made specific commitments and the LEC Consent contains a number of conditions aimed at minimising air quality impacts.

The approved air quality monitoring program for the Gunlake Extension Project comprises the following:

- Three dust deposition gauges located to the northeast, south and northwest of the quarry operations as shown on Figure 2;
- Two high volume air samplers located at R1 to the east of the quarry and R4 located to the northwest of the quarry; and
- Automatic weather station located adjacent to the site offices.

The air quality monitoring activities are summarised in Table 6.4 below.

Table 6.4 –Air Quality Monitoring Program

Monitoring Site	Parameter	Timing
DDG1	Deposited Dust	Monthly (30 days +/- 2 days)
DDG2	Deposited Dust	Monthly (30 days +/- 2 days)
DDG3	Deposited Dust	Monthly (30 days +/- 2 days)
R1 (HVAS)	Particulate Matter (PM_{10})	One day in six cycle
R4 (HVAS)	Particulate Matter (PM_{10})	One day in six cycle
Weather Station	Meteorological Parameters	Continuous

6.4.3 Background Dust Concentrations

As part of the Environmental Assessment process for the Gunlake Extension Project, the available monitoring data was used to determine background air quality concentrations at the nearest residential receptors. These are shown in Table 6.5 below and are considered low in comparison to typical agricultural environments.

Table 6.5 – Background Air Quality Concentrations

Parameter	Concentration
24-hour average PM_{10}	Varies daily
Annual Average $PM_{2.5}$	7 ug/m^3
Annual average PM_{10}	13 ug/m^3
Annual average TSP	33 ug/m^3
Combined Annual Average Dust Deposition	1.8 g/m^2/month

6.4.4 Air Quality Assessment Criteria and Predictions

Table 6.6 defines the short term and long term impact assessment criteria for particulate matter and Table 6.7 defines the long term impact assessment criteria for deposited dust.

Table 6.6 Short Term and Long Term Particulate Matter Impact Assessment Criteria

Pollutant	Averaging Period	[d] Criterion
Total Suspended Particulate matter (TSP)	Annual	[a] 90 ug/m3
Particulate Matter < 10um (PM_{10})	Annual	[a] 25 ug/m3
	24 Hour	[a] 50 ug/m3

Table 6.7 Long term Assessment Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level	Maximum Total Deposited Dust Level
[c] Deposited dust	Annual	[b] 2g/m^2/month	[a] 4g/m^2/month

Notes to Tables 6.6 and 6.7:

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

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

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

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 EPA.

The data presented in Table 6.8 below shows the predicted Gunlake Quarry- only incremental concentrations and deposition rates at each of the receptor locations. The following EIS predictions are under an existing operations scenario. All concentrations and deposition rates are well below the relevant impact assessment criteria, as presented in Tables 6.6 and 6.7 above.

Table 6.8 Predicted Quarry-only Incremental Concentrations and Deposition Rates for Existing Operations

Receptor ID	Annual TSP (µg/m^3)	Max 24h PM_{10} (µg/m^3)	Annual PM_{10} (µg/m^3)	Max 24h $PM_{2.5}$ (µg/m^3)	Annual $PM_{2.5}$ (µg/m^3)	Annual RCS	Annual Dust Deposition (g/m^2/month)
Criteria	90	50	25	25	8	3	2
1*	2.4	9.7	0.9	1.5	0.2	0.013	0.4
2	1.0	6.7	0.4	1.1	0.1	0.005	0.2
3*	0.5	3.3	0.2	0.7	<0.1	0.003	0.1
4*	0.2	1.4	0.1	0.3	<0.1	0.001	<0.1
5	0.9	4.9	0.3	0.8	0.1	0.004	0.1
6	0.5	1.4	0.1	0.2	<0.1	0.002	0.1
7	0.3	1.2	0.1	0.2	<0.1	0.001	<0.1
8	0.7	1.3	0.1	0.2	<0.1	0.002	0.1
9	0.3	0.7	0.1	0.1	<0.1	0.001	<0.1
10	0.2	0.6	0.1	0.1	<0.1	0.001	<0.1
11	0.1	0.5	<0.1	0.1	<0.1	0.001	<0.1
12	0.1	0.5	<0.1	0.1	<0.1	0.001	<0.1

**Gunlake Quarries owned residence*

6.4.5 Dust Deposition Monitoring Results

Table 6.9 includes the dust fallout data for the reporting period which is shown graphically in Graph 6.5 with the annual rolling average shown in Graph 6.6. Dust deposition levels are monitored by Gunlake at three locations in the vicinity of the quarry. Dust Deposition Gauge 1 (DDG1) is located to the northeast of the quarry, DDG2 to the south and DDG3 to the

northwest. Monitoring has been undertaken on a monthly basis continually since 2007 and the locations of the monitoring sites are shown on Figure 2.

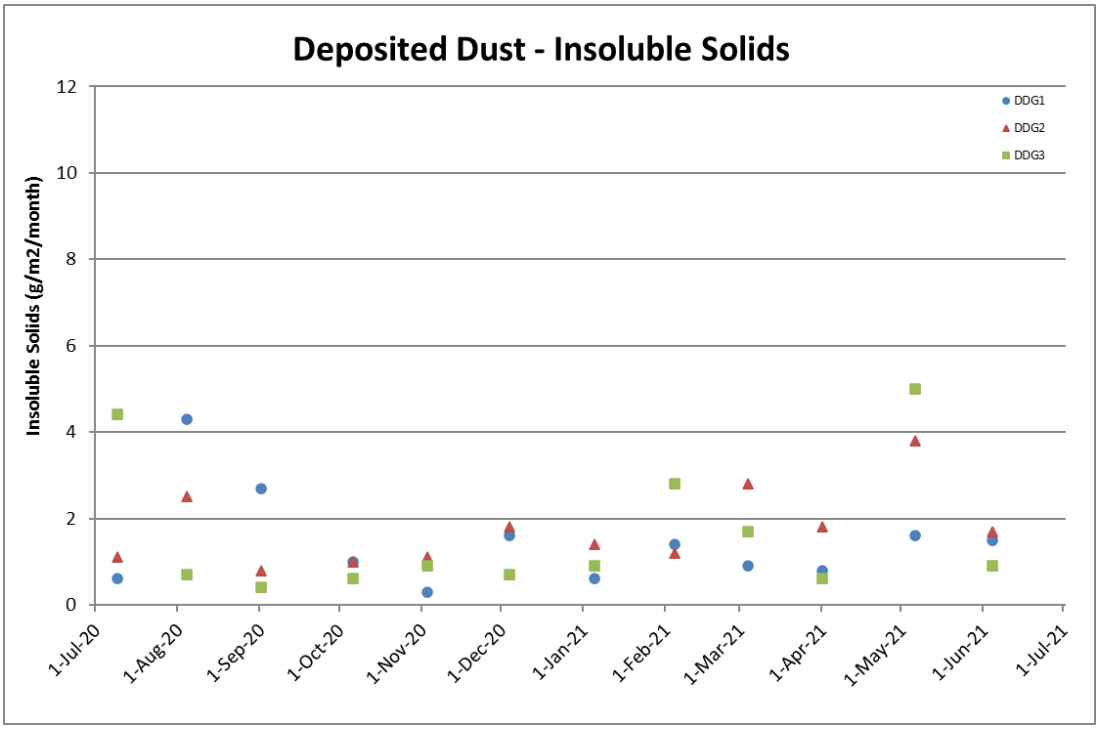
The Gunlake property is predominantly grassland with patches of well vegetated areas with tall trees. Sources of particulate matter in the area would include quarrying activities, traffic on unsealed roads, local building and construction activities, and agricultural activities.

Table 6.9 Dust Monitoring Results – Insoluble Solids (g/m²/month)

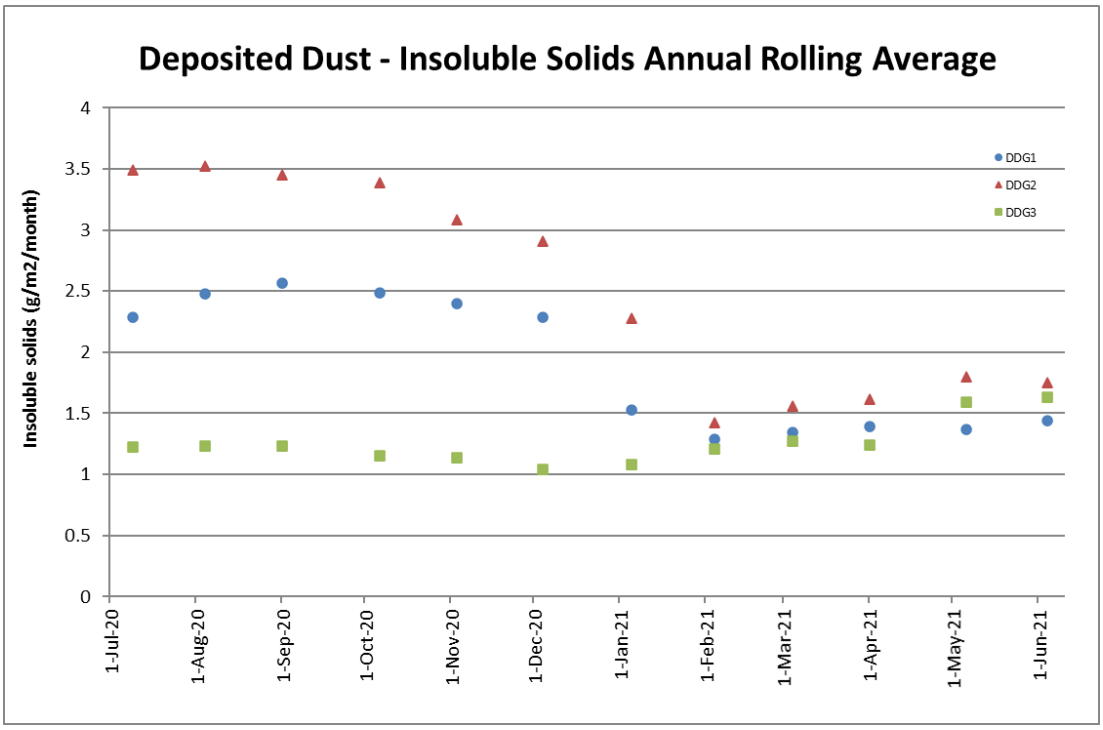
Date Sampled	DDG1	DDG2	DDG3
9/07/2020	0.6	1.1	4.4
4/08/2020	4.3	2.5	0.7
1/09/2020	2.7	0.8	0.4
6/10/2020	1	1	0.6
3/11/2020	0.3	1.1	0.9
4/12/2020	1.6	1.8	0.7
5/01/2021	0.6	1.4	0.9
4/02/2021	1.4	1.2	2.8
4/03/2021	0.9	2.8	1.7
1/04/2021	0.8	1.8	0.6
6/05/2021	1.6	3.8	5
4/06/2021	1.5	1.7	0.9

Table 6.10 Insoluble Solids (g/m²/month) Summary

	Dust Gauge No 1	Dust Gauge No 2	Dust Gauge No 3
Individual Gauge Background Average	1.8	0.9	2.4
Overall Background Average	1.8		
Individual Gauge Average July 18 – June 19	1.6	3.3	2.1
Overall Average for Period July 18 – June 19	2.3		
Individual Gauge Average July 19 – June 20	2.4	3.5	1.2
Overall Average for Period July 19 – June 20	2.3		
Individual Gauge Average July 20 – June 21	1.4	1.8	1.6
Overall Average for Period July 20 – June 21	1.6		



Graph 6.5 - Dust Deposition



Graph 6.6 - Dust Deposition – Annual Rolling Average

The annual average dust deposition at DDG1 for the reporting period was 1.4 g/m^2/month, which is lower than the background levels, lower than the previous reporting period and below the assessment criteria detailed in the AQMP and Table 6.7. DDG1 had the lowest annual average dust deposition for the reporting period.

The annual average of DDG2 (1.8 g/m^2/month) was in line with the background levels for that site and lower than the previous reporting periods. It is below the assessment criteria detailed in the AQMP. DDG2 is located to the southeast of the Gunlake Extension Project extraction area and the increased dust deposition in previous reporting periods is likely due to localised dust generated from topsoil stripping, blasting and removal of overburden activities adjacent to the gauge. These activities were completed in this area in early 2020 and subsequently bench development has continued with blasting and removal of hardrock at lower depths reflected in lower dust deposition in DDG2.

The annual average of DDG3 for the reporting period was 1.6 g/m^2/month. This result is significantly lower than the background average for the site (2.3 g/m^2/month) but was slightly higher than the previous reporting period as can be seen in Table 6.10.

Table 6.11 below shows calendar year summaries of the dust deposition monitoring program covering background conditions, construction, first production and normal operations into the extension project.

Table 6.11 Gunlake Quarry Dust Deposition Summary

Year	DDG1	DDG2	DDG3	Average	Comment
2007	0.7	1.3	2.4	1.5	No quarry activities
2008	1.4	2.7	2.4	2.1	No quarry activities
2009	0.9	1.4	2.5	1.6	Construction and initial extraction
2010	1.0	0.9	1.2	1.0	First production
2011	1.1	1.0	1.8	1.3	Normal operations
2012	1.8	1.8	3.6	2.4	Normal operations
2013	1.9	0.9	2.1	1.6	Normal operations
2014	2.1	0.9	2.4	1.8	Normal operations
2015	1.5	1.1	2.1	1.6	Normal operations
2016	2.8	1.6	2.4	2.3	Normal operations
2017	1.3	1.2	2.6	1.7	Normal operations
2018	1.4	2.6	2.9	2.3	Normal operations
2019	1.6	3.3	2.0	2.3	Normal operations
2020	2.7	3.8	1.0	2.5	Normal operations
2021	1.4	1.8	1.6	1.6	Normal operations
Average	1.6	1.8	2.2	1.8	Normal operations

Based on the above results, there are no statistically significant changes in dust deposition rates in the direction of the nearest residential receptors since the quarry commenced operations. DDG3 located to the west of the quarry, has had fluctuating dust deposition levels and is influenced by normal surrounding agricultural activities. DDG1, located to the northeast of the quarry operations, in opposing the direction of the prevailing winds, captures dust emanating from the quarry. This gauge shows constant readings from before the quarry started and throughout the operations to date and therefore verifies that the dust mitigation strategy has been effective in meeting the assessment goals contained in AQMP, that is the

quarry has not increased ambient dust levels by more than 2 g/m^2/month at nearby residential receptors.

6.4.6 High Volume Air Sampling PM10 Monitoring

PM_{10} monitoring is undertaken at the quarry on a one-in-six-day cycle in line with the Gunlake Extension Project Development Consent and the EPL. One high volume air sampler (HVAS) is located to the northeast of the quarry at R1 the second is located to the northwest at R4. Results for the 2020/2021 reporting period are contained in Tables 6.12 and 6.13 and shown graphically in Graph 6.7 and 6.8 for R1 and R4 respectively.

Table 6.12 PM_{10} Monitoring Results R1

Sampling Date	R1 PM_{10} (µg/m^3)
2/07/2020	12.2
8/07/2020	1
14/07/2020	0.5
20/07/2020	35.4
26/07/2020	1.9
1/08/2020	12.7
7/08/2020	12.6
13/08/2020	24.3
19/08/2020	10.6
25/08/2020	18.1
31/08/2020	19.4
6/09/2020	8.4
12/09/2020	13.4
18/09/2020	7.9
24/09/2020	14.4
30/09/2020	11.8
6/10/2020	9
12/10/2020	22.2
18/10/2020	8.3
24/10/2020	10.1
30/10/2020	10.5
5/11/2020	6.3
11/11/2020	15.8
17/11/2020	22.9
23/11/2020	15.1
29/11/2020	17
5/12/2020	17.7
11/12/2020	14
17/12/2020	6.2
23/12/2020	6
29/12/2020	<0.1
4/01/2021	1.4
10/01/2021	9.2
16/01/2021	32.4
22/01/2021	64.2

Sampling Date	R1 PM_{10} (µg/m^3)
28/01/2021	10.1
3/02/2021	11.4
9/02/2021	12.2
15/02/2021	10.1
21/02/2021	10.4
27/02/2021	11.7
5/03/2021	16.6
11/03/2021	8.8
17/03/2021	NA*
23/03/2021	1.9
29/03/2021	11.9
5/04/2021	10.5
11/04/2021	4.2
29/04/2021	16.7
4/05/2021	8.3
10/05/2021	10.3
16/05/2021	0.1
22/05/2021	14.8
28/05/2021	9.4
3/06/2021	5.6
9/06/2021	9.2
15/06/2021	8.4
21/06/2021	2.8
27/06/2021	2

	Maximum 24 hour average ug/m^3	Annual average ug/m^3
Background	Varies Daily	13
2014/2015	24.9	13.19
2015/2016	40.4	15.33
2016/2017	44.7	18.8
2017/2018	48.0	18.6
2018/2019	47.4	17.62
2019/2020	61.0	18.63
2020/2021	64.2	12.07
Assessment Criteria	50	25

*Torn paper

Table 6.13 PM_{10} Monitoring Results R4

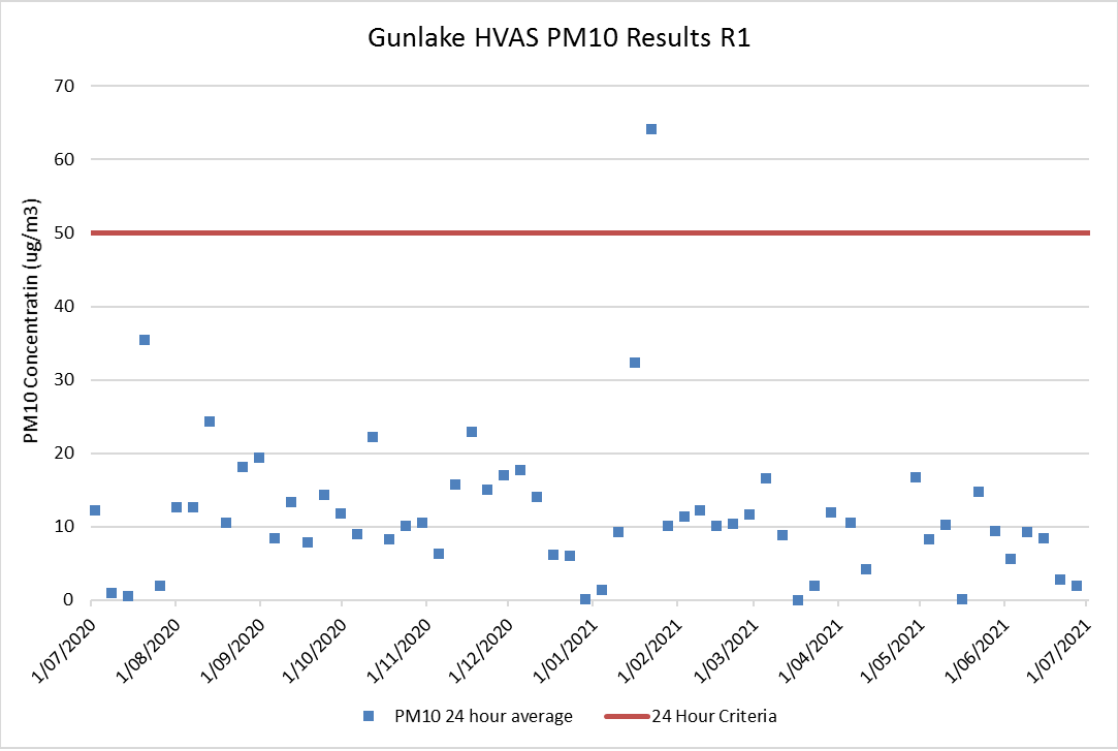
Sampling Date	R4 PM_{10} (µg/m^3)
2/07/2020	5.1
8/07/2020	13.5
14/07/2020	1
20/07/2020	3.5
26/07/2020	0.5
1/08/2020	8.7
7/08/2020	9.1
13/08/2020	7.6
19/08/2020	4.8
25/08/2020	5.4

Sampling Date	R4 PM_{10} ($\mu g/m^3$)
31/08/2020	14.3
6/09/2020	9.1
12/09/2020	10.4
18/09/2020	9.5
24/09/2020	6.2
30/09/2020	14.9
6/10/2020	10.4
12/10/2020	12
18/10/2020	10.6
24/10/2020	11.3
30/10/2020	7.5
5/11/2020	4.2
11/11/2020	14.3
17/11/2020	22.4
23/11/2020	10.5
29/11/2020	17.6
5/12/2020	18.8
11/12/2020	16.6
17/12/2020	1.8
23/12/2020	<0.1
29/12/2020	N/A*
4/01/2021	2.4
10/01/2021	7.8
16/01/2021	14.8
22/01/2021	21
28/01/2021	11.4
3/02/2021	13.8
9/02/2021	9.6
15/02/2021	12.6
21/02/2021	10.1
27/02/2021	8.9
5/03/2021	13.6
11/03/2021	8.3
17/03/2021	6.6
23/03/2021	5.2
29/03/2021	8.2
5/04/2021	10.6
11/04/2021	10.6
17/04/2021	16
23/04/2021	11
29/04/2021	24.3
4/05/2021	6.2
10/05/2021	2.1
16/05/2021	0.9
22/05/2021	11.4
28/05/2021	6.4
3/06/2021	3.8

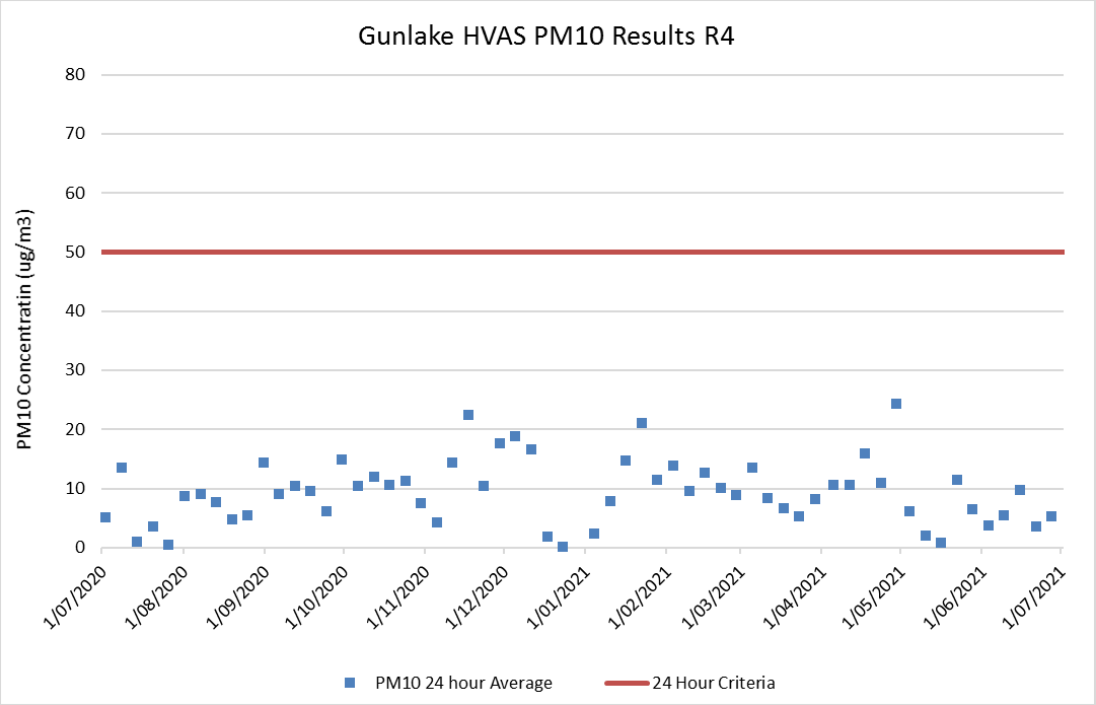
Sampling Date	R4 PM_{10} (µg/m³)	
9/06/2021	5.4	
15/06/2021	9.7	
21/06/2021	3.6	
27/06/2021	5.3	
	Maximum 24 hour average ug/m³	**Annual average ug/m³**
Background	Varies Daily	13
2018/2019	49.5	13.61
2019/2020	51.3	12.80
2020/2021	24.3	9.39
Assessment Criteria	50	25

*damaged paper

Graphs 6.7 and 6.8 show the PM_{10} data for both HVAS sites recorded for the 2020/2021 reporting period.



Graph 6.7 – R1 HVAS PM_{10} Results



Graph 6.8 – R4 HVAS PM_{10} Results

The monitoring results at R1, show an annual average PM_{10} concentration of 12.07 ug/m^3, with a maximum 24 hour average of 64.2 ug/m^3 and a minimum 24 hour average of <0.1 ug/m^3. At R4, the annual average PM_{10} concentration was 9.39 ug/m^3, with a maximum 24 hour average of 24.3 ug/m^3 and a minimum 24 hour average of <0.1 ug/m^3.

It can be seen in Table 6.12 that the maximum 24 hour average PM_{10} concentration at R1 was higher than the previous reporting period and exceeded the 24 hour criteria detailed in Table 6.6. The annual average PM_{10} concentration was however below the annual average criteria, and lower that the previous reporting period. R4 had a lower maximum 24 hour PM_{10} concentration that did not exceed the 24 hour criteria and the annual average was also lower than the previous reporting period and the assessment criteria. The exceedance of the 24 hour criteria on 22nd January at R1 was investigated and reported to the DPIE and EPA. The monitoring period was characterised by prevailing easterly winds indicating that the dust was emanating from the adjacent areas to the east and not from the quarry.

These PM_{10} -HVAS are located on Gunlake-owned properties and the results are used to indicate compliance at the nearest non-company owned residences which are further away from the operation. Dust assessment contained in the EA predicted that the closest non-company owned residences will not experience dust levels attributed to the project greater than the project emissions criteria as outlined in the AQMP. Monitoring results have confirmed the predictions in the EIS.

6.4.7 TSP Monitoring

Condition 14 of Schedule 3 of the LEC Consent requires evaluation of a Total Suspended Particulate (TSP) annual average criterion of 90 µg/m^3. The typical percentage of PM_{10} compared to TSP in a semi-rural environment (i.e. one where the airshed is not dominated by particulate from motor vehicles) lies in the range of 40-50%. Given this, compliance with the

annual PM_{10} criterion (30 µg/m^3) should therefore be seen as satisfying the annual TSP criterion. Monitoring of PM_{10} therefore is used as a surrogate for evaluating compliance with the TSP criterion (i.e. if the annual PM_{10} criterion is satisfied, it is assumed that the TSP criterion will also be achieved). In addition, the annual average TSP has been estimated from the monitoring results to be approximately 34 µg/m^3 which is well below the annual average criteria of 90 µg/m^3 for TSP. These results are in line with the predictions made in the EIS.

6.5 Biodiversity

6.5.1 Flora and Fauna

The land on which the Gunlake quarry is located was historically extensively cleared and used for sheep and cattle grazing. The property consists of highly disturbed native vegetation, of which most is predominantly native grassland in cleared areas and the remainder consisting of clusters of remnant native trees and shrubs and some isolated native trees.

One threatened ecological community has been identified in the vicinity of the quarry that is listed both under the NSW Biodiversity Conservation Act (*as* EEC *White Box Yellow Box Blakely's Red Gum Woodland)* and the Commonwealth EPBC Act (as CEEC *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*).

During surveys undertaken as part of the original EIS for the Gunlake Extension Project, six threatened fauna species listed under the Biodiversity Conservation Act were recorded within the extension area being the Speckled Warbler, Diamond Firetail (*Stagonopleura guttata*), Square-tailed Kite (*Lophoictinia isura*), Eastern Bentwing Bat, Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) and Little Bentwing Bat (*Miniopterus australis*). Fauna and flora are managed as per Gunlake's Rehabilitation and Biodiversity Offset Management Plan.

6.5.2 Fauna Management

Effective management of vegetation communities at Gunlake enhances the habitat for native fauna species including known rare endangered species such as the Speckled Warbler. Specific management initiatives include:

- Minimising clearing at any one time as the quarry progresses;
- Undertaking pre-clearing surveys which include marking of hollow bearing trees which will not be felled if there is a risk to fauna or active nests;
- Should any threatened fauna be discovered or injured a suitably qualified carer such as WIRES will be contacted and works in that area will cease until the ecologist has given the all clear to proceed;

The above measures are designed to minimise the impact on existing fauna on site as well as enhancing the habitat value of the property both during and after quarry extraction.

6.5.3 Biodiversity and Rehabilitation

The aims of the Management Strategy for biodiversity, rehabilitation and agriculture, currently comprise:

- protection, maintenance and enhancement of 32.66 ha of "Box Gum Woodland" in Biodiversity Areas 1 and 2 through assisted regeneration;

- regeneration and/or replanting of 46.16 ha of cleared land in Biodiversity Areas 1 and 2 with native vegetation representative of Box Gum Woodland;
- including 571 ecosystem credits for PCT 1330 in the Gunlake Quarry Extension Project offset areas;
- including 845 ecosystem credits for PCT 734 in the Gunlake Quarry Extension Project offsets;
- protection of the biodiversity offsets into perpetuity; and
- no net loss of stream length and aquatic habitat in the offset areas.

The Biodiversity Areas are currently subject to a modification as detailed in Section 3.2.1. These areas are currently covered by a funded Conservation Agreement that will be finalised following the outcome of the modification. The Gunlake Extension Project Offset Areas that house the credits required to offset impacts from the Extension Project will be protected by the BioBanking Agreement. The management initiatives of these areas will be implemented as per the updated Rehabilitation and Biodiversity Offset Management Plan following the resolution of the modification.

Plate 3 Biodiversity Conservation Area Rehabilitation Monitoring Site

Plate 4 Biodiversity Conservation Area Existing Vegetation

Plate 5 Gunlake Extension Project Offset Area

6.5.4 Weeds and Feral Animals

Two noxious weeds listed under the Goulburn-Mulwaree LGA occur on the Gunlake property:

- Serrated Tussock – *Nasella trichomotoma*
- Blackberry – *Rubus fruiticosus*

Gunlake implements a weed control strategy for the site. During the reporting period spraying of blackberry and serrated tussock continued in the biodiversity offset areas and riparian zones (Plate 6). The weed control program at Gunlake will continue during the coming reporting period.

