DARACON Group

ARDGLEN QUARRY

2020 Annual Environmental Management Report (AEMR)

PROJECT APPROVAL MP 06_0264

TITLE BLOCK

Table 1: Ardglen Quarry – Title block

Name of operation	Ardglen Quarry
Name of operator	Buttai Gravel Pty Ltd (Daracon Quarries)
Development consent / project approval #	Project Approval MP 06_0624 MOD 1
Name of holder of development consent / project approval	Buttai Gravel Pty Ltd (Daracon Quarries)
Annual Review start date	1st January 2020
Annual Review end date	31st December 2020
I, Luke Robinson, certify that this audit report is a true and accurate record of the compliance status of Ardglen Quarry for the period 1st January 2020 to 31st December 2020 and that I am authorised to make this statement on behalf of Buttai Gravel Pty Ltd. *Note.* *a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.* *b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).*	
Name of authorised reporting officer	Luke Robinson
Title of authorised reporting officer	Systems Manager – Construction Materials
Signature of authorised reporting officer	
Date	29th March 2021

STATEMENT OF COMPLIANCE

Table 2: Ardglen Quarry – Statement of compliance

Were all of the conditions of the relevant approval complied with?	No

SUMMARY OF NON-COMPLIANCES

Table 3: Ardglen Quarry – Summary of non-compliances

Condition #	Condition / description	Compliance status – refer legend below	Comment	Where addressed in AEMR
Sch. 3 Cl. 26; SoC 8	Daracon has not provided long term security for the off-set areas as per the stipulated timeframe.		**2018 IEA NC3** - Daracon has actively engaged in discussions and exchanged information with the Biodiversity Conservation Trust NSW relating to the offset areas associated with the Ardglen quarry consent. Those discussions have confirmed that a "Conservation Agreement" (CA) is the appropriate process to secure the Biodiversity Offset Areas (BOA) detailed in the consent. Daracon is progressing well with the CA including substantial consultation with the Biodiversity Conservation Trust (BCT) who inspected the site in early 2021 to facilitate the completion of the CA. At the time of the AEMR submission, we were still working through a few critical components of the CA before it could be finalised.	Section 2.12
SoC 8	Daracon has not provided long term security for the off-set areas as per the stipulated timeframe.		**2018 IEA NC7** – Refer to 2018 IEA NC3 above	Section 2.12

Sch. 3 Cl. 19	Prior to commencing work in the Extension Area: (1) It is recommended that the retention volume of the final sedimentation basin necessary to capture surface waters (to ensure compliance with the EPL) be calculated. The calculation should take into account the area of dirty water catchment from the existing quarry and the extension area. (2) It is recommended that final sediment basin be surveyed to determine if it has sufficient volume to meet the volume requirements determined in (1) above. (3) It is recommended, that if the volume of the final sediment basin is not sufficient, that the ballast dumped in the basin, be removed to increase the basin volume to the required amount.		**2018 IEA NTR1** - A revised Water Management Plan, including an assessment of basin volumes is included as part of the proposed consent modification. This will be enacted prior to commencing work in the Extension Area.	Section 2.8
Sch. 3 Cl. 21	The Water Management Plan be updated to include an assessment of the reliability of the water supply to the operation. This should be completed prior to the commencement of works in the Extension Area.		**2018 IEA NTR2** - A revised Water Management Plan including an assessment of the reliability of the water supply to the operation is included as part of the proposed consent modification. This will be enacted prior to commencing work in the Extension Area.	Section 2.8
Sch. 3 Cl. 22	Operational and maintenance activities on site that could cause soil erosion and sediment generation should be identified and described for in the plan.		**2018 IEA NTR3** - Operational and maintenance activities that could cause soil erosion and sediment generation will be identified and described in the revised Water Management Plan included as part of the proposed consent modification. This will be enacted prior to commencing work in the Extension Area.	Section 2.8

Sch. 3 Cl. 23	The water monitoring plan should be revised to include detailed protocol for investigation, notification and mitigation of water quality exceedances. Details for procedures to manage unforeseen water quality impacts should be included in the site water management plan.		**2018 IEA NTR4** - Procedures to manage unforeseen water quality impacts are included in the revised site water management plan included as part of the proposed consent modification. This will be enacted prior to commencing work in the Extension Area.	Section 2.8
Sch. 3 Cl. 44	Daracon should implement all practicable measures to mitigate impacts from off-site lighting upon recommencement of operations. Daracon should ensure that all external lighting associated with the project complies with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting and have the satisfaction of the Director-General on record upon recommencement of operations.		**2018 IEA NTR6** - There is currently no external lighting associated with the operation of Ardglen Quarry, however if this was to change in the future, then Daracon would ensure compliance with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting to the satisfaction of the Director-General.	Section 2.7
Sch. 3 Cl. 11	Blast SWMS should be updated to ensure that appropriate communications and fly rock protection are in place for blasting a within 500 m of adjacent land. It would be wise to make this a standard provision for all blasts since much of the quarry is within 500 m of adjacent land.		**2013 IEA 1** - No blasting has occurred during the audit period and there are no current plans for the recommencement of blasting. The SWMS will be reviewed and updated prior to blasting and/or entering the extension area.	Section 2.2
Sch. 3 Cl. 20	It is recommended that surface water quality monitoring is implemented regardless of the operational status of the quarry.		**2013 IEA 2** - A revised Water Management Plan including an assessment of basin volumes is included as part of the proposed consent modification. This will be enacted prior to commencing work in the Extension Area.	Section 2.8

Sch. 3 Cl. 26	In order to secure the offset areas a VCA or similar mechanism should be implemented as soon as practicable.		**2013 IEA 3** - Refer to 2018 IEA NC3 above.	Section 2.12
Sch. 3 Cl. 44	An assessment of external lighting against AS4282 (INT) 1995 is required to be submitted to the DG.		**2013 IEA 4** - There is currently no external lighting associated with the operation of Ardglen Quarry, however if this was to change in the future, then Daracon would ensure compliance with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting to the satisfaction of the Director-General.	Section 2.7
SoC 8	A VCA, or similar mechanism should be implemented as soon as practicable.		**2013 IEA 8** - Refer to 2018 IEA NC3 above.	Section 2.12
SoC 9	Blast SWMS should be updated to ensure that appropriate communications and fly rock protection are in place for blasting a within 500 m of adjacent land. It would be wise to make this a standard provision for all blasts since much of the quarry is within 500 m of adjacent land.		**2013 IEA 9** - No blasting has occurred during the audit period and there are no current plans for the recommencement of blasting. The SWMS will be reviewed and updated prior to blasting and/or entering the extension area.	Section 2.2

COMPLIANCE STATUS LEGEND

Risk level	Colour code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non-compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

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1. INTRODUCTION

1.1 Scope

This report has been prepared by Daracon Quarries, in accordance with Schedule 5 Condition 4 of the Project Approval MP 06_0264 to record the activities and environmental monitoring undertaken within and surrounding Ardglen Quarry during the period 1st January 2020 to 31st December 2020.

Figure 1: Quarry Location

On 2nd December 2008 Daracon was granted approval (Project Approval MP 06_0264) under part 3A of the Environmental Planning & Assessment Act 1979 to extend the existing quarry operations in a westerly direction into Lot 218 (DP 751028). In December 2010, Modification 1 (MOD 1) for Project Approval MP 06_0264 was implemented and remains valid today.

Daracon ceased operations at Ardglen Quarry in February 2012 and the site was placed into “care and maintenance” at that time.

In August 2018, Ardglen quarry was taken out of "care and maintenance" due to the need for material at the Scone Bypass Project (SBP). This was communicated to the community and relevant regulatory authorities as part of the recommencement process. The export of material from Ardglen quarry to the SBP was completed in early 2020.

This document provides an overview of activities and environmental monitoring that occurred within the reporting period and also activities and environmental monitoring planned for 2021. This Annual Environmental Management Report (AEMR) contains the following:

- A description of activities that were carried out in 2020;
- A review of the environmental monitoring results that were carried out in 2020;
- Results of the Independent Environmental Audit that was carried out in 2020;
- A description of measures that will be implemented throughout 2021 to improve the environmental performance of the Quarry;

1.2 Standards and Performance Measures

The owner and operator of Ardglen Quarry, Daracon Quarries (Trading as Buttai Gravel Pty Ltd) is required to operate the approved activities within the Quarry site in accordance with MP 06_0624 MOD 1 and licences listed in **Table 4.**

Table 4: Ardglen Quarry - Consents and Licences

Approval/Licence	Issue Date	Expiry Date
Project Approval MP 06_0624 MOD 1	December 2010	31 August 2038
Environment Protection Licence No.1115		1 January (anniversary date)

Relevant conditions with Project Approval MP 06_0624 which nominate specific environmental criteria are as follows:

- *Schedule 3 Condition 2:* Noise
- *Schedule 3 Condition 7:* Blasting and Vibration
- *Schedule 3 Condition 15:* Air Quality
- *Schedule 3 Condition 18:* Meteorological Monitoring
- *Schedule 3 Condition 19:* Surface and Ground Water

In addition to the specific environmental criteria, the following conditions within MP 06_0624 specifically request further information be included in each AEMR:

- *Schedule 3 Condition 33: Product Transport*
- *Schedule 3 Condition 46: Greenhouse Gas*
- *Schedule 3 Condition 47:* Waste Minimisation

1.3 Site Management And Responsibilities

The overall management of Ardglen Quarry is the responsibility of Daracon's Manager Quarries, Mr Paul Walker. While the Quarry was in "care and maintenance", environmental monitoring is arranged by Mr Luke Robinson (Systems Manager) and Mr Geoff Reeves (Quarry Supervisor). Site supervision is also ably assisted by Daniel Smith (Supervisor) and Scott Brown (Supervisor). Other companies involved with quarry related documentation and monitoring data include:

- RCA Aust. Pty Ltd Laboratories;
- Rubicon Enviro Pty Ltd;

1.4 Document Preparation

The following information and data for this report has been drawn from documents commissioned or held by Daracon.

- Environmental Management Strategy Ardglen Quarry Extension - Major Project 06/0264, September 2010, Orogen Pty Ltd;
- Ardglen Quarry Environmental Monitoring Folders;

This document has been prepared by Mr Luke Robinson of Daracon Quarries.

In response to enquiries received from DPIE and the community during the reporting period (received independently of the formal CCC meetings), **Table 5** below includes the details of specific requests for additional information as well as the relevant action taken.

Table 5: DPIE requests for additional information

DPIE requests	Action taken
Section 2.12 – please include a detailed explanation of the rehabilitation activities that commenced in September 2019 and continue through 2020;	Refer to Section 2.12 for additional information as requested
Section 4.4 – please include a summary of all monitoring undertaken in the biodiversity offset and rehabilitation areas, as required in the Landscape Management Plan, and any follow on actions required to rectify deficiencies.	Refer to Section 4.4 for additional information as requested

DPIE "Show Cause" notification – September / October 2020	During September, the DPIE made enquiries regarding the status of a number of aspects of the consent, culminating with the provision of a "Show Cause" notification on the 30th September 2020. Daracon responded to the "Show Cause" notice within the specified timeframe and were subsequently issued with a warning notice by the DPIE in early 2021.

2. OPERATIONS DURING THE REPORTING PERIOD

2.1 Introduction

Prior to August 2018, Ardglen quarry remained in "care and maintenance". Ardglen quarry was taken out of "care and maintenance" during the latter part of 2018 due to the need for material at the Scone Bypass Project (SBP). **Table 6** lists the activities that did occur at Ardglen Quarry throughout 2020. Additionally, Daracon are currently working on a consent modification to streamline the operation of the quarry going forward. The details of the proposed consent modification are included in various parts of this report as applicable.

Table 6: Operations during the Reporting Period

January	Weekly Site Inspections and exporting of previously processed earth fill to the Scone Bypass Project
February	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
March	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
April	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
May	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
June	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
July	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
August	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
September	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
October	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
November	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.
December	Weekly Site Inspections and maintenance of rehabilitation areas including weed spraying as required.

2.2 Extraction And Clearing Operations

Table 7 displays the monthly/annual sales of various products exported from Ardglen Quarry during 2020.

Table 7: Ardglen Quarry Sales (tonnes)

Month - 2020	Aggregates	Road Pavements	Other	Total
January	0	0	5,420	5,420
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0

June	0	0	0	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
Total	**0**	**0**	**5,420**	**5,420**
Source: Ardglen tracking records				

Although 5,420 tonnes of earth fill (general and select fill) was exported from Ardglen Quarry during the reporting period, no blasting, quarrying or extraction operations took place during the reporting period to obtain this material as it remained in stockpile from previous operations before the quarry was placed in "care and maintenance" in 2012.

Subject to the approval of the current consent modification, the status of blasting, quarrying and extraction operations will remain unchanged unless otherwise advised.

2.3 Processing Operations

Nil processing operations took place during 2020

2.4 Overburden and Silt Management

Nil overburden was removed during 2020.
Nil silt removal occurred during 2020.

2.5 Waste Management

Although there was material exported to the SBP, no production took place during 2020 which meant that there was no production waste generated as follows:

- General Demolition Waste – Nil;
- Recyclable Concrete – Nil;
- Paper & Cardboard – Nil;
- Scrap Steel – Nil;
- Recyclables – Nil;
- Waste Oil – Nil;
- Waste Oil Filters – Nil;
- Empty Drums – Nil;
- Grease – Nil;
- Oily Water – Nil;
- Batteries – Nil;
- Asbestos Containing Material – Nil;

It is worth noting however, that a small quantity of general landfill waste was generated as part of the operation of the site. This was disposed of via general waste bins, collected and disposed via appropriate means. A waste register was completed for this small quantity of general landfill waste and it is included in Appendix 7.

2.6 Emissions

Daracon is committed to ongoing emission reduction strategies as part of the operation of Ardglen Quarry. The current mitigation measures currently employed on site to ensure particulate matter emissions are minimised include:

- Sealing the haul road to the wheel wash / weighbridge;
- Limiting the speed limit on unpaved surfaces to 15 km/hr;
- High level watering of unpaved road surfaces (greater than 2L/m2/hr);
- Covering all loads leaving the site;
- Building a wheel wash at the end of the unpaved section of the haul road;
- Wet suppression of static stockpiles;

Additionally, the proposed mitigation measures to ensure particulate matter emissions are minimised include:

- Revegetation of exposed surfaces where available;
- Regular inspection and fault reporting for mobile plant and equipment;
- Prompt rectification of reported faults associated with mobile plant and equipment;
- As part of the forward planning for site, considering the use of renewable energy sources including solar, wind and battery storage for example;
- Analysing the regular NGERS / NPI reports for trends and potential avenues for emission reductions;
- Minimise energy consumption on site by:
  - Shutting down plant and equipment when not used;
  - Regular servicing of plant and equipment;
  - Walking in preference to vehicular use where possible;

2.7 Site Infrastructure And Services

Once the export of material to the Scone Bypass Project (SBP) ceased, a number of activities occurred on site:

- The wheel wash was removed as it was a hired item and we had no further plans to export material until MOD 2 was assessed and determined. If we choose to recommence export of material from Ardglen quarry, we will re-install a wheel wash;
- Following the decommissioning of the electrical substation, there is currently no external lighting associated with the operation of Ardglen Quarry, however if this was to change in the future, then Daracon would ensure compliance with Australian Standard AS4282 (INT) 1995;

2.8 Water Management

Figure 2 displays the current water management system in place at Ardglen Quarry. During the reporting period there was some minor maintenance to the various drainage and sedimentation control structures on site.

A revised Water Management Plan, including the following, is included as part of the proposed consent modification. Subject to approval, this will be enacted prior to commencing work in the Extension Area.

- An assessment of basin volumes is included as part of the proposed consent modification;
- An assessment of the reliability of the water supply to the operation is included as part of the proposed consent modification;
- Operational and maintenance activities that could cause soil erosion and sediment generation will be identified and described;
- Procedures to manage unforeseen water quality impacts;
- Water treatment processes to enable discharge as required (subject to the approval of a variation to the site EPL);

Figure 2: Water Management

2.9 Bushfire Management

No bushfire prevention activities occurred during this reporting period apart from selective weed spraying on site.

2.10 Hazardous Materials Management

Hazardous materials within the Quarry site are appropriately managed with incidental quantities of fuels and oils located in an appropriately bunded area. During this reporting period there was no bulk diesel fuel stored onsite. Incidental quantities of aerosols and weed poison are also stored within the appropriately bunded area.

2.11 Product Transportation

The transportation of products, both imported and exported is identified in Schedule 3 Condition 33. Condition 33 states the following including Daracon responses in red - *The Proponent shall:*
(a) keep records of the:

- *amount of quarry materials imported onto the site each year* – Refer to commentary below;
- *amount of product transported from the site each year* – Refer to Table 7;
- *number of truck movements generated by the project, on a weekly basis* - Refer to table 8;

- *number of train movements generated by the project, on a weekly basis* - Refer to commentary below;
- *date and time of each train movement generated by the project* - Refer to commentary below;

(b) provide annual production data to the DPI using the standard form for that purpose – Completed via separate submission to the DPI*; and*

(c) include these records in the AEMR – Included here.

During the reporting period there was no material imported to site or material exported by rail transport. Details of truck movements generated by the project during the reporting period are shown in **Table 8**.

Table 8: Truck movements generated by the project

Dates	Maximum loaded truck movements per day during period	Average loaded truck movements for the period
Week ending 12/01/20	27	27
Week ending 19/01/20	25	25
For entire reporting period	**27**	**26.7**
Source: Ardglen tracking records		

Additionally, the Road Safety Audit (RSA) completed during 2018 is included in Appendix 8. Work on the proposed agreed remedial actions commenced during early 2019 and are mostly complete apart from those detailed and explained in the attachment shown in Appendix 8.

Finally, as part of the proposed MOD 2 currently in process, we hope to modify the transportation methods for site which, subject to the approval of MOD 2 would improve the efficiency and viability of the site going forward.

2.12 Rehabilitation

Significant rehabilitation work occurred during the reporting period as detailed in the revised Landscape Management Plan (LMP).

With respect to the specific aspects of the actual rehabilitation and landscape activities that occurred during the reporting period, we provide the following status updates:

- The Offset Strategy (S3_C25) – Further to our previous advice, Daracon continues to liaise with the Biodiversity Conservation Trust NSW (BCT) regarding the implementation of the "Conservation Agreement" (CA) to secure the Biodiversity Offset Areas (BOA's. Daracon and the BCT have made substantial progress with the CA following the consolidation of the property titles to which the CA will apply. This process also included a site inspection during February 2021 at the request of the BCT representatives;
- The Landscape Management Plan (S3_C27) – Further to our previous advice, the Landscape Management Plan (LMP) was updated and resubmitted to the DPIE in April 2020. This update included additional information obtained as part of the Umwelt rehabilitation inspection report from late 2019. We have not received any further advice from the DPIE regarding the approval or otherwise of this document. It is worth noting however that we may need to update the LMP once we receive additional advice from the BCT following their recent site inspection.
- The Doughboy Hollow Creek Rehabilitation Strategy (S3_C28) – Due to the fact that this particular strategy "shall commence prior to the start of quarry operations into the approved extension area", this strategy remains incomplete at this stage. This strategy will be finalised as part of the planning processes to enter the extension area; subject to the approval of the proposed consent modification;
- The Rehabilitation and Biodiversity Offset Management Plan (S3_C29) – The Rehabilitation and Biodiversity Offset Management Plan forms an integral component of the revised LMP which was reviewed and resubmitted to the DPIE in April 2020. As described above, we may need to update the LMP once we receive additional advice from the BCT following their recent site inspection.

Also refer to Table 3 for a summary of the non-compliances arising from the Independent Environmental Audit undertaken by Pitt and Sherry in 2018.

Regarding the additional DPIE request for *"a detailed explanation of the rehabilitation activities that commenced in September 2019 and continue through 2020",* please see below an excerpt taken from the 2020 "Rehabilitation and Nesting Inspection Report":

Approximately 500 saplings were planted in the two rehabilitation areas outside of the BOAs as identified in Figure 2.4 of the 2020 "Rehabilitation and Nesting Inspection Report" (contained within Appendix 6) and reproduced as Figure 3 below. The two areas planted within the quarry boundary were:

- The Western Rehabilitation plantings along with the lower/eastern plantings in the Southern Rehabilitation area were undertaken in September 2019 (shown in yellow in Figure 3);
- The top/western portion of this area was planted in March/April 2020 (shown in green in Figure 3);

Figure 3: Rehabilitation planting areas

Both areas showed a very high survival rate, and although the count of saplings was not exhaustive, only a handful of planted individuals appeared to have perished. Survival rate appeared to be above 85% in both areas. Though some species could not be identified due to their young age, the species mix appeared to be a satisfactory mix of representative canopy and mid-storey species for the area.

In the Western Boundary (Top of Pit plantings), a dense exotic understorey was present. Weed management is not recommended in this area as the thick groundcover is acting to shield the smaller saplings from herbivory, and provide shelter from the elements. The plant guards in this area seemed mostly intact, and plant heights ranged from 0.2 to 1.7 metres in height, the upper end of which is shown in Photo 1 below. Given the timing of plantings in this area in the height of intense drought, the survival rate and condition of these plantings is very high. The watering protocol undertaken for these plantings has resulted in successful outcomes for this rehabilitated area.

Photo 1: Rehabilitation planting on the western edge

2.13 Closure

The revised LMP includes information regarding the proposed closure arrangements.

3. COMMUNITY RELATIONS

3.1 Surrounding Communities

Figure 4 displays the land ownership and residence surrounding the quarry. During the reporting period, it is understood that there were no changes to the land ownership within the area. Informal discussions have occurred with a number of residents in the area during the reporting period.

Figure 4: Land Ownership and Residents

Table 9: Land Owners and Residents

Land Owners and Residents	
Mingay Property	Ms P Purtell & Mr S Harnes
The State of New South Wales	Mr W E & Mrs E A Avery
County Property Group	Ms Penny Dalton
Land and Property Management Authority	Ms A Bojba-Lis
Mr and Mrs R McGhie	Ms C M Thompson
Mr D J Bates	Ms E Russell
Mr D J Burraston	Ms M Taylor
Mr G B Smith & Ms N E Ryder	Mr G N & Mrs M A Lewins

3.2 Community Consultative Committee Meetings

In mid-2015 Daracon sought approval for an Independent Community Consultative Committee Chairperson. Approval was granted for PEP Consulting to undertake the Independent Chairperson position. Following the appointment, PEP Consulting engaged with the community to re-establish a Community Consultative Committee (CCC) and establish community representatives. This process was finally resolved in July 2016 with the first CCC meeting held 23rd August 2016. Refer to Section 3.4 for more information.

3.3 Environmental Complaints

Daracon received no pollution or environmental complaints during the reporting period.

3.4 Community Involvement

Firstly, it's worth noting that due to the presence of COVID-19 and subsequent restrictions imposed by the government, all Community Consultative Committee (CCC) meetings that occurred during 2020 were undertaken remotely without a face to face interaction. Additionally, there was no site visit completed in 2020 for the same reason.

Regardless of the COVID-19 limitations, the Ardglen Quarry CCC held two meetings during 2020 with the first during June 2020 and the second during November 2020. The meeting minutes are attached in Appendix 3.

Furthermore, Daracon circulated a community newsletter in early 2020 to provide additional information to the local residents regarding the CCC and planned activities associated with the operation of Ardglen Quarry.

Daracon also updated the CCC presentation to include compliance criteria level to make it simpler for the community to understand the information presented.

4. ENVIRONMENTAL MONITORING

4.1 Water Quality

4.1.1 Introduction

Ardglen Quarry operates under an approved Site Water Management Plan. The purpose of this plan is to ensure that Ardglen Quarry does not pollute any waters it may discharge into, in accordance with Environmental Protection Licence No. 1115. The water monitoring plan proposes that prior to any discharge from the sediment basin, the water be tested for turbidity using a probe and visually assessed for the presence of oil and grease.

Ardglen Quarry has two sediment basins onsite, the in-pit sump which is approximately 30ML and a tertiary sediment basin which is approximately 3ML. Currently, all water from the disturbed area is directed towards the in-pit sump and when this becomes full, water is then directed to the smaller (3ML) tertiary sediment basin for storage and re-use.

Additionally, as part of the proposed MOD 2 currently in process, we plan to make a number of critical improvements to the water management processes on site to permit the appropriate discharge of water. This would also involve a variation to the EPL which would be sought subject to the approval of MOD 2.

4.1.2 Conclusion

During the reporting period, nil water was discharged over the tertiary basin spillway.

4.2 Noise and Blasting

4.2.1 Introduction

Ardglen Quarry operates under an approved Noise Monitoring Program and Blast Monitoring program. These programs outline the measures which will mitigate the environmental effects of noise and blasting of the quarry activities on our neighbours; proposes noise monitoring programs to assess and report the levels of impact, in compliance with Schedule 3 of the Project Approval and provides a mechanism whereby any noise complaints can be dealt with quickly and effectively.

The Blast Monitoring program requires monitoring to take place at specified locations as shown in **Figure 5**. The Noise Monitoring Plan calls for quarterly attended noise monitoring to be completed and take place at specified noise monitoring locations as shown in **Figure 6.**

Figure 5: Blast Monitoring Locations

Figure 6: Noise Monitoring Locations

4.2.2 Noise Criteria

Table 10: Noise Criteria

NOISE IMPACT ASSESSMENT CRITERIA dB(A)				
Land	*Day*	*Evening*	*Night*	
	Leq (15 min)	*Leq (15 min)*	*Leq (15 min)*	*L1 (1 min)*
1 Burraston	*35*	*35*	*35*	*45*
2 Lewin	*35*	*35*	*35*	*45*
4 C M Thompson	*44*	*35*	*35*	*45*
5 M Taylor	*45*	*35*	*35*	*45*
6 EJ Russell	*45*	*35*	*35*	*45*
9 Bates	*37*	*35*	*35*	*45*
10 Avery	*38*	*35*	*35*	*45*
11 County Property	*37*	*35*	*35*	*45*
12 Guy Smith	*36*	*35*	*35*	*45*
13 McGhie	*35*	*35*	*35*	*45*
14 Purtell	*36*	*35*	*35*	*45*
15 P Dalton	*43*	*35*	*35*	*45*
16 Bojba	*40*	*35*	*35*	*45*
All other privately owned land	*35*	*35*	*35*	*45*

4.2.3 Noise Monitoring Results

Due to the fact that Ardglen quarry was non-operational, limited noise monitoring was undertaken prior to 2018. During 2020, quarterly noise monitoring of the site occurred and the results are summarised in Table 11, Table 12, Table 13 and Table 14.

Table 11: Noise monitoring 28th February 2020

Ardglen Quarry noise monitoring results – 28th February 2020 (day)				
Location	**Time**	**dB(A),Leq**	**Wind speed/ direction**	**Identified Noise Sources**
4. Thompson	12:52 pm	42	0.5 m/s SE	Traffic (41), birds & insects (35), **AQ inaudible**
13. McGhie	1:50 pm	40	1.5 m/s ESE	Traffic (40), birds (25), **AQ inaudible**
14. Purtell	1:25 pm	34	1.0 m/s ESE	Birds & insects (33), traffic (25), **AQ inaudible**
16. Bojba	12:30 pm	62	0.5 m/s SE	Traffic (62), birds & insects (38), **AQ inaudible**

Table 12: Noise monitoring 28th May 2020

Ardglen Quarry noise monitoring results – 28th May 2020 (day)				
Location	**Time**	**dB(A),Leq**	**Wind speed/ direction**	**Identified Noise Sources**
4. Thompson	1:00 pm	43	2.5 m/s W	Traffic (43), birds (31), **AQ inaudible**
13. McGhie	1:55 pm	35	2.5 m/s SW	Birds (33), traffic (30), **AQ inaudible**
14. Purtell	1:35 pm	48	2.0 m/s NW	Traffic (47), birds (41), **AQ inaudible**
16. Bojba	12:35 pm	54	1.5 m/s NW	Traffic (54), birds (38), **AQ inaudible**

Table 13: Noise monitoring 4th August 2020

Ardglen Quarry noise monitoring results – 4th August 2020 (day)				
Location	**Time**	**dB(A),Leq**	**Wind speed/ direction**	**Identified Noise Sources**
4. Thompson	12:10 pm	44	1 m/s NW	Traffic (44), birds (34), **AQ inaudible**
13. McGhie	1:00 pm	41	1.5 m/s NW	Traffic (40), birds (34), **AQ inaudible**
14. Purtell	12:35 pm	45	1.5 m/s NW	Traffic (45), birds (28), **AQ inaudible**
16. Bojba	11:50 am	48	1 m/s NW	Traffic (48), birds (30), **AQ inaudible**

Table 14: Noise monitoring 25th November 2020

Ardglen Quarry noise monitoring results – 25th November 2020 (day)				
Location	**Time**	**dB(A),Leq**	**Wind speed/ direction**	**Identified Noise Sources**
4. Thompson	10:00 am	46	2 m/s SE	Traffic (45), birds (37), **AQ inaudible**
13. McGhie	10:45 am	47	2.5 m/s S	Traffic (44), birds (43), **AQ inaudible**
14. Purtell	10:25 am	46	2 m/s SE	Traffic (45), birds (39), **AQ inaudible**
16. Bojba	9:40 am	46	2 m/s SE	Traffic (45), birds & insects (40), **AQ inaudible**

4.2.4 Blasting Criteria

Table 15: Blasting Criteria

Airblast overpressure level (dB(Lin Peak))	*Allowable exceedance*
115	*5% of the total number of blasts over a period of 12 months*
120	*0%*
Peak Particle Velocity (mm/s)	***Allowable exceedance***
5	*5% of the total number of blasts over a period of 12 months*
10	*0%*

4.2.5 Blasting Monitoring Results

No blasts were carried out during the reporting period.

4.2.6 Analysis of Results

The results of the noise monitoring undertaken in February, May, August and November 2020 are included in Appendix 2. These results were all below the specified criteria.

No blasting occurred during the reporting period, so therefore no blast monitoring was completed.

4.2.7 Conclusion

The noise monitoring results were within the specified limits and when operations re-commence blast monitoring will then recommence.

Additionally, as part of the proposed MOD 2 currently in process, we plan to make a number of critical improvements to the noise mitigation measures to enable the appropriate handling and processing of material on site. This may also involve a variation to the EPL which would be sought subject to the approval of MOD 2.

4.3 Air Quality

4.3.1 Introduction

Ardglen Quarry operates under an approved Air Quality Management Plan. The objectives of this plan is to comply with all statutory requirements, minimise air quality impacts on surrounding residents and properties, maintain reasonable levels of amenity for surrounding residents, to keep the local community and regulators informed and to respond quickly and effectively to issues and complaints and to ensure that air quality is measured according to best practice and results are presented in a timely and transparent manner to stakeholders.

4.3.2 Meteorological Station

Condition 18 (32) requires that a meteorological station to operate in the vicinity of the project site for the life of the project. Daracon has installed a meteorological station (Figure 7), ensuring that the meteorological station complies with the requirements in the "Approved Methods for Sampling of Air Pollutants in New South Wales Guideline".
The meteorological station currently monitors the following parameters as per EPL 1115:

- Rainfall;
- Wind Speed and Direction;
- Temperature (at 2m and 10m above ground level);
- Sigma theta;
- Solar Radiation;

4.3.3 Air Quality Monitoring Locations and Frequency

The current air quality monitoring network consists of three deposited dust gauges (DDG), two HVAS units and one TSP unit (see **Figure 7**).

The location of the air quality monitoring equipment (primarily to the North-East and East of the Quarry) was deduced from the location of the surrounding residences.

Figure 7: Air Quality Monitoring and Weather Station Locations

4.3.4 Air Quality Criteria

The air quality criteria for the quarry, as outlined with condition 15 (10) of the approval are provided in the below table.

Table 16: Air Quality Criteria

Parameter	Frequency	Locations	Limit/Guideline	Sampling Method
Deposited dust	Monthly.	DG-1 located at Receptor 2 (EPL point 2). DG-2 located at Receptor 5 (EPL point 3). DG-3 located at Receptor 6 (EPL point 4).	**Deposition Rate*** Maximum total deposited dust level: 4 g/m^2.month - as an annual average	AM-19 AS3580.10.1 – 2003
Total suspended particulate (TSP) matter	24 hours every 6 days for 12 months.	TSP-1 located at Receptor 2. Removed after 12 months.	**Concentration** 90 µg/m^3 - as an annual average	AM-15 AS3580.9.3 – 2003
Particulate matter < 10 µm (PM_{10})	24 hours every 6 days.	PM10-1 located at Receptor 2. PM10-2 located at Receptor 6.	**Concentration** 50 µg/m^3 - as a 24 hour average 30 µg/m^3 - as an annual average	AM-16 AS3580.9.6 - 2003

Parameter	Frequency	Locations	Limit/Guideline	Sampling Method
Visible air pollution	Weekly. In response to any visible emissions complaint.	Weekly site inspection. At the location of any reported emission.	**Project Approval Schedule 3, Condition 16** The Proponent shall ensure any visible air pollution generated by the project is assessed regularly, and that quarrying operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately-owned land, to the satisfaction of the Director-General.	No required sampling methodology. Actions required if visual impact is suspected or confirmed.
Meteorological station	Continuous.	On site near the weighbridge.	**Project Approval Schedule 3, Condition 18** The Proponent shall ensure the project has a suitable meteorological station in the vicinity of the site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.	AM-1 to AM-4 USEPA (2000) EPA 454/R-99-005
Greenhouse gases (electricity and fuel consumption)	Upon purchase of electricity or fuel.	Entire site.	**Project Approval Schedule 3, Condition 46(a)** The proponent shall monitor the greenhouse gas emissions generated by the project.	No required sampling methodology. Records of purchase and storage used to determine consumption.

4.3.5 Air Quality Monitoring Results

The following information presents the results of the Dust Deposition Gauges (DDG), High Volume Air Sampler (HVAS) and Total Suspended Particulate (TSP) monitoring program.

4.3.5.1 Depositional Dust Gauges

Table 17: Depositional Dust Gauge Results

	Insoluble Solids (g/m^2.month)			Insoluble Solids Annual Average (g/m^2.month)		
	EPA2	EPA3	EPA4	EPA2	EPA3	EPA4
9/01/20 to 6/02/20	2.5	2.8	2.7	1.3	1.8	1.6
6/02/20 to 5/03/20	1.1	1	0.8	1.3	1.7	1.5
5/3/20 to 3/4/20	0.6	0.9	0.9	1.2	1.6	1.4
3/4/20 to 1/5/20	1	1	0.8	1.2	1.5	1.5
1/5/20 to 2/6/20	0.2	0.2	0.3	1.2	1.2	1.5
2/6/20 to 1/7/20	0.3	0.2	0.4	1.2	1.5	1.5
1/7/20 to 31/7/20	0.1	0.2	0.2	1.2	1.5	1.5
31/7/20 to 1/9/20	0.4	0.1	0.2	1.2	1.4	1.4
1/9/20 to 2/10/20	0.5	0.5	0.7	1.2	1.4	1.4
2/10/20 to 3/11/20	0.7	0.7	0.7	1.2	1.2	1.2
3/11/20 to 3/12/20	1.4	1.2	0.9	0.9	1	1
3/12/20 to 4/01/21	1.4	1.2	0.7	**0.9**	**0.8**	**0.8**

4.3.5.2 HVAS Unit 1 (PM10-1)

Table 18: HVAS Unit 1 Results

		Sample #	Run Date	PM10	Filter #	Date Off	Time Off	Tech	Hrs
Jan-20	PM_{10}-1	1209733012	3/01/2020	47	9711478	7/01/2020	10:37	Client	24.02
	PM_{10}-1	1209733015	9/01/2020	37	9719635	14/01/2020	11:08	Client	24.02
	PM_{10}-1	1209733018	15/01/2020	24	9720645	20/01/2020	12:58	Client	24.04
	PM_{10}-1	1209733021	21/01/2020	61	9719700	23/01/2020	11:57	Client	24
	PM_{10}-1	1209733024	27/01/2020	15	9720316	30/01/2020	9:40	Client	24.02
Feb-20	PM_{10}-1	2209733012	2/02/2020	25	9720365	5/02/2020	11:30	Client	24.02
	PM_{10}-1	2209733015	8/02/2020	4	9722348	13/02/2020	13:05	Client	24.02
	PM_{10}-1	2209733018	14/02/2020	12	9781200	17/02/2020	12:58	Client	24.01
	PM_{10}-1	2209733021	20/02/2020	14	9779103	25/02/2020	7:13	Client	24.02
	PM_{10}-1	2209733024	26/02/2020	6	9779106	2/03/2020	13:26	Client	24

Mar-20	PM_{10}-1	3209733012	3/03/2020	12	9779109	6/03/2020	7:27	Client	24.21
	PM_{10}-1	3209733015	9/03/2020	3	9779112	11/03/2020	12:11	Client	24.02
	PM_{10}-1	3209733018	15/03/2020	6	9779159	19/03/2020	9:24	Client	24.01
	PM_{10}-1	3209733021	21/03/2020	20	9779162	25/03/2020	6:25	Client	24.03
	PM_{10}-1	3209733024	27/03/2020	4	9779165	2/04/2020	10:10	Client	24.02
Apr-20	PM_{10}-1	4209733012	2/04/2020	6	9779168	3/04/2020	9:00	Client	24.02
	PM_{10}-1	4209733015	8/04/2020	4	9779171	9/04/2020	7:09	Client	24.02
	PM_{10}-1	4209733018	14/04/2020	9	9809143	15/04/2020	12:44	Client	24.02
	PM_{10}-1	4209733021	20/04/2020	5	9809146	22/04/2020	6:12	Client	24
	PM_{10}-1	4209733024	26/04/2020	10	9809149	29/04/2020	11:26	Client	24
May-20	PM_{10}-1	5209733012	2/05/2020	3	9809152	6/05/2020	11:56	Client	24.16
	PM_{10}-1	5209733015	8/05/2020	3	9809155	13/05/2020	12:05	Client	24.02
	PM_{10}-1	5209733018	14/05/2020	3	9809158	19/05/2020	11:29	Client	24.02
	PM_{10}-1	5209733021	20/05/2020	4	9809188	22/05/2020	11:07	Client	24.01
	PM_{10}-1	5209733024	26/05/2020	2	9809191	27/05/2020	13:21	Client	24.01
Jun-20	PM_{10}-1	6209733012	1/06/2020	1	9809194	5/06/2020	11:14	Client	24.02
	PM_{10}-1	6209733015	7/06/2020	2	9809197	12/06/2020	11:23	Client	24.01
	PM_{10}-1	6209733018	13/06/2020	3	9780929	18/06/2020	11:07	Client	24.03
	PM_{10}-1	6209733021	19/06/2020	2	9780932	22/06/2020	11:20	Client	24.01
	PM_{10}-1	6209733024	25/06/2020	1	9780935	26/06/2020	11:01	Client	24.02
	PM_{10}-1	7209733012	30/06/2020	3	9780938	2/07/2020	10:15	Client	24.02
July-20	PM_{10}-1	7209733015	7/07/2020	9	9780941	8/07/2020	10:38	Client	24.17
	PM_{10}-1	7209733018	13/07/2020	0.1	9780944	16/07/2020	10:42	Client	24.02
	PM_{10}-1	7209733021	19/07/2020	1	9780947	23/07/2020	13:38	Client	24.01
	PM_{10}-1	7209733024	25/07/2020	0.1	9780950	29/07/2020	11:02	Client	24.03
	PM_{10}-1	7209733027	31/07/2020	6	9843689	5/08/2020	10:47	Client	24.01
Aug-20	PM_{10}-1	8209733012	6/08/2020	3	9843683	10/08/2020	13:29	Client	24.02
	PM_{10}-1	8209733015	12/08/2020	6	9843686	14/08/2020	10:12	Client	24.08
	PM_{10}-1	8209733018	18/08/2020	1	9806631	19/08/2020	10:09	Client	24.01
	PM_{10}-1	8209733021	24/08/2020	1	9806634	26/08/2020	10:16	Client	24.02
	PM_{10}-1	8209733024	30/08/2020	8	9806637	2/09/2020	10:16	Client	24.22
Sep-20	PM_{10}-1	9209733012	5/09/2020	5	9806640	9/09/2020	10:38	Client	24.01
	PM_{10}-1	9209733015	11/09/2020	2	9806643	16/09/2020	10:11	Client	24.02
	PM_{10}-1	9209733018	17/09/2020	8	9806646	21/09/2020	10:25	Client	24.01
	PM_{10}-1	9209733021	23/09/2020	8	9806649	28/09/2020	9:57	Client	24.03
	PM_{10}-1	9209733024	29/09/2020	3	9806652	30/09/2020	10:55	Client	24.01

