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## Annual Environmental Monitoring Report (2021)

January – December 2021

**Blakebrook Quarry**

ENV216470

For:

Northern Rivers Quarry

By:

ENV Solutions

Date:

17/06/2022

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## SCOPE OF ENGAGEMENT AND LIMITATIONS

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## EXECUTIVE SUMMARY

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Blakebrook Quarry (the quarry) is a basalt quarry located off Nimbin Road, approximately 6 kilometres north-west of Lismore (Figure 1-1). The quarry is operated by Northern Rivers Quarry (NRQ), which is a commercial entity operated by Lismore City Council (Council). The quarry is identified as a 'State Significant' resource and provides a range of quarry products to northern NSW. Materials provided include aggregates, drainage rock, road base, basalt, metal dust, fill material and select fill (overburden).

As a condition of consent, the quarry is required to prepare and submit an annual review of the environmental performance of the quarry to the Regulating Authority (Department of Planning and Environment). This Annual Environmental Monitoring Report (AEMR) has been prepared to comply with this requirement. The reporting period for this AEMR is 1 January 2021 to 31 December 2021.

In this AEMR, each condition of approval is reproduced in full and followed by a compliance statement addressing the findings.

The findings of the AEMR indicated that there was one (1) non-compliance with the conditions during the reporting period. In addition, the following items were observed in the assessment that require further action:

1. Council reported a non-compliance to the EPA on Friday 10th December (ref 8147). Excavated Road Material intended for reuse offsite, pursuant to *The Excavated Public Road Material Order 2014* was brought into the Quarry between 28 October 2021 and 8 December 2021. Discussions with involved parties highlighted the extremely confined nature of the road reserve in the project area, lack of other appropriate storage areas for the material and extreme challenges with road construction and meeting project deadlines in the ongoing wet weather. EPA advised on 1 April 2022 that no further action would be taken at this time. DPE Council are progressively transporting this material offsite (in line with the *Excavated Public Road Material Order 2014*) and providing regular updates to the EPA.
2. One complaint was registered in regard to the blasting event that occurred on 13 December 2021. The complaint was managed by Council's Commercial Services Compliance division as per the requirements specified within Section 8.7 of the approved Noise and Blasting Management Plan (2018). The complaint was responded to within the specified timeframes. Subsequently Council engaged a building consultant to investigate and document structural damage at the complainant's property on 20 January 2022, with a report due by 13 March 2022. This report was delayed due to major flooding across the region in February/March and was provided to the property owner upon receipt on 27 April 2022. Following this, Council engaged a third-party consultant (specialised blast expert) to conduct additional monitoring and review the dilapidation report and blast circumstances. This investigation is in progress and once complete a property investigation report will be provided to both parties including the Department of Planning and Environment (DPE).
3. Site specific targets of surface water quality within the receiving environment need to be updated and included in the revised Soil and Water Management Plan for each of the analysed parameters as stipulated in Attachment 6 – *Site specific surface water quality monitoring requirements and targets* of the approved SWMP (2019).



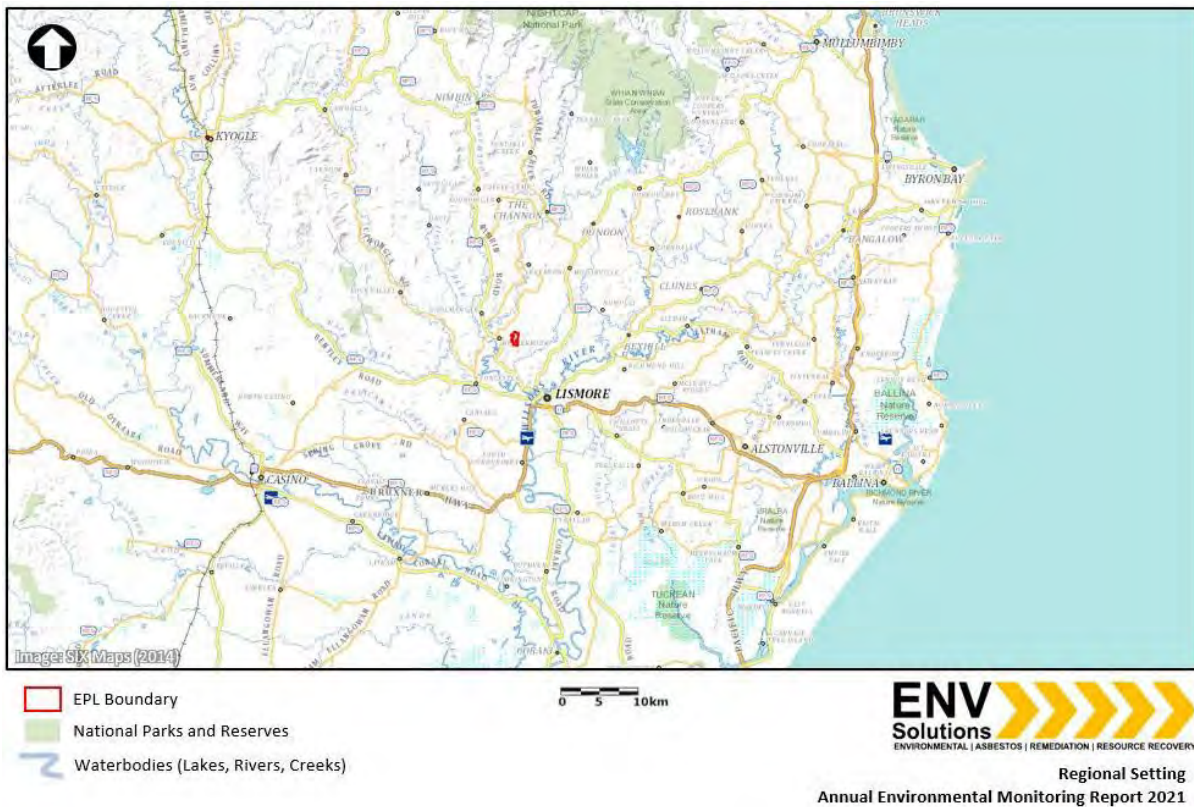
4. Elevated pH was observed during monitoring of surface water within the receiving environment during the reporting period. These elevated results are unlikely to be influenced by activities associated with quarrying operations.
5. Site specific groundwater targets need to be updated and included in the revised Soil and Water Management Plan for each of the analysed parameters as stipulated in Attachment 7 – *Site specific groundwater monitoring requirements and targets* of the approved SWMP (2019).

Overall, this AEMR has found that the operations demonstrate a high level of compliance with the conditions of approval.

# 1 INTRODUCTION

## 1.1 Background

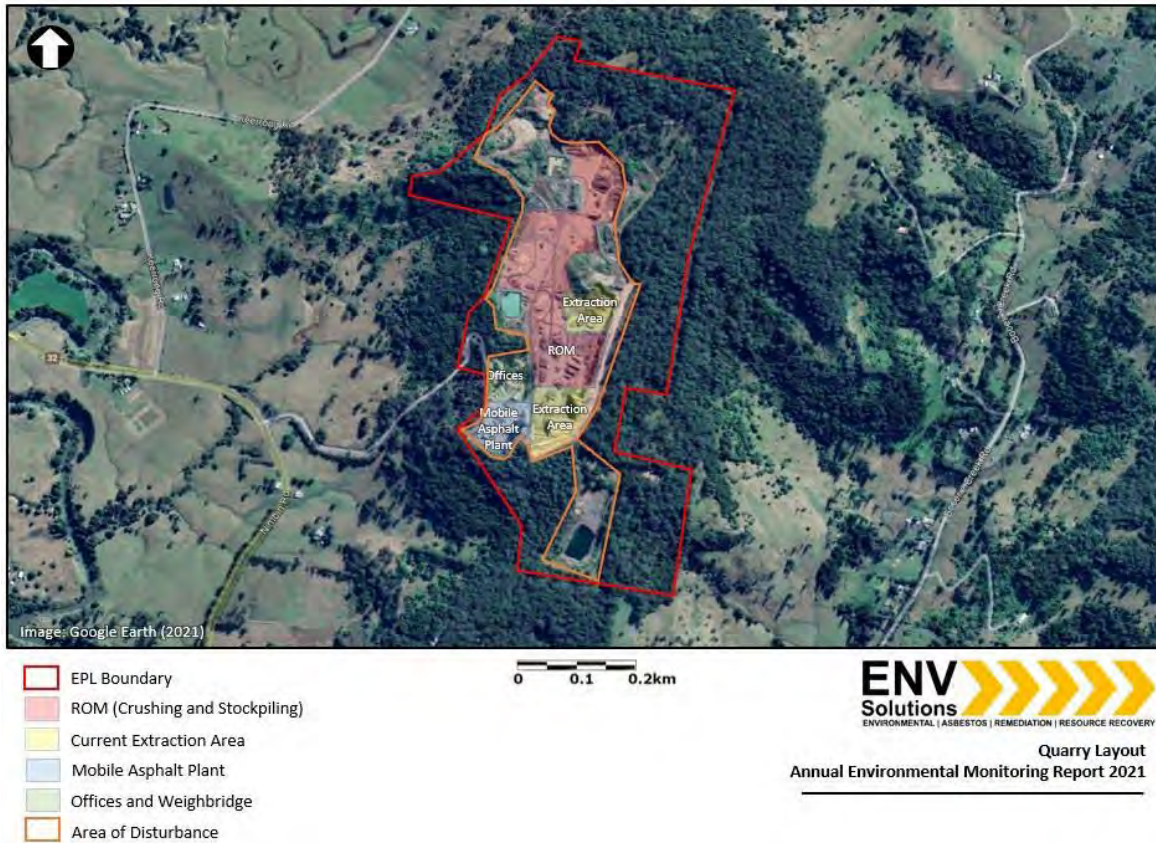
Blakebrook Quarry (the quarry) is a basalt quarry located off Nimbin Road, approximately 6 kilometres north-west of Lismore within the Northern Rivers region of New South Wales (Figure 1-1). The site is situated on Lot 53 DP 1254990 and occupies an area of approximately 126 hectares, with elevations (prior to commencement of quarrying operations) ranging from approximately 30 metres Australian Height Datum (mAHD) to 140 mAHD. The operations consist of an active pit and associated run of mine (ROM) pad for the storage of liberated material which is subsequently crushed and screened onsite in addition to an area designated for the manufacture of asphalt. The site also contains a hardstand for site offices, a laydown yard, maintenance and weighbridge facilities (Figure 1-2).



**Figure 1-1 Regional Setting of Operations**

The quarry is operated by Northern Rivers Quarry (NRQ), which is a commercial entity operated by Lismore City Council. The quarry is identified as a ‘State Significant’ resource and provides a range of quarry products to northern NSW. Materials provided include aggregates, drainage rock, road base, basalt, metal dust, fill material and select fill (overburden).

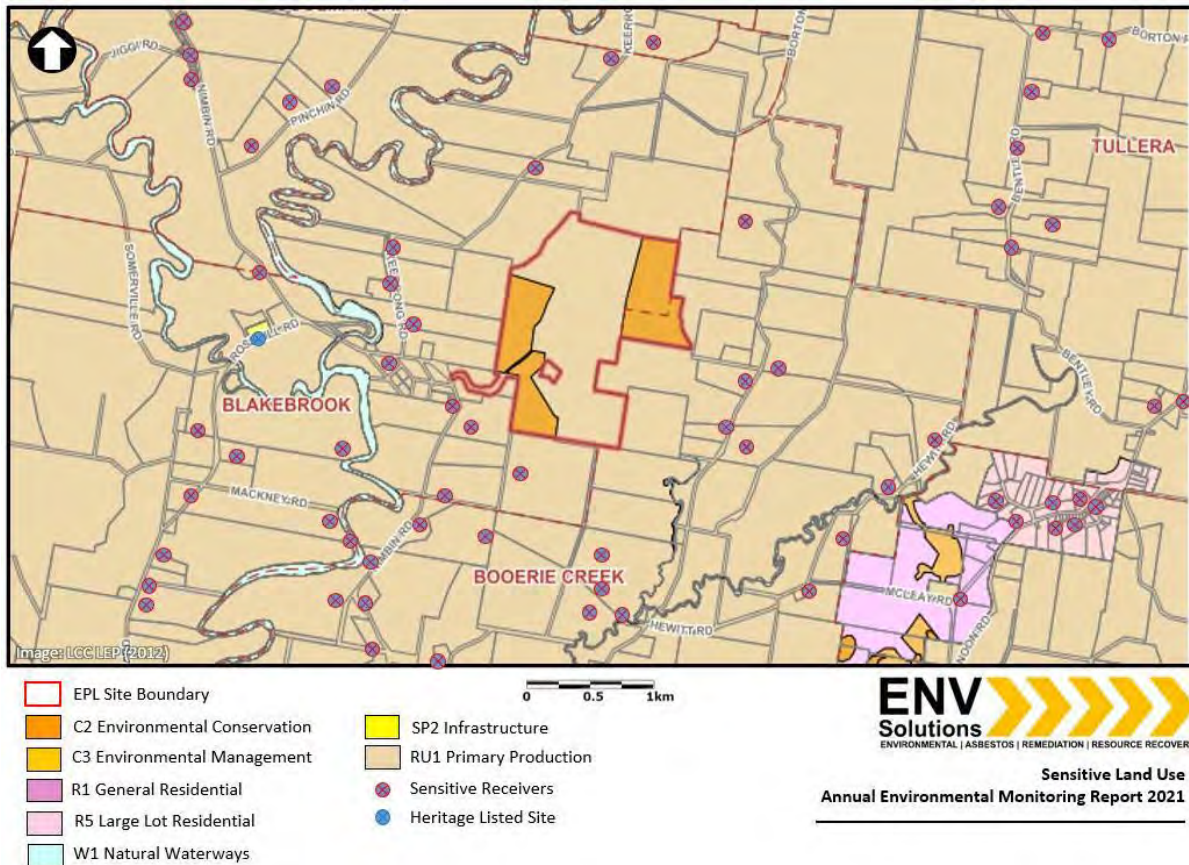
The operation is situated primarily within a sparsely populated farming community established within a rural land use (Figure 1-3) setting applied as primary production (RU1) under the Lismore Local Environmental Plan (LLEP 2012). The site is surrounded by mapped areas of high conservation areas (Figure 1-4) and is located proximal to several intermittent streams that intersect Terania Creek to the west.



**Figure 1-2 Quarry Layout**

The quarry initially started operations in 1979 with development consent formally granted by Lismore City Council in 1995. Approval was granted for the expansion of the quarry in November 2009 via Part 3A Approval No. 07\_0020. This approval was issued by the Minister for Planning and was subject to an extensive list of consent conditions. In September 2017, approval was issued for Modification 1 to the consent. Subsequent expansion of site activities to encompass the operation of an asphalt plant triggered the successful application to update consent conditions (Part 3A Approval No. 07\_0020 Modification 3) that was approved in July 2021. A copy of the approval (as modified) is provided at Appendix A.

As per the conditions of approval, the quarry operator is required to prepare an annual review of the environmental performance of the quarry and submit this documentation to the Department of Planning & Environment (DPE), formerly known as the Department of Planning, Industry & Environment (DPIE). This Annual Environmental Monitoring Report (AEMR) has been prepared to comply with this requirement.



**Figure 1-3 Sensitive Land Use**

## 1.2 Scope and Objectives

This AEMR is prepared in response to Schedule 5 Condition 11 of the Blakebrook Quarry Part 3A Approval No. 07\_0020 (Mod 3). The modification to the revised Approval (dated July 2021) from the Minister of Planning now incorporates the operation of the asphalt plant into the sites Consent Conditions which was previously approved and regulated via DA 1990/341 (as amended) approved by Lismore City Council and EPA Licence No.3384. All conditions within the revised approval (Mod 3) are included within this AEMR to demonstrate compliance.