Plate 6 Gunlake Extension Project Offset Area Weed Spraying Riparian Zone

Feral animal control is currently undertaken by shooting, targeting rabbits and foxes. No feral cat, goat or deer populations have been recently observed.

6.6 Operational Noise

The Noise Monitoring Program (NMP) and Blast Monitoring Program (BMP) are contained in the Noise and Blast Management Plan (NBMP) for Gunlake Quarry, and detail the monitoring locations, methods of monitoring noise and vibration and the correct compliance checking procedures for the subsequent reporting in accordance with the DPIE and the EPA requirements.

Table 6.14 lists the Gunlake Quarry Project operational noise assessment criteria as prescribed in Condition 6, Schedule 3 of the LEC Consent. These criteria have to be met at any residence or on more than 25% of any privately owned land.

Table 6.14 Operational Noise Assessment Criteria

Noise Assessment Location	Day	Evening	Night	
	L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	L_{Aeq} (15 minute)	L_{A1} (1 minute)
R7	38	38	38	45
R8	37	37	37	45
All other privately-owned residences	35	35	35	45

Noise modelling for the Gunlake Extension Project EIS identified receiver locations R7 and R8 as being relevant for the project. The predicted noise emission levels from Gunlake Quarry at R7 and R8 are provided in Table 6.15. Noise emission levels are predicted to be within the Development Consent limits and project specific noise limits (PSNLs) at both receiver locations from year 1 to year 30. Noise levels at R2 are predicted to be up to 10dB above the PSNLs which is considered to be a significant impact and entitles this location to voluntary acquisition upon request and therefore is not subject to the assessment criteria. Gunlake has purchased receivers R1, R3 and R4.

Table 6.15 Predicted Noise Levels LAeq (15 min) dB

Assessment Location	Day	Evening/Night	Night	Night
	Calm	Calm	Prevailing Winds*	Inversion#
Existing Quarry Operations (Pre – Extension Project)				
R7	33	31	34	34
R8	32	30	33	33
Quarry Operations (Gunlake Extension Project Years 1-30)				
R7	34	35	37	38
R8	33	34	37	37

* Max level based on wind speeds of 23m/s and wind directions from 360º to 112.5º from north based on data from the Gunlake weather station
# F class temperature inversion

To verify compliance with operational noise assessment criteria, noise measurements have been carried out at all source points and at the property boundary in the direction of the noise receptors. Attended noise monitoring is undertaken at N1 and N2 at the property boundary between the quarry and R7/R8.

Noise monitoring of the plant and equipment was undertaken as part of the environmental assessment for the Gunlake Extension Project to verify the sound power level of various plant and equipment. The results are provided in Table 6.16.

Table 6.16 Noise Monitoring Plant and Equipment

Plant and Equipment	Sound Power Level (L_w) (dB)
Primary Crusher	112
Secondary Crusher	115
Primary Screens	112
Tertiary Crusher and Impact Crusher	115
Secondary Screens	109
Front End Loader	112
Excavator	104
Dozer	112
Water Cart	102

Attended noise measurements were undertaken quarterly during the reporting period at N1 to the east of the quarry processing area and at N2 located at the south-east boundary corner. This location measures noise generated from the quarry travelling in the direction of sensitive receivers R7 and R8. The results show compliance with the assessment criteria and are in line with the EIS predictions.

Additionally, a noise impact assessment was undertaken by EMM Consulting for the LEC Consent Mod 2 which allows for an increase in product transport from 2Mtpa to 2.6Mtpa. Operational noise levels from current operations were calculated and compared to the results of operator attended noise monitoring undertaken on-site in February 2021. It was found that calculated noise levels correlated well with measured noise levels and it was determined that operational noise levels are predicted to comply with current noise limits. In June 2021 Mod 2 was approved (File 2020/00327172) and subsequently the NBMP will be reviewed and updated in the coming reporting period to reflect the changes to the consent and updated noise modelling.

6.7 Vibration and Air blasting

Table 6.17 shows the airblast overpressure criteria and ground vibration impact assessment criteria for residences on privately owned land in relation to the Gunlake Quarry Project as prescribed by Condition 10, Schedule 3 of the LEC Consent.

Table 6.17 Airblast Overpressure and Ground Vibration Impact Assessment Criteria

Airblast Overpressure Level (dB (Lin Peak))	Allowable Exceedances
115	5% total number of blasts over 12 month period.
120	0%
Ground Vibration Level (mm/s)	**Allowable Exceedances**
5	5% total number of blasts over 12 month period.
10	0%

A blast overpressure and ground vibration assessment was undertaken at various distances from the blast locations at the Quarry. The results shown in Table 6.18 convey that a large range of MICs can be adopted, based on the distance from the blast. Blasting may occur at 700m from the nearest assessment location, and the ANZECC limits will be satisfied with a respective MIC of 290kg.

Table 6.18 Blast Overpressure and Ground Vibration EIS Assessment Results for Hard Rock Extraction

Distance from Blast (m)	Highest Allowable MIC (kg)	Overpressure Criteria (dB (Lin Peak))	Ground Vibration Criteria PPV (mm/s)	Highest Allowable MIC (kg) to satisfy criteria
700	290	≤115	≤5	290
900	600	≤115	≤5	600
1,100	1,150	≤115	≤5	1,150
1,300	1,900	≤115	≤5	1,900

A portable blast emissions monitor that measures airblast overpressure and vibration is positioned at R2 on Brayton Road during each blast event. Monitoring will continue at this location in the coming reporting period.

Table 6.19 details the Airblast Overpressure and the Ground Vibration level monitoring results for all the blasts undertaken at Gunlake during the reporting period. All blasting was undertaken within the approved time between 9:00am to 5:00pm Monday to Friday.

Table 6.19 Blast Monitoring Summary for the Reporting Period

Date	Time	Location	Airblast Overpressure (dB (Lin Peak))	Ground Vibration Level (mm/s)
24/7/2020	14.02	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
7/8/2020	15.33	Lot 575 Brayton Rd	100.0	0.539
21/8/2020	12.18	Lot 575 Brayton Rd	108	0.730
28/8/2020	14.02	Lot 575 Brayton Rd	101.9	0.741
4/9/2020	14.35	Lot 575 Brayton Rd	110.0	0.524
11/9/2020	11.59	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
29/9/2020	14.11	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
9/10/2020	12.10	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
16/10/2020	11.44	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
20/10/2020	11.47	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
23/10/2020	12.04	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
6/11/2020	12.10	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
13/11/2020	14.24	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
20/11/2020	12.11	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
27/11/2020	12.12	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
4/12/2020	13.51	Lot 575 Brayton Rd	111.2	1.164
18/12/2020	14.24	Lot 575 Brayton Rd	113.3	0.696
15/1/2021	12.05	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
22/1/2021	14.23	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
5/2/2021	12.05	Lot 575 Brayton Rd	97.5	0.852
12/2/2021	10.26	Lot 575 Brayton Rd	108.4	0.568
19/2/2021	11.59	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
26/2/2021	15.23	Lot 575 Brayton Rd	98.8	0.508
5/3/2021	9.56	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
12/3/2021	13.10	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
24/3/2021	14.38	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
9/4/2021	13.33	Lot 575 Brayton Rd	114.8	1.4
21/4/2021	14.29	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
28/4/2021	11.51	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
30/4/2021	14.12	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
30/4/2021	14.36	Lot 575 Brayton Rd	98.8	0.539
12/5/2021	12.40	Lot 575 Brayton Rd	101.9	0.582
14/5/2021	13.56	Lot 575 Brayton Rd	105.5	0.635
21/5/2021	12.21	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
28/5/2021	12.54	Lot 575 Brayton Rd	107	0.524
9/6/2021	2.02	Lot 575 Brayton Rd	Nil Trigger	Nil Trigger
18/6/2021	11.58	Lot 575 Brayton Rd	106.5	0.582
25/6/2021	12.18	Lot 575 Brayton Rd	113.1	1.212
7/7/2021	14.28	Lot 575 Brayton Rd	103.5	0.524

During the reporting period a total of 39 blasts were conducted. The maximum air blast overpressure results for the reporting period were 114.8 dB (Lin Peak) recorded at Lot 529 Brayton Road on 9th April 2021. This result is equal to the maximum for the previous reporting period. Results for all 39 blasts were below the criteria of 115 dB (Lin Peak) outlined in Table 6.17.

The ground vibration results show compliance with impact assessment criteria with the maximum recorded on 9th April 2021 being 1.40 mm/s. This was lower than the previous reporting period's maximum of 1.44 mm/s however both maximums are well below the impact assessment criteria of 5mm/s as detailed in Table 6.18 and the Noise and Blast Management Plan.

The results confirm the EIS predictions that the project will comply with relevant vibration and air blast criteria at all sensitive receivers through ongoing management of blast design.

6.8 Aboriginal Heritage

Gunlake's Aboriginal Heritage Management Plan was updated in April 2018 as required by the LEC Consent and reviewed in March 2020 following the Independent Environmental Audit. The Plan outlines a six step mitigation process for the accidental discovery of cultural heritage items, and a five step mitigation process for the accidental discovery of skeletal material. No skeletal material were discovered during the reporting period, nor the previous reporting period.

Extensive surveys of the areas subject of the Gunlake Extension Project were undertaken as part of the Aboriginal Cultural Heritage Assessment (ACHA) for the EIS. An Aboriginal site collection report was conducted by EMM Consulting Pty Limited and assisted by representatives from Registered Aboriginal Parties on 25/07/2018. The site survey involved the collection of Aboriginal stone artefact sites which would otherwise be impacted during quarrying operations for the extension project. A total of 867 artefacts were salvaged during the survey. No further surveys are required under the development consent.

6.9 Bushfire

Under the *Rural Fires Act 1997,* there are a number of obligations that must be met by Gunlake with respect to managing their land. In summary, these include:

- Occupiers of land are to extinguish fires or notify firefighting authorities immediately; and
- It is the duty of the owner or occupier of land to take practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of bush fires on or from that land.

These issues are relevant, given the location of the quarry having native forested areas to the south and will include additional reafforested areas on site. The following measures are employed at the site to ensure that these obligations under the Rural Fires Act are met:

- The main water storages on site are available for fighting purposes if required. This includes the main farm dam and PWD adjacent to the workshop.
- Maintaining the agricultural component of the property to avoid significant quantities of long dry grass. Management activities include active grazing or slashing as required.
- Firebreaks are maintained around key infrastructure areas including the office and main access road to the site.

Fire fighting equipment is available on site at the office, workshop, and mobile equipment.

Due to ongoing regular rainfall from early 2020 the bushfire risk during the reporting period was generally low.

6.10 Hydrocarbon Contamination

Plant and equipment are serviced regularly to maintain good working order and lubricants and oils for servicing of plant are stored in the workshop and bunded. Spill kits are kept on site. The site fuel tank located adjacent to the workshop is self bunded.

6.11 Waste Management

Gunlake operates a comprehensive management system for the appropriate handling and disposal of waste materials. The principle wastes generated by the site are categorised as non-production and production wastes.

6.11.1 Non-Production Wastes

General Domestic-Type Wastes and Routine Maintenance Consumables

All general wastes originating from the office and workshop area, together with routine maintenance wastes from the servicing of equipment are disposed of in drums and mobile garbage bins located adjacent to the various buildings on site. These bins are collected weekly or as required into skips adjacent to the workshop, which is then collected by a licensed waste contractor.

Recyclables such as paper, cardboard, drink containers, ferrous and non-ferrous metals, are contained separately and collected by a licensed waste contractor for recycling.

Oils and Greases

Routine maintenance of quarrying and earthmoving equipment is undertaken in the maintenance workshop. Waste oils are collected and pumped to bulk storage tanks by oil excavation pumps. Waste oils and grease are stored in a bunded area at the maintenance workshop and collected by an EPA licensed waste oil recycling contractor for recycling.

Sewerage

All domestic waste water is collected and treated in a purpose-built approved wastewater management system. This system is serviced annually by an external contractor.

6.11.2 Production Wastes – Overburden

When quarrying first commenced, overburden was used to progressively construct the noise bund wall to the north of the processing area. Overburden from the current extraction area is being placed on the Western Overburden Emplacement.

7. WATER MANAGEMENT

The attributes of the Quarry form the basis of ongoing management principles governing the need to protect water systems, both surface and groundwater, during quarrying activities as well as managing the remaining land for agricultural and biodiversity uses.

The operation lies within the Chapman's Creek Catchment. Chapman's Creek is an ephemeral creek which flows through the property roughly from south to north. The water management system has been designed to protect Chapman's Creek.

7.1 Erosion and Sediment Management

Gunlake Quarry operates in accordance with the Gunlake Water Management Plan which contains an Erosion and Sediment Control Plan. Specifically, the Plan includes:

- Implementation of the requirements set out in the publication "Managing Urban Stormwater: Soils and Construction Volume 1, 4th Edition, 2004 (Landcom, 2004)", referred to as the *'Blue Book'* and Volume 2E Mines and Quarries (DECC, 2008);
- Detailing practices that have potential to cause erosion and generate sediment and what control measures will be adopted to minimise the impact of these practices; and
- Detailing the location function and capacity of erosion and sediment control structures and how they will be maintained.

The design of the quarry has included the construction of rock-lined drains and check dams, sediment traps and water quality control ponds to contain dirty water. These structures were constructed as part of the initial quarry development and are maintained as necessary in order ensure adequate storage to capture runoff from storm events, to maintain a nil discharge site, and to minimise erosion and sedimentation.

The Independent Environmental Audit undertaken for the site identified the need to desilt the water quality control ponds, particularly the Process Water Dam (PWD). Investigations determined that desilting of the dam was not possible due to safety and access constraints and to prevent further siltation of the PWD, maintenance work was undertaken on the drainage adjacent to the workshop and weigh bridge, and a silt pond was installed at the end of the drain directing dirty water into the PWD. This pond is easily accessible and is inspected quarterly and following heavy rainfall and desilted as required.

7.2 Surface Water Management

7.2.1 Pollution Control Strategies

Gunlake Quarry operates under an approved Soil and Water Management Plan. Stormwater is collected in a series of pollution control structures which is then recycled within the process water circuit. Collected water is utilised for the:

- Crushing plant;

- Dust suppression on roads and hardstand areas;
- Pasture irrigation (when required to dispose of excess site water);
- Truck washing; and
- Non-potable domestic water.

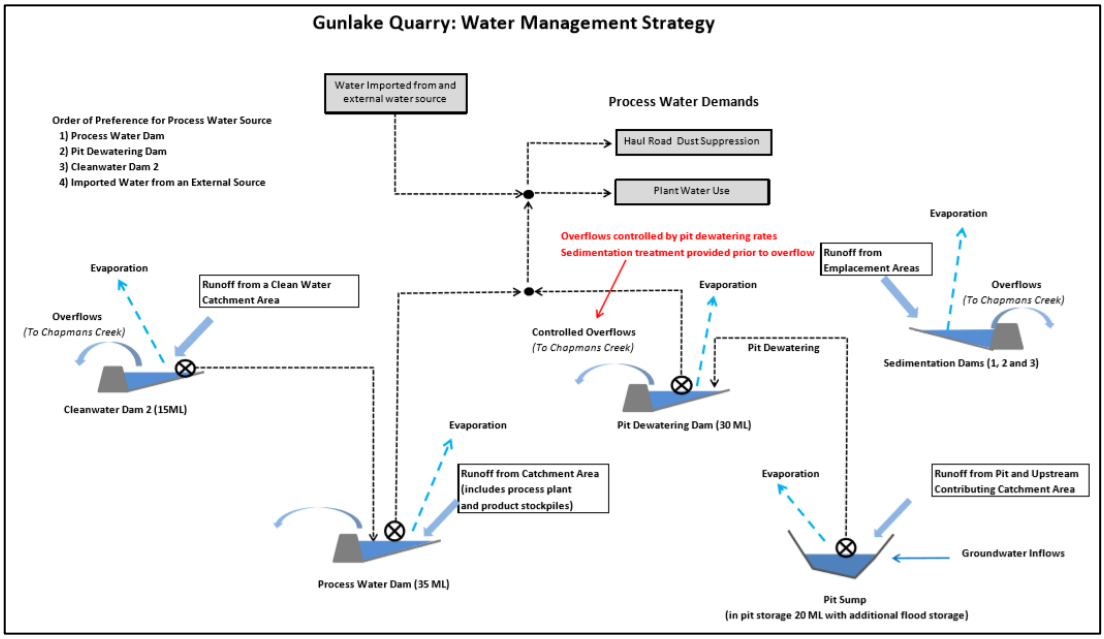


Plate 7 – Surface Water Management Plan

Plate 7 Process Water Dam

7.2.2 EIS Assessment and Predictions

No specific assessment criteria were provided in the EIS in relation to surface water. The EIS however, made the following Surface water management objectives;

- Separation of clean and quarry water circuits using clean water diversion drains up gradient from disturbance areas. This will minimise water treatment required on site.
- Providing sedimentation basins of an appropriate size for all catchment areas based on '*Managing Urban Stormwater: Soils and Construction, Volume 2E– Mines and Quarries'* (DECC, 2008).
- Suitable management of excess water in the pit by pumping to a pit dewatering dam that will hold water for process water usage.
- The volume and frequency of site discharge will be minimised by capturing water from disturbed areas in water management dams to be used as process water.
- Site discharge locations have been established and characterised for each stage of the quarry plan.
- Model the quarry's operational water demands to estimate process water needs and supply reliability, including dam storage volumes.
- Use of an ongoing monitoring and review program to enable improvement of the Surface Water Management Plan as the operation expands.

7.2.3 Monitoring and Reporting

Gunlake Quarry undertakes quarterly monitoring of surface water quality within Chapman's Creek at two sites within the project boundary to determine a basis for potential impact assessment as the quarry progresses. The upper reaches of Chapmans Creek are predominantly dry and only flow following heavy rain events, while the lower section towards Brayton Road at the Gunlake property boundary consists largely of pools connected by baseflow during periods of low rainfall. Chapman's Creek flows into Joaramin Creek approximately 1.4 km downstream from the Gunlake project boundary, and Joaramin Creek eventually flows into the Wollondilly River.

The sites include two sampling locations on Chapmans Creek downstream of the operation known as RW1 and RW2. RW1 is located at the Quarry entrance adjacent to Brayton Road, whilst RW2, which is often dry, is sampled approximately 1km upstream of RW1 within the property. The upstream site previously recorded as Site I is no longer monitored as sufficient background data on Chapmans Creek exists for the purposes of impact assessment.

The water quality has been monitored and significant parameters outlined in the Trigger Action Response Plan (TARP) including pH, EC and TDS have been compared to historical background levels taken at Site I in order to be able to identify any harmful changes to the creek's water quality.

Tables 7.1 to 7.4 provide summaries of the surface water monitoring for the 2020/2021 reporting period. Monitoring is undertaken on a quarterly basis and sample results from the Process Water Dam (PWD) and the Drop Cut are also included.

Table 7.1 Monitoring Results for RW1

Analyte	Units	Sample Date			
		01/09/2020	15/12/2020	16/03/2021	16/06/2021
pH	pH units	8.16	8.37	8.28	7.98
Electrical Conductivity	uS/cm	967	1340	1360	1370
Total Suspended Solids (TSS)	mg/L	17	7	10	<5
Total Dissolved Solids (TDS)	mg/L	628	871	884	890
Total Phosphorus as P (TP)	mg/L	0.03	<0.01	0.05	0.02
Total Nitrogen as N (TN)	mg/L	4.6	1.2	0.6	2.3
Dissolved Oxygen (DO)	mg/L	9.8	8.9	8.6	10.2
Turbidity	NTU	10.7	2.7	9.6	6.7
Chloride	mg/L	212	297	294	302
Calcium	mg/L	29	33	36	43
Magnesium	mg/L	35	49	53	58
Sodium	mg/L	112	151	161	144
Potassium	mg/L	6	6	6	5
Total Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L	0.001	<0.001	<0.001	<0.001
Total Copper	mg/L	0.003	<0.001	<0.001	<0.001
Total Manganese	mg/L	0.026	0.048	0.046	0.038
Total Nickel	mg/L	0.001	<0.001	0.001	<0.001
Total Zinc	mg/L	0.005	<0.005	<0.005	0.007
Total Iron	mg/L	0.46	0.16	0.61	0.06
Oil and Grease	Visual	None visible	None visible	None visible	None visible

Table 7.2 Monitoring Results for RW2

Analyte	Units	Sample Date			
		01/09/2020	15/12/2020	16/03/2021	16/06/2021
pH	pH units	8.26	8.48	8.15	7.97
Electrical Conductivity	uS/cm	884	1310	1670	1280
Total Suspended Solids (TSS)	mg/L	17	6	9	<5
Total Dissolved Solids (TDS)	mg/L	575	852	1080	832
Total Phosphorus as P (TP)	mg/L	0.02	<0.01	0.02	<0.01
Total Nitrogen as N (TN)	mg/L	5.8	0.8	2.3	4.6
Dissolved Oxygen (DO)	mg/L	10.4	8.9	8.7	10.3
Turbidity	NTU	9.5	2.6	7.3	7.3
Chloride	mg/L	179	266	380	268
Calcium	mg/L	22	28	43	37
Magnesium	mg/L	32	51	65	55
Sodium	mg/L	107	157	197	142
Potassium	mg/L	6	6	7	6
Total Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L	0.001	<0.001	<0.001	<0.001
Total Copper	mg/L	0.002	<0.001	<0.001	<0.001
Total Manganese	mg/L	0.034	0.053	0.109	0.03
Total Nickel	mg/L	<0.001	<0.001	0.001	0.001
Total Zinc	mg/L	0.006	<0.005	<0.005	0.006
Total Iron	mg/L	0.38	0.16	0.47	0.06
Oil and Grease	Visual	None visible	None visible	None visible	None visible

Due to dry weather conditions at the time of sampling and the nature of the location of Site RW2 being further upstream in Chapmans Creek, no samples were obtained for this site during December 2019.

Table 7.3 Monitoring Results for PWD

Analyte	Units	Sample Date			
		01/09/2020	15/12/2020	16/03/2021	16/06/2021
pH	pH units	8.26	8.0	8.47	8.29
Electrical Conductivity	uS/cm	586	634	707	722
Total Suspended Solids (TSS)	mg/L	33	28	10	8
Total Dissolved Solids (TDS)	mg/L	381	412	460	469
Total Phosphorus as P (TP)	mg/L	0.02	<0.01	0.02	<0.01
Total Nitrogen as N (TN)	mg/L	9.1	7.2	6.6	9.3
Dissolved Oxygen (DO)	mg/L	10.4	8.4	8.6	11.2
Turbidity	NTU	27.5	28.5	19	14.4
Chloride	mg/L	73	76	101	96
Calcium	mg/L	11	14	16	16

Analyte	Units	Sample Date			
		01/09/2020	15/12/2020	16/03/2021	16/06/2021
Magnesium	mg/L	17	16	21	23
Sodium	mg/L	83	83	95	96
Potassium	mg/L	8	7	8	8
Total Arsenic	mg/L	0.001	0.001	<0.001	<0.001
Total Cobalt	mg/L	0.002	0.001	<0.001	<0.001
Total Copper	mg/L	0.003	0.002	<0.001	<0.001
Total Manganese	mg/L	0.051	0.028	0.024	<0.001
Total Nickel	mg/L	<0.001	<0.001	<0.001	<0.001
Total Zinc	mg/L	0.006	<0.005	<0.005	0.006
Total Iron	mg/L	1.06	1.07	0.63	<0.05
Oil and Grease	Visual	None visible	None visible	None visible	None visible

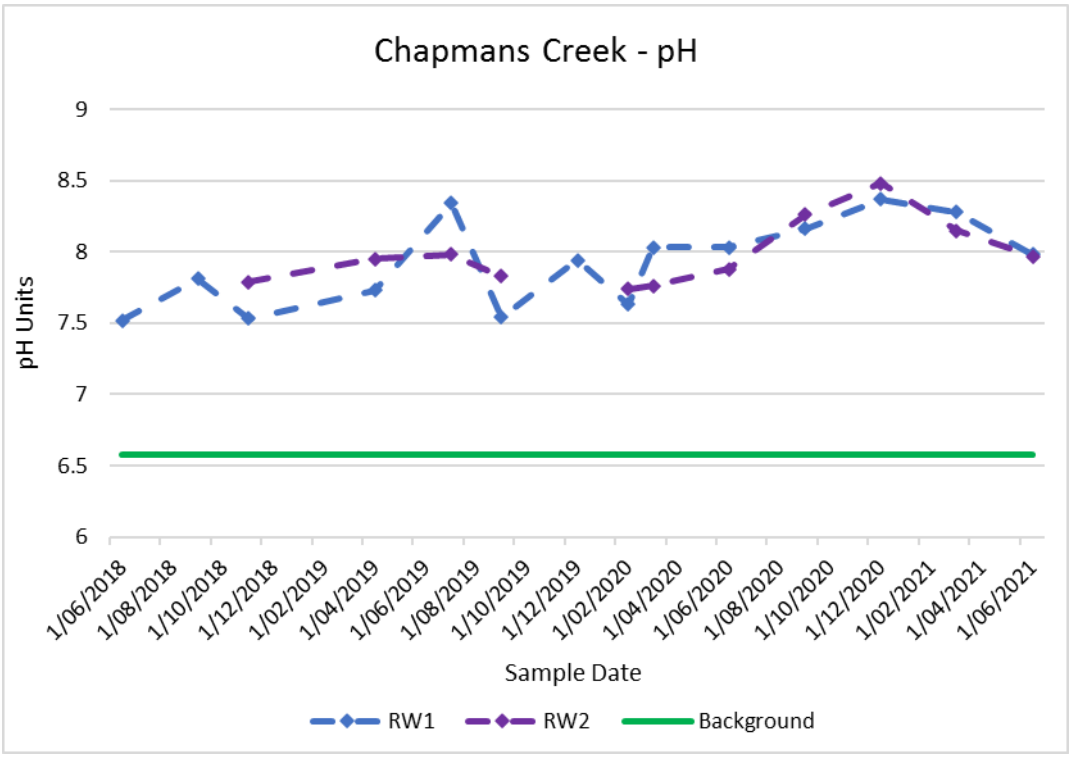
Table 7.4 Monitoring Results for Drop Cut

Analyte	Units	Sample Date			
		01/09/2020	15/12/2020	16/03/2021	16/06/2021
pH	pH units	7.88	7.61	7.99	7.7
Electrical Conductivity	uS/cm	481	668	768	646
Total Suspended Solids (TSS)	mg/L	75	24	<5	5
Total Dissolved Solids (TDS)	mg/L	313	434	499	420
Total Phosphorus as P (TP)	mg/L	0.02	<0.01	<0.01	<0.01
Total Nitrogen as N (TN)	mg/L	8.2	9.1	8	8.3
Dissolved Oxygen (DO)	mg/L	9.4	8.6	7.6	9.6
Turbidity	NTU	92.7	18.5	6.1	10.7
Chloride	mg/L	68	117	131	99
Calcium	mg/L	16	23	26	24
Magnesium	mg/L	15	19	24	21
Sodium	mg/L	62	76	87	74
Potassium	mg/L	4	12	5	5
Total Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L	0.002	0.001	0.001	<0.001
Total Copper	mg/L	0.004	0.002	0.002	0.001
Total Manganese	mg/L	0.04	0.016	0.008	0.011
Total Nickel	mg/L	0.001	<0.001	<0.001	<0.001
Total Zinc	mg/L	0.011	<0.005	<0.005	<0.005
Total Iron	mg/L	2.49	0.94	0.21	<0.05
Oil and Grease	Visual	None visible	None visible	None visible	None visible

Graphs 7.1 - 7.5 present the water quality parameters in Chapmans Creek over the last two reporting periods. There are no site specific trigger values for the surface water monitoring sites, however the following water quality parameters and values are used as the basis for impact assessment as detailed in the SWMP:

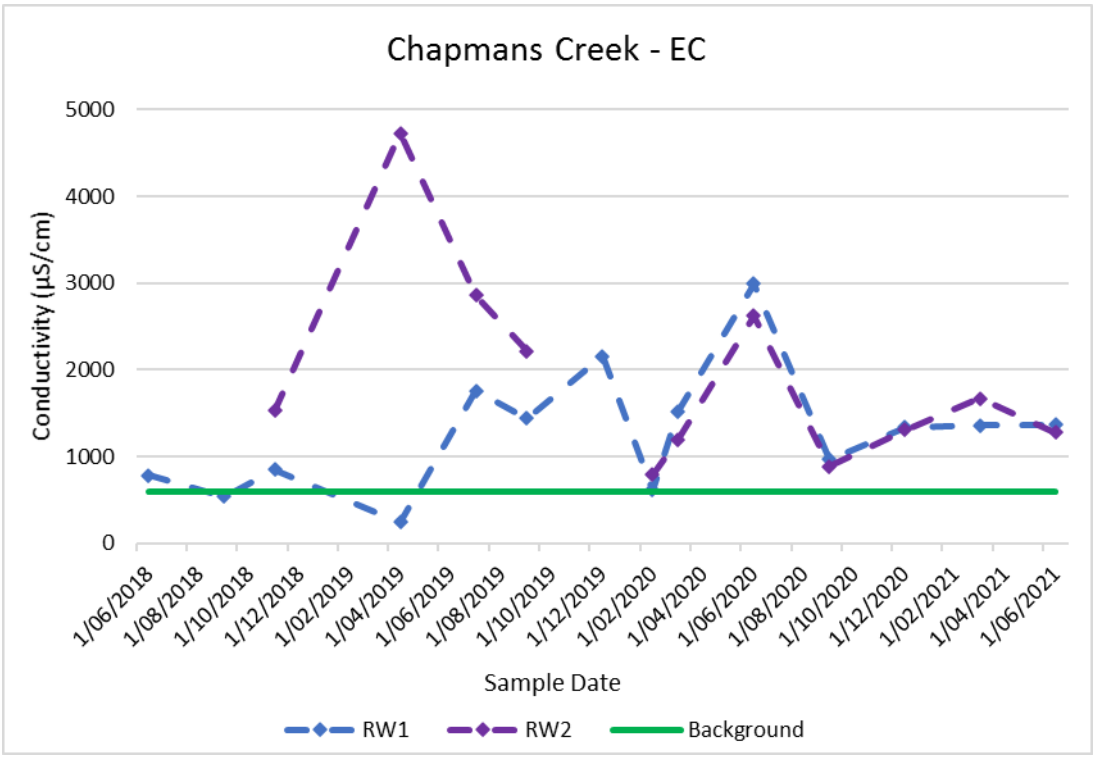
- ❒ pH 6.5 – 8.5
- ❒ Electrical conductivity <2,000 uS/cm
- ❒ Total suspended solids <50mg/L

The monitoring results for the past two periods show results below the assessment criteria for pH and suspended solids with fluctuating conductivity on a number of occasions exceeding the criteria for both sites in Chapmans Creek. Given the ephemeral nature of the creek it is difficult to determine trends in the water quality and therefore the cause of changes in water quality. The fluctuation in conductivity is likely due to the variation from stagnant water through to high flow events and movement of salts through the system.