Oct-20	PM_{10}-1	10209733012	5/10/2020	12	9828347	9/10/2020	10:44	Client	24.02
	PM_{10}-1	10209733015	11/10/2020	4	9828350	14/10/2020	13:19	Client	24.02
	PM_{10}-1	10209733018	17/10/2020	18	9828353	19/10/2020	10:11	Client	24.02
	PM_{10}-1	10209733021	23/10/2020	10	9828356	28/10/2020	10:23	Client	24.03
	PM_{10}-1	10209733024	29/10/2020	3	9828359	30/10/2020	10:11	Client	10.28
Nov-20	PM_{10}-1	11209733012	4/11/2020	9	9828362	6/11/2020	6:31	Client	24.01
	PM_{10}-1	11209733015	10/11/2020	6	9825226	10/11/2020	9:36	Client	24.02
	PM_{10}-1	11209733018	16/11/2020	16	9825234	18/11/2020	9:39	Client	24.34
	PM_{10}-1	11209733021	22/11/2020	17	9825237	26/11/2020	8:48	Client	24.01
	PM_{10}-1	11209733024	28/11/2020	16	9825240	3/12/2020	8:38	Client	24.02
Dec-20	PM_{10}-1	12209733012	4/12/2020	11	9825243	8/12/2020	10:21	Client	24.04
	PM_{10}-1	12209733015	10/12/2020	11	9825246	14/12/2020	6:45	Client	24
	PM_{10}-1	12209733018	16/12/2020	1	9825249	18/12/2020	6:36	Client	24.03
	PM_{10}-1	12209733021	22/12/2020	10	9829942	23/12/2020	6:20	Client	24.03
	PM_{10}-1	12209733024	28/12/2020	6	9829954	29/12/2020	6:45	Client	23.98

4.3.5.3 HVAS Unit 2 (PM10-2)

Table 19: HVAS Unit 2 Results

		Sample #	Run Date	PM10	Filter #	Date Off	Time Off	Tech	Hrs
Jan-20	PM_{10}-2	1209733013	3/01/2020	63	9711481	7/01/2020	10:21	Client	24.03
	PM_{10}-2	1209733016	9/01/2020	42	9719626	14/01/2020	10:47	Client	24.02
	PM_{10}-2	1209733019	15/01/2020	24	9719643	20/01/2020	12:23	Client	24.05
	PM_{10}-2	1209733022	21/01/2020	62	9719672	23/01/2020	12:15	Client	24.02
	PM_{10}-2	1209733025	27/01/2020	9	9720356	30/01/2020	10:00	Client	24.04
Feb-20	PM_{10}-2	2209733013	2/02/2020	22	9722346	5/02/2020	11:40	Client	24.02
	PM_{10}-2	2209733016	8/02/2020	4	9722349	13/02/2020	12:49	Client	24.05
	PM_{10}-2	2209733019	14/02/2020	12	9722350	17/02/2020	13:20	Client	24.02
	PM_{10}-2	2209733022	20/02/2020	12	9779104	25/02/2020	7:24	Client	24.05
	PM_{10}-2	2209733025	26/02/2020	6	9779107	2/03/2020	13:53	Client	24.01
Mar-20	PM_{10}-2	3209733013	3/03/2020	10	9779110	6/03/2020	7:37	Client	24.16
	PM_{10}-2	3209733016	9/03/2020	4	9779172	11/03/2020	12:21	Client	24.05
	PM_{10}-2	3209733019	15/03/2020	4	9779160	19/03/2020	9:36	Client	24.03
	PM_{10}-2	3209733022	21/03/2020	23	9779163	25/03/2020	6:47	Client	24.05
	PM_{10}-2	3209733025	27/03/2020	2	9779166	2/04/2020	10:25	Client	24.03
Apr-20	PM_{10}-2	4209733013	2/04/2020	5	9779169	3/04/2020	9:19	Client	24.02
	PM_{10}-2	4209733016	8/04/2020	5	9809141	9/04/2020	7:21	Client	24.04

	PM_{10}-2	4209733019	14/04/2020	10	9809144	15/04/2020	13:04	Client	24.03
	PM_{10}-2	4209733022	20/04/2020	9	9809147	22/04/2020	6:23	Client	24.05
	PM_{10}-2	4209733025	26/04/2020	14	9809150	29/04/2020	12:00	Client	24.02
May-20	PM_{10}-2	5209733013	2/05/2020	2	9809153	6/05/2020	12:28	Client	24.21
	PM_{10}-2	5209733016	8/05/2020	6	9809156	13/05/2020	12:16	Client	24.06
	PM_{10}-2	5209733019	14/05/2020	5	9809186	19/05/2020	12:33	Client	24.03
	PM_{10}-2	5209733022	20/05/2020	6	9809189	22/05/2020	11:24	Client	24.04
	PM_{10}-2	5209733025	26/05/2020	2	9809192	27/05/2020	13:30	Client	24.04
June-20	PM_{10}-2	6209733013	1/06/2020	3	9809195	5/06/2020	11:39	Client	24.04
	PM_{10}-2	6209733016	7/06/2020	9	9780927	12/06/2020	11:38	Client	24.03
	PM_{10}-2	6209733019	13/06/2020	3	9780930	18/06/2020	11:25	Client	24.04
	PM_{10}-2	6209733022	19/06/2020	2	9780933	22/06/2020	11:32	Client	24
	PM_{10}-2	6209733025	25/06/2020	1	9780936	26/06/2020	11:13	Client	24.02
	PM_{10}-2	7209733013	30/06/2020	4	9780939	2/07/2020	11:03	Client	24.03
July-20	PM_{10}-2	7209733016	7/07/2020	9	9780942	8/07/2020	10:54	Client	24.12
	PM_{10}-2	7209733019	13/07/2020	0.1	9780945	16/07/2020	10:55	Client	24.02
	PM_{10}-2	7209733022	19/07/2020	2	9780948	23/07/2020	13:50	Client	24.06
	PM_{10}-2	7209733025	25/07/2020	2	9780951	29/07/2020	11:22	Client	24.03
	PM_{10}-2	7209733028	31/07/2020	9	9843681	5/08/2020	11:00	Client	24.02
Aug-20	PM_{10}-2	8209733013	6/08/2020	4	9843684	10/08/2020	13:44	Client	24.04
	PM_{10}-2	8209733016	12/08/2020	4	9843687	14/08/2020	10:26	Client	24.03
	PM_{10}-2	8209733019	18/08/2020	1	9806632	19/08/2020	10:21	Client	24.03
	PM_{10}-2	8209733022	24/08/2020	2	9806635	26/08/2020	10:38	Client	24.04
	PM_{10}-2	8209733025	30/08/2020	12	9806638	2/09/2020	10:28	Client	24.19
Sep-20	PM_{10}-2	9209733013	5/09/2020	5	9806641	9/09/2020	10:49	Client	24.04
	PM_{10}-2	9209733016	11/09/2020	1	9806644	16/09/2020	10:27	Client	24.03
	PM_{10}-2	9209733019	17/09/2020	7	9806647	21/09/2020	10:47	Client	24.05
	PM_{10}-2	9209733022	23/09/2020	10	9806650	28/09/2020	10:09	Client	24
	PM_{10}-2	9209733025	29/09/2020	4	9806653	30/09/2020	11:07	Client	24.04
Oct-20	PM_{10}-2	10209733013	5/10/2020	12	9828348	9/10/2020	11:01	Client	24.04
	PM_{10}-2	10209733016	11/10/2020	6	9828351	14/10/2020	13:27	Client	24.04
	PM_{10}-2	10209733019	17/10/2020	20	9828354	19/10/2020	10:23	Client	24.03
	PM_{10}-2	10209733022	23/10/2020	8	9828357	28/10/2020	10:45	Client	24.04
	PM_{10}-2	10209733025	29/10/2020	4	9828360	30/10/2020	10:40	Client	23.35
Nov-20	PM_{10}-2	11209733013	4/11/2020	9	9828363	6/11/2020	6:41	Client	24.03
	PM_{10}-2	11209733016	10/11/2020	6	9825232	10/11/2020	9:50	Client	24.03

	PM_{10}-2	11209733019	16/11/2020	16	9825235	18/11/2020	9:54	Client	24.2
	PM_{10}-2	11209733022	22/11/2020	16	9825238	26/11/2020	9:18	Client	24.04
	PM_{10}-2	11209733025	28/11/2020	17	9825241	3/12/2020	9:01	Client	24.04
Dec-20	PM_{10}-2	12209733013	4/12/2020	11	9825244	8/12/2020	10:30	Client	24.05
	PM_{10}-2	12209733016	10/12/2020	16	9825247	14/12/2020	7:00	Client	24.06
	PM_{10}-2	12209733019	16/12/2020	3	9825250	18/12/2020	6:50	Client	24.04
	PM_{10}-2	12209733022	22/12/2020	10	9829943	23/12/2020	6:40	Client	24.03
	PM_{10}-2	12209733025	28/12/2020	5	9829955	29/12/2020	7:10	Client	23.97

4.3.5.4 TSP Unit 1

Table 20: TSP Unit 1 Results

		Sample #	Run Date	TSP	Filter #	Date Off	Time Off	Tech	Hrs
Jan-20	TSP	1209733011	3/01/2020	120	9711432	7/01/2020	10:38	Client	24.03
	TSP	1209733014	9/01/2020	86	9719642	14/01/2020	11:09	Client	24.04
	TSP	1209733017	15/01/2020	56	9719664	20/01/2020	12:59	Client	24.04
	TSP	1209733020	21/01/2020	135	9719671	23/01/2020	11:51	Client	24.03
	TSP	1209733023	27/01/2020	63	9722008	30/01/2020	9:30	Client	24.03
Feb-20	TSP	2209733011	2/02/2020	41	9720357	5/02/2020	11:23	Client	24.02
	TSP	2209733014	8/02/2020	6	9722347	13/02/2020	13:06	Client	24.05
	TSP	2209733017	14/02/2020	21	9779101	17/02/2020	12:51	Client	24.02
	TSP	2209733020	20/02/2020	31	9779102	25/02/2020	7:05	Client	23.93
	TSP	2209733023	26/02/2020	14	9779105	2/03/2020	13:19	Client	24.01
Mar-20	TSP	3209733011	3/03/2020	19	9779108	6/03/2020	7:17	Client	24.16
	TSP	3209733014	9/03/2020	7	9779111	11/03/2020	12:04	Client	24.04
	TSP	3209733017	15/03/2020	11	9779173	19/03/2020	9:18	Client	24.03
	TSP	3209733020	21/03/2020	42	9779161	25/03/2020	6:17	Client	24.03
	TSP	3209733023	27/03/2020	8	9779164	2/04/2020	10:04	Client	24.05
Apr-20	TSP	4209733011	2/04/2020	12	9779167	3/04/2020	8:51	Client	24.02
	TSP	4209733014	8/04/2020	8	9779170	9/04/2020	7:02	Client	24.02
	TSP	4209733017	14/04/2020	14	9809142	15/04/2020	12:36	Client	24.02
	TSP	4209733020	20/04/2020	11	9809145	22/04/2020	6:05	Client	24.06
	TSP	4209733023	26/04/2020	24	9809148	29/04/2020	11:18	Client	24
May-20	TSP	5209733011	2/05/2020	7	9809151	6/05/2020	11:47	Client	24.17
	TSP	5209733014	8/05/2020	10	9809154	13/05/2020	11:58	Client	24.04
	TSP	5209733017	14/05/2020	9	9809157	19/05/2020	11:21	Client	24.04
	TSP	5209733020	20/05/2020	13	9809187	22/05/2020	11:00	Client	24.02
	TSP	5209733023	26/05/2020	7	9809190	27/05/2020	13:13	Client	24.03
June-20	TSP	6209733011	1/06/2020	11	9809193	5/06/2020	11:06	Client	24.03
	TSP	6209733014	7/06/2020	6	9809196	12/06/2020	11:15	Client	24.02
	TSP	6209733017	13/06/2020	5	9780928	18/06/2020	10:59	Client	24.03
	TSP	6209733020	19/06/2020	2	9780931	22/06/2020	11:12	Client	24.03

	TSP	6209733023	25/06/2020	3	9780934	26/06/2020	10:53	Client	24.03
	TSP	7209733011	30/06/2020	3	9780937	2/07/2020	10:08	Client	24.06
July-20	TSP	7209733014	7/07/2020	14	9780940	8/07/2020	10:30	Client	24.03
	TSP	7209733017	13/07/2020	3	9780943	16/07/2020	10:36	Client	24.02
	TSP	7209733020	19/07/2020	3	9780946	23/07/2020	13:31	Client	24.05
	TSP	7209733023	25/07/2020	2	9780949	29/07/2020	10:55	Client	24.04
	TSP	7209733026	31/07/2020	14	9843688	5/08/2020	10:43	Client	24.04
Aug-20	TSP	8209733011	6/08/2020	5	9843682	10/08/2020	13:22	Client	24
	TSP	8209733014	12/08/2020	9	9843685	14/08/2020	10:06	Client	24.08
	TSP	8209733017	18/08/2020	4	9806630	19/08/2020	10:02	Client	24.04
	TSP	8209733020	24/08/2020	5	9806633	26/08/2020	10:07	Client	24.04
	TSP	8209733023	30/08/2020	14	9806636	2/09/2020	10:07	Client	24.26
Sep-20	TSP	9209733011	5/09/2020	10	9806639	9/09/2020	0:30	Client	24.05
	TSP	9209733014	11/09/2020	5	9806642	16/09/2020	10:04	Client	24.03
	TSP	9209733017	17/09/2020	21	9806645	21/09/2020	10:20	Client	24.04
	TSP	9209733020	23/09/2020	24	9806648	28/09/2020	9:51	Client	24.03
	TSP	9209733023	29/09/2020	11	9806651	30/09/2020	10:50	Client	24.05
Oct-20	TSP	10209733011	5/10/2020	27	9828346	9/10/2020	10:37	Client	24.04
	TSP	10209733014	11/10/2020	13	9828349	14/10/2020	13:14	Client	24.04
	TSP	10209733017	17/10/2020	50	9828352	19/10/2020	10:06	Client	24.05
	TSP	10209733020	23/10/2020	24	9828355	28/10/2020	10:18	Client	24.04
	TSP	10209733023	29/10/2020	22	9828358	30/10/2020	10:05	Client	23.35
Nov-20	TSP	11209733011	4/11/2020	25	9828361	6/11/2020	6:23	Client	24.04
	TSP	11209733014	10/11/2020	18	9825225	10/11/2020	9:29	Client	24.04
	TSP	11209733017	16/11/2020	40	9825233	18/11/2020	9:32	Client	24.36
	TSP	11209733020	22/11/2020	41	9825236	26/11/2020	8:42	Client	24.04
	TSP	11209733023	28/11/2020	43	9825239	3/12/2020	8:31	Client	24.04
Dec-20	TSP	12209733011	4/12/2020	24	9825242	8/12/2020	10:16	Client	24.05
	TSP	12209733014	10/12/2020	30	9825245	14/12/2020	6:39	Client	24.04
	TSP	12209733017	16/12/2020	23	9825248	18/12/2020	6:31	Client	24.04
	TSP	12209733020	22/12/2020	16	9829941	23/12/2020	6:15	Client	24.03
	TSP	12209733023	28/12/2020	12	9829953	29/12/2020	6:50	Client	23.98

4.3.6 Analysis of Results

Please refer to sections 4.3.6.1 to 4.3.6.3 for a breakdown of the air quality monitoring data.

4.3.6.1 Depositional Dust Gauges

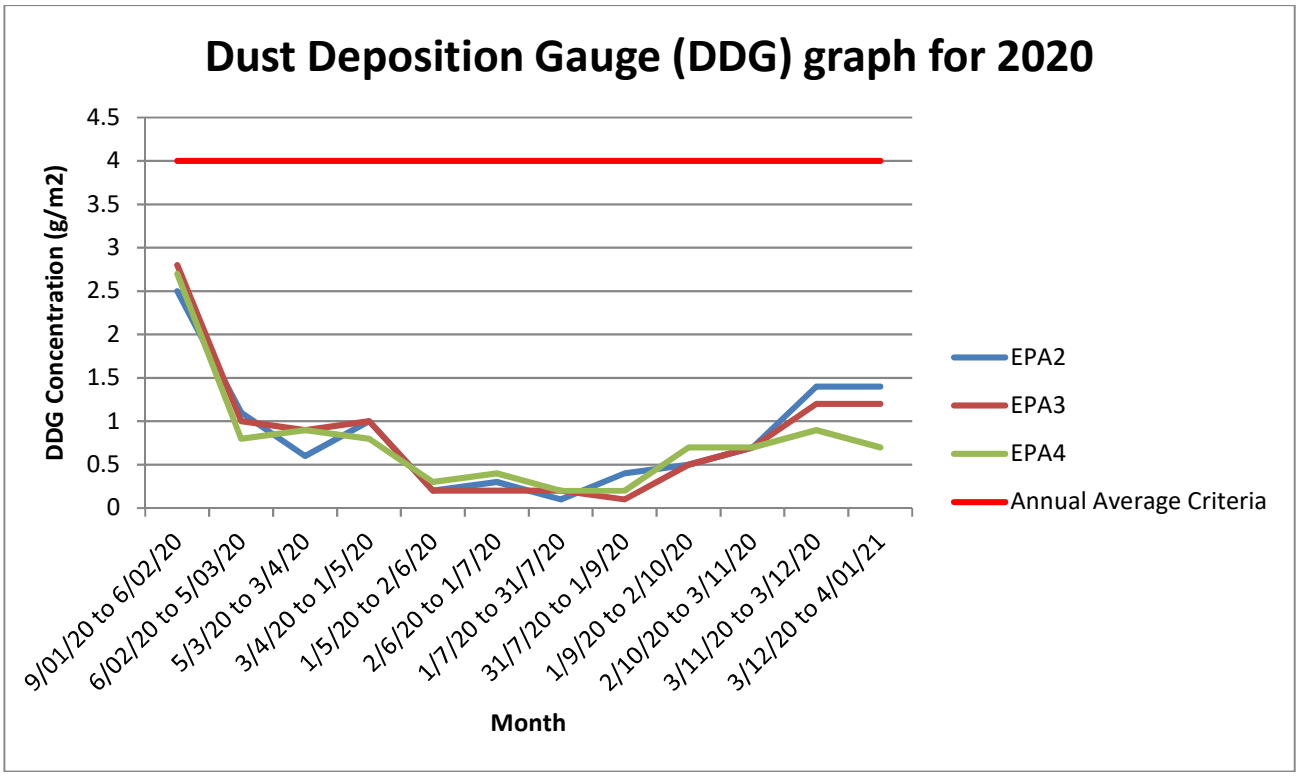


Figure 8: DDG results for the reporting period

4.3.6.2 HVAS PM-10 Unit 1 and 2

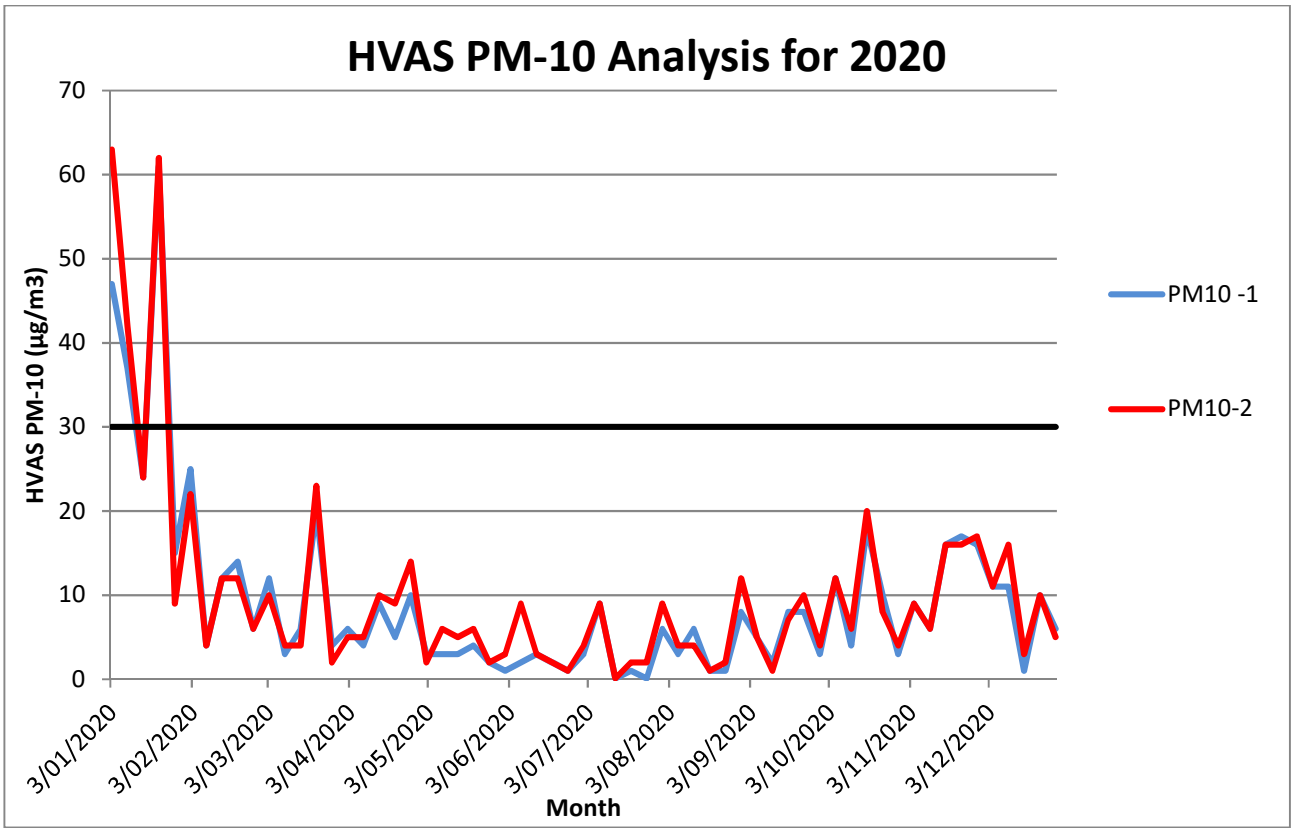


Figure 9: HVAS (PM-10) results for the reporting period

*The HVAS PM10 Annual average of 30µg/m3 is based on the short term impact assessment criterion for particulate matter. The 24hr average is the long term impact assessment criteria for deposited dust. Clause 15 (10) of approval.

Table 21: PM10 and TSP annual average results

Unit	Ardglen HVAS Annual Average	24 hour Criterion (Short Term)	Annual Average Criterion (Long Term)
PM10-1	9.2	30	50
PM10-2	10.1	30	50
TSP	22.2	N/A	90

4.3.6.3 TSP Unit 1

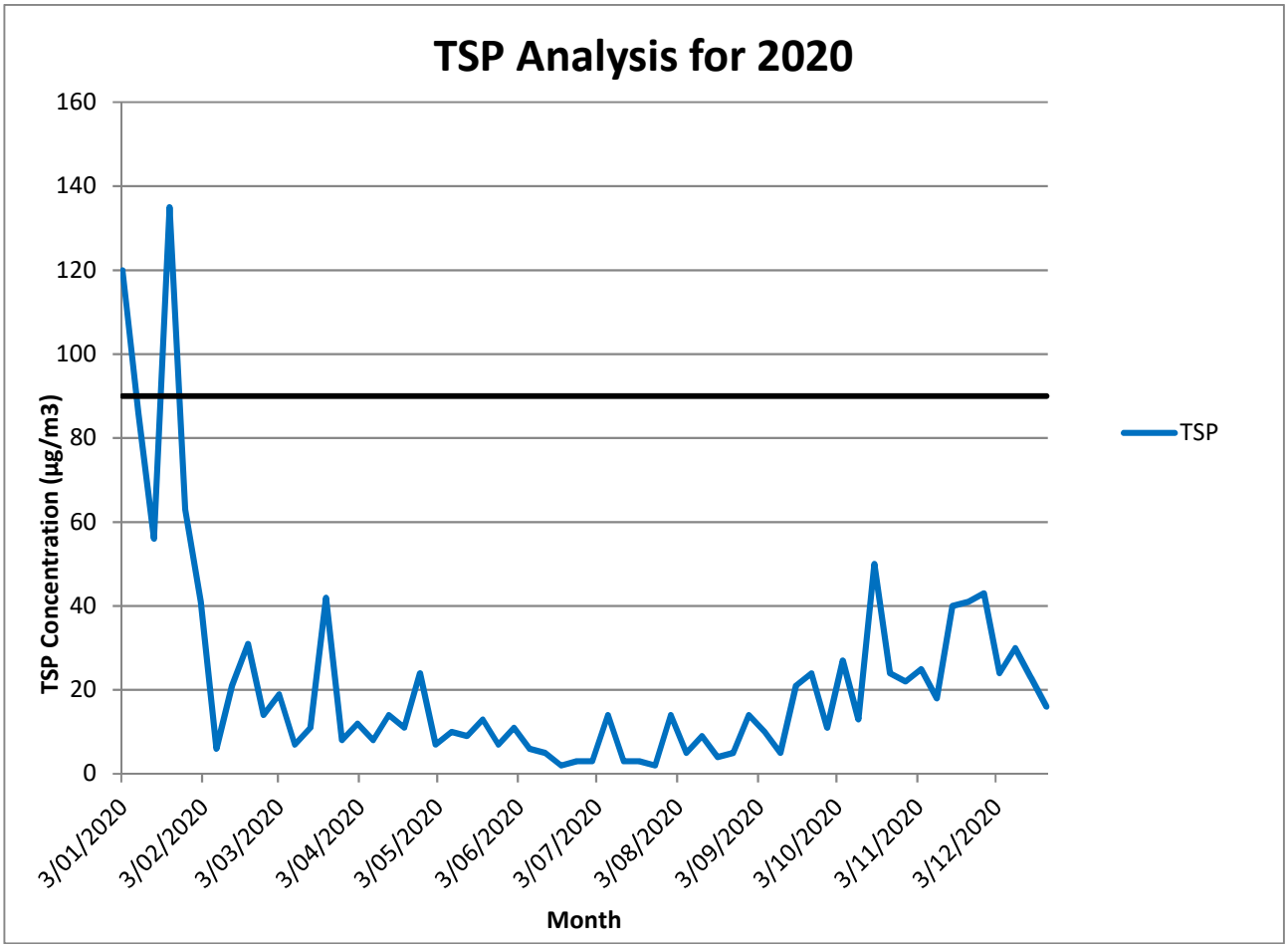


Figure 10: HVAS (TSP) results for the reporting period

4.3.7 Discussion

Commentary on the various air monitoring data is below:

DDG

All DDG's were compliant based on the annual average and individual results achieved during the reporting period.

HVAS (PM10 and TSP)

All HVAS's were compliant based on the annual average results achieved during the reporting period.

It is worth noting that although all of the annual average results obtained were compliant, there were a number of elevated "24 hour" results which were caused by a number of factors as detailed below:

- Intense drought conditions experienced throughout the region for the first half of the reporting period as described in more detail below in Section 4.6.3;
- Factors external to the operation of Ardglen quarry;

Additionally it is also worth noting that there was a single instance of non-compliance for run time of a PM10 unit (10.28 hours) caused by a local storm event. This matter was reported to DPIE, investigated and rectified immediately.

4.3.8 Conclusion

Although there were elevated PM-10 and TSP results obtained during the reporting period, following the completion of the relevant investigations, it was deduced that all elevated HVAS results were from external influences that were not related to the operation of Ardglen quarry.

4.4 Flora and Fauna Habitat

4.4.1 Introduction

As part of the current consent, the three BOA's have been established as described in the off-set strategy. Please refer to Section 2.12 for further details of this ongoing process.

From a fauna perspective, nesting boxes were installed in April 2012 on Lot 187 DP 751028 as identified in the sites Landscape Management Plan. It is a requirement of the plan that annual springtime inspections of the nesting boxes are conducted for the life of the quarry and this occurred again in late 2020. Please refer to Appendix 6 for a copy of the 2020 Rehabilitation and nesting inspection report.

4.4.2 Fauna Management

Appropriate feral animal control is an important aspect of the correct management of the site. Feral animal control is therefore ongoing and completed on the site (including offset areas) as required. Once again, this occurred for the entire duration of the reporting period with information provided to the DPIE recently regarding this matter.

4.4.3 Nest Box Usage

The report associated with the annual springtime inspections of the nesting boxes is attached in **Appendix 6**.

4.4.4 Biodiversity offset and rehabilitation areas

The full report associated with the 2020 Rehabilitation and nesting inspection report is attached in **Appendix 6**. A summary of this report is shown below.

Four permanent monitoring plots (Q01, Q02, Q03 and Q04) were established within each of the four vegetation zones in the BOAs identified by Orogen (2010). These vegetation zones have been assigned a Plant Community Type (PCT) in order to be comparable with PCT benchmarks and track condition and progress over time. These PCTs have been described using floristic data, broad-scale vegetation mapping (DPIE 2020) and using knowledge of the local topography and landscape.

Table 22 below shows the vegetation zones and corresponding PCT associated with each of the four monitoring plots used.

Photo 2 below also demonstrates nest box usage as detailed within the 2020 Rehabilitation and nesting inspection report attached in **Appendix 6**

Table 22: Vegetation Zones and Corresponding PCT and Plot Information

Plot Name	Easting	Northing	Zone	Vegetation Zone (Orogen 2010)	PCT Name
Q01	290019	6485647	56	Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion
Q02	289747	6486167	56	River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)
Q03	289761	6485921	56	White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion
Q04	289144	6486073	56	Derived Native Grassland	PCT 796 - Derived grassland of the NSW South Western Slopes

A comparison of the data collected at each of the monitoring sites to the 2019 results and their corresponding PCT benchmarks is outlined below:

Q01 - PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion.
Since 2019, native species richness dropped from 78% to 45% of the benchmark. Overstorey foliage cover has increased from 25% to 28%, which is now at 65% of the benchmark. Mid storey foliage cover remains absent. Native grass cover was at 98% of the benchmark, which is a 27% increase from last year. This is likely because the ground cover has increased so much in general following a sustained period of increased rainfall. For the same reasons, exotic species cover was high at 54%. There were no native forbs or 'other' species. Fallen log cover was lower this year than last year, however it is likely that the logs were not as visible due to the dense groundcover, and still persist below the thick coverage. Regeneration of canopy species was evident in this plot.

Q02 - PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion). Native species richness was lower than the results seen in 2019, with 2020 results reaching just 25% of the benchmark. Overstorey foliage cover was around the same at 39% of the benchmark, and mid storey foliage cover was absent. Native grass cover met only 29% of the benchmark, however native forbs and 'other' species met 75% of the benchmark. Fallen logs were higher this year but only met 25% of the benchmark. Given the low canopy cover, this is a reasonable result. Exotic cover was very high at 84%. It is likely that given the position of this plot in the landscape, exotic seeds have culminated at the low point of the topography in the riparian area and flourished after consecutive rainfall flushes. 2020 Ardglen Quarry Annual Biodiversity Offset Monitoring 21113_R01_Ardglen_Quarry_V2 Results 23

Q03 - PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion. Native species richness was somewhat low, meeting 42% of the benchmark. This is unchanged since 2019. Overstorey foliage cover has increased since 2019, and is now at 89% of the benchmark. In 2019, dieback was evident from prolonged drought, but the canopy cover appeared to increase in 2020. The mid-storey was again absent, however native grass cover exceeded the benchmark at 123%. This is an excellent result, and exotic species cover was at its lowest in this vegetation zone, though still high at 48%. There had been a drop in native forbs and other species cover this year, and this was experienced across the

board, likely due to being outcompeted by vigorous exotic groundcovers. Fallen logs remained absent in this vegetation zone.

Q04 - PCT 796 - Derived grassland of the NSW South Western Slopes Native species richness was lower than the results seen in 2019, with 2020 results reaching 43% of the benchmark. Native overstorey and mid-storey cover were appropriately absent, as were fallen logs. Exotic species cover was very high at 72%. This impacted the native grass cover score, which met only 30% of the benchmark. Native forbs and 'other' species were at 60% of the benchmark, which is an increase from the 2019 results.

Additionally, as also detailed in the 2020 Rehabilitation and nesting inspection report, the following recommendations (including proposed actions in red) are provided for consideration in the 2020 Annual Review:

• Perimeter fencing of the BOAs is adequate, but internal fences can be removed if practical. These may hinder the movement of native fauna throughout the BOAs – Daracon does not currently propose to remove the internal fences as it is not practical or necessary to do so;

• Daracon should continue to engage the services of a feral animal shooter for feral pest animals that frequent the BOAs (e.g., foxes and wild dogs). Daracon may liaise with Local Land Services to discuss the merits of a wild dog baiting program if considered necessary – Daracon continues to engage the services of a feral animal shooter and will continue to do so for the foreseeable future;

• Weed management works of prickly pear (Opuntia stricta) in Offset B and C and St John's wort (Hypericum perforatum) and blackberry (Rubus fruticosus agg.) is recommended in Offset A – Daracon continues to undertake regular weed spraying across the entire site and will endeavour to focus their efforts to those noted above in the near future;

• It is recommended that the ply stuck to the upper part of Nest Box 17 (TT158) is removed to better facilitate monitoring of the box, however this is a low priority as access to the box by animals does not appear to be impeded – Daracon will monitor this matter and remove the errant material if we consider it impedes the use of the nest box;

• It is recommended that where metal mesh plant guards have been destroyed by grazers, these are replaced with plastic mesh plant guards as they are less likely to be dismantled – In recent times, Daracon has utilised many different types of plant guards and also replaced those damaged as required. Daracon will monitor this matter and adjust the plant guards if deemed necessary;

• Assisted revegetation should be prioritised in Offset A and B, as Offset C is generally quite well vegetated. Planting should begin in derived native grassland areas closest to existing canopy cover (i.e., where there is the most protection), and progress further out into areas with lower canopy cover over time - Daracon currently plans to undertake assisted revegetation within these areas during April/May 2021 subject to the advice received from the BCT;

Photo 2: Nest box usage

4.5 Analysis of monitoring results against those predicted in the EA

4.5.1 Water Quality

Due to the fact that the quarry has mostly been in “care and maintenance” for many years, the fact that the site has substantial water storage capacity on site and ongoing and persistent drought conditions, there have been no documented water discharge events or known water quality issues identified. This is consistent with those predicted in the EA which states “the project is unlikely to result in any significant impacts on water”.

4.5.2 Noise and Blast

Due to the fact that the quarry has mostly been in “care and maintenance” for many years and the fact that the site has not undertaken blasting or significant quarrying operations during this time, there have been no issues relating to noise or blasting identified. We are yet to fully implement all mitigation measures detailed in the EA as we have not yet entered the extension area. Subject to the approval of the current consent modification,

the various additional mitigation measures will be implemented and monitored in accordance with the consent.

4.5.3 Air Quality

Due to the fact that the quarry has mostly been in "care and maintenance" for many years and the fact that the site has not undertaken blasting or significant quarrying operations during this time, there have been no substantial issues relating to air quality identified. There have obviously been a few (but infrequent) air quality monitoring results that have not complied with the consent, however these have easily been discounted for reasons not specifically associated with quarry operations (regional dust storms or persistent intense drought conditions). This is consistent with those predicted in the EA which states "air quality modelling indicates that worst case dust emissions generated by the project would comply with the DECC criteria for dust deposition, TSP and small particulate matter (PM-10) at all privately owned residences in the vicinity of the site".

4.6 Trends of monitoring over the life of the project

4.6.1 Water Quality

Due to the fact that the quarry has mostly been in "care and maintenance" for many years, the fact that the site has substantial water storage capacity on site and ongoing and persistent drought conditions, there have been no documented water discharge events or known water quality issues identified. It must be noted however that the proposed consent modification includes additional water management strategies to permit appropriate water discharge subject to approval;

4.6.2 Noise and Blast

Due to the fact that the quarry has mostly been in "care and maintenance" for many years and the fact that the site has not undertaken blasting or significant quarrying operations during this time, there have been no issues relating to noise or blasting identified. It must be noted however that the proposed consent modification includes additional noise mitigation measures that will be implemented and monitored in accordance with the consent subject to approval.

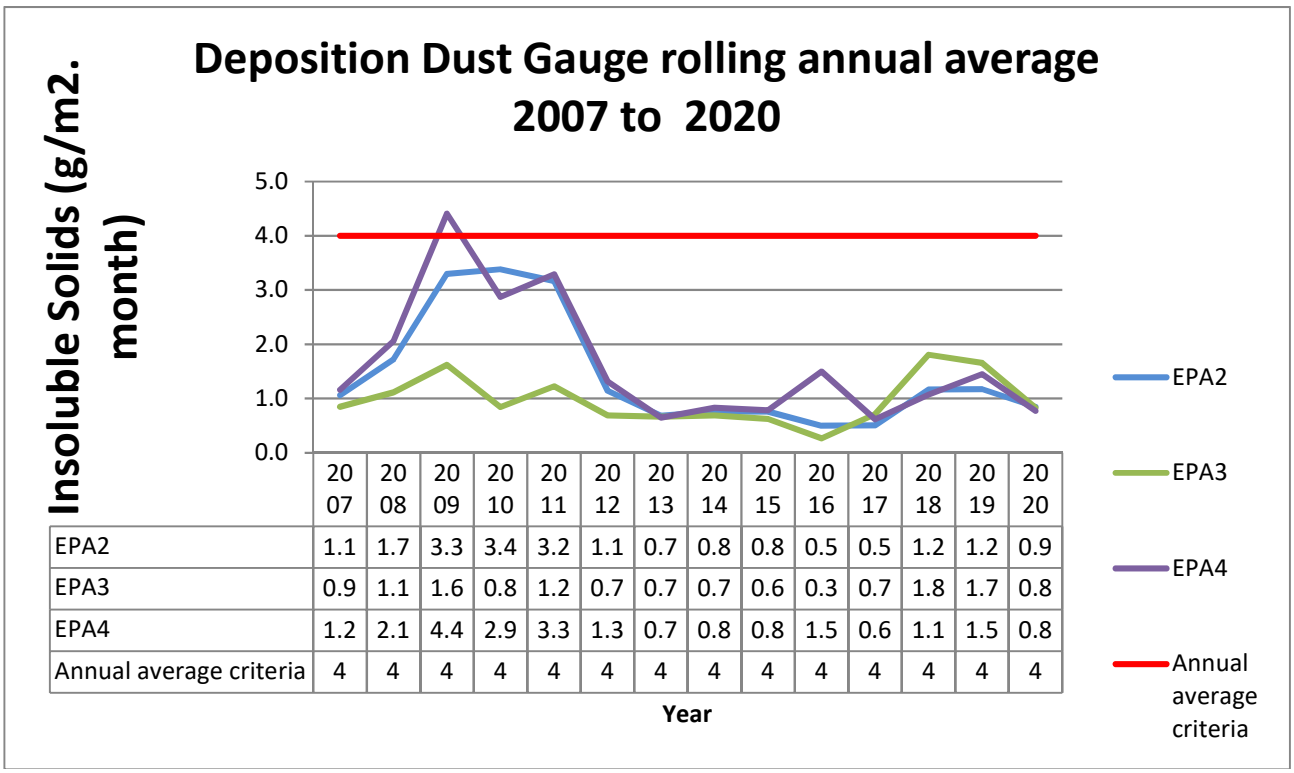
4.6.3 Air Quality

Due to the fact that the quarry has mostly been in "care and maintenance" for many years and the fact that the site has not undertaken blasting or significant quarrying operations during this time, there have been no substantial issues relating to air quality identified.