## 1.3 Reporting Period

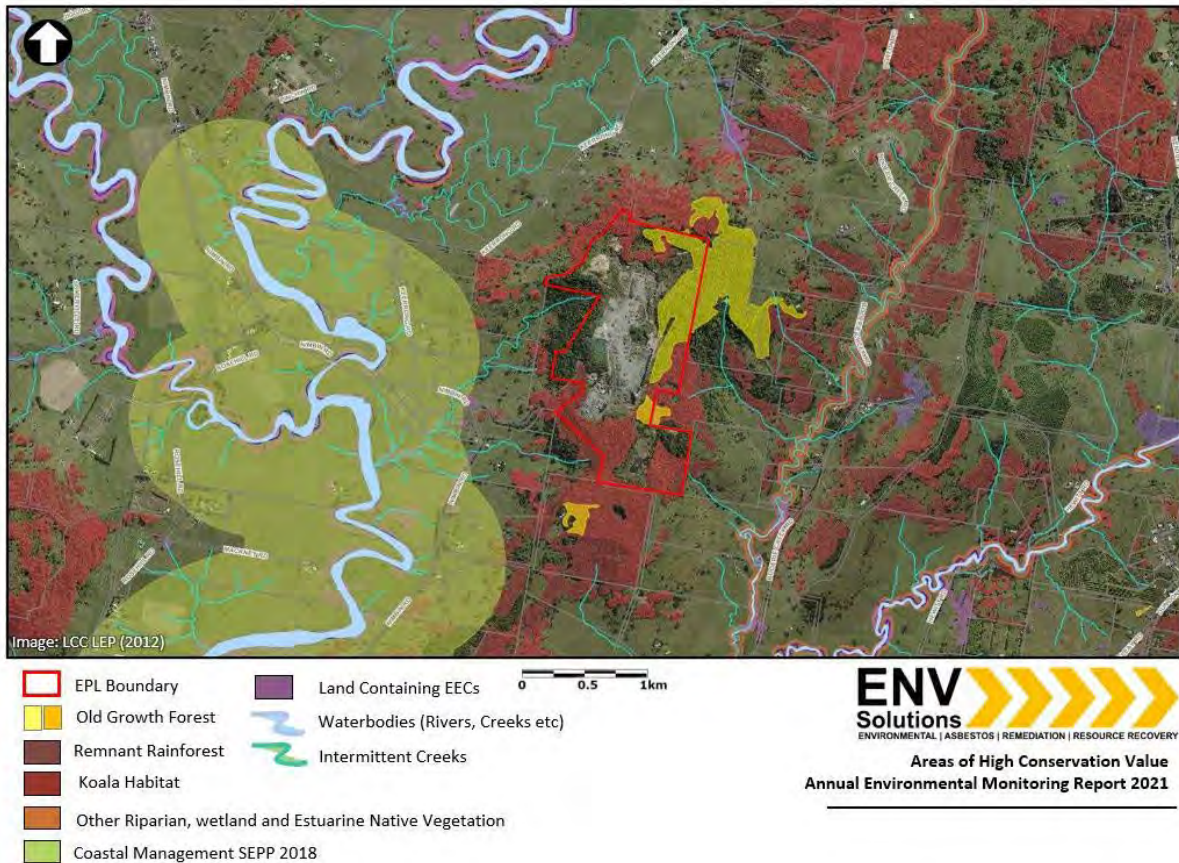
The reporting period for this AEMR is 1 January 2021 to 31 December 2021.

## 1.4 Relevant Approvals

S75W Approval (Modification 1) to Project Approval 07\_0020 was approved in September 2017. The proponent lodged an application to DPE (formerly known as DPIE) on 11 January 2019 to amend Part 3A Approval No. 07\_0020 (Mod 1) to amalgamate the approvals for the Asphalt Plant and the Quarry. This application was subsequently approved (Modification 3) by the Minister of Planning in July 2021. Therefore, this review will incorporate Asphalt activity data from 20 July 2021.

A copy of the Notice of Modification (Mod 3) is provided at Appendix A. The approval was issued by the Minister for Planning and expires on 31 December 2039.

The quarry is also subject to EPA Licence 3384 which is issued by the NSW Environment Protection Authority (EPA) pursuant to the Protection of the Environment Operations Act 1997. The licence provides details with respect to a range of environmental thresholds to be complied with during the operation of the quarry. The licence is reviewed annually, and a copy of the current licence is provided at Appendix B.



**Figure 1-4 Areas of High Conservation Value**

## 1.5 Application to Amend Approvals

There are currently no applications lodged with the DPE.

## 1.6 DPE Response to 2020 AEMR

The 2020 AEMR was submitted to DPE on 30<sup>th</sup> March 2020. On 6<sup>th</sup> May 2021, DPE advised that the AEMR had been reviewed and DPE “considers it to satisfy the reporting requirements of the approval and the Department’s Annual Review Guideline (October 2015).”

The response identified an opportunity to improve the Annual Review (AEMR) by including maps relating to the operations local and regional context, incorporating surrounding sensitive landuse, current operational disturbance footprint and environmental offsets.

A copy of this response is provided at Appendix C.

## 2 STATEMENT OF COMPLIANCE

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### 2.1 Introduction

This section provides a comprehensive compliance assessment relating to each condition of consent applicable to MP07\_0020 (Modification 3). Each condition is reproduced in full and followed by a compliance statement addressing the findings of this AEMR.

### 2.2 Schedule 1 – Description of Approval

Schedule 1 describes the development, approval dates and delegations. No compliance statement is required.

### 2.3 Schedule 2 – Administrative Conditions

#### 2.3.1 Schedule 2 - Condition 1 (Minimise Harm)

In addition to meeting the specific performance measures and criteria established under this approval, the Proponent must implement all reasonable and feasible measures to prevent or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

#### **Compliance Statement**

Noted.

#### 2.3.2 Schedule 2 - Condition 2 (Terms of Approval)

The Proponent must carry out the project:

- (a) generally in accordance with the EA and EA (Mod 1); and MR (Mod 3); and
- (b) in accordance with the conditions of this approval, Project Layout Plan and the Statement of Commitments.

#### **Compliance Statement**

Noted.

#### 2.3.3 Schedule 2 - Condition 3 (Interpretation)

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

#### **Compliance Statement**

Noted.

#### **2.3.4 Schedule 2 - Condition 4 (Compliance with Written Instruction)**

The Proponent must comply with any written requirement/s of the Secretary arising from the Department's assessment of:

- (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval (including any stages of these documents);
- (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this approval;
- (c) and the implementation of any actions or measures contained in these documents.

##### **Compliance Statement**

As per Section 1.4, DPE specified the requirement to include additional maps providing local and regional context of the operations including sensitive land use, current footprint and location of offsets within all future AEMRs.

#### **2.3.5 Schedule 2 - Condition 5 (Surrender of Former Consent)**

By 30 June 2010, the Proponent shall surrender development consent DA 95/239 to the relevant consent authority to the satisfaction of the Secretary.

##### **Compliance Statement**

Completed.

#### **2.3.6 Schedule 2 – Condition 5A (Surrender of Former Consent)**

Within 12 months of the date of commencement of development under this consent, or other timeframe agreed by the Secretary, the Proponent must surrender development consent DA90/341 to the satisfaction of the Secretary, in accordance with the EP&A Regulation.

##### **Compliance Statement**

Council is in the process of completing all requirements under the current consent conditions in order to surrender development consent DA90/341.

#### **2.3.7 Schedule 2 - Condition 6 (Expiry of Approval)**

The Proponent may carry out quarrying operations and asphalt plant operations on the site until 31 December 2039.

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

##### **Compliance Statement**

Noted. Rehabilitation requirements are not applicable to the current stage of the development.

### **2.3.8 Schedule 2 - Condition 7 (Quarry Depth)**

The Proponent must not undertake quarrying operations below 55 m AHD in the northern pit or 105 m AHD in the southern pit.

Note: Drainage sumps may be constructed below this level with the agreement of the Secretary.

#### **Compliance Statement**

Blasting occurred on four occasions during the reporting period. Quarry operations did not extend below the nominated levels in 2021.

### **2.3.9 Schedule 2 - Condition 8 (Limits on Approval)**

The Proponent must not:

- (a) transport more than 600,000 tonnes of quarry materials from the site per calendar year;
- (b) transport more than 50,000 tonnes of asphalt from the site per calendar year;
- (c) dispatch more than 120 laden trucks from the site on any calendar day prior to the completion of intersection upgrade required by Condition 21(f) of Schedule 3 to the satisfaction of TfNSW; and
- (d) dispatch more than 150 laden trucks from the site on any calendar day following completion of the intersection upgrade required by Condition 21(f) of Schedule 3 to the satisfaction of TfNSW.

Note: Dispatch of laden trucks is also controlled under Condition 1 of Schedule 3.

#### **Compliance Statement**

- (a) Sale production tonnages have been provided in the Extractive Materials Return for the 2020/2021 financial year at Appendix D and in the Quarry Stockpile Report for the 2021 calendar year at Appendix E. The total annual quantities reported are 174,977 and 149,999 tonnes respectively. Both of these quantities are substantially less than the 600,000 tonnes per calendar year permitted by Schedule 2 Condition 8(a).

Please note that the DPE Extractive Minerals Return reflects product sales for the financial year rather than calendar year as required by this condition.

- (b) The total annual quantities of asphalt transported offsite during the reporting period was 24,598.98 tonnes (Appendix F). This quantity is less than the 50,000 tonnes per calendar year as permitted in Schedule 2 Condition 8(b).
- (c) The total daily dispatch of laden trucks during the reporting period was below the thresholds set out in Schedule 2 Conditions 8(c). A summary of truck movements is provided in Table 2-1.  
A breakdown of daily laden truck movements from the quarry is provided within Appendix G. Yellow cells within the attached schedule represent weekly totals whilst the cell highlighted pink represents the instigation of the updated conditions outlined within MR (Mod 3).
- (d) The total daily dispatch of laden trucks during the reporting period (Table 2-1) was below the thresholds set out in Schedule 2 Conditions 8(d).



Table 2-1 Laden Truck Movements

Truck Movements	January	February	March	April	May	June	July	August	September	October	November	December
Highest (Daily)	14	13	39	100	93	66	115	76	53	92	65	76
Average (Daily)	3	4	9	31	42	31	32	36	26	24	32	34
Total (Monthly)	83	100	231	702	1097	776	857	933	677	610	822	838

### 2.3.10 Schedule 2 - Condition 9 (New Buildings & Structures)

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

Notes:

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

#### Compliance Statement

Noted. During the reporting period, no building works that required construction and occupation certificates were undertaken.

### 2.3.11 Schedule 2 – Condition 10 (Demolition)

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

#### Compliance Statement

Demolition associated with the decommissioning and disposal of redundant diesel and bitumen storage equipment within the operation occurred during the reporting period. All tanks were purged as per AS 4976-2008, prior to demolition or removal and all demolition works were carried out by licenced demolition contractors as per the specifications of Australian Standard AS 2601-2001: The Demolition of Structures. A copy of the report is provided in Appendix H.

### 2.3.12 Schedule 2 – Condition 11 (Protection of Public Infrastructure)

Unless the Proponent and the applicable authority agree otherwise the Proponent must:

- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the project; and
- (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the project.

*Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by Condition 13 of Schedule 2.*

### **Compliance Statement**

No damage to public infrastructure occurred as the result of the project during the reporting period.

#### **2.3.13 Schedule 2 – Condition 12 (Plant & Equipment)**

The Proponent must ensure that all the plant and equipment used at the site, or to monitor the performance of the project is:

- (a) maintained in a proper and efficient condition; and
- (b) operated in a proper and efficient manner.

### **Compliance Statement**

Quarry fleet maintenance is managed by Council contracted fleet suppliers. Contractors evaluated as part of the procurement process must have adequate operation, maintenance and safety procedures in place. Environmental monitoring is largely completed by contractors. A condition of engagement requires that a regular maintenance program is completed for all monitoring equipment.

#### **2.3.14 Schedule 2 – Condition 13 (Roads Contributions)**

The Proponent must pay Council an annual financial contribution toward the maintenance of local roads used for haulage of quarry products. The contribution must be determined in accordance with the Lismore City Council Section 94 Contribution Plan, 2004, or any subsequent relevant contributions plan adopted by Council.

### **Compliance Statement**

Section 7.11 contributions are paid to Council monthly. Appendix I provides a report of the monthly payments made during the reporting period.

#### **2.3.15 Schedule 2 – Condition 14 (Production Data)**

The Proponent must:

- (a) from the commencement of quarrying operations provide calendar year annual quarry production data to MEG using the standard form for that purpose; and
- (b) include a copy of this data in the Annual Review.

### **Compliance Statement**

Annual quarry production data was provided to the Resource Economics, Strategy, Performance and Industry Development, Department of Regional NSW on 15 September 2020. A copy of the Extractive Materials Return is provided at Appendix D.

Please note that the annual quarry production data is provided on a financial year basis as per the specifications of Form S1 Extractive Materials Return.

#### **2.3.16 Schedule 2 – Condition 15 (Compliance with Conditions)**

The Proponent must ensure that all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

**Compliance Statement**

Council has advised that staff are briefed on approval requirements (relevant to their responsibilities) as part of the induction process.

**2.3.17 Schedule 2 – Condition 16 (Extraction Limits)**

The Proponent must ensure that the boundaries of the approved limits of extraction are clearly marked at all times in a permanent manner that allows operating staff and inspecting officers to clearly identify those limits.

**Compliance Statement**

Council advises that extraction boundaries are clearly identified on site with metal stakes. These were viewed by DPE officers during their last site inspection.

**2.4 Schedule 3 – Specific Environmental Conditions**

**2.4.1 Schedule 3 - Condition 1 (Hours of Operation)**

The Proponent must comply with the operating hours set out in the Table 2-2 below and derived from Table 1: Schedule 3 – Condition 1 (Modification 3).

Table 2-2 Operating Hours

Activity	Permissible Hours
Quarrying operations, Asphalt plant operations and loading and dispatch of laden trucks	7am – 6pm Monday to Friday
	7am – 3pm Saturday
	At no time on Sunday or Public Holidays
Blasting	10am – 3pm Monday to Friday (except public holidays)
	At no time on Sunday or Public Holidays
Maintenance	May be conducted at any time, provided that these activities are not audible at any privately-owned residence

**Compliance Statement**

The following observations are made with respect to hours of operation of the quarry:

- (a) The quarry opening hours are advertised on the Council website as follows:
  - 7am - 4pm Monday to Thursday
  - 7am - 3.30pm Friday

The opening hours are compliant with the approved operating hours for the premises.

- (b) Blasting occurred on four occasions during the reporting period. All blasts events were compliant with the approved operating hours for the premises.
- (c) Quarry Management advises that no quarrying operations or significant maintenance were undertaken outside of the permitted operating hours.
- (d) Out of hours asphalt operations were approved by EPA and DPE/local Government planning division accordingly. All relevant stakeholders were notified on each occasion prior to commencement of this activity.

#### 2.4.2 Schedule 3 – Condition 2 (Exception to Hours of Operation – Emergency Works)

The following activities may be carried out outside the hours specified in Schedule 3 Condition 1 above:

- (a) delivery or dispatch of materials as requested by Police or other public authorities; and
- (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

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

##### Compliance Statement

Quarry Management advises that no activities specified within Schedule 3 Condition 2 occurred outside of the operating hours nominated in Schedule 3 Condition 1.

#### 2.4.3 Schedule 3 – Condition 2A (Exception to Hours of Operation – Asphaltting)

With the prior written agreement of the Secretary, the Proponent may undertake limited campaign asphalt plant operations (within the limits imposed under Condition 8 of Schedule 2) outside of the operating hours prescribed in Condition 1 of this Schedule, as requested by public authorities.

In such circumstances, the applicant must prepare an Out of Work Hours Work Protocol. This protocol must:

- (a) be prepared in consultation with the EPA and any residents who may be affected by the noise generated by these works; and
- (b) be approved by the Secretary prior to the commencement of any out of hours Asphalt plant operations.

##### Compliance Statement

Council has developed an Out of Work Hours Work Protocol (OHWP) for the prescribed works. Campaign asphaltting (for an estimated 5 nights per month) which has been approved by DPE and EPA since the inception of the conditions of Mod 3 in July 2021. Council is in the process of finalising the revision of the Noise & Blast Management Plan, at the request of DPE. Once complete and accepted by DPE, Council will transition to the new approved OHWP and surrender DA90/341. Any out of hours asphalt operations within the reporting period has been approved by EPA and the relevant land consent authority.