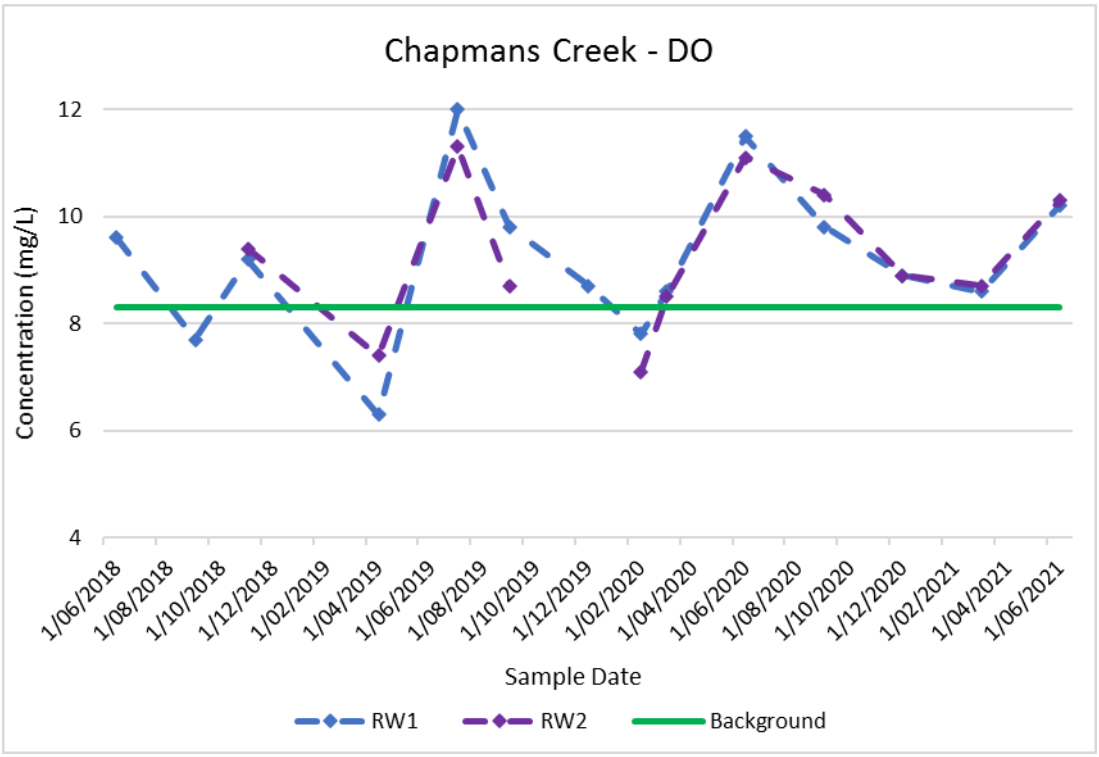
Graph 7.1 – Chapmans Creek pH

The data shows that water quality in Chapmans Creek is largely influenced by groundwater baseflow. Salt levels at RW1 and RW2 respectively average at 1282 µS/cm and 1917 µS/cm (Graph 7.2) with a pH slightly above neutral (Graph 7.1). During high flow, the salt content would likely decrease following initial flushing of the system.

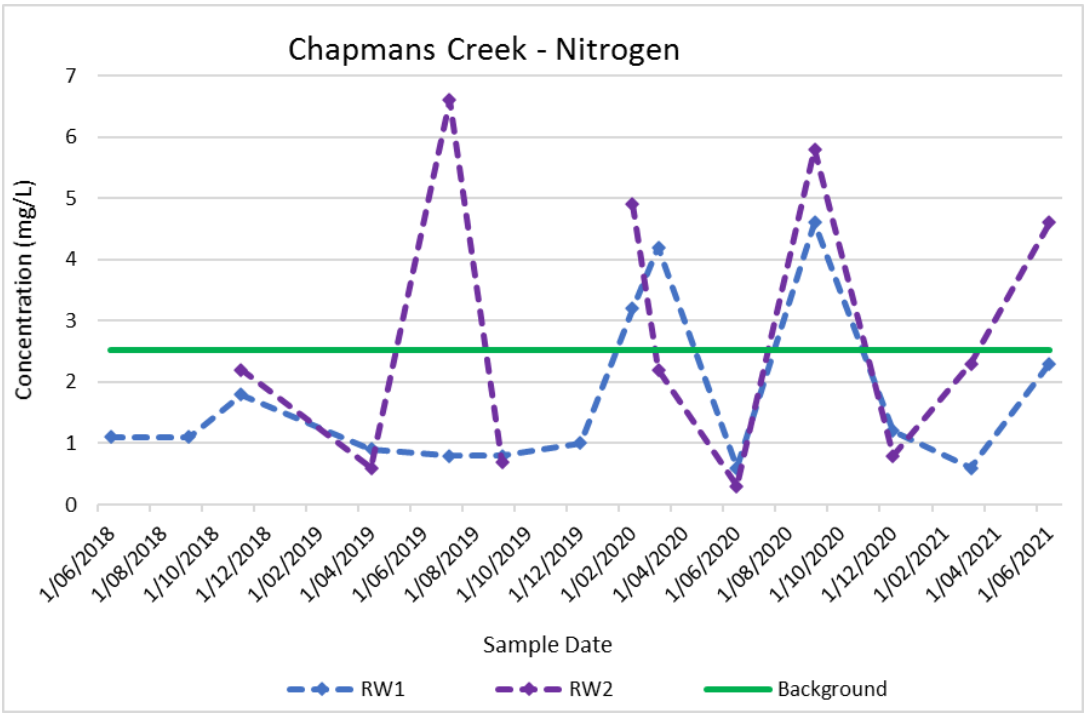


Graph 7.2 - Chapmans Creek Electrical Conductivity

Dissolved oxygen levels presented in Graph 7.3 remain in a range for healthy aquatic biodiversity in line with background levels from the upstream Site I.



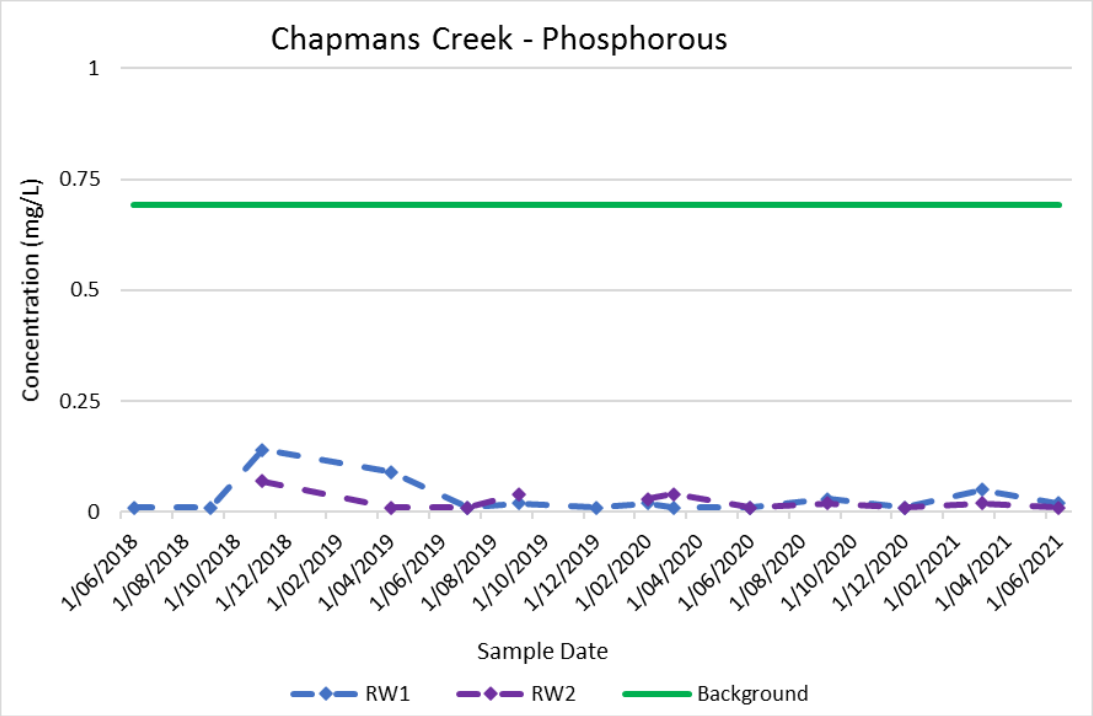
Graph 7.3 – Chapmans Creek Dissolved Oxygen



Graph 7.4 – Chapmans Creek Total Nitrogen

Levels of total Nitrogen show fluctuation which is likely due to fertilisation of the agricultural properties upstream of the quarry (Graph 7.4). Total Phosphorus levels shown in Graph 7.5

are consistently below 0.2mg/L and are well below the background average of 0.7mg/L at Site I.



Graph 7.5 – Chapmans Creek Total Phosphorous

7.2.4 Stream Health Monitoring

As with most ephemeral streams, the intermittent flow events in Chapmans Creek give rise to infrequent but often high sediment movement. Ephemeral streams tend to remain apparently stable for long periods until major storm events when high flows can cause channel scour and mass movement of sediment downstream. Although these are natural events, the loss of riparian vegetation through past agricultural activities can result in higher than normal instability of channels and banks. Four monitoring points have been identified along the creek and are monitored quarterly to observe changes over time. The results of this monitoring are included in Appendix C.

During the reporting period, no evidence of any further erosion was recorded at the four monitoring points. Erosion is minimal at point 1 and 2, as banks are shallow and are well vegetated. Highly disturbed riparian vegetation is visible at site 3. The roots of large trees growing on the embankment are exposed due to erosion, although no changes were observed in 2020/2021 or since monitoring commenced in 2018. The gully erosion at monitoring site 4 has not extended during this period, however continued monitoring is required following heavy rainfall.

There has been no change to the four monitoring points over the reporting period, and the creek is deemed to currently be in a degraded but stable state. Quarterly monitoring will continue over the coming reporting period with additional monitoring following heavy rainfall.

7.2.5 Future Improvements

Surface water quality remains within a healthy range and will continue to be monitored on a quarterly basis in the 2021/2022 reporting period and beyond.

7.3 Groundwater Management

7.3.1 Groundwater Monitoring

Baseline data on static water level, water quality and rock permeability was obtained from a broad network of monitoring bores distributed around the current and future quarry area. Ongoing monitoring will continue with two groundwater monitoring bores GM6 and GM13 located in proximity to the pit. The direction of the groundwater flow is generally to the northwest following the surface topography.

The Groundwater Monitoring component of the Gunlake Groundwater Management Plan provides a set of trigger levels for investigating any potential adverse groundwater impacts. The initial triggers relate to physical and chemical descriptors of water quality which may be influenced by quarrying activities. These triggers will be updated as the range of natural background variability is refined through ongoing monitoring. The current triggers relating to groundwater quality are:

- A 'significant' decrease in pH (pH less than 6); and
- A gradually increasing trend in EC and TDS values in GM6 and GM13.

Table 7.5 presents average analytical results for the background groundwater as sampled from a series of 9 groundwater monitoring bores determined from samples collected in June 2007 prior to the commencement of quarrying activities.

Table 7.5 Summary of Background Bore Water Quality

Analyte	Range	Average
pH (pH units)	6.8-7.3	6.9
EC (uS/cm)	720-7210	3232
Sodium (mg/L)	110-575	293
Calcium (mg/L)	17-530	224
Potassium (mg/L)	2.5-18	9.7
Magnesium (mg/L)	17-435	177
Ammonia (mg/L)	<0.1-1.4	0.7
Chloride (mg/L)	110-2620	1093
Sulphate (mg/L)	3-44	17
Bicarbonate (mg/L)	210-760	490
Carbonate (mg/L)	<1	<1
Nitrate (mg/L)	<0.1-7.1	2.02
Nitrite (mg/L)	<0.1-0.33	0.14
Phosphate (mg/L)	<0.01-0.04	0.02
Total Phosphorous (mg/L)	0.33-4.0	1.16
Copper (mg/L)	0.001-0.003	0.002
Lead (mg/L)	<0.001	<0.001
Zinc (mg/L)	0.002-0.010	0.005
Cadmium (mg/L)	<0.0002	<0.0002

Analyte	Range	Average
Chromium (mg/L)	<0.01	<0.01
Nickel (mg/L)	<0.01	<0.01
Total Iron (mg/L)	14-82	42
Dissolved Iron (mg/L)	<0.01-0.69	0.09
Arsenic (mg/L)	<0.01	<0.01
Mercury (mg/L)	<0.0001	<0.0001

Tables 7.6 to 7.7 show the monitoring data during the reporting period for bores GM6 and GM13.

Table 7.6 Groundwater Quality Monitoring Results and Summary GM 6

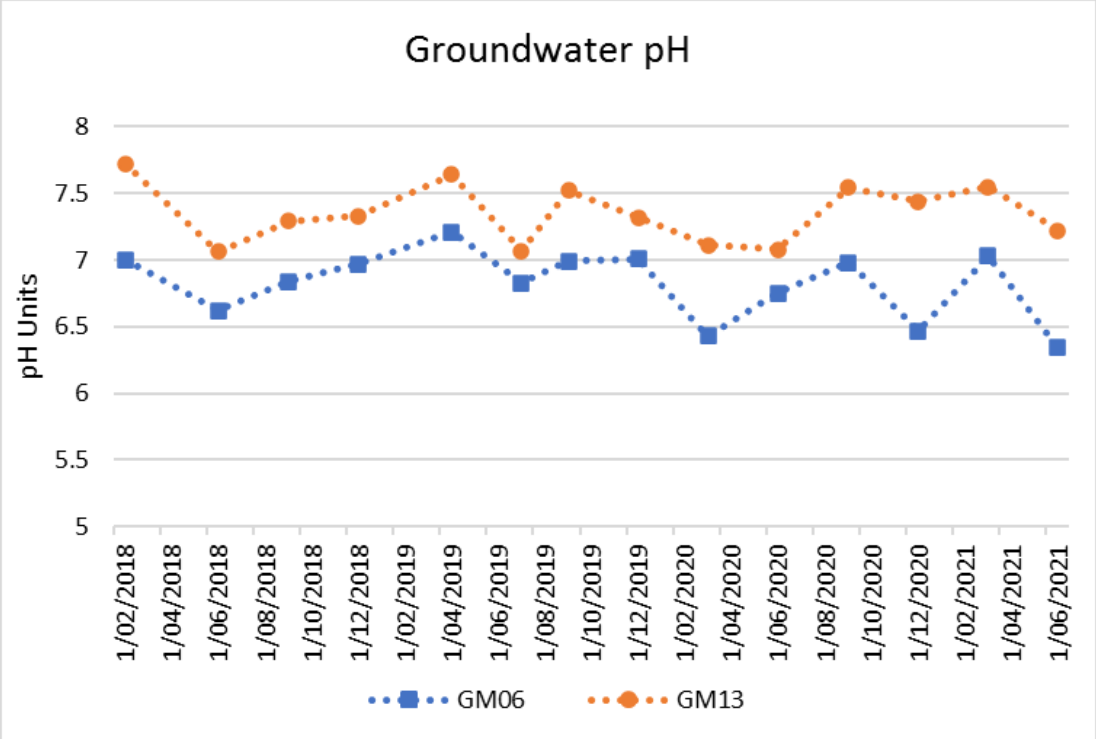
Parameter	Unit of Measure	Sample Date:1/09/20	Sample Date:15/12/20	Sample Date:16/3/21	Sample Date:15/6/21	Reporting Period Average
pH	pH units	6.98	6.47	7.03	6.34	6.705
Electrical Conductivity	µS/cm	206	224	239	165	208.5
Total Dissolved Solids	mg/L	134	146	155	107	135.5
Hardness	mg/L	40	36	49	33	39.5
Chloride	mg/L	42	39	37	23	35.25
Sulfate	mg/L	3	7	3	5	4.5
Bicarbonate alkalinity	mg/L	33	47	56	38	43.5
Carbonate alkalinity	mg/L	<1	<1	<1	<1	<1
Hydroxide alkalinity	mg/L	<1	<1	<1	<1	<1
Total alkalinity	mg/L	33	47	56	38	43.5
Calcium	mg/L	6	6	8	5	6.25
Iron (dissolved)	mg/L	<0.05	0.15	1.73	0.12	0.666667
Magnesium	mg/L	6	5	7	5	5.75
Potassium	mg/L	4	3	4	4	3.75
Sodium	mg/L	30	26	27	22	26.25
Iron (total)	mg/L	0.51	3.71	4.24	0.54	2.25
Arsenic	mg/L	<0.001	0.002	0.002	<0.001	0.002
Cadmium	mg/L	<0.0001	0.0001	0.0004	0.0001	0.0002
Chromium	mg/L	0.003	0.007	0.005	0.002	0.00425
Copper	mg/L	0.006	0.005	0.005	0.009	0.00625
Lead	mg/L	0.002	0.025	0.024	0.006	0.01425
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.032	0.01	0.019	0.008	0.01725
Zinc	mg/L	0.03	0.026	0.03	0.013	0.02475
Ammonia as N	mg/L	<0.01	0.02	0.06	<0.01	0.025
Nitrite as N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate as N	mg/L	0.16	0.2	0.14	0.5	0.25
Total Phosphorus as P	mg/L	0.06	0.18	0.2	0.09	0.1325
Reactive Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01

Table 7.7 Groundwater Quality Monitoring Results and Summary GM 13

Parameter	Unit of Measure	Sample Date:1/09/20	Sample Date:15/12/20	Sample Date:16/3/21	Sample Date:15/6/21	Reporting Period Average
pH	pH units	7.54	7.44	7.55	7.22	7.4375
Electrical Conductivity	µS/cm	618	4100	1700	454	1718
Total Dissolved Solids	mg/L	402	2660	1100	295	1114.25
Hardness	mg/L	175	1350	517	149	547.75
Chloride	mg/L	154	1040	424	43	415.25
Sulfate	mg/L	6	15	9	10	10
Bicarbonate alkalinity	mg/L	90	370	168	156	196
Carbonate alkalinity	mg/L	<1	<1	<1	<1	<1
Hydroxide alkalinity	mg/L	<1	<1	<1	<1	<1
Total alkalinity	mg/L	90	370	168	156	196
Calcium	mg/L	32	243	90	30	98.75
Iron (dissolved)	mg/L	<0.05	<0.05	<0.05	0.08	0.08
Magnesium	mg/L	23	181	71	18	73.25
Potassium	mg/L	4	11	6	7	7
Sodium	mg/L	52	252	110	38	113
Iron (total)	mg/L	0.3	0.81	1.08	1.74	0.9825
Arsenic	mg/L	<0.001	<0.001	<0.001	0.001	0.001

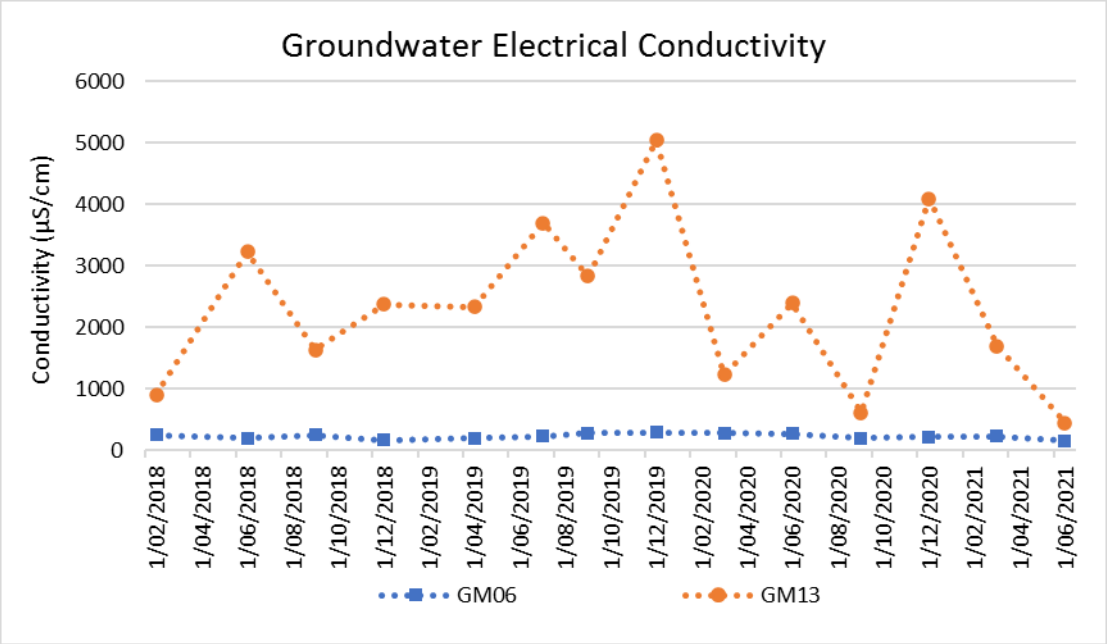
Parameter	Unit of Measure	Sample Date:1/09/20	Sample Date:15/12/20	Sample Date:16/3/21	Sample Date:15/6/21	Reporting Period Average
Cadmium	mg/L	<0.0001	0.0005	0.0004	<0.0001	0.00045
Chromium	mg/L	0.001	0.002	0.003	0.003	0.00225
Copper	mg/L	0.007	0.005	0.014	0.012	0.0095
Lead	mg/L	<0.001	0.002	0.002	0.005	0.003
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.001	<0.0001
Nickel	mg/L	0.003	0.038	0.011	0.006	0.0145
Zinc	mg/L	0.011	0.013	0.018	0.019	0.01525
Ammonia as N	mg/L	<0.01	<0.01	0.02	0.01	0.0125
Nitrite as N	mg/L	<0.01	0.05	0.02	<0.01	0.0225
Nitrate as N	mg/L	1.46	0.99	1.39	0.05	0.9725
Total Phosphorus as P	mg/L	0.01	0.01	0.04	0.07	0.0325
Reactive Phosphorus	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01

The monitoring to date shows that the groundwater varies from slightly basic at GM13 to slightly acidic at GM06, having a narrow range of 1pH unit from 6.34 to 7.55 across the sites for the reporting period (Graph 7.6). The lowest pH recorded was 6.34 for GM6. Subsequent monitoring showed a normal pH range and no further investigation under the trigger action response plan was required. It should be noted that the quarry does not undertake any processes, store or use any materials that would cause a low pH to occur in the groundwater.



Graph 7.6 – Monitoring Bore Ground Water - pH

The bores show typical groundwater characteristics with conductivity ranging from 165 µS/cm to 239 µS/cm in bore GM6 and 454 µS/cm to 4,100 µS/cm for GM13 (Graph 7.7). The concentration of GM6 has remained relatively consistent, although GM13 shows fluctuating concentrations with a gradual increase during the prolonged drought conditions, followed by a decline after high rainfall events.



Graph 7.7 – Monitoring Bore Ground Water - Electrical Conductivity

The salt content consists largely of chloride, magnesium and sodium ions. The background levels shown in Table 7.5 show conductivity levels in excess of 7,000 uS/cm but having the same characteristics being dominated by chloride, sodium, magnesium and low levels of sulphates and metals with the exception of iron. Variability in concentration of parameters between sites indicate local changes in geology, particularly for conductivity and iron. There has been no significant change in metal concentrations in either bore during the reporting period and remain low.

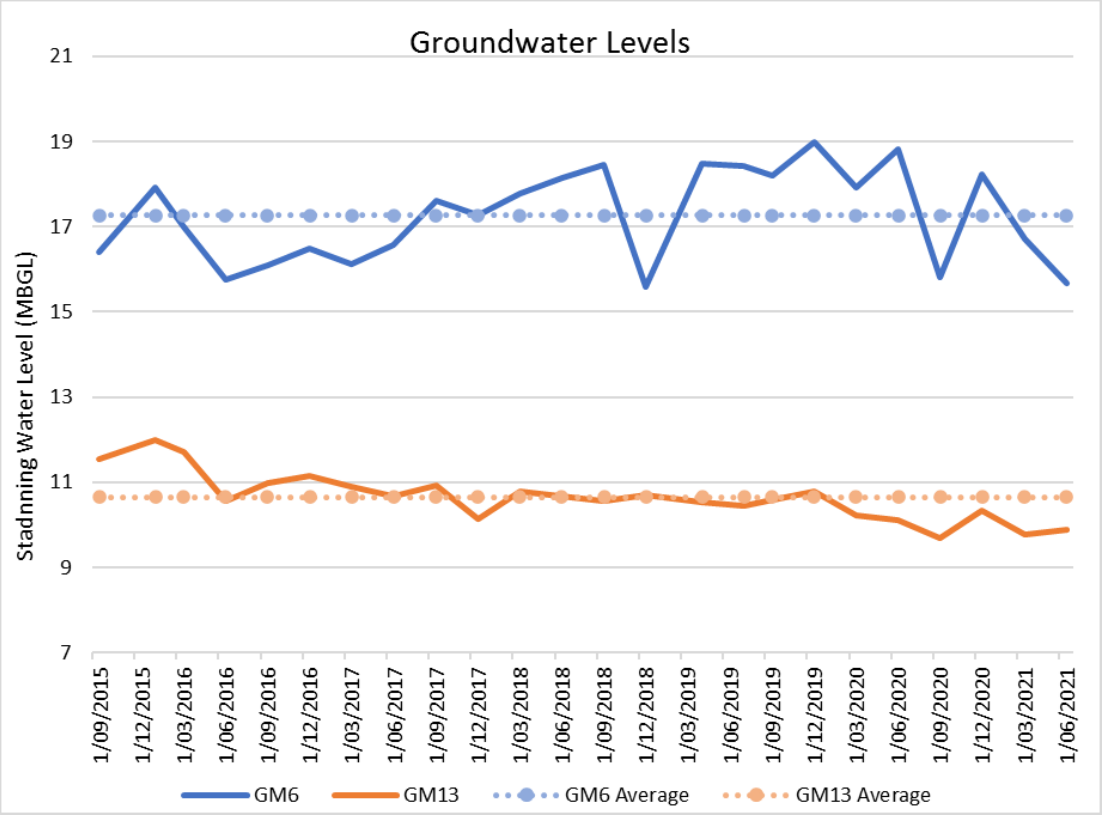
There are indications of some low levels of nutrients such as nitrate and phosphorus which could have come from agricultural practices in the area.

7.3.2 Groundwater Levels

The EIS has made assumptions of predicted groundwater levels using a series of transient models used to simulate the staged expansion of the extension project. The incorporation of the expanded pit shows levels of stress on the groundwater system. At the end of each development stage, the EIS has predicted the following impacts to the groundwater table:

- Stage 1: During the first five years excavation will only occur above the groundwater table, and no impacts on groundwater are predicted.
- Stage 2: Years 5 – 10 will see an interception of the groundwater table, resulting in a predicted 2m drawdown contour extending 300m from the edge of the pit.
- Stage 3: From year 10 – 20, the 2m drawdown contour will extend up to 1km from the pit footprint edge.
- Stage 4: During years 20 – 30, it is predicted that the drawdown will extend up to 1.5km.

The groundwater levels recorded during the reporting period are presented in Graph 7.8 below.



Graph 7.8 - GW6 and GW13 Standing Water Level

The results of the bore monitoring are in line with the projections of the EIS. Increases in standing water level are seen to be a result of recharge of local aquifers following rainfall while a drop in standing water level coincides with periods of low rainfall rather than quarrying activities to date. The long term trend for bore GW06 shows fluctuating standing water levels between 15.5 MBGL and 19MBGL, which was evident during the reporting period. GM13 follows a similar but less pronounced trend with an average standing water level of 10.7MBGL and a range of 2m (Graph 7.8). GM 13 is located closer to the pit than GM6 and has had a positive increase to the standing water level since the rains in early 2020. Bore monitoring will continue in the coming reporting period and expansion of the monitoring network with additional bore/s on the western side of the quarry will be examined.

7.3.3 Water Take

Gunlake quarry holds water access licence WAL42340 which allows for 37ML groundwater take per annum. No groundwater was extracted or used during the reporting period. The EIS predicts that groundwater will not be intercepted in the pit until year 5 of quarry operations.

7.3.4 Future Improvements

There are no apparent significant variations or developing trends in groundwater quality as a result of the quarrying activity undertaken to date. The monitoring program will continue on a quarterly basis in the 2021/2022 period.

8. REHABILITATION

8.1 Rehabilitation Performance and Objectives

The Applicant must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and must comply with the objectives in Table 8.1.

Table 8.1 Rehabilitation Objectives

Feature	Objective
Site (as a whole)	• Safe, stable and non-polluting • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible • Final landform has minimal visual impact when viewed from surrounding land
Surface Infrastructure	• Decommissioned and removed, unless otherwise agreed by the Secretary
Land identified as the Biodiversity Area	• Conserved and enhanced with native, endemic vegetation consistent with the objectives
Riparian Corridors along Chapman Creek and its tributaries	• Stabilised and vegetated
Quarry benches	• Landscaped and vegetated using native tree and understorey species
Final Void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void

Table 8.2 Rehabilitation Performance

Area of Rehabilitation	Site Comment
Extent of the operations and rehabilitation at completion of the reporting period	During the reporting period the quarry was expanded further to the south and west as approved in the Gunlake Extension Project. Existing rehabilitation on the bund wall was maintained. Approximately 300 trees were planted on overburden benches, along with seeding and stormwater erosion works.
Agreed post- rehabilitation land use	The final land use will comprise the final void, rehabilitated emplacement area, conservations areas and agricultural areas within the Gunlake property.
Key rehabilitation performance indicators	The following performance criteria apply: • Key indicator species present in equivalent density to target vegetation community. • Indicator species successfully seed in two consecutive years.