As shown in Figures 11, 12, 13 and 14 below, the long term trends associated with the various air quality monitoring parameters are summarised as follows:

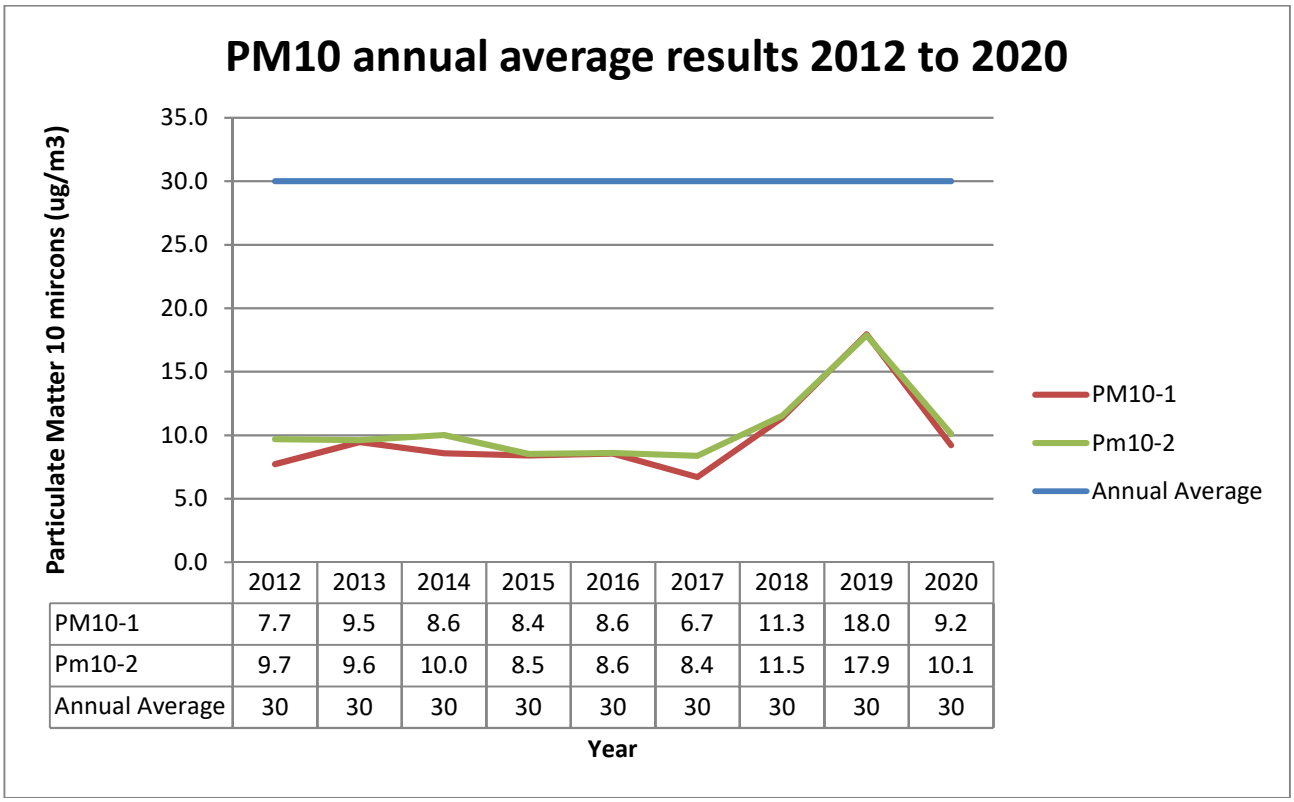
- Figure 11 – This shows the Dust Deposition Gauge (DDG) monitoring results from 2007 to 2020. As seen in this figure, the annual average results are all below the criterion apart from the average result for EPA #4 from 2009;
- Figure 12 – This shows the HVAS PM10 "annual average" monitoring results from 2012 to 2020. As seen in this figure, the annual average results are all below the criterion;
- Figure 13 – This shows the HVAS PM-10 "24 hour" monitoring results from 2012 to 2020. As seen in this figure, the annual average results are all below the criterion apart from the results obtained in 2012 and more recently during late 2018, late 2019 and into early 2020. For clarification regarding the prevailing weather conditions during 2019 and 2020, please see also see below Figure 15 (taken from the biodiversity monitoring report) which demonstrates that the region surrounding Ardglen quarry was experiencing "intense drought" conditions which were a significant contributor to the elevated PM10 monitoring results obtained during this time;
- Figure 14 – This shows the HVAS TSP monitoring results from 2012 to 2020. As seen in this figure, the TSP results are all below the criterion apart from the results obtained during late 2018, late 2019 and into early 2020. For clarification regarding the prevailing weather conditions during early 2020, please see also see below Figure 15 (taken from the biodiversity monitoring report) which demonstrates that

the region surrounding Ardglen quarry was experiencing "intense drought" conditions which were a significant contributor to the elevated PM10 monitoring results obtained during the first half of 2020;



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EPA2	1.1	1.7	3.3	3.4	3.2	1.1	0.7	0.8	0.8	0.5	0.5	1.2	1.2	0.9
EPA3	0.9	1.1	1.6	0.8	1.2	0.7	0.7	0.7	0.6	0.3	0.7	1.8	1.7	0.8
EPA4	1.2	2.1	4.4	2.9	3.3	1.3	0.7	0.8	0.8	1.5	0.6	1.1	1.5	0.8
Annual average criteria	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Figure 11: DDG rolling averages from 2007 to 2020



	2012	2013	2014	2015	2016	2017	2018	2019	2020
PM10-1	7.7	9.5	8.6	8.4	8.6	6.7	11.3	18.0	9.2
Pm10-2	9.7	9.6	10.0	8.5	8.6	8.4	11.5	17.9	10.1
Annual Average	30	30	30	30	30	30	30	30	30

Figure 12: Annual average PM-10 results from 2012 to 2020

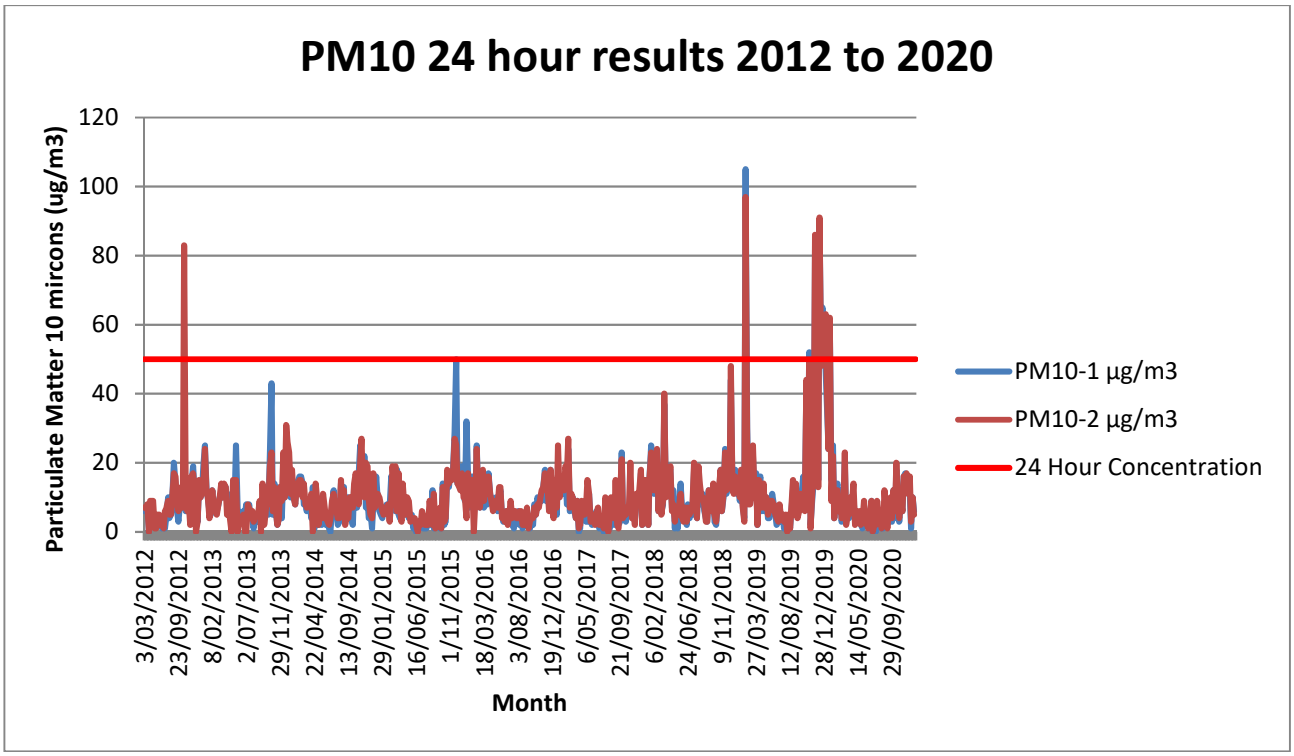


Figure 13: Twenty four hour concentration PM-10 results from 2012 to 2020

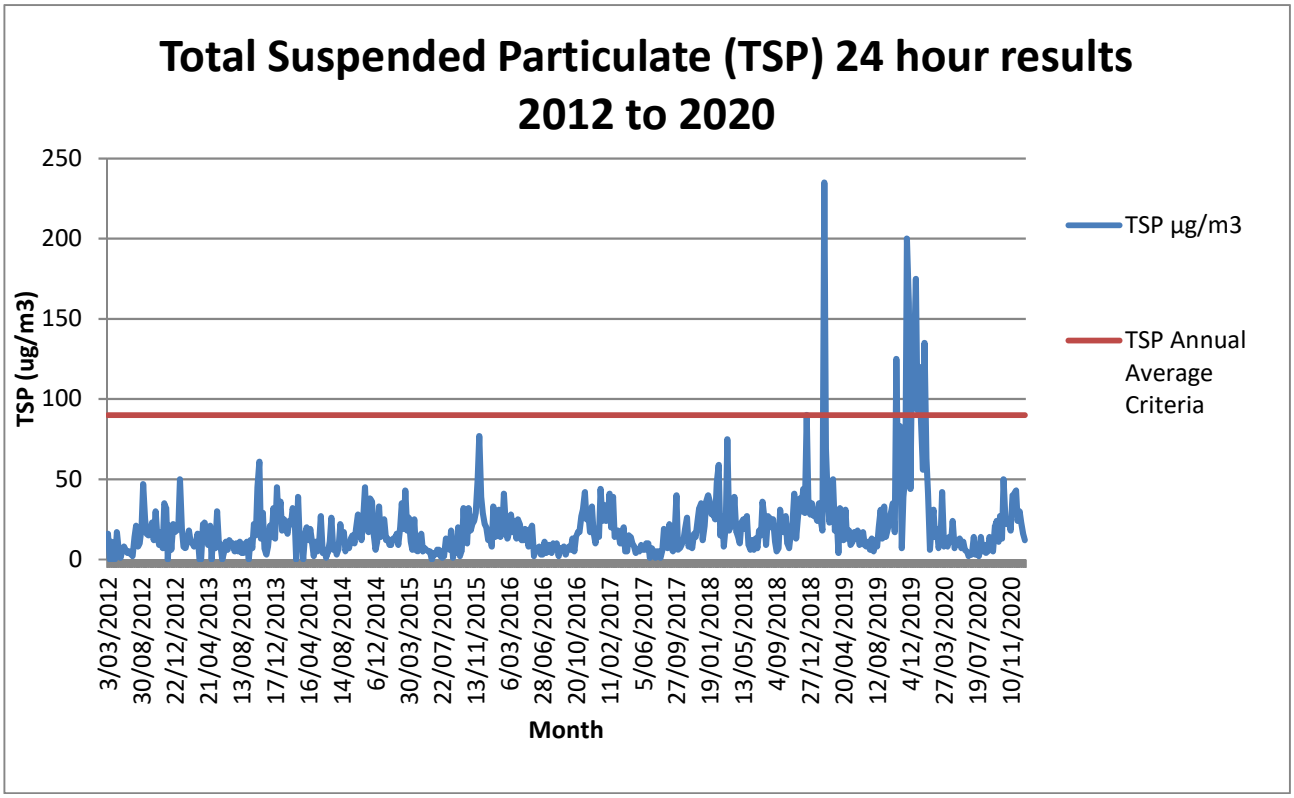


Figure 14: Annual average TSP results from 2012 to 2020

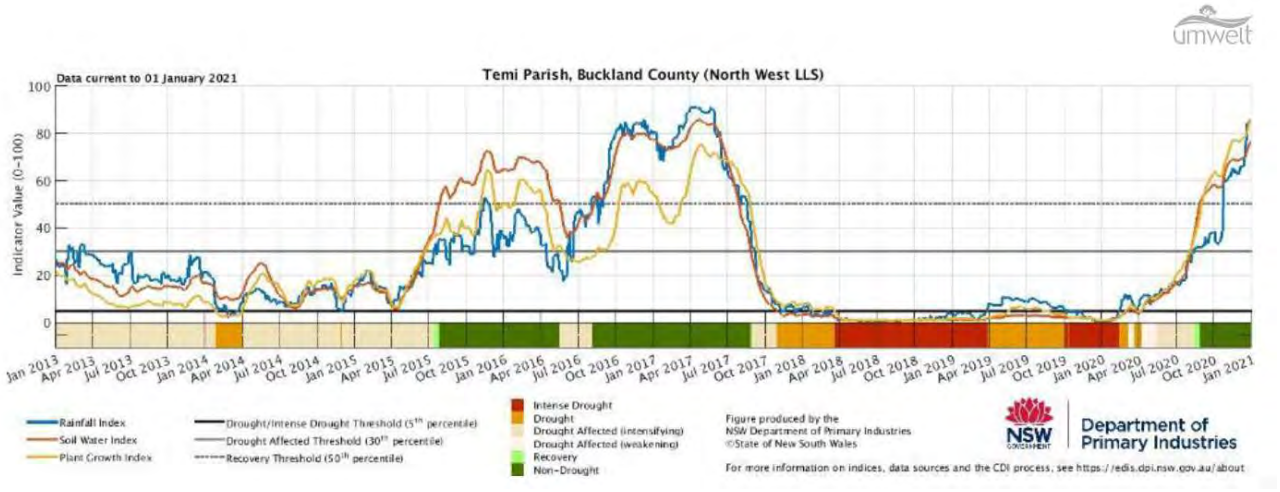


Figure 15: DPIE "Combined Drought Indicator" taken from Biodiversity monitoring report (Appendix 6)

5. COMPLIANCE ASSESSMENT

5.1 Environmental Protection Licence

Daracon hold Environmental protection Licence 1115 for a 'land based' extractive industry. The licence has an anniversary date of 1 January. The annual return covering the reporting period identified no non-compliances with the conditions of the licence and was submitted to the EPA in February 2021. The current version of the Ardglen Quarry Environment Protection Licence (EPL 1115) is available on site.

5.2 Discrepancies With Predicted And Actual Quarry Operations

The previous AEMR included a list of various activities planned for the following reporting period. With regard to the actual activities undertaken on site during the reporting period, the discrepancies between those predicted and those undertaken are summarised below:

- The security of the offset areas associated with the quarry extension approval continues to take longer than expected, however we're continuing to work closely with the Biodiversity Conservation Trust to enable the completion of a Conservation Agreement which we hope to have this resolved as soon as possible;

5.3 Independent Audit

During 2018, Daracon engaged the services of an environmental auditor to undertake the Independent Environmental Audit (IEA) in accordance with the Project Approval MP 06_0624 MOD. A copy of the IEA report and Response to Audit Recommendations were appended to a previous AEMR including a summary of the various actions as well as the status of each. Please also refer to Table 3 for a summary of the non-compliances arising from the IEA including the current status of each.

5.4 Summary of Incidents and Non-Compliances

Table 23 includes a summary of the incidents raised by Daracon during the reporting period. Please also refer to **Appendix 4** for a summary of complaints received and **Table 3** for a summary of the non-compliances arising from the IEA undertaken by Pitt and Sherry.

Table 23: Summary of incidents raised

Date occurred	Description	Outcome / action	Closed (Y / N)
January 2020	A number of HVAS results exceeded the 24 hour criterion during January 2020	The matter was investigated and not found to be a result of quarrying activities	Y
October 2020	Run time of a HVAS unit did not meet the 24 hour plus or minus one hour criteria	The matter was investigated and the fault repaired immediately	Y

6. ACTIVITIES PROPOSED DURING THE NEXT REPORTING PERIOD

6.1 Introduction

The following section provides a brief summary of operational & non-operational activities planned throughout the 2021 reporting period. **Table 24** provides a summary of the proposed quarry activities.

Table 24: Proposed Activities for 2021

January - December 2021	• Ongoing review of Management Plans; • Noise monitoring; • Regular Site Inspections; • Ongoing Air Quality Monitoring; • Addressing corrective actions identified in Independent Environmental Audit (IEA) as necessary; • Addressing corrective actions identified in the Road Safety Audit (RSA) as necessary; • Progressing the modification to the Consent and subject to its approval, quarrying activities (overburden removal, blasting and crushing) may recommence; • Another update to the LMP following the completion of the biodiversity offset monitoring inspection in late 2020 and further advice from BCT; • Ongoing site rehabilitation work;

6.2 Extraction Operations

Subject to the approval of the consent modification, extraction operations may be undertaken during the next reporting period.

6.3 Processing

Subject to the approval of the consent modification, processing may be undertaken during the next reporting period.

6.4 Overburden And Silt Management

Subject to the approval of the consent modification, overburden removal may be undertaken during the next reporting period. Current controls for overburden and silt management will remain in place and be monitored.

6.5 Waste Management

Subject to the approval of the consent modification, additional waste management processes may be implemented during the next reporting period.

6.6 Site Infrastructure And Services

Subject to the approval of the consent modification, changes may occur to the site infrastructure and services during the next reporting period.

6.7 Water Management

Subject to the approval of the consent modification, changes may be made to the current water management practices during the next reporting period.

6.8 Bushfire Management

Bush fire management practices will remain in place and monitored.

6.9 Hazardous Materials Management

There will be no importation or disposing of hazardous materials on site. Subject to the approval of the consent modification, changes may be made to the management practices associated with hazardous materials during the next reporting period.

6.10 Product Transportation

The export of material to the SBP was completed in early 2020 and we currently don't have any plans to export substantial quantities of material from Ardglen quarry, however there may be a need to service a few small scale local projects for which the existing stockpiled material would be suitable and appropriate.

6.11 Rehabilitation and landscape management

During the next reporting period it is likely that the following rehabilitation and landscape management activities will occur:

- Subject to the advice received from the BCT, Daracon may revise the Landscape Management Plan (LMP) again with assistance from Umwelt and submit to the DPIE for review and approval;
- Continue with rehabilitation planting in areas identified in the LMP;
- Monitoring of Off-Set areas will be conducted on a regular basis;
- Long term security of the off-set areas to be resolved;
- Subject to the approval of the consent modification, implement the various management strategies as detailed in the consent and revised LMP prior to entering the extension area;

7. REFERENCES

1. ANZECC (2000) – Australian and New Zealand Guidelines Fresh and Marine Water Quality
2. DEC (2007) Approved Methods for Sampling of Air Pollutants in New South Wales
3. DECCW (2007) Methods for the Sampling and Analysis of Air Pollutants in New South Wales
4. EPA (2000) New South Wales Industrial Noise Policy

8. APPENDICES

Appendix 1 Project Approval MP 06_0264 (Mod 1)

Project Approval

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

I approve the application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Hon Kristina Keneally MP
Minister for Planning

Sydney **2008**

SCHEDULE 1

Application Number:	06_0264
Proponent:	Buttai Gravel Pty Limited (Daracon Quarries)
Approval Authority:	Minister for Planning
Land:	Lot 1 DP 1001734 Lot 218 DP 751028 Various Crown public roads
Project:	Ardglen Quarry Extension

Blue type represents December 2010 modification (MOD 1)

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DEFINITIONS

AEMR	Annual Environmental Management Report
BCA	Building Code of Australia
CCC	Community Consultative Committee
Council	Liverpool Plains Shire Council
Day	The period from 7.00am to 6.00pm on Monday to Saturday, and 8.00am to 6.00pm on Sundays and Public Holidays
DECCW	Department of Environment, Climate Change and Water
Department	Department of Planning
Director-General	Director-General of Department of Planning, or delegate
DWE	Department of Water and Energy
EA	Environmental assessment titled *Ardglen Quarry Extension Environmental Assessment,* dated June 2007, including the response to submissions, dated November 2007
EEC	Endangered Ecological Community as defined under the NSW *Threatened Species Conservation Act 1995*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence
Evening	The period from 6.00pm to 10.00pm
Extension Area	The Extension Area as shown in Appendix 1
I&I NSW	NSW Department of Industry and Investment
Land	Land means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Minister	Minister for Planning, or delegate
Night	The period from 10.00pm to 7.00am on Monday to Saturday, and 10.00pm to 8.00am on Sundays and Public Holidays
NOW	NSW Office of Water within DECCW
Privately-owned Land	Land that is not owned by a public agency, or a quarrying company (or its subsidiary)
Project	The development as described in the EA
Proponent	Buttai Gravel Pty Limited (Daracon Quarries), or its successors
Reasonable and Feasible	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. Feasible relates to engineering considerations and what is practical to build
RTA	Roads and Traffic Authority
Site	The land referred to in Schedule 1 and shown in Appendix 1 as the project application area
Statement of Commitments	The Proponent's commitments in Appendix 4

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

Terms of Approval

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

   Note: The general layout of the project is shown in Appendix 1.

3. If there is any inconsistency between the above documents, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Proponent shall comply with any reasonable and feasible requirement/s of the Director-General arising from the Department's assessment of:
   (a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.

Limits on Approval

5. This approval expires on 31 August 2038.

   Note: Under this approval, the Proponent is required to rehabilitate the site and implement biodiversity offsets to the satisfaction of the Director-General. Consequently, this approval will continue to apply in all other respects other than the right to conduct extractive operations until the site has been rehabilitated and the biodiversity offset provided to a satisfactory standard.

6. The Proponent shall not extract or process more than 500,000 tonnes of material on the site each year.

7. The Proponent shall not transport more than:
   (a) 250,000 tonnes of product from the site by rail a year; or
   (b) 250,000 tonnes of product from the site by road a year.

8. The Proponent shall not import more than 80,000 tonnes of materials for the purposes of blending and product quality improvement each year.

Surrender of Consents

9. Within 3 years of this approval, the Proponent shall surrender all development consents or continuing use rights for the Ardglen Quarry, to the satisfaction of the Director-General.

Management Plans/Monitoring Programs

10. With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

Structural Adequacy

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

    Notes:
    - *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of development.*

Demolition

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

Operation of Plant and Equipment

13. The Proponent shall ensure that all 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.

Protection of Public Infrastructure

14. The Proponent shall:
    (a) repair, or pay all reasonable costs associated with repairing any public infrastructure that is damaged by the project; and
    (b) relocate, or pay all reasonable costs associated with relocating any public infrastructure that needs to be relocated as a result of the project.

Revision of Strategies, Plans or Programs

15. Within 3 months of any modification to this approval, the Proponent shall review and if necessary revise all management and monitoring strategies, plans and programs required under this approval which are relevant to the modification to the satisfaction of the Director-General.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

HOURS OF OPERATION

1. The Proponent shall comply with the hours of operation in Table 1.

Table 1: Hours of Operation

Activity	*Day*	*Time*
Topsoil/overburden removal/emplacement	Monday-Saturday	7.00am to 5.00pm
	Sunday	None
Blasting	Monday-Friday	10:00pm to 3.00pm
	Saturdays, Sundays and Public Holidays	None
In-pit activities (including drilling, extraction, and transfer of material out of the pit)	Monday-Saturday	7.00am to 5:30pm
	Sundays and Public Holidays	None
Out-of-pit activities (including processing, and stockpiling)	Monday-Saturday	7.00am to 5:30pm
	Sundays and Public Holidays	None
Maintenance (if inaudible at nearby residences)	Monday-Sunday	Any time
Truck loading and distribution	Monday-Saturday	6.30am to 5.30pm
	Sundays and Public Holidays	None
Rail loading	Monday-Sunday	7:00am to 10:00pm

Note:
- *The Proponent may load no more than 2 trains each year outside the hours listed in Table 1 (see condition 41).*
- *The Proponent may carry out blasting operations outside the hours listed in Table 1 for safety reasons provided the Proponent has notified DECCW and the local community about the proposed blast.*

NOISE

Noise Impact Assessment Criteria

2. The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 2: Noise impact assessment criteria dB(A)

Land	*Day*	*Evening*	*Night*	
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$
1 – Burraston	35	35	35	45
3 – Rose	35	35	35	45
4 – CM Thompson	44	35	35	45
5 – M Taylor	45	35	35	45
6 – S Thompson	45	35	35	45
9 – Bates	37	35	35	45
10 – Avery	38	35	35	45
11 – Shipman	37	35	35	45
12 – Hall	36	35	35	45
13 – McGhie	35	35	35	45
14 – Purtell	36	35	35	45
15 – J Taylor	43	35	35	45

Land	Day	Evening	Night	
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$
16 - Bojba	40	35	35	45
All other privately-owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 2, and a copy of this agreement has been forwarded to the Department and DECCW, then the Proponent may exceed the noise limits in Table 2 in accordance with the negotiated noise agreement. The Proponent may also exceed the $L_{A1(1\ min)}$ and $L_{Aeq(15\ min)}$ noise impact assessment criteria during out of hours rail loading activities provided they are conducted in accordance with condition 41 below.

Notes:

- *For information on the numbering and identification of properties used in this approval see Appendix 5.*
- *To determine compliance with the $L_{Aeq(15\ minute)}$ 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 a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
- *The noise emission limits identified in the above table apply under meteorological conditions of:*
  - *wind speeds of up to 3 m/s at 10 metres above ground level; or*
  - *temperature inversion conditions of up to 3ºC/100m, and source to receiver gradient wind speeds of up to 2 m/s at 10 metres above ground level.*

Land Acquisition Criteria

3. If the noise generated by the project exceeds the criteria in Table 3 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 7-9 of Schedule 4.

Table 3: Land acquisition criteria dB(A)

Land	Day	Evening	Night
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$
1 – Burraston	40	40	40
3 – Rose	46	40	40
4 – CM Thompson	46	40	40
5 – M Taylor	46	40	40
6 – S Thompson	46	40	40
9 – Bates	46	40	40
10 – Avery	46	40	40
11 – Shipman	46	40	40
12 – Hall	46	40	40
13 – McGhie	40	40	40
14 – Purtell	46	40	40
15 – J Taylor	46	40	40
16 - Bojba	46	40	40
All other privately-owned land	40	40	40

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 3, and a copy of this agreement has been forwarded to the Department and DECCW, then the Proponent may exceed the noise limits in Table 3 in accordance with the negotiated noise agreement. The Proponent may also exceed the land acquisition criteria during out of hours rail loading activities provided they are conducted in accordance with condition 41 below.

Note: Noise generated by the project is to be measured in accordance with the notes to Table 2.

Additional Noise Mitigation

4. Upon receiving a written request from the owner of any privately-owned residence where subsequent noise monitoring shows the noise generated by the project is greater than the relevant criteria in Table 4, the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner.

Table 4: Additional Noise Mitigation Criteria dB(A)

Land	Day	Evening	Night
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$
1 – Burraston	38	38	38
3 – Rose	44	38	38
4 – CM Thompson	44	38	38
5 – M Taylor	44	38	38
6 – S Thompson	44	38	38
9 – Bates	44	38	38
10 – Avery	44	38	38
11 – Shipman	44	38	38
12 – Hall	44	38	38
13 – McGhie	38	38	38
14 – Purtell	44	38	38
15 – J Taylor	44	38	38
16 - Bojba	44	38	38
All other privately-owned land	38	38	38

Note: Noise generated by the project is to be measured in accordance with the notes to Table 2.

These additional mitigation measures must be reasonable and feasible.

If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

Within 3 months of this approval, the Proponent shall notify all applicable landowners of their rights under this condition, to the satisfaction of the Director-General.

Continuous Improvement

5. The Proponent shall:
   (a) implement all reasonable and feasible noise mitigation measures;
   (b) investigate ways to reduce the noise generated by the project, including off-site road and rail noise and maximum noise levels which may result in sleep disturbance; and
   (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR,

   to the satisfaction of the Director-General.

Monitoring

6. Prior to any works being undertaken in the Extension Area, the Proponent shall prepare and implement a Noise Monitoring Program for the project, in consultation with DECCW, and to the satisfaction of the Director-General. The program must include:
   (a) a combination of attended and unattended noise monitoring measures; and
   (b) a noise monitoring protocol for evaluating compliance with the noise impact assessment and land acquisition criteria in this approval.

BLASTING AND VIBRATION

Airblast Overpressure Criteria

7. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 5 at any privately-owned residence.

Table 5: Airblast overpressure impact assessment criteria

Airblast overpressure level (dB(Lin Peak))	Allowable exceedance
115	5% of the total number of blasts over a period of 12 months
120	0%

Ground Vibration Impact Assessment Criteria

8. The Proponent shall ensure that the ground vibration level from blasting at the project does not exceed the criteria in Table 6 at any privately-owned residence.

Table 6: Ground vibration impact assessment criteria

Peak particle velocity (mm/s)	Allowable exceedance
5	5% of the total number of blasts over a period of 12 months
10	0%

Blasting Frequency

9. The Proponent shall not carry out more than 30 blasts a year, or more than 1 blast per day, without the written approval of the Director-General.

Operating Conditions

10. The Proponent shall implement best blasting practice to:
    (a) protect the safety of people, property, public infrastructure and livestock; and
    (b) minimise the dust and fume emissions from blasting at the project,
    to the satisfaction of the Director-General.

11. The Proponent shall not undertake blasting within 500 metres of any privately-owned land or any land not owned by the Proponent, unless suitable arrangements have been made with the landowner and any tenants to minimise the risk of flyrock-related impact to the property to the satisfaction of the Director-General.

Public Notice

12. The Proponent shall:
    (a) notify the landowner/occupier of any residence within 1 kilometre of the quarry pit who registers an interest in being notified about the blasting schedule at the quarry;
    (b) operate a Blasting Hotline, or alternate system agreed to by the Director-General, to enable the public to get up-to-date information on the blasting schedule at the quarry;
    (c) keep local residents informed about this hotline (or any alternative notification protocols),
    to the satisfaction of the Director-General.

Property Investigations

13. If any landowner of privately-owned land within 1 kilometre of the site claims that buildings and/or structures on his/her land have been damaged as a result of blasting at the site, following commencement of operations within the extension area, then he/she may ask the Director-General in writing to investigate the claim.

    If the Director-General is satisfied that an independent property investigation is warranted, the Proponent shall within 3 months of the Director-General's determination:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to investigate the claim; and
    (b) give the landowner a copy of the property investigation report.

If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damages to the satisfaction of the Director-General.

If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 6).

Blast Monitoring Program

14. Prior to carrying out any blasting in the Extension Area, the Proponent shall prepare and implement a Blast Monitoring Program for the project, in consultation with the DECCW, and to the satisfaction of the Director-General. This program must include a protocol for demonstrating compliance with the blasting criteria in this approval.

AIR QUALITY

Impact Assessment Criteria

15. The Proponent shall ensure that the dust emissions generated by the project do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 8, 9 and 10 at any residence, on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 8: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 9: Short term impact assessment criterion for particulate matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Table 10: Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Note: Deposited dust is 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.

Operating Conditions

16. The Proponent shall ensure any visible air pollution generated by the project is assessed regularly, and that quarrying operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately-owned land, to the satisfaction of the Director-General.

Monitoring

17. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project, in consultation with DECCW, and to the satisfaction of the Director-General. This program must:
    (a) use a combination of high volume air samplers and dust deposition gauges to monitor the dust emissions from the project;
    (b) include a protocol for demonstrating compliance with the air quality impact assessment criteria in this approval; and
    (c) be submitted to the Director-General for approval prior to any works being undertaken in the Extension Area.

METEOROLOGICAL MONITORING

18. The Proponent shall ensure the project has a suitable meteorological station in the vicinity of the site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline, to the satisfaction of the DECCW and the Director-General.

SURFACE AND GROUND WATER

Surface Water Discharges

19. The Proponent shall only discharge water from the site in accordance with the provisions of an EPL.

Site Water Management Plan

20. Prior to any works being undertaken in the Extension Area, the Proponent shall prepare and implement a Site Water Management Plan for the project, in consultation with DECCW and NOW, and to the satisfaction of the Director-General. This plan must be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General, and must include:
    (a) a Site Water Balance;
    (b) an Erosion and Sediment Control Plan; and
    (c) a Water Monitoring Program.

    Note: The Site Water Management Plan must incorporate the existing quarry operations and operations within the extension area.

Site Water Balance

21. The Site Water Balance must include details of:
    (a) sources and reliability of water supply;
    (b) water management;
    (c) water use; and
    (d) any off-site discharges.

Erosion and Sediment Control

22. The Erosion and Sediment Control Plan must:
    (a) be consistent with the requirements of the *Managing Urban Stormwater: Soils and Construction Manual* (Landcom 2004, or its latest version);
    (b) identify activities that could cause soil erosion and generate sediment;
    (c) describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters;
    (d) describe the location, function, and capacity of erosion and sediment control structures; and
    (e) describe what measures would be implemented to maintain the structures over time.

Water Monitoring

23. The Water Monitoring Plan must include:
    (a) water quality assessment criteria;
    (b) a program to monitor water flows and quality in creeks and other waterbodies that could potentially be affected by the project;
    (c) a protocol for the investigation, notification, and mitigation of identified exceedances of the water quality assessment criteria; and
    (d) the procedures that would be followed if any unforeseen impacts are detected during the project.

REHABILITATION AND LANDSCAPE MANAGEMENT

Rehabilitation

24. The Proponent shall progressively rehabilitate the site in a manner that is generally consistent with the conceptual rehabilitation principles and proposed rehabilitation strategy in the EA (shown conceptually in Appendix 2), to the satisfaction of the Director-General.

Offset Strategy

25. Prior to undertaking any works in the Extension Area, the Proponent shall revise the Biodiversity Offset Strategy described in the EA and Response to Submissions (shown conceptually in Appendix 3), to the satisfaction of the Director-General. The revised strategy must be prepared in consultation with the DECCW, and include additional areas where Yellow Box White Box Blakely's Red Gum Woodland EEC would be actively re-established within the identified biodiversity offset areas shown in Appendix 3.

26. Within 3 years of this approval, the Proponent shall make suitable arrangements to provide appropriate long term security for the offset areas to the satisfaction of the Director-General.

Landscape Management Plan

27. The Proponent shall prepare and implement a detailed Landscape Management Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General;
    (b) submitted to the Director-General for approval prior to undertaking any works in the Extension Area; and
    (c) include a:
        - Doughboy Hollow Creek Rehabilitation Strategy;
        - Rehabilitation and Biodiversity Offset Management Plan; and
        - Quarry Closure Plan.

    Note: The Department accepts that the initial Landscape Management Plan may not include the detailed Quarry Closure Plan. However, if this occurs, the Proponent will be required to seek approval from the Director-General for an alternative timetable for the completion and approval of the Quarry Closure Plan.

Doughboy Hollow Creek Rehabilitation Strategy

28. The Doughboy Hollow Creek Rehabilitation Strategy must:
    (a) be prepared in consultation with the I&I NSW and NOW;
    (b) describe the measures that would be implemented to:
        - remove the weir from Doughboy Hollow Creek;
        - rehabilitate the creek; and
        - rehabilitate and/or re-establish riparian vegetation.

Rehabilitation and Biodiversity Offset Management Plan

29. The Rehabilitation and Biodiversity Offset Management Plan must:
    (a) be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General;
    (b) describe in general the short, medium, and long term measures that would be implemented to:
        - rehabilitate the site;
        - implement the Biodiversity Offset Strategy and Doughboy Hollow Creek Rehabilitation Strategy; and
        - manage the remnant vegetation and habitat on the site;
    (c) include a detailed description of what measures would be implemented over the next 3 years to implement the Biodiversity Offset Strategy and Doughboy Hollow Creek Rehabilitation Strategy;
    (d) include a detailed description of what measures would be implemented over the next 5 years to rehabilitate the site, including the procedures to be implemented for:
        - progressively rehabilitating areas disturbed by quarrying;
        - implementing revegetation and regeneration within the disturbance areas, including establishment of canopy, sub-canopy (if relevant), understorey and ground strata;
        - managing the remnant vegetation and habitat on site;
        - managing impacts on fauna;
        - reducing the visual impacts of the project;
        - landscaping the site to minimise visual impacts;
        - protecting areas outside the disturbance areas;
        - conserving and reusing topsoil;
        - collecting and propagating seeds for rehabilitation works;
        - salvaging and reusing material from the site for habitat enhancement;
        - controlling weeds and feral pests;
        - controlling access; and
        - bushfire management;

(e) detailed performance and completion criteria for the rehabilitation of the site and implementation of the Biodiversity Offset Strategy and Doughboy Hollow Creek Rehabilitation Strategy;
(f) a detailed description of how the performance of the rehabilitation of the site and implementation of the Biodiversity Offset Strategy and Doughboy Hollow Creek Rehabilitation Strategy would be monitored over time to achieve the relevant objectives and completion criteria;
(g) a description of the potential risks to successful revegetation and/or rehabilitation in the offset areas and project area, and a description of the contingency measures that would be implemented to mitigate these risks; and
(h) details of who is responsible for monitoring, reviewing and implementing the plan.

Quarry Closure Plan

30. The Quarry Closure Plan must:
(a) define the objectives and criteria for quarry closure;
(b) investigate options for the future use of the site, including any final void(s);
(c) describe the measures that would be implemented to minimise or manage the ongoing environmental effects of the development; and
(d) describe how the performance of these measures would be monitored over time.

Rehabilitation Bond

31. Within 3 months of the approval of the Landscape Management Plan, the Proponent shall lodge a rehabilitation bond with the Director-General to ensure that the rehabilitation and biodiversity offset obligations required in this approval are implemented in accordance with the performance and completion criteria in the Rehabilitation and Biodiversity Offset Management Plan. The rehabilitation bond may in the form of a bank guarantee or security bond. The sum of the bond shall be calculated by:
(a) a suitably qualified quantity surveyor at $\$2.50/m^2$ for the area to be disturbed over the next 5 year period at the quarry; and
(b) a suitably qualified rehabilitation expert for land within the biodiversity offset areas where re-establishment of the EEC is proposed,
to the satisfaction of the Director-General.

Notes:
- *If the rehabilitation and biodiversity offset is completed to the satisfaction of the Director-General, the Department will release the rehabilitation bond.*
- *If the rehabilitation and biodiversity offset is not completed to the satisfaction of the Director-General, all or part of the rehabilitation bond will be used to ensure the satisfactory completion of the relevant works.*

32. Every 5 years, following the provision of the rehabilitation bond (see condition 31), the Proponent shall review, and if necessary revise, the sum of the bond to the satisfaction of the Director-General. This review must consider:
(a) the effects of inflation;
(b) any changes to the total area of disturbance; and
(c) the performance of the rehabilitation against the completion criteria of the Rehabilitation, Biodiversity Offset Management Plan.

TRANSPORT

Product Transport

33. The Proponent shall:
(a) keep records of the:
- amount of quarry materials imported onto the site each year;
- amount of product transported from the site each year;
- number of truck movements generated by the project, on a weekly basis;
- number of train movements generated by the project, on a weekly basis;
- date and time of each train movement generated by the project;

(b) provide annual production data to the I&I NSW using the standard form for that purpose; and
(c) include these records in the AEMR.

Road Safety and Condition Audit

34. Prior to undertaking any works in the Extension Area, the Proponent shall undertake a Road Safety and Condition Audit for the project, to the satisfaction of the Director-General. This audit must:
    (a) be prepared by a suitably independent and qualified expert/s whose appointment has been approved by the Director-General;
    (b) be prepared in consultation with the RTA and Council;
    (c) assess the safety, performance and condition of the Ardglen Street-New England Highway intersection and the quarry access route from the New England Highway to the quarry entrance (Ardglen Street, High Street (Swinging Bridges Road), St Stephen Street and Warra Street); and
    (d) identify any road works that are required to comply with relevant AUSROAD standards or other relevant RTA requirements.

35. Within 12 months of completing the Road Safety and Condition Audit, the Proponent shall undertake (and complete) any road works recommended in the Audit, to the satisfaction of the relevant roads authority (i.e. RTA or Council). If there is a dispute about the implementation of these measures, then the Proponent may refer the matter to the Director-General for resolution.

Road Signage

36. Within 3 months of this approval, the Proponent shall install warning signs ("Truck Turning") on the northern and southern approaches to the quarry access route on the New England Highway, to the satisfaction of the RTA.

Road Maintenance

37. The Proponent shall maintain the quarry access route from the New England Highway to the quarry entrance (Ardglen Street, High Street (Swinging Bridges Road), St Stephen Street and Warra Street) until the cessation of quarrying on the site, to the satisfaction of Council.

    If the Proponent and the Council fail to reach agreement on the road maintenance requirements, then either party may refer the matter to the Director-General for resolution. Any determination by the Director-General's on this matter will be binding on the Proponent and the Council.

Road Haulage

38. The Proponent shall ensure that truck movements associated with the project do not exceed 50 movements on average per day.

39. The Proponent shall not use trucks with a capacity of greater than 35 tonnes to transport product from the site, unless otherwise agreed in writing by the RTA.

40. The Proponent shall ensure that all loaded vehicles entering or leaving the site are covered, and are cleaned of materials that may fall onto public roads.

Rail Loading

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours in Table 1 in any 12 month period, unless agreed to in writing by the Director-General.

42. If the Proponent intends to undertake out of hours rail loading, it must use its best endeavours to notify all local residents at least 12 hours prior to the proposed rail loading, to the satisfaction of the Director-General.

Traffic and Transport Management Plan

43. Prior to undertaking any works in the Extension Area, the Proponent shall prepare and implement a Traffic and Transport Management Plan, to the satisfaction of the Director-General. The plan must include:
    (a) a driver code of conduct for the project to minimise the impacts of trucks on local residents;
    (b) the measures that would be put in place to ensure compliance with the driver code of conduct;
    (c) the measures that would be taken to avoid night time train loading operations; and
    (d) the procedures for notifying local residents about night time train loading activities when these occur.

VISUAL IMPACT

44. The Proponent shall:
    (a) take all practicable measures to mitigate off-site lighting impacts from the project; and
    (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*,
    to the satisfaction of the Director-General.

ABORIGINAL CULTURAL HERITAGE

45. The Proponent shall not destroy any known Aboriginal objects (as defined in the *National Parks and Wildlife Act 1974*) without the written approval of the Director-General.

GREENHOUSE GAS

46. The Proponent shall:
    (a) monitor the greenhouse gas emissions generated by the project;
    (b) investigate ways to reduce greenhouse gas emissions generated by the project; and
    (c) report on greenhouse gas monitoring and abatement measures in the AEMR,
    to the satisfaction of the Director-General.