#### 2.4.4 Schedule 3 – Condition 3 (Noise)

The Proponent must ensure that the noise generated by the project does not exceed the criteria specified in Table 2-3 (derived from Table 2: Schedule 3 – Condition 3) below at any residence on privately-owned land.

Table 2-3 Noise Criteria dB(A)

Receiver	Day LAeq (15 minutes)
Location 2 and Location 7	36
All other Locations	35

Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

Appendix 5 (of Mod 3) sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 2 (of Schedule 3 – Condition 3) do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

**Compliance Statement**

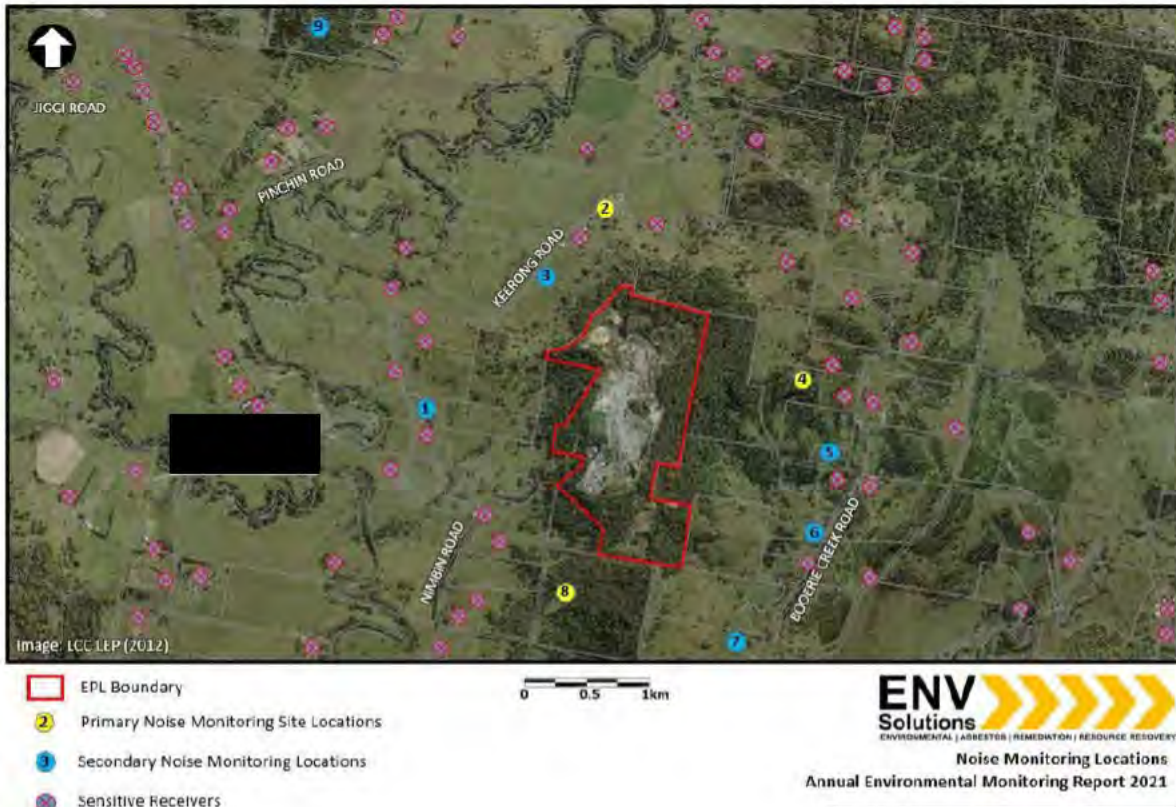
Noise monitoring was conducted by Ambience Audio Services in November and December 2021 at the three primary locations (Receiver 2, 4, & 8) specified within the Noise and Blast Management Plan V3.1 (Refer to Table 2-4 below) to ascertain compliance with noise limit prescribed in Schedule 3 – Condition 3 during normal operating conditions. Results indicate elevated noise levels attributed to extraneous noise sources (insects) that exceeded the prescribed limits. Observations taken during the monitoring rounds indicated that noise generated from the quarrying operations was negligible (barely audible to inaudible) and therefore a low frequency analysis in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA, 2017) was conducted to isolate quarrying related noise emissions (low frequency) from extraneous noise sources (higher frequency) to confirm compliance. Results from this analysis confirmed that noise emissions derived from quarrying operations were below the specified limits.

A copy of the report documenting the findings of this assessment is provided at Appendix J. Figure 2-1 provides the noise monitoring locations specified within the approved Noise and Blast Management Plan V3.1.

**Table 2-4 Noise Monitoring Results**

Receiver	Date	Time	Raw Result LAeq dB(A)	Corrected Result* LAeq dB(A)	Site Specific Limits LAeq dB(A)	Comments
R2	18/11/21	7:42	50.0	<35	36	Quarry Not Audible
R4	16/12/21	8:07	39.1	<33	35	Quarry barely audible. Low frequency of machine just audible at times
R8	18/11/21	8:31	41.2	<35	35	Quarry Not Audible

\* Calculated as per the NSW EPA Noise Policy for Industry - Fact Sheet C: Corrections for annoying noise characteristics



**Figure 2-1 Acoustic Monitoring Sites**

### 2.4.5 Schedule 3 – Condition 4 (Operating Conditions)

The Proponent must:

- (a) implement best practice management to minimise the construction, operational and road transportation noise of the project;
- (b) minimise the noise impacts of the project during meteorological conditions when the noise criteria in this approval do not apply (see Appendix 5 of Mod 3);
- (c) carry out noise monitoring (at least every 3 months or as otherwise agreed with the Secretary) to determine whether the project is complying with the relevant conditions of this approval; and
- (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval, to the satisfaction of the Secretary.

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

#### **Compliance Statement**

Noise monitoring was conducted in November and December to assess compliance with the Project Specific Noise Level (SPNL) set in EPL 3384 Condition L4.1 and documented within the Noise and Blast Management Plan Version 3.1 (ERM 2018).

Noise monitoring was carried out as per the approved Noise and Blast Management Plan Version 3.1 (ERM 2018) which specifies that noise monitoring was required every three months for a period of 12 months, with the frequency reviewed after the first 12 months of operation to determine future monitoring requirements. Considering monitoring results have continued to demonstrate operational

compliance with limits, (which is supported by limited noise complaints received since the inception of a Complaints Register in 2008), the reduced frequency of monitoring from quarterly to annual is warranted as noise related risk associated with the operations has been mitigated.

#### 2.4.6 Schedule 3 – Condition 5 (Noise Management Plan)

The Proponent must prepare a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be prepared in consultation with the EPA;
- (b) be submitted to the Secretary within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- (c) describe the measures to be implemented to ensure:
  - compliance with the noise criteria and operating conditions of this approval;
  - best practice management is being employed; and,
  - the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply (see Appendix 5 of Mod 3);
- (d) describe the proposed noise management system; and
- (e) include a monitoring program to be implemented to measure noise from the project against the noise criteria in Table 2 (of Mod 3).

The Proponent must implement the Noise Management Plan as approved from time to time by the Secretary.

#### Compliance Statement

The Noise and Blast Management Plan (Rev 3.1) was updated and approved by DPE in 2018.

#### 2.4.7 Schedule 3 – Condition 6 (Blast Parameters)

The Proponent must ensure that blasting on site does not cause any exceedance of the criteria in Table 3 (of Schedule 3 – Condition 6 and provided in Table 2-5 below).

Table 2-5 Blasting Criteria

Receiver	Air Blast Overpressure dB(Lin Peak)	Ground Vibration PVS (mm/s)	Allowable Exceedance
Any residence on privately-owned land	120	10	0%
	115	5	Must not exceed criteria for more than 5% of the total number of blasts over a period of 12 months

However, these criteria do not apply if the Proponent has a written agreement with the relevant owner to exceed the limits in Table 3 (of Schedule 3 – Condition 6 and provided in Table 2-5 above), and the Proponent has advised the Department in writing of the terms of this agreement.

#### Compliance Statement

Vibration monitoring associated with blasting was carried out on four occasions during the reporting period at the locations specified within Figure 2-2.

A summary of vibration monitoring results are provided in Table 2-6, with the blast reports provided in Appendix K.

**Table 2-6 Blast Monitoring Results**

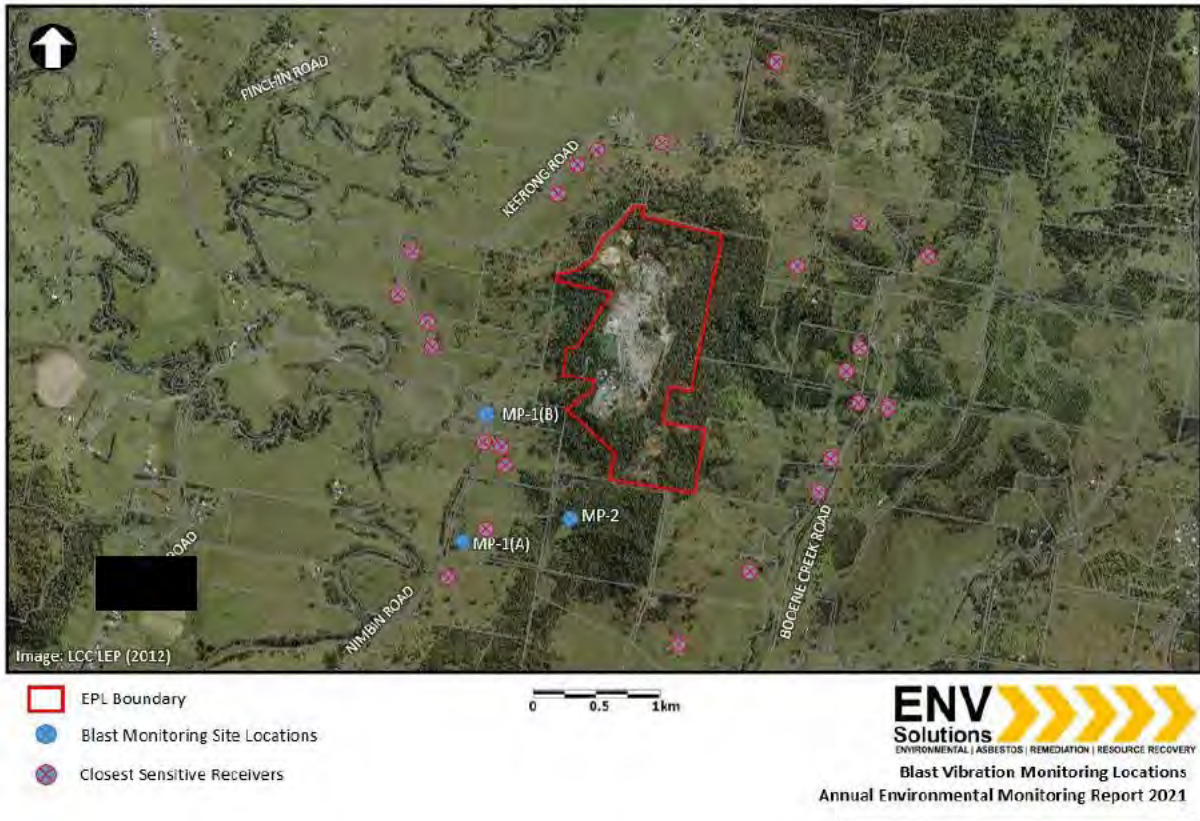
Monitoring Location	Date	Time	Airblast Overpressure (dB)		Ground Vibration PPV (mm/s)	
			Result	Threshold	Result	Threshold
MP 1(a)	18/01/21	13:03	110.9	115	3.619	5
MP 1(b)	22/09/21	14:22	94.9	115	0.14	5
	7/10/21	14:33	113.9	115	4.26	5
	13/12/21	14:43	110.5	115	3.63	5
MP 2	18/01/21	13:03	112.6	115	1.368	5
	22/09/21	14:22	104.1	115	0.41	5
	7/10/21	14:33	113.3	115	2.72	5
	13/12/21	14:43	111.8	115	2.27	5

Vibration monitoring records indicate that the results comply with the air blast overpressure and ground vibration criteria defined in Table 3 (Mod 3) and listed in the table above (Table 2-6). The blasting events also conform with:

- the nominated blasting frequency (2 blasts per month) specified in Condition 7 of Schedule 3 (refer to Section 2.4.7); and
- are within the nominated hours of operation specified in Condition 1 of Schedule 3 (refer to Section 2.4.1).

One complaint was registered in regard to the blasting event that occurred on 13 December 2021. The complaint was managed by Council’s Commercial Services Compliance division as per the requirements specified within Section 8.7 of the approved Noise and Blast Management Plan (2018). The complaint was responded to within the specified timeframes. Subsequently Council engaged a building consultant to investigate and document structural damage at the complainant’s property on 20 January 2022, with a report due by 13 March 2022. This report was delayed due to major flooding across the region in February/March and was provided to the property owner upon receipt on 27 April 2022. Following this, Council engaged a third-party consultant (specialised blast expert) to conduct additional monitoring and review the dilapidation report and blast circumstances. This investigation is in progress and once complete a property investigation report will be provided to both parties including the Department of Planning and Environment.





**Figure 2-2 Blast Vibration Monitoring Locations**

**2.4.8 Schedule 3 – Condition 7 (Number of Blasts)**

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

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

**Compliance Statement**

Compliance with this condition was met with the number of recorded blast events (Refer to Table 2-6) per month being lower than the maximum monthly allocation.

**2.4.9 Schedule 3 – Condition 8 (Blast Management)**

During blasting operations, the Proponent must:

- (a) implement best practice management to protect the safety of people and livestock; protect public or private infrastructure and property from damage; and minimise the dust and fume emissions;
- (b) operate a suitable system to enable the local community to get up-to-date information on the proposed blasting schedule on site; and
- (c) carry out regular monitoring to determine whether the project is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.

**Compliance Statement**

The updated Noise and Blast Management Plan (Rev 3.1) includes management measures relating to these matters. The blasting that occurred during the reporting period complied with the requirements in the Noise and Blast Management Plan.

**2.4.10 Schedule 3 – Condition 9 (Blast Management Plan)**

The Proponent must prepare a Blast Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- (b) describe the measures to be implemented to ensure compliance with the blast criteria and operating conditions of this approval;
- (c) include measures to manage fly rock to ensure the safety of people and livestock and to protect property;
- (d) include a monitoring program for evaluating and reporting on compliance with the blasting criteria in this approval;
- (e) include local community notification procedures for the blasting schedule, in particular to nearby residences; and
- (f) include a protocol for investigating and responding to complaints related to blasting operations.

The Proponent must implement the Blast Management Plan as approved from time to time by the Secretary.

**Compliance Statement**

The Noise and Blast Management Plan (Rev 3.1) was updated and endorsed by the DPE in 2018.

**2.4.11 Schedule 3 – Condition 10 (Air Quality)**

The Proponent must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not cause exceedances of the criteria in Table 4 (of Schedule 3 – Condition 6 and provided in Table 2-7 below) at any residence on privately-owned land.