Area of Rehabilitation	Site Comment
Any other Rehabilitation Taken including: • Exploration activities; • Infrastructure; • Dams; and • The installation or maintenance of fences, bunds and any other works	There was no other rehabilitation undertaken during the reporting period. Fencing of the Biodiversity area was completed. Ongoing repair of erosion controls within stormwater management system.
Any rehabilitation areas which have received formal sign off from DRG	N/A
Variations to activities undertaken to those proposed (including why there were variations and whether DRG was notified)	No
Outcomes of trials, research projects and other initiatives	No trials were undertaken during the reporting period
Key issues that may affect successful rehabilitation	There are a number of issues that affect rehabilitation success and these include low volume of topsoil, extreme drought condition, feral animals, and seedling quality.

8.2 Progressive Rehabilitation Strategy

Gunlake has adopted a progressive approach to the rehabilitation of disturbed areas to ensure that where practicable areas where quarrying or overburden placement is completed are progressively shaped and vegetated to provide a stable landform. The rehabilitation of the site has been designed to integrate the re-establishment of agricultural land with the conservation of native vegetation and the creation of a riparian habitat corridor.

The outer extent of the overburden emplacement bund to the north east of the processing area has been shaped and revegetation work undertaken on the completed batters progressively (Plates 8 and 9). Maintenance of the rehabilitated area was undertaken during the reporting period, with infill planting of tubestock, weed control and maintenance of water control structures.

As previously discussed, the drought significantly restricted the rehabilitation activities at the site during the past two reporting periods. Water levels in the drop cut and process water dam were at historic low levels and water was required to be maintained for dust suppression, processing and firefighting, therefore leaving no water for irrigation. Following rain in February 2020, the first three completed batters at the northern end of the western overburden emplacement area were planted with 600 tubestock to commence rehabilitation of this area (Plates 10 and 11). Due to ongoing rain there has been success with the establishment of the tubestock with significant growth. Rehabilitation continued in this area during the reporting period with a further 300 hundred tubestock planted.

Plate 8 Rehabilitation of Bund Wall

Plate 9 Rehabilitation of Bund Wall / Conservation Area

Plate 10 Rehabilitation Works Western Overburden Emplacement Area

Plate 11 Rehabilitation Western Overburden Emplacement Area

8.3 Key Environmental Issues and Management Measures

Due to active quarry development and emplacement of overburden rehabilitation areas are essentially limited to the noise bund wall and the northern end of the western emplacement overburden emplacement area. Rehabilitation success was limited during 2018 through to early 2020 due to prolonged drought conditions, but subsequently wetter conditions have seen good vegetation growth. Replacement of unsuccessful tubestock, weed and erosion control comprise the main management measures for the rehabilitation area at present.

8.4 Actions for the Next Reporting Period

Table 8.3 Actions for the Next Reporting Period

Action	Site Comment
Describe the steps to be undertaken to progress agreement during next reporting period, where final rehabilitation outcomes have not yet been agreed between stakeholders	There will be further rehabilitation of the bund wall and western overburden emplacement following final shaping in the next Annual Review period.
Outline proposed rehabilitation trials, research projects and other initiatives to be undertaken during next reporting period.	Details of this will be provided in the next Annual Review following determination of Mod 1 of the LEC Consent. Monitoring of the conservation and offset areas will be undertaken during the period.
Summary of rehabilitation activities proposed for next report period.	There will be further rehabilitation of the bund wall and western overburden emplacement following final shaping as well as further maintenance and weed spraying in the next Annual Review period.

9. COMMUNITY RELATIONS

9.1 Community Consultation

Gunlake management is required keep the local community and relevant agencies informed about the construction, operation and environmental performance of the project. A Community Consultative Committee (CCC) has been formed. Information is provided to the CCC along with other members of the community on request. The CCC is independently chaired and currently meets approximately three to four times per year. Minutes are available on the website.

Four CCC meetings were held during the reporting period, on the 17th July 2020, 23rd October 2020, 26th February 2021 and 21st May 2021. These meetings discussed the Primary Transport Route Update, current employment, road use, provided a community update, discussed the LEC Consent Mod 1 and the LEC Consent Mod 2 as well as the proposed Continuation Project SSD. In addition to the CCC meetings, Gunlake distributed newsletter updates and hosted a Community Information Session to provide members of the public with information relating to the quarry operations and in particular discuss details of the LEC Mod 2 and the proposed Continuation Project SSD.

Gunlake is committed to supporting the local community and welcomes input from the Committee on other local Community events or projects that may benefit from Gunlake's support. Gunlake participates in numerous local community programs and events including:

- annual commitments:
  - Goulburn District Education Foundation (major contributor);
  - Marulan Australia Day Committee (major sponsor);
  - Tallong Apple Day Festival (major sponsor);
  - Marulan Chamber of Commerce Events: Marulan Kite Festival Art Show (major sponsor) and NSW Horologists Exhibition (major sponsor); and
  - trades training scholarships.
- Other recent community commitments and initiatives include:
  - Marulan Public School: major Contributor to Playground upgrade;
  - Marulan Rural Fire Brigade: major contribution to fire station training room upgrade;
  - Goulburn Mulwaree Council, Marulan Village Working Party: co-contributor to the barbeque cover;
  - Bundanoon Wombat Care: loan of vehicle after bushfires;
  - Gibraltar Road residents crown road upgrade: donated construction materials; and
  - Marulan Country Women's Association: co-contributor to the provision of a community defibrillator.
- Gunlake also participates in:
  - the Goulburn Mulwaree Council: Marulan Village Plan Working Party member;
  - the Goulburn Secondary Schools Work Experience Placement Program: committee member and participant in local career expos; and

– Regional Development Australia: ongoing panel member at a local 'jobs agenda' forums.

Community liaison and support will continue in the coming reporting period.

9.2 Blast Liaison

In accordance with Schedule 3, Condition 13 of the LEC Consent, Gunlake undertakes a notification process as detailed in the Noise and Blast Management Plan:

9.3 Community Complaints

A complaints register is provided on Gunlake's website. No complaints were received during the reporting period.

10. INDEPENDENT AUDIT

Condition 11 of Schedule 5 of the LEC Consent for the project requires an independent environmental audit to be undertaken within a year of commencing development under the consent and every three years thereafter. The first independent environmental audit covered the date of commencement of SSD 2017/108663, that is, 7th August 2018 to 30th September 2019. The audit report is available on the Gunlake Quarries website. The next audit is due to be undertaken in late 2022.

10.1 Audit Recommendations and Actions

The following table details the status of implementation of recommendations from the independent audit for actions that were still outstanding or partially complete at the start of the reporting period.

Table 10.1- Summary of Recommendations – Outstanding Actions

Recommendations from Audit	Actions
Update the Rehabilitation and Biodiversity Offset Management Plan following determination of the SSD MOD1 application and approval from OEH of the BioBanking Agreement.	Plan will be updated within three months of determination of SSD LEC Consent MOD 1 which was heard in the NSW L&E Court in February/March 2021. Judgement is expected early in the coming reporting period.
Spray areas of tussock and blackberry	Action works commenced with on-site weed spray vehicle and trained staff. Weed control strategy ongoing.
When rainfall improves determining the presence of seeps and springs on nearby privately-owned land in accordance with Condition 22 iv) point 6.	All accessible seeps have been investigated, access to adjacent properties will now be required.
When soil moisture improves, revegetated bare and eroded sections within the rehabilitation areas.	Monitoring rainfall and regrowth which is extensive at present. Reseeding of certain areas ongoing.
Ensure all stormwater ponds are desilted following storm events to maintain capacity.	Ongoing.
Determine species diversity in the Biodiversity Offset Area to enable comparison with undisturbed vegetation communities. Plan for the potential for additional sowing or planting of tube stock to supplement ground cover and shrubs which are currently missing.	All work will be performed in accordance with the Biobank and Conservation Agreements, commencement pending approval of LEC Consent Mod 1.

11. INCIDENTS AND NON-COMPLIANCES

No incidents occurred at Gunlake Quarry during the reporting period, and as such the Pollution Incident Response Management Plan was not activated. Non-compliances relating to dust monitoring are described in Section 6.4.6.

Non-compliances identified in the Independent Environmental Audit were of an administrative nature and did not pose a risk to the environment, increase environmental impacts or otherwise detract from the intent of the conditions and were addressed in Gunlake's response to DPIE.

12. ACTIVITIES PROPOSED FOR NEXT AEMR PERIOD

The following activities are planned to be undertaken in the coming reporting period:

- Further development of quarry benches in the Gunlake Extension Project Area;
- Rehabilitation of completed benches on western overburden emplacement area and eastern noise bund wall;
- Ongoing program for desilting of sediment ponds and stormwater erosion control system;
- Continue environmental monitoring in accordance with management plans, EPL and consent requirements;
- Continue to update the website with monitoring data;
- Management of conservation areas as per conservation agreement;
- Management of offset areas as per BioBanking agreement;
- Spraying of tussock and blackberry focused in BioBanking area and riparian zones;
- Determination of LEC Consent Mod 1 - reduction in biodiversity areas;
- Finalisation of the Biodiversity and Rehabilitation Management Plan;
- Review of management plans following approval of LEC Consent Mod 2 in June 2021 – truck movement and tonnage increase;
- Preparation of EIS to support the SSD Gunlake Continuation Project application;
- Expand air monitoring network to include a $PM_{2.5}$ HVAS unit at R1; and
- Ongoing driver training in accordance with the Driver Code of Conduct and Transport Management Plan.

APPENDIX A – Development Consent

Annexure B

DETERMINATION OF DEVELOPMENT APPLICATION BY GRANT OF CONSENT

Development Application No: Land and Environment Court proceedings 108663 of 2017 (SSD7090).

Development: Development of a hard rock quarry as an extension of the existing quarry footprint (previously approved pursuant to MP07_0074);

- transportation from the site of no more than 2 million tonnes per annum (Mtpa) of quarry products from the site per year by road;
- transporting quarry products by truck via two approved transport routes (the Primary Transport Route and the Secondary Transport Route);
- additional overburden emplacements;
- supporting infrastructure;
- 24 hour per day crushing & processing; and
- blasting

Site: 715 Brayton Road, Marulan (contained in Lot 13 DP1123374, Lot 271 DP750053, Lot 1 DP1246715, Lot 12 DP1123374 and Lot 1 DP841147)

Schedule of Modifications:

Date approved	Modification Application Number	Decision maker (Land and Environment Court or relevant council)	Proceedings Name and Number (if applicable)
9 June 2021	Land and Environment Court Proceedings 327172 of 2020	Land and Environment Court	Land and Environment Court Proceedings 327172 of 2020

Date of determination: 30 June 2017

Date from which consent takes effect: Date of determination - 30 June 2017 (and modified on 9 June 2021)

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DEFINITIONS

Aboriginal item or object	Any item or object that provides evidence of the use of an area by Aboriginal people, as defined under the *National Parks and Wildlife Act 1974*
AHD	Australian Height Datum
Annual Review	The review required by condition 10 of Schedule 5
Applicant	Gunlake Quarries Pty Ltd, or any other person/s who rely on this consent to carry out the development that is subject to this consent
BCA	Building Code of Australia
Biodiversity offset strategy	The conservation and enhancement strategy described in the EIS
Calendar Month	The first day of the month until the last day of the month
CCC	Community Consultative Committee
Conditions of consent	Conditions contained in Schedules 2 to 5 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
Council	Goulburn Mulwaree Council
Cured concrete waste	Cured concrete waste from a batch plant as defined in clause 49, Definitions of waste classifications, in Schedule 1 of the *POEO Act,* as in force from time to time
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Environment
Development	The development as described in the documents listed in condition 2(a) of Schedule 2
DPI Water	Department of Primary Industries – Water
DPI Fisheries	Department of Primary Industries – Fisheries
DRG	Division of Resources and Geosciences within the Department
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement titled *Gunlake Quarry Extension Project,* dated April 2016 and prepared by EMM, and the Response to Submissions report titled *Gunlake Quarry Extension Project Response to Submission*s, dated September 2016 and prepared by EMM
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
GPS	Global Positioning System
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
INP	*NSW Industrial Noise Policy* (NSW EPA, 2000)
Laden trucks	Trucks transporting quarry products from the site and/or trucks transporting cured concrete waste to the site
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 consent, 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 consent
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
Mitigation	Activities associated with reducing the impacts of the development
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
OEH	Office of Environment and Heritage
POEO Act	*Protection of the Environment Operations Act 1997*
Primary transport route	Route from the site along Brayton Road, Ambrose Road and Red Hills Road
Privately-owned land	Land that is not owned by a public agency, the Applicant (or its subsidiary) or another quarry-owning company
Public infrastructure	Linear and other 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, stockpiling and transportation of extractive materials carried out on the site, the associated removal of vegetation, topsoil and overburden, and the associated emplacement of overburden
Quarry products	Includes all saleable quarry products, but excludes tailings and other wastes
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 development to a good condition and for the purpose of establishing a safe, stable and non-polluting environment
RMS	Roads and Maritime Services
Secondary transport route	Route from the site to the Marulan interchange on the Hume Highway, along Brayton Road, across George Street, and under the Hume Highway
Secretary	Secretary of the Department, or nominee
SEE MOD 2	**Statement of Environmental Effects prepared by EMM Consulting dated November 2020, the Response to Submissions dated March 2021 and supplementary noise and air quality impact assessments prepared by EMM Consulting dated 23 April 2021**
Site	~~The land identified in Schedule 1~~ **Lot 13 in Deposited Plan 1123374** **Lot 271 in Deposited Plan 750053** **Lot 1 in Deposited Plan 1246715** **Lot 12 in Deposited Plan 1123374** **Lot 1 in Deposited Plan 841147**
Truck movements	Truck movements mean heavy vehicle one-way trips, either entering or leaving the site

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant must carry out the development:
   (a) generally in accordance with the EIS **and SEE (MOD 2)**; and
   (b) in accordance with the conditions of this consent, the Development Layout Plan and the Statement of Commitments.

   Notes: The Development Layout Plan is included in Appendix 1
   The Statement of Commitments is included in Appendix 2

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172

3. If there is any inconsistency between the documents in condition 2(a), the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail over all documents in condition 2(a) to the extent of any inconsistency.

4. The Applicant must comply with any 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 consent (including any stages of these documents);
   (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this consent; and
   (c) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Quarrying Operations

5. The Applicant may carry out quarrying operations on the site for 25 years from the date of notification, as stipulated under Condition 10(a), Schedule 2.

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

6. The Applicant must not undertake quarrying operations below a level of 572 m AHD.

7. The Applicant must not transport more than ~~2~~ **2.6** million tonnes of quarry products from the site in any calendar year.

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8. The Applicant must not receive more than 30,000 tonnes of cured concrete waste on the site in any calendar year. The volume of cured concrete waste held on site at any one time must not exceed 2,500 tonnes. No other material classified as waste under the *EPA Waste Classification Guidelines 2014* (or its latest version) may be received on site.

Quarry Product Transport

9.

The Applicant must limit truck movements to:

(a) an average of 220 inbound movements and 220 outbound movements, including no more than 25 outbound movements on the secondary transport route, per working day (averaged over the working days in each quarter); and
(b) a maximum of 295 inbound movements and 295 outbound movements, including no more than 38 outbound truck movements on the secondary transport route, per working day.

Note: In this condition:
'working day' means any day on which the Applicant may load and despatch trucks (see condition 4 of Schedule 3); and
'quarter' means a three-monthly period, comprising January to March, April to June, July to September and October to December (inclusive) in each calendar year.

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172

NOTIFICATION OF COMMENCEMENT

10. The Applicant must notify the Department in writing of the date on which it will commence:
(a) development permitted under this consent, at least 14 days prior to commencing that development; and
(b) quarrying operations under this consent, at least 14 days prior to commencing those operations.

SURRENDER OF EXISTING DEVELOPMENT CONSENTS

11. Within six months of commencing development under this consent, or as otherwise agreed by the Secretary, the Applicant must surrender the project approval MP 07_0074 for the Gunlake Quarry granted on 24 September 2008, in accordance with the EP&A Regulation.

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. The surrender of the project approval should not be understood as implying that works legally constructed can no longer be legally maintained or used.

12. Following the commencement of development under this consent, the conditions of this consent shall prevail to the extent of any inconsistency with the conditions of project approval MP 07_0074.

STRUCTURAL ADEQUACY

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

Notes:
- *Under Part 4A of the EP&A Act, the Applicant 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 development or project.*

DEMOLITION

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

PROTECTION OF PUBLIC INFRASTRUCTURE

15. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:
(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 21 of Schedule 2.

OPERATION OF PLANT AND EQUIPMENT

16. The Applicant must 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.

PRODUCTION DATA

17. The Applicant must:
    (a) provide annual quarry production data to DRG and the Secretary using the standard form for that purpose; and
    (b) include a copy of this data in the Annual Review.

IDENTIFICATION OF APPROVED EXTRACTION LIMITS

18. Prior to commencing quarrying operations under this consent, the Applicant must:
    (a) engage a registered surveyor to mark out the boundaries of the approved disturbance area; and
    (b) submit a survey plan of these boundaries with applicable GPS coordinates to the Secretary.

19. While quarrying operations are being carried out, the Applicant must ensure that the boundaries of the approved disturbance areas are clearly marked at all times in a manner that allows operating staff to clearly identify these approved limits.

20. The Applicant must ensure that:
    (a) no quarrying operations take place outside the approved disturbance area; and
    (b) the haul road between the extraction area and western overburden emplacement area is clearly marked at all times, has the minimum width required for safe hauling operations, and includes erosion and sedimentation measures to minimise impacts from the use of the road on Chapmans Creek.

    Note: The approved disturbance area includes the extraction area, the overburden emplacement areas, the infrastructure area, haul roads and ancillary areas required to carry out the development.

CONTRIBUTIONS TO COUNCIL

21. The Applicant must pay to Council an annual financial contribution toward the maintenance of Council-owned roads along its primary and secondary transport routes. The contribution must be determined in accordance with the *Goulburn Mulwaree s94 Development Contributions Plan 2009*, or any subsequent relevant contributions plan adopted by Council.

22. Following commencement of development under this consent, the contribution must be paid to Council within one month of the anniversary of the date of this consent each year and reported in the Annual Review.

SCHEDULE 3
ENVIRONMENTAL PERFORMANCE CONDITIONS

NOISE

Acquisition upon Request

1. Upon receiving a written request from the owner of the land listed in Table 1, the Applicant must acquire the land in accordance with condition 5 of Schedule 4.

Table 1: Land subject to acquisition upon request

Acquisition Basis	***Land***
Noise	R2

Note: The location of the residence referred to in Table 1 is shown on the figure in Appendix 3.

Additional Mitigation upon Request

2. Upon receiving a written request from the owner of any residence listed in Table 2, the Applicant must implement additional mitigation measures at the residence, in consultation with the landowner.

Table 2: Land subject to additional mitigation upon request

Mitigation Basis	***Residence***
Noise	R2, R7

Note: The location of the residences referred to in Table 2 is shown on the figure in Appendix 3.

These measures must be reasonable and feasible, and directed towards reducing the noise impacts of the development on the residence. Mitigation may include measures such as double-glazing, insulation and/or air conditioning.

If within 3 months of receiving this request from the owner, the Applicant and the owner 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.

Enclosure of Primary Crusher

3. The Applicant must achieve at least a 5 dB(A) reduction in the measured sound power level of the primary crusher by enclosing the primary crusher within two months of commencing development under this consent and prior to operating the primary crusher outside the hours of 7 am to 6 pm Monday to Saturday.

The Applicant must engage a suitably qualified and experienced acoustical practitioner to measure the sound power level of the primary crusher before and after constructing the enclosure to demonstrate that the enclosure has resulted in a 5 dB(A) sound power level reduction. A report from the acoustical practitioner must be provided to the Secretary within 30 days of constructing the enclosure.

Hours of Operation

4. The Applicant must comply with the operating hours set out in Table 3.

Table 3: Operating Hours

Activity	***Permissible Hours***
Construction	• 7 am to 6 pm Monday to Friday • 8 am to 1 pm Saturday • At no time on Sunday or public holidays
Blasting	• 9 am to 5 pm Monday to Friday • At no time on Saturday, Sunday or public holidays
Quarrying operations (excluding overburden removal/emplacement and drilling)	• 24 hours a day but not between 6 pm Saturday and 2 am Monday • At no time on Sunday or public holidays
Overburden removal/emplacement and drilling	• 7 am to 6 pm Monday to Saturday • At no time on Sunday or public holidays
Loading and dispatching	• 24 hours a day but not between 6 pm Saturday and 2 am Monday

	• At no time on Sunday or public holidays
Transportation on the primary transport route	• 24 hours a day but not between 6 pm Saturday and 2 am Monday • At no time on Sunday or public holidays
Transportation on the secondary transport route	• 6 am to 7 pm Monday to Saturday • At no time on Sunday or public holidays
Maintenance	• At any time provided that the activity is not audible at any privately-owned residence

5. The following activities may be carried out on the site outside the hours specified in condition 4:
   (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 Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

Noise Impact Assessment Criteria

6. The Applicant must ensure that operational noise generated by the development does not exceed the criteria in Table 4 at any residence on privately-owned land.

Table 4: Noise criteria dB(A)

Receiver	***Day*** $L_{Aeq\ (15\ minute)}$	***Evening*** $L_{Aeq\ (15\ minute)}$	***Night***	
			$L_{Aeq\ (15\ minute)}$	$L_{A1\ (1\ minute)}$
R7	38	38	38	45
R8	37	37	37	45
All other privately-owned residences	35	35	35	45

Note: Receiver locations referred to in Table 4 are shown on the figure in Appendix 3

Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy*. Appendix 4 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 4 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

7. The Applicant must:
   (a) implement best practice management to minimise the construction, operational and road transportation noise of the development, particularly during the evening and night periods;
   (b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 4);
   (c) carry out quarterly attended noise monitoring, unless otherwise agreed by the Secretary, to determine whether the development is complying with the relevant conditions of this consent; and
   (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent,

   to the satisfaction of the Secretary.

   Note: Required frequency of noise monitoring may be reduced if approved by the Secretary.

Noise Management Plan

8. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA;
   (b) be submitted to the Secretary within six months of commencing development under this consent and prior to commencing quarrying operations under this consent;
   (c) describe the measures that would be implemented to ensure:
      • compliance with the noise criteria in this consent;
      • best practice noise management is being employed;

- noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 4); and
- best practice management is being employed to minimise the noise impacts on the primary transport route and the secondary transport route;

(d) describe the proposed noise management system; and
(e) include a monitoring program to be implemented to measure noise from the development against the noise criteria in Table 4, and which evaluates and reports on the effectiveness of the noise management system on site.

The Applicant must implement the Noise Management Plan as approved by the Secretary.

Traffic Noise Compliance Assessment

9.

A noise compliance assessment of the traffic noise impacts of the project must be undertaken within two months of annual dispatches of quarry products exceeding 1 million, 1.5 million, 1.9 million **and 2.5 million** tonnes. The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance of the traffic noise impacts against the predictions in the **documents listed in condition 2(a) of Schedule 2** and relevant road noise criteria**, to the satisfaction of the Secretary**. The traffic noise compliance assessment reports must be provided to the Department within 1 month of each assessment.

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172
BLASTING

Blasting Impact Assessment Criteria

10. The Applicant must ensure that blasting on site does not cause any exceedance of the criteria in Table 5.

Table 5: Blasting Criteria

Receiver	***Airblast overpressure (dB(Lin Peak))***	***Ground vibration (mm/s)***	***Allowable exceedance***
Any residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months

However, these criteria do not apply if the Applicant has a written agreement with the relevant owner to exceed the limits in Table 3, and the Applicant has advised the Department in writing of the terms of this agreement.

Blasting Frequency

11. The Applicant may carry out a maximum of 2 blasts per week, unless an additional blast is required following a blast misfire. This condition does not apply to blasts required to ensure the safety of the quarry or workers on site.

Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the quarry.

Operating Conditions

12. During blasting operations, the Applicant must:
(a) implement best practice management to:
- protect the safety of people and livestock in the areas surrounding blasting operations;
- protect public or private infrastructure/property in the surrounding area from damage from blasting operations and
- minimise the dust and fume emissions of blasting;

(b) operate a suitable system to enable the local community to get up-to-date information on the proposed blasting schedule on site;
(c) co-ordinate the timing of blasting on site with the timing of blasting at Johnniefelds quarry and Lynwood quarry to minimise potential cumulative blasting impacts of the three quarries; and
(d) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent,
to the satisfaction of the Secretary.

Blast Management Plan

13. The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be submitted to the Secretary for approval within six months of commencing development under this consent and prior to commencing quarrying operations under this consent;
    (b) describe the measures that would be implemented to ensure compliance with the blast criteria and operating conditions of this consent;
    (c) include measures to manage flyrock;
    (d) include a monitoring program for evaluating and reporting on compliance with the blasting criteria in this consent;
    (e) include a protocol for investigating and responding to complaints; and.
    (f) include community notification procedures for blasting, which includes:
        (i) a notification process to alert any resident who registers an interest in the blasting schedule to be notified at least 24 hours in advance of each blast;
        (ii) a blasting hotline, or alternative system agreed to by the Secretary, to enable the public to obtain up-to-date information on blasting operations; and
        (iii) information on how the public will be kept informed of the hotline, or any alternative system.

    The Applicant must implement the Blast Management Plan as approved by the Secretary.

AIR QUALITY

Air Quality Impact Assessment Criteria

14. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures[e] are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 6 at any residence on privately-owned land.

Table 6: Air quality criteria

Pollutant	***Averaging period***	***Criterion***	
Particulate matter < 10 µm (PM_{10})	Annual	[a, d] 25 µg/m^3	
	24 hour	[b] 50 µg/m^3	
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual	[a, d] 8 µg/m^3	
	24 hour	[b] 25 µg/m^3	
Total suspended particulate (TSP) matter	Annual	[a, d] 90 µg/m^3	
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a.d] 4 g/m^2/month

Notes to Table 6:
a Cumulative impact (ie increase in concentrations due to the development plus background concentrations due to all other sources).
b Incremental impact (ie increase in concentrations due to the development alone, with zero allowable exceedances of the criteria over the life of the development.
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 or any other activity agreed by the Secretary.
e "Reasonable and feasible avoidance measures" includes, but is not limited to, the operational requirements in conditions 14, 15 and 16 to develop and implement an air quality management system that ensures operational responses to the risks of exceedance of the criteria.

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172

Operating Conditions

15. The Applicant must:
    (a) implement best practice management to minimise the dust emissions of the development;
    (b) regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this consent;
    (c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d under Table 6);
    (d) monitor and report on compliance with the relevant air quality conditions in this consent; and

(e) minimise the area of surface disturbance and undertake progressive rehabilitation of the site,
to the satisfaction of the Secretary.

Air Quality Management Plan

16. The Applicant must prepare an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the EPA;
    (b) be submitted to the Secretary for approval within six months of commencing development under this consent and prior to commencing quarrying operations under this consent;
    (c) describe the measures that would be implemented to ensure:
        - compliance with the relevant conditions of this consent;
        - best practice management is being employed; and
        - the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;
    (d) describe the proposed air quality management system, including a minimum of two High Volume Air Samplers in locations agreed to by the EPA;
    (e) include an air quality monitoring program that:
        - is capable of evaluating the performance of the development;
        - includes a protocol for determining any exceedances of the relevant conditions of consent;
        - effectively supports the air quality management system; and
        - evaluates and reports on the adequacy of the air quality management system.

    The Applicant must implement the Air Quality Management Plan as approved by the Secretary.

Quarry-owned Land

17. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Table 6 at any occupied residence on quarry-owned land unless:
    (a) the tenant has been notified of any health risks associated with such exceedances in accordance with the notification requirements under Schedule 4 of this consent; and
    (b) the tenant of any land owned by the Applicant can terminate their tenancy agreement without penalty at any time, subject to giving reasonable notice,
    to the satisfaction of the Secretary.

Meteorological Monitoring

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

Greenhouse Gas Emissions

19. The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.

SOIL AND WATER

Water Supply

20. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply, to the satisfaction of the Secretary.

    Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary water licences for the development.

Water Discharges

21. The Applicant must comply with the discharge limits in any EPL, or with section 120 of the POEO Act.

Soil and Water Management Plan

22. The Applicant must prepare a Soil and Water Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared by suitably qualified and experienced person/s approved by the Secretary;

(b) be prepared in consultation with the EPA, WaterNSW and DPI Water;
(c) be submitted to the Secretary for approval within six months of commencing development under this consent and prior to commencing quarrying operations under this consent;
(d) 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; and
      - reporting procedures; and
    - measures that would be implemented to minimise clean water use on site;
  (ii) Erosion and Sediment Control Plan that:
    - is consistent with the requirements of the Landcom's *Managing Urban Stormwater: Soils and Construction* manual;
    - identifies activities that could cause soil erosion and generate sediment;
    - describes measures to minimise soil erosion and the potential for the transport of sediment to downstream waters, including for the haul road between the extraction area and the western emplacement area;
    - describes the location, function, and capacity of erosion and sediment control structures, including for the haul road between the extraction area and the western emplacement area; and
    - describes what measures would be implemented to maintain (and if necessary decommission) the structures over time.
  (iii) 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 development;
    - surface water impact assessment criteria;
    - a protocol for managing any exceedances of the surface water impact assessment criteria;
    - a detailed description of the surface water management system on site including the:
      - clean water diversion system;
      - dirty water management system;
      - water storages, including their capacity to contain dirty water during flood events;
      - irrigation areas; and
      - design of creek and stream crossings; and
    - a program to monitor and report on:
      - the effectiveness of the water management system in ensuring that the development has a neutral or beneficial effect on downstream receiving waters;
      - channel stability of the watercourses on the site;
      - surface water flows and quality in watercourses on the site;
      - surface water discharges from the site, including provisions for sampling of water quality during discharge events;
      - the impact of the irrigation areas on water quality;
    - details of the on-site waste water management system, including the effluent disposal area, that demonstrates there is adequate capacity for the wastewater loads generated by the development;
  (iv) Groundwater Management Plan that includes:
    - detailed baseline data on groundwater levels, flows and quality in the region;
    - groundwater impact assessment criteria for monitoring bores;
    - a program to monitor:
      - groundwater levels and quality on the site;
      - the impacts of the development on any groundwater dependent ecosystems;
      - the impacts of the development on any groundwater bores, springs and seeps on privately-owned land; and
    - a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria.