WASTE MINIMISATION

47. The Proponent shall:
    (a) monitor the amount of waste generated by the project;
    (b) investigate ways to minimise waste generated by the project;
    (c) implement reasonable and feasible measures to minimise waste generated by the project;
    (d) ensure irrigation of treated wastewater is undertaken in accordance with DECCW's *Use of Effluent by Irrigation*; and
    (e) report on waste management and minimisation in the AEMR,
    to the satisfaction of the Director-General.

48. The Proponent shall ensure that all waste generated or stored on site is assessed, classified and managed in accordance with the DECCW's *Waste Classification Guidelines Part 1: Classifying Waste*.

SCHEDULE 4
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. If the results of monitoring required in Schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria, then the Proponent shall notify the Director-General and the affected landowners and/or existing or future tenants (including tenants of quarry owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the relevant criteria.

INDEPENDENT REVIEW

2. If a landowner (excluding quarry owned properties) considers that the operations of the project are exceeding the impact assessment criteria in Schedule 3 then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land.

   If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 3 months of the Director-General's decision:
   (a) consult with the landowner to determine his/her concerns;
   (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land to:
      - determine whether the project is complying with the relevant impact assessment criteria in Schedule 3; and
      - identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and
   (c) give the Director-General and landowner a copy of the independent review.

3. If the independent review determines that the project is complying with the relevant impact assessment criteria in Schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

4. If the independent review determines that the project is not complying with the relevant impact assessment criteria in Schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and
   (b) conduct further monitoring to determine whether these measures ensure compliance.

   If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in Schedule 3, or the Proponent and landowner enter into a negotiated agreement to allow these exceedances, then the Proponent may discontinue the independent review with the approval of the Director-General.

5. If the independent review determines that the relevant criteria in Schedule 3 are being exceeded, then the Proponent shall:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and
   (b) conduct further monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner to allow exceedances of the criteria in Schedule 3.

   If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in Schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

6. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the Director-General for resolution.

   If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 6).

LAND ACQUISITION

7. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project the subject of the project application, 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 property 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 conditions 5 and 6 of Schedule 3;
   (b) the reasonable costs associated with:
      - relocating within the Liverpool Plains local government area, or to any other local government area determined by the Director-General;
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if at the end of this period, the Proponent 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 Director-General for resolution.

   Upon receiving such a request, the Director-General shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute, to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.

   Within 14 days of receiving the independent valuer's determination, the Proponent shall make a written offer to purchase the land at a price not less than the independent valuer's determination.

   If the landowner refuses to accept this offer within 6 months of the Proponent's offer, the Proponent's obligations to acquire the land shall cease, unless otherwise agreed by the Director-General.

8. The Proponent shall bear the costs of any valuation or survey assessment requested by the independent valuer, or the Director-General, and the costs of determination referred above.

9. If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING & REPORTING

ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must be submitted to the Director-General for approval prior to any works being undertaken in the Extension Area, and:
   (a) provide the strategic framework for environmental management of the project;
   (b) identify the statutory requirements that apply to the project;
   (c) describe in general how the environmental performance of the project would be monitored and managed;
   (d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance; and
      - respond to emergencies; and
   (e) describe the role, responsibility, authority, and accountability of all the key personnel involved in environmental management of the project.

ENVIRONMENTAL MONITORING PROGRAM

2. The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program must be submitted to the Director-General for approval prior to any works being undertaken in the Extension Area, and consolidate the various monitoring requirements in Schedule 3 of this approval into a single document, and be submitted to the Director-General concurrently with the submission of the relevant monitoring programs/plans.

REPORTING

Incident Reporting

3. Within 7 days of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) harm to the environment, the Proponent shall report the exceedance/incident to the Department and any relevant agencies. This report must:
   (a) describe the date, time, and nature of the exceedance/incident;
   (b) identify the cause (or likely cause) of the exceedance/incident;
   (c) describe what action has been taken to date; and
   (d) describe the proposed measures to address the exceedance/incident.

Annual Reporting

4. Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and relevant agencies. This report must:
   (a) identify the standards and performance measures that apply to the project;
   (b) describe the works carried out in the last 12 months;
   (c) describe the works that will be carried out in the next 12 months;
   (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   (e) include a summary of the monitoring results for the project during the past year;
   (f) include an analysis of these monitoring results against the relevant:
      - limits/criteria in this approval;
      - monitoring results from previous years; and
      - predictions in the EA;
   (g) identify any trends in the monitoring results over the life of the project;
   (h) identify and discuss any non-compliance during the previous year; and
   (i) describe what actions were, or are being, taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

5. Prior to 31 December 2012, and every 5 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
   (a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Director-General;
   (b) assess the environmental performance of the project, and its effects on the surrounding environment;
   (c) assess whether the project is complying with the relevant standards, performance measures, and statutory requirements;
   (d) review the adequacy of any strategy/plan/program required under this approval; and, if necessary,
   (e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy/plan/program required under this approval.

   Note: This audit team must be led by a suitably qualified auditor, and include experts in the field of noise and rehabilitation.

6. Within 6 weeks of completing this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General with a response to any recommendations contained in the audit report.

7. Within 3 months of submitting the audit report to the Director-General, the Proponent shall review and if necessary revise the strategies/plans/programs required under this approval, to the satisfaction of the Director-General.

COMMUNITY CONSULTATIVE COMMITTEE

8. The Proponent shall operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General, in general accordance with the *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects*.

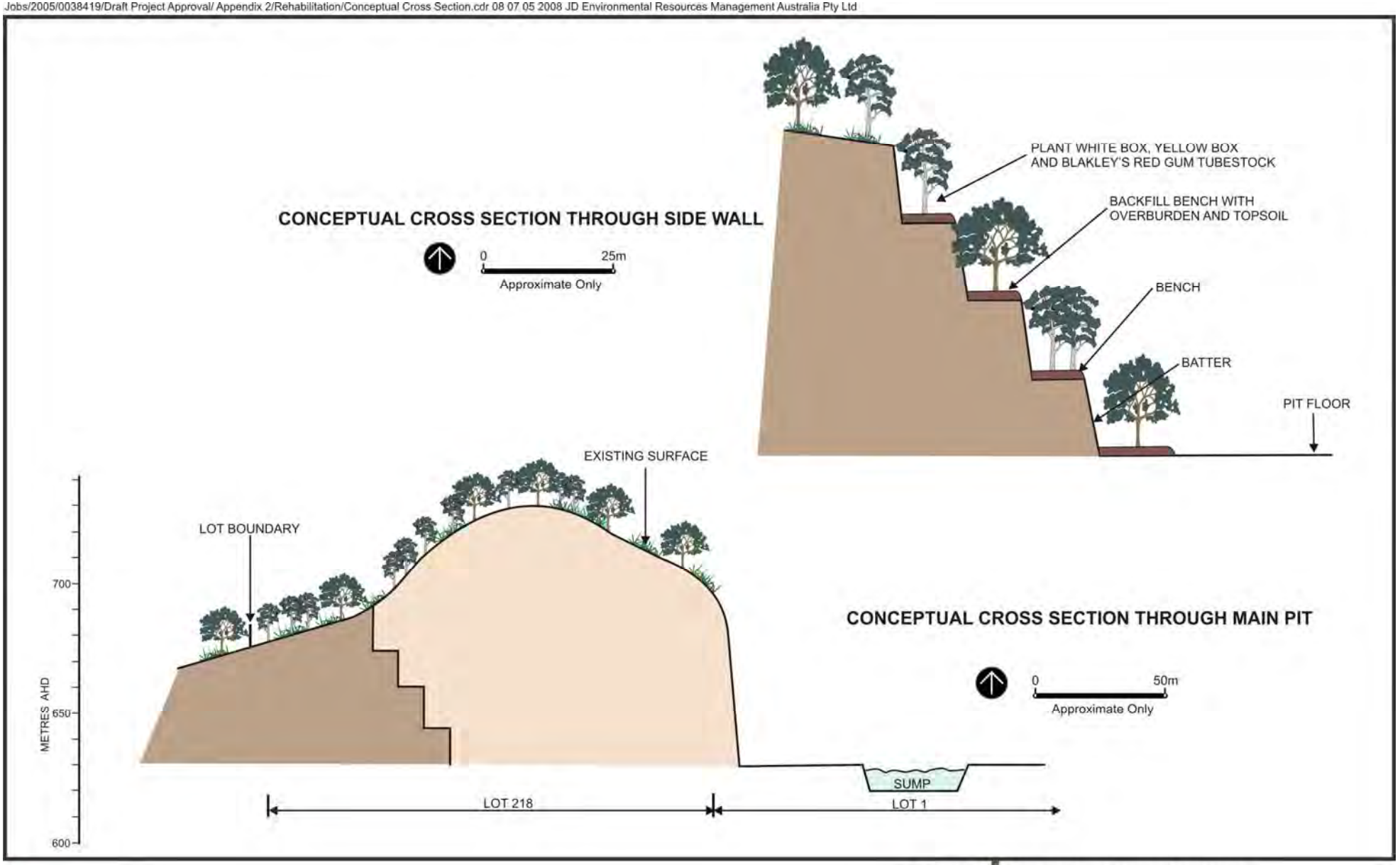
ACCESS TO INFORMATION

9. Within 3 months of the approval of any plan/strategy/program required under this approval (or any subsequent revision of these plans/strategies/programs), or the completion of the audits or AEMRs required under this approval, the Proponent shall:
   (a) provide a copy of the relevant document/s to the relevant agencies and CCC; and
   (b) put a copy of the relevant document/s on its website.

10. During the development, the Proponent shall:
   (a) include a copy of this approval, as may be modified from time to time, on its website;
   (b) provide a full summary of monitoring results required under this approval on its website; and
   (c) update these results on a regular basis (at least every 6 months).

APPENDIX 1
GENERAL PROJECT LAYOUT

APPENDIX 2
CONCEPTUAL REHABILITATION PLAN



ERM

Appendix 2 **Conceptual Cross Sections**

Daracon Engineering - Ardglen Quarry, NSW - Draft Project Approval

APPENDIX 3
CONCEPTUAL OFFSET PLAN

APPENDIX 4
STATEMENT OF COMMITMENTS

Table 1: Statement of Commitments

Item Number	Item	Commitment	Responsibility	Timing
1	Scope of Development	The project will be carried out generally in accordance with the following plans and documentation, except where amended by the conditions of the project approval: • the Environmental Assessment (EA) prepared by ERM (June, 2007) and accompanying specialist reports; • the Response to Submissions report prepared by ERM (November, 2007); and • this revised Statement of Commitments.	Daracon Quarries	Ongoing for the duration of the project.
2	Statutory Requirements	All necessary licences, permits and approvals will be obtained and maintained for the project.	Daracon Quarries	Ongoing for the duration of the project.
3		In accordance with section 104A of the EP&A Act, the proponent will surrender the existing development consent applying to Lot 1 DP 1001734, issued by Murrurundi Shire Council in May 1994.	Daracon Quarries	Within 2 years of work commencing within the extension area.
4	General	The proponent will prepare and implement an Environmental Management System (EMS) based on the AS/NZA ISO 14001:2004 - Environmental Management Systems. The EMS will: • incorporate an operational Environmental Management Plan (EMP); • detail potential environmental risks due to operation of the proposed quarry; • provide measures for the prevention, minimisation and management of these impacts to within acceptable limits; and • provide a means for the project to improve environmental performance and move towards environmental sustainability.	Daracon Quarries	EMS to be submitted for approval prior to work commencing within the extension area.
5	Water Management	The proponent will prepare and implement a Surface Water Management Plan for the project that will include: • an Erosion and Sediment Control Plan (including procedures to minimise erosion, capture of sediment on-site, and maintenance of control structures);	Daracon Quarries	Plan to be submitted for approval prior to work commencing within the extension area.

<table>
<tr><th>Item Number</th><th>Item</th><th>Commitment</th><th>Responsibility</th><th>Timing</th></tr>
<tr><td></td><td></td><td>• a Site Water Balance; and
• a Water Quality Monitoring Program</td><td></td><td></td></tr>
<tr><td>6</td><td>Biodiversity</td><td>The proponent will implement the biodiversity offset strategy outlined in the EA, which includes the conservation and long term protection of the areas described in Table 1.
Table 1 Biodiversity Offset Areas
<table>
<tr><th>Land Description</th><th>Area (ha)</th><th>Proposed Management Strategy</th></tr>
<tr><td>Lot 187 DP 751028</td><td>8.2</td><td>stock removal, weed control, planting of EEC trees, transport of logs and rocks, provision of nest boxes</td></tr>
<tr><td>Lot 39 DP 751028</td><td>11.65</td><td>stock removal, weed control, major planting of EEC trees and grasses, transport of logs and rocks</td></tr>
<tr><td>Lot 49 DP 751028</td><td>16.3</td><td>stock removal, weed control</td></tr>
<tr><td>Total</td><td>36.15</td><td></td></tr>
</table></td><td>Daracon Quarries</td><td>Ongoing for the duration of the project.</td></tr>
<tr><td>7</td><td></td><td>The proponent will prepare a detailed biodiversity offset management plan in consultation with the DECC and submit it for approval by the Director-General. The plan will include:
▪ proposed staging;
▪ planting details such as final density, species mix, sowing rates, fertiliser;
▪ proposed maintenance schedule;
▪ weed control;
▪ importation of rock and log shelter;
▪ topsoil handling;
▪ fencing;</td><td>Daracon Quarries</td><td>Plan to be submitted for approval prior to work commencing within the extraction area.</td></tr>
</table>

Item Number	Item	Commitment	Responsibility	Timing
		▪ pre-clearing surveys of all hollow bearing trees within the proposed quarry extension area; ▪ herbivore control; and ▪ number and location of nest boxes.		
8		The proponent will make suitable arrangements to provide appropriate long term security for the offset areas.	Daracon Quarries	Within 3 years of work commencing within the extraction area.
9	Noise	The proponent will continue to implement the following measures, which are currently in place at Ardglen Quarry, to mitigate noise impacts: ▪ quarry hours are restricted to between 6am and 5.30pm; ▪ noise created by the haul trucks, both empty and loaded, is reduced by imposing a speed limit of 50 km/h when travelling on local roads between the quarry and the highway. Trucks on site are limited to a speed of 25 km/h; ▪ all on-site, fixed and mobile diesel-powered plant, excluding road vehicles, are correctly fitted and maintained to manufacturer specifications. Particular attention is given to engine exhaust systems and the care and maintenance of mufflers. Further noise control is nominated through the implementation of the following measures: ▪ reduction of equipment through the separation of site activities to overburden stripping and extraction, whereby they do not occur simultaneously; ▪ rail loading will be limited to the day period (7am to 6pm) as much as practicable; ▪ the surge bin will be lined with latex or polymer liners to reduce impulsive noise; ▪ a sheet metal enclosure will be built around the rail loader discharge and extend to include the rail wagon being loaded. The enclosure will be constructed of sheet metal and will cover the length of a minimum of three wagons whereby the wagon being loaded will be in the centre of the enclosure. The enclosure will be open at the ends and will contain a roof which will be connected to the rail loader discharge.	Daracon Quarries	Ongoing for the duration of the project.

Item Number	Item	Commitment	Responsibility	Timing
		Gaps between the loader discharge and the roof will be sealed; ▪ the two scrapers initially assigned for overburden stripping will be replaced by one excavator and two articulated dump trucks; ▪ the existing three crushers will be acoustically treated by extending the metal cladding on the crushing and screening station building to ground level with no gaps or openings; ▪ the existing screens will be located behind earth bunds; and ▪ mobile acoustic barriers or earth mounds will surround the drill rig and any mobile plant situated on the surface during initial stripping; and ▪ where land slopes away from stripping activities to receivers, barriers will be raised to a height of 4 metres, so there is no direct line of sight to receivers.		
10		Except during night-time rail loading activities, the proponent will ensure that the noise generated by the project does not exceed the levels set out in *Table 2*, at any privately-owned residence, unless a specific agreement is reached with the landholder, in which case the proponent may exceed the noise limits set out in *Table 2* in accordance with the negotiated noise agreement. *Table 2 Noise Criteria* **Land** — **Noise Level LAeq dB(A)** 1 - Burraston — 35 2 - Rose — 35 4 – CM Thomson — 44 5 – M Taylor — 45 6 – S Thompson — 45 9 – Bates — 37 10 – Avery — 38	Daracon Quarries	Ongoing for the duration of the project.

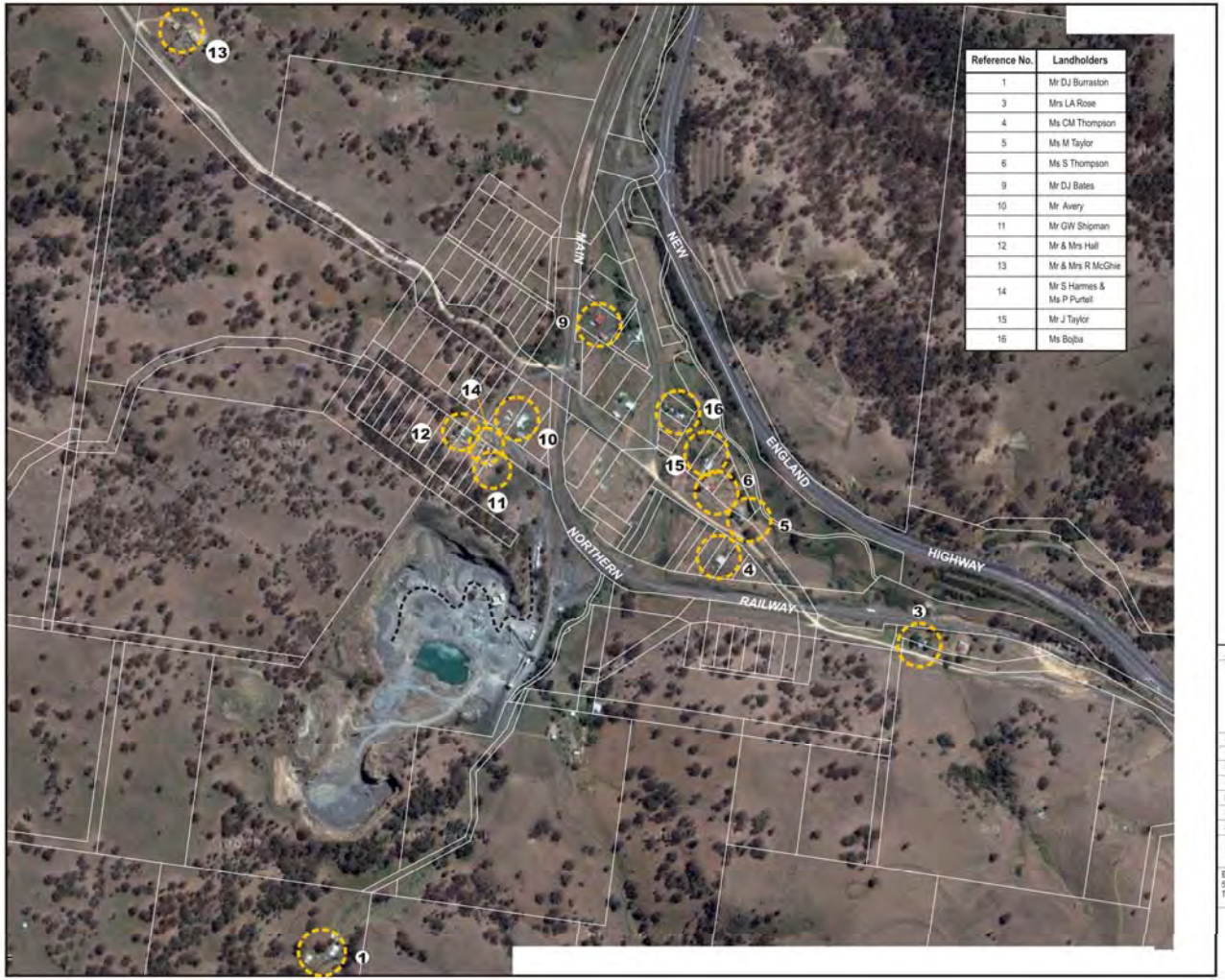
Item Number	Item	Commitment		Responsibility	Timing
		11 – Shipman	37		
		12 – Hall	36		
		13 – McGhie	35		
		14 – Purtell	36		
		15 – J Taylor	43		
		16 - Bojba	40		
11	Blasting and Vibration	The proponent will implement the following measures to mitigate the impacts of blasting and vibration: ▪ blasting will be limited to between the hours of 10am and 4pm, Monday to Friday and residents in the vicinity of the quarry will be given adequate notification of forthcoming blasts; ▪ air-blast overpressure from any blast will not exceed 120 dB(Lpeak) at any privately-owned residence for more than 5% of all blasts over a 12 month period. It will not exceed 115 dB(Lpeak) at any time, unless specific prior agreement is reached with the affected landholder; ▪ peak particle velocity (ppv) from ground vibration will not exceed 5 mm/s at any privately-owned residence for more than 5% of the total number of blasts over a 12 month period. The maximum level will not exceed 10 mm/s at any time; ▪ the existing blast management strategy will continue to be implemented to ensure appropriate charge masses are used to avoid excessive air blast overpressure and ground vibrations; and ▪ a Blast Monitoring Program will be prepared and submitted to the Director-General for approval		Daracon Quarries	Ongoing for the duration of the project.

Item Number	Item	Commitment	Responsibility	Timing
12	Air Quality	In addition to the dust mitigation measures currently employed, the proponent will implement the following measures to ensure particulate matter emissions are minimised: ▪ revegetation of exposed surfaces where possible; ▪ sealing the haul road; ▪ limiting the speed limit on unpaved surfaces to 15 km/hr; ▪ high level watering of unpaved road surfaces (greater than 2L/m2/hr); ▪ covering all loads leaving the site; ▪ building a wheel wash at the end of the unpaved section of the haul road (after the weighbridge); and ▪ wet suppression or chemical coating of static stockpiles.	Daracon Quarries	Ongoing for the duration of the project.
13		The proponent will prepare and implement an air quality monitoring program for the project. The program will include: ▪ a series of dust deposition gauges operated in accordance with Australian/New Zealand Standard AS/NZS 3580.10.1:2003; and ▪ a series of high volume or low volume air samplers to monitor levels of PM10, operated in accordance with Australian/New Zealand AS/NZS 3580.9.6:2003 and AS/NZS 3580.9.6:2003.	Daracon Quarries	Program to be submitted for approval prior to work commencing within the extension area.
14	Rehabilitation	The proponent will prepare a detailed biodiversity offset plan to provide an integrated plan for the whole site, considering the existing quarry areas, the western extension, the areas of box-gum woodland to be preserved and the areas to be planted as offsets. This plan will be prepared in liaison with the DECC and lodged for approval by the Director-General.	Daracon Quarries	Plan to be submitted for approval prior to work commencing within the extension area.
15		The proponent will progressively rehabilitate the site, generally in accordance with the rehabilitation strategy outlined in the EA.	Daracon Quarries	Ongoing for the duration of the project.

Item Number	Item	Commitment	Responsibility	Timing
16		The proponent will lodge a rehabilitation bond with the Director-General to ensure that rehabilitation of the site is satisfactorily completed, generally in accordance with the rehabilitation strategy outlined in the EA.	Daracon Quarries	Within 6 months of work commencing within the extension area.
17	Traffic Management and Access	The proponent will not transport more than 500,000 tonnes of product from the site each year.	Daracon Quarries	Ongoing for the duration of the project.
18		The proponent will keep daily records of: ▪ the type and amount of product transported from the site and the method of transportation i.e. road or rail; and ▪ the type and amount of quarry material imported onto the site and the method of transportation i.e. road or rail.	Daracon Quarries	Ongoing for the duration of the project.
19		The proponent will maintain the quarry access route from the New England Highway to the quarry entrance, to at least its present standard (two lane rural road), to the satisfaction of Council.	Daracon Quarries	Ongoing for the duration of the project.
20	Visual Amenity	The proponent will implement the following mitigation measures to reduce the potential visual impacts of the project: ▪ those areas of the quarry in which the resource has been exhausted will be progressively rehabilitated and revegetated; and ▪ further planting will be undertaken along the ridgeline to the west of the proposed extension area.	Daracon Quarries	Further planting to be undertaken prior to work commencing within the extension area.

21	Aboriginal Cultural Heritage	Should any Aboriginal objects (artefacts) be exposed during ground surface disturbance, all works involving ground surface disturbance will be suspended. A representative of the Nungaroo Local Aboriginal Land Council and an archaeologist will conduct an assessment of the significance of the Aboriginal object(s) and identify appropriate mitigation and management measures.	Daracon Quarries	Ongoing for the duration of the project.
22	Community Consultation	The proponent will continue to engage the community in consultation, with the aim of providing the community with up-to-date information in relation to the project and quarry operations in general, and allowing the community to provide feedback and raise any issues or concerns. On-going consultation will include distribution of an annual community newsletter and individual face-to-face meetings with adjoining landowners and other stakeholders when required.	Daracon Quarries	Ongoing for the duration of the project.
23	Annual Reporting	The proponent will prepare and submit to the Director-General an Annual Environmental Management Report (AEMR). The AEMR will: ▪ include a summary of the environmental monitoring results for the project for the past year; ▪ include an analysis of the monitoring results against relevant limits/criteria and monitoring results from previous years; and ▪ identify and discuss any non-compliances during the past year and detail any actions taken to ensure compliance.	Daracon Quarries	Report to be submitted annually

APPENDIX 5
LOCATION OF RESIDENCES



Reference No.	Landholders
1	Mr DJ Burraston
3	Mrs LA Rose
4	Ms CM Thompson
5	Ms M Taylor
6	Ms S Thompson
9	Mr DJ Bates
10	Mr Avery
11	Mr GW Shipman
12	Mr & Mrs Hall
13	Mr & Mrs R McGhie
14	Mr S Harmes & Ms P Purtell
15	Mr J Taylor
16	Ms Bojba

Appendix 5
Nearest Residences

Client:	Daracon Engineering
Project:	Ardglen Quarry
Drawing No:	0038419hr_DoP request_let may 08_01
Date:	22/05/08
Drawing size:	A3
Drawn by:	JD
Reviewed by:	OM
Source:	Google Maps
Scale:	Refer to Scale Bar

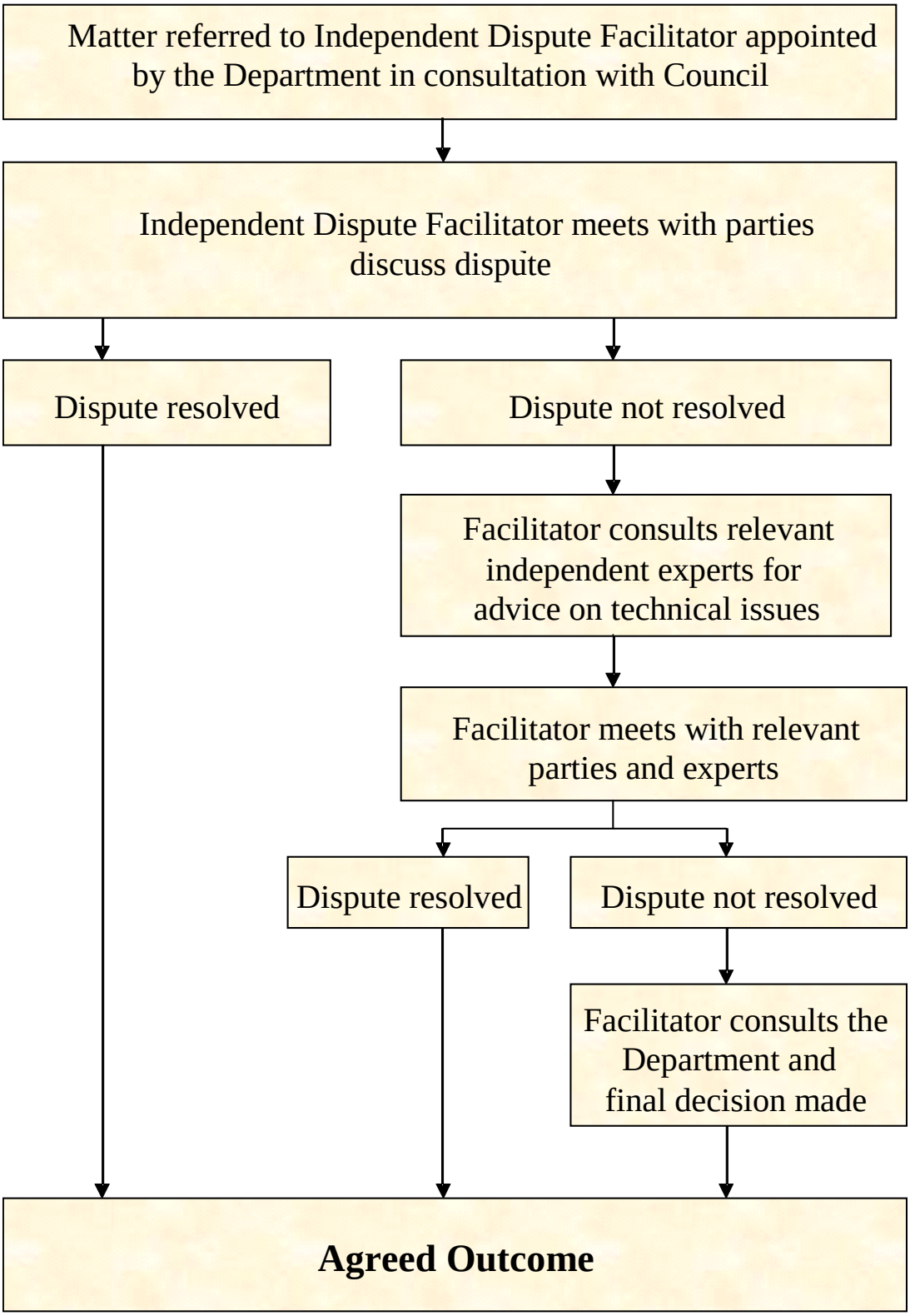
N
0 50 100 150 200m

Environmental Resources Management Australia Pty Ltd
53 Bonville Avenue, Thornton, NSW 2322
Telephone +61 2 4964 2150

ERM

APPENDIX 6
INDEPENDENT DISPUTE RESOLUTION PROCESS

Independent Dispute Resolution Process (Indicative only)



Appendix 2 Noise monitoring reports

Included:

- February 2020 Noise Monitoring Report
- May 2020 Noise Monitoring Report
- August 2020 Noise Monitoring Report
- November 2020 Noise Monitoring Report

16 April 2020

Ref: 161308/28873

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: FEBRUARY 2020 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglen Quarry (AQ) between Friday 21st and 28th February, 2020. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1
Noise Impact Assessment Criteria

Land	*Day*	*Evening*	*Night*	
	Leq (15 min)	*Leq (15 min)*	*Leq (15 min)*	*L1 (1 min)*
1 Burraston	*35*	*35*	*35*	*45*
3 Rose	*35*	*35*	*35*	*45*
4 C M Thompson	*44*	*35*	*35*	*45*
5 M Taylor	*45*	*35*	*35*	*45*
6 S Thompson	*45*	*35*	*35*	*45*
9 Bates	*37*	*35*	*35*	*45*
10 Avery	*38*	*35*	*35*	*45*
11 Shipman	*37*	*35*	*35*	*45*
12 Hall	*36*	*35*	*35*	*45*
13 McGhie	*35*	*35*	*35*	*45*
14 Purtell	*36*	*35*	*35*	*45*
15 J Taylor	*43*	*35*	*35*	*45*
16 Bojba	*40*	*35*	*35*	*45*
All other privately owned land	*35*	*35*	*35*	*45*

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

> *41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.*
>
> *Notes:*
>
> - *For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).*
> - *To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
> - *To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
> - *The noise emission limits identified in the above table apply under meteorological conditions of:*
>   - *wind speeds of up to 3 m/s at 10 metres above ground level; or*
>   - *Temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba

Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2.5m above ground level. The weather throughout the survey was warm with relatively clear skies. The wind speed was generally calm to light from the east to south east.

The quarry operates on an ad hoc basis as and when demand dictates. Throughout the current monitoring period the quarry was not operating.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

TABLE 2
Ardglen Quarry Noise Monitoring Results – 28th February 2020 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
4. Thompson	12:52 pm	42	0.5 m/s SE	Traffic (41), birds & insects (35), AQ inaudible
13. McGhie	1:50 pm	40	1.5 m/s ESE	Traffic (40), birds (25), AQ inaudible
14. Purtell	1:25 pm	34	1.0 m/s ESE	Birds & insects (33), traffic (25), AQ inaudible
16. Bojba	12:30 pm	62	0.5 m/s SE	Traffic (62), birds & insects (38), AQ inaudible

The results in Table 2 show that under the operating conditions at the time the noise emissions from AQ were inaudible and, therefore, compliant with the relevant noise criteria at all monitoring locations.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of seven days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment Rion NL-42 sound level meters, set up as environmental noise loggers, were located as shown in Figure 2 from 15th to 22nd November, 2019. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix I**.

TABLE 3
Measured Logger Noise Levels dB(A) – 21st to 28th February 2020

Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	52	35	50	33	43	31
Logger 2	51	41	48	43	50	40

Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R 14. This is adjacent to the attended noise monitoring location for this residence. Logger 2 was in an open paddock north of the house.

The unattended noise loggers measure the total noise level in the environment but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

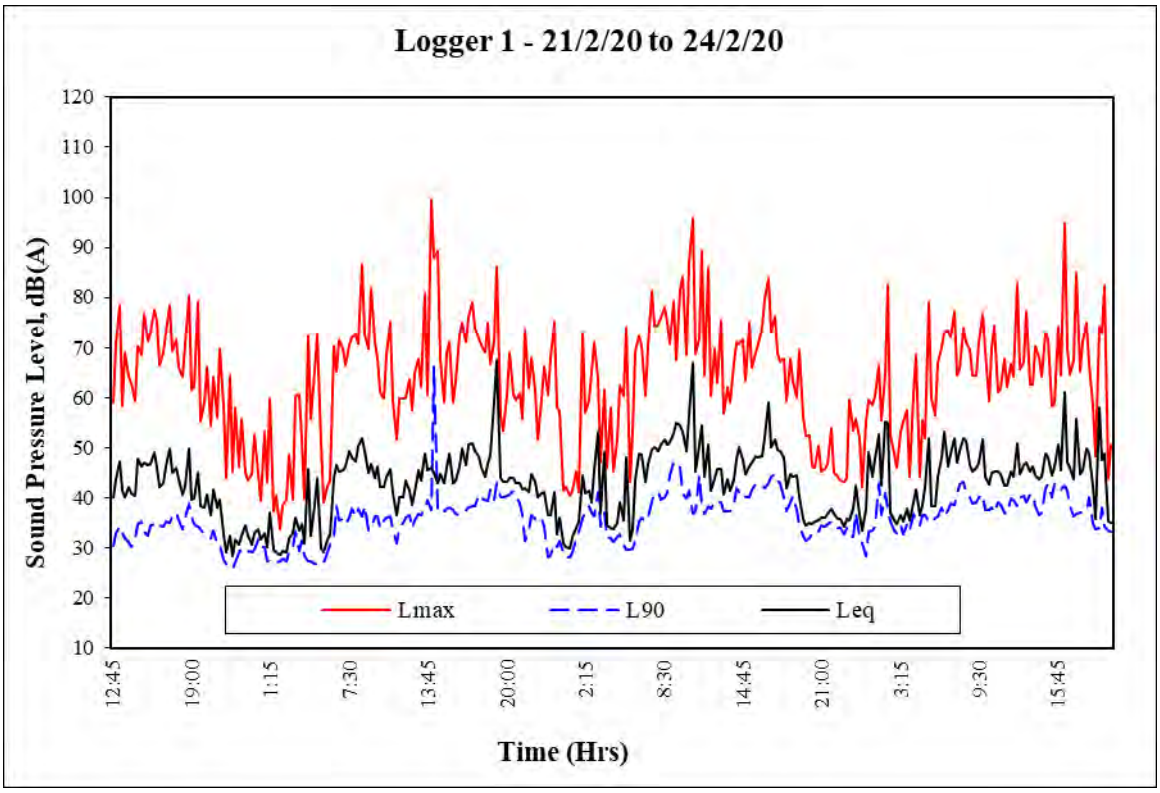
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

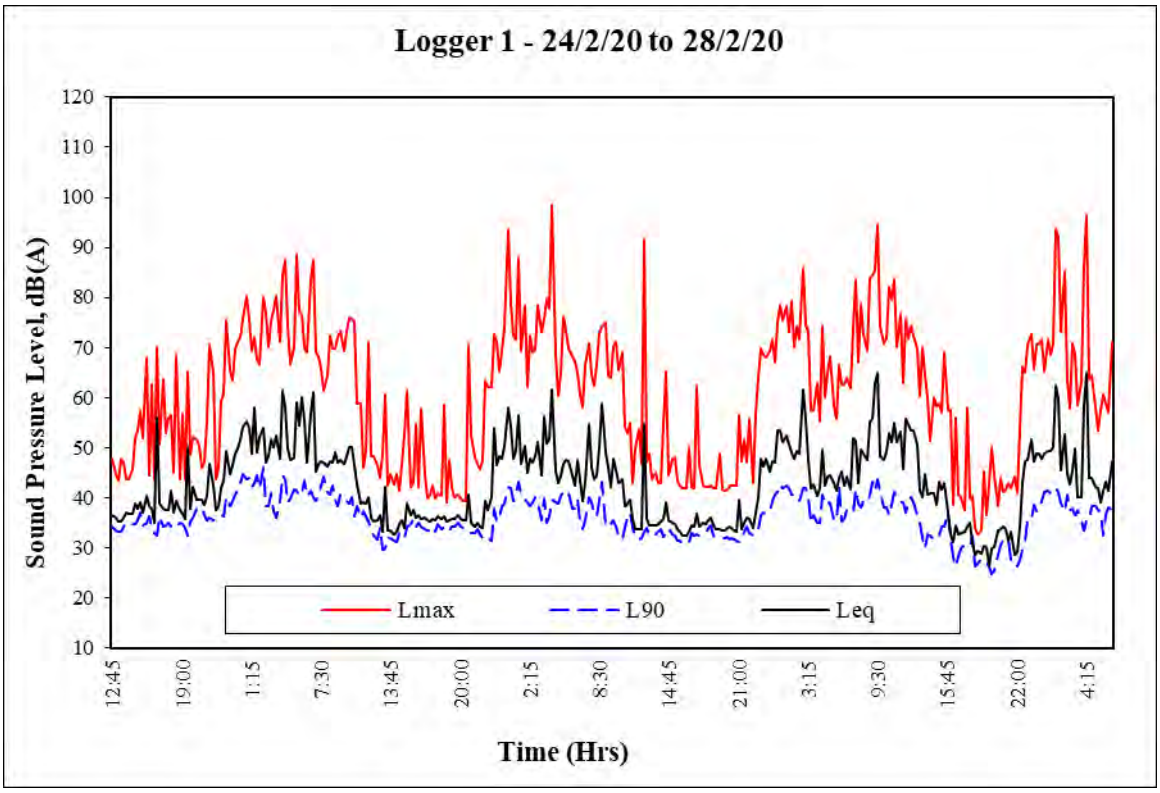
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

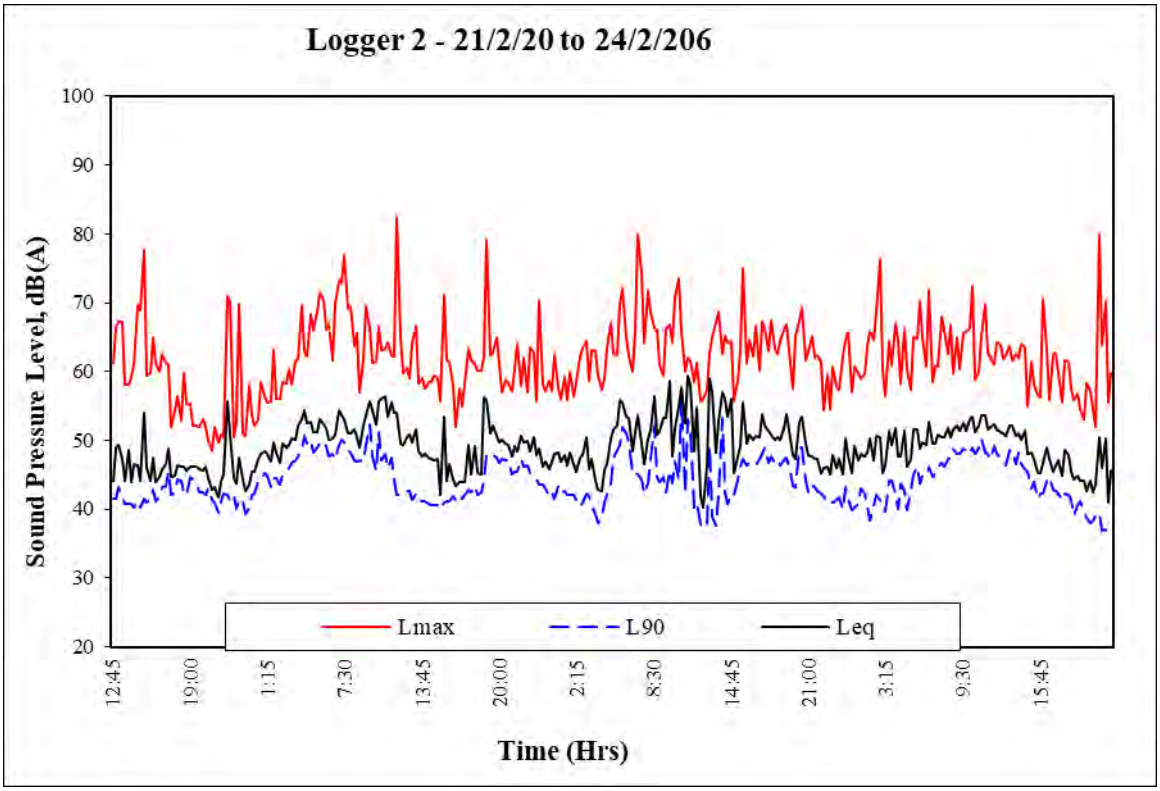
Author:

Ross Hodge
Acoustical Consultant

APPENDIX A
NOISE LOGGER CHARTS






Logger 2 - 21/2/20 to 24/2/206
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
Lmax
L90
Leq
12:45
19:00
1:15
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20:00
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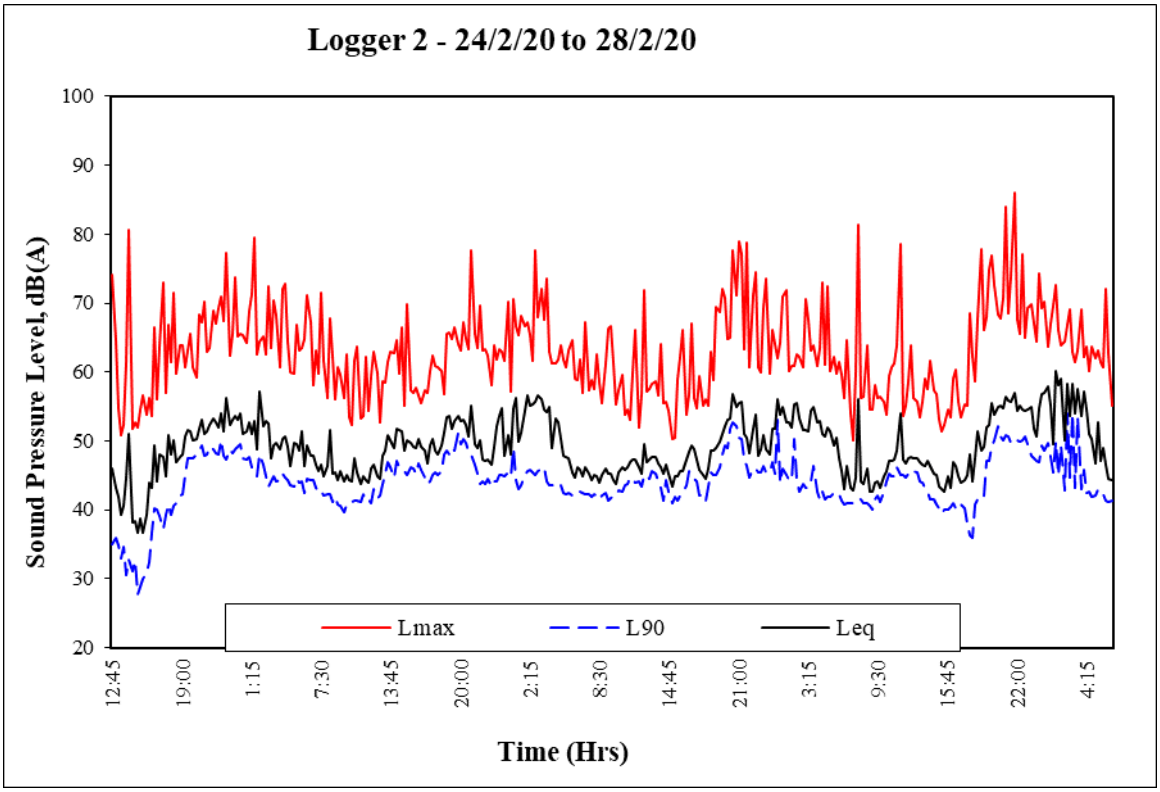
14:45
21:00
3:15
9:30
15:45
Time (Hrs)


Logger 2 - 24/2/20 to 28/2/20
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
Lmax
L90
Leq
12:45
19:00
1:15
7:30
13:45
20:00
2:15
8:30
14:45
21:00
3:15
9:30
15:45
22:00
4:15
Time (Hrs)

11 June 2020

Ref: 161308/28949

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: MAY 2020 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglen Quarry (AQ) between 21st and 28th May, 2020. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1
Noise Impact Assessment Criteria

Land	*Day*	*Evening*	*Night*	
	Leq (15 min)	*Leq (15 min)*	*Leq (15 min)*	*L1 (1 min)*
1 Burraston	*35*	*35*	*35*	*45*
3 Rose	*35*	*35*	*35*	*45*
4 C M Thompson	*44*	*35*	*35*	*45*
5 M Taylor	*45*	*35*	*35*	*45*
6 S Thompson	*45*	*35*	*35*	*45*
9 Bates	*37*	*35*	*35*	*45*
10 Avery	*38*	*35*	*35*	*45*
11 Shipman	*37*	*35*	*35*	*45*
12 Hall	*36*	*35*	*35*	*45*
13 McGhie	*35*	*35*	*35*	*45*
14 Purtell	*36*	*35*	*35*	*45*
15 J Taylor	*43*	*35*	*35*	*45*
16 Bojba	*40*	*35*	*35*	*45*
All other privately owned land	*35*	*35*	*35*	*45*

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

> *41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.*
>
> *Notes:*
>
> - *For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).*
> - *To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
> - *To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
> - *The noise emission limits identified in the above table apply under meteorological conditions of:*
>   - *wind speeds of up to 3 m/s at 10 metres above ground level; or*
>   - *Temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba

Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2.5m above ground level. The weather throughout the survey was warm with relatively clear skies. The wind speed was generally light but varying in direction from the south west and north west.