**Table 2-7 Air Quality Criteria**

Pollutant	Averaging Period	Criterion
Particulate Matter < 10 µm (PM <sub>10</sub> )	Annual	<sup>a,d</sup> 25 µg/m <sup>3</sup>
Particulate Matter < 10 µm (PM <sub>10</sub> )	24 Hour	<sup>b</sup> 50 µg/m <sup>3</sup>
Total Suspended Particulate (TSP)	Annual	<sup>a,d</sup> 90 µg/m <sup>3</sup>
<sup>c</sup> Deposited Dust	Annual	<sup>b</sup> 2 g/m <sup>2</sup> /month   <sup>a,d</sup> 4 g/m <sup>2</sup> /month

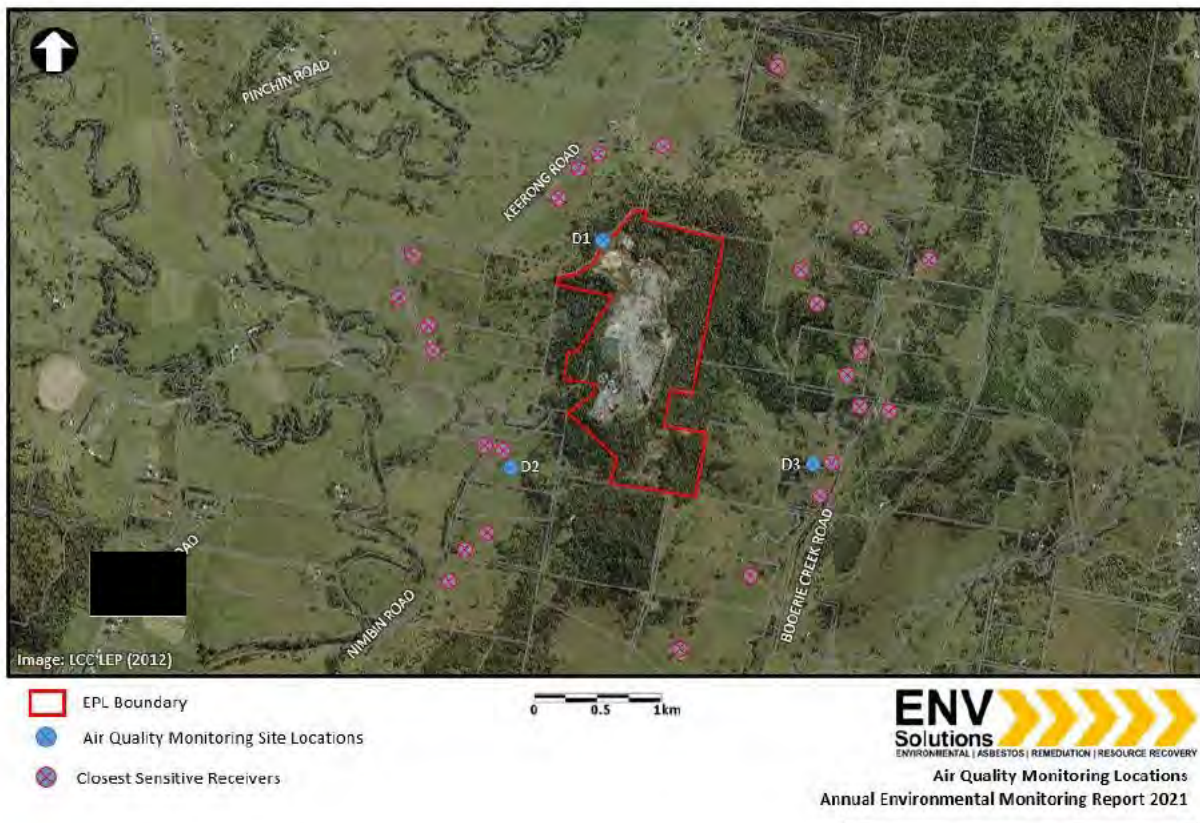
Notes to Table:

- a. Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources).

- b. Incremental impact (i.e. increase in concentrations due to the project alone, with zero allowable exceedances of the criteria over the life of the project).
- c. Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter - Deposited Matter - Gravimetric Method.
- d. Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.
- e. “Reasonable and feasible avoidance measures” includes, but is not limited to, the operational requirements in conditions 11, 12 and 13 to develop and implement an air quality management system that ensures operational responses to the risks of exceedance of the criteria.

**Compliance Statement**

Dust deposition monitoring stations (Figure 2-3) are established at three sites around the perimeter of the operations to ascertain compliance with limits (Table 2-7) specified within the licence conditions documented in Schedule 3 Condition 10. The monitoring stations have been positioned adjacent to sensitive receptors located to the northwest (D1), southwest (D2) and east (D3) of the site (Figure 2-3).



**Figure 2-3 Air Quality Monitoring Locations**

A review of the dust monitoring results (Appendix L) collected during the reporting period confirms that the correct number of monitoring rounds were completed, with all monitoring rounds completed in accordance with the exposure period (usually 30 days (+/- 2 days)) specified within the approved Air Quality Management Plan (2018). It should be noted that a transcription error in regard to the number of sampling days occurs within the analytical report (K5466) for the March reporting period. The report stipulates 35 days however the actual number of sampling days is 30 days, therefore the

monitoring duration complies with the specifications of the approved Air Quality Management Plan (Rev 3.1).

As per the guidance provided in the approved Air Quality Management Plan (Rev 3.1), the deposited rate of ash is used to determine compliance with the deposited dust criterion. This variation away from the specified condition (Schedule 3 Condition 10) and Australian Standard is to assist in clearly defining exceedances attributed to quarrying activities. The reporting of total deposited dust (total suspended solids) is not representative of quarrying related activities (ash content) as it incorporates insoluble solids (ash content), soluble and combustible matter that is typically derived from extraneous sources including organic pollutants such as bird droppings, pollen, and plant material. This is evident in dust deposition samples from D2 (8/3/2021) and D3 (8/2/21, 8/3/21 and 31/5/21), where elevated total suspended solids (SSt) were recorded which were influenced by high concentrations of soluble and combustible matter derived from extraneous sources such as bird droppings and insects.

Based on the criteria stipulated within the approved Air Quality Management Plan (Rev 3.1), the monthly deposited rate ( $\text{g}/\text{m}^2/\text{mth}$ ) and annualised average ash content ( $\text{g}/\text{m}^2/\text{mth}$ ) as tabulated in Table 2-8 and depicted in Figure 2-4– Figure 2-9 were compliant at all monitoring sites (Figure 2-3).

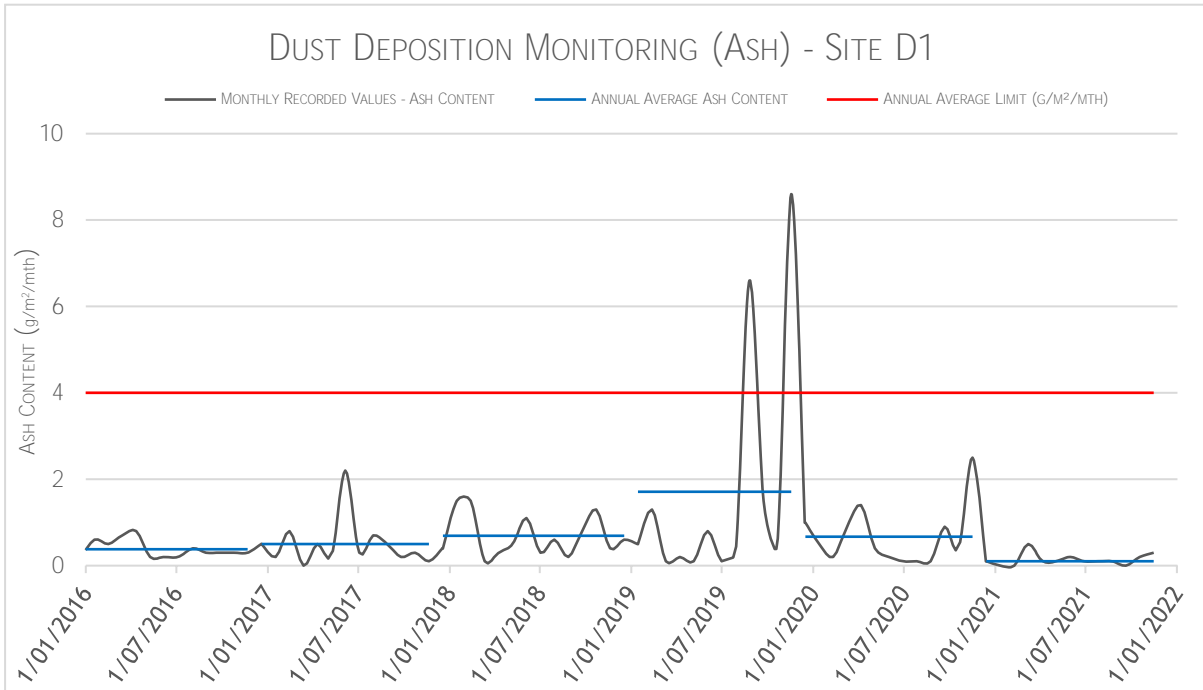
**Table 2-8 Monthly Dust Deposition Results ( $\text{g}/\text{m}^2/\text{mth}$ )**

Monitoring Period	D1		D2		D3		Limit $\text{g}/\text{m}^2/\text{mth}$
	SSt $\text{g}/\text{m}^2/\text{mth}$	Ash $\text{g}/\text{m}^2/\text{mth}$	SSt $\text{g}/\text{m}^2/\text{mth}$	Ash $\text{g}/\text{m}^2/\text{mth}$	SSt $\text{g}/\text{m}^2/\text{mth}$	Ash $\text{g}/\text{m}^2/\text{mth}$	
14/12/20-11/1/21	1.0	0.1	1.5	0.3	3.3	0.1	4
11/1/21-8/2/21	0.4	0.0	0.7	0.5	2.5	1.4	4
8/2/21-8/3/21	0.6	0.0	2.1	0.3	4.8 <sup>#</sup>	1.4	4
8/3/21-6/4/21	1.0	0.5	12.7 <sup>#</sup>	1.7	4.6 <sup>#</sup>	2.5	4
6/4/21-3/5/21	0.6	0.1	0.5	0.0	1.5	0.4	4
3/5/21-31/5/21	0.3	0.1	1.3	0.5	1.8	0.8	4
31/5/21-28/6/21	0.4	0.2	0.7	0.4	4.8 <sup>#</sup>	2.0	4
28/6/21-26/7/21	0.1	0.1	0.4	0.2	1.9	0.7	4
26/7/21-23/8/21	0.3	0.1	1.3	0.4	1.0	0.6	4
23/8/21-20/9/21	0.3	0.1	0.4	0.1	1.4	0.5	4
20/9/21-18/10/21	0.3	0.0	0.6	0.5	2.1	1.2	4
18/10/21-15/11/21	0.9	0.2	1.8	1.1	3.5	1.5	4
<b>Annual Average</b>	<b>0.7</b>	<b>0.1</b>	<b>2.2</b>	<b>0.6</b>	<b>3.0</b>	<b>1.1</b>	<b>4</b>

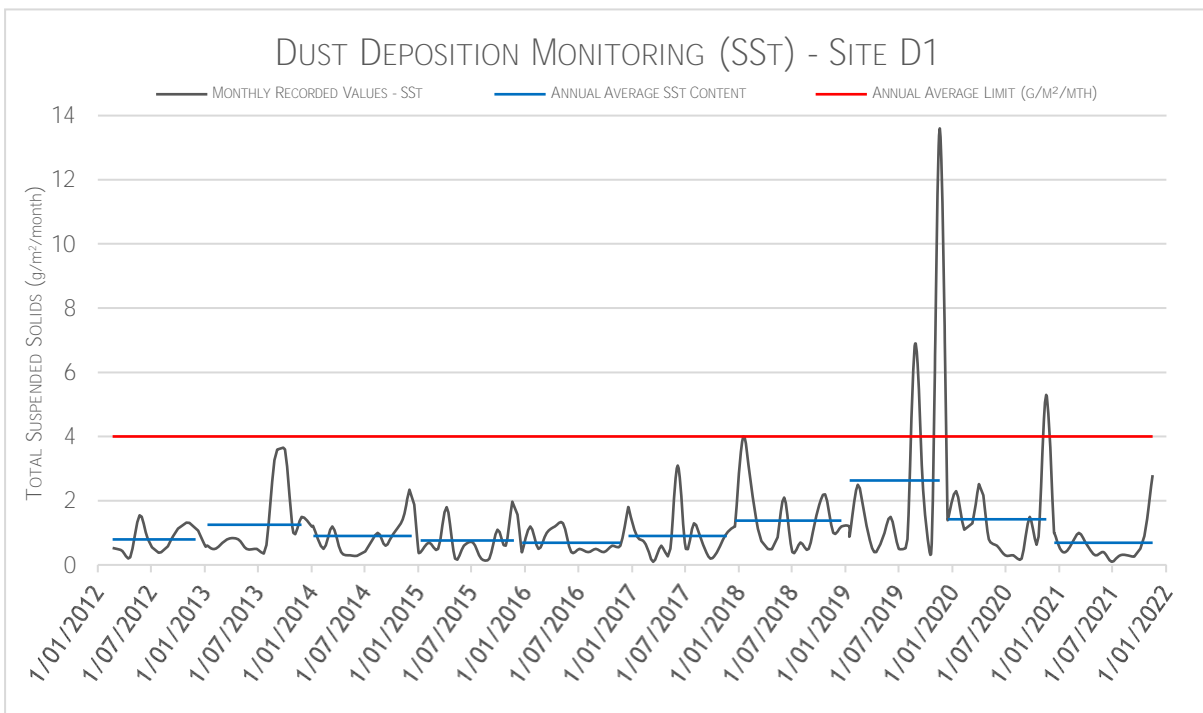
<sup>#</sup> Elevated Total Suspended Solids (SSt) associated with high concentrations of combustible / soluble matter derived from extraneous sources (bird droppings, insects etc)

No complaints associated with mobilisation of dust from the operations were received from the public or neighbours during the reporting period.

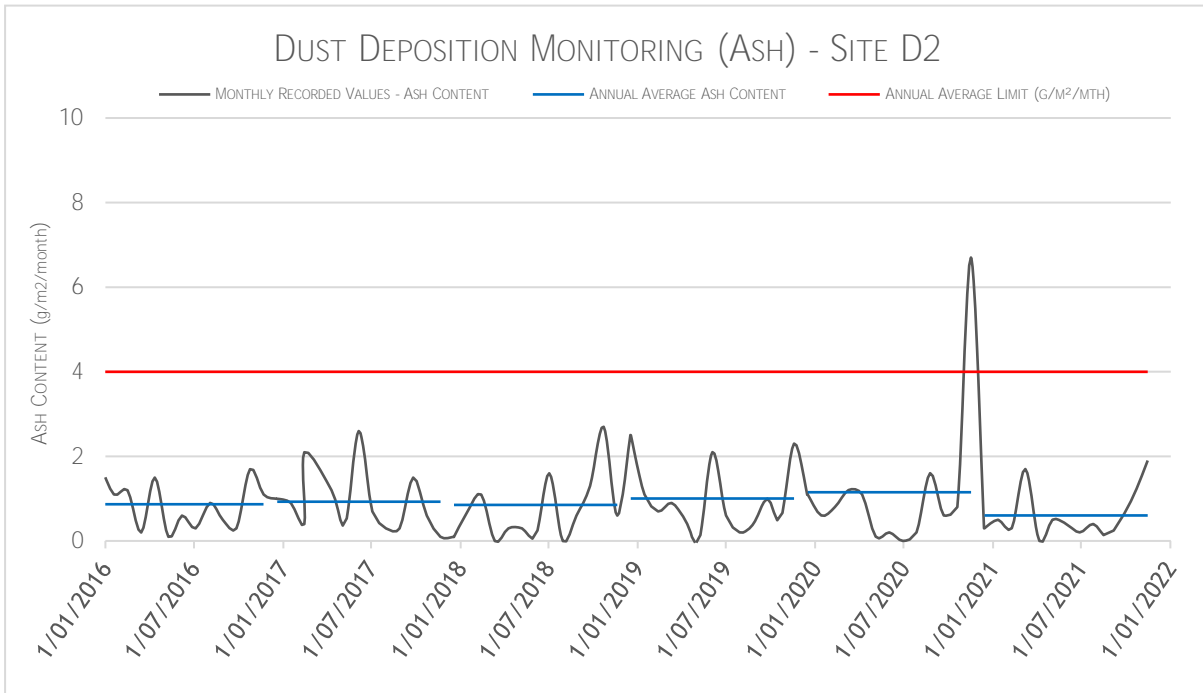
Figure 2-4, Figure 2-6 and Figure 2-8 present monthly ash deposition results for 2016 to 2021 with reference to the deposited dust (ash content) limit. To provide an indication of dust deposition levels over an extended period, Figure 2-5, Figure 2-7 and Figure 2-9 present monthly total suspended solids deposition results for 2012 to 2021. Over the duration of the monitoring period, monthly results have varied. Higher dust deposition levels have typically been recorded at D2 and D3 compared with D1.