The Applicant must implement the Soil and Water Management Plan as approved by the Secretary.

TRANSPORT

Monitoring of Product Transport

23. The Applicant must keep accurate records of all truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records, which includes daily maximum and calendar month averages, on its website every 6 months.

Note: See condition 9 of Schedule 2 for the relevant daily maximum and monthly averages.

Operating Conditions

24. The Applicant must:
    (a) ensure that all laden trucks entering or exiting the site have their loads covered, with the exception of loads consisting solely of boulders greater than one tonne in weight;
    (b) ensure that all laden trucks exiting the site are cleaned of material that may fall on the road, before leaving the site; and
    (c) use its best endeavours to ensure that appropriate signage is displayed on all trucks used to transport quarry product from the development so they can be easily identified by road users.

Traffic Management Plan

25. The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the RMS and Council;
    (b) be submitted to the Secretary for approval within six months of commencing development under this consent and prior to commencing quarrying operations under this consent;
    (c) describe the measure that would be implemented to avoid dispatching and/or receiving large groups or convoys of laden trucks from the site onto public roads;
    (d) include a Drivers' Code of Conduct as required under condition 28 of Schedule 3;
    (e) describe the measures that would be put in place to ensure compliance with the Drivers' Code of Conduct; and
    (f) include measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry.

    The Applicant must implement the Traffic Management Plan as approved by the Secretary.

Primary Transport Route

26. Prior to transporting more than 62,500 tonnes per calendar month of quarry products from the site, either under this consent or under this consent in combination with MP 07_0074 (while ever it has not been surrendered), the Applicant must implement and complete:

    (a) **Red Hills Road and Hume Highway intersection works** - construct an additional 500m long (including taper) left turn northbound acceleration lane at the intersection of Red Hills Road and the Hume Highway in accordance with the relevant Austroads intersection design requirements and to the satisfaction of the Secretary and RMS; and

    (b) **Brayton Road and Quarry Access Road intersection works** - upgrade the intersection of the quarry access road with Brayton Road in accordance with Austroads intersection design requirements, to the satisfaction of the local roads authority including carrying out the following:
        (i) laying asphalt; and
        (ii) constructing an acceleration lane on Brayton Road for truck traffic turning right from the Quarry Access Road onto Brayton Road, to be located south of the quarry intersection, and starting at the intersection.

    (c) **General Road Upgrade Works**- the primary transport route shall be upgraded such that it conforms with current Austroads standards and is generally in accordance with the plans entitled Primary Transport Route Road Upgrade Plans prepared by EMM dated 29 June 2017, Map 1 - 39. Detailed road works plans, including relevant supportive calculations and modelling, shall be submitted to the local roads authority for approval, which outlines the extent of works to be undertaken. The applicant must:
        (i) Obtain a survey of the primary transport route from a registered surveyor of the entire road corridor. This should show road corridor boundaries, sealed and unsealed pavement extents, line markings, signage, hazards, driveways and intersections, shoulders and any significant vegetation within the corridor that would be affected by the road upgrade works. The survey shall include sufficient detail to indicate the levels and grades of existing pavement, shoulder and clear zone areas.
        (ii) The design plans shall show the full extent of works, including at a minimum, earthworks, road widening, shoulders and clear zones, stopping areas, bus bays, drainage, line marking, pavement upgrades, signage and vegetation to be removed or retained. The design plans shall include long-sections of roads and the drainage

system, and representative road cross-sections which identify the extent of upgrade works.

(iii) The design plans shall demonstrate that 3.1 m wide lanes are provided along the primary transport route.

(iv) The design plans shall demonstrate that 1.5 m wide shoulders, with 0.5 m width being sealed, are provided along the primary transport route. Where this is not achieved, alternative measures are to be provided, and justification is to be given which demonstrates that the non-compliance does not result in an unacceptable road safety outcome.

(v) The design plans shall demonstrate that 3.0 m wide clear zones are provided along the primary transport route. Where this is not achieved, alternative measures are to be provided generally in accordance with the plans entitled Primary Transport Route Road Upgrade Plans prepared by EMM dated 29 June 2017, Map 1 - 39.

(vi) The design plans must identify all trees and native vegetation that need to be removed as a part of the works. Lawful approval for any vegetation removal must be provided to the local roads authority prior to the removal of any vegetation in association with the road works.

(vii) A geotechnical report shall be provided to the local roads authority in respect of existing road pavement conditions, pavement carrying capacity, and requirements to upgrade the pavement to accommodate the increase in truck traffic. The geotechnical report shall document the existing pavement by way of borehole and strength testing, at a sampling frequency that will adequately characterise the existing pavement.

(viii) A drainage design shall be submitted as a part of the road works plans. This will include relevant calculations and modelling of the road drainage system, and document the extent of drainage works required for the works. The drainage design shall be undertaken such that there will be no detrimental impact on the drainage system within the road corridor, on adjoining properties, or local vegetation.

(ix) The design plans shall be certified by suitably qualified civil engineer to be compliant with Austroads standards.

(d) **In addition to the matters specified in (c) above, in respect of the primary transport route** - carry out road safety upgrades generally in accordance with the plans entitled Primary Transport Route Road Upgrade Plans prepared by EMM dated 29 June 2017, Map 1 – 39, and subject to any requirements or variations requested by Council as the roads authority including:

(i) line-marking and signage along the primary transport route, including by:
- marking hidden driveways;
- upgrade line markings and increase signage; and
- following discussions and agreement with Council, any upgrades required to improve school bus stop safety.

(ii) installing centre double white line-marking with retroreflective pavement markers along the full length (or along such sections as are otherwise required by Council) of the primary transport route, to prevent overtaking;

(iii) installing edge line-marking on pavement edges with retroreflective pavement markers along the full length (or along such sections as are otherwise required by the Council) of the primary transport route;

(iv) carrying out an analysis of the frequency of heavy fogs on the primary transport route within a 1 month period and in consultation with the Council;

(v) installing guide posts and spacings along appropriate sections of the primary transport route in consultation with the Council. The guide post spacing is to be determined on the basis of the analysis of the frequency of heavy fogs to be prepared by the Applicant as per condition (d)(iv).

(e) Any application to Council under s138 of the Roads Act 1993 for the Primary Transport Route upgrade works is to be in accordance with the plans entitled Primary Transport Route Road Upgrade Plans prepared by EMM dated 29 June 2017, Map 1 – 39, and a copy of such application is to be provided to the Secretary no later than 2 working days after its lodgement with Council.

Note: 62,500 tonnes per calendar month is the monthly equivalent of 750,000 tonnes per annum, the consented limit under project approval MP 07_0074.

27. The Applicant must install and operate a video camera at the intersection of Red Hills Road and the Hume Highway, to the satisfaction of the Secretary. The Applicant must install the camera prior to commencing

quarrying operations under this consent and operate the camera until the Hume Highway intersection acceleration lane is constructed and fully operational. The camera must be located in a fixed position with a field of view that accurately records heavy vehicles (including truck identification numbers) merging from Red Hills Road to travel north along the Hume Highway. Recordings from the camera must be examined weekly by the Applicant to ensure safe merging practices at the intersection, securely stored for at least 60 days and made available to the Department and RMS on request.

Truck Driver Code of Conduct

28. Prior to transporting more than 62,500 tonnes per calendar month of quarry products from the site, the Applicant must prepare a Truck Driver Code of Conduct and submit it to the Secretary for approval. The Truck Driver Code of Conduct is to:
    (a) require induction of all truck drivers, including a requirement to read the Truck Driver Code of Conduct and sign a Truck Driver Induction Form, prior to commencing truck driving duties to and from the site;
    (b) include all speed restrictions for the primary transport route and secondary transport route in the Truck Driver Induction Forms;
    (c) incorporate provisions regarding anti-social behaviour and anti-littering practices;
    (d) incorporate details of the safe and quiet driving practices that must be used by drivers transporting products to and from the quarry (particularly on the primary and secondary transport routes) and on safe merging practices at the intersection of Red Hills Road and the Hume Highway;
    (e) incorporate provisions prohibiting overtaking moving vehicles on the primary transport route and secondary transport route;
    (f) incorporate provisions prohibiting the use of air brakes by in-bound trucks at the Red Hills and Hume Highway intersection (except in the case of emergencies) and include provisions for truck drivers to be educated regarding the acceptable use of air brakes on local roads;
    (g) include a copy of the Applicant's drug and alcohol policy; and
    (h) incorporate mechanisms for ensuring compliance with the Truck Driver Code of Conduct including a mechanism for the Applicant's onsite manager to conduct random compliance checks (no less than once per quarter) of driver behaviour along the primary transport route and secondary transport route.

Transport Options Review

29. Within 10 years of commencing development under this consent, and every 10 years thereafter, the Applicant must commission, commence and pay the full cost of a Transport Options Review for the development. This review must:
    (a) be conducted by a suitably qualified, experienced and independent expert/s whose appointment has been endorsed by the Secretary;
    (b) include detailed consultation with Transport for NSW, RMS and Council;
    (c) review the economic, social and environmental costs and benefits of all reasonable and feasible options for the transport of quarry products from the site (including by rail and including trucks movements currently permitted by this consent);
    (d) recommend any appropriate measures or actions to reduce the economic, social and environmental costs associated with transport of quarry products from the site, and
    (e) be conducted and reported to the satisfaction of the Secretary.

    Within 12 weeks of commencing this review or as otherwise agreed by the Secretary, the Applicant must submit a copy of the review report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the review report.

ABORIGINAL HERITAGE

Aboriginal Heritage Management Plan

30. The Applicant must prepare an Aboriginal Heritage Management Plan for the development to the satisfaction of the Secretary. The plan must:

    (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
    (b) be prepared in consultation with OEH and the Registered Aboriginal Parties;
    (c) be submitted to the Secretary for approval within six months of commencing development under this consent and prior to commencing quarrying operations under this consent; and
    (d) include a description of the measures that would be implemented to:
        (i) protect, monitor and manage known sites of archaeological significance;
        (ii) manage any new Aboriginal objects or relics that are discovered;
        (iii) store Aboriginal heritage items salvaged on site; and
        (iv) ensure ongoing consultation and involvement of the Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site.

BIODIVERSITY AND REHABILITATION

Biodiversity Offset Strategy

31. The Applicant must implement the Biodiversity Offset Strategy, including:
    (a) protecting, enhancing and maintaining the Biodiversity Areas identified in condition 32 of Schedule 3; and
    (b) retiring the biodiversity credits identified in condition 34 of Schedule 3, in accordance with the *Framework for Biodiversity Assessment - NSW Biodiversity Offsets Policy for Major Projects*;
    to the satisfaction of the Secretary and OEH.

Biodiversity Areas

32. The Applicant must protect, enhance and maintain the Biodiversity Areas described in Table 7 and shown conceptually on the plan in Appendix 5, to achieve the objectives in Table 7 to the satisfaction of the Secretary and OEH.

Table 7: Biodiversity Areas

Biodiversity Area	***Objective***	***Minimum Size (ha)***
White Box-Yellow Box Blakely's Red Gum Woodland Endangered Ecological Community (Box Gum Woodland EEC)	Protect, maintain and enhance, including through assisted regeneration, Box Gum Woodland EEC on the site	32.66
Cleared land	Regenerate and/or replant cleared land on site with native vegetation representative of Box Gum Woodland EEC	46.16
Total		78.82

Security of Biodiversity Areas

33. Prior to commencing quarrying operations under this consent, unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide long-term security and funding for the Biodiversity Areas identified in condition 32 of Schedule 3, to the satisfaction of the Secretary and OEH.

    Note: Mechanisms to provide appropriate long-term security to the Biodiversity Area include a BioBanking Agreement, under the Threatened Species Conservation Act 1995, a Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain in force in perpetuity.

Biodiversity Offsets

34. The Applicant must retire the biodiversity credits set out in Table 8, in accordance with the *Framework for Biodiversity Assessment - NSW Biodiversity Offsets Policy for Major Projects* to the satisfaction of the Secretary and OEH. The credits identified in Table 8 include credits arising from the carrying out of the primary transport route upgrade works referred to in condition 26. If the vegetation to be removed is less than anticipated at the date of this consent the credits arising from these upgrade works may be reduced if approved by the Secretary provided the number of credits does not fall below the minimum number identified in column 2 of the table.

Table 8: Biodiversity credits to be retired

Credit type	***Number of Credits***	***Additional Credits resulting from Primary Transport Route Upgrade Works***
Ecosystem Credits		
Yellow Box - Blakely's Red Gum Grassy Woodland (PCT1330)	373	13
Yellow Box - Blakely's Red Gum Grassy Woodland Derived Native Grassland (PCT1330)	185	
Broad-leaved	160	23

Peppermint - Red Stringybark grassy open forest (PCT734)		
Broad-leaved Peppermint - Red Stringybark grassy open forest Derived Native Grassland (PCT734)	662	
Total	1,380	36

Security of Offsets

35. Within eighteen months of commencing development under this consent, unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide long-term security and funding for the Biodiversity Offset Areas used to retire the credits identified in condition 34 of Schedule 3, through a Biobanking Agreement under the *Threatened Species Conservation Act 1995,* to the satisfaction of OEH.

Rehabilitation Objectives

36. The Applicant must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and must comply with the objectives in Table 9.

Table 9: Rehabilitation Objectives

Feature	***Objective***
Site (as a whole)	• Safe, stable and non-polluting • Final landform integrated with surrounding natural landforms as far as is reasonable and feasible • Final landform has minimal visual impact when viewed from surrounding land
Surface Infrastructure	• Decommissioned and removed, unless otherwise agreed by the Secretary
Land identified as the Biodiversity Area	• Conserved and enhanced with native, endemic vegetation consistent with the objectives shown in Table 7
Riparian corridors along Chapman Creek and its tributaries	• Stabilised and vegetated
Quarry benches	• Landscaped and vegetated using native tree and understorey species
Final Void	• Minimise the size, depth and slope of the batters of the final void • Minimise the drainage catchment of the final void

Progressive Rehabilitation

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

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

Biodiversity and Rehabilitation Management Plan

38. The Applicant must prepare a Biodiversity and Rehabilitation Management Plan for the development to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with OEH, DPI Fisheries and Council;
(b) be submitted to the Secretary within twelve months of commencing development under this consent and prior to commencing quarrying operations under this consent unless the Secretary agrees otherwise;
(c) provide details of the conceptual final landform and associated land uses for the site;
(d) describe how the implementation of condition 31 of Schedule 3 would be integrated with the overall rehabilitation of the site;

(e) include detailed performance and completion criteria for evaluating performance under condition 31 of Schedule 3 and rehabilitation of the site, including triggers for any necessary remedial action;
(f) describe the short, medium and long term measures that would be implemented to:
- manage remnant vegetation and habitat, including within the Biodiversity Areas and any areas that would be used to offset the biodiversity credits identified in condition 34 of Schedule 3; and
- ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this consent;

(g) 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 approval of the plan) including the procedures to be implemented for:
- maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation;
- restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
- protecting vegetation and fauna habitat outside the approved disturbance area on-site;
- protecting the Chapmans Creek riparian buffer area shown on the figure in Appendix 6 in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management*;
- minimising the impacts on native fauna, including undertaking pre-clearance surveys;
- establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;
- ensuring minimal environmental consequences for threatened species, populations and habitats;
- collecting and propagating seed;
- controlling weeds and feral pests;
- controlling erosion; and
- managing bushfire risk;

(h) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
(i) identify the potential risks to the successful implementation of condition 31 of Schedule 3, and include a description of the contingency measures that would be implemented to mitigate these risks; and
(j) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

The Applicant must implement the Biodiversity and Rehabilitation Management Plan as approved by the Secretary.

Biodiversity and Rehabilitation Bond

39. Within 6 months of the approval of the Biodiversity and Rehabilitation Management Plan, the Applicant must lodge a Biodiversity and Rehabilitation Bond with the Department 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 and the relevant conditions of this consent. The sum of the bond must be determined by:
(a) calculating the cost of implementing the Biodiversity Offset Strategy over the next 3 years for the Biodiversity Areas identified in condition 32 of Schedule 3;
(b) calculating the cost of rehabilitating all 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, or by using the Rehabilitation Cost Estimate spreadsheet tool (RCE) issued by DRG.

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 Biodiversity and Rehabilitation Bond.*
- *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
- *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are 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.*

40. Within 3 months of each Independent Environmental Audit (see condition 11 of Schedule 5), the Applicant must review, and if necessary revise, the sum of the Biodiversity and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:
(a) effects of inflation;

(b) likely cost of implementing the Biodiversity Offset Strategy and rehabilitating all disturbed areas of the site (taking into account the likely surface disturbance over the next 3 years of the development); and
(c) performance of the implementation of the Biodiversity Offset Strategy and rehabilitation of the site to date.

VISUAL

41. The Applicant must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development to the satisfaction of the Secretary.

WASTE

42. The Applicant must:
(a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council;
(b) minimise the waste generated by the development;
(c) ensure that the waste generated by the development is appropriately stored, handled, and disposed of; and
(d) report on waste management and minimisation in the Annual Review,
to the satisfaction of the Secretary.

43. Except as expressly permitted in an EPL, the Applicant must not receive waste (with the exception of the cured concrete transported to the site in accordance with condition 8 of Schedule 2) at the site for storage, treatment, processing, reprocessing or disposal.

LIQUID STORAGE

44. The Applicant must ensure that all tanks and similar storage facilities (other than for water) are protected by appropriate bunding or other containment, in accordance with the relevant Australian Standards.

DANGEROUS GOODS

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

BUSHFIRE

46. The Applicant must:
    (a) ensure that the development 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. Within 2 months of the commencement of development under this consent, the Applicant must notify in writing the owner of:
   (a) the residences listed in Table 2 of Schedule 3 that they are entitled to ask the Applicant to install additional noise mitigation measures at the residences; and
   (b) notify any tenants of quarry-owned land of their rights under this consent.

2. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended dust and/or noise criteria, the Applicant must:
   (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time); and
   (b) advise the prospective tenants of the rights they would have under this consent,
   to the satisfaction of the Secretary.

3. As soon as practicable after obtaining monitoring results showing:
   (a) an exceedance of any relevant criteria in Schedule 3, the Applicant must notify the affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; and
   (b) an exceedance of any relevant air quality criteria in Schedule 3, the Applicant must send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

INDEPENDENT REVIEW

4. If an owner of privately-owned land considers the development 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 development 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 Applicant must:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
      - if the development 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.

LAND ACQUISITION

5. Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
      - presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the additional noise mitigation measures in condition 2 of Schedule 3;
   (b) the reasonable costs associated with:
      - relocating within the Goulburn Mulwaree local government area, or to any other local government area determined by the Secretary; and
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if at the end of this period, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution.

Upon receiving such a request, the Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:

- consider submissions from both parties;
- determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;
- prepare a detailed report setting out the reasons for any determination; and
- provide a copy of the report to both parties.

Within 14 days of receiving the independent valuer's report, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions.

Within 14 days of this determination, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination.

If the landowner refuses to accept the Applicant's binding written offer under this condition within six months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Secretary determines otherwise.

The Applicant must pay all reasonable costs associated with the land acquisition process described in this condition, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. If the Secretary requires, the Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Applicant;
   (b) provide the strategic framework for environmental management of the development;
   (c) identify the statutory approvals that apply to the development;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (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 development;
      - receive, record, handle and respond to complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - respond to emergencies; and
   (f) include:
      - copies of any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

   The Applicant must implement any Environmental Management Strategy as approved by the Secretary.

Management Plan Requirements

2. The Applicant must ensure that the management plans required under this consent 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; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development 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 development; and
   - 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 development 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.

Application of Existing Management Plans

3. Prior to the approval of management plans under this consent, the Applicant shall manage development undertaken pursuant to this consent in accordance with any equivalent or similar management plan/s required under project approval MP 07_0074.

Revision of Strategies, Plans & Programs

4. Within 3 months of the:
   (a) submission of an Annual Review;
   (b) submission of an incident report under condition 8 below;
   (c) submission of an audit report under condition 11 below; and
   (d) approval of any modifications to this consent,

   the Applicant must review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

   Within 4 weeks of conducting any such review, the Applicant must advise the Secretary of the outcomes of the review, and provide any revised documents to the Secretary for review and approval.

   Note: This is to ensure that strategies, plans and programs are updated on a regular basis, and to incorporate any recommended measures to improve environmental performance of the development.

Updating and Staging of Strategies, Plans or Programs

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

   With the agreement of the Secretary, the Applicant 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 consent.

   Notes:
   - *While any strategy, plan or program may be submitted on a staged basis, the Applicant will need to ensure that the operations associated with the development 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 development 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.*

Adaptive Management

6. The Applicant must assess and manage development-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 consent 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 Applicant 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.

COMMUNITY CONSULTATIVE COMMITTEE

7. The Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. The CCC must be operated in general accordance with the Department's *Community Consultative Committee Guidelines for State Significant Projects* (November 2016, or its latest version).

   Note:
   - *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*

REPORTING

Incident Reporting

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

Regular Reporting

9. The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

Annual Review

10. By the end of September each year, or other timing as may be agreed by the Secretary, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:
    (a) describe the development (including any rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;
    (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial 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 consent;
        - monitoring results of previous years; and
        - relevant predictions in the documents listed in condition 2(a) of Schedule 2;
    (c) identify any non-compliance over the past financial 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 development;
    (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
    (f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

    The Applicant must ensure that copies of the Annual Review are submitted to Council and the EPA and are available to the Community Consultative Committee (see condition 7 of Schedule 5) and any interested person upon request.

INDEPENDENT ENVIRONMENTAL AUDIT

11. Within a year of commencing development under this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission, commence and pay the full cost of an Independent Environmental Audit of the development. This audit must:
    (f) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
    (g) include consultation with the relevant agencies;
    (h) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL or necessary water licences for the development (including any assessment, strategy, plan or program required under these approvals);
    (i) review the adequacy of strategies, plans or programs required under the abovementioned approvals;
    (j) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and
    (k) be conducted and reported to the satisfaction of the Secretary.

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

12. Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

13. Within 6 months of the commencement of development under this consent, the Applicant must:
    (a) make the following information publicly available on its website:

- the documents listed in condition 2(a) of Schedule 2;
- current statutory approvals for the development, including any environmental protection licence and any permits or approvals under the Roads Act 1993 relating to road upgrades, etc;
- all approved strategies, plans and programs required under the conditions of this consent;
- a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
- a complaints register, updated monthly;
- the annual reviews of the development;
- any independent environmental audit, and the Applicant's response to the recommendations in any audit; and
- any other matter required by the Secretary; and

(b) keep this information up-to-date,

to the satisfaction of the Secretary.

APPENDIX 1
DEVELOPMENT LAYOUT

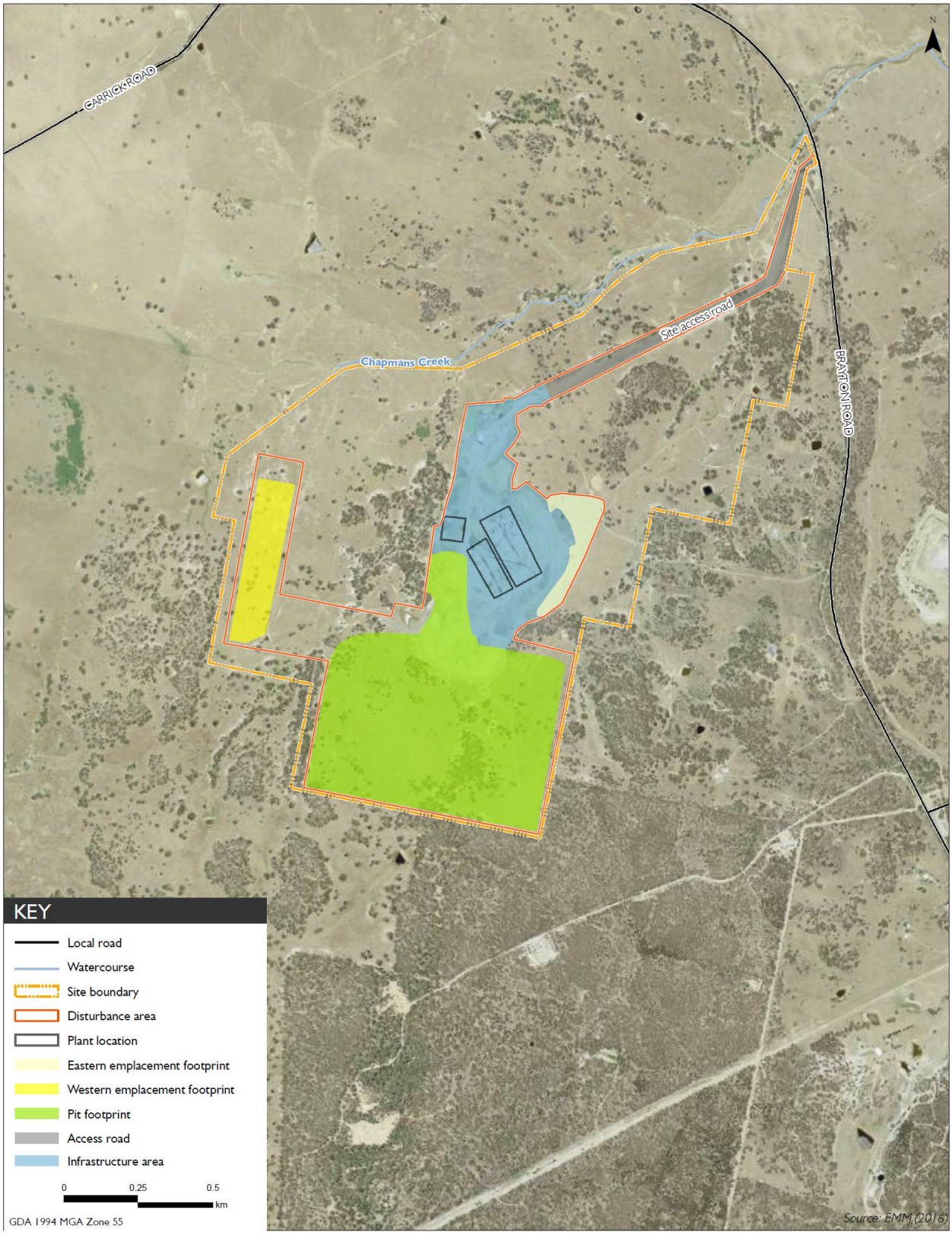

Figure: *Development Layout*

APPENDIX 2
STATEMENT OF COMMITMENTS

Aspect	Commitment
Noise and vibration	*Voluntary land acquisition and mitigation* • Voluntarily acquisition rights will be offered to receiver R2 in accordance with the VLAMP. • Voluntarily mitigation rights will be offered to receiver R2 and R7 in accordance with the VLAMP. *Primary crusher noise attenuation* • The primary crusher will be enclosed as part of the extension project within four months of approval. • The primary crusher will not be operated at night until it is enclosed. *Overburden emplacement* • The overburden emplacement east of the infrastructure area will be extended to the north and south as shown in the general site layout. *Evening and night operation of mobile fleet* • The mobile fleet operations will be reduced during the evening and night periods, as represented in the noise model. *Noise and Blast Management Plan* • An updated Noise and Blast Management Plan will be submitted to DPE within six months of commencing development under the consent.
Air quality	*Air quality monitoring* • The existing air quality monitoring network will continue under the extension project. Monitoring results will be reviewed on an annual basis against the Environment Protection Licence (EPL) and approval conditions to determine if additional monitoring is required due to production increases. *Air quality management* • The following additional management measures will be implemented to enable Gunlake to continue to manage potential air quality impacts effectively: - compliance with the USA-EPA Tier 3 or Tier 4 emissions standards, where practicable, for any new plant acquired by Gunlake; and - consideration of the following factors during blast design: ▪ delaying blasting to avoid unfavourable weather conditions that are likely to cause or spread a blast fume; ▪ selecting an explosive product that is correct for the conditions; ▪ monitoring the amount of hydrocarbon (diesel) in the product; ▪ preventing water ingress into blast holes; ▪ dewatering holes before loading; ▪ keeping sleep time (the amount of time between charging and firing of a blast) to a minimum, well within manufacturer recommended times; ▪ providing effective stemming; and ▪ loading the product using the appropriate techniques.

Aspect	Commitment
Biodiversity	*Rehabilitation and Biodiversity Offsets Management Plan [previously the Landscape Management Plan]* • The Rehabilitation and Biodiversity Offsets Management Plan (RBOMP) will be updated to include details on biodiversity management and rehabilitation for the extension project. The plan will be completed and implemented within 12 months of commencing development under the consent. • The RBOMP will include procedures to be applied for the management of the offset properties, the arrangements for conservation in perpetuity and regeneration works to be undertaken. This will include the procedures for: - assisting the revegetation and regeneration in the offset areas, including establishment of canopy, understorey and groundcover in areas of native pasture where required; - controlling weeds and feral pests; - fencing and access arrangements; - erosion control; and - bushfire management. • An offset monitoring program will also be included within the RBOMP to monitor any changes to the condition of the offset areas. *Offsets* • Biodiversity Areas of 78.82 ha will be provided to compensate for the biodiversity impacts of the original approval, as modified. • An offset package with 1,380 ha of biodiversity credits will be provided under a BioBanking agreement to compensate for the additional biodiversity impacts of the extension project. • The offset areas will be managed in accordance with the RBOMP.
Groundwater	*Water management plan* The Water Management (WMP) Plan will be updated to provide details of the surface water management system, surface water management and monitoring for the extended quarry and will be submitted to DPE within six months of commencing development under the consent. The Gunlake water management plan will be updated to include: • triggers values to facilitate the identification of groundwater impacts outside of predictions; • the use of monitoring data to calibrate and update the model at significant project stages; • quarterly groundwater quality and level monitoring to facilitate the early identification of adverse impacts and test model predictions; • monitoring of spring flow in conjunction with the quarterly groundwater level and quality program; • monitoring mapped areas of Box Gum Woodland; • procedures for the re-use of site water; and • response protocols and contingency mitigation measures to be implemented in the event of an unpredicted adverse impact. *Groundwater licensing* • Gunlake Quarry will obtain a WAL(s) for the predicted groundwater take over the lifespan of extension project (up to 37 ML/year). • Groundwater monitoring bores will be registered under the Water Act.
Surface water	*Surface water licensing* • Gunlake will seek any required water licences should water need to be imported during extended dry periods.