The quarry operates on an ad hoc basis as and when demand dictates. Throughout the current monitoring period the quarry was not operating.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

TABLE 2
Ardglen Quarry Noise Monitoring Results – 28th May 2020 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
4. Thompson	1:00 pm	43	2.5 m/s W	Traffic (43), birds (31), AQ inaudible
13. McGhie	1:55 pm	35	2.5 m/s SW	Birds (33), traffic (30), AQ inaudible
14. Purtell	1:35 pm	48	2.0 m/s NW	Traffic (47), birds (41), AQ inaudible
16. Bojba	12:35 pm	54	1.5 m/s NW	Traffic (54), birds (38), AQ inaudible

The results in Table 2 show that under the operating conditions at the time the noise emissions from AQ were inaudible and, therefore, compliant with the relevant noise criteria at all monitoring locations.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of seven days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment Rion NL-42 sound level meters, set up as environmental noise loggers, were located as shown in Figure 2 from 21st to 28th May, 2020. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix I**.

TABLE 3
Measured Logger Noise Levels dB(A) – 21st to 28th May 2020

Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	47	35	40	34	44	31
Logger 2	55	36	45	33	45	29

Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R 14. This is adjacent to the attended noise monitoring location for this residence. Logger 2 was in an open paddock north of the house.

The unattended noise loggers measure the total noise level in the environment but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

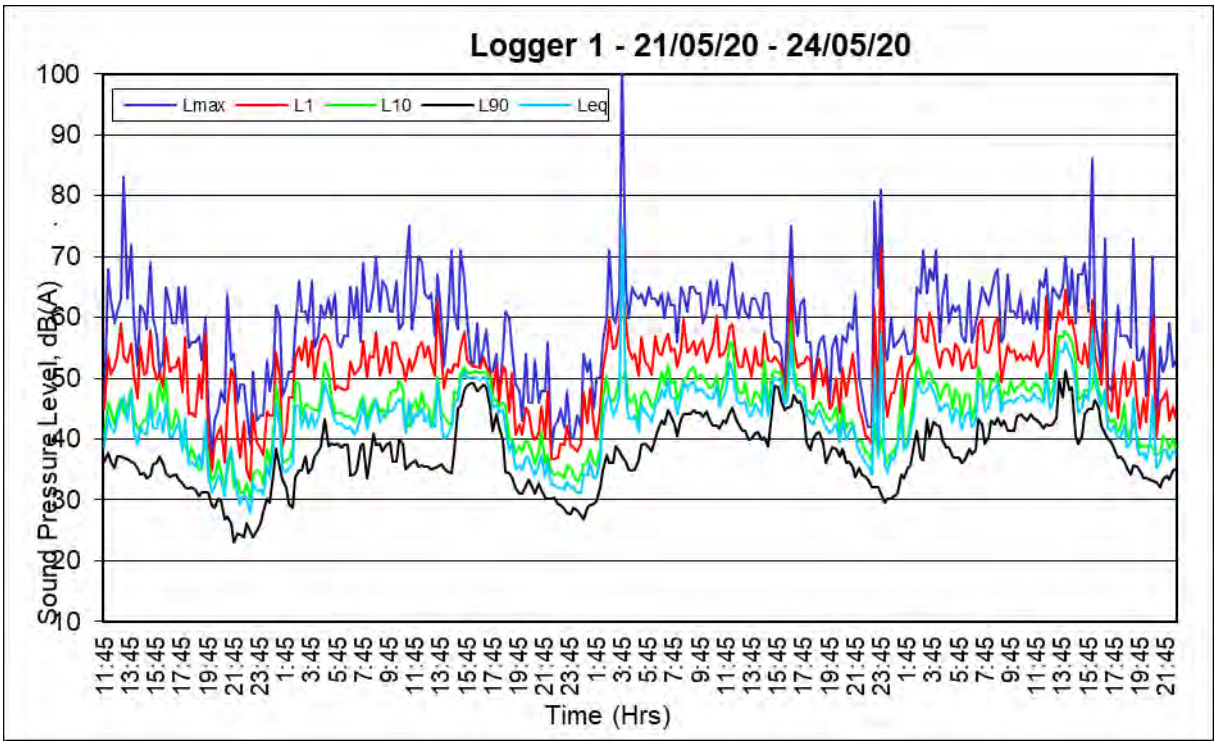
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

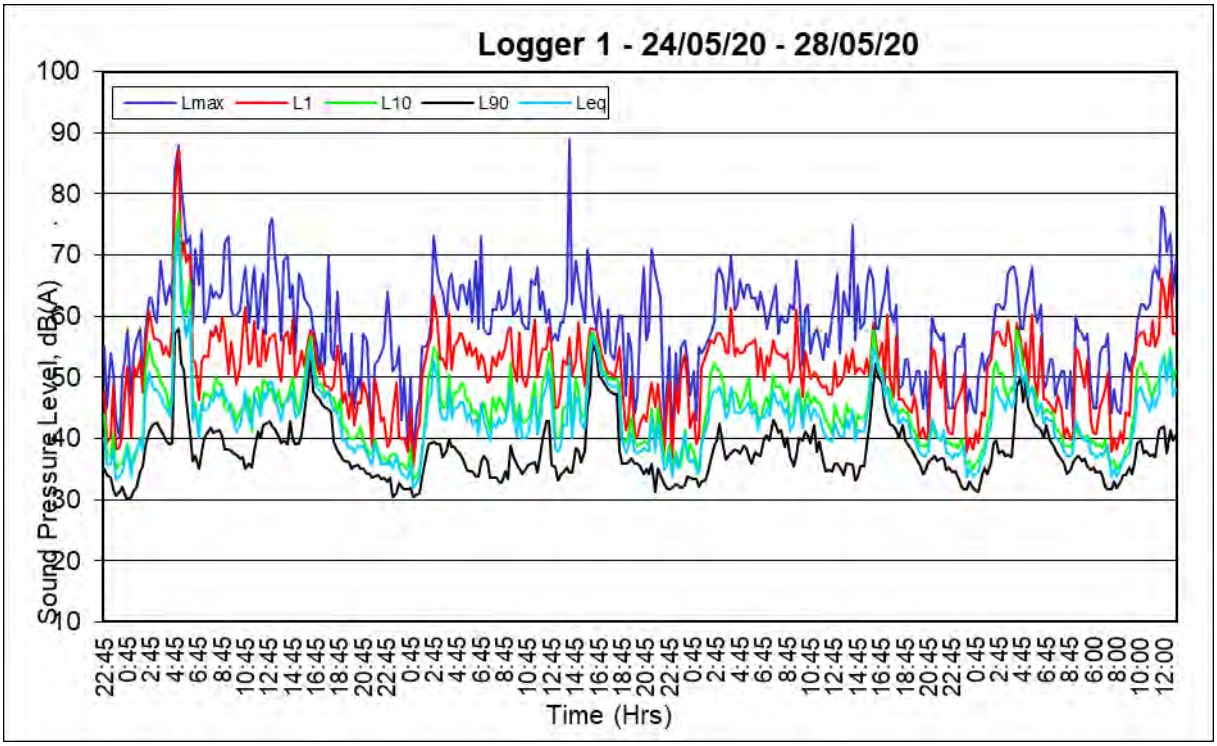
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

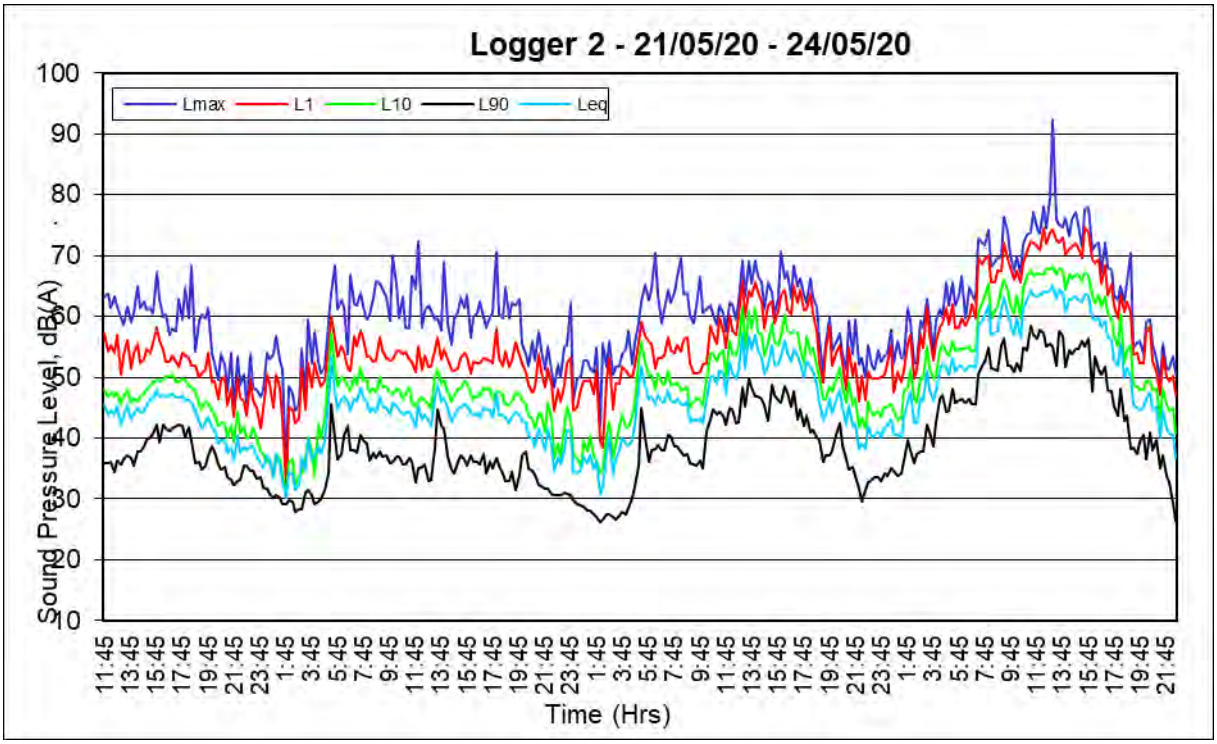
Author:

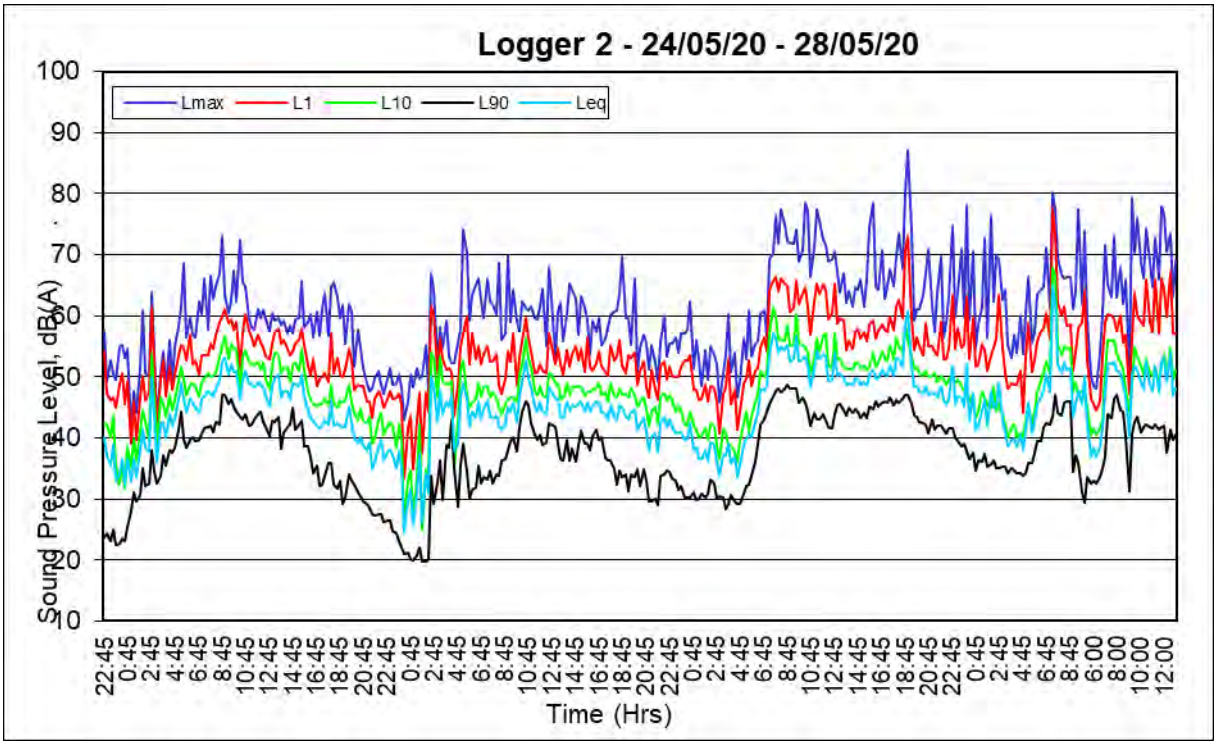
Ross Hodge
Acoustical Consultant

APPENDIX A
NOISE LOGGER CHARTS






Logger 2 - 21/05/20 - 24/05/20
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)


Logger 2 - 24/05/20 - 28/05/20
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)

17 August 2020

Ref: 161308/29028

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: AUGUST 2020 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglen Quarry (AQ) between 4th and 11th August, 2020. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1
Noise Impact Assessment Criteria

Land	*Day*	*Evening*	*Night*	
	Leq (15 min)	*Leq (15 min)*	*Leq (15 min)*	*L1 (1 min)*
1 Burraston	*35*	*35*	*35*	*45*
3 Rose	*35*	*35*	*35*	*45*
4 C M Thompson	*44*	*35*	*35*	*45*
5 M Taylor	*45*	*35*	*35*	*45*
6 S Thompson	*45*	*35*	*35*	*45*
9 Bates	*37*	*35*	*35*	*45*
10 Avery	*38*	*35*	*35*	*45*
11 Shipman	*37*	*35*	*35*	*45*
12 Hall	*36*	*35*	*35*	*45*
13 McGhie	*35*	*35*	*35*	*45*
14 Purtell	*36*	*35*	*35*	*45*
15 J Taylor	*43*	*35*	*35*	*45*
16 Bojba	*40*	*35*	*35*	*45*
All other privately owned land	*35*	*35*	*35*	*45*

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

> *41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.*
>
> *Notes:*
>
> - *For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).*
> - *To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
> - *To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
> - *The noise emission limits identified in the above table apply under meteorological conditions of:*
>   - *wind speeds of up to 3 m/s at 10 metres above ground level; or*
>   - *Temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba

Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2.5m above ground level. The weather throughout the survey was warm with relatively clear skies. The wind speed was light from the north west.

The quarry operates on an ad hoc basis as and when demand dictates. Throughout the current monitoring period the quarry was not operating.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

TABLE 2
Ardglen Quarry Noise Monitoring Results – 4th August 2020 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
4. Thompson	12:10 pm	44	1 m/s NW	Traffic (44), birds (34), AQ inaudible
13. McGhie	1:00 pm	41	1.5 m/s NW	Traffic (40), birds (34), AQ inaudible
14. Purtell	12:35 pm	45	1.5 m/s NW	Traffic (45), birds (28), AQ inaudible
16. Bojba	11:50 am	48	1 m/s NW	Traffic (48), birds (30), AQ inaudible

The results in Table 2 show that under the operating conditions at the time the noise emissions from AQ were inaudible and, therefore, compliant with the relevant noise criteria at all monitoring locations.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of seven days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment a Rion NL-42 sound level meter, and an ARL EL-315 environmental noise logger, were located as shown in Figure 2 from 4th to 11th August, 2020. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix I**.

TABLE 3
Measured Logger Noise Levels dB(A) – 4th to 11th August 2020

Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	57	40	53	32	52	29
Logger 2	55	38	52	33	53	30

Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R 14. This is adjacent to the attended noise monitoring location for this residence. Logger 2 was in an open paddock north of the house.

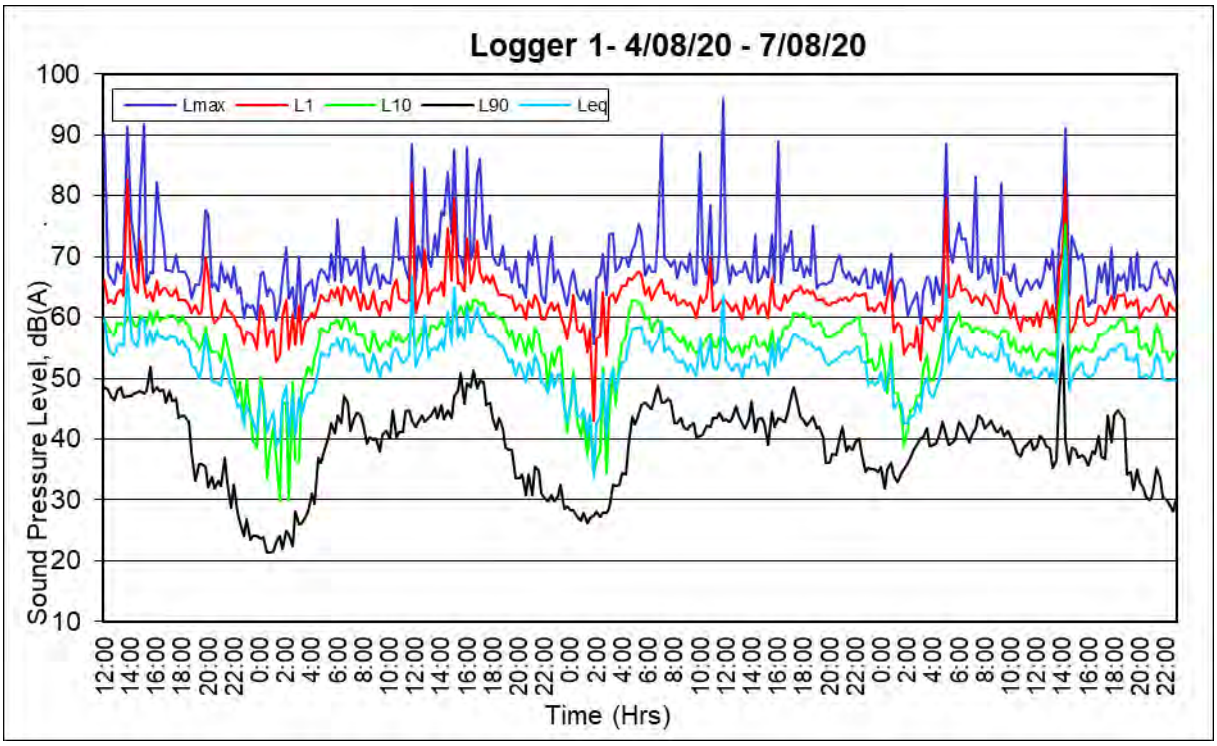
The unattended noise loggers measure the total noise level in the environment but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

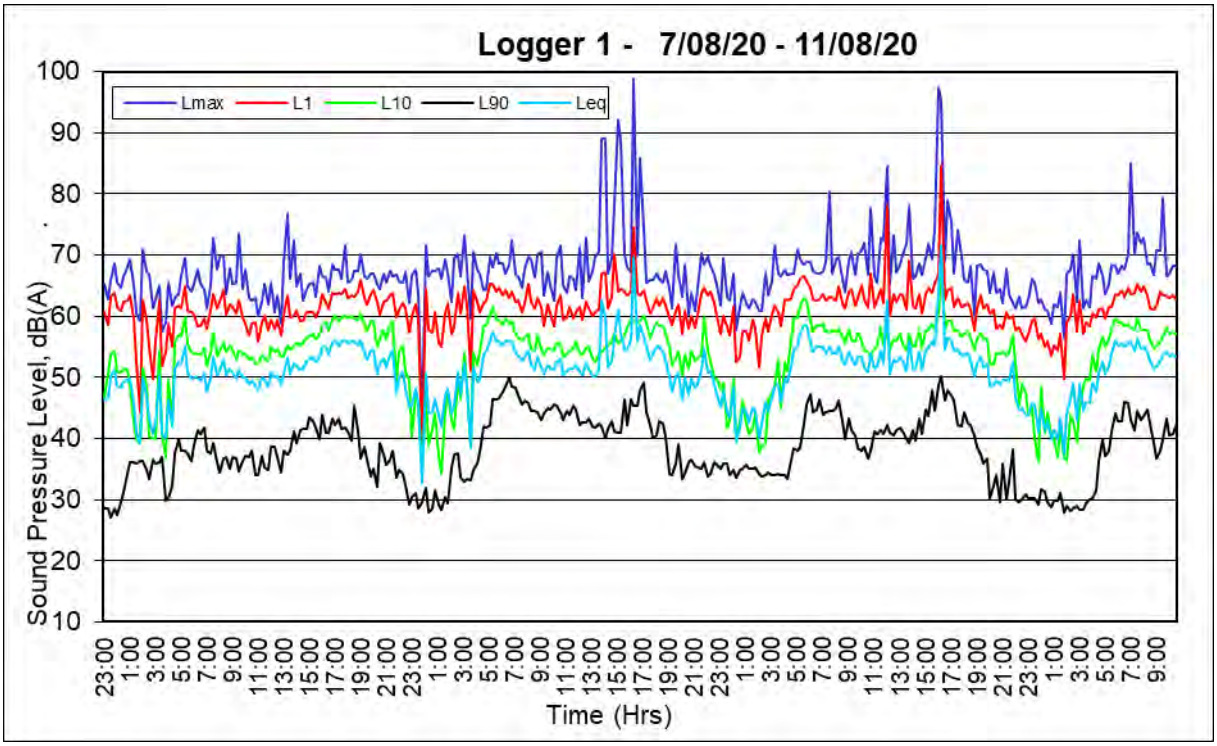
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

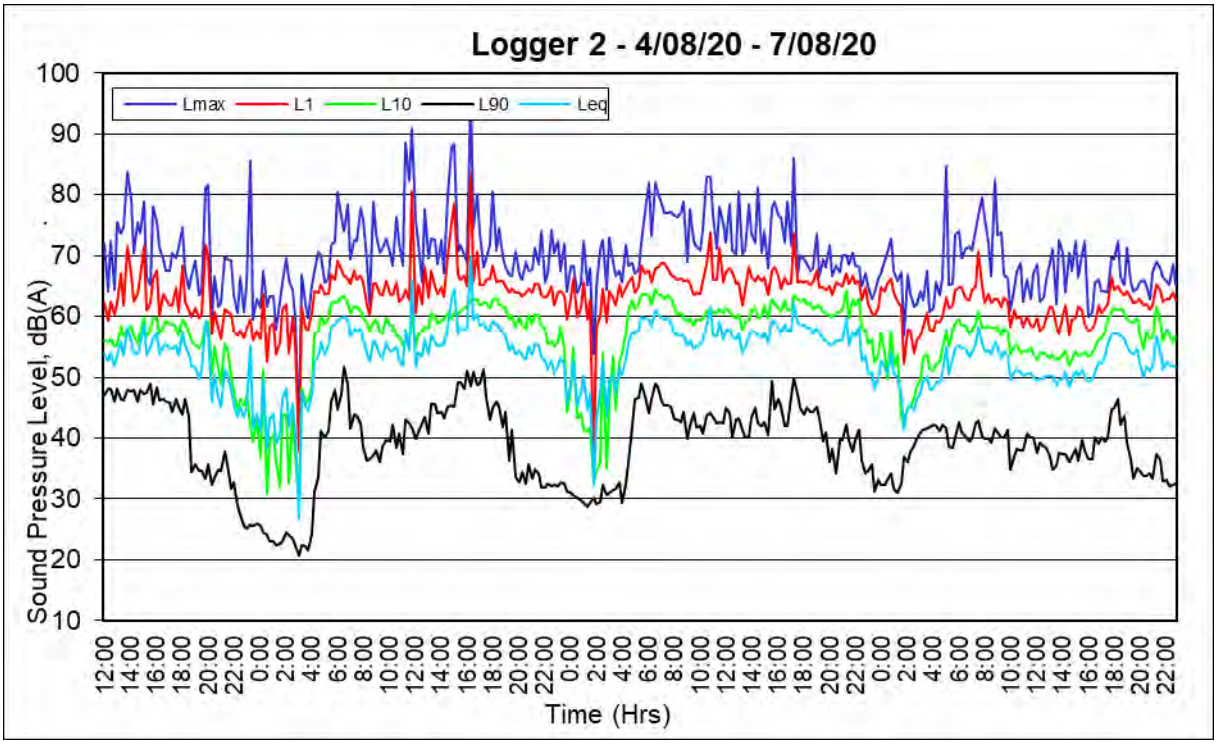
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

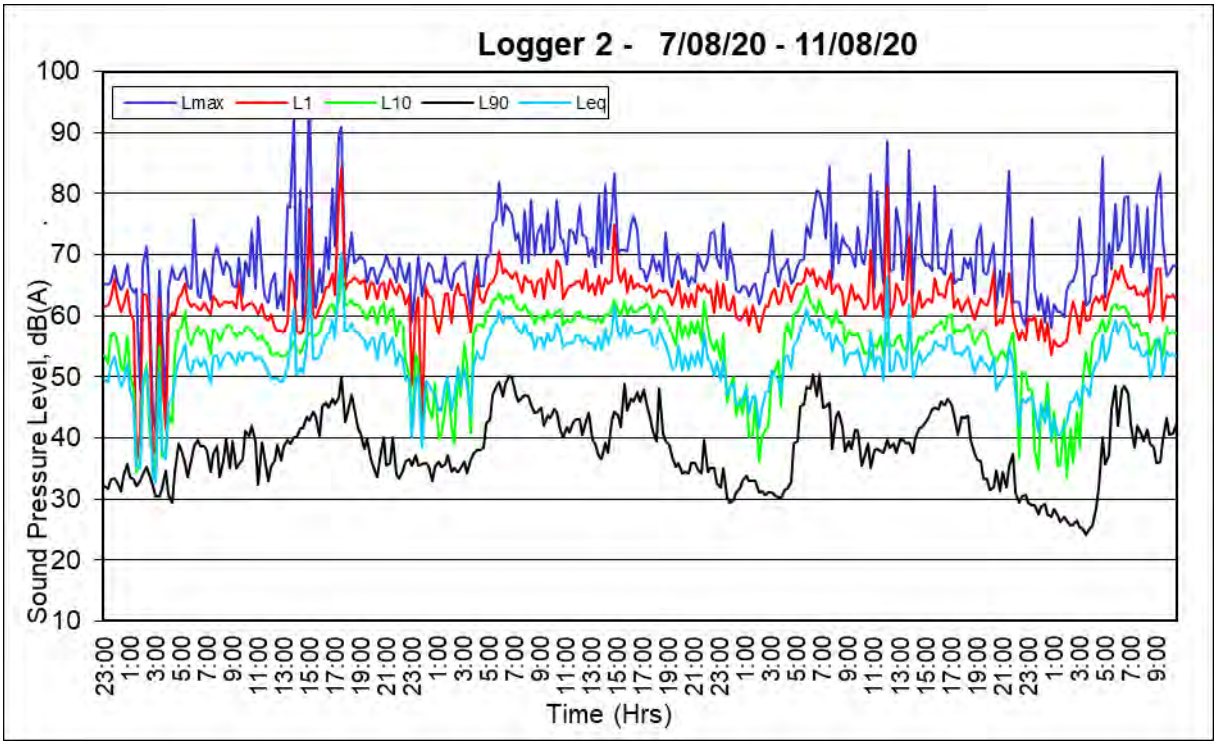
Ross Hodge
Acoustical Consultant

APPENDIX A
NOISE LOGGER CHARTS






Logger 2 - 4/08/20 - 7/08/20
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)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Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)

16 December 2020

Ref: 161308/29183

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: NOVEMBER 2020 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglen Quarry (AQ) between 18th and 25th November, 2020. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1
Noise Impact Assessment Criteria

Land	*Day*	*Evening*	*Night*	
	Leq (15 min)	*Leq (15 min)*	*Leq (15 min)*	*L1 (1 min)*
1 Burraston	*35*	*35*	*35*	*45*
3 Rose	*35*	*35*	*35*	*45*
4 C M Thompson	*44*	*35*	*35*	*45*
5 M Taylor	*45*	*35*	*35*	*45*
6 S Thompson	*45*	*35*	*35*	*45*
9 Bates	*37*	*35*	*35*	*45*
10 Avery	*38*	*35*	*35*	*45*
11 Shipman	*37*	*35*	*35*	*45*
12 Hall	*36*	*35*	*35*	*45*
13 McGhie	*35*	*35*	*35*	*45*
14 Purtell	*36*	*35*	*35*	*45*
15 J Taylor	*43*	*35*	*35*	*45*
16 Bojba	*40*	*35*	*35*	*45*
All other privately owned land	*35*	*35*	*35*	*45*

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

> *41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.*
>
> *Notes:*
>
> - *For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).*
> - *To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
> - *To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
> - *The noise emission limits identified in the above table apply under meteorological conditions of:*
>   - *wind speeds of up to 3 m/s at 10 metres above ground level; or*
>   - *Temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba

Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand-held weather station with measurements made at approximately 2.5m above ground level. The weather throughout the survey was warm with relatively clear skies. The wind speed was light from the south east.

The quarry operates on an ad hoc basis as and when demand dictates. Throughout the current monitoring period the quarry was not operating.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

TABLE 2
Ardglen Quarry Noise Monitoring Results – 25th November 2020 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
4. Thompson	10:00 am	46	2 m/s SE	Traffic (45), birds (37), AQ inaudible
13. McGhie	10:45 am	47	2.5 m/s S	Traffic (44), birds (43), AQ inaudible
14. Purtell	10:25 am	46	2 m/s SE	Traffic (45), birds (39), AQ inaudible
16. Bojba	9:40 am	46	2 m/s SE	Traffic (45), birds & insects (40), AQ inaudible

The results in Table 2 show that, under the operating conditions at the time, the noise emissions from AQ were inaudible and, therefore, compliant with the relevant noise criteria at all monitoring locations.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of seven days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment two x ARL EL-315 environmental noise loggers, were located as shown in Figure 2 from 18th to 25th November, 2020. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix I**.

TABLE 3
Measured Logger Noise Levels dB(A) – 18th to 25th November 2020

Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	52	40	56	39	53	32
Logger 2	55	38	52	33	53	30

Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R 14. This is adjacent to the attended noise monitoring location for this residence. Logger 2 was in an open paddock north of the house.