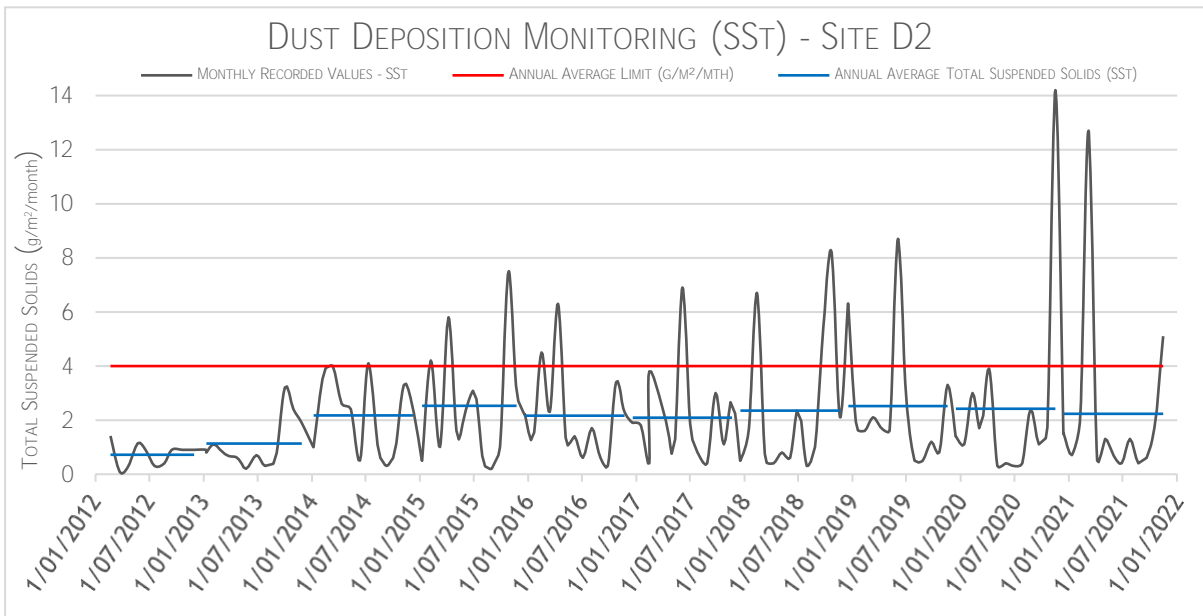
**Figure 2-4 D1 Monthly Dust Deposition Monitoring Results - Ash Content (2016 – 2020)**



**Figure 2-5 D1 Monthly Dust Deposition Monitoring Results - Total Suspended Solids (2012 – 2020)**



**Figure 2-6 D2 Monthly Dust Deposition Monitoring Results - Ash Content (2016 – 2020)**



**Figure 2-7 D2 Monthly Dust Deposition Monitoring Results - Total Suspended Solids (2012 – 2020)**

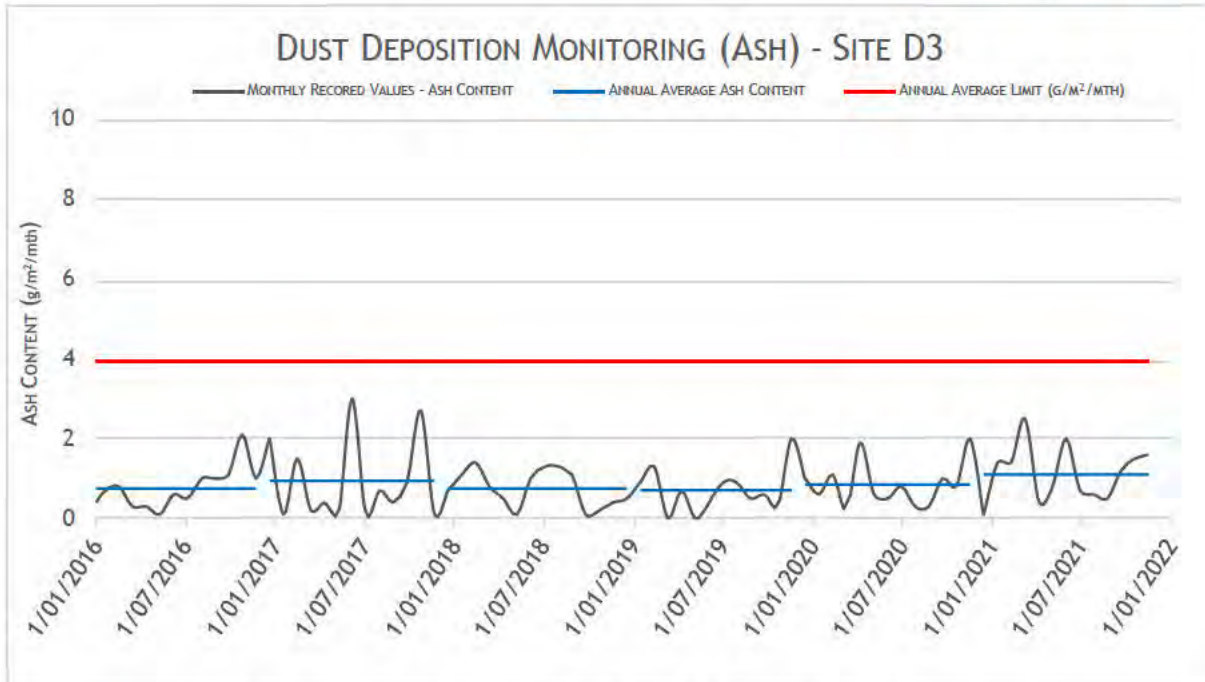


Figure 2-8 D3 Monthly Dust Deposition Monitoring Results - Ash Content (2016 – 2020)

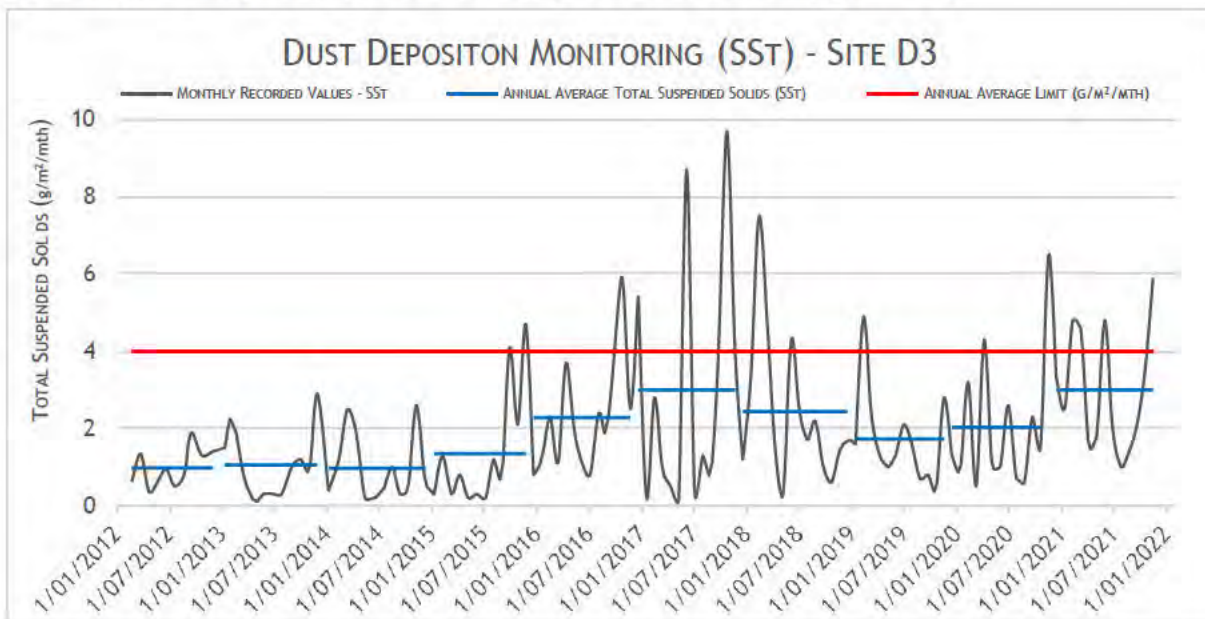


Figure 2-9 D3 Monthly Dust Deposition Monitoring Results - Total Suspended Solids (2012 – 2020)

**Particulate Matter Monitoring Results:**

As per the Air Quality Management Plan, an air quality assessment was undertaken in 2008. Compliance with the particulate criteria was considered sufficient to prove the low risk of the operations to ambient PM<sub>10</sub> concentrations. Additional monitoring for PM<sub>10</sub> and TSP are required only in the event of sustained exceedances of deposited dust criteria. If sustained annual average dust deposition > 4 g/m<sup>2</sup>/month is identified the quarry will establish an additional monitoring site for testing particulate matter concentrations (PM<sub>10</sub> and TSP).

As indicated in Table 2-8, and depicted in Figure 2-4, Figure 2-6 and Figure 2-8 the average deposited dust (as ash content) result for dust deposition monitoring sites D1, D2 and D3 during the reporting

period was 0.1, 0.6 and 1.1 g/m<sup>2</sup>/month respectively. This is lower than the applicable annual average dust deposition threshold, therefore there is no requirement for the establishment of additional monitoring for the testing of particulate matter concentrations.

#### **2.4.12 Schedule 3 – Condition 11 (Air Quality Management)**

The Proponent must:

- (a) implement best practice management to minimise the dust emissions of the project;
- (b) regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval;
- (c) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see noted under Table 4 of Mod 3);
- (d) monitor and report on compliance with the relevant air quality conditions in this approval; and,
- (e) minimise the area of surface disturbance and undertake progressive rehabilitation of the site, to the satisfaction of the Secretary.

#### **Compliance Statement**

The updated Air Quality Management Plan (Rev 3.1) incorporates suitable management measures relating to the above matters.

#### **2.4.13 Schedule 3 - Condition 12 (Air Quality Management Plan)**

The Proponent must prepare an Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must:

- a) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- b) describe the measures to be implemented to ensure:
  - compliance with the air quality criteria and operating conditions of this approval;
  - best practice management is being employed; and the air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events;
- c) describe the proposed air quality management system;
- d) include an air quality monitoring program that:
  - is capable of evaluating the performance of the project;
  - includes a protocol for determining any exceedances of the relevant conditions of approval;
  - and effectively supports the air quality management system.

The Proponent must implement the approved Air Quality Management Plan as approved from time to time by the Secretary.

#### **Compliance Statement**

An updated Air Quality Management Plan (Rev 3.1) for the quarry was submitted and endorsed by DPE in 2018.

#### **2.4.14 Schedule 3 – Condition 13 (Weather Station)**

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



### **Compliance Statement**

A meteorological weather station was installed on site in 2018. Daily weather data recorded during the reporting period is provided within Appendix M.

#### **2.4.15 Schedule 3 - Condition 14 (Greenhouse Gas Emissions)**

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

### **Compliance Statement**

The vehicle fleet associated with the quarry currently focuses on achieving US EPA Tier 3 Emission Standards and, where possible within budget limitations, aspires to Tier 4.

#### **2.4.16 Schedule 3 - Condition 15 (Water Supply)**

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

### **Compliance Statement**

No water was required to be imported to the site during the reporting period.

#### **2.4.17 Schedule 3 - Condition 16 (Water Discharge)**

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

### **Compliance Statement**

No water discharge (active release) occurred during the reporting period.

#### **2.4.18 Schedule 3 - Condition 17 (Groundwater Assessment)**

The Proponent must undertake a detailed groundwater assessment to the satisfaction of the Secretary. This assessment must be:

- (a) prepared by a suitably qualified expert in consultation with DPI Water;
- (b) submitted to the Secretary for approval by 30 December 2018;
- (c) approved by the Secretary before any extraction below 105 m AHD in the northern pit or below 118.5 m AHD in the southern pit;
- (d) adequately assess groundwater resources affected by the northern and southern pits, to the proposed full extraction depths of those pits;
- (e) adequately assess all groundwater impacts associated with proposed extraction;
- (f) provide data for predicted groundwater pit inflows during and following extraction; and
- (g) propose management measures to address pit inflows and impacts to groundwater resources.

The Proponent must implement the management measures proposed in the groundwater assessment to the satisfaction of the Secretary.

### **Compliance Statement**

The Groundwater Assessment Report was submitted and approved by DPE in June 2019. Following consideration of the report, the Department of Industry (Lands and Water) and the DPE required Council to obtain:

“the necessary Water Access Licences (WALs) for the extraction of groundwater up to the predicted maximum annual take of 70ML per annum from the North Coast Volcanics Ground Water Source and the North Coast Fractured and Porous Rock Groundwater Sources. The Department requests that this process commence no later than 9 July 2019 and to be notified once the required WALs have been obtained”.

The initial application for a Water Access Licence was made on 9 July 2019. On 12 November 2019, a formal application was made via the Controlled Allocation Order, 3rd period ROI process for 70 Unit Shares from the North Coast Volcanics Groundwater Source at the rate of \$550 per share.

Council was notified of a successful outcome on 7 January 2020. Shares were paid in full on 2 March 2020.

A Notice of Decision for the Water Access Licence was issued in June 2020 (refer to Appendix N) and the licence was registered on 19 January 2021 (refer to Appendix O).

#### **2.4.19 Schedule 3 - Condition 18 (Intercept of Groundwater)**

If groundwater is encountered during quarrying operations in the South Pit under EA (Mod 1), the Proponent must cease quarrying operations until authorised to recommence by the Secretary.

### **Compliance Statement**

Groundwater was not encountered during the operation of the quarry during the reporting period. No quarrying activities were undertaken in the South Pit during the reporting period.

#### **2.4.20 Schedule 3 - Condition 19 (Soil and Water Management Plan)**

The Proponent must prepare a Soil and Water Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be prepared by suitably qualified and experienced person/s approved by the Secretary;
- (b) be prepared in consultation with the EPA and DPI Water;
- (c) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary; and
- (d) include a:
  - i. Site Water Balance that includes:
    - details of:
      - sources and security of water supply;
      - water use and management onsite;
      - any off-site water transfers; and
      - reporting procedures; and
      - measures to be implemented to minimise clean water use on site;
    - ii. Surface Water Management Plan, that includes:
      - a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the project;
      - a detailed description of the surface water management system on site including the:
        - clean water diversion system;

- erosion and sediment controls;
- dirty water management system; and
- water storages; and
- a program to monitor and report on:
  - any surface water discharges;
  - the effectiveness of the water management system,
  - the quality of water discharged from the site to the environment;
  - surface water flows and quality in local watercourses;
- iii. Groundwater Management Plan that includes:
  - a provision that requires the Proponent to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor; and
  - a monitoring program to manage potential impacts, if any, on any alluvium and associated surface water source near the proposed extraction area that includes:
    - identification of a methodology for determining threshold water level criteria;
    - contingency measures in the event of a breach of thresholds; and
    - a program to regularly report on monitoring.

The Proponent must implement the approved Soil and Water Management Plan as approved from time to time by the Secretary.

### **Compliance Statement**

**Soil and Water Management Plan:** The Soil and Water Management Plan (December 2018) was submitted on 5 March 2019 and approved by DPE on 25 June 2019. The prescribed 3 yearly review of the sites EMS documentation shall be carried out in the 2022 reporting period.

**Site Water Balance:** The Soil and Water Management Plan incorporates a Site Water Balance assessment (June 2019). This is reassessed/updated at each 3 yearly review a copy of which is provided on the Council website. A Surface Water Balance review is undertaken annually as required by the SWMP. The conclusion of this assessment indicated that:

*“...during this period, rainfall captured and stored within the quarry catchment provided sufficient supply for all on-site (non-potable) water usage”.*

The assessment subsequently provided a number of recommendations to improve the accuracy of future site water balance estimates through a number of measures including the following:

- Training of quarry staff to consistently identify/name the various water bodies on site in the water truck usage log.
- Recording of days of zero water use (to remove uncertainty over whether records were kept on days with no recorded usage).
- Detailed ground survey of the catchment draining to sediment basins SW1 and SW2 (including the sediment basins) to ensure that site runoff is being directed to the correct basin for treatment.
- Installation of water level markers in all water bodies on site and regular records of water levels (weekly during dry periods and daily following rainfall until capacity is restored).