Aspect	Commitment
	Surface water monitoring • The current surface water monitoring program will be modified to include monitoring at: - two receiving water sites on Chapmans Creek, downstream of the quarry; and - the Process Water Dam and Pit Dewatering Dam. • Should the monitoring program indicate that the quarry is potentially adversely affecting water quality in Chapmans Creek, Gunlake will undertake an investigation to establish the likely cause and will implement necessary mitigation measures. • The updated Soil and Water Management Plan will include the site water balance and measures to manage water excesses and deficits.
Aboriginal heritage	*Aboriginal Heritage Management Plan* • An updated Aboriginal Heritage Management Plan, prepared in consultation with OEH and Registered Aboriginal Parties, will be submitted to DPE within six months of commencing development under the consent • The Gunlake Quarry Aboriginal Heritage Management Plan (AHMP) will be updated and provide details of: - all Aboriginal sites identified for the project and those previously recorded in the broader project site boundary; - management measures and their progress towards completion; - continuing consultation and involvement of registered Aboriginal parties; - protocols for newly identified sites; - protocols for suspected human skeletal material; and - provisions for review and updates of the AHMP. *Aboriginal sites* • All Aboriginal sites in the project disturbance footprint will be collected by a qualified archaeologist and members of the RAPs and relocated to the same area as previously collected artefacts at the site. • If new Aboriginal sites are discovered outside of known site areas, all work will halt and an archaeologist and members of the RAPs be contacted to determine the significance of the objects. Objects will be managed based on their sensitivity in a manner consistent with the management measures outlined above, including appropriate forms of salvage for the items. • In the event that known or suspected human skeletal remains are encountered during the activity, the procedures detailed in Appendix M of the EIS will be followed. *Avoiding Aboriginal sites* • The Aboriginal sites, GL4, GL12, GL13 and GL15, will be fenced and avoided by the
Social	*Local employment, training and engagement* • Gunlake will ensure that preference is given to local employees. Gunlake will use local or regional contractors and suppliers where this presents a cost effective and feasible option. • Gunlake will provide ongoing training and certification opportunities for local community members to ensure they have the necessary skills to work in extractive industries. • Gunlake will continue to actively engage with the local community and affected individuals and groups and address any complaints and feedback on quarry operations.
Soils and rehabilitation	*Rehabilitation scheduling* • Rehabilitation will be progressively staged as soon as possible after final completion of works is determined. Staging of rehabilitation activities will require identification of timelines for decommissioning of pits, buildings and other supporting infrastructure. A more detailed schedule of works will be developed 12 to 24 months prior to the confirmed closure. *Erosion and sediment control* • Erosion and sediment control measures will be defined in an Erosion and Sediment Control Plan to be implemented throughout the life of the project.

Aspect	Commitment
	Weeds • Gunlake will take the necessary precautions to prevent excessive development of weeds within rehabilitated areas. *Rehabilitation monitoring* • Gunlake will undertake an ongoing monitoring program throughout and beyond the operation of the project. Areas being rehabilitated will regularly be inspected and assessed against the short and long-term rehabilitation objectives outlined in EIS Section 6.4.1. • It is envisaged that rehabilitation monitoring will be undertaken for at least 2 years following the completion of all rehabilitation. The exact period would reflect seasonal conditions during that period. In any event, maintenance will continue until such time as the objectives have been achieved. The monitoring criteria will be reviewed and finalised with Goulburn Mulwaree Council at the time of submitting a final rehabilitation plan.
Visual	*Visual amenity* • Gunlake will continue to consult with surrounding landowners regarding the visual amenity of the quarry and will implement any reasonable additional controls to further reduce their visual impact, if necessary.
Historic heritage	*Unexpected finds* • Gunlake will include an unexpected finds protocol in relation to historic heritage as part of the EMS for the quarry.

APPENDIX 3
NOISE RECEIVER LOCATIONS

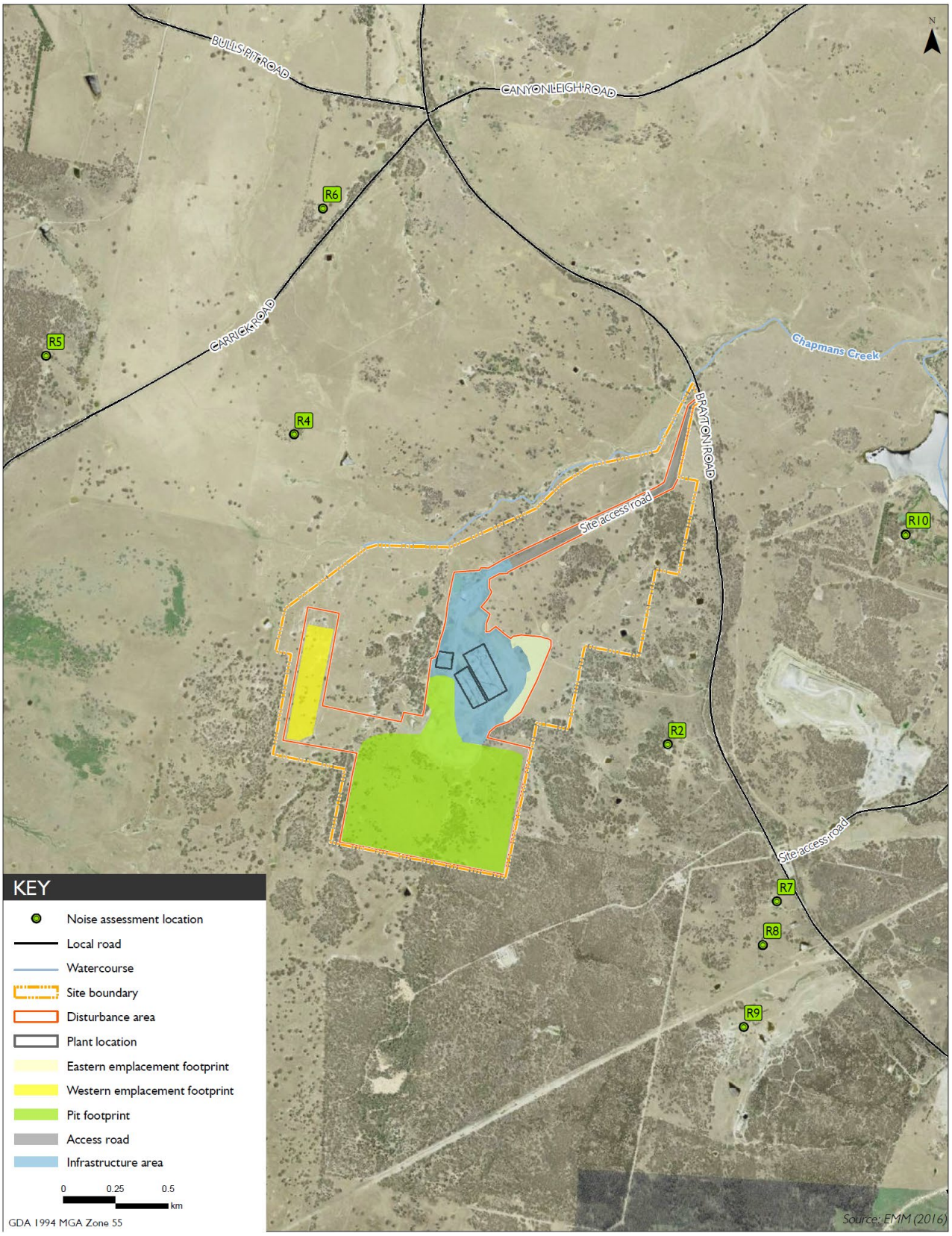

Figure: *Noise Assessment Locations*

APPENDIX 4
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 2 are to apply under all meteorological conditions except the following:
   (a) wind speeds greater than 3 m/s at 10 m above ground level; or
   (b) temperature inversion conditions between 1.5°C and 3°C/100 m and wind speed greater than 2 m/s at 10 m above ground level; or
   (c) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station required under condition 18 of Schedule 3.

Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.

4. Unless the Secretary agrees otherwise, 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 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,**

   with the exception of applying appropriate modifying factors for low frequency noise during compliance testing. This should be undertaken in accordance with Fact Sheet C of the *NSW Noise Policy for Industry* (EPA, 2017).

Modified by the Land and Environment Court on 9 June 2021 in LEC Proceedings 2020/ 327172

APPENDIX 5
BIODIVERSITY AREAS

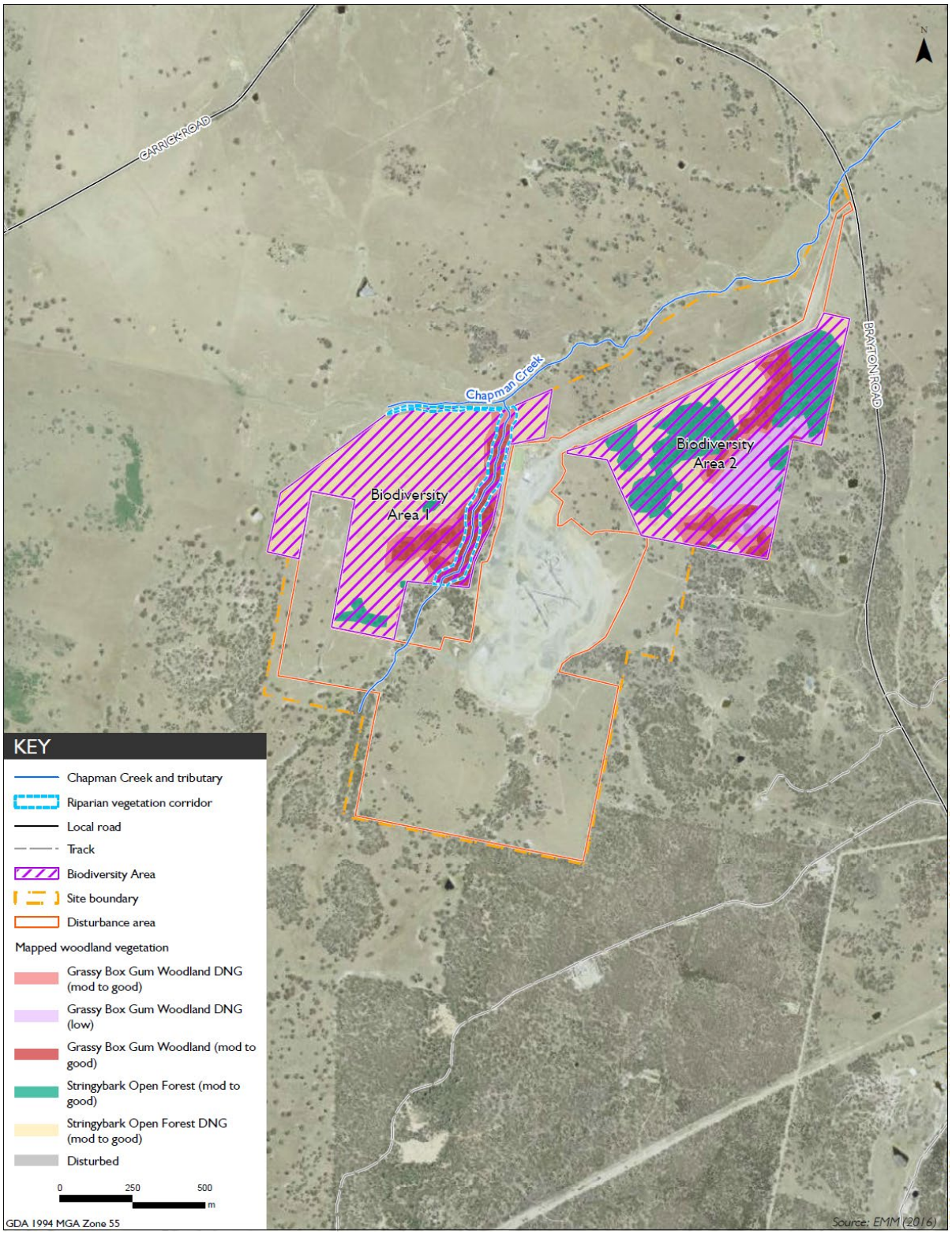

Figure: *Location of Biodiversity Areas*

APPENDIX 6
CHAPMANS CREEK RIPARIAN BUFFER

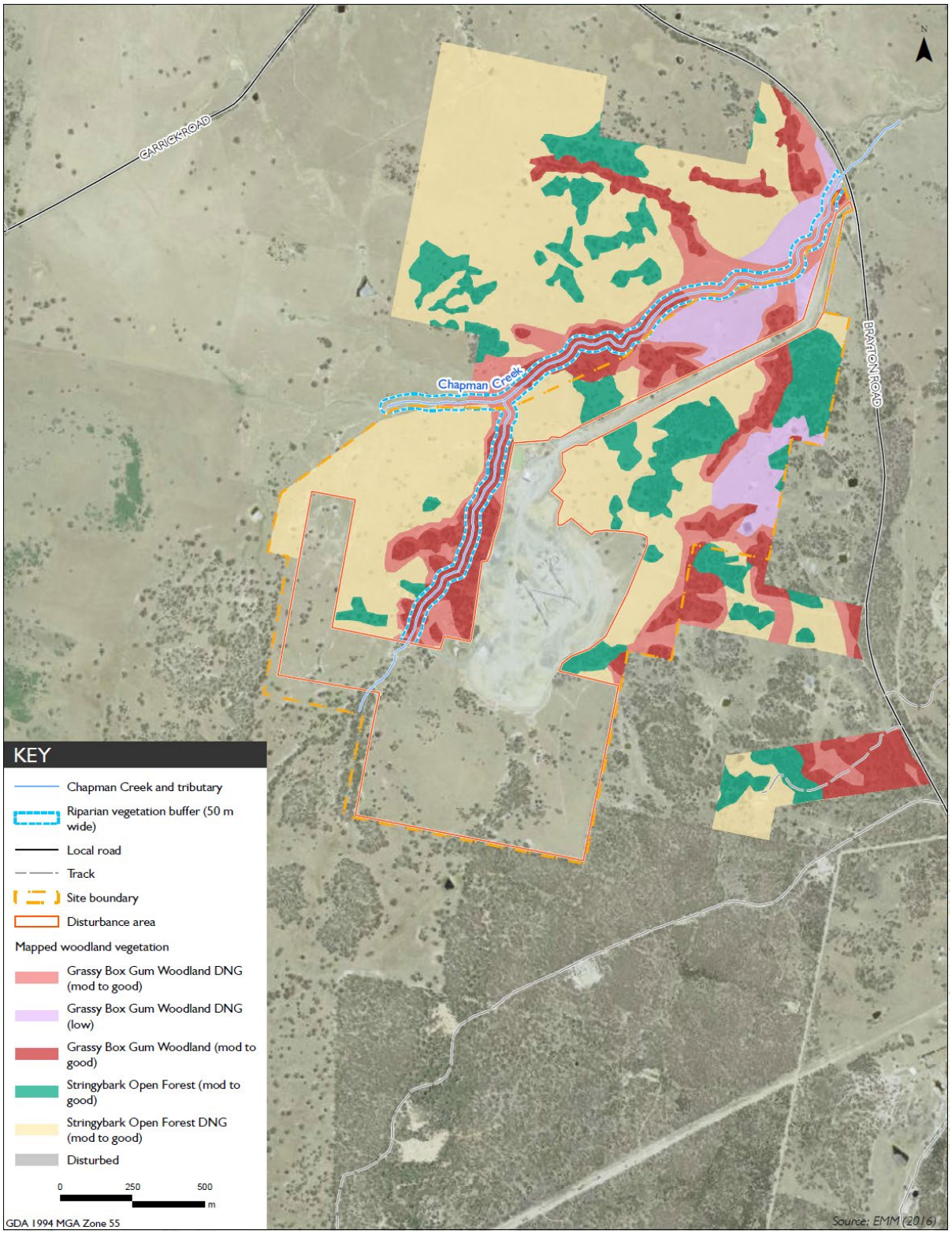

Figure: *Chapmans Creek Riparian Buffer*

APPENDIX B - EPA LICENCE

Environment Protection Licence

Licence - 13012

Licence Details	
Number:	13012
Anniversary Date:	13-July

Licensee

GUNLAKE QUARRIES PTY LIMITED

PO BOX 1665

DOUBLE BAY NSW 1360

Premises

GUNLAKE QUARRIES

715 BRAYTON ROAD

MARULAN NSW 2579

Scheduled Activity

Extractive activities

Resource recovery

Fee Based Activity	Scale
Extractive activities	> 500000-2000000 T annual capacity to extract or process
Recovery of general waste	Any general waste recovered

Region

South East - Queanbeyan

11 Farrer Place

QUEANBEYAN NSW 2620

Phone: (02) 6229 7002

Fax: (02) 6229 7006

PO Box 622

QUEANBEYAN NSW 2620

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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 13012

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

GUNLAKE QUARRIES PTY LIMITED
PO BOX 1665
DOUBLE BAY NSW 1360

subject to the conditions which follow.

Environment Protection Licence

Licence - 13012

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Extractive activities	Extractive activities	> 500000 - 2000000 T annual capacity to extract or process
Resource recovery	Recovery of general waste	Any general waste recovered

A1.2 The licensee must not carry on any scheduled activities until the scheduled development works are completed, except as elsewhere provided in this licence.

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
GUNLAKE QUARRIES
715 BRAYTON ROAD
MARULAN
NSW 2579
LOT 13 DP 1123374

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

Environment Protection Licence

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2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Dust Monitoring		Dust Deposition Gauge labelled DDG 1 on map titled "Figure A- Receptor and DDG locations- July 2009 " provided to DECC on 3 July 2009 (DOC09/31859)
2	Dust Monitoring		Dust Deposition Gauge labelled DDG 2 on map titled "Figure A- Receptor and DDG locations- July 2009 " provided to DECC on 3 July 2009 (DOC09/31859)
3	Dust Monitoring		Dust Deposition Gauge labelled DDG 3 on map titled "Figure A- Receptor and DDG locations- July 2009 " provided to DECC on 3 July 2009 (DOC09/31859)
4	PM 10 Monitoring		High Volume Air Sampler labelled R1 - HVAS on map titled "Figure A - Receptor and DDG locations - July 2009" provided to DECC on 3 July 2009 (DOC09/31859)
11	PM10 Monitoring		High Volume Air Sampler labelled R4 - HVAS on map titled "Figure 2 - Gunlake Quarry Environmental Monitoring Sites" submitted with licence variation application to EPA on 29 May 2018(DOC18/375566)

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description

7	Groundwater Monitoring	Bore labelled as 'GM 6' on Figure 2 in the document titled 'Groundwater and Surface Water Monitoring Program' received by DECC 15 June 2009 (DOC09/28459)
8	Groundwater Monitoring	Bore labelled as 'GM 13' on Figure 2 in the document titled 'Groundwater and Surface Water Monitoring Program' received by DECC 15 June 2009 (DOC09/28459)
9	Groundwater Monitoring	Bore labelled as 'GM 24' on Figure 2 in the document titled 'Groundwater and Surface Water Monitoring Program' received by DECC 15 June 2009 (DOC09/28459)
10	Groundwater Monitoring	Bore labelled as 'GM 36' on Figure 2 in the document titled 'Groundwater and Surface Water Monitoring Program' received by DECC 15 June 2009 (DOC09/28459)

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Waste

L2.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Cured concrete waste from a batch plant as defined in Section 49 Definitions of waste	As specified in each particular resource recovery exemption	No more than 30,000 tonnes per year imported to the site.

	classifications, in Schedule 1 of the Protection of the Environment Operations Act 1997, as in force from time to time.	No more than 2,500 tonnes at any one time.

L3 Noise limits

L3.1 Noise generated at the premises must not exceed the noise limits presented in the table below:

Noise Assessment Location	Day	Evening	Night	Night
	LAeq(15 minute)	LAeq(15 minute)	LAeq(15 minute)	LA1(1 minute)
R7	38	38	38	45
R8	37	37	37	45
All other privately owned residences	35	35	35	45

Note: *For the purpose of the above table, the following definitions apply:*

- *Day - the period from 7.00am to 6.00pm Monday to Saturday; or 8.00am to 6.00pm on Sundays and Public Holidays*
- *Evening - the period from 6.00pm to 10.00pm*
- *Night - the remaining periods*

The locations referred to in the above table represent noise assessment locations as indicated in Appendix 3 'Noise Assessment Locations' in the document titled "ANNEXURE ‘A’ OF S34 AGREEMENT FILED 30 JUNE 2017 IN PROCEEDINGS NO: 108663 OF 2017 CONDITIONS OF CONSENT"

L3.2 To determine compliance with these noise limits, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary.

The noise limits apply under meteorological conditions of:

- wind speed up to 3m/s at 10m above the ground level;
- temperature inversion conditions of up to 3 degrees c/100m and wind speed up to 2m/s at 10m above the ground;
- where the wind velocity and temperature gradients are determined to be relevant to the project site in accordance with the NSW industrial Noise Policy.

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L4 Blasting

L4.1 The overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L4.2 The overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L4.3 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L4.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L5 Hours of operation

L5.1 The licensee must comply with the operating hours listed in the below table:

Activity	Day	Time
Overburden removal/emplacement and drilling	Monday-Saturday	7.00am to 6.00pm
	Sunday and Public Holidays	None
Blasting	Monday-Friday	9.00am to 5.00pm
	Saturday, Sunday and Public Holidays	None
Quarrying operations (excluding overburden removal/emplacement and drilling)	Monday-Saturday	24-hours but not between 6.00pm Saturday to 2.00am Monday.
	Sunday and Public Holidays	None
Maintenance	Monday-Saturday Sunday and Public Holidays	Any time provided that the activity is not audible at any privately-owned residence
Loading and dispatching	Monday-Saturday	24-hours but not between 6.00pm Saturday to 2.00am Monday.
	Sunday and Public Holidays	None
Construction	Monday-Friday	7.00am to 6.00pm
	Saturday	8.00am to 1.00pm
	Sunday and Public Holidays	None

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4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The plant must be maintained in a condition which minimises or prevents the emission of dust from the plant.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

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M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 1,2,3

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	Australian Standard 3580.10.1-2003

POINT 4,11

Pollutant	Units of measure	Frequency	Sampling Method
PM10	micrograms per cubic metre	Special Frequency 1	AS/NZS 3580.9.6:2003

M2.3 For the purposes of the table(s) above Special Frequency 1 means the collection of samples on a one day in six cycle using a HVAS fitted with size selective inlet for PM10.

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the

carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Julian Thompson

Environment Protection Authority

(By Delegation)

Date of this edition: 09-July-2009

End Notes

2	Licence varied by notice 1516660 issued on 16-Sep-2013
3	Licence transferred through application 1521128 approved on 23-Apr-2014 , which came into effect on 01-May-2014
4	Licence varied by notice 1522524 issued on 27-Oct-2014
5	Licence varied by notice 1532111 issued on 10-Aug-2015
6	Licence varied by notice 1565848 issued on 12-Jul-2018
7	Licence varied by notice 1588001 issued on 11-Dec-2019

Appendix C – Chapmans Creek Monitoring Report

Gunlake Quarry

Chapman's Creek Monitoring Report

July 2021

Contents

1. Introduction

1.1 Background

Gunlake Quarry (the Quarry) is a hard rock quarry operated by Gunlake Quarries Pty Ltd and is located approximately 7 km northwest of Marulan, on Brayton Road as shown in Appendix A**.** Gunlake Quarry produces a range of hardrock products for the Sydney and Regional NSW construction industry.

The Quarry holds an Environment Protection Licence (EPL) 13012 issued by the EPA under the *Protection of the Environment Operations Act 1997* (POEP Act) and operates under the conditions of Development Consent: 2017/00108663. Condition 22 of Schedule 2 of the consent requires a program to monitor stream health and stability in the site which is detailed in the Soil and Water Management Plan. This report details the monitoring undertaken as required.

1.2 Chapmans Creek

Gunlake Quarry is located in the upper reaches of the Chapman's Creek catchment and is surrounded by undulating stony countryside primarily used for sheep and cattle grazing. Elevations range from approximately 690m AHD on the southern boundary to 620 m AHD on the eastern boundary at Brayton Road. Soils are shallow and generally of low fertility, consequently, pasture cover is generally low quality improved or native species. There is evidence of sheet and some gully erosion in the main watercourses around the quarry site.

The development site of the Gunlake Extension Project is wholly within the upper catchment of Chapman's Creek. Chapman's Creek is an ephemeral creek which flows generally from south to north through the Gunlake property, and then east to its confluence with Joarimin Creek approximately 1km downstream of the site. Joarimin Creek in turn flows north to join the Wollondilly River. Chapman's Creek and its tributaries are intermittent streams which flow only following significant rainfall events.

The catchment area and riparian zones have previously been extensively modified for agricultural production, predominantly grazing of sheep and cattle. The adjacent flats of Chapman's Creek are only susceptible to temporary inundation after prolonged storms. The areas surrounding the creek have been cleared and vegetation is highly disturbed. Noxious woody weeds are present on creek banks, with a predominance of blackberry. Severe erosion is present along many sections of the stream bank, and multiple gully heads have formed at the southern upstream end.

The current ecological state of Chapmans Creek has been poor for some time as an influence of disturbance from clearing and previous agricultural use. Regular monitoring and maintenance is therefore required to ensure the creek health does not deteriorate further..

This is the third annual monitoring report of Chapmans Creek, which aims to outline the current health of the riparian ecosystem and any changes observed over subsequent reporting periods.

1.3 Springs

Springs can be defined as areas where water naturally flows from the groundwater aquifers. The springs located at Gunlake Quarry are termed as seepage or filtration springs, referring to a spring with a low flow rate, where the source water has filtered through permeable earth material. These springs are generally fed by perched aquifers in the vicinity of the quarry and therefore dry out following prolonged periods of low rainfall. Gunlake undertakes quarterly monitoring of springs as required by the Development Consent: 2017/00108663 and detailed in the Soil and Water Management Plan. Further details are provided in Sections 2.3 and 3.4.

2. Monitoring Program

The attributes of the Quarry form the basis of ongoing management principles governing the need to protect water systems, both surface and groundwater, during quarrying activities as well as managing the remaining land for agricultural and biodiversity uses. The water management system has been designed to protect Chapmans Creek.

2.1 Surface Water Monitoring

Gunlake Quarry has a well-established ambient water quality monitoring program inclusive of a substantive database on Chapmans Creek. Surface water samples are collected quarterly from two sites within Chapman's Creek to determine a basis for potential impact assessment as the quarry progresses. The data shows that the upper reaches of Chapmans Creek are predominantly dry and only flow following heavy rain events, while the lower section towards Brayton Road at the Gunlake property boundary consists largely of unconnected stagnant pools.

Appendix A shows the location of the surface water monitoring sites. The sites include two sampling locations on Chapmans Creek downstream of the operation known as RW1 and RW2. RW1 is located at the Quarry entrance adjacent to Brayton Road, whilst RW2, which is often dry, is sampled approximately 1km upstream of RW1 within the property. The upstream site (site I) that was required to be monitored under the previous project approval is no longer required to be monitored as sufficient background data on Chapmans Creek exists for the purposes of impact assessment.

The water quality has been monitored and significant parameters outlined in the TARPs as developed for the Soil and Water Management Plan. Electrical Conductivity, pH, and Total Dissolved Solids have been compared to historical background levels taken at Site I in order to identify any harmful changes to the creek's water quality.

2.2 Channel Stability

As with most ephemeral streams, the intermittent flow events in Chapmans Creek give rise to infrequent but often high sediment movement. Ephemeral streams tend to remain apparently stable for long periods until major storm events when high flows can cause channel scour and mass movement of sediment downstream. Although these are natural events, the loss of riparian vegetation through past agricultural activities can result in higher than normal instability of channels and banks.

The collection of quarterly water samples, taken during flow events where possible, correspond with inspections of channel stability and evidence of erosion or sedimentation. High flows are natural channel forming events and the movement of sediments downstream can also have beneficial effects on fluvial systems. The monitoring therefore needs to consider what is natural and what may have been exacerbated by past and current land uses be it from agricultural or quarrying activities. Changes to the creek banks, heads and floor will be monitored using a series of four photo-points which will be compared to identify changes over time, as presented in the results section below. This program will include identification of the causes of deterioration which could relate to reduced groundwater baseflow within the alluvial system. Any changes which may have occurred as a result of quarry activities will be noted separately and corrected as soon as practicable.

2.3 Springs

The EIS for the Gunlake Extension Project identified nine springs in the vicinity of the project area, with four of these springs being located on site, referred to as Springs 6, 7, 8 and 9 which may be impacted by drawdown from the quarry void (Appendix A). The springs do not support GDEs or hold any significant environmental value and predicted reductions in flow are not considered to require mitigation and specific management activities.

Three of these springs are monitored on a quarterly basis. The monitoring comprises a photographic and descriptive record. The timing of the inspections corresponds to the monitoring of the groundwater bores and Chapman's Creek riparian vegetation corridor. Based on groundwater modelling the first five years of monitoring will represent baseline data prior to potential impacts of the quarry occurring

Monitoring of the springs was scheduled to commence in June 2018, but due to prolonged drought conditions the springs could not be located until a storm event in February 2020 recharged the aquifers and nine springs were identified in April 2020, as shown in Appendix A. Springs 6, 7, 8 and 9 were therefore first monitored in April 2020 and will continue to be monitored on a quarterly basis with the exception of Spring 6.