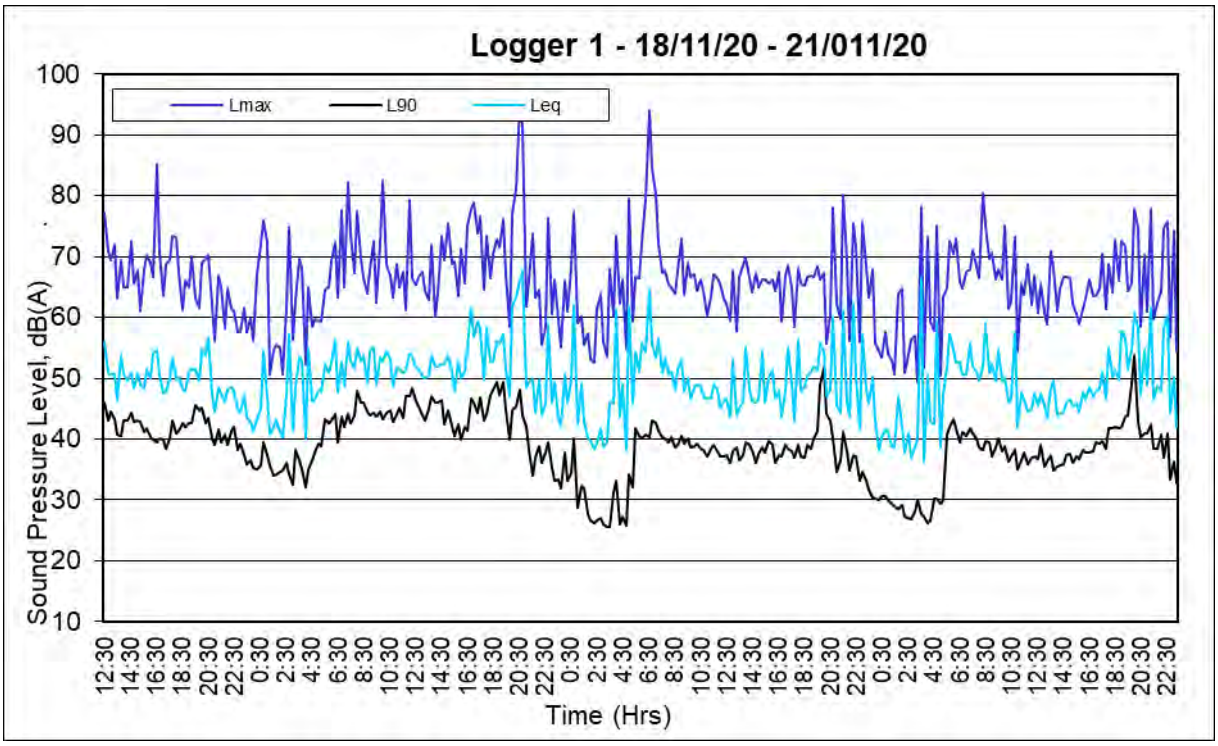
The unattended noise loggers measure the total noise level in the environment but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

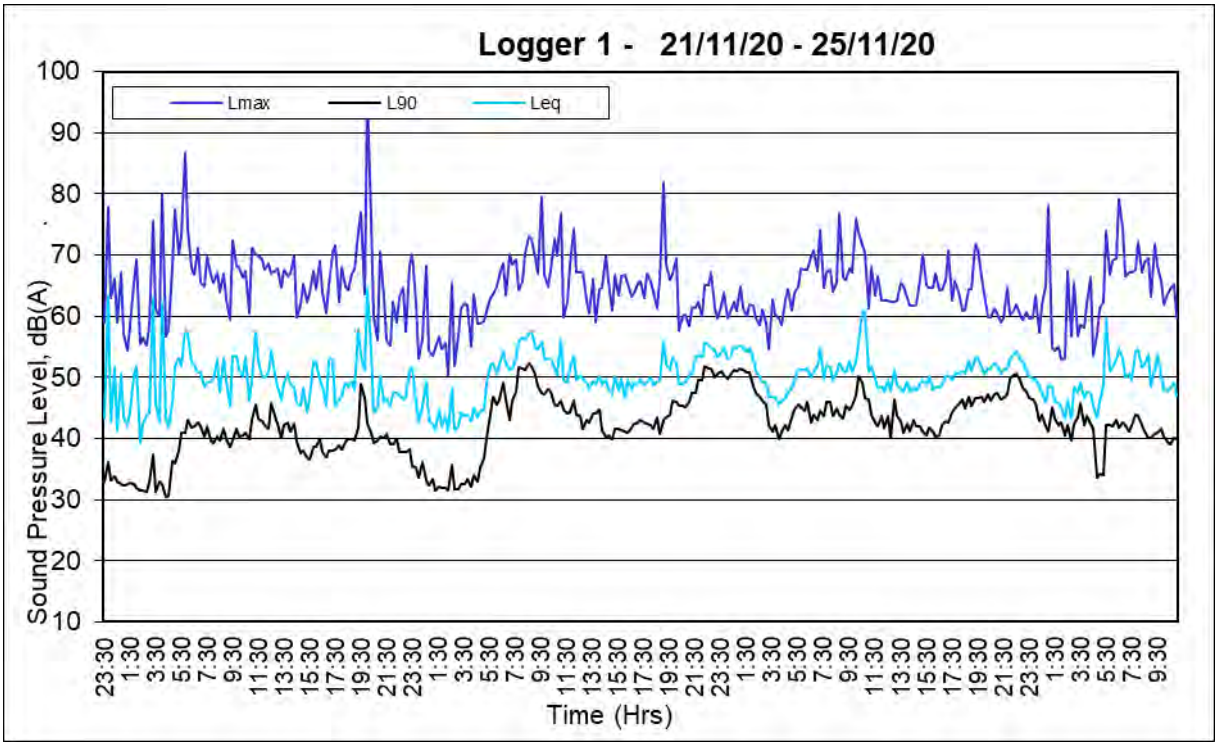
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

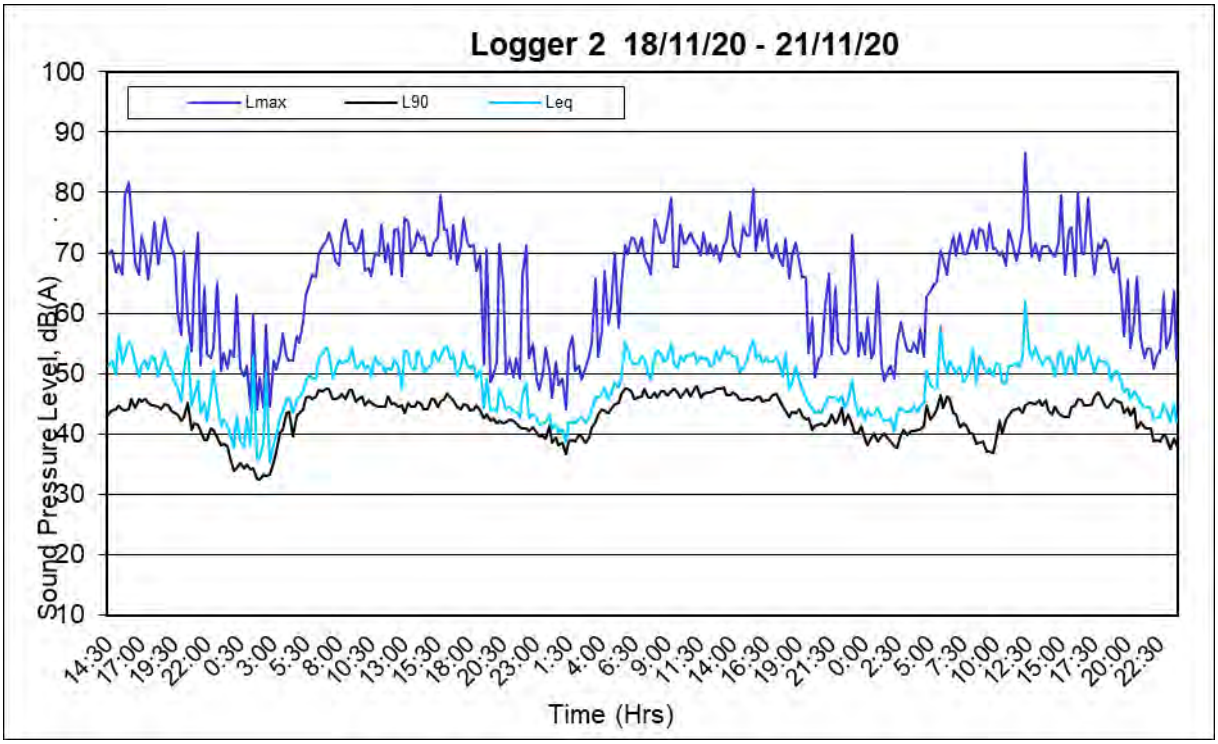
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

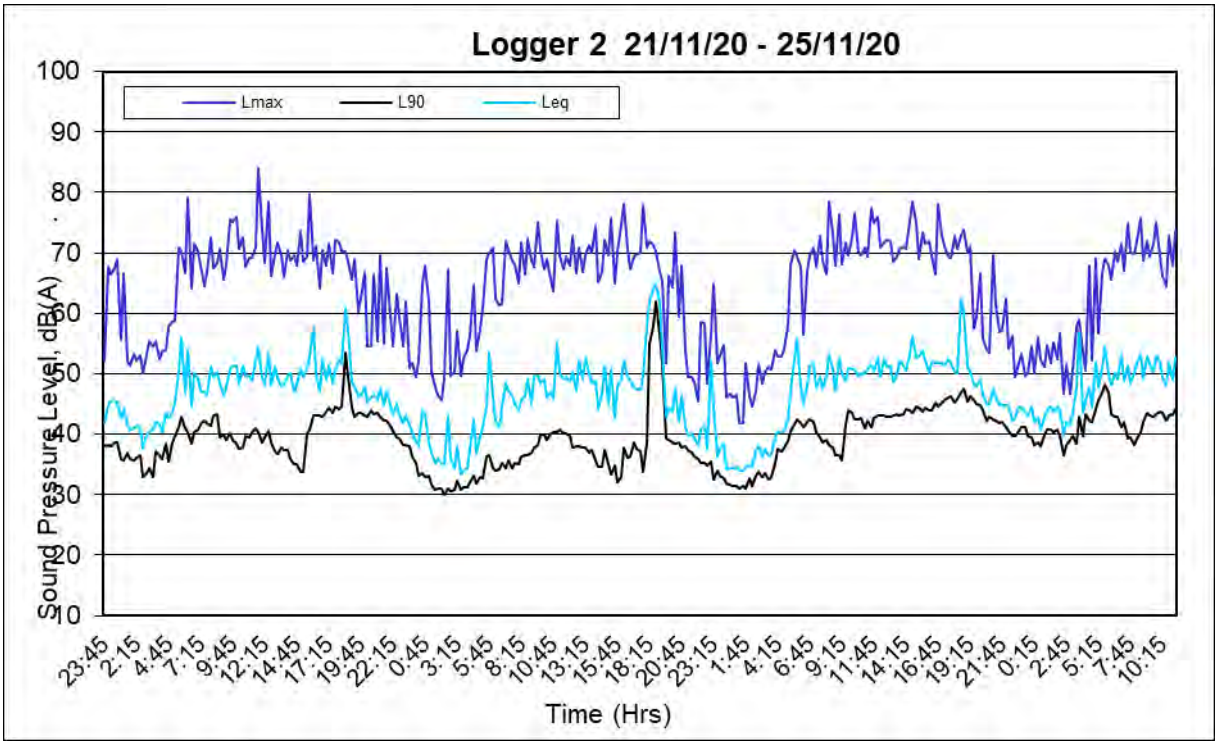
Ross Hodge
Acoustical Consultant

APPENDIX A
NOISE LOGGER CHARTS






Logger 2 18/11/20 - 21/11/20
Lmax
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)


Logger 2 21/11/20 - 25/11/20
Lmax
L90
Leq
Sound Pressure Level, dB(A)
Time (Hrs)

Appendix 3 2020 Community Consultative Committee Meeting Minutes

PEP Consulting
Positive Environmental Planning

Meeting Notes

Ardglen Quarry Community Consultative Committee

Distributed June 2020

Distribution List

Shay Riley-Lewis (Independent Chairperson)
Dan Smith (Daracon)
John Cannon (Daracon)
Dell Ross (Community Representative)
Megan Taylor (Community Representative)
Bill Avery (Community Representative)
Christine Thompson (Community Representative)
Alice Elsley (Liverpool Plains Shire Council)
Donna Ausling (Liverpool Plains Shire Council)
Michelle Reed (Crown Lands Department)
Geoff Phillips (Crown Lands Department)

CC: Lauren Evans (Department Planning, Industry and Environment)
Penny Dalton (Community Representative nominee)

1. Welcome and introductions (SRL)

   Thankyou everyone for your patience. During this COVID-19 pandemic it has made it difficult to have our scheduled CCC meetings. After discussions with our community representatives we've decided to use a remote meeting method.

   The presentation and meeting material was emailed and uploaded to dropbox on 29th June 2020. Hard copies were delivered to BA and CT on 2nd July 2020. SRL followed up with each CCC member to obtain feedback. Comments were provided to SRL via email and telephone.

   Below is the agenda, response to actions and Daracon presentation.

   Comments received from CCC members have been inserted into the Agenda in red. Draft responses are provided.

2. Confirmation of previous minutes of meeting held 26th November 2019.

   Please advise if any comments on the previous notes (**Attachment 1**).

No comments were received.

3. Pecuniary interest

- The Chair is engaged by Daracon as per the Conditions of Consent in accordance with the NSW Government "Community Consultative Committee Guideline, State Significant Projects, January 2019".
- Dell Ross rents a Daracon owned property at a reduced market rate in return for maintaining the property.
- LPSC have previously obtained water from the quarry dam free of charge in order to effectively maintain the local unsealed road network to ensure it is safe for the travelling public.

CT advised:

"When CT queried the free provision of Murrurundi Library for meetings, SRL stated that the library is part of the Upper Hunter Shire Council which is not the governing council of the quarry, but on unmarked page within Attachment 3 it is recorded: "The transport of material to the Scone Bypass Project (SBP) continued intermittently during 2019 . . . " and later in the document entitled "Proposed works for 2020" "Continued supply of material to Scone bypass".

As Daracon operates both the quarry and the SBP, and the SBP being located within the Upper Hunter Shire Council therefore not paying, and what is more never having previously paid for the use of council assets, represents another pecuniary interest and should be listed as such".

SRL response:

The SBP is a State and Federally funded project approved by Transport for NSW. Upper Hunter Shire Council (UHSC) has no role in approval or construction of the SBP. The Ardglen Quarry contract of supply for the SBP is governed by the State government procurement protocols, with no involvement of UHSC.

The UHSC has no role in the Ardglen Quarry CCC and as such their relationship with quarry is not relevant to the CCC. Free use of the space does not constitute a pecuniary use per the NSW Government *Community Consultative Committee Guidelines – State Significant Projects* (January 2019) being:

> *"intended or likely to influence – or that could be reasonably perceived by an impartial observer as intended to likely to influence – the member to:*
> - *act in a particular way (including making a particular decision)*
> - *fail to act in a particular circumstance*
> - *otherwise deviate from the proper exercise of their duty as a member"*

4. Issues raised from previous minutes and responses provided below:

i. AE to advise if any discount is provided to Council for purchase of gravel from Daracon.

DA advised:

"I have checked Council's AP system and spoken with Paul Isaac who has confirmed that Council does not purchase gravel from Daracon's Ardglen Quarry".

LR advised:

LPSC has not obtained gravel materials from the quarry for many years.

ii. AE to advise if LPSC pay for the water.

DA advised:

"Paul also confirmed that during the drought when grading works were being undertaken in the area around the quarry and all other water supplies had been exhausted that water would be taken from Daracon's pit. This water is not charged for by Daracon".

iii. DS to investigate if Daracon are able to remove the rubbish that may belong to State Rail. If it can be removed, Daracon will remove it promptly.

Daracon advised:

"We understand that ARTC removed the material in question sometime following the meeting in November 2019".

iv. DS to investigate Lot 11 and tidy up if required.

Daracon advised:

"We understand that ARTC removed the material in question sometime following the meeting in November 2019".

CT advised:

"This is inaccurate as Lot 11 is CT's responsibility, a fact she is well aware. However, the enquiry related to debris remaining outside Lot 11 after Daracon/ARTC work undertaken. It is difficult to ascertain if the clean-up has occurred as LPSC has allowed the grass to grow so long it is impossible to see".

v. SRL to resend the link to the drop box and post a hard copy of Annual Report and Daracon slide presentation to CT.

Completed.

vi. Daracon to discuss noise mitigation associated with the proposed modification with BA.

Completed. BA agreed to screen planting at the rear of his property in addition to the operational noise mitigation measures included in the modification application.

vii. LE to advise the process for independent review of complaints

Ann Hagerthy of the Department of Planning, Industry and Environment's (DPIE's) Compliance branch advised that the project approval does not have a mechanism for an independent review process related to groundwater and surface water use, or an independent review of complaints.

If the community has a concern regarding compliance with the project approval, they are encouraged to contact DPIE and make a complaint on 1300 305 695 or https://www.planningportal.nsw.gov.au/major-projects/services/complaint-form.

However, the Natural Resource Access Regulator (NRAR) is the lead regulator in relation to water licensing, water use and other water related compliance matters and can be contacted on 1800 633 362 or via email nrar.enquiries@nrar.nsw.gov.au.

viii. SRL to liaise with LE on the appropriate independent hydrological assessment process.

SRL and LE agreed to initially request WF of LPSC formalise his inspection advice with technical justification as to the disconnection of the dam from groundwater sources.

DA provides the following advice:

" Council is unable to provide further information and definitive advice surrounding potential interactivity with groundwater and quarry void water as we do not possess the relevant technical skills in this area.

Unfortunately, Mr Faulkner is no longer employed by Council and as such we are unable to obtain further information in relation to his previous assessment and corresponding advice.

Our Engineering Services Division has, however, confirmed that our road crews intermittently accessed the supply during the drought for the purposes of dust suppression and whilst the quarry was not operational. Water was provided at no charge to Council".

ix. AE to raise a customer request to have the road graded and maintained.

Completed.

x. SRL to post a hard copy of the May 2019 Daracon slide presentation to CT.

Completed.

xi. DS to update the slides and have the noise monitoring report amended to report the monitoring times in AM instead if PM.

Completed and updated report uploaded to drop box.

CT advised:

"Noise monitoring was to be amended to report monitoring times in the morning yet CT recently encountered staff from Spectrum Acoustics monitoring during the early afternoon, when the quarry was not operating and in an area along Swinging Ridges Road that would likely not be impacted by noise if the quarry was operational".

SRL response:

Amendments to the noise monitoring report were to clarify ambiguity in the recording times for the reported data sets. Afternoon noise monitoring is still required under the endorsed 'Noise Monitoring Program' per the conditions of approval. Noise monitoring is required under the current consent and needs to occur quarterly regardless of the operational status of the quarry. The noise monitoring locations are also detailed in the consent.

xii. SRL to post a hard copy of Daracon slide presentation to CT.

Completed.

xiii. SRL to contact the CCC members prior to the advertisement being released

Not completed. The advertisement was originally to include the names of existing community representatives however this did not follow the DPIE template format and was therefore excluded. The advertisement provided as **Attachment 2** was published in the Hunter Valley News (8, 29 April and 6 May 2020) and Northern Daily Leader (4, 13 and 22 April 2020).

CT advised:

"Why was advertising not placed with the nearest publication, the Quirindi Advocate, instead of the Hunter Valley News and the Northern Daily Leader, neither of which due to the distance of their prime audience was likely to attract a readership interested in Ardglen".

SRL response:

The advertisement distribution was based on advice obtained from the local newspaper distributors Fairfax media in 2016 when I arranged the previous CCC member nomination advertisement.

xiv. Next meeting to include a site inspection.

Due to COVID-19 the site inspection has been postponed. A site inspection will be scheduled at the earliest convenience in conjunction with the next CCC meeting if possible in accordance with social distancing rules.

5. Modification Application Update

See Daracon presentation.

6. Quarry status of activities and planned work

See Daracon presentation as **Attachment 3**.

7. New CCC members

Following advertising in April 2020 for new community representatives, one application was received from a local Ardglen resident.

SRL response:

Additional information was provided by the applicant and has been provided to DPIE. DPIE have completed their assessment and are awaiting final director endorsement.

8. Annual Report

As a part of the quarry conditions of consent, the Independent Facilitator of the CCC is required to submit to DPIE an Annual Report outlining the activities of the CCC in accordance with the DPIE template.

In previous years when the quarry was not operational, DPIE advised an Annual Report was not required.

A copy of the Annual Report 2019 is provided as **Attachment 4**.

9. Other Issues

CT advised:

"In the of spirit of transparency and in the public interest, CT would like it recorded that subsequent to the last physical meeting of 2019, Daracon submitted an offer for the purchase of her property at Ardglen, which CT declined.

This should be put on the public record as a number of residents have expressed their concern about the number of properties being acquired by Daracon".

10. Date of next meeting

Let's pencil in **9am Tuesday 27th October 2020**, with site inspection to follow.

Details will be confirmed closer to the date in response to the prevailing COVID-19 restrictions.

Attachments

1. Meeting Notes 26 November 2019
2. Newspaper Advertisement
3. Daracon presentation
4. Annual Report

PEP Consulting
Positive Environmental Planning

Meeting Notes
Ardglen Quarry Community Consultative Committee

Distributed November 2020

Distribution List

Shay Riley-Lewis (Independent Chairperson)
Luke Robinson (Daracon)
Dan Smith (Daracon)
John Cannon (Daracon)
Dell Ross (Community Representative)
Megan Taylor (Community Representative)
Bill Avery (Community Representative)
Christine Thompson (Community Representative)
Penny Dalton (Community Representative)
Alice Elsley (Liverpool Plains Shire Council)
Donna Ausling (Liverpool Plains Shire Council)
Michelle Reed (Crown Lands Department)
Geoff Phillips (Crown Lands Department)

CC: Lauren Evans (Department Planning, Industry and Environment)

1. Welcome and introductions (SRL)

   Thankyou everyone for your patience. Appreciate the COVID-19 pandemic makes the CCC meetings more difficult, so thankyou for your participation.

   We welcome our newest community representative, Penny Dalton. Penny has recently moved to Ardglen and is also on the Ardglen Commons Committee. Penny responded to the advertisement calling for nominations and her application was accepted by the Department of Planning, Industry and Environment. We look forward to meeting in person when restrictions allow.

   Below are responses to raised issues and Daracon presentation. There were no outstanding actions from the previous meeting.

   Additional comments and responses added to the issued Agenda are below in red.

2. Confirmation of previous minutes of COVID meeting held June 2020.

   Please advise if any comments on the previous notes (**Attachment 1**).

3. Pecuniary interest

- The Chair is engaged by Daracon as per the Conditions of Consent in accordance with the NSW Government "Community Consultative Committee Guideline, State Significant Projects, January 2019".
- Dell Ross rents a Daracon owned property at a reduced market rate in return for maintaining the property.
- LPSC have previously obtained water from the quarry dam free of charge in order to effectively maintain the local unsealed road network to ensure it is safe for the travelling public.

CT re-iterated the importance of CCC members raising all pecuniary interests.

4. Modification Application Update

See Daracon presentation as **Attachment 2**.

5. Quarry status of activities and planned work

See Daracon presentation.

6. Other Issues

i. CT has requested an independent hydrologist's report of Ardglen quarry and surrounds.

As per the previous minutes of June 2020, DPIE advised they do not have any authority to force Daracon to investigate groundwater since it is not a condition of their consent. DPIE suggest contacting the Natural Resource Access Regulator who manage water licensing and use on 1800 633 362 or email nrar.enquiries@nrar.nsw.gov.au. A LPSC engineer had inspected the dam and advised the dam was not related to the groundwater. Noting that all surrounding bores are much lower than the dam. Unfortunately the LPSC representative associated with this matter is no longer employed by LPSC.

Daracon advise:
"The supply of small quantities of site water to LPSC for the purpose of road grading during the severe drought conditions has ceased. Daracon also notes they have a number of current and approved Water Access Licences (WAL's) to obtain water for site, but due to the current non-operational status, Daracon are not drawing water from these at the moment. Daracon sees no specific reason to alter this current arrangement."

Both CT and MT affirmed they are interested in obtaining further confirmation regarding the dam's relation with groundwater.

ACTION: SRL to liaise with NSW Water to attempt to obtain further information regarding the dam's relation to the groundwater.

ii. PD has queried the water flows of Doughboy Creek, wondering if the quarry was able to release more water to the creek and what water quality controls are in place for the discharges.

The quarry does not have control of the water flow of Doughboy Creek, but it does have a Water Access Licence (WAL) that allows them to extract a certain amount from the creek. Daracon advise that they have not been extracting any water as its not required for current operations.

The quarry currently has an application lodged with the Department of Planning, Industry and Environment (DPIE) to modify their development consent to enable the treatment and discharge of used quarry water to the creek. This would add to water flows if approved. This application (which includes some other changes to the approvals) is still under consideration by DPIE.

Daracon advise:
"That if the MOD #2 application was approved and the alterations to the current water management systems were undertaken, then Daracon would also need to apply for a variation to the EPA Environmental Protection Licence (EPL) which would then provide further direction regarding the expected discharge water quality parameters. Daracon would then be required to treat and test the water to ensure it meets the revised EPL criteria before discharging could commence."

7. Date of next meeting

Let's pencil in **9am Thursday 29th April 2021**, with site inspection to follow if possible.

Details will be confirmed closer to the date in response to the prevailing COVID-19 restrictions.

Attachments

1. Meeting Notes COVID June 2020
2. Daracon presentation

Appendix 4 2020 Community Complaints Register

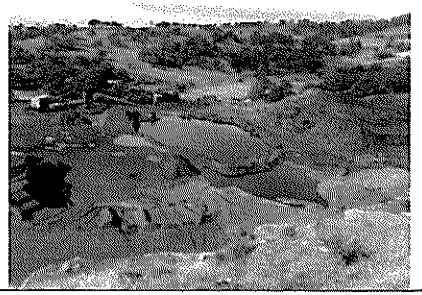
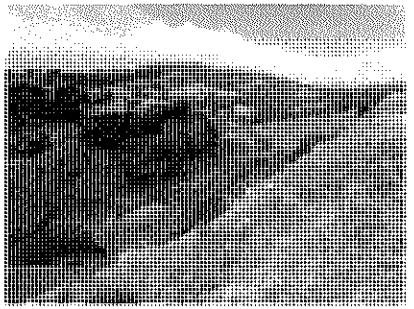
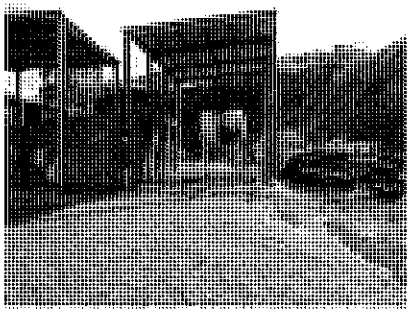
Date received	***Complaint was received regarding?***	***Complaint was received from?***	***Buttai Gravel response***	***Buttai Gravel action following complaint***	***Closed out (Y/N)***
Nil	N/A				

Appendix 5 Rubicon (formerly TREES) Erosion & Sediment Control Inspection Report

RUBICON ENVIRO PTY LTD
ABN: 75 616 518 211

Inspection Report – Daracon Group

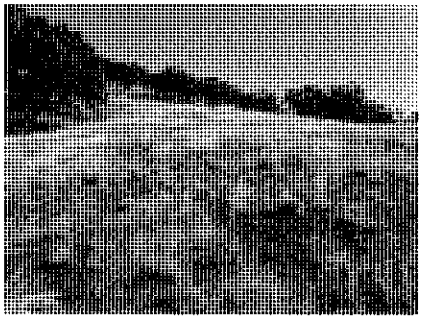
CLIENT	Daracon Group	REPORT DATE	29th May 2020	REPORT NO.	4	REPORT TO:	Luke Robinson, Jason Gorton – Daracon Group
PROJECT	Ardglen Quarry	INSPECTION DATE	27th May 2020	ATTENDEES:	Luke Robinson – Daracon Group, Andrew Littlewood – Rubicon Enviro		
WEATHER	Cool, Fine, Moderate winds	COMMENT	Recent operations at the quarry had been limited to de-stocking stockpiled quarry materials in the preceding year, however, operations have now ceased and the quarry areas are now dormant. Minor maintenance activities continue and an extensive tree-planting program has commenced. No significant issues with drainage or erosion and sediment control were identified. Weed suppression continues across the quarry areas, however, some minor outbreaks were noted as detailed below.				

ISSUE NO.	LOCATION	ISSUE/MATTER	RECOMMENDATION/COMMENT	PHOTOGRAPH
1.	Main central dam.	The main dam on the quarry floor was nearing capacity from recent ongoing rain events. The water clarity was good with very low turbidity indicating low levels of erosion in the catchment.	Continue to monitor the dam, drainage lines and contributing catchment. ✓ Ongoing R.	
2.	Quarry slopes and floor.	The inspection around the quarry floor confirmed runoff was directed to the central dam. No significant outbreaks of weed have established, and in general terms, weed infestation control is good.	As recommended previously, ensure regular weed control continues with a focus on noxious weeds on boundary areas. ✓ Regular weed spraying continues to occur R.	
3.	Lube shed and fuel storage area.	As noted on the previous inspection, the lube shed area remains secure and dormant with adequate bund storage and controls. Ponded water in the surrounding areas was clear and no oil sheens were present.	Continue maintain the area and visually monitor water quality in the surrounding areas. ✓ Ongoing R.	

RUBICON ENVIRO PTY LTD
ABN: 75 616 518 211

Inspection Report – Daracon Group

PROJECT:	Ardglen Quarry	INSPECTION REPORT NO.	4	INSPECTION DATE	29th May 2020

ISSUE NO.	LOCATION	ISSUE/MATTER	RECOMMENDATION/COMMENT	PHOTOGRAPH
4.	Rehabilitation of offset areas.	As noted above, an extensive tree-planting program has commenced in several areas surrounding the quarry.	We inspected the plantings on the northern escarpment. The majority of seedlings have survived summer growing conditions, are where specimens have perished, replacement tube stock have been replanted in recent months.	
5.	Weed control – main quarry	As noted above, weed suppression has been effective across most areas, with no significant outbreaks noted in the main quarry floor and surrounds. A small outbreak of 'Paterson's Curse' was noted around the quarry entrance and site sheds. Evidence of die back of previously treated areas was noted in several areas.	Continue to monitor the workings and perimeter areas and implement periodic weed control as required. ✓ Regular weed spraying occurring	
6.	Warra Street rail siding area.	As noted previously, the stockpile area had been reworked and a stand of sediment has been installed downslope from the stockpile area.	The stockpile batter areas are now adequately colonised with vegetation and sediment controls are no longer required. No actions required beyond regular weed control.. ✓ 12/6/20.	

Report by: Andrew Littlewood – Senior Soil Conservationist & CPESC No. 5988	Signed :	Date: 29th May 2020

Appendix 6 Rehabilitation and nesting inspection report - Ardglen Quarry

umwelt
Environmental & Social Consultants

DARACON Group

2020 ARDGLEN QUARRY ANNUAL BIODIVERSITY OFFSET MONITORING

Ardglen Quarry

FINAL

February 2021

2020 ARDGLEN QUARRY ANNUAL BIODIVERSITY OFFSET MONITORING

Ardglen Quarry

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Daracon

Project Director:	Shaun Corry
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Report No.	21113/R01
Date:	February 2021

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This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
1	Amber Wilson	15/02/2021	Shaun Corry	15/02/2021
2	Amber Wilson	22/02/2021	Shaun Corry	22/02/2021

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1.0 Introduction

Umwelt (Australia) Pty Limited (Umwelt) was engaged to undertake the 2020 annual biodiversity offset monitoring program at Ardglen Quarry on behalf of Buttai Gravel Pty Limited (Daracon Quarries). This report documents the methods and results of the 2020 monitoring and compares the results to the baseline monitoring results conducted in 2019 to assist with continued monitoring of the site under a Conservation Agreement in accordance with the *Biodiversity Conservation Act 2016* (BC Act).

The 2020 monitoring was undertaken in accordance with the Landscape Management Plan (LMP) (Umwelt 2020a) for the site, in turn satisfying the relevant conditions contained in the Project Approval 06_0264, and the Environment Protection and Biodiversity Conservation Approval (EPBC2007/3442).

1.1 Background

Buttai Gravel Pty Limited (Daracon Quarries) operates the Ardglen Quarry (the quarry), a hard rock quarrying, processing and handling operation located approximately 5 kilometres (km) northwest of Murrurundi in Ardglen, NSW (refer to **Figure 1.1**). The Quarry has been in operation for over 100 years with Daracon Quarries (Daracon) holding ownership of the Quarry since 2005. The site is approximately 64 hectares (ha) and is situated in the small rural community of Ardglen, NSW which supports mainly agricultural land.

Three existing Biodiversity Offset Areas (BOAs) are located adjacent to the quarry, being Offset A, Offset B and Offset C (refer to **Figure 1.1**). The land contained in these offset areas consists of box gum woodland and cleared pastoral lands, with a small ephemeral creek line (Doughboy Hollow Creek) and associated riparian vegetation. A small weir was historically established on the creek as the water supply access point for the quarry. A small causeway located approximately 200 metres (m) north of the weir provides access across Doughboy Hollow Creek.

Monitoring results from previous years (Umwelt 2020b; Conacher Consulting 2018; Kendall & Kendall 2013) have been referenced in this report, where appropriate, in order to track the trajectory of conservation commitments in the BOAs.

It is understood that Daracon is in consultation with the Biodiversity Conservation Trust (BCT) to secure the BOAs under a Conservation Agreement, in accordance with the BC Act. In addition to the standard monitoring program, permanent monitoring sites within each vegetation zone have been monitored to satisfy the requirements of the proposed Conservation Agreement for the proposed Conservation (offset) Areas.

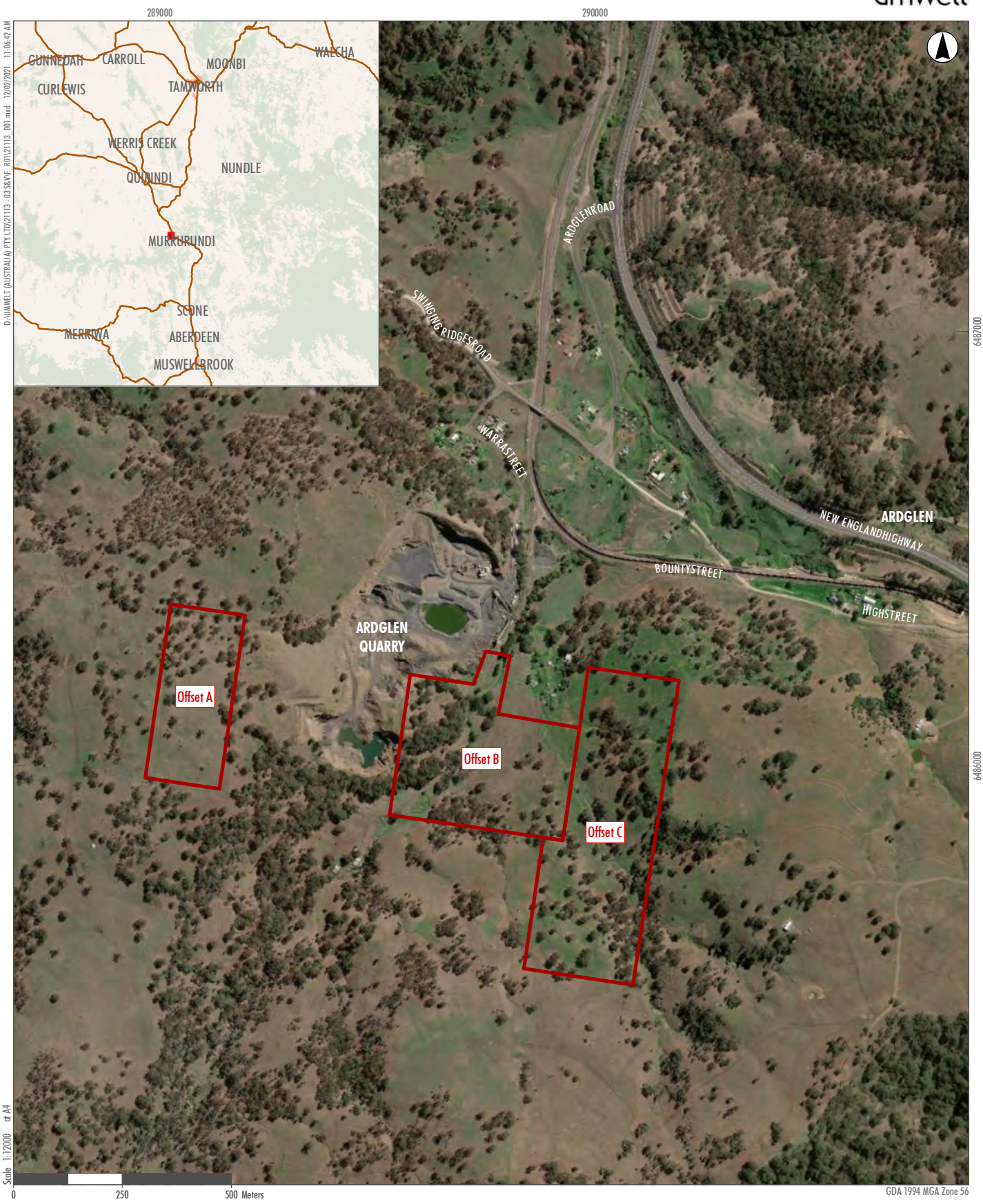


FIGURE 1.1

Location Map

Image Source: ESRI Basemap Data source: DFSI (2020)

1.2 Objectives

The key objective of this report is to describe the relevant methods, results and recommendations of the monitoring program, and assess performance outcomes with completion criteria outlined in the LMP. The LMP states that the program should monitor:

- condition of perimeter fencing around offset properties to exclude livestock
- weed composition within BOAs including the need for any works to control weeds during the following 12-month period
- the location, condition and usage of salvaged hollows which have been placed in the BOAs
- the location and usage of nest boxes of which have been placed within the BOAs
- the extent of natural regeneration within BOAs
- whether any assisted revegetation is required within BOAs.

As described in the LMP:

"*The completion of this offset monitoring will then inform whether any additional management or remediation measures are required to be implemented with the results of the Offset Monitoring reported in the Annual Review*".

Where appropriate, management recommendations have been provided (**Section 6**) to guide the improvement of biodiversity values.

2.0 Methods

2.1 Existing Offset Monitoring Program

The field monitoring program covered 34.9 ha, encompassing three BOAs, being Offset A, Offset B and Offset C (refer to **Table 2.1**). This program was conducted in accordance with the requirements of the LMP and follows the methods undertaken in 2019 (Umwelt 2020).

Table 2.1 Biodiversity Offset Areas (BOAs)

Biodiversity Offset Area (BOA)	Lot Number	Total Area (ha)
Offset A	Lot 187 DP 751028	6.8
Offset B	Lot 39 DP 751028	12.3
Offset C	Lot 49 DP 751028	15.8
	Total	**34.9**

It is understood that rehabilitation works had not been undertaken along Doughboy Hollow Creek in 2020, as a review of the Doughboy Hollow Creek Rehabilitation Strategy will be undertaken in 2021. Erosion transect monitoring as described in the 2017 monitoring report (Conacher Consulting 2018) was not undertaken during this annual monitoring period.

2.1.1 Walkover Assessment

A walkover assessment was undertaken across the BOAs, which involved observation of:

- condition of perimeter fencing around BOAs to exclude livestock
- weed composition within BOAs, including the need for any works to control weeds during the following 12-month period.

2.1.2 Natural Regeneration Monitoring

Natural regeneration was assessed within Derived Native Grassland communities at each of the BOAs. Four 50 m x 20 m plots were established in 2019 in the grassland area within each BOA (12 plots in total), with a small wooden picket marking the north east corner of each permanent plot. The canopy cover (projective foliage cover %) was assessed within each plot. The location of the natural regeneration monitoring plots is shown on **Figure 2.1**.

Additionally, the number of saplings was counted within each natural regeneration plot. Saplings were defined as individuals of native canopy species with a diameter at breast height (DBH) <5 cm. This number was then multiplied to give the number of saplings per hectare.

2.1.3 Nest Box Monitoring

Nest box monitoring was undertaken for 27 nest boxes installed in Offset A (Lot 187 DP 751028) which are shown in **Figure 2.2**. These boxes were comprised of:

- 9 brush-tailed phascogale boxes (rear entry)
- 9 glider boxes (front entry)
- 9 microbat boxes (base entry).

Boxes were inspected using a pole-mounted camera. Monitoring comprised content and condition assessment and included the following:

- Content monitoring:
    - Target species use
    - Signs of presence such as nesting material or feathers
    - Predator use
    - Presence of native fauna
    - Presence of non-target species such as bees, wasps and introduced birds.
- Condition monitoring:
    - Collapsing joints
    - Missing lids
    - Bowing timber
    - Perishing timber
    - Tree attachment.

Legend

- Biodiversity Offset Area Boundary
- Natural Regeneration Monitoring Plot

FIGURE 2.1

Natural Regeneration Monitoring Plots

Image Source: Nearmap (2015) Data source: DFSI (2020)

Legend

Biodiversity Offset Area Boundary

Nest Box Locations

- Glider
- Microbat
- Phascogale

FIGURE 2.2

Nest Box Locations

Image Source: Nearmap (2015) Data source: DFSI (2020)

2.2 Conservation Agreement Baseline Monitoring

Four permanent monitoring plots were established within each of the four vegetation zones in the BOAs identified by Orogen (2010). Each plot was marked in the north east corner (of the 20 m x 20 m subplot) with a steel picket and high visibility flagging tape. Plot locations are shown in **Figure 2.3**. Photo monitoring, floristic and biometric data collection and a walkover assessment were completed according to the BioBanking Assessment Method (BBAM) methodology (OEH 2014) and are further described in the following sections.

2.2.1 Photo Monitoring

Photo monitoring was undertaken at each site and will be used to identify any observable changes in the vegetation condition and development of vegetation structure over time. Photo monitoring was completed at the north-east plot corner, with photos taken facing north, south, east and west.

2.2.2 Floristic and Biometric Data Collection

Floristic and biometric monitoring was completed four permanent monitoring sites established at each of the vegetation zones previously outlined by Orogen (2010) in the BOAs. This monitoring was completed in a manner consistent with the BBAM (2014) and consisted of a:

- 50 m transect
- 50 m by 20 m plot
- 20 m by 20 m sub-plot.

For each flora monitoring site, vascular species present within the 20 m x 20 m sub-plot were identified. Searches were generally undertaken through parallel transects from one side of the plot to another. Most effort was spent on examining the groundcover, which usually supports well over half of the species present, however the composition of any shrub, mid-storey, canopy and emergent layers were also thoroughly examined.

For each species recorded in the plot, the scientific name, common name, stratum, cover and abundance were recorded. The total native species richness was then calculated for the 20 m x 20 m sub-plot.

Along the 50 m transect, and within the 50 m x 20 m plot, the following were noted:

- overstorey foliage cover
- mid-storey foliage cover
- groundcover – grasses foliage cover
- groundcover – shrubs foliage cover
- groundcover – other foliage cover
- proportion of overstorey regeneration
- exotic cover
- hollow-bearing trees

- length of fallen logs.

This data was then compared to benchmark levels for each Plant Community Type (PCT) as outlined in the Vegetation Information System (VIS) database (DPIE 2021).

2.2.3 Walkover Assessment

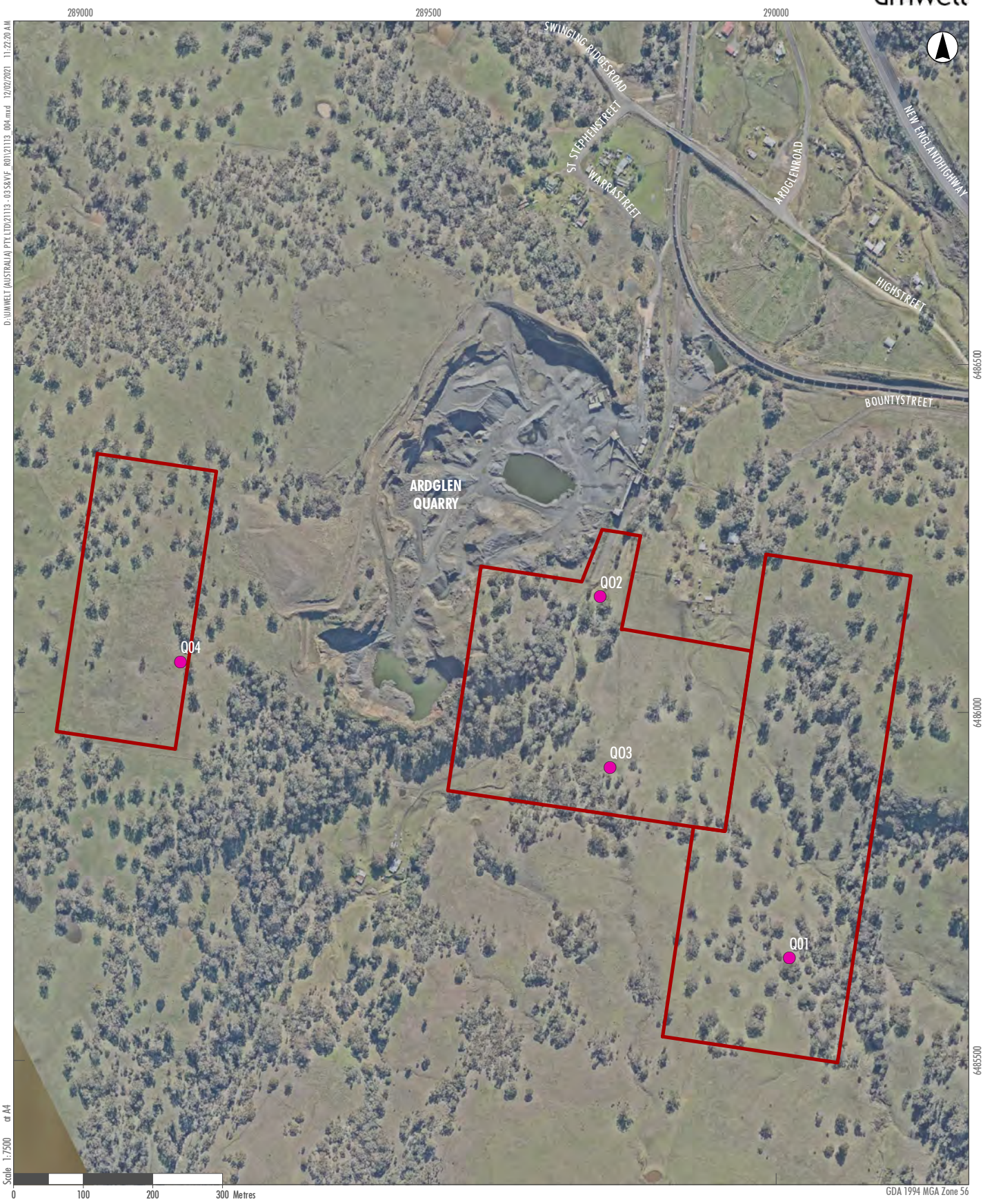
As outlined in the BBAM, a walkthrough assessment of opportunistic sightings was undertaken across the proposed Conservation (offset) Areas, making observations of:

- fire events or impacts of fire management
- weeds (including compilation of list of exotic species and recording new weed infestations including location and extent)
- pest animals (species and location must be recorded, including evidence of pest animals such as burrows, scats or disturbance)
- visitor impact and vehicle access (including evidence of any recent usage, and the presence of any new access trails or tracks)
- rubbish dumping
- natural regeneration of previously disturbed areas
- sightings of threatened species.