The recommendations are being implemented and the surface water balance monitoring report for 2021 is due to be received from the consultant in June 2022.

### **Surface Water Monitoring Results:**

As per the Soil and Water Management Plan quarterly monitoring of the background sites is to include the following parameters:

- pH
- EC
- DO
- Temperature
- Turbidity
- TSS
- Nutrients
- Oil and Grease (Visual)

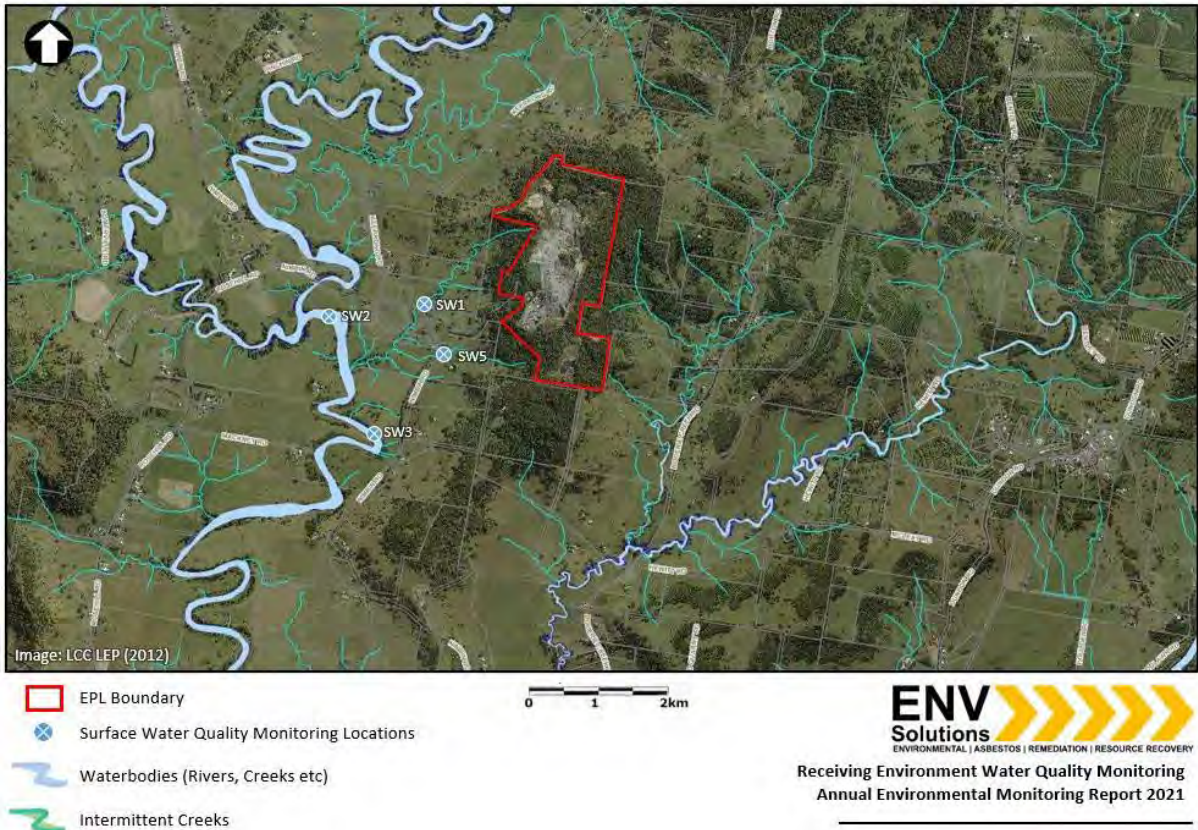
Quarterly surface water monitoring of receiving waterways was undertaken at the specified monitoring sites (Figure 2-10) within the reporting period (Appendix P) as per the requirements of the approved SWMP. Water quality sampling could not be carried out at monitoring site SW5 in the March and June monitoring periods as there was no surface water flow at the site.

Based on the assessment of the quarterly field monitoring reports and associated monitoring results, the site complies with the requirements of the SWMP. It should be noted that site specific background water quality targets will need to be established for surface water monitoring sites SW1 – SW3 as per Attachment 6 of the approved SWMP. Baseline data was completed in the March 2022 monitoring. This will establish trigger limits and be incorporated into the updated SWMP due to be completed and submitted to DPE by September 2022.

An assessment of baseline monitoring data (Figure 2-9) against the ANZECC/ARMCANZ Water Quality Guidelines (2000) for freshwater environments for each of the surface water monitoring sites indicated pH concentrations trended higher during the reporting period with elevated pH results observed at monitoring location SW1 in March (pH: 9.21) and September (pH: 9.53) and at SW2 during September (pH: 9.22) only. Additionally elevated nitrates at monitoring site SW5 (nitrates: 1.42mg/L) during September along with elevated total suspended solids at monitoring site SW3 (TSS: 66mg/L) during the December quarter were also identified.

Field observations (Appendix P) recorded during each of the monitoring events indicated that there had been no controlled or uncontrolled discharges from the operations during the reporting period and therefore these results are likely to be anomalous or derived from an external source.

Background monitoring results for 2013 to 2020 for pH and TSS are presented in Figure 2-11 and Figure 2-12, respectively.



**Figure 2-10 Surface Water Monitoring Locations**

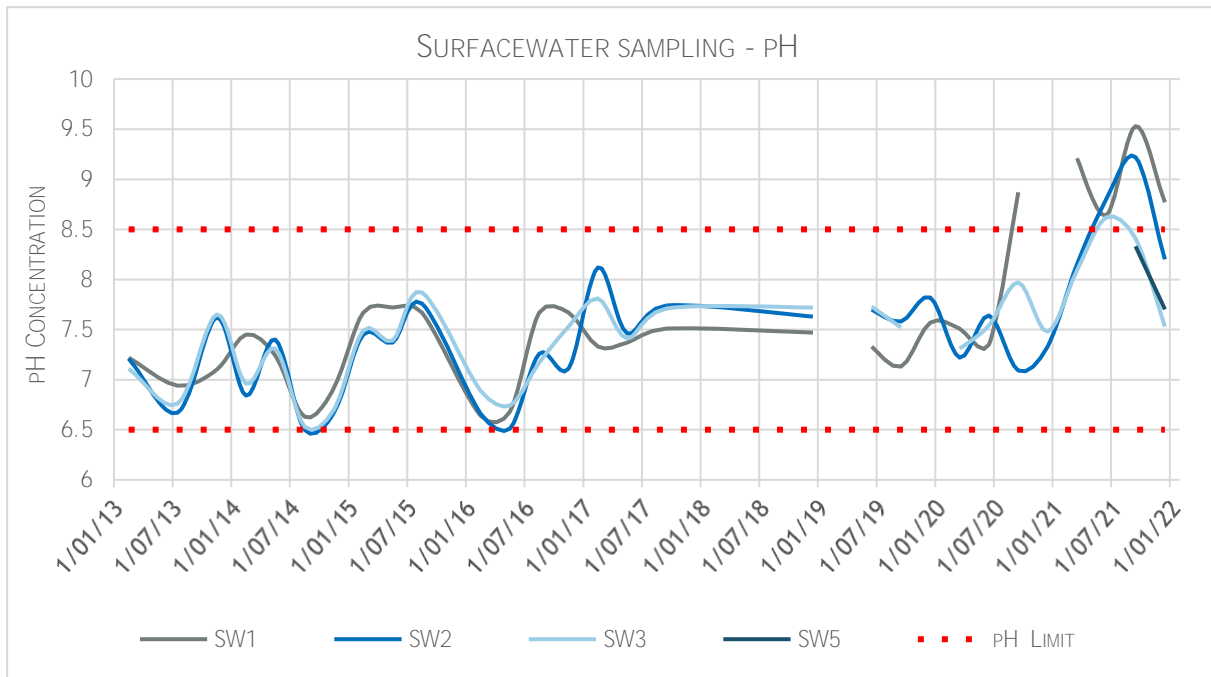
Water quality monitoring associated with discharging of sediment basins is required prior to water being actively discharged from sediment basins. There were no reported discharges from sediment basins during the reporting period, therefore sediment basin monitoring was not conducted.

Table 2-9 Summary of Surface Water Monitoring of Receiving Waterways

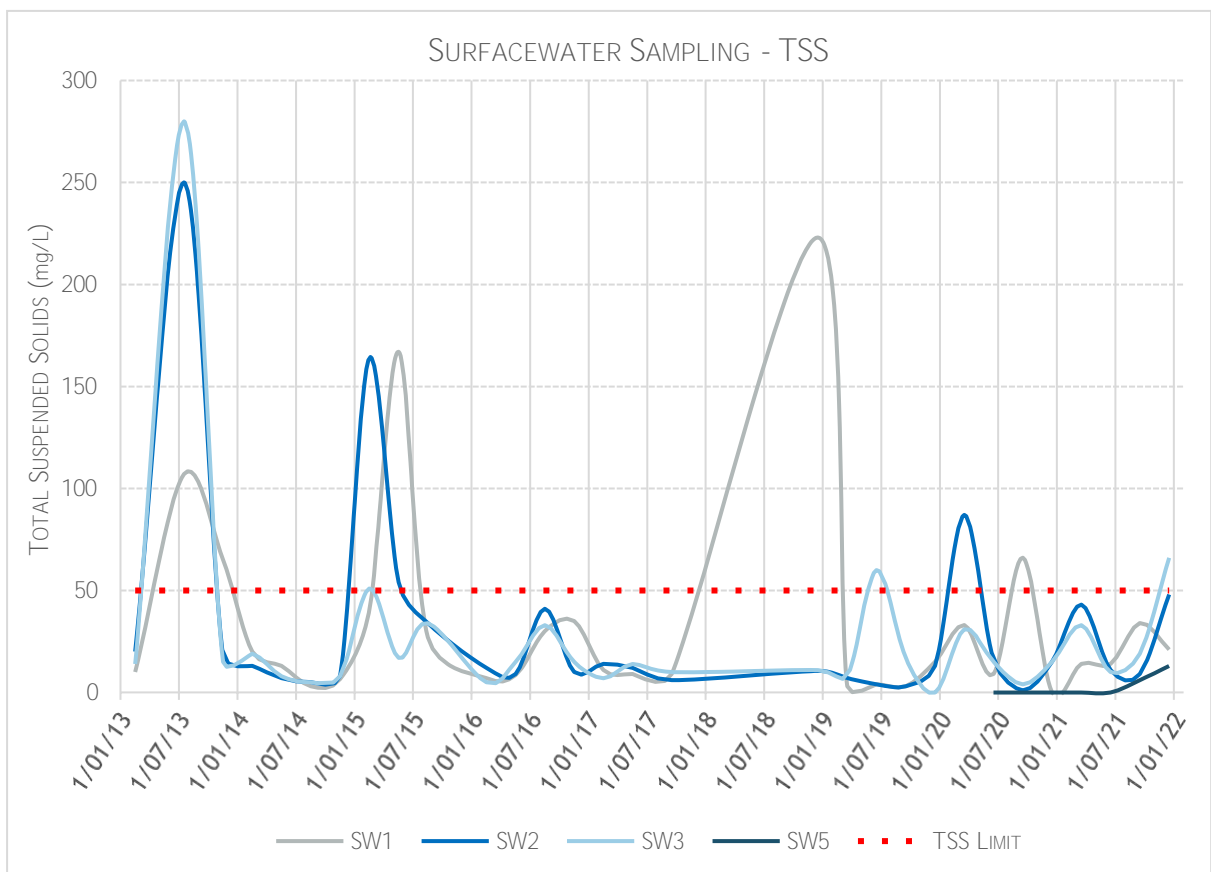
Site	Date	Field Observations	pH	EC μS/cm	DO %	Temperature °C	ORP mV	Turbidity NTU	TSS mg/L	Phosphate mg/L	Nitrate mg/L	Nitrite mg/L	Ammonia mg/L	Oil & Grease Visual
<b>ANZECC Guidelines (Freshwater)</b>			<b>6.5 - 9.0</b>	<b>1500</b>	<b>-</b>	<b>-</b>		<b>-</b>	<b>50</b>	<b>-</b>	<b>0.7</b>	<b>-</b>	<b>0.9</b>	<b>Visible</b>
SW1 (Downstream)	1/3/21	Moderate flow, slightly turbid	9.21#	210.10	86.61	26.54	70.58	35.0	14	0.057	0.013	<0.005	0.114	No
	4/6/21	Moderate flow, slightly turbid	8.64	445.71	83.66	18.03	190.90	16.5	14	<0.005	<0.005	<0.005	0.025	No
	2/9/21	Moderate flow, slightly turbid	9.53#	413.16	73.98	19.01	1379.30	50.0	34	0.028	0.276	0.011	0.081	No
	1/12/21	High flow, very turbid	8.77	145.36	94.49	23.34	1167.01	128.0	21	0.099	0.332	0.008	0.050	No
SW2 (Upstream)	1/3/21	Moderate Flow, very turbid. Disturbance from high flows	8.15	99.05	87.13	25.26	136.26	41.5	43	0.036	0.216	<0.005	0.109	No
	4/6/21	Moderate flow, slightly turbid	8.80	153.12	94.26	16.02	269.49	15.5	11	0.025	0.178	<0.005	0.019	No
	3/9/21	Moderate flow, slightly turbid	9.22#	151.19	87.66	19.17	1484.6	15.7	9	0.016	0.014	<0.005	0.081	No
	1/12/21	High flow, very turbid	8.20	74.73	84.26	22.32	1259.11	130	48	0.110	0.184	0.015	0.044	No
SW3 (Downstream)	1/3/21	Moderate Flow, very turbid. Disturbance from high flows	8.09	106.11	87.63	25.87	110.55	52.6	33	0.038	0.217	0.006	0.111	No
	4/6/21	Moderate flow, slightly turbid	8.62	146.90	92.37	16.40	273.47	15.0	10	0.024	0.120	0.043	0.014	No

Site	Date	Field Observations	pH	EC μS/cm	DO %	Temperature °C	ORP mV	Turbidity NTU	TSS mg/L	Phosphate mg/L	Nitrate mg/L	Nitrite mg/L	Ammonia mg/L	Oil & Grease Visual
<b>ANZECC Guidelines (Freshwater)</b>			<b>6.5 - 9.0</b>	<b>1500</b>	<b>-</b>	<b>-</b>		<b>-</b>	<b>50</b>	<b>-</b>	<b>0.7</b>	<b>-</b>	<b>0.9</b>	<b>Visible</b>
SW3 (Downstream)	2/9/21	Moderate flow, slightly turbid	8.41	223.05	94.09	19.44	1442.2	21.9	19	0.024	0.070	<0.005	0.086	No
	1/12/21	High flow, very turbid	7.53	84.71	78.68	21.99	1316.41	140.1	66 <sup>#</sup>	0.138	0.176	0.017	0.051	No
SW5 (Downstream)	1/3/21	No Flow, Brown water present – No Sample Obtained												
	4/6/21	No Flow, Brown water present – No Sample Obtained												
	2/9/21	Slight flow	8.33	185.13	70.04	18.24	1470.3	24.5	6	0.468	1.42 <sup>#</sup>	<0.05	0.154	No
	1/12/21	High flow, moderately turbid	7.70	74.53	79.32	24.31	1300.06	91.2	13	0.473	<0.005	0.015	0.050	No

NOTE: <sup>#</sup> No discharges reported from site – elevated result derived from an extraneous source



**Figure 2-11 Surface water pH monitoring results 2013 - 2021**



**Figure 2-12 Surface water TSS monitoring results 2013 - 2021**



### Groundwater Monitoring Results:

Quarterly groundwater quality monitoring was undertaken at nine groundwater monitoring bores in March, June, September and December 2021.

As per the Soil and Water Management Plan groundwater is to be analysed for the following parameters:

- pH<sup>1</sup>
- EC<sup>1</sup>
- TPH<sup>1</sup>
- BTEX<sup>1</sup>
- total iron<sup>1</sup>
- total lead<sup>1</sup>
- dissolved iron<sup>2</sup>
- dissolved lead<sup>2</sup>
- total oils and grease (to be monitored as a surrogate for TPH and BTEX until sufficient data is available) <sup>2</sup>
- major ions and cations<sup>2</sup>

<sup>1</sup> Site specific interim groundwater quality triggers have been established for these parameters in the Soil and Water Management Plan.