3. Results

3.1 Weather Results

Rainfall data recorded by the Gunlake weather station for past two years is presented below. Raw data is provided in Table 3.1 while a summary of recent years is provided in Graph 1 below.

Table 3.1 – Total Monthly Rainfall (mm) (2018/19)

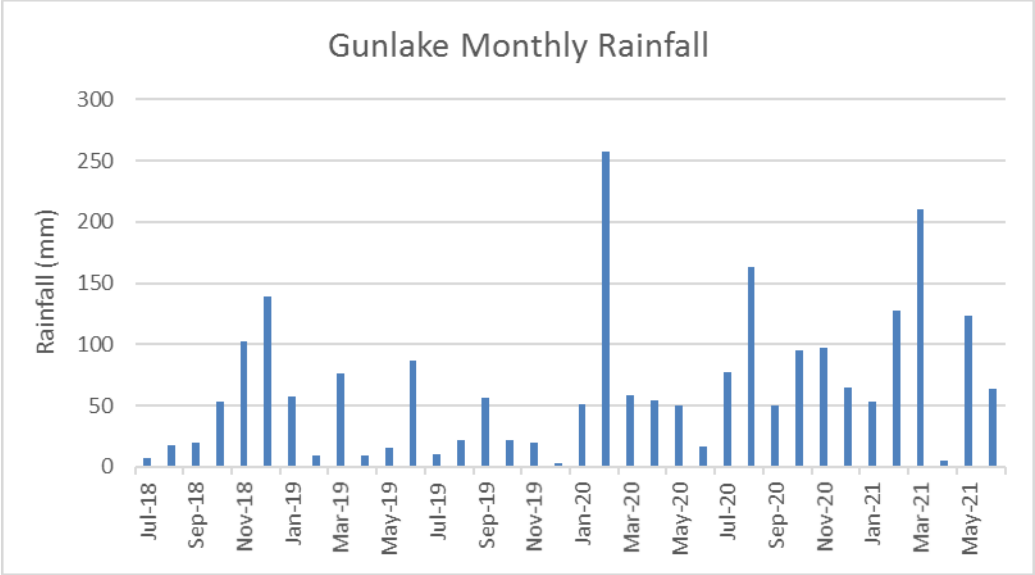
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**Tot**
7	18.2	19.4	52.8	102.4	138.8	57.2	9.6	76.2	9.2	15.4	87	593.2
Number of Rain Days (≥1mm)												
1	6	4	15	13	8	14	3	12	3	5	12	96

Table 3.1 continued – Total Monthly Rainfall (mm) (2019/20)

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**Tot**
10.8	22.4	56.2	22.2	20.0	2.6	50.8	257.2	58.2	54.6	50.4	16.4	621.8
Number of Rain Days (≥1mm)												
6	8	6	6	6	2	3	15	11	8	8	6	85

Table 3.1 continued – Total Monthly Rainfall (mm) (2020/21)

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**Tot**
77.2	163	50.2	95.4	96.8	64.6	53.8	127.2	210.2	5	123.6	63.8	1130.8
Number of Rain Days (≥1mm)												
10	12	14	13	11	14	13	14	14	0	6	12	133



Graph 1 – Monthly Rainfall

The 2020-2021 reporting period experienced a significant increase in rainfall and greater number of rain days compared to the previous two reporting periods which were subject to prolonged drought. March 2021 had the heaviest rain, with a total of 210.2mm and 14 days of rain above 1mm/day for the month (Graph 1). The average monthly rainfall was 94.2mm which was reflective of the months October and November 2020. Meanwhile, April 2021 had the lowest rainfall, with only 5.0mm over the duration of the month.

Following months of higher rainfall during 2020-2021, there has been no further damage to the walls of the creek bank and the gully heads have remained stable with no further erosion visible. The state of Chapmans Creek is expected to remain relatively stable under equivalent rainfall events. The event of extremely high rainfall experienced in the future may lead to the requirement of bank and gully stabilisation measures to be put in place as determined by the monitoring program and inspections.

The heavy rainfall experienced from February 2020 enabled the identification of the four springs located on site, three of which have since been monitored quarterly .

3.2 Surface Water Monitoring

The data shows that there is generally an increasing trend in pH, salinity, sodium and chloride downstream within Chapman's Creek, while nitrogen, phosphorous, iron and manganese tend to decrease downstream. This data forms the basis for impact assessment as the quarry progresses.

The data shows that water quality in Chapmans Creek is largely influenced by groundwater baseflow. Salt levels are generally above 1,200 µS/cm with neutral pH. During high flow, the salt content would likely decrease following initial flushing of the system. Monitoring during the period is detailed in Tables 3.2 to 3.5.

Table 3.2 – Monitoring Results for Sites for, RW1, RW2 and PWD (Sample Date 1/09/2020)

Analyte	Units	RW1	RW2	PWD	Drop Cut
pH	pH units	8.16	8.26	8.26	7.88
Electrical Conductivity	uS/cm	967	884	586	481
Total Suspended Solids (TSS)	mg/L	17	17	33	75
Total Dissolved Solids (TDS)	mg/L	628	575	381	313
Total Phosphorus as P (TP)	mg/L	0.03	0.02	0.02	0.02
Total Nitrogen as N (TN)	mg/L	4.6	5.8	9.1	8.2
Dissolved Oxygen (DO)	mg/L	9.8	10.4	10.4	9.4
Turbidity	NTU	10.7	9.5	27.5	92.7
Chloride	mg/L	212	179	73	68
Calcium	mg/L	29	22	11	16
Magnesium	mg/L	35	32	17	15
Sodium	mg/L	112	107	83	62
Potassium	mg/L	6	6	8	4

Analyte	Units	RW1	RW2	PWD	Drop Cut
Total Arsenic	mg/L	<0.001	<0.001	0.001	<0.001
Total Cobalt	mg/L	0.001	0.001	0.002	0.002
Total Copper	mg/L	0.003	0.002	0.003	0.004
Total Manganese	mg/L	0.026	0.034	0.051	0.04
Total Nickel	mg/L	0.001	<0.001	<0.001	0.001
Total Zinc	mg/L	0.005	0.006	0.006	0.011
Total Iron	mg/L	0.46	0.38	1.06	2.49
Oil and Grease	visual inspection	None visible	None visible	None visible	None visible

Table 3.3 – Monitoring Results for Sites for, RW1, RW2 and PWD (Sample Date 15/12/2020)

Analyte	Units	RW1	RW2	PWD	Drop Cut
pH	pH units	8.37	8.48	8.0	7.61
Electrical Conductivity	uS/cm	1340	1310	634	668
Total Suspended Soilds (TSS)	mg/L	7	6	28	24
Total Dissolved Solids (TDS)	mg/L	871	852	412	434
Total Phosphorus as P (TP)	mg/L	<0.01	<0.01	<0.01	<0.01
Total Nitrogen as N (TN)	mg/L	1.2	0.8	7.2	9.1
Dissolved Oxygen (DO)	mg/L	8.9	8.9	8.4	8.6
Turbidity	NTU	2.7	2.6	28.5	18.5
Chloride	mg/L	297	266	76	117
Calcium	mg/L	33	28	14	23
Magnesium	mg/L	49	51	16	19
Sodium	mg/L	151	157	83	76
Potassium	mg/L	6	6	7	12
Total Arsenic	mg/L	<0.001	<0.001	0.001	<0.001
Total Cobalt	mg/L	<0.001	<0.001	0.001	0.001
Total Copper	mg/L	<0.001	<0.001	0.002	0.002
Total Manganese	mg/L	0.048	0.053	0.028	0.016
Total Nickel	mg/L	<0.001	<0.001	<0.001	<0.001
Total Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
Total Iron	mg/L	0.16	0.16	1.07	0.94
Oil and Grease	visual inspection	None visible	None visible	None visible	None visible

Table 3.4 – Monitoring Results for Sites for, RW1, RW2 and PWD (Sample Date 16/03/2021)

Analyte	Units	RW1	RW2	PWD	Drop Cut
pH	pH units	8.28	8.15	8.47	7.99
Electrical Conductivity	uS/cm	1360	1670	707	768
Total Suspended Soilds (TSS)	mg/L	10	9	10	<5
Total Dissolved Solids (TDS)	mg/L	884	1080	460	499
Total Phosphorus as P (TP)	mg/L	0.05	0.02	0.02	<0.01
Total Nitrogen as N (TN)	mg/L	0.6	2.3	6.6	8
Dissolved Oxygen (DO)	mg/L	8.6	8.7	8.6	7.6
Turbidity	NTU	9.6	7.3	19	6.1
Chloride	mg/L	294	380	101	131
Calcium	mg/L	36	43	16	26
Magnesium	mg/L	53	65	21	24
Sodium	mg/L	161	197	95	87
Potassium	mg/L	6	7	8	5
Total Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L	<0.001	<0.001	<0.001	0.001
Total Copper	mg/L	<0.001	<0.001	<0.001	0.002
Total Manganese	mg/L	0.046	0.109	0.024	0.008
Total Nickel	mg/L	0.001	0.001	<0.001	<0.001
Total Zinc	mg/L	<0.005	<0.005	<0.005	<0.005
Total Iron	mg/L	0.61	0.47	0.63	0.21
Oil and Grease	visual inspection	None visible	None visible	None visible	None visible

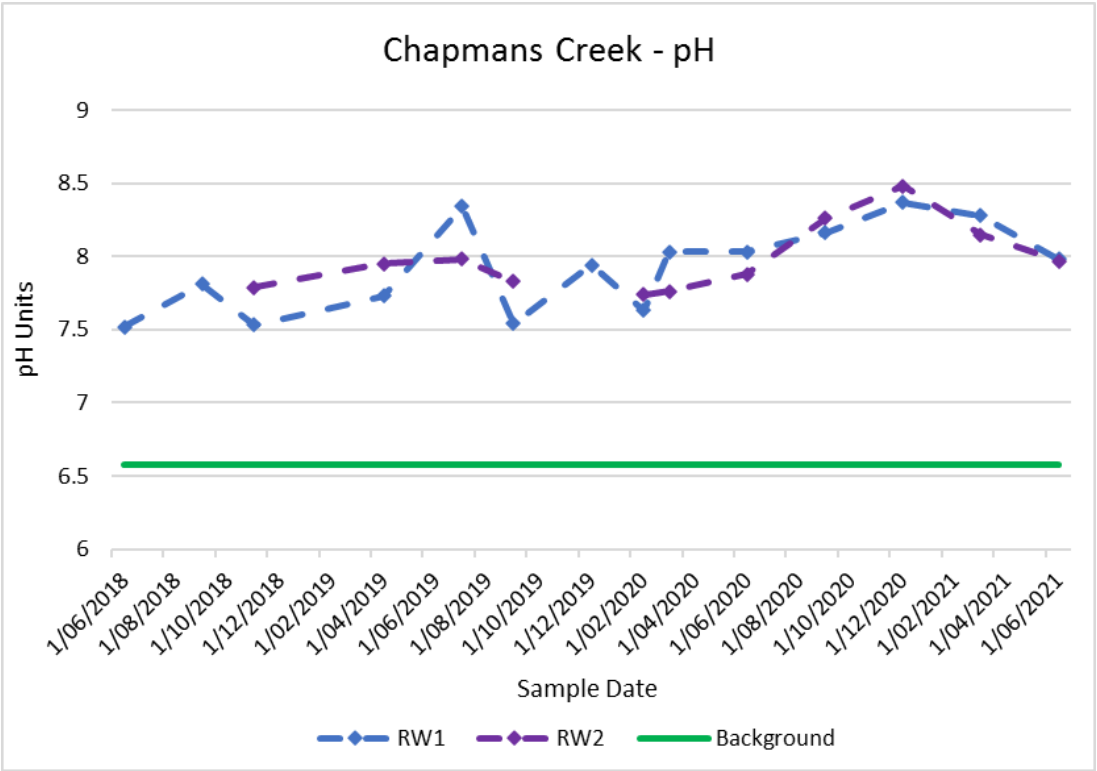
Table 3.5 – Monitoring Results for Sites for, RW1, RW2 and PWD (Sample Date 16/06/2021)

Analyte	Units	RW1	RW2	PWD	Drop Cut
pH	pH units	7.98	7.97	8.29	7.7
Electrical Conductivity	uS/cm	1370	1280	722	646
Total Suspended Soilds (TSS)	mg/L	<5	<5	8	5
Total Dissolved Solids (TDS)	mg/L	890	832	469	420
Total Phosphorus as P (TP)	mg/L	0.02	<0.01	<0.01	<0.01
Total Nitrogen as N (TN)	mg/L	2.3	4.6	9.3	8.3
Dissolved Oxygen (DO)	mg/L	10.2	10.3	11.2	9.6
Turbidity	NTU	6.7	7.3	14.4	10.7
Chloride	mg/L	302	268	96	99
Calcium	mg/L	43	37	16	24
Magnesium	mg/L	58	55	23	21
Sodium	mg/L	144	142	96	74
Potassium	mg/L	5	6	8	5
Total Arsenic	mg/L	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L	<0.001	<0.001	<0.001	<0.001
Total Copper	mg/L	<0.001	<0.001	<0.001	0.001
Total Manganese	mg/L	0.038	0.03	<0.001	0.011
Total Nickel	mg/L	<0.001	0.001	<0.001	<0.001
Total Zinc	mg/L	0.007	0.006	0.006	<0.005
Total Iron	mg/L	0.06	0.06	<0.05	<0.05
Oil and Grease	visual inspection	None visible	None visible	None visible	None visible

Graphs 2 to Graph 5 below show the water quality parameters of the two downstream Chapmans Creek sample sites RW1 and RW2 alongside the historical background average taken at the original upstream sampling Site I. RW2 was dry during June and September 2018, and December 2019 therefore only seven results are presented for this site. The data in the graphs below shows that water quality in Chapmans Creek is largely influenced by groundwater baseflow.

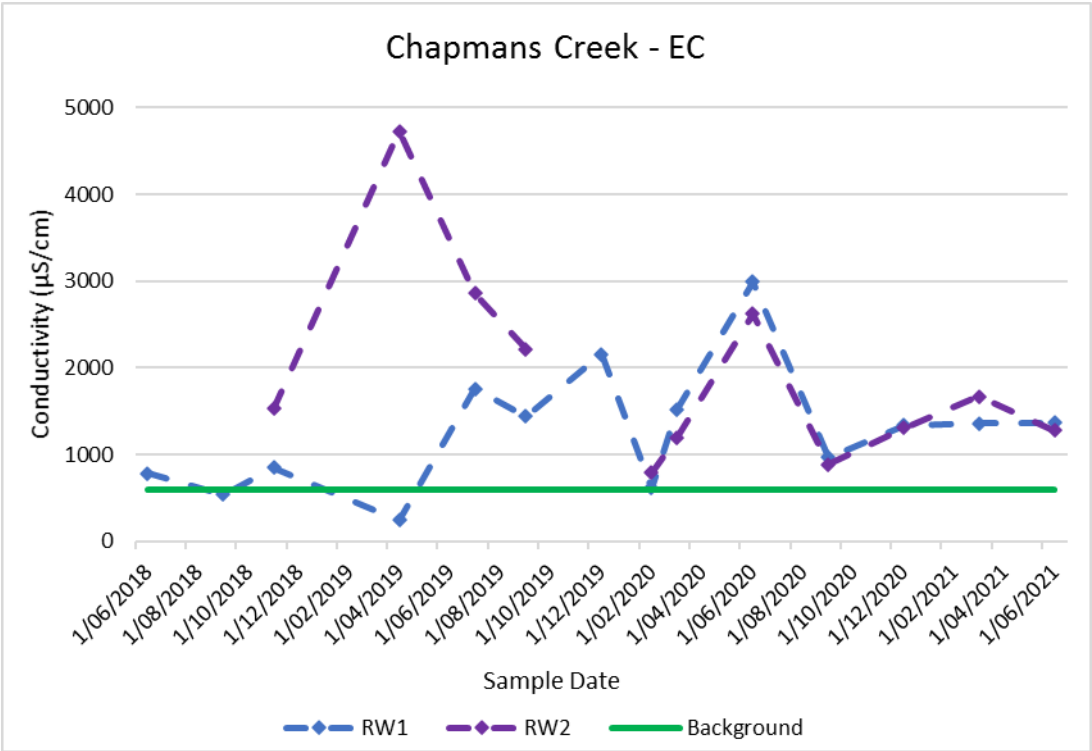
Graph 2 shows the pH of Chapmans Creek over the past 4 years. The pH has remained within a 1 pH unit band for the duration of this time for both sites. RW1 is situated 1km downstream of RW2, recording a pH averaging at 7.92 pH units compared to a slightly higher average of 7.98 pH units at RW2. The Creek is currently sitting at slightly alkaline pH approximately 1 and 2 pH unit higher than the historical background average.

Table 3.6 outlines the Trigger Action Response Plan (TARP) for surface water at the site. One of the triggers for action and investigation is the monitored pH in Chapmans Creek falling below 6.0 pH units. This has not occurred to date and therefore the TARP has not been enacted.



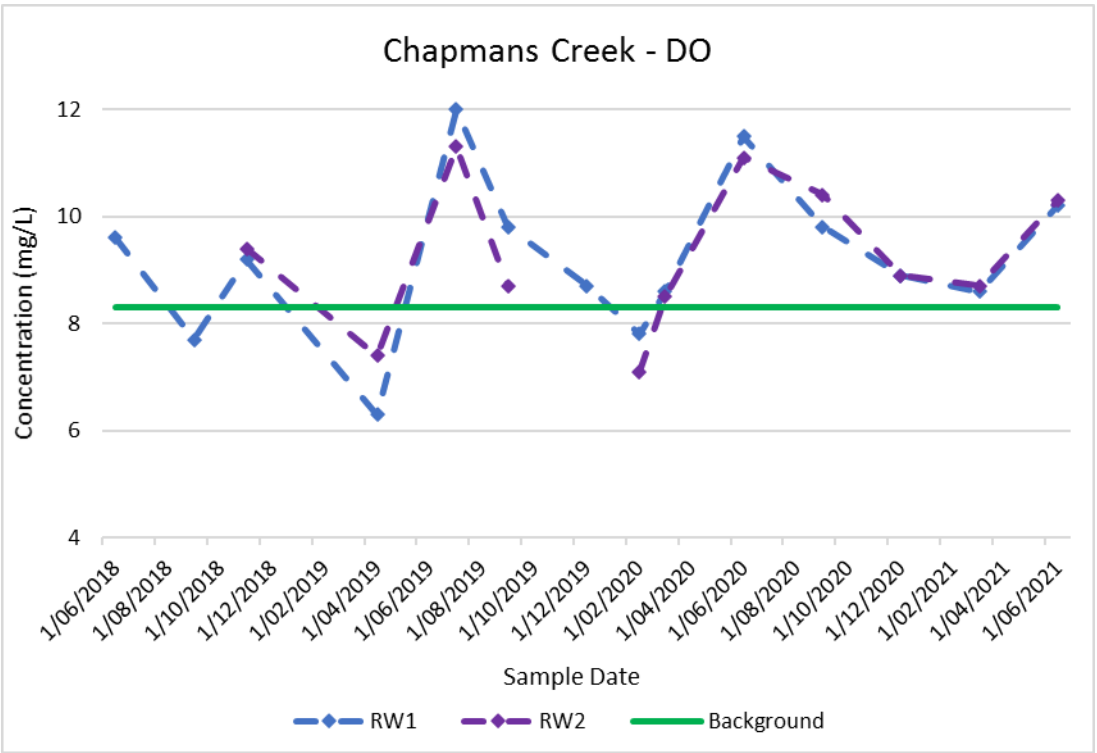
Graph 2- Chapmans Creek pH

Electrical conductivity of Chapmans Creek at RW1 and RW2 over the past 4 years are presented in Graph 3. Salinity levels recorded at the furthest downstream site RW1 average 1282 µS/cm which is higher than historical background upstream averages of 596 µS/cm. Conductivity levels at RW2 were higher still with an average of 1917 µS/cm. This is not a concern, as levels within the creek are lowered by RW1 where water leaves the site at Brayton Road. Also, during high flow the salt content is expected to decrease, which was seen in a period of high rainfall in 2021 and salinity is generally at its highest when low rainfall and evaporation causes stagnant pools to increase in salt content.



Graph 3- Chapmans Creek Electrical Conductivity

Dissolved oxygen levels are relatively similar for RW1, RW2 and the background average. These are consistent results, remain in a range for healthy aquatic biodiversity in line with background levels from the upstream Site I.



Graph 4- Chapmans Creek Dissolved Oxygen

3.2.1 Trigger Action Response

The following triggers in Table 3.6 do not relate to any specific action required by the Quarry but rather are designed to enable the quarry to determine if there are any impacts caused as a result of the quarry development.

Table 3.6 - Trigger Action Response Plan

Trigger	Action Required	Any Follow Up Actions
Water Quality (when overflow from Process Water Dam)		
When overflow from the Process Water Dam occurring, a 'significant' decrease in water quality in particular decreasing pH, increasing EC and increasing TDS at time in Chapmans Creek upstream of Brayton Road. A significant decrease is defined as: 1. a pH less than 6.0 2. A gradually increasing trend in EC & TDS values compared with any trends observed in the historic background monitoring site in Chapmans Creek (referred to as Site I).	Continue to monitor and assess surface water quality data during and after or overflow events. Establish trends and correlate with quarrying activities and climatic data (rainfall) to determine any causal link with Gunlake quarrying operations. Apply statistical analysis to assess trends if required. Compare water quality data in downstream monitoring sites with water quality data from the background monitoring site (Site I).	If evolving geochemical anomalies are detected in downstream surface water samples in Chapmans Creek (compared with water quality at the background monitoring - Site I) and an impact from the proposed quarrying is suspected or demonstrated, carry out follow-up verification sampling at the two monitoring sites within 30 days of the receipt of the anomalous analytical results. Collate, interpret results and assess significance of any impacts. Develop mitigation measures the detail of which will depend on the type, distribution and degree of impact.
Stream flow (when extraction depth exceeds 20m)		
A 'significant' decrease in stream flow over time that may or may not be associated with quarrying activities	Continue to monitor and assess stream flow data, establish trends and correlate with quarrying activities, climatic data (rainfall) and water table fluctuations in monitoring bores. Apply statistical analysis to assess trends if required. Determine whether any decrease in stream flow may be due to impacts from the proposed quarrying	Continue to monitor and assess stream flow data and assess trends. In the unlikely event that some, or all the reduction of stream flow in Chapmans Creek is assessed by the hydrogeological and/or surface water consultant to be due to impacts from quarrying, determine at what stage the stream flow was impacted upon and the likely mechanism for the decrease in flow. Develop a contingency plan to restore any stream flows.

It is important to note that it is necessary for Gunlake Quarry to actively recycle process water to maintain operations during normal to dry rainfall years. Excess water will only occur during above average rainfall patterns which may necessitate offsite discharges or transfers to occur. As the quarry expands, the need for offsite discharge will diminish but the need to recycle water will remain. Water within the dirty water storages is actively managed to ensure that runoff from storm events does not leave the site in an uncontrolled manner.

3.3 Creek Stability

Land clearing for historic agricultural purposes in the vicinity of the quarry has resulted in excessive overland runoff, and severe gully erosion to occur in Chapmans Creek in the past. Quarterly monitoring of the Creek is essential and following periods of higher rainfall in order to identify and manage further detrimental changes to the creek caused by erosion.

Four photopoints have been identified along the creek and are monitored closely to observe changes over time. These locations have been selected at relatively even intervals with areas of variable levels of erosion in order to create a broad snapshot of the creek. The location of this riparian monitoring area is shown in Appendix A.

- Photopoint 1 is the furthermost downstream photopoint. It lies adjacent to the Quarry carpark and the PWD. Upstream and downstream photos are taken at this point. The area visible from Photopoint 1 is relatively flat with minor erosion visible.
- Photopoint 2 is located approximately 300m upstream of Photopoint 1. Photos are taken both upstream and downstream at this point and moderate levels of rill erosion are monitored.
- Photopoint 3 is located at a steep drop in the bank approximately 2m in height. Severe erosion is to be monitored at this point, particularly from the downstream view at the undercutting of a large eucalypt.
- Photopoint 4 is the gully head at the beginning of the Creek on the Gunlake Site. Further upstream movement of the gully erosion is monitored at this point.

3.3.1 July 2018 – Baseline Monitoring Imagery


Photopoint 1 – Looking Upstream and Downstream


Photopoint 2 – Looking Upstream and Downstream

Photopoint 3 – Looking Downstream

3.3.2 December 2018– Baseline Monitoring Imagery


Photopoint 1 – Looking Upstream and Downstream


Photopoint 2 – Looking Upstream and Downstream


Photopoint 3 – Looking Upstream and Downstream


Photopoint 4 – Looking upstream at gully head

3.3.3 April 2019– Baseline Monitoring Imagery

Photopoint 2 – Looking Upstream and Downstream

Photopoint 3 – Looking Downstream

3.3.4 June 2019 – Baseline Monitoring Imagery

Photopoint 2 – Looking Upstream and Downstream

Photopoint 3 – Looking Downstream


Photopoint 4 – Looking upstream at gully head

3.3.5 September 2020


Photopoint 1- Looking Upstream and Downstream


Photopoint 2- Looking Upstream and Downstream

Photopoint 3- Looking Upstream

Photopoint 4- Looking Upstream and Downstream

Gully Head

3.3.6 December 2020


Photopoint 1- Looking Upstream and Downstream


Photopoint 2- Looking Upstream and Downstream


Photopoint 3- Looking Upstream and Downstream


Gully head

3.3.7 March 2021


Photopoint 1- Looking Upstream and Downstream


Photopoint 2- Looking Upstream and Downstream


Photopoint 3- Looking Upstream and Downstream


Photopoint 4- Looking Upstream and Downstream

3.3.8 June 2021


Photopoint 1- Looking Upstream and Downstream

Photopoint 3- Looking Upstream and Downstream

Photopoint 4- Looking Upstream and Downstream

Gully Head

During the reporting period, no evidence of any further erosion was recorded at the four Photopoints. Erosion is minimal at Photopoint 1, as banks are shallow and are well vegetated. The serrated tussock has been treated, and with increased rainfall native grasses are observed growing on the banks seen in the downstream photograph.

Photopoint 2 shows some rill erosion on the right bank in the downstream photo. It is possible that during high rainfall, water gushes into the creek from this section. Following the heavy rain during the previous year, no changes to this erosion was visible over the four monitoring periods. The upstream facing photos show infestation of the exotic weed Blackberry on the northern bank. The creek floor has positive vegetation growth, with grass cover for the duration of the year and water reeds visible in June 2021.

Highly disturbed riparian vegetation is visible in Photopoint 3. The roots of large trees growing on the embankment are exposed due to erosion cutting into the bank supporting their structure. Further erosion could possibly lead to the failure of the bank resulting in trees falling. The bank drop is over two metres high in this section, although no changes were visible during the reporting period. Blackberry is also visible from Photopoint 3.

The gully heads in Photopoint 4 were monitored in June 2020 and December 2020. The gully erosion has not extended during this period, however continued monitoring is required following heavy rainfall.

3.4 Springs Photographic Record

Springs are a naturally occurring phenomena and monitoring the seepage on a regular basis can gauge changes to groundwater levels due to influences of climatic variability. Quarterly monitoring of the Springs is essential in order to identify and manage changes to the sites aquifer systems.

Four Springs were re-identified during February 2020 following a storm event and three of these will be monitored closely to observe changes over time. The location of each spring is shown in Appendix A.

- Spring 6 is located to the southwest of the processing area and drop cut. The spring is now situated within a surface water dam that catches runoff from within the quarry and hence will not be monitored on a quarterly basis.

- Spring 7 is located on the eastern boundary of the site, nearby bore GM6.

- Spring 8 is also located on the east boundary of the site, approximately 400m north of Spring 7. The water from Spring 8 flows into a dammed area adjacent to a track leaving the site to an eastern property.

- Spring 9 can be found 200m due west of the DDG1. Some recent erosion and the formation of a gully head must be monitored closely at this spring.

3.4.1 April 2020 – Baseline Photographic Record

Spring 6 located within the dam

Spring 7

Spring 8


Spring 9

3.4.2 September 2020


Spring 7


Spring 8

Spring 9

3.4.3 December 2020

Spring 7


Spring 8


Spring 9

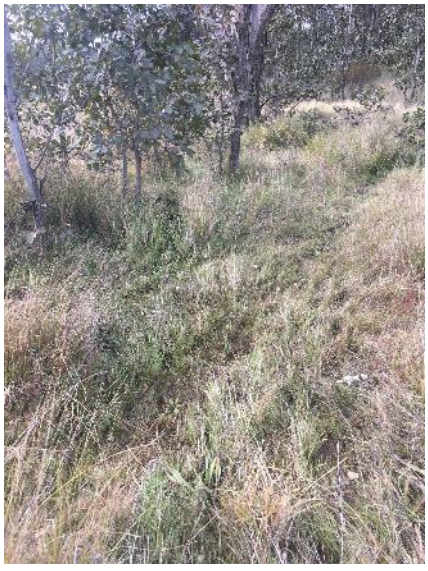
3.4.4 March 2021


Spring 7


Spring 8


Spring 9

3.4.5 June 2021




Spring 7


Spring 8


Spring 9

Monitoring of spring 6 has ceased since it has been dammed, as differentiation between spring water and surface water runoff within the dam is not achievable. Only a small amount of water was visible at spring 7 in June 2021, while spring 8 was completely overgrown with native grasses. The erosion at the head of spring 9 has extended approximately 6inches as a result of heavy rainfall in the reporting period, which must be carefully monitored for signs of further erosion and the need to employ preventative action.

4. Recommendations and Conclusion

The purpose of this report is to monitor the status and health of Chapmans Creek within the Gunlake Quarry site boundary to ensure further damage is not incurred as a results of quarrying activities.

Subject to management provisions detailed in the BioBanking Agreement, Conservation Agreement and Biodiversity and Rehabilitation Management Plan that area expected to be finalised in early 2022, staged management of Chapmans Creek will be scheduled in future reporting periods. This will involve strategic infill of tube stock and weed removal practices.

Vegetative surface cover is the key to mitigating erosion of the creek banks by absorbing heavy impacts from water runoff. The weeds present on the banks including serrated tussock and blackberry should be sprayed with caution to ensure chemical runoff does not travel into the waterways. Physical removal is not recommended however, until a stable cover of native vegetation is established. Removal of the weed species would leave a bare slope and disturbance to the soil which would increase the associated impacts of erosive forces.

The gully heads have not eroded further over the past 12 months and are currently in a stable state despite a number of high rainfall events and intense stream flow conditions. It is recommended to leave this section untouched, as disturbance of the surrounding soils is likely to reactivate the gully to cause further erosion. This area must be monitored quarterly and following heavy rainfall to ensure that erosion does not continue.

References

Alt, S., Jenkins, A., and Lines-Kelly, R., (2009) Saving soil ~ A landholder's guide to preventing and repairing soil erosion, Department of Primary Industries, ISBN 978 0 7347 1953 9

Jenkins, A., NSW DPI, Soil Erosion Solutions: Factsheet 5 Gully Erosion, Catchment Management Authority, http://www.dpi.nsw.gov.au/agriculture/resources/soils/erosion

Goulburn Mulwaree Council (2014), Goulburn Mulwaree Waterways Plan: A plan to rehabilitate and protect Goulburn Mulwaree's waterways

NSW Weedwise, (2019) Blackberry (*Rubus fruticosus* species aggregate), DPI https://weeds.dpi.nsw.gov.au/Weeds/Blackberry

NSW Weedwise, (2019) Serrated Tussock (*Nassella trichotoma),* DPI https://weeds.dpi.nsw.gov.au/Weeds/Details/123

Pattison, M, and Turner, B.M. (2008) *Lake Bathurst and The Morass Wetlands Background Paper*. Prepared for the Hawkesbury Nepean Catchment Management Authority, WetlandCare Australia, NSW.

Appendix A Monitoring Sites

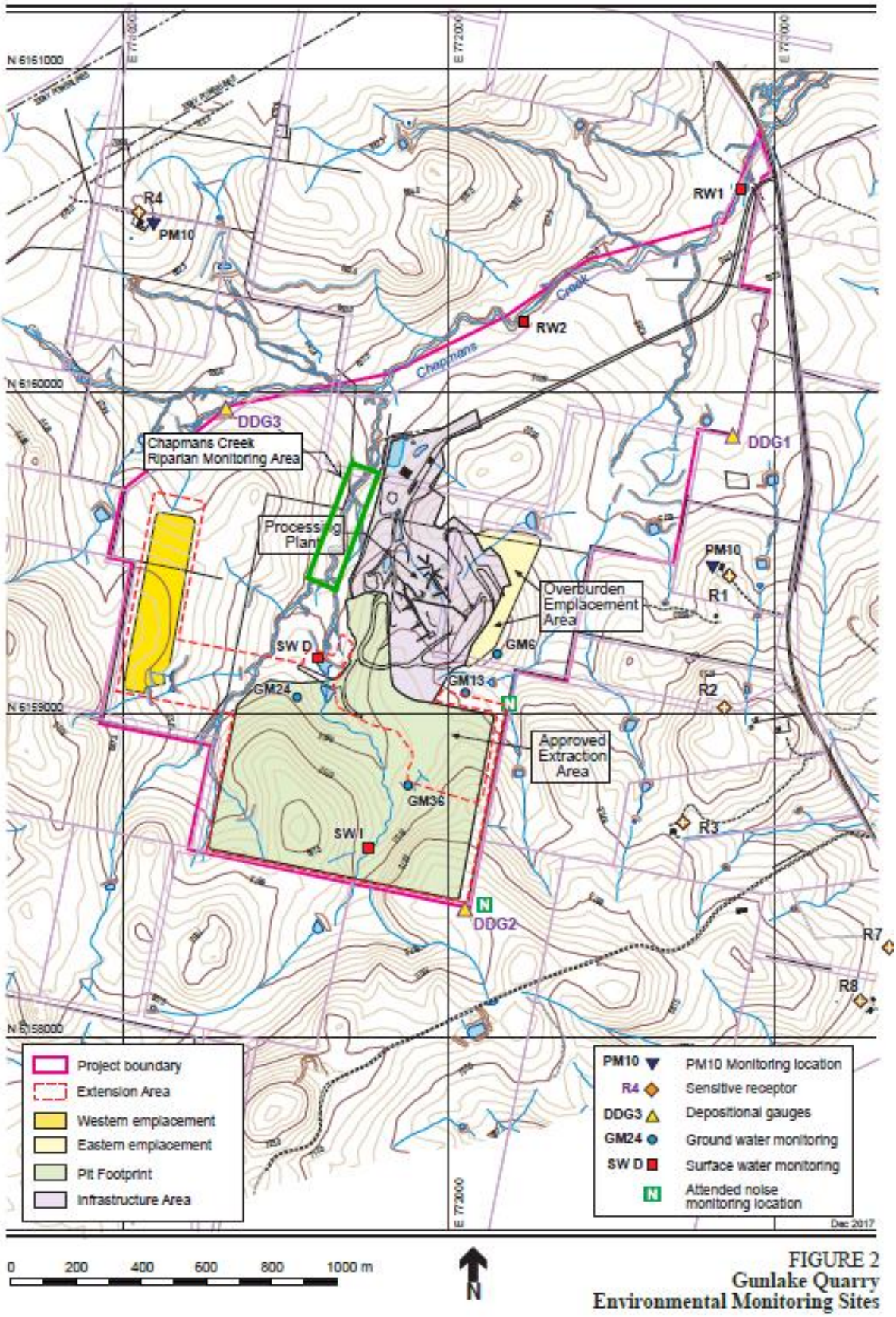


FIGURE 2
Gunlake Quarry
Environmental Monitoring Sites

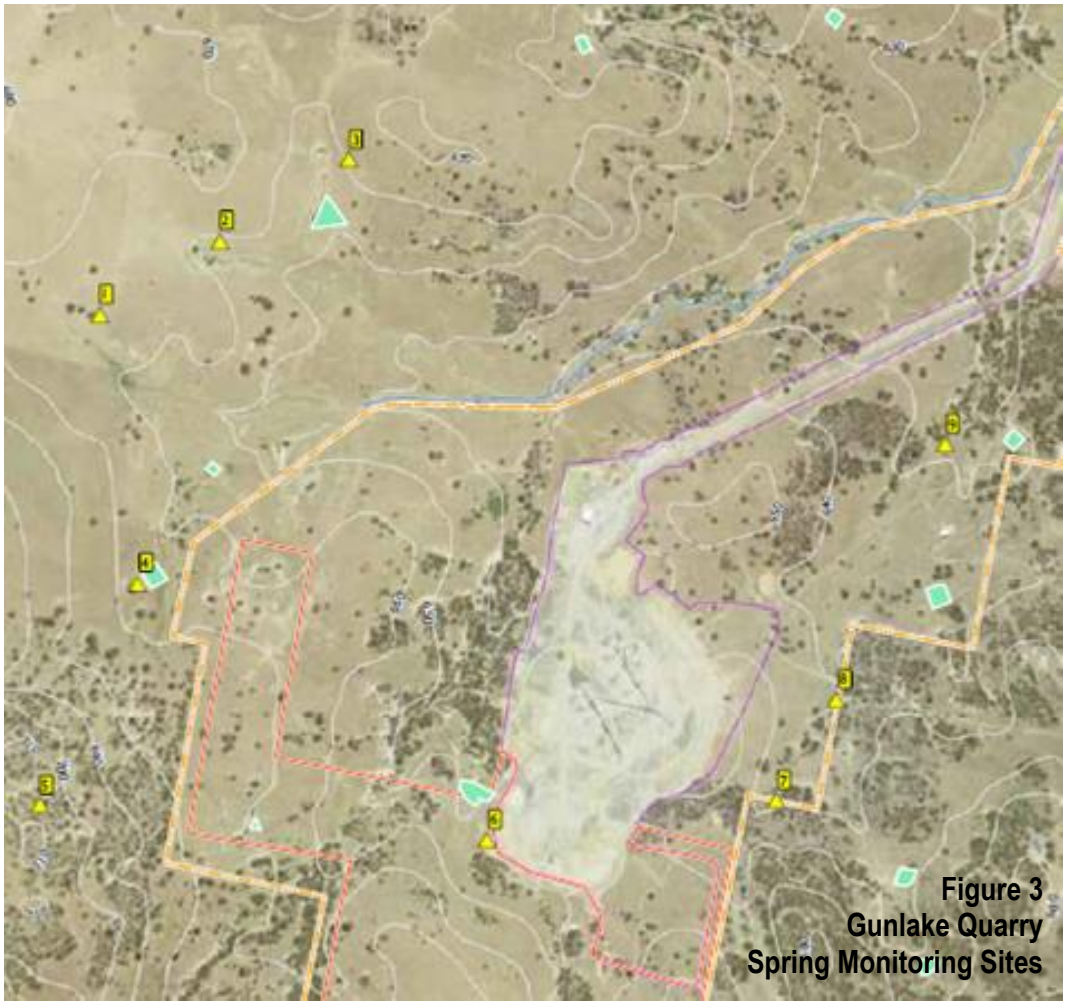


Figure 3
Gunlake Quarry
Spring Monitoring Sites

Appendix D – EPBC 2015 7557 Report

Gunlake Quarry

Compliance Report
Gunlake Extension Project
EPBC 2015/7557

September 2021

Table of Contents

1. Introduction

1.1 Background

The Gunlake Quarry Extension Project was approved by the NSW Land and Environment Court on 30 June 2017 (File 2017/108663). Prior to the NSW State approval, the Gunlake Extension Project was referred to the Federal Department of Environment and Energy and it was determined that the project comprised a controlled action with impact to threatened species and communities listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Specifically, impact to White Box Yellow Box Red Gum Grassy Woodland and Derived Native Grasslands ecological community and the Regent Honeyeater (*Anthochaera phrygia*), listed as critically endangered entities, was identified as a potential outcome of the action.

The controlled action was subsequently approved under the EPBC Act on 17th November 2017 subject to eight separate conditions, six of which are also contained in the NSW Development Consent. Five of the concurring conditions relate specifically to the Biodiversity Offset Areas that are required to retire the credits associated with impacts on native vegetation communities resulting from pit expansion and road upgrades as part of the Gunlake Extension Project. These areas are covered by a BioBanking Agreement.

A modification to LEC Consent 2017/108663 (Mod 1) was filed with the NSW Land and Environment Court in March 2019 which seeks to amend Schedule 3 Condition 32 to reduce the required area of the historical Biodiversity Conservation Areas from 78.82ha to 39.6ha. The case was heard over February and March 2021. Judgement is still pending as of September 2021.

The LEC hearing has implications with regards to both the State and Federal Approvals. The BioBanking Agreement was approved and executed on 25/5/2019. Until LEC Consent Mod 1 is determined, the Rehabilitation and Biodiversity Offset Management Plan prepared for Modification 2 of Project Approval 07_0074 remains the approved management document for the Gunlake Extension Project.

Compliance status with conditions of approval is detailed in Section 2.

1.2 Approval Details

Approval of the controlled action was granted under sections 130(1) and 133 of the EPBC Act. Further information relating to the approval is detailed in Table 1 below.

Table 1 – EPBC 2015/7557 Approval Details

Approval Details	
EPBC Number	EPBC 2015/7557
Project Name	Gunlake Extension Project
Approval Date	17/11/2017
Expiry Date of Approval	31/12/2042
Approval Holder	Gunlake Quarries Pty Limited ACN 118 686 963

Approval Details	
Approved Action	To extend the existing hard rock quarry operated by Gunlake Quarries Pty Limited, and undertake road upgrades along the primary transport route
Controlling Provision	Listed threatened species and communities
Project Location	Gunlake Quarry - 7km north west of Marulan NSW
Reporting Period	First reporting period 5/2/2018 – 4/2/2019 and annually thereafter.

2. Compliance Statement

2.1 Reporting Period 5/2/2021 – 30/6/2021

The compliance status for the reporting period to June 30 2021 is detailed in Table 2.1 below. The EPBC reporting period has now been aligned with the Annual Review Period. This report was lodged on 30/09/2021

Table 2.1 – EPBC Approval Conditions Compliance Status: 5/2/2021 – 30/6/2021

Referral Condition Number	Relevant SSD Consent Condition	Condition Particulars	Compliance Status	Comments / Evidence
1		For the protection of listed threatened species and communities, the person taking the action must not impact more than 16.06 hectares of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland as a result of the proposed action.	Compliant	The referral of the Gunlake Extension Project to the Department related to unavoidable impacts on up to 16.06 hectares of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland as determined from ecological surveys of the project's disturbance area. This included removal of this particular vegetation community in the approved pit extension area as well as impacts to this vegetation community resulting from road upgrades required by the LEC Consent. Clearing of vegetation is undertaken progressively ahead of pit development within the approved disturbance areas as detailed in the referral to the Department and therefore no greater than 16.06 hectares has or will be disturbed.

Referral Condition Number	Relevant SSD Consent Condition	Condition Particulars	Compliance Status	Comments / Evidence
2		For the protection of listed threatened species and communities, the person taking the action must comply with the NSW conditions of consent below, as in force or existing from time to time, where those conditions relate to avoiding, mitigating, offsetting, managing, recording or reporting on impacts to listed threatened species and communities.		
	1, Schedule 2	General obligation to prevent environmental harm.	Compliant	Monitoring and reporting of impacts from the development are reported each year in the Annual Review. No significant environmental harm has been reported.
	2, Schedule 2	Requirement to undertake the action generally in accordance with the Gunlake Extension Project EIS.	Compliant	Ongoing requirement which is reported each year in the Annual Review.
	31(b), Schedule 3	Requirement to implement the Biodiversity Offset Strategy, including retirement of biodiversity credits	Compliant	The Biodiversity and Rehabilitation Management Plan (BRMP) incorporating the Biodiversity Offset Strategy cannot be finalised until the determination of Mod 1. The BioBanking Agreement was approved and executed on 25/5/2019.

Referral Condition Number	Relevant SSD Consent Condition	Condition Particulars	Compliance Status	Comments / Evidence
	34, Schedule 3	Requirement to retire the specific number of biodiversity credits	Compliant	BioBanking credit report prepared and lodged in February 2018. BioBanking Agreement approved on 25/5/2019. A total of 1,466 credits have been approved to compensate for the impacts of the Gunlake Extension Project which exceeds development consent conditions..
	35, Schedule 3	Requirement to retire credits through a BioBanking Agreement	Compliant	BioBanking Agreement Application lodged February 2018 and approved and executed in May 2019.
	38, Schedule 3	Requirement to prepare and implement an approved Biodiversity and Rehabilitation Management Plan	Compliant	A Biodiversity and Rehabilitation Management Plan (BRMP) was lodged with DPIE in February 2018 and cannot be finalised until the determination of Mod 1, consequently the Rehabilitation and Biodiversity Offset Management Plan prepared for Modification 2 of Project Approval 07_0074 remains the management document for the Gunlake Extension Project. Judgement is expected to be handed down in the coming compliance reporting period.
3		Within 20 business days after commencement of the action, the person taking the action must advise the Department in writing of actual date of commencement	Not applicable	Action commenced prior to previous reporting period.

Referral Condition Number	Relevant SSD Consent Condition	Condition Particulars	Compliance Status	Comments / Evidence
4		The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Biodiversity Offset Strategy, Biodiversity and Rehabilitation Management Plan, and Environmental Management Plan required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with Section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Compliant	Vegetation disturbance, rehabilitation and maintenance of rehabilitation and vegetation within offset areas are reported on in the Annual Review.
5		Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as	Compliant	Reporting was undertaken through the Quarry's Annual Review.

Referral Condition Number	Relevant SSD Consent Condition	Condition Particulars	Compliance Status	Comments / Evidence
		the compliance report is published. Reports mush remain published for the life of the approval. The approval holder must continue to publish reports until otherwise advised by the Minister in writing.		
6		The person taking the action must advise the Department of any potential non-compliance with any of these conditions of approval in writing within seven days of becoming aware of the potential non-compliance.	Compliant	
7		If, at any time after five years from the date of this approval, the person taking the action has not commenced the action, then the person taking the action must not commence the action without the written agreement of the Minister.	Compliant	Commencement occurred on 5th February 2018
8		Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management documents referred to in these conditions of approval on their website. This includes documents required indirectly through the NSW conditions of consent.	Compliant	All approved Management Plans applicable to this approval and the NSW conditions of consent are available via the company's website.

3. Non-compliance Summary

There were no non-compliances during the reporting period.

Appendix A – EPBC Approval Document

Approval
Gunlake Extension Project, Brayton, NSW (EPBC 2015/7557)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Gunlake Quarries Pty Limited
proponent's ACN	118 686 963
proposed action	To extend the existing hard rock quarry operated by Gunlake Quarries Pty Limited, and undertake road upgrades along the primary transport route, approximately 7 km north-west of Marulan, NSW. [See EPBC Act referral 2015/7557 and request for variation received 8 and 10 August 2017].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2042.

Decision-maker

name and position	Dane Roberts Acting Assistant Secretary Assessments (ACT, NSW) & Waste Branch
signature	
date of decision	17/11/17

Conditions attached to the approval

1. For the protection of **listed threatened species and communities**, the person taking the action must not impact more than 16.06 hectares of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland as a result of the proposed action.

2. For the protection of **listed threatened species and communities**, the person taking the action must comply with the following conditions of the **NSW conditions of consent**, as in force or existing from time to time, where those conditions relate to avoiding, mitigating, offsetting, managing, recording or reporting on impacts to **listed threatened species and communities**:

Schedule	Condition	Subject
Administrative conditions		
2	1	general obligation to prevent environmental harm
	2	requirement to undertake the action generally in accordance with the Gunlake Extension Project Environmental Impact Statement and conditions of consent
Biodiversity and rehabilitation		
3	31(b)	requirement to implement the Biodiversity Offset Strategy, including retirement of biodiversity credits
	34	requirement to retire the specified number of biodiversity credits
	35	requirement to retire credits through a BioBanking Agreement
	38	requirement to prepare and implement an approved Biodiversity and Rehabilitation Management Plan

3. Within 20 business days after **commencement** of the action, the person taking the action must advise **the Department** in writing of the actual date of **commencement**.

4. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Biodiversity Offset Strategy, Biodiversity and Rehabilitation Management Plan, and Environmental Management Plan required by this approval, and make them available upon request to **the Department**. Such records may be subject to audit by **the Department** or an independent auditor in accordance with section 458 of **the EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on **the Department**'s website. The results of audits may also be publicised through the general media.

5. Within three (3) months of every twelve (12) month anniversary of the **commencement** of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of

the date of publication and non-compliance with any of the conditions of this approval must be provided to **the Department** at the same time as the compliance report is published. Reports must remain published for the life of the approval. The approval holder must continue to publish reports until otherwise advised by **the Minister** in writing.

6. The person taking the action must advise **the Department** of any potential non-compliance with any of these conditions of approval in writing within seven (7) days of becoming aware of the potential non-compliance.

7. If, at any time after five (5) years from the date of this approval, the person taking the action has not **commenced** the action, then the person taking the action must not **commence** the action without the written agreement of **the Minister**.

8. Unless otherwise agreed to in writing by **the Minister**, the person taking the action must publish all management documents referred to in these conditions of approval on their website. This includes documents required indirectly through the **NSW conditions of consent**.

Definitions

Commencement (also commence the action etc.) is the first instance of an activity described as part of the proposed action, excluding the erection of fences and signage.

The Department is the Australian Government department responsible for administration of **the EPBC Act**.

The EPBC Act is the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Listed threatened species and communities are flora and fauna species and ecological communities that are listed as threatened under **the EPBC Act** that may be impacted by the proposed action, including White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

The Minister is the Australian Government minister responsible for administering **the EPBC Act**, and includes a delegate of **the Minister**.

NSW conditions of consent is the document recording the decision of the Land and Environment Court of NSW in the case Gunlake Quarries Pty Limited v The Minister for Planning, entitled "Annexure 'A' of S34 Agreement filed 30 June 2017 in proceedings no: 108663 of 2017 – conditions of consent", under the *Land and Environment Court Act 1979* (NSW).

Appendix B – Management Plan

All approved Management Plans and Annual Reports can be found on the Gunlake website www.gunlake.com.au

Table A1 – Vegetation Management

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
Degradation from stock grazing	Exclude stock from Biodiversity Offset Areas.	Fence off Biodiversity Offset Areas	1). To be completed as soon as practicable following approval of this Plan. 2). Type of fencing to be determined by Gunlake, however where new fences are constructed, the use of plain wire rather than barbed wire is generally used. If barbed wire is necessary, at least the top strand will be plain wire (to prevent wildlife entanglement). 3). Fencing to be maintained in good condition to exclude stock. In particular, fences in gullies/creek lines are to be checked after rain for damage and to remove debris.	BioBanking areas fenced off in August 2019. Fencing is checked on a quarterly basis as a minimum and following heavy rain and/or high wind conditions.
Existing vegetation - Biodiversity Offset Areas	Maintain sustainable Box Gum Woodland EEC and riparian vegetation communities within nominated Biodiversity Offset Areas.	1). Establish structure and floristics of final target vegetation community 2).Source local provenance seed either by collecting seed on site or from local supplier. 3). Establish vegetation monitoring plots. Recorded monitoring data will	1). The following performance criteria apply: ❒ Key indicator species present in equivalent density to target EEC or riparian vegetation.	Target vegetation community structure and florists established. Monitoring plot establishment pending the outcome of the LEC Consent Mod 1

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
		include percentage canopy cover, germination rate, percentage erosion/bare patches, seed development, and photographs. 4). Supplementary planting or direct seeding in areas with low natural regenerative capacity 5). Monitor natural regeneration & planting/direct seeding areas and review success of natural regeneration and any revegetation measures. 6). Identify areas requiring infill planting or specific management tasks.	❒ Indicator species successfully seed in two consecutive years. ❒ Canopy density greater than 30% 2). Seed collection is undertaken in consultation with a qualified/experienced person (e.g. bush regeneration contractor or local native nursery staff). Seed collection is undertaken when needed and when available. 3). Monitoring plots established and mapped. 4). Additional planting/seed sowing as required (determined by success of previous activities and natural regeneration) to be undertaken in consultation with a qualified/experienced person. 5). The results from the monitoring plots will be reported	determination and approval of the Rehabilitation and Biodiversity Offset Management Plan. Despite the establishment of these plots pending, photographs of the BioBanking and Biodiversity Conservation Areas are taken on an annual basis and reported in the Annual Review.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
			in the Annual Review submitted to the DP&E in accordance with the Project Approval.	
Passive Regeneration areas - past clearing and disturbance (loss of native tree, shrub and ground cover)	Create sustainable Box Gum Woodland EEC and riparian vegetation communities within nominated Biodiversity Offset Areas.	1). Establish structure and floristics of final target vegetation community 2).Source local provenance seed either by collecting seed on site or from local supplier. 3). Establish vegetation monitoring plots. Recorded monitoring data will include percentage canopy cover, germination rate, percentage erosion/bare patches, seed development, and photographs. 4). Supplementary planting or direct seeding in areas with low natural regenerative capacity 5). Monitor natural regeneration & planting/direct seeding areas and review success of natural regeneration and any revegetation measures. 6). Identify areas requiring infill planting or specific management tasks.	1). The following performance criteria apply: ❒ Key indicator species present in equivalent density to target EEC or riparian vegetation. ❒ Indicator species successfully seed in two consecutive years. ❒ Canopy density greater than 30% 2). Seed collection is undertaken in consultation with a qualified/experienced person (e.g. bush regeneration contractor or local native nursery staff). Seed collection is undertaken when needed and when available. 3). Monitoring plots established and mapped. 4). Additional planting/seed sowing as required (determined	Target vegetation community structure and florists established. Monitoring plot establishment pending the outcome of the LEC Mod 1 determination and approval of the Rehabilitation and Biodiversity Offset Management Plan. Despite the establishment of these plots pending, photographs of the BioBanking and Biodiversity Conservation Areas are taken on an annual basis and reported in the Annual Review.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
			by success of previous activities and natural regeneration) to be undertaken in consultation with a qualified/experienced person. 5). The results from the monitoring plots to be reported in the Annual Review submitted to the DP&E in accordance with the Project Approval.	
Rehabilitated Areas	Areas where quarrying or overburden placement are completed are quickly shaped and vegetated to provide a stable landform with sustainable vegetation cover.	1). Following overburden placement, shaping, subsoil and topsoil replacement, contour banks are progressively installed prior to sowing with either a mixture of pasture species or native species mix depending on final land use. 2). Establish structure and floristics of final target vegetation community 3). Recorded monitoring data will include percentage canopy cover, germination rate, percentage erosion/bare patches, seed development, and photographs. 4). Monitor rehabilitation areas and review success of natural	1). Direct transfer of topsoil is maximised and the area of land remaining to be rehabilitated at the end of quarry life is minimised. Final land use may comprise areas for agriculture and areas of native habitat. 2). The following performance criteria apply: ❒ Key indicator species present in equivalent density to target vegetation community. ❒ Indicator species successfully seed in two consecutive years.	Rehabilitation of disturbed areas is presently limited to the completed sections of both the noise bund overburden emplacement to the north east of the processing area and the Western Overburden Emplacement area. Rehabilitation commenced on the noise bund in 2014 with maintenance being undertaken annually including weed spraying, erosion control, and infill planting.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
		regeneration and any revegetation measures.	3). The results from the monitoring to be reported in the Annual Review submitted to the DP&E in accordance with the Project Approval.	Rehabilitation of the first two tiers of the northern extent of the Western Overburden Emplacement was undertaken in mid 2020 with the planting of native tube stock sourced from a local nursery. The progress of this rehabilitation is reported in the Annual Review.
Weeds	Control and/or reduce weeds, particularly Serrated Tussock.	1). All weed control activities will be undertaken by suitably qualified contractors. Weed control activities will be subject to, and augment, revegetation work being undertaken by the bush regeneration specialist. 2). Weed control will be monitored 3). Gunlake will encourage neighbours to participate in a weed control program in the Chapman's creek catchment area. The level of neighbour participation and commitment will contribute significantly to the degree of success. There are populations of blackberry	1). All weed control and reduction activity will be undertaken in accordance with the requirements of the Goulburn Mulwaree Shire Council. 2). Results of weed control program and monitoring included in the Annual Review. The reporting will review the success of weed control/removal measures. 3). Results of community activities associated with weed	Gunlake implements weed control in accordance with the Goulburn-Mulwaree Council policy publications *Management Plan for the Enforcement of Class 4 Noxious Weeds* and *Noxious Weed Management Program Guidelines*. This program involves experienced weed control contractors undertaking targeted spraying exercises.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
		and serrated tussock on neighbouring properties that will need to be controlled for Gunlake's weed control program to be efficient and effective in the medium to long term	control reported in the Annual Review.	Details of weed control measures are detailed in the annual review.
Degradation and erosion within creeks/drainage lines.	To stabilise stream banks and gullies and to improve or restore riparian vegetation within the Gunlake property.	1). Identify areas of instability and erosion within the nominated section of creek line. 2). Maintenance – design and undertake streambed and bank rehabilitation measures. 3). Infill planting and passive regeneration. 4). Monitoring and review 5). Gunlake will liaise with adjacent land owners and attempt to get participation in creek management.	1). Identified areas and regeneration progress to be mapped 2). Records kept of all erosion control structures or works undertaken 3). Additional planting/seed sowing as required (determined by success of previous activities and natural regeneration) to be undertaken in consultation with a qualified/experienced person. 4). Results of revegetation and monitoring included in the Annual Review. The reporting will review the success of remediation works, including review of the relative success of bank stabilisation, erosion control and riparian strip	Quarterly monitoring of the Chapmans Creek Riparian Zone within the Conservation Area has been undertaken on a quarterly basis since July 2018. A detailed report is prepared annually and appended to the Annual Review. To date no erosion control works or stream bed remediation has been undertaken as monitoring has indicated that no further erosion is occurring. Rather, infill planting of native species will be undertaken in 2021 in the riparian zones to further stabilise the areas adjacent to the creek lines and prevent erosion progressing in future.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
			rehabilitation/revegetation measures, as well as outcomes of neighbour liaison.	
Feral animals	Maintain or reduce feral animal activity	1). Continue current management practices in consultation with Council and local pest animal management strategy.	1). To be undertaken by the proponent (or contractor) for the life of the project.	The primary feral animal on site is the rabbit however there have been no infestations identified requiring specific controls. There are also regular sightings of goats and foxes however these are transient and are not known to breed on the Gunlake properties.
Vehicle/ pedestrian access to Vegetation Offset Areas	Vehicle and pedestrian access to be controlled	1). Fencing. 2). Education and awareness. 3). Signage.	1). As described previously above. To be undertaken by proponent (ongoing). 2). All staff and contractors to be made aware of the location of the Biodiversity Offset Areas and the need to limit access. 3). Clear and simple signs saying "Biodiversity Offset Area – Sensitive Environmental Site" should be attached at various points along the boundary	Signs have been erected at key points along the perimeter of the BioBanking and Conservation Areas. Designated access tracks within these areas.

Management Issues	Objective	Actions	Performance and/or Completion Criteria	Comments
			fence of the Biodiversity Offset Areas (particularly on gates). 4). To be completed by proponent within 1 month of completing fencing.	
Bushfire	Minimise the risk of bush fires occurring on, or spreading from the Gunlake property.	1). Maintain firebreaks around key infrastructure areas including the office and main access road to the site. 2).Maintain the agricultural component of the property to avoid significant quantities of long dry grass 3). Extinguish fires or notify fire fighting authorities immediately in the event of a fire. 4). Inform Rural Fire Service (RFS), staff and contractors of the need to restrict burning activities. 5). Monitor and Review.	1). To be inspected annually and maintained as required. 2). Active grazing or slashing as required 3). Keep a record of fire events (to be undertaken by proponent). 4). Review frequency of fire events and the effect on native vegetation as part of the vegetation monitoring program.	Bushfire management plan and practices reviewed annually in consultation with RFS. Severe drought conditions during 2018, 2019 and early 2020 meant that no vegetation management was required in relation to maintaining low-grass firebreaks however bushfire risk was great over the summer of 2019/2020. Despite fires burning to the south, east and north, no fires encroached within the vicinity of the quarry and no vegetation or infrastructure was harmed.