As this methodology is similar to the walkover assessment in the existing offset monitoring program, the results for each of these have been combined for readability in **Section 4.1**.

2.3 Rehabilitation Walkover

At the request of Daracon, rehabilitated areas outside the BOAs but adjacent to the quarry were inspected in addition to the Offset Monitoring scope described in the above sections. Approximately 500 saplings have been planted in areas adjacent the existing quarry in September 2019 and March/April 2020, as shown in **Figure 2.4**. Brief notes were recorded on the condition, suitability of planted species, planting density and approximate survivability of the plants within the rehabilitated areas during the survey period.



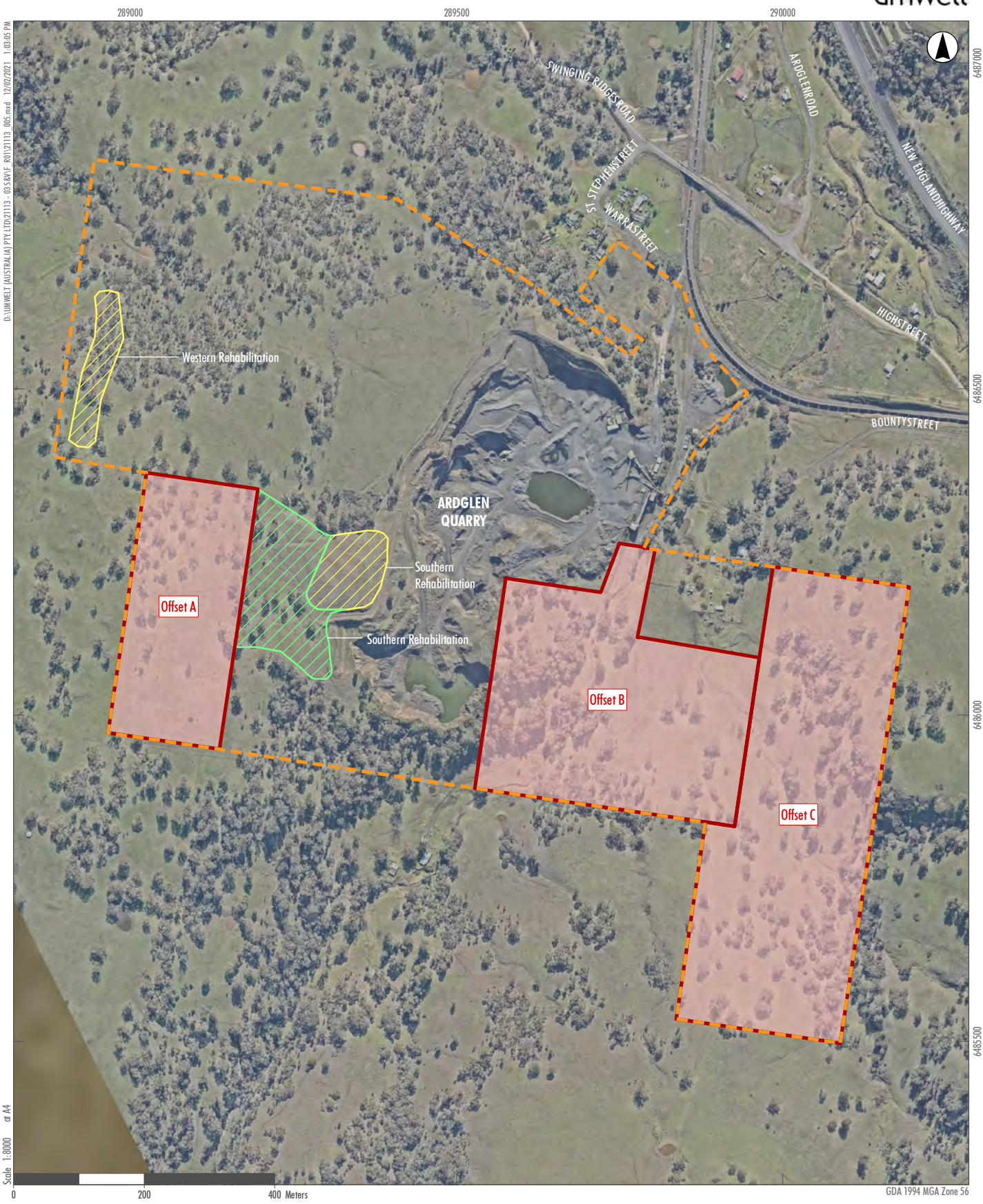
Legend

- Biodiversity Offset Area Boundary
- Permanent Floristic Monitoring Plots

FIGURE 2.3

Conservation Agreement Plot Locations

Image Source: Nearmap (2015); DFSI (2013; 2011); Data source: Geoscience Australia; DFSI (2017; 2019)



Legend

- Site Boundary
- Biodiversity Offset Area Boundary
- Recent Planting
- Older Planting

FIGURE 2.4

Rehabilitated Areas

Image Source: ESRI Basemap Data source: DFSI (2020)

3.0 Weather

Table 3.1 provides the range of weather conditions that occurred in 2020 prior to monitoring (which occurred on 17 December 2020). These results show the Murrurundi region experienced wetter conditions in 2020 than historical averages (though note the historical average ranges from 2003 - 2020). Monthly rainfall levels were often much higher than the long term mean. Temperatures in Murrurundi closely reflected long term averages.

The climatic conditions experienced in 2020 were in sharp contrast to those experienced in 2019 and provides context for the floristic conditions observed across both monitoring periods. The total precipitation falling in Murrurundi in 2020 was over three times the total amount that fell within the previous monitoring period (BOM 2021). Subsequently, the amount of groundcover was much higher across the BOAs than what was observed in the previous monitoring period, with biomass and plant height markedly higher in 2020.

Table 3.2 shows the weather conditions that were experienced during the 2020 monitoring period.

3.1 Climatic Conditions

The Combined Drought Indicator (CDI), developed by the NSW Department of Primary Industries, uses three indices (Rainfall Index, Plant Growth Index and Soil Water Index) to determine the drought category at any given time. The CDI classifies each parish in NSW into one of five drought categories:

- **Non drought:** At least one indicator is above the 50th percentile
- **Recovering phase:** All indicators are below the 50th percentile but above the 30th percentile
- **Drought Affected:** At least one indicator is below the 30th percentile
- **Drought:** At least one indicator is below the 5th percentile
- **Intense Drought:** All three indicators (rainfall, soil water, plant growth) are below the 5th percentile
- Using the CDI (DPI 2021a), the Ardglen area is classified at the time of monitoring as in “Non-Drought”. These trends are shown in Graph 3.1 **Combined Drought Indicator record for Temi Parish, 2013 - 2021 (DPI 2021a)**

(DPI 2021a) for the Temi Parish, which is the representative Parish for Ardglen Quarry. The CDI graph shows that Temi Parish started the year in a “Drought” and “Intense Drought” state, which it had been fluctuating since November 2017. In the latter three quarters of the year, a weakening of the drought was seen, subsequent to increased rainfall levels, and the CDI was brought into recovery in August and September 2020. The Parish has been in “Non-Drought” since this time.

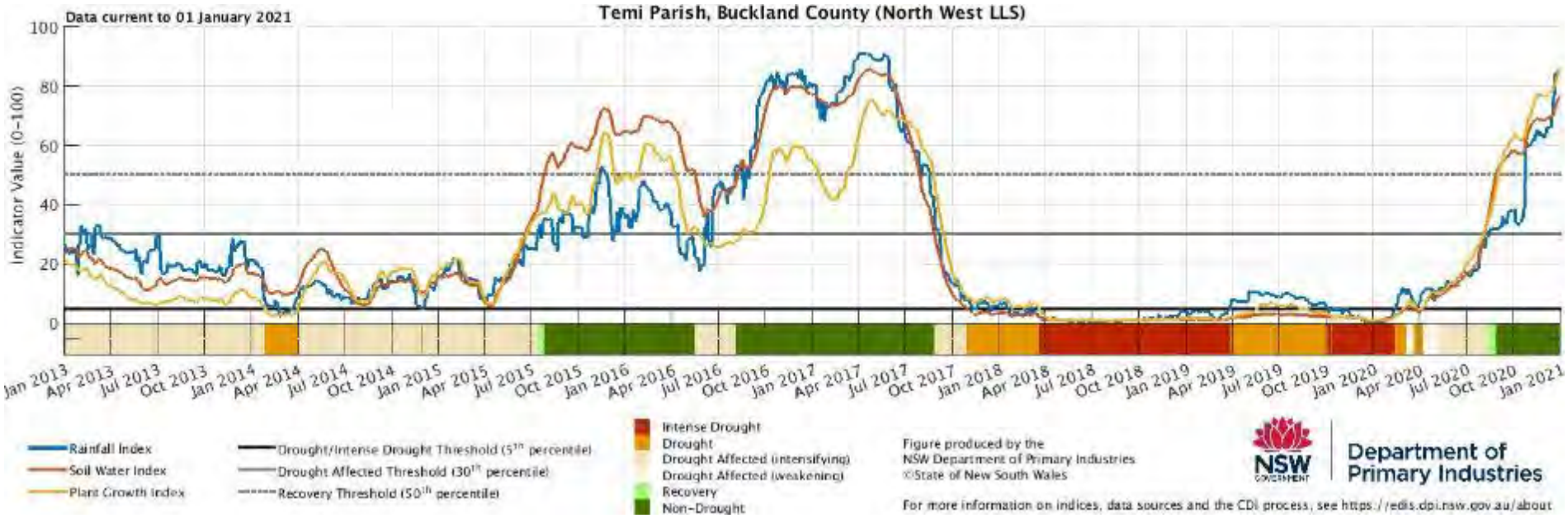
This has substantial implications in terms of vegetative performance, cover and landscape functioning of the BOAs at Ardglen Quarry. Drought conditions lead to decreased soil moisture, plant growth and groundcover, and reduces the capacity of plants to regenerate and reproduce. Drought affects plant and soil nutrient flows, limiting the ability of plants to uptake nutrients and increasing susceptibility of nutrient loss during the next rainfall flush (Lucci 2019). The increased biomass and groundcover observed across the BOAs is likely a result of drought recovery. Increased rainfall and subsequently increased soil moisture would promote the rapid growth of groundcover species.

Table 3.1 Temperatures and Rainfall Data from Murrurundi Gap AWS (Station 061392) during 2020 (BOM 2021)

	2020											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum Temperature (°C)	38.7	35.5	29.8	23.6	19.8	19.0	16.1	19.6	23.3	27.9	35.2	35.4
Mean Maximum Temperature (°C)	31.0	24.9	22.1	20.2	14.3	13.0	12.5	13.3	18.4	21.9	25.5	24.8
Long Term Mean Maximum Temperature (°C)	*28.8*	*27.4*	*24.5*	*21.0*	*16.7*	*13.0*	*12.6*	*14.6*	*18.4*	*21.8*	*24.7*	*31.3*
Minimum Temperature (°C)	13.8	11.9	9.4	6.2	0.6	1.8	-1.8	0.3	1.6	8.1	6.8	7.9
Mean Minimum Temperature (°C)	18.0	16.3	13.5	12.0	6.9	5.9	5.4	5.0	8.7	11.4	13.5	14.4
Long Term Mean Minimum Temperature (°C)	*16.8*	*15.8*	*14.2*	*11.3*	*8.2*	*6.0*	*4.9*	*5.7*	*8.6*	*11.0*	*13.2*	*15.0*
Rainfall (mm)	**95.8**	**160.8**	**67.0**	**69.8**	**58.8**	**43.4**	**93.8**	**37.6**	**37.8**	**138.0**	**39.2**	**120.6**
Long Term Mean Rainfall (mm)	*66.3*	*72.8*	*75.1*	*33.9*	*35.4*	*66.4*	*46.6*	*38.5*	*43.5*	*52.6*	*78.6*	*85.3*

Table 3.2 Temperatures and Rainfall Data from Murrurundi Gap AWS (Station 061392) during the December 2020 Monitoring Event (BOM 2021)

	17/12/2020
Maximum Daily Temperature (°C)	28.2
Minimum Daily Temperature (°C)	17.0
Rainfall (mm)	**38.2**



Graph 3.1 Combined Drought Indicator record for Temi Parish, 2013 - 2021 (DPI 2021a)

4.0 Results

4.1 Walkover Assessment

4.1.1 Fence Condition

A walkover assessment was conducted across all three BOAs. Inspection of fences showed that all external fences of the BOA properties are functioning adequately, and no breaches were observed. Upgrades appear to have been undertaken at some internal gates, which made for easier access. Fences are not appearing to deter feral dogs or foxes, but increased security measures (e.g., mesh fencing) are not recommended, as these may also deter native animals. Internal fencing was noted in several cases, particularly between Offset B and Offset C, and this can be removed, if practical.

4.1.2 Pests and Livestock

Feral goats and horses caused substantial issues for the BOAs in 2019, however it is noted that both of these threats have been resolved. In 2019 and 2020, Daracon had engaged the services of feral animal shooters to mitigate and reduce the impacts of feral animals both on the native wildlife and the condition of the BOAs. The obvious signs of trampling and overgrazing that were present during the 2019 monitoring event were not observed in 2020, and the areas in poor condition from feral livestock appear to have fully recovered since the exclusion of these animals. The only signs of digging and grazing observed in the BOAs were from native animals, such as wallabies and wombats.

In 2020, wild dogs, deer and foxes have become an emerging threat to the wildlife within the BOAs. It is recommended that the practice of engaging feral animal shooters continues in order to reduce threats of these animals to native wildlife. If wild dog numbers are observed to increase across the BOAs, it is recommended that Daracon liaise with Local Land Services (and potentially neighbouring landholders) to discuss the merits of implementing a wild dog 1080 baiting protocol. Further information about integrated wild dog management and 1080 baiting can be found on the NSW Department of Primary Industries website (DPI 2021b).

Rabbits and hares persist across the BOAs however the observable evidence of both species was minor, and it is not considered that their presence poses a threat to the condition of the BOAs such that management is required.

4.1.3 Fire Events or Impacts of Fire Management

No fire events or fire management actions were experienced or undertaken in 2020.

Given the very low groundcover in 2019, and subsequent rapid growth in 2020, bushfire fuel loads have increased since 2019. However, the absence of a dense shrub layer and the open nature of the woodland would likely reduce the intensity of fire if ignition occurred. Grass fire risk is considered to be higher this year, despite the wetter conditions, and grass fire could be a possibility if a warmer, drier weather spell eventuates in late summer and desiccates the groundcover layer. Daracon should monitor the climatic conditions in conjunction with the groundcover condition and undertake any bushfire hazard reduction management actions outlined in the LMP if necessary.

4.1.4 Weeds

Weeds with high invasive potential were generally observed at low levels throughout BOAs. Weed control was previously undertaken for St John's wort (*Hypericum perforatum*) and no individuals were sighted during the walkover or when conducting floristic monitoring in 2019. However, this species has reappeared in moderate numbers across the southern portion of Offset A. Weed control across this area is recommended. The few instances of localised prickly pear (*Opuntia stricta*) and Paterson's curse (*Echium plantagineum*) infestations noted in 2019 had reduced substantially. Weed control in these areas appeared to be successful, particularly for Paterson's curse. There was also a small amount of blackberry (*Rubus fruticosus* sp. agg) present in Offset A in plot Q04, and this should be managed while it is a relatively small infestation.

Given the very dry conditions and very low groundcover observed in 2019, and the subsequent amount of rainfall during 2020, regeneration of the groundcover layer has occurred to a high degree. However, most of the regeneration has occurred by exotic species, and has not boosted the native species diversity across the BOAs, as anticipated. It is likely that the soil seedbank contained many exotic seeds due to the previous pastoral landuse, and the increased rainfall levels over the past year have allowed these species to flourish. As this is a side-effect of drought recovery, and it does not pose an immediate threat to the overall landscape function of the BOAs, is recommended that the exotic species cover is continued to be monitored. Exotic groundcover species were most abundant in the Derived Native Grassland areas, giving way to more native groundcovers under open woodland.

Willow trees (*Salix* sp.) were prominent along the Doughboy Hollow Creek banks in Offset B. These are recommended to be left in situ as their removal may cause soil instability and creek bank erosion.

4.1.5 Rubbish and Dumping

There were no significant rubbish or dumping issues observed across the BOAs. The rubbish dump in Offset B observed in 2019 has since been removed. Large concrete pipes were still noted within permanent monitoring plot Q02 (**Figure 2.3**) in Offset B but do not pose a threat to wildlife.

4.1.6 Visitor and Vehicle Impacts

None observed in 2020.

4.1.7 Natural Regeneration of Previously Disturbed Areas

Discussed further in **Section 4.2**.

4.1.8 Threatened Species Sightings

No targeted threatened species searches were undertaken as part of this monitoring, however the little lorikeet (*Glossopsitta pusilla*) was again identified in the offset areas in 2020 during the walkover. It is suspected that a nest discovered in Offset A may have been made by little lorikeets, which is a positive sign of continued use of the habitat in the BOAs by this species (see **Plate 4.1**).

Plate 4.1 Suspected little lorikeet (*Glossopsitta pusilla*) nest in Offset A

4.2 Natural Regeneration Monitoring

The results of the natural regeneration monitoring for Offset A, Offset B and Offset C are presented in **Table 4.1**.

The locations of the natural regeneration plots were the same as those established in 2019. The GPS co-ordinates in each of the tables below were taken from the north east corner of each 50 m x 20 m plot.

Table 4.1 Natural Regeneration Monitoring Results

Plot Name	Easting	Northing	Cover (%)	Sapling Count (per plot)	Sapling Count (per hectare)
Offset A					
A1	289077	6486201	0	0	0
A2	289062	6486145	0	0	0
A3	289060	6486090	0	0	0
A4	289150	6485973	0	0	0
Offset B					
B1	289822	6486108	0.1	1	10
B2	289821	6486014	0.5	6	60
B3	289945	6485915	0	0	0
B4	289854	6485906	0	0	0
Offset C					
C1	290061	6486188	0.1	1	10
C2	290034	6485967	0	0	0
C3	289953	6485745	0	0	0
C4	289943	6485582	0	0	0

The canopy cover (%) and sapling counts for natural regeneration plots were still low, however this is to be expected of derived native grassland areas. This will increase once assisted regeneration (planting) commences in these areas. Three plots (25%) had one or more saplings already present, which is a positive sign of recruitment already occurring in these areas without assistance. This is down from four plots in 2019, but it is noted that due to the tall and thick groundcover layer this year, the previously reported sapling in B4 could not be located and is likely still persisting beneath the grass. Three more individual saplings were identified in B2, which is an excellent sign of natural regeneration.

4.3 Nest Box Monitoring

The full nest box monitoring results are detailed in **Appendix A**. A summary table of results is outlined in **Table 4.2.**

Table 4.2 Nest Box Monitoring Results Summary

Box Type	No. with signs of occupation*	No. with pest species	No. with actual occupation	Target Species Identified	Nest Boxes requiring Repair/ Replacement
Phascogale (rear entry) (9 boxes)	glider nest (3) bird nest (3) glider (sp. indeterminate) (2) **Total = 8**	0	2	No phascogales. Glider (sugar or squirrel - undetermined) identified - species known to use this box type.	NB17/TT158 - part of lid stuck to inner box cavity but was able to be monitored with minor difficulty. Does not hinder use of box by fauna.
Microbat (9 boxes)	**Total = 0**	**Total = 0**	0	none	NB14/TT163 has been repaired
Glider (front entry) (9 boxes)	glider nest (1) worn or chewed entry (8) bird nesting material/leaf debris (4) spiders (2) **Total = 15**	**Total = 0**	0	Glider (sugar or squirrel - undetermined) nests identified.	NB12/no tree tag - has been relocated to a different tree.
Total = 27	**23**	**0**	**2**	**2**	**3**
% of Boxes	**79.3**	**0**	**7.4**	**-**	**11.1**

* Sometimes these numbers will add to more than their total as a number of fauna species may utilise the same nest box

This year's monitoring period showed greater usage of nest boxes by vertebrate fauna, with target glider species utilising four nest boxes (14.5%), and bird species utilising 7 boxes (25.9%) as shown in **Plate 4.2 and Plate 4.3**. An eggshell was found in NB24/TT115, which is an excellent sign that the nest boxes are being utilised for breeding. There were positive signs of use of a high percentage of boxes (79.3%), which is lower than last year, however this year's monitoring event produced stronger signs of occupation. Two boxes were found to contain glider species in their characteristic nests, though the exact species (sugar glider *Petaurus breviceps* or squirrel glider *Petaurus norfolcensis*) could not be determined from the footage.

Plate 4.2 Gliders (sugar or squirrel, indeterminate) in NB22/TT112

Plate 4.3 Bird nest and empty eggshell in NB24/TT115

4.4 Conservation Agreement Baseline Monitoring

Four permanent monitoring plots were established within each of the four vegetation zones in the BOAs identified by Orogen (2010). These vegetation zones have been assigned a Plant Community Type (PCT) in order to be comparable with PCT benchmarks and track condition and progress over time. These PCTs have been described using floristic data, broad-scale vegetation mapping (DPIE 2020) and using knowledge of the local topography and landscape. The vegetation zones with their corresponding PCT and site locations are outlined in **Table 4.3.**

Table 4.3 Vegetation Zones and Corresponding PCT and Plot Information

Plot Name	Easting	Northing	Zone	Vegetation Zone (Orogen 2010)	PCT Name
Q01	290019	6485647	56	Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion
Q02	289747	6486167	56	River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)
Q03	289761	6485921	56	White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion
Q04	289144	6486073	56	Derived Native Grassland	PCT 796 - Derived grassland of the NSW South Western Slopes

The full flora list, biometric data and photo monitoring results for the monitoring of the permanent Conservation Agreement monitoring sites are presented in **Appendix B**.

A comparison of the data collected at each of the monitoring sites to the 2019 results and their corresponding PCT benchmarks is outlined below:

Q01 - PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion

Since 2019, native species richness dropped from 78% to 45% of the benchmark. Overstorey foliage cover has increased from 25% to 28%, which is now at 65% of the benchmark. Mid storey foliage cover remains absent. Native grass cover was at 98% of the benchmark, which is a 27% increase from last year. This is likely because the ground cover has increased so much in general following a sustained period of increased rainfall. For the same reasons, exotic species cover was high at 54%. There were no native forbs or 'other' species. Fallen log cover was lower this year than last year, however it is likely that the logs were not as visible due to the dense groundcover, and still persist below the thick coverage. Regeneration of canopy species was evident in this plot.

Q02 - PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)

Native species richness was lower than the results seen in 2019, with 2020 results reaching just 25% of the benchmark. Overstorey foliage cover was around the same at 39% of the benchmark, and mid storey foliage cover was absent. Native grass cover met only 29% of the benchmark, however native forbs and 'other' species met 75% of the benchmark. Fallen logs were higher this year but only met 25% of the benchmark. Given the low canopy cover, this is a reasonable result. Exotic cover was very high at 84%. It is likely that given the position of this plot in the landscape, exotic seeds have culminated at the low point of the topography in the riparian area and flourished after consecutive rainfall flushes.

Q03 - PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion

Native species richness was somewhat low, meeting 42% of the benchmark. This is unchanged since 2019. Overstorey foliage cover has increased since 2019, and is now at 89% of the benchmark. In 2019, dieback was evident from prolonged drought, but the canopy cover appeared to increase in 2020. The mid-storey was again absent, however native grass cover exceeded the benchmark at 123%. This is an excellent result, and exotic species cover was at its lowest in this vegetation zone, though still high at 48%. There had been a drop in native forbs and other species cover this year, and this was experienced across the board, likely due to being outcompeted by vigorous exotic groundcovers. Fallen logs remained absent in this vegetation zone.

Q04 - PCT 796 - Derived grassland of the NSW South Western Slopes

Native species richness was lower than the results seen in 2019, with 2020 results reaching 43% of the benchmark. Native overstorey and mid-storey cover were appropriately absent, as were fallen logs. Exotic species cover was very high at 72%. This impacted the native grass cover score, which met only 30% of the benchmark. Native forbs and 'other' species were at 60% of the benchmark, which is an increase from the 2019 results.

4.5 Rehabilitation Walkover

Approximately 500 saplings were planted in the two rehabilitation areas outside of the BOAs and identified in **Figure 2.4**. Two areas were planted within the quarry boundary. the Western Rehabilitation plantings were undertaken in September 2019 along with the lower/eastern plantings in the and the Southern Rehabilitation area. The top/western portion of this area was planted in March/April 2020.

Both areas showed a very high survival rate, and although the count of saplings was not exhaustive, only a handful of planted individuals appeared to have perished. Survival rate appeared to be above 85% in both areas. Though some species could not be identified due to their young age, the species mix appeared to be a satisfactory mix of representative canopy and mid-storey species for the area.

In the Western Boundary - Top of Pit plantings, a dense exotic understorey was present. Weed management is not recommended in this area as the thick groundcover is acting to shield the smaller saplings from herbivory, and provide shelter from the elements. The plant guards in this area seemed mostly intact, and plant heights ranged from 0.2 to 1.7 metres in height, the upper end of which is shown in **Plate 4.4**. Given the timing of plantings in this area in the height of intense drought, the survival rate and condition of these plantings is very high. The watering protocol undertaken for these plantings has resulted in successful outcomes for this rehabilitated area.

In the Southern Rehabilitation area, the survival rate is slightly lower than that of the plantings further up the slope in the Western Rehabilitation. This is likely because the plantings are in a more open, easterly facing setting at the edge of the quarry face, with less surrounding canopy cover and lower groundcover height. Its more exposed setting has also likely contributed to the slower apparent growth rate of the plantings and lower plant heights (0.1 to 1 metre). Despite this, there was a high success rate, which is a testament to the watering protocol Daracon have committed to over the last monitoring period. Herbivory also appears to be a higher risk in this area, with some of the wire mesh plant guards having been destroyed by macropods or feral grazing animals (deer seen in the vicinity) as shown in **Plate 4.5**. It is recommended that these destroyed wire mesh guards are replaced with the plastic mesh guards, which look to be of a sturdier construction.

Plate 4.4 Successful juvenile eucalypt planting in Western Rehabilitation

Plate 4.5 Destroyed wire mesh guard and browsed plant in Southern Rehabilitation

5.0 Compliance with LMP

An evaluation of the BOAs against the relevant performance/completion criteria outlined in the LMP is provided in **Table 5.1**. Note that these criteria have changed since the last monitoring report as the LMP was updated in May 2020.

Table 5.1 Assessment of the BOAs against LMP performance criteria

Feature	Aspect	Performance/Completion Criteria	Corrective Action
Landscape Condition	Weed infestation	Weeds do not comprise more than 15% cover in any stratum. There are no significant weed infestations.	**Progressing towards.** There are no significant weed infestations however exotic species represent greater than 15% cover in the ground stratum of every plot. This is likely a side-effect of drought recovery and soil moisture promoting the growth of dormant exotic species in the seedbank. Weed management is recommended for high threat weeds, and continued monitoring of proportion of exotic species.
	Rubbish removal	Offset Areas free of rubbish	**Achieved**.
Natural Regeneration	**Short term** - Grazing exclusion	Fencing has been established around all offset areas and is maintained	**Achieved.**
	Medium term - Quality and cover of existing overstorey within Offset Area C (Lot 49 DP 751028)	A stem count of >30 stems/ha is achieved via natural recruitment in over 75% of the Natural Regeneration monitoring plots by 2023.	**Progressing towards.** Stem counts in the natural regeneration monitoring plots did not meet this threshold. While natural recruitment was occurring in some areas, assisted revegetation is required to support the trajectory of the BOAs towards this performance criteria.
	Long term - Recruitment and rehabilitation of overstorey	More than 15% cover of mid-storey and overstorey species is achieved in over half of the Natural Regeneration monitoring plots by 2030.	**Progressing towards.** Cover in the natural regeneration monitoring plots did not meet this threshold. While natural recruitment was occurring in some areas, assisted revegetation is required to support the trajectory of the BOAs towards this performance criteria.
Assisted Regeneration	**Short term -** Vegetation establishment	Assisted planting program as outlined in **Section 5.2.1.2** of the LMP is commenced in 2020. Species planting list follows that which is outlined in this Section.	**Not achieved.** Assisted planting program to commence in 2021.

Feature	Aspect	Performance/Completion Criteria	Corrective Action
	Medium term - Seedling survivability	Following the implementation of the assisted planting program, more than 70% of planted seedlings have survived in each of the offset rehabilitation monitoring plots. Seedlings must have a survival rate of >70% in each planting area for at least three years post-planting before monitoring this parameter can cease.	**Not applicable.**
	Long term - Overstorey restoration	A density of >30 mature stems/ha is achieved in more than 75% of the offset rehabilitation monitoring plots ten years after the initial planting year. A mature stem is a tree (overstorey species) with a diameter at breast height (dbh) greater than 10 cm.	**Not applicable.**
	Long term - Vegetation community	Long term monitoring indicates that planted vegetation is recognisable as a vegetation community consistent with the NSW determination for White Box Yellow Box Blakely's Red Gum Woodland CEEC at the end of the Quarry life.	**Not applicable.**
Habitat Material	All salvageable hollows shall be re-erected within 12 weeks from completion of staged clearing operations	Hollows are installed as required and monitored annually (condition and content) for the life of the Quarry.	**Not applicable.** No clearing works that would yield salvageable hollows have been undertaken in 2020.
Long Term Security of Offset Site	Security of Offset	Offset security mechanism as detailed in **Section 5.6** established and implemented.	**Progressing towards.** Actively liaising with BCT to resolve.

6.0 Recommendations

The following recommendations are provided for consideration in the 2020 Annual Review:

- Perimeter fencing of the BOAs is adequate, but internal fences can be removed if practical. These may hinder the movement of native fauna throughout the BOAs.
- Daracon should continue to engage the services of a feral animal shooter for feral pest animals that frequent the BOAs (e.g., foxes and wild dogs). Daracon may liaise with Local Land Services to discuss the merits of a wild dog baiting program if considered necessary.
- Weed management works of prickly pear (*Opuntia stricta*) in Offset B and C and St John's wort (*Hypericum perforatum*) and blackberry (*Rubus fruticosus* agg.) is recommended in Offset A.
- It is recommended that the ply stuck to the upper part of Nest Box 17 (TT158) is removed to better facilitate monitoring of the box, however this is a low priority as access to the box by animals does not appear to be impeded.
- It is recommended that where metal mesh plant guards have been destroyed by grazers, these are replaced with plastic mesh plant guards as they are less likely to be dismantled.
- Assisted revegetation should be prioritised in Offset A and B, as Offset C is generally quite well vegetated. Planting should begin in derived native grassland areas closest to existing canopy cover (i.e., where there is the most protection), and progress further out into areas with lower canopy cover over time.

An indicative species list to be utilised in assisted revegetation includes:

Trees

- white box (*Eucalyptus albens*)
- Blakely's red gum (*Eucalyptus blakelyi*)
- yellow box (*Eucalyptus melliodora*)
- rough-barked apple (*Angophora floribunda*)
- red stringybark (*Eucalyptus macrorhyncha*)

Small Trees/Shrubs

- box-leaf wattle (*Acacia buxifolia*)
- silver wattle (*Acacia dealbata*)
- hickory wattle (*Acacia implexa*)
- kangaroo thorn (*Acacia paradoxa*)
- western rosewood (*Alectryon oleifolius*)
- kurrajong (*Brachychiton populneus*)

- blackthorn (*Bursaria spinosa*)
- white cypress pine (*Callitris glaucophylla*)
- *Cassinia arcuata*
- *Cassinia quinquefaria*
- sticky hop-bush (*Dodonaea viscosa*)
- native cherry (*Exocarpos cupressiformis*)
- wilga (*Geijera parviflora*)
- native olive (*Notelaea microcarpa*)
- smooth darling-pea (*Swainsona galegifolia*)
- sticky daisy-bush (*Olearia elliptica*)
- peach heath (*Lissanthe strigosa*)
- urn-heath (*Melichrus urceolatus*)

Grasses/Groundcovers

- three-awn speargrass (*Aristida ramosa*)
- trailing woodruff (*Asperula conferta*)
- red grass (*Bothriochloa macra*)
- bristly cloak fern (*Cheilanthes distans*)
- plump windmill grass (*Chloris ventricosa*)
- yellow buttons (*Chrysocephalum apiculatum*)
- barbed wire grass (*Cymbopogon refractus*)
- wattle mat-rush (*Lomandra filiformis*)
- slender rice flower (*Pimelea curviflora*)
- grey tussock grass (*Poa sieberiana*)
- slender rats tail grass (*Sporobolus creber*)
- kangaroo grass (*Themeda triandra*)

7.0 Conclusion

The key findings of the 2020 biodiversity offset monitoring include the following:

- The vegetation was generally in a better condition and with more foliage cover during this monitoring period.
- Weed species were widespread and should continue to be monitored. Weeds of concern in infestation areas previously discussed are recommended for targeted removal.
- Feral animals are a detriment to the condition of the BOAs and surrounding quarry grounds, particularly in terms of browsing juvenile plants and plantings (deer) and threats to native wildlife (foxes and wild dogs).
- PCT benchmarks for a range of biometric parameters decreased this year, and this can almost entirely be explained by the increased exotic species presence following the period of increased rainfall.
- Weeds and feral animals are the main hindrances to the progression of the offsets towards benchmark conditions.
- Natural recruitment and regeneration are occurring to a small degree, but the BOAs would benefit from assisted revegetation.
- A high percentage of nest boxes are showing positive signs of use with 14.5% having clear evidence of use by target species. Evidence of a higher number of native animals (wombats, bird species, little lorikeets, gliders) making the BOAs a permanent home was observed in this monitoring period.

8.0 References

Botanic Gardens Trust 2021. *PlantNET – The Plant Information Network System of Botanic Gardens Trust*, Sydney, Australia (version 2.0). http://plantnet.rbgsyd.nsw.gov.au accessed January 2021.

Bureau of Meteorology (BOM) 2021. *Climate Data Online*. Australian Government Bureau of Meteorology. http://www.bom.gov.au/ accessed January 2021.

Conacher Consulting 2018. *2017 Monitoring Report for Biodiversity Rehabilitation and Landscape Management Works - Ardglen Quarry*, April 2018.

Department of Primary Industries (DPI) 2021a. *Weekly Parish Update - Seasonal Conditions Information Portal*. NSW Government. https://edis.spaceport-dev.intersect.org.au/%2FWeekly%20Parish%20Update accessed January 2021.

Department of Primary Industries (DPI) 2021b. *Integrated Pest Management - Wild Dog Control*. NSW Government. https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/pest-animals-in-nsw/wild-dogs/wild-dog-control accessed January 2021.

Department of Planning, Industry and Environment (DPIE) 2020. State Vegetation Type Map: Upper Hunter v1.0. Geodatabase Guide (4.0).

Department of Planning, Industry and Environment (DPIE) 2021. Vegetation Information System (VIS) accessed January 2021.

Kendall & Kendall Ecological Consultants 2018. *Nesting Box Inspection Ardglen Quarry*, December 2018.

Harden, G, J editor 1992. *Flora of New South Wales. Volume 3*. Royal Botanic Gardens Sydney & New South Wales University Press, Sydney.

Harden, G, J editor 1993. *Flora of New South Wales. Volume 4*. Royal Botanic Gardens Sydney & New South Wales University Press, Sydney.

Harden, G, J editor 2000. *Flora of New South Wales. Volume 1*. 2nd edition. New South Wales University Press and Royal Botanic Gardens, Sydney.

Harden, G, J editor 2002. *Flora of New South Wales. Volume 2*. Revised edition. Royal Botanic Gardens Sydney & New South Wales University Press, Sydney.

Lucci, G. M. 2019. Pastures and drought: a review of processes and implications for nitrogen and phosphorus cycling in grassland systems. *Soil Research* 57, 101-112.

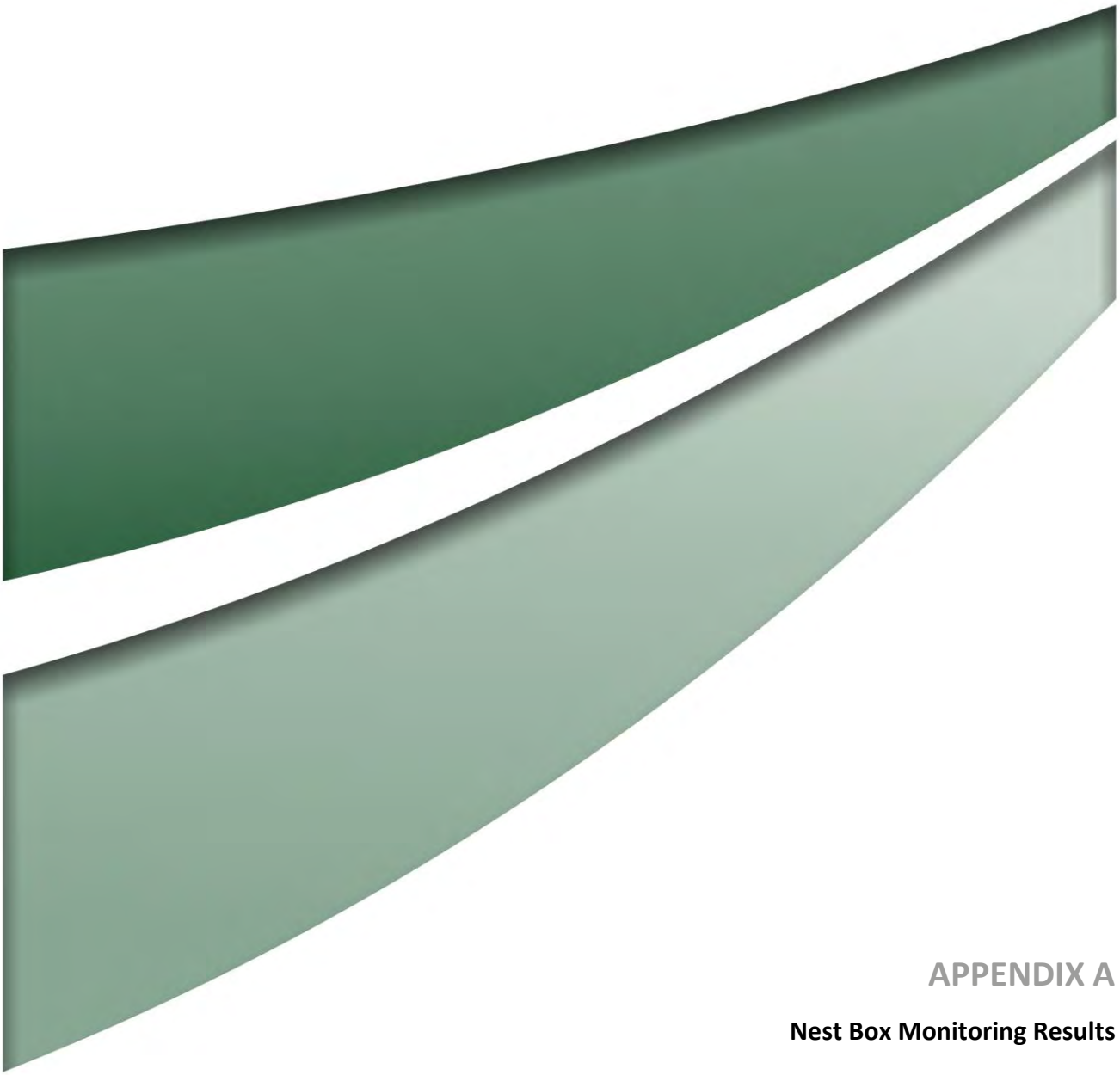
Office of Environment and Heritage (OEH) 2014. BioBanking Assessment Methodology, September 2014.