<sup>2</sup> There are no site-specific trigger values for these parameters in the Soil and Water Management Plan. These additional parameters are monitored to assist with the characterisation of groundwater.

A summary of the 2021 groundwater quality monitoring results is provided at Appendix Q and tabulated below (Table 2-10). Where a groundwater quality result is higher than the relevant trigger values, it has been shaded and highlighted in bold red font.

Analytical results (Table 2-10) identified several exceedances of the sites prescribed (interim) trigger values for:

- pH: BQS1-I (1/12/21), BQS1-D (1/12/21), BQN1-D (3/06/21) & BQN2-A (3/06/21);
- Oil and Grease: BQS1-D (1/12/21), BQN1-B (3/06/2021), BQN1-D (2/09/2021), BQN3-B (1/12/21) and BQN2-D (2/09/21 & 1/12/21);
- Total Iron: BQN1-A (2/03/21 & 2/09/21); and,
- Total Lead: BQN2-B (2/03/21).

The following points are relevant to the results that exceed the interim trigger values:

- In some instances, the result was only slightly higher than the relevant trigger and these are not considered to be of concern.
- The Soil and Water Management Plan notes that “a target exceedance has a 20% probability per monitoring round (using this approach). As such, results from multiple monitoring events necessarily need to be reviewed as a group against the interim target to determine compliance or otherwise (i.e. one exceedance of the target is not necessarily an indication of non-compliance).”
- The trigger values are stated as being ‘interim’ in the Soil and Water Management Plan with the intention being to update the trigger values once sufficient data (background monitoring) is available.
- pH and Total Iron concentrations exceed the relevant trigger levels however the reported values are below the maximum ranges reported within aquifers hosted within basalts located

within the region (McJannet *et al.* 2015). Therefore, the exceedances are considered to be the result of the natural geological environment.

Additional to these elevated results, two anomalous values were reported for:

- Total recoverable hydrocarbons (TRH) within BQN1-S (390µg/L) during the December monitoring period;
- Total Lead within BQN2-B (0.077mg/L) on the 3 March 2021

A review of the oil and grease concentrations (Table 2-10) from within monitoring wells BQN1-S during the monitoring round (1/12/21) where elevated TRH values were observed does not show any correlation. Elevated TRH values would only be present if oil and grease concentrations were elevated. Additionally, TRH concentrations reported in the previous monitoring rounds were reported to be below the limit or reporting. Therefore the reported total recoverable hydrocarbons concentrations observed within the monitoring well BQN1-S is interpreted as anomalous.

Additionally elevated total lead concentrations observed within BQN2-B (0.077mg/L) are also likely to be anomalous as the values reported in the previous reporting period and subsequent monitoring rounds were all reported at or below the limit or reporting. This interpretation is substantiated by dissolved lead concentrations reported from the same monitoring event within the same monitoring well (BQN2-B: <0.001mg/L) recording a value less than the limit of reporting.

Based on the assessment of groundwater data, the site is compliant with the requirements specified within the condition (Schedule 3 - Condition 19) however as per section 3.5.5 of the SWMP groundwater quality results should be adequately assessed against site specific triggers to determine whether elevated values are anomalous, or groundwater quality is declining.

Table 2-10 Summary of Groundwater Monitoring Results

Sample Point	Date	pH	Conductivity	Oil and Grease	Sodium	Potassium	Calcium	Magnesium	Chloride	Sulfate	Iron - Total	Lead - Total	Iron Dissolved	Lead - Dissolved	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene	Naphthalene	Total Recoverable Hydrocarbons (Sum of C10 – C36)
			dS/m	mg/L										µg/L							
ANZECC Guidelines - Freshwater		6.5 - 9.0	1.500	-	-	-	-	-	-	-	-	0.0034	-	0.0034	-	180	-	-	-	-	-
ADWG Guidelines - Drinking Water		6.5 - 8.5	-	-	-	-	-	-	-	500	0.3	0.01	-	0.01	1	800	300	-	-	-	-
BQS1-S Interim Trigger		7.12	0.512	10.8	-	-	-	-	-	-	1.82	0.001	-	-	-	-	-	-	-	-	-
BQS1-S	2/03/2021	6.36	0.252	<2	35.5	2.36	11.9	4.15	17	7	0.245	<0.001	<0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	8.20	0.349	<2	34.7	2.10	12.6	4.66	16	8	0.112	<0.001	0.004	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	8.15	0.253	10	38	2.50	14.7	4.70	22	4	0.326	0.001	0.001	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	7.00	0.260	8	38	2.38	14.9	5.21	22	6	0.269	<0.001	0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	390
BQS1-I Interim Trigger		8.12	1.624	21	-	-	-	-	-	-	4.97	0.005	-	-	-	-	-	-	-	-	-
BQS1-I	2/03/2021	8.01	1.442	<2	254	5.79	30.4	5.48	356	12	0.099	<0.001	0.046	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	6.58	1.281	2	250	4.86	28.4	5.21	295	13	0.039	<0.001	0.023	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	7.54	1.369	4	277	5.60	30.3	5.70	315	7	0.112	<0.001	0.023	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	9.02	1.423	6	271	5.23	29.4	5.39	317	10	0.636	<0.001	0.022	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
BQS1-D Interim Trigger		8.30	1.829	14.2	-	-	-	-	-	-	6.58	0.009	-	-	-	-	-	-	-	-	-
BQS1-D	2/03/2021	8.19	1.763	<2	348	4.11	13.3	1.80	477	38	0.455	<0.001	<0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	7.71	1.590	<2	340	3.68	13.0	1.74	416	36	0.167	<0.001	0.002	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	7.68	1.689	11	371	4.26	15.2	2.59	419	33	1.97	0.001	0.003	0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	8.47	1.723	17	344	3.71	12.7	1.70	438	38	0.344	<0.001	0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100

Sample Point	Date	pH	Conductivity	Oil and Grease	Sodium	Potassium	Calcium	Magnesium	Chloride	Sulfate	Iron - Total	Lead - Total	Iron Dissolved	Lead - Dissolved	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene	Naphthalene	Total Recoverable Hydrocarbons (Sum of C10 – C36)
			dS/m	mg/L										µg/L							
ANZECC Guidelines - Freshwater		6.5 - 9.0	1.500	-	-	-	-	-	-	-	-	0.0034	-	0.0034	-	180	-	-	-	-	-
ADWG Guidelines - Drinking Water		6.5 - 8.5	-	-	-	-	-	-	-	500	0.3	0.01	-	0.01	1	800	300	-	-	-	-
BQN1-B Interim Trigger		7.18	1.171	4.1	-	-	-	-	-	-	2.16	0.001	-	-	-	-	-	-	-	-	-
BQN1-B	2/03/2021	7.00	1.001	<2	163	4.21	28.3	16.0	232	7	1.63	0.001	0.013	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	7.09	0.979	6	157	3.52	26.6	16.7	189	8	1.63	<0.001	0.82	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	7.18	1.017	<2	177	4.03	28.3	18.0	202	6	1.77	<0.001	0.038	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	7.00	1.041	2	181	3.98	28.7	18.8	211	8	1.77	<0.001	0.086	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
BQN1-A Interim Trigger		11.34	2.082	9	-	-	-	-	-	-	1.97	0.018	-	-	-	-	-	-	-	-	-
BQN1-A	2/03/2021	9.22	1.767	<2	298	6.69	60.4	7.55	508	21	2.33	0.003	0.055	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	7.24	1.755	2	318	6.27	42.7	6.24	478	25	0.038	<0.001	0.003	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	7.62	1.937	<2	350	6.80	77.7	12.4	504	21	7.34	0.004	0.002	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	9.02	1.975	<2	357	7.26	47.6	7.92	541	25	0.362	<0.001	0.01	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
BQN1-D Interim Trigger		9.10	1.440	4.4	-	-	-	-	-	-	97.64	0.008	-	-	-	-	-	-	-	-	-
BQN1-D	2/03/2021	8.43	1.378	<2	278	2.78	13	6.42	320	83	12.2	0.002	0.007	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	9.14	1.252	2	260	2.13	9.06	0.89	266	69	0.365	<0.001	0.002	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	9.06	1.323	5	277	3.00	24.7	32.5	288	65	66.6	0.004	0.013	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	8.47	1.379	2	294	2.85	16.4	16.7	309	76	31.1	0.002	0.011	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100

Sample Point	Date	pH	Conductivity	Oil and Grease	Sodium	Potassium	Calcium	Magnesium	Chloride	Sulfate	Iron - Total	Lead - Total	Iron Dissolved	Lead - Dissolved	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene	Naphthalene	Total Recoverable Hydrocarbons (Sum of C10 – C36)
			dS/m	mg/L										µg/L							
ANZECC Guidelines - Freshwater		6.5 - 9.0	1.500	-	-	-	-	-	-	-	-	0.0034	-	0.0034	-	180	-	-	-	-	-
ADWG Guidelines - Drinking Water		6.5 - 8.5	-	-	-	-	-	-	-	500	0.3	0.01	-	0.01	1	800	300	-	-	-	-
BQN2-B Interim Trigger		11.07	1.138	3.6	-	-	-	-	-	-	0.57	0.004	-	-	-	-	-	-	-	-	-
BQN2-B	2/03/2021	9.06	1.044	2	184	6.70	23.9	4.54	244	28	0.203	0.077	<0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	10.20	0.969	<2	151	6.25	23.2	0.37	182	39	0.018	<0.001	0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	9.77	0.952	<2	167	6.40	30.5	3.10	203	29	0.535	0.001	0.003	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	10.53	1.061	5	168	6.58	26.7	2.01	221	31	0.246	<0.001	0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
BQN2-A Interim Trigger		8.67	1.200	6.9	-	-	-	-	-	-	0.30	0.002	-	-	-	-	-	-	-	-	-
BQN2-A	2/03/2021	7.75	0.680	3	112	7.08	23.7	9.17	100	19	0.052	0.001	<0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	9.68	0.662	<2	107	6.37	23.6	8.93	80	21	0.018	<0.001	0.008	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	8.10	0.429	<2	70.2	4.50	20.1	7.70	52	8	0.138	0.001	0.002	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	7.32	0.533	5	93.2	5.58	24.9	10.5	77	14	0.134	<0.001	0.006	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
BQN2-D Interim Trigger		8.85	1.014	4	-	-	-	-	-	-	3.904	0.005	-	-	-	-	-	-	-	-	-
BQN2-D	2/03/2021	8.77	0.906	5	205	2.15	3.58	0.44	101	19	0.083	0.001	<0.005	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	3/06/2021	8.30	0.836	3	199	1.76	3.23	0.45	79	19	0.062	<0.001	0.003	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100
	2/09/2021	8.47	0.906	5	218	2.2	3.6	0.5	96	15	0.314	0.001	0.003	<0.001	<0.5	6.9	<0.5	<1	<0.5	<0.5	<100
	1/12/2021	8.69	0.914	7	220	2	3.57	0.49	93	18	0.183	<0.001	0.006	<0.001	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<100

#### **2.4.21 Schedule 3 - Condition 20 (Record of Truck Movements)**

The Proponent must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months.

##### **Compliance Statement**

Records on laden truck movements are kept which detail the date, time and registration plate details of trucks exiting the quarry. A review of the Council website indicates that these records and a summary table with daily, weekly, and monthly total laden truck movements are provided for the 2021 calendar year.

#### **2.4.22 Schedule 3 - Condition 21 (Road Upgrades)**

The Proponent must undertake the following road upgrade works generally in accordance with the recommendations in the EA, and to the satisfaction of the TfNSW:

- (a) upgrade the intersection of the Quarry Access and Nimbin Road to a 'Type AUR Intersection Treatment', prior to 31 December 2010;
- (b) upgrade the guard rails on the approaches to Booerie Creek Bridge prior to 31 December 2010;
- (c) upgrade the Booerie Creek Road and Nimbin Road intersection to a 'Type BAR Right Turn Treatment on the Through Road' prior to 31 December 2010;
- (d) upgrade the Wilson Street and Nimbin Road intersection to a 'Type CHR Right Turn Bay Treatment' prior to 31 December 2010; and
- (e) re-align Nimbin Road and the Quarry Access intersection to meet the AUSTRoads sight distance requirements for vehicles travelling in both directions through the intersection prior to 31 December 2011; and,
- (f) upgrade the intersection at Nimbin Road and the Quarry Access from the current Type AUR intersection to a Type CHR-S (Shortened Channelised Right Hand Turn) to the satisfaction of TfNSW.

*Note: The road works must be constructed in accordance with the relevant TfNSW or AUSTRoads standards, and signposted and lit in accordance with AS:1742 – Manual of Uniform Traffic Control Devices and AS/NZ 1158:2005 – Lighting for Roads and Public Spaces.*

##### **Compliance Statement**

All required roadworks associated items a – e within this condition were completed prior to this reporting period.

Designs completed for 21(f). Project planning is approved however Council will assess budget requirements in respect to work schedules in the coming financial year.

#### **2.4.23 Schedule 3 - Condition 22 (Road Upgrades)**

The Proponent must:

- (a) restrict truck movements from the quarry to an average of 50 laden trucks a day until all road upgrades works required by condition 21 (a) – (e) of Schedule 3, are met or unless otherwise approved by the Secretary;

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

### **Compliance Statement**

A review of truck movements from the quarry indicates that the average laden trucks departing site are below the specifications listed in item (a) of the Condition.

The Operational Traffic Management Plan (refer to Schedule 3 Condition 23 in Section 2.4.24) includes measures to address Items (b), (c) and (d).

#### **2.4.24 Schedule 3 - Condition 23 (Traffic Management Plan)**

The Proponent must prepare a Traffic Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be prepared in consultation with the TfNSW and Council;
- (b) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- (c) describe the processes in place for the control of truck movements entering and exiting the site;
- (d) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers transporting products to and from the quarry;
- (e) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
- (f) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry.

The Proponent must implement the approved Traffic Management Plan as approved from time to time by the Secretary.

### **Compliance Statement**

The updated Operational Traffic Management Plan (Rev 3.1) for the quarry was submitted by Council and endorsed by the DPE in 2018.

#### **2.4.25 Schedule 3 - Condition 24 (Aboriginal Heritage Management Plan)**

The Proponent must prepare an Aboriginal Heritage Management Plan for the project to the satisfaction of the Secretary. The plan must:

- (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
- (b) be prepared in consultation with Heritage NSW and the Registered Aboriginal Parties;
- (c) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary; and
- (d) include a description of the measures that would be implemented to:
  - protect, monitor and manage known sites of archaeological significance;

- manage any new Aboriginal objects or relics that are discovered;
- store Aboriginal heritage items salvaged on site; and
- ensure ongoing consultation and involvement of the Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site.

The Proponent must implement the approved Aboriginal Heritage Management Plan as approved from time to time by the Secretary.

**Compliance Statement**

The updated Aboriginal Heritage Management Plan (Rev 3.1) for the quarry was submitted by Council and endorsed by the DPE in 2018.

**2.4.26 Schedule 3 - Condition 25 (Aboriginal Heritage)**

If any item or object of Aboriginal heritage significance is identified on site, the Proponent must ensure that:

- (a) all work in the immediate vicinity of the suspected Aboriginal item or object ceases immediately;
- (b) a 10 m buffer area around the suspected item or object is cordoned off; and
- (c) the Heritage NSW is contacted immediately.

Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the National Parks and Wildlife Act 1974.

**Compliance Statement**

Council advises that no items or objects of Aboriginal Cultural Heritage significance were identified during the reporting period. The Aboriginal Heritage Management Plan (Schedule 3 Condition 24 in Section 2.4.25) includes an Unexpected Finds Procedure, which will further guide staff actions in the event that an item or object of Aboriginal Cultural Heritage is discovered.

**2.4.27 Schedule 3 – Condition 25A (Habitat Offsets)**

The Proponent must:

- (a) implement the Biodiversity Offset Strategy (see Table 5 (Mod 3 and listed in Table 2-11 below));
- (b) ensure that adequate resources are dedicated towards the implementation of this strategy;
- (c) provide appropriate long- term security for the offset area; and
- (d) provide a timetable for the implementation of the offset strategy prior to 30 June 2010, or as otherwise agreed by the Secretary, to the satisfaction of the Secretary.

**Table 2-11 Biodiversity Offset Strategy**

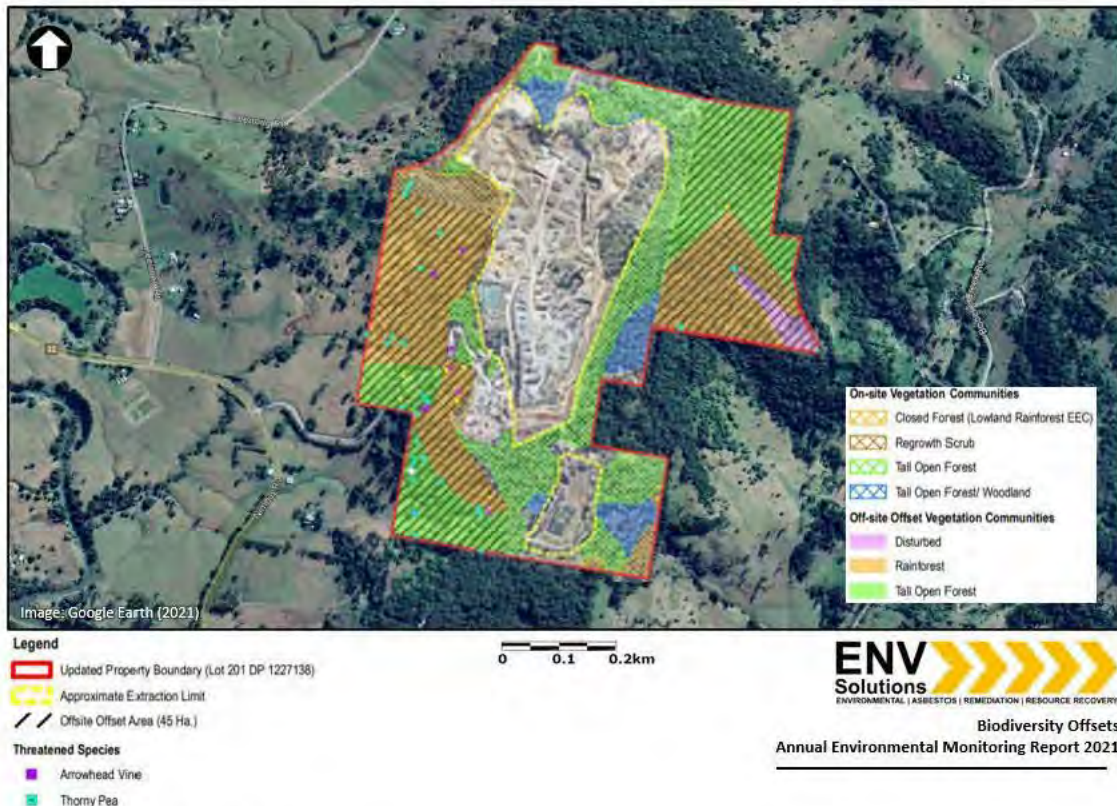
<b>Offset Areas</b>	<b>Minimum Size</b>
On-site offset (Protection Zone on Appendix 4)	17.6 hectares
Off-site offset (within Lismore local government area, and not already within a conservation area)	45 hectares
<b>Total</b>	<b>62.6 hectares</b>



*Note: Mechanisms to provide appropriate long-term security to the land within the Biodiversity Offset Strategy in accordance with the NSW Biodiversity Offset Policy for Major Projects 2014, include a BioBanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome.*

**Compliance Statement**

The Biodiversity Offset Strategy for the quarry was submitted by Council and endorsed by the DPE in March 2019. Figure 2-13 identifies the biodiversity offsets held in perpetuity by Council for the project.



**Figure 2-13 Biodiversity Offsets**

**2.4.28 Schedule 3 - Condition 26 (Rehabilitation Strategy)**

The Proponent must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and must comply with the objectives in Table 6 (of Mod 3 and listed in Table 2-12 below).

**Table 2-12 Rehabilitation Objectives**

Feature	Objective
<i>All areas of the site affected by the project</i>	<ul style="list-style-type: none"> <li>• Safe</li> <li>• Hydraulically and geotechnically stable</li> <li>• Non-polluting</li> <li>• Fit for the intended post-mining land use(s)</li> <li>• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land</li> </ul>

Feature	Objective
<i>Surface Infrastructure</i>	<ul style="list-style-type: none"> <li>Decommissioned and removed, unless otherwise agreed by the Secretary</li> </ul>
<i>Quarry benches and pit floor</i>	<ul style="list-style-type: none"> <li>Landscaped and vegetated using native tree and understorey species</li> </ul>
<i>Final Void</i>	<ul style="list-style-type: none"> <li>Minimise the size, depth and slope of the batters of the final void</li> <li>Minimise the drainage catchment of the final void</li> </ul>

**Compliance Statement**

No site rehabilitation was required, or occurred, during the reporting period.

**2.4.29 Schedule 3 - Condition 27 (Progressive Rehabilitation)**

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

*Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to future re-disturbance*

**Compliance Statement**

No site rehabilitation was required, or occurred, during the reporting period.

**2.4.30 Schedule 3 - Condition 28 (Biodiversity Management Plan)**

The Proponent must prepare a Biodiversity and Rehabilitation Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be prepared by a suitably qualified expert;
- (b) be prepared in consultation with BCD and Council;
- (c) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- (d) provide details of the conceptual final landform and associated land uses for the site;
- (e) describe how the implementation of the Biodiversity Offset Strategy will be integrated with the overall rehabilitation of the site;
- (f) include a Koala Management Plan prepared in accordance with SEPP 44;
- (g) include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site (including progressive rehabilitation), including triggers for any necessary remedial action;
- (h) describe the short, medium and long-term measures to be implemented to:
  - manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and
  - ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this approval;

- (i) include a detailed description of the measures described in paragraph (h) to be implemented over the next 3 years (to be updated for each 3-year period following initial approval of the plan) including the procedures to be implemented for:
  - maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation;
  - restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
  - protecting vegetation and fauna habitat outside the approved disturbance area on-site, including core Koala habitat;
  - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
  - establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;
  - ensuring minimal environmental consequences for threatened species, populations and habitats;
  - collecting and propagating seed;
  - controlling weeds and feral pests
  - controlling erosion; and,
  - managing bushfire risk.
- (j) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
- (k) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate these risks; and,
- (l) include details of who is responsible for monitoring, reviewing, and implementing the plan.

The Proponent must implement the Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.

### **Compliance Statement**

The Biodiversity Rehabilitation Management Plan was submitted to DPE in August 2018. In 2019, following the approval of the Biodiversity Offset Strategy, the Biodiversity Rehabilitation Management Plan was again amended and submitted to DPE for approval. This was subsequently approved on 14 March 2019.

Bush regeneration activities associated with the management of biodiversity offsets continued throughout 2021 as per the requirements specified within the Biodiversity Offset Strategy. An assessment of these activities provided within the Blakebrook Quarry Bush Regeneration Plan Monitoring Report (Appendix R) indicates that all key performance indicators specified within the governing strategy were being achieved.

#### **2.4.31 Schedule 3 - Condition 29 (Biodiversity and Rehabilitation Bond)**

Within 6 months of the approval of the Biodiversity and Rehabilitation Management Plan, the Proponent must lodge a Biodiversity and Rehabilitation Bond with the Department to ensure that the Biodiversity Offset Strategy and rehabilitation of the site are implemented in accordance with the performance and completion criteria set out in the plan and the relevant conditions of this approval. The sum of the bond must be determined by:

- (a) calculating the full cost of implementing the Biodiversity Offset Strategy;
- (b) calculating the cost of rehabilitating all disturbed areas of the site, taking into account the likely surface disturbance over the next 3 years of quarrying operations; and
- (c) employing a suitably qualified quantity surveyor or other expert to verify the calculated costs, to the satisfaction of the Secretary.

*Notes:*

- *Alternative funding arrangements for long term management of the Biodiversity Offset Strategy, such as provision of capital and management funding as agreed by BCD as part of a BioBanking Agreement, or transfer to conservation reserve estate can be used to reduce the liability of the Biodiversity and Rehabilitation Bond.*
- *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
- *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant work.*

**Compliance Statement**

This condition was complied with prior to the reporting period.

**2.4.32 Schedule 3 – Condition 30 (Review of Biodiversity Bond)**

Within 3 months of each Independent Environmental Audit (see Condition 12 of Schedule 5), the Proponent must review, and if necessary, revise the sum of the Biodiversity and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:

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

**Compliance Statement**

The bond was reviewed and paid in 2019, following completion of the last Independent Environmental Audit. A review of the biodiversity bond is required within 3 months of the IEA report submission (due October 2022).

**2.4.33 Schedule 3 – Condition 31 (Visual Impacts)**

The Proponent must implement all reasonable and feasible measures to minimise the visual and offsite lighting impacts of the project to the satisfaction of the Secretary.

### **Compliance Statement**

Quarry operations are located below the tree line and do not intrude on the landscape of visual character of the locality. Council advises that they are not aware of any complaints with respect to visual impacts associated with the quarry.

#### **2.4.34 Schedule 3 – Condition 32 (Waste Management)**

The Proponent must:

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

### **Compliance Statement**

Council advises that, during the reporting period, waste management practices at the quarry involved the following:

- Segregation of waste streams (general waste and recyclables).
- Council carries out ‘standard’ waste collection service, supplemented by waste delivery to the Wyrallah Road Waste Management Facility by quarry staff as required.
- Used oil and chemicals drums / containers are transported (when applicable) to the Wyrallah Road Waste Management Facility by quarry staff on an ‘as needs’ basis.
- Crushed glass from the Wyrallah Road Waste Management Facility is mixed with quarry product road base. The EPA Licence has been varied to allow the acceptance of glass sand for this purpose.
- No waste streams (other than the glass product referenced above) is stored or processed on site.

#### **2.4.35 Schedule 3 - Condition 33 (Waste Management)**

Except as expressly permitted in an EPL, the Proponent must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

### **Compliance Statement**

Council reported a non-compliance to the EPA on Friday 10th December (ref 8147). Excavated Road Material intended for reuse offsite, pursuant to The Excavated Public Road Material Order 2014 was incorrectly brought into the Quarry between 28 October 2021 and 8 December 2021 for temporary storage.

Discussions with involved parties highlighted the extremely confined nature of the road reserve in the project area, lack of other appropriate storage areas for the material and extreme challenges with road construction and meeting project deadlines in the ongoing wet weather. EPA advised on 1 April 2022 that no further action would be taken at this time. Council is progressively transporting material offsite and providing regular updates to the EPA.

In accordance with the Quarry's Incident Reporting Investigation and Notification Procedure the EPA were notified via the Environment Line (ref 8147). DPE were notified via the Major Projects Planning Portal in accordance with the required timeframes in the consent conditions. The non-compliance has been recorded in the Quarry's Non-conformance Register in accordance with Integrated Management System requirements (per ISO9001 & ISO14001).

#### **2.4.36 Schedule 3 – Condition 34 (Storage of Liquids)**

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

##### **Compliance Statement**

Council advises that during the reporting period there were no changes to the former methods of storing liquids, namely:

- A 20,000 litre self-bunded fuel tank is provided on site within a besser block bund;
- Oils and lubricants are stored in suitable containers with self-contained bunding; and
- Chemicals associated with the on-site laboratory are stored within suitable containers within a bunded shed.

Note: Since February 2022, the 20,000 litre fuel tank is no longer in use as the site has upgraded to a self bunded 10,000 litre diesel tank.

#### **2.4.37 Schedule 3 - Condition 35 (Dangerous Goods)**

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

##### **Compliance Statement**

Quarry stores include ethanol (for laboratory use), hydraulic and transmission fluids and oils. These liquids, in addition to diesel fuel, are stored as outlined in Section 2.4.36 (Storage of Liquids).

#### **2.4.38 Schedule 3 - Condition 36 (Fire)**

The Proponent must:

- (a) ensure that the project is suitably equipped to respond to any fires on site; and
- (b) assist the Rural Fire Service and emergency services to the extent practicable if there is a fire in the vicinity of the site.

##### **Compliance Statement**

Council advises that during the reporting period:

- The Pollution Incident Response Management Plan was tested in March 2021 and contains response actions for fires on site.
- The quarry was equipped with both fire extinguishers and water carts, with this equipment maintained on a regular basis.

- The Emergency Response Plan contains scenarios for fires on site, including bush fire. Emergency drills are undertaken annually as a minimum, last enacted in May and October 2021.

## 3 SCHEDULE 4 – ADDITIONAL PROCEDURES

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### 3.1.1 Schedule 4 - Condition 1 (Notification of Exceedance)

As soon as practicable, and no longer than 7 days, after obtaining monitoring results showing:

- an exceedance of any criteria in Schedule 3, the Proponent must notify the affected landowners in writing of the exceedance, and provide regular monitoring results, at least every 3 months, to each affected landowner until the project is again complying with the relevant criteria; and
- an exceedance of any air quality criteria in Schedule 3, the Proponent must send a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

#### **Compliance Statement**

There were no exceedances recorded during the reporting period.

### 3.1.2 Schedule 4 – Condition 2 (Independent Review if Impacts)

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

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

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

#### **Compliance Statement**

No neighbours requested an independent assessment of the impacts of the development on their land during the reporting period however, Council did carry out a dilapidation assessment at a property located proximal to the operations after a complaint was received in regard to blasting on 13 December 2021 (refer to condition 3.1.5).

### 3.1.3 Schedule 4 - Condition 3 (Baseline Dilapidation Reports)

Prior to 30 June 2010, the Proponent must advise all owners of privately-owned land within 2 kilometres of proposed blasting activities, and any other landowner nominated by the Secretary, that they are entitled to a property inspection to establish the baseline condition of the property.



### **Compliance Statement**

All notifications and associated inspections required by this condition were completed prior to this reporting period.

#### **3.1.4 Schedule 4 – Condition 4 (Property Inspections)**

If the Proponent receives a written request for a property inspection from any such landowner, the Proponent must:

- (a) commission a suitably qualified person, whose appointment has been approved by Secretary, to inspect and report on the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and,
- (b) give the landowner a copy of this property inspection report.

*Note: It is preferable for the property inspection to be carried out prior to the commencement of blasting activities on the site, and the Proponent should facilitate this occurring wherever possible.*

### **Compliance Statement**

As required by Schedule 4, Condition 3, Council afforded neighbours an opportunity for property inspections. Subsequently Council received several written requests for property inspections, this was completed in 2012. No further written requests were received within the reporting period.

#### **3.1.5 Schedule 4 - Condition 5 (Property Investigations)**

If any owner of privately-owned land within 2 kilometres of proposed blasting activities, or any other landowner nominated by the Secretary, claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:

- (a) commission a suitably qualified person whose appointment has been approved by the Secretary to investigate the claim and prepare a property investigation report; and
- (b) give the landowner a copy of the report.

If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damage to the satisfaction of the Secretary.

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

### **Compliance Statement**

Council received a complaint claiming property damage as a result of a blast. Subsequently Council firstly engaged a building consultant to investigate and document structural damage at the complainant's property on 20 January 2022, with a report due by 13 March 2022. This report was delayed due to major flooding across the region in February/March and was provided to the property owner upon receipt on 27 April 2022 (falling outside the required three (3) months' timeframe). Secondly, Council engaged a third-party consultant (specialised blast expert) to conduct additional monitoring and review the dilapidation report and blast circumstances. This investigation is in progress and once complete a property investigation report will be provided to both parties including the Department of Planning and Environment. Council has liaised with the DPE regarding this issue and

the associated timeframes. Council advised that one (1) suitably qualified person to fulfil all the requirements of Schedule 4, conditions 3.1.5 (a) was not viable.

## **4 SCHEDULE 5 – ENVIRONMENTAL MANAGEMENT, REPORTING & AUDITING**

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### **4.1.1 Schedule 5 - Condition 1 (Environmental Management Strategy)**

The Proponent must prepare an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must:

- (a