Orogen Pty Ltd, 2010. *Landscape Management Plan Version 1: Ardglen Quarry Extension Major Project 06/0264*

Umwelt 2020a. *Ardglen Quarry Landscape Management Plan,* prepared for Buttai Gravel Pty Limited, May 2020.

Umwelt 2020b. *2020 Ardglen Quarry Annual Biodiversity Offset Monitoring*, prepared for Daracon Quarries, February 2020.

Wheeler, D, J, B, Jacobs, S, W, L, and Whalley, R, D, B 2002. *Grasses of New South Wales*, 3rd Edition. The University of New England, Armidale.

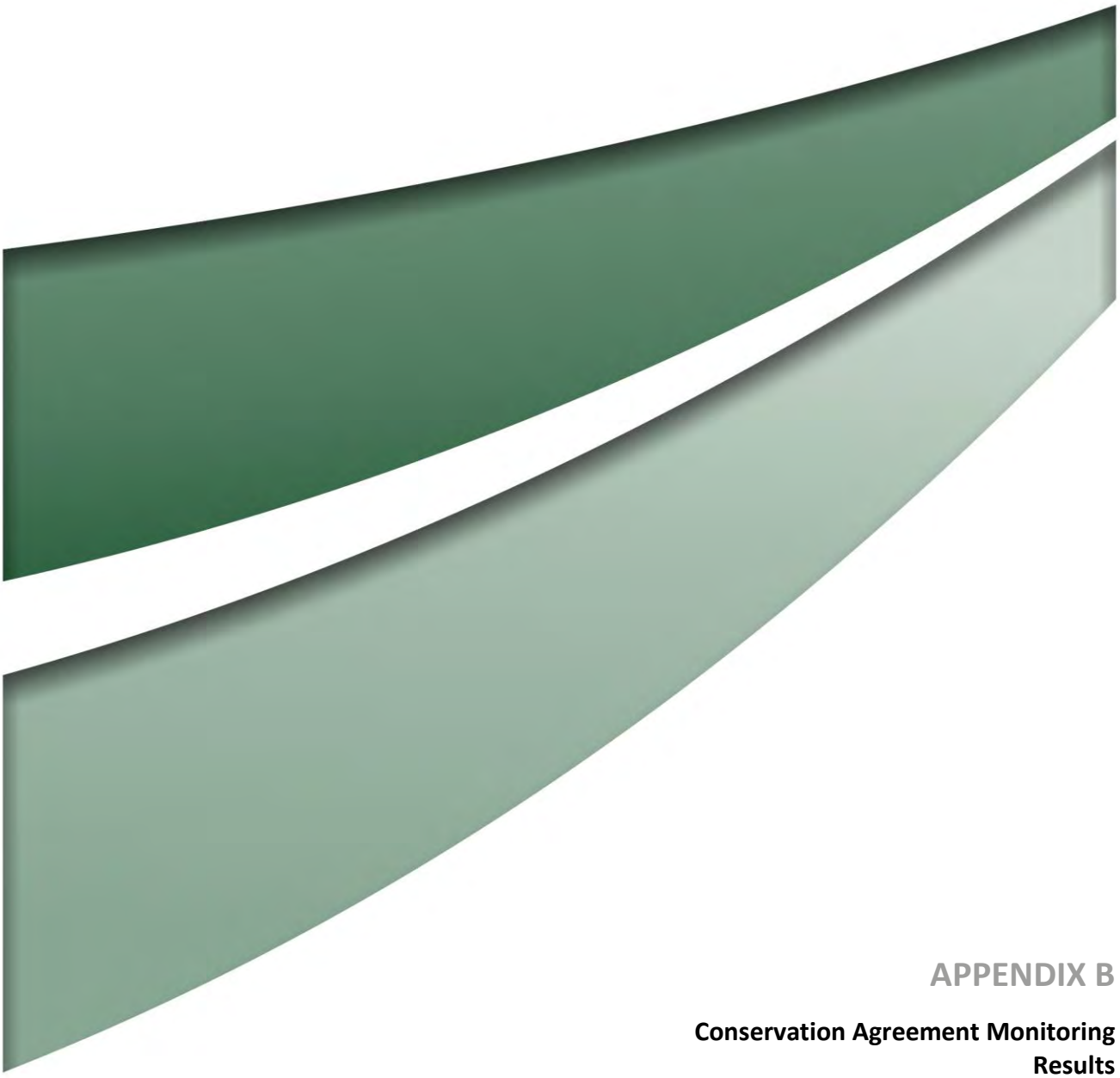


APPENDIX A

Nest Box Monitoring Results

Nest Box Monitoring Results

Date Monitored	Box Number	Tree Tag Number	Type	Contents	Condition
17/12/2020	1	175	phascogale	glider (sugar or squirrel indeterminate) in nest	good
17/12/2020	2	-	glider	empty; chewed entry	good
17/12/2020	3	178	phascogale	bird nest	good
17/12/2020	4	177	glider	spider; chewed entry	good
17/12/2020	5	172	phascogale	empty	good
17/12/2020	6	173	microbat	empty	good
17/12/2020	7	171	glider	bird nest; chewed entry	box lid now open
17/12/2020	8	168	phascogale	empty	good
17/12/2020	9	169	phascogale	glider nest	good
17/12/2020	10	164	phascogale	bird nest (feathers and carpet material)	good
17/12/2020	11	165	glider	rosella nest; chewed entry	good
17/12/2020	12	-	glider	ant nest; chewed entry	carpet on lid has fallen into box
17/12/2020	13	-	microbat	empty	mesh is worn
17/12/2020	14	163	microbat	internal ply collapsed	ply needs removal or replacement
17/12/2020	15	161	glider	worn entrance; glider nest	good
17/12/2020	16	159	microbat	empty	worn mesh
17/12/2020	17	158	phascogale	empty	part of lid stuck to inner box - view mostly obscured
17/12/2020	18	157	glider	glider nest; worn entry	good
17/12/2020	19	156	microbat	empty	good
17/12/2020	20	114	glider	bird nest; worn entry	carpet fallen inwards
17/12/2020	21	113	microbat	empty	good
17/12/2020	22	112	phascogale	5 x gliders (sugar or squirrel indeterminate) in glider nest	good
17/12/2020	23	111	glider	worn entry; spider and remnants of old nest	good
17/12/2020	24	115	phascogale	eggshell and feathers (nest)	good
17/12/2020	25	-	microbat	empty	mesh frayed
17/12/2020	26	176	microbat	empty	mesh worn
17/12/2020	27	160	microbat	empty	good



APPENDIX B

Conservation Agreement Monitoring Results

Biometric Plot and Transect Data

The following abbreviations or symbols are used in the list:

NPS	number of native plant species
NOC	native overstorey cover
NMC	native mid-storey cover
NGCG	native ground cover (grasses)
NGCS	native ground cover (shrubs)
NGCO	native ground cover (other)
EPC	exotic plant cover
NTH	number of trees with hollows
OR	overstorey regeneration, and
FL	total length of fallen logs (m).

Plot Name	NPS	NOS	NMS	NGCG	NGCS	NGCO	EPC	NTH	OR	FL	Easting	Northing	Zone
PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion													
Q01	17	28	0	44	2	0	54	0	1	9	290019	6485647	56
Benchmark	37	43	7	45	7	13				26			
PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)													
Q02	7	15	0	0	0	6	94	1	0	9	289747	6486167	56
Benchmark	28	38	10	35	10	8				36			
PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion													
Q03	13	16	0	52	0	0	48	0	1	0	289761	6485921	56
Benchmark	31	18	2	42	2	7				41			
PCT 796 - Derived grassland of the NSW South Western Slopes													
Q04	9	0	0	24	0	4	72	0	0	0	289144	6486073	56
Benchmark	21	0	1	80	1	6				0			

Floristic Results

Flora specimens recorded or collected were identified using the nomenclature and keys from Harden (1992, 1993, 2000 & 2002) and Wheeler et al. (2002). Recent changes to classification as identified from PlantNET (Botanic Gardens Trust 2021) were incorporated into floristic results.

The following abbreviations and symbols are used in the table below:

PC Percent Cover
AA Actual Abundance
* exotic species
** high threat weed

Family Name	Scientific Name	Common Name	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion		PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)		PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion		PCT 796 - Derived grassland of the NSW South Western Slopes	
			Q01		*Q02*		*Q03*		*Q04*	
			PC	AA	PC	AA	PC	AA	PC	AA
Filicopsida (ferns)										
Adiantaceae	*Cheilanthes distans*	bristly cloak fern							50	0.1
Magnoliopsida – Liliidae (monocots)										
Cyperaceae	**Cyperus eragrostis*	umbrella sedge			500	20				
Lomandraceae	*Lomandra confertifolia*	matrush					100	2		
Lomandraceae	*Lomandra filiformis*	wattle matt-rush							5	0.1
Poaceae	**Avena fatua*	wild oats			50	0.2				
Poaceae	**Bromus catharticus*	prairie grass			100	5				
Poaceae	**Cenchrus clandestinus*	kikuyu grass	20	0.2	1000	60	1	0.1		
Poaceae	**Lolium perenne*	perennial ryegrass	1000	30	10	0.1			500	6

Family Name	Scientific Name	Common Name	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion		PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)		PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion		PCT 796 - Derived grassland of the NSW South Western Slopes	
			Q01		*Q02*		*Q03*		*Q04*	
			PC	AA	PC	AA	PC	AA	PC	AA
Poaceae	**Paspalum dilatatum*	paspalum			40	0.5				
Poaceae	**Paspalum urvillei*	vasey grass					200	3		
Poaceae	*Aristida ramosa*	purple wiregrass	50	0.5					500	5
Poaceae	*Aristida vagans*	threeawn speargrass					1000	60		
Poaceae	*Rytidosperma setaceum*	small-flowered wallaby-grass	1000	10			500	5		
Poaceae	*Dichanthium sericeum*	queensland bluegrass	100	2			200	2	1000	30
Poaceae	*Echinopogon ovatus*	forest hedgehog grass	20	0.2						
Poaceae	*Microlaena stipoides*	weeping grass					500	3		
Poaceae	*Themeda triandra*	kangaroo grass							10	0.1
Magnoliopsida – Magnoliidae (dicots)										
Apiaceae	**Cyclospermum leptophyllum*	slender celery	10	0.1	10	0.1	20	0.2		
Apocynaceae	**Araujia sericifera*	moth vine					1	0.1		
Apocynaceae	**Gomphocarpus fruticosus*	narrow-leaved cotton bush	20	0.1						
Asteraceae	**Bidens pilosa*	cobbler's pegs	500	2	50	1				
Asteraceae	**Carthamus lanatus*	saffron thistle	500	5	50	0.5	500	5	100	40
Asteraceae	**Cirsium vulgare*	spear thistle	50	0.2	100	0.5	100	0.4	1000	2
Asteraceae	**Conyza bonariensis*	flaxleaf fleabane			20	0.1	1	0.1		

Family Name	Scientific Name	Common Name	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion		PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)		PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion		PCT 796 - Derived grassland of the NSW South Western Slopes	
			Q01		*Q02*		*Q03*		*Q04*	
			PC	AA	PC	AA	PC	AA	PC	AA
Asteraceae	*Sigesbeckia orientalis subsp. orientalis*	indian weed	1000	40			500	3		
Brassicaceae	**Brassica spp.*	brassica	20	0.2						
Cactaceae	***Opuntia stricta*	common prickly pear	1	0.1						
Campanulaceae	*Wahlenbergia communis*	tufted bluebell	10	0.1						
Caryophyllaceae	**Petrorhagia nanteuilii*	proliferous pink	50	0.1			1000	40	1000	0.5
Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*	river oak			2	30				
Celastraceae	*Denhamia silvestris*	narrow-leaved orangebark	1	0.1						
Chenopodiaceae	*Einadia trigonos*	fishweed			50	0.1	1000	10		
Convolvulaceae	*Dichondra repens*	kidney weed			100	0.1	20	0.1	500	0.2
Fabaceae (Faboideae)	**Trifolium arvense*	haresfoot clover							10	0.1
Fabaceae (Faboideae)	**Trifolium campestre*	hop clover							1000	4
Fabaceae (Faboideae)	*Glycine clandestina*	twining glycine	1000	4	50	0.1	500	3	500	0.5
Hypericacae	***Hypericum perforatum*	St John's wort							10	1000
Lamiaceae	*Mentha satureioides*	native pennyroyal	10	0.1						
Malvaceae	**Malva parviflora*	small-flowered mallow	1000	2	10	0.1	100	1	50	0.1

Family Name	Scientific Name	Common Name	PCT 496 - Yellow Box - White Box - Silvertop Stringybark - Blakely's Red Gum grass shrub woodland mainly on the Liverpool Range, Brigalow Belt South Bioregion		PCT 485 - River Oak riparian grassy tall woodland of the western Hunter Valley (Brigalow Belt South Bioregion and Sydney Basin Bioregion)		PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, Brigalow Belt South Bioregion		PCT 796 - Derived grassland of the NSW South Western Slopes	
			Q01		*Q02*		*Q03*		*Q04*	
			PC	AA	PC	AA	PC	AA	PC	AA
Malvaceae	**Sida rhombifolia*	paddy's lucerne							500	0.5
Malvaceae	*Sida corrugata*	corrugated sida	500	2						
Myrtaceae	*Eucalyptus albens*	white box	3	5			10	30		
Myrtaceae	*Eucalyptus blakelyi*	blakely's red gum	9	35						
Oleaceae	*Notelaea microcarpa*	native olive	7	5						
Oxalidaceae	*Oxalis spp.*		1000	4	10	0.1	50	0.1		
Phytolaccaceae	**Phytolacca octandra*	inkweed	20	0.1	10	1	50	0.5	6	0.5
Plantaginaceae	**Plantago lanceolata*	lamb's tongues	100	1	200	2			1000	20
Polygonaceae	*Rumex brownii*	swamp dock			20	0.5			100	4
Rosaceae	***Rubus fruticosus sp. agg.*	blackberry complex							1	1
Rubiaceae	*Asperula conferta*	common woodruff	200	1	10	0.1	1000	10	1000	0.5
Solanaceae	**Solanum nigrum*	black-berry nightshade	50	0.2	20	0.5	50	0.5		
Solanaceae	*Solanum brownii*	violet nightshade	1	0.1						
Urticaceae	*Urtica incisa*	stinging nettle	10	0.1			1	0.1		
Verbenaceae	**Verbena bonariensis*	purpletop			10	0.2				
Verbenaceae	**Verbena rigida var. rigida*	veined verbena			20	0.5	40	0.5		

Photo Monitoring

Plot Q01: Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	
North 2019	**North 2020**
	

Plot Q01: Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	
East 2019	**East 2020**
	

Plot Q01: Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	
South 2019	**South 2020**
	

Plot Q01: Blakelys Red Gum (+/- Yellow Box) Dry Sclerophyll Grassy Woodlands/Open Woodland	
West 2019	**West 2020**
	

Plot Q02: River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	
North 2019	**North 2020**
	

Plot Q02: River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	
East 2019	**East 2020**
	

Plot Q02: River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	
South 2019	**South 2020**
	

Plot Q02: River Oak (*Casuarina cunninghamiana*) Dry Sclerophyll Woodland	
West 2019	**West 2020**
	

Plot Q03: White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	
North 2019	**North 2020**
	

Plot Q03: White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	
East 2019	**East 2020**
	

Plot Q03: White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	
South 2019	**South 2020**
	

Plot Q03: White Box (*Eucalyptus albens*) and Rough barked Apple (*Angophora floribunda*) Dry Sclerophyll Grassy Woodland	
West 2019	**West 2020**
	

Plot Q04: Derived Native Grassland	
North 2019	**North 2020**
	

Plot Q04: Derived Native Grassland	
East 2019	East 2020
	

Plot Q04: Derived Native Grassland	
South 2019 (no picture taken 2020)	**West 2019 (no picture taken 2020)**
	

umwelt
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Appendix 7 Waste Register

FORM: WASTE MANAGEMENT RECORD

REPORT REFERENCE NO. : …BAR – 20 Ardglen Quarry……..

This form to be completed by the Project Manager, or designee, to record volumes of waste material generated on site and its method of disposal.

PERIOD: 01 / 01 / 20 TO 31 / 12 / 20

WASTE MATERIAL	LOCATION OF SOURCE	QUANTITY	RECYCLED/DISPOSAL LOCATION	METHOD OF RECYCLING OR DISPOSAL
TIMBER	N/A	Nil		
CONCRETE	N/A	Nil		
ASPHALT	N/A	Nil		
SURPLUS TOPSOIL	N/A	Nil		
SURPLUS FILL	N/A	Nil		
DICL PIPE	N/A	Nil		
OILS / GREASES	N/A	Nil		
GLASS	N/A	Nil		
PAPER	N/A	Nil		
STEEL	N/A	Nil		
BRICKS	N/A	Nil		
ROCK	N/A	Nil		
PLASTERBOARD	N/A	Nil		
METALS	N/A	Nil		

FORM: WASTE MANAGEMENT RECORD

WASTE MATERIAL	LOCATION OF SOURCE	QUANTITY	RECYCLED/DISPOSAL LOCATION	METHOD OF RECYCLING OR DISPOSAL
BLOCKS	N/A	Nil		
MULCH	N/A	Nil		
GENERAL WASTE COLLECTED FROM SITE DURING 2020	Ardglen quarry and surrounds	1.7 T	As detailed in the disposal docket – CLEANAWAY Plus one service and empty of three cubic metre bin - CLEANAWAY	To an authorised waste disposal facility
TYRES	N/A	Nil		
HAZARDOUS WASTE				
ASBESTOS		Nil		
ACID SULFATE		Nil		
HYDROCARBON (BTEX,Coal Tar etc)		Nil		

Project Manager	Signature	Date
Paul Walker	PW	31 / 12 / 20

Copy to client ☐YES ☑ NO

15th June 2020

Daracon Group
PO Box 401
Beresfield NSW 2322

Cleanaway Pty Ltd
ABN: 79 000 164 938

2 Balbu Close, Beresfield
PO Box 155
Beresfield NSW 2322

Phone: (02) 4920 1455
Fax: (02) 4920 1477

To Neil,

Re: Treatment and disposal of waste materials

This document is to confirm Cleanaway Solid Waste division Northern NSW provides the above services for Daracon Ardglen Quarry site, Via New England Hwy, Murrurundi. Materials collected from site are mixed general waste and scrap metal. This waste is transported from site by our drivers and vehicles to local secure landfills and recycling centres as listed below:

Upper Hunter Shire Council
Scone Waste Management Facility, Noblet Rd, Scone NSW 2337.

Singleton Shire Council
Singleton Waste Management Facility, Dyrring Rd, Fern Gully, NSW 2330.

Muswellbrook Shire Council
Muswellbrook Waste management Facility, Coal Rd, Muswellbrook, NSW 2333.

Sims Metal Recycling
Cormorant Rd, Kooragang, NSW 2304.

Benedict Recycling
1 McIntosh Dr, Mayfield West, NSW 2304.

Regards

Kate Lynch
Customer Service Officer
Cleanaway Northern NSW

Appendix 8 Road Safety Audit

Table 1 – Ardglen Quarry Road Safety Audit (RSA) – Summary of responses August 2019

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
1	Intersection of Main Street and New England Highway Northbound and Southbound Delineation	The approach to the intersection of Main Street and New England Highway is missing delineation (i.e. RRPM's) and has faded line marking. This may increase the likelihood of readability issues for a driver. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and injury to occupants of a vehicle(s).	RMS Response – New England Highway (NEH) work will be addressed by works for Daracon	Mostly complete with essential delineation re-instated along New England Highway (NEH) by RMS prior to July 2019. Main Street Ardglen delineation installed on the 11th July 2019 by Daracon. All as shown in the images.	  	Longer term planning for additional NEH intersection upgrade works continues with final arrangements pending the proposed MOD #2 status.
2	New England Highway Southbound Delineation	The existing right turn bay into Main Street is missing right turn pavement arrows, which may lead to readability issues for approaching vehicles. The likelihood of this risk may increase at night and / or adverse weather conditions. This may confuse oncoming drivers for the purpose of lane and cause late lane change decisions. This may result in vehicle crashes and injury to occupants of a vehicle(s).	RMS Response – **RMS to install missing Right Turn Arrows**. RMS to arrange to be included in this year's AC linemarking program.	Completed by RMS prior to July 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
3	New England Highway Southbound Traffic signs	The advanced warning signage on approach to Main Street appears damaged, does not provide advanced warning to approaching vehicles, and has a reduced readability due to sightlines being obscured on the horizontal curve approach. This may lead to driver confusion and increase the likelihood of drivers slowing too early prior to the intersection and may result in vehicle crashes and serious injury to occupants of a vehicle(s).	RMS Response – **RMS to repair signs** from Routine Maintenance	Completed by RMS prior to July 2019.		N/A
4	Intersection of Main Street and New England Highway Northbound and Southbound Delineation and Road pavement	At the intersection New England Highway and Main Street there is a combination of damaged / deformed pavement, loose gravel in the mouth of the intersection and faded delineation. The faded delineation may cause drivers readability issues. The loose gravel and damaged pavement may increase the likelihood of vehicles being unable to gain the required traction when entering Ardglen Road from New England Highway. The likelihood of this risk may increase during adverse weather conditions. This may result in vehicle crashes and serious injury to occupants of a vehicle(s).	RMS Response – New England Highway (NEH) work will be addressed by works for Daracon.	Partially complete with essential delineation re-instated along New England Highway (NEH) by RMS prior to July 2019 as shown in Item (1) above. Loose gravel removed by Daracon on 3rd April 2019. Daracon continues to monitor for damage and /or further deterioration of the pavement in this area and repairs as required in accordance with the current maintenance arrangement with Liverpool Plains Shire Council (LPSC).		Longer term planning for additional NEH intersection upgrade works continues with final arrangements pending the proposed MOD #2 status.
5	Main Street South of the Intersection on the outside of the curve Northbound Road pavement	At the Main Street / rail site compound access and in front of the existing w-beam safety barrier there is loose gravel on the outside of the horizontal curve. This may lead to reduced skid resistance for an errant vehicle. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, the loose gravel on the outside of the curve will be removed by appropriate means by Daracon.	Daracon completed this on the 3rd April 2019 with street sweeper on site. Additional gravel removal on the 11th July 2019 before the line marking was installed		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
6	Main Street – South of the intersection of New England Highway Northbound and Southbound Roadside hazards	200m along Main Street from the intersection of New England highway, there is an existing culvert with steep embankments within the clear zone. The combination of narrow shoulder widths, steep batters, culvert headwalls within the clear zone, may limit a driver's manoeuvrability to avoid striking an object or have a reduced ability to gain control of their vehicle and strike objects within the clear zone. Narrow shoulders may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may increase the likelihood of drivers encroaching into the opposing travel lane and / or vehicles driving within the road shoulder / verge area to avoid a stationary object on the road. This may result in drivers striking the object or another object within the clear zone and lead to rapid deceleration of the vehicle. This may result in serious injury (not limited to) to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to install a temporary barrier (type F concrete or similar) to highlight the presence of the existing culvert and minimise the likelihood of interaction with the roadside hazard. Subject to the ongoing operation of the quarry, Daracon may choose to install a permanent barrier (guardrail or similar) at some time in the future.	Effectively complete with the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks was imposed immediately. On the 11th July 2019, additional controls were installed to highlight the presence of the culvert. These additional controls were the extension of the line marking and installation of extra guideposts as shown in the image.		As of the 30th March 2020 and in consultation with LPSC, no issues or incidents have arisen at this location. This fact combined with the cessation of material export from Ardglen quarry (and the subsequent reduction in vehicular movements along Main St), combined with the fact that the additional guideposts are still present and operating effectively, means that this item remains unchanged at this time.
7	Main Street – Rail site compound access Northbound Road alignment and cross section and delineation	Approximately 150m from the intersection of New England Highway along Main Street there is an access track to a rail site compound. At the access there is a lack of delineation on the horizontal curve. This may give the oncoming driver the impression that the Main Street continues through rather the traveling to the right, especially at night. This may cause a driver to make a late change in direction. The combination of loose gravel on the outside of the curve and the late change in direction may result in crashes with other vehicles and result in injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to install additional guide posts (or similar) to delineate the outside of the horizontal curve.	Completed on the 26th March 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
8	Main Street Northbound and Southbound Road pavement And Road alignment and cross section	The road carriageway width does not appear suitable for vehicles to pass (i.e. trucks passing other trucks and / or cars). The travel lane widths may limit a driver's manoeuvrability and increase the likelihood of readability issues to oncoming vehicles. Narrow travel lane may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may result in drivers striking oncoming objects or another object within the clear zone and lead to rapid deceleration of the vehicle. This may result in injury to occupants of a vehicle(s).	Please also refer to LPSC point #2 below. Although the AADT would be less than 300 vehicles per day including the quarry operating at 500,000T by road per year as proposed (approximately 60 outbound and 60 inbound truck movements), it was agreed with LPSC to install additional line marking only at the curves either end of Main St. The straight section of Main St will remain with no line marking. All existing line marking will also be renewed if not completed recently by LPSC. An additional control that has been implemented is the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks.	Completed on the 11th July 2019.	 	N/A
9	Main Street Intersection with Ardglen Road Northbound and Southbound Traffic signs	On Main Street approach to Ardglen Road, the existing speed zone repeater signage appears faded. This may increase the likelihood of readability issues for drivers, and increase the likelihood of a driver failing to travel to the sign posted speed limit. The likelihood of this risk may increase at night and / or adverse weather conditions. This may lead to vehicle crashes and injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to install new speed limit signage as the existing sign is faded.	Completed on the 20th March 2019.		N/A
10	Main Street Approaching the Intersection with Ardglen Road Northbound and Southbound Roadside hazards	On Main Road approach to Ardglen Road, there is an existing power pole and fence posts within the clear zone. Errant vehicles at these locations may have a reduced ability to gain control of their vehicle and strike the power pole or fence post within the clear zone which may lead to rapid deceleration of the vehicle. This may be due to the combination of horizontal and / or vertical alignment of the road and / or drivers swerving to avoid striking an animal (i.e. animal carcass). The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and injury to occupants of a vehicle(s), not limited to.	As agreed with LPSC representative, Daracon proposes to install delineation in the form of additional guideposts adjacent to the roadway to highlight the presence of the existing power pole.	Completed on the 26th March 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
11	Main Street Approaching the Intersection with Ardglen Road Northbound and Southbound Pavement	Approximately 65m along Main Road from the intersection of Main Road and High Road, there is loose gravel on the outside of the horizontal curve. This may lead to reduced skid resistance for an errant vehicle. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, the loose gravel on the outside of the curve will be removed by appropriate means by Daracon.	Completed on the 3rd April 2019 with street sweeper on site. Additional gravel removal occurred on the 11th July 2019 before the line marking was installed.		N/A
12	Main Street Intersection with High Street Delineation	At the intersection of Main Street and High Street, the existing delineation is faded. This may lead to readability issues for a driver and increase the likelihood of a vehicle failing to give way at the intersection. The likelihood of this risk may increase at night and / or adverse weather conditions. This may lead to vehicle crashes and injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to refresh the existing line marking.	Completed on the 11th July 2019.	 	N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
13	Main Street Intersection with High Street Westbound Traffic signs	Approaching the intersection of Main Street and High Street from the south eastern side traveling west there is a missing Stop sign. This may increase the likelihood of readability issues for drivers and lead to drivers failing to stop to oncoming vehicles. This may increase the likelihood of vehicle crashes, especially during adverse weather conditions. This could lead to crashes with other vehicles, thus may result in serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to reinstate the existing stop sign.	Completed on the 20th March 2019.		N/A
14	High Street Approach to St Stephen Street intersection Westbound Traffic signs	On the south eastern side of the intersection of High Street and St Stephen Street, the advanced warning of T-intersection signage is loose, which has caused the sign to point in the wrong direction. This may increase the likelihood of readability issues for drivers and lead to drivers failing to negotiate the intersection. This may increase the likelihood of vehicle crashes, especially during adverse weather conditions. This could lead to crashes with other vehicles, thus may result in serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to reinstate the existing T intersection sign.	Completed on the 26th March 2019.		N/A
15	High street Rail overpass bridge Eastbound and Westbound Road alignment and cross section	Traveling west along High Street towards the rail overpass bridge, the travel lanes appear to narrow and there is a kink in the alignment of the road. The narrow travel lane widths may limit a driver's manoeuvrability and increase the likelihood of readability issues to oncoming vehicles. Narrow travel lane may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may result in drivers striking oncoming vehicles or safety barriers and lead to rapid deceleration of the vehicle. This may result in serious injury (not limited to) to occupants of a vehicle(s).	As agreed with LPSC representative, all existing line marking will be renewed if not completed recently by LPSC. An additional control that has been implemented is the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks. Appropriate delineation already exists along the guardrail.	Self-imposed 40 kph speed limit imposed immediately. The line marking was completed on the 11th July 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
16	High Street Approach to St Stephen Street Intersection Eastbound and Westbound Delineation	At the intersection of High Street and St Stephen Street, the existing delineated is faded. This may lead to readability issues for a driver and increase the likelihood of a vehicle failing to give way / stop at the intersection. The likelihood of this risk may increase at night and / or adverse weather conditions. This may lead to vehicle crashes and injury to occupants of a vehicle(s).	As agreed with LPSC representative, all existing line marking will be renewed by Daracon if not completed recently by LPSC.	Completed on the 11th July 2019.	 	N/A
17	St Stephen Street Northbound and Southbound Road alignment and cross section	The road carriageway width along St Stephens Street does not appear suitable for vehicles to pass (i.e. trucks passing other trucks and / or cars). The travel lane widths may limit a driver's manoeuvrability and increase the likelihood of readability issues to oncoming vehicles. Narrow travel lane may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may result in drivers striking oncoming vehicles or objects within the clear zone and lead to rapid deceleration of the vehicle. This may result in serious injury (not limited to) to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon will consult with the three residents along Warra and St Stephen Streets to discuss the potential installation of convex mirrors at strategic locations and will install as agreed. Daracon has also implemented a self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance as well as a mandatory "call up" protocol for St Stephens and Warra St's as detailed in the TTMP.	Complete with the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks was imposed immediately. The call up protocol for St Stephens and Warra St's was also implemented immediately as detailed in the TTMP. The residents along Warra and St Stephens St were also consulted with and agreed that the installation of "convex mirrors" located in strategic locations would assist to mitigate the issues identified. The "convex mirrors" were installed on the 15th August 2019 as shown in the images.	 	N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
18	St Stephen Street Intersection with Warra Street Northbound and Southbound Road alignment and cross section And Road Pavement	Traveling along St Stephens Street towards Warra Street there is deteriorated / damaged pavement with excessive road cross fall, narrow lane widths and sight distance restrictions. The combination of all the above elements may limit a driver's manoeuvrability and increase the likelihood of readability issues to oncoming vehicles. Narrow travel lane may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may result in drivers striking oncoming objects or another object within the clear zone and lead to rapid deceleration of the vehicle. This may result in serious injury (not limited to) to occupants of a vehicle(s).	Refer to RSA CAR #17.	Refer to RSA CAR #17.		N/A
19	Warra Street Northbound and Southbound Road alignment and cross section	The road carriageway width along Warra Street does not appear suitable for vehicles to pass (i.e. trucks passing other trucks and / or cars). The travel lane widths may limit a driver's manoeuvrability and increase the likelihood of readability issues to oncoming vehicles. Narrow travel lane may also limit the available road width for wide vehicle loads and restrict vehicles in the opposing direction. This may result in drivers striking oncoming vehicles or objects within the clear zone and lead to rapid deceleration of the vehicle. This may result in serious injury (not limited to) to occupants of a vehicle(s).	Refer to RSA CAR #17.	Refer to RSA CAR #17.		N/A
20	Warra Street Near the quarry entrance Southbound Pavement And Road alignment And cross section	Near the entrance to the quarry and part of Warra Road the existing pavement is deteriorated and shoulder show evidence of erosion. This may lead to soft shoulders and may be unstable for heavy vehicle to use if divers need to move their vehicle to avoid oncoming traffic. This may result in injury to occupants of a vehicle(s), not limited to.	As agreed with LPSC representative, Daracon proposes to investigate and repair the shoulder as described in the RSA.	Completed 20th March 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
21	Warra Street Northbound and Southbound Roadside hazards	Along Warra Street the auditors observed trees within clear zone as well as narrow carriageway. Errant vehicles at these locations may have a reduced ability to gain control of their vehicle and strike the trees within the clear zone which may lead to rapid deceleration of the vehicle. This may be due to the narrow carriageway width of the road and / or drivers swerving to avoid striking oncoming vehicles. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and injury to occupants of a vehicle(s), not limited to.	As agreed with LPSC representative, Daracon proposes to install delineation in the form of additional guideposts adjacent to the roadway to highlight the presence of the trees. Daracon has implemented a self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance as well as a mandatory "call up" protocol for St Stephens and Warra St's as detailed in the TTMP.	Completed on the 26th March 2019.		N/A
22	Warra Street Northbound and Southbound Roadside hazards	Approximately 50m from the entrance of the quarry there is an existing culvert headwall with drop-off within the clear zone. Errant vehicles at these locations may have a reduced ability to gain control of their vehicle impact with the existing headwall and / or surrounding objects within the clear zone. This may be due to the narrow carriageway width of the road and / or drivers swerving to avoid striking oncoming vehicles. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to install a temporary barrier (type F concrete or similar) to highlight the presence of the existing culvert and minimise the likelihood of interaction with the roadside hazard. Additionally, **LPSC have committed to investigating the option of extending the existing storm water pipe** to permit widening of the formation thus eliminating the roadside hazard.	The self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks was imposed immediately. The call up protocol for St Stephens and Warra St's was also implemented immediately as detailed in the TTMP. Temporary delineation was installed on the 1st April 2019 as shown in the image. These are considered appropriate short term rectification measures due to the fact that this location exists beyond the section of Warra St that requires private vehicular access and only quarry traffic utilises this section of road.		Longer term planning for additional works along Warra St are continuing in consultation with LPSC with final arrangements pending the proposed MOD #2 status. This matter was discussed and agreed with Warren Faulkner from LPSC on the 26th February 2020.

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
23	Warra Street Quarry entrance Northbound and Southbound Road alignment and cross section	At the site entry of the quarry, the entry appears narrow, lack of carriageway width for drivers to turn around as well as lack of restriction signage / no through road. This may lead to diver frustration and confusion which may contribute to diver error. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and serious injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon has implemented a self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance as well as a mandatory "call up" protocol for St Stephens and Warra St's as detailed in the TTMP.	The self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks was imposed immediately. The call up protocol for St Stephens and Warra St's was also implemented immediately as detailed in the TTMP. Additional "no entry" and "no through road" signage was installed on the 11th July 2019.	 	N/A
24	Warra Street Northbound and Southbound Delineation	It was noted that along Warra Street there is a lack of delineation. This may increase the likelihood of readability issues for drivers. The likelihood of this risk may increase at night and / or adverse weather conditions. This may result in vehicle crashes and injury to occupants of a vehicle(s).	As agreed with LPSC representative, Daracon proposes to install delineation in the form of additional guideposts adjacent to the roadway.	Completed on the 11th July 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
LPSC #1	Either side of the rail overpass bridge	The two 'T' intersections either side of the rail overpass bridge are not your normal 'T' intersections in that the approach roads to the top of the 'T' have right away, whereas the thru road normally has right of way. Whilst 'Give Way' and 'Stop Signs' along with line marking (that needs maintaining) exists, I think advance warning 'Give Way Sign Ahead' and 'Stop Sign Ahead' signs (W3-1B and W3-2B) should be considered to forewarn road users along High Street and Swinging Ridges Road as the thru road(s).	Daracon agree to install additional advance warning 'Give Way Sign Ahead' and 'Stop Sign Ahead' signs (W3-1B and W3-2B) to forewarn road users along High Street and Swinging Ridges Road as the thru road(s)	Completed on the 20th March 2019.	 	N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
LPSC #2	Main Street	There is no centreline delineation along the Ardglen Road (it is being called Main Street in the RSA). High Street has centreline marking (albeit it is very faded and needs redoing). Given there are 2 curves along the Ardglen Road, the RSA should identify the lack of centreline marking along this road in greater detail.	Although the AADT would be less than 300 vehicles per day including the quarry operating at 500,000T by road per year as proposed (approximately 60 outbound and 60 inbound truck movements), it was agreed with LPSC to install additional line marking only at the curves either end of Main St. The straight section of Main St will remain with no line marking. All existing line marking will also be renewed if not completed recently by LPSC. An additional control that has been implemented is the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks.	Completed on the 11th July 2019.	  	N/A
LPSC #3	Main Street	The advance 'T' junction warning sign on Ardglen Road on approach to High Street does not depict the road alignment on approach to the intersection. The approach to the intersection has a horizontal curve between the Advanced intersection Warning Sign and the intersection. The sign should be changed to a Curved Intersection (W2-14B) sign.	Daracon agrees to change the advance 'T' junction warning sign on Ardglen Road on approach to High Street to a Curved Intersection (W2-14B) sign.	Completed on the 3rd April 2019.		N/A

RSA report identification number	Location / category	Description of risk to road safety	Specific actions Daracon commit to undertake	Completion date (if complete) with comments	Evidence of completion	If not complete, status update as at 30th March 2020 (provided by Daracon to DPIE)
LPSC #4	Warra Street	There is a deficiency in Safe Intersection Sight Distance (SISD) at and for the second house along Warra Street on the right as you head towards the quarry. AUSTROADS stipulates the SISD for 50km/h is 90 metres. There would only be 40m at this location. The RSA does not identify this deficiency.	Refer to RSA CAR #17.	Refer to RSA CAR #17.		N/A
Other observation #1	Main Street	Approximately 370m along Main Street from the intersection of New England Highway, the pavement surface appears deformed / subsided (near the abandoned house).	Daracon continues to monitor for damage and /or further deterioration of the pavement in this area and repairs as required in accordance with the current maintenance arrangement with Liverpool Plains Shire Council (LPSC).	Ongoing		Ongoing
Other observation #2	St Stephen Street and Main Street	There is a gap in the existing w-beam safety barrier for rail corridor access at the intersection of St Stephen Street and High Street. The auditors observed that the point of need for safety barrier may not protect an errant vehicle from the hazard at this location.	Ardglen Quarry has been operating as a hard rock quarry for over 100 years and Buttai Gravel (Daracon) has owned and operated Ardglen Quarry since 2005 after purchasing the quarry from the State Rail Authority. Sometime following Daracon's purchase of the quarry, ARTC commenced work on the construction of the rail overpass bridge which was completed sometime before 2009 (and whilst the quarry was still operating). With respect to the design and construction of the new rail overpass bridge, access road and associated structures, Daracon were not involved in the process and had no influence over the design parameters associated with the safety barriers associated with the new bridge and access roads. **However, Daracon and LPSC have recently renewed the line marking in this location which, combined with the additional signage and guideposts installed as well as the self-imposed mandatory speed limit of 40kph from the New England Highway to the Quarry entrance for all trucks, has significantly reduced the risk of an errant vehicle in this location.**	Completed on the 11th July 2019.	 Note – The dirt present on the road surface (as shown in the above image) was the result of LPSC unsealed road maintanence occurring along Swinging Ridges Rd and was in no way associated with truck movements to or from Ardglen Quarry.	N/A

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Other observation #3	Rail overpass bridge	The audit makes no provision for allowing safe pedestrian access over High Street rail overpass bridge (complaint received August 2018). Provide a response action to address this issue.	Ardglen Quarry has been operating as a hard rock quarry for over 100 years. Buttai Gravel (Daracon) has owned and operated Ardglen Quarry since 2005, after purchasing the quarry from the State Rail Authority. Sometime following Daracon's purchase of the quarry, ARTC commenced work on the construction of the rail overpass bridge which was completed sometime before 2009 (and whilst the quarry was still operating). With respect to the design and construction of the new rail overpass bridge, Daracon were not involved in the process and had no influence over the design parameters associated with pedestrian movements at that location. Daracon are therefore unable to comment on the design parameters used as part of the rail bridge construction. **Although pedestrian activity through the township of Ardglen is irregular and limited, Daracon is however able to inform ALL truck drivers of the need to be vigilant to the increased presence of pedestrians and vehicles associated with the school bus drop offs, collections and also pedestrians utilising the rail bridge. Daracon are also willing to liaise with the local residents to understand and appropriately manage pedestrian movements across the bridge as required.** The Code of Conduct (CoC) and Traffic and Transport Management Plan (TTMP) were updated and resubmitted to the DPIE on the 5th August 2019.	5th August 2019		N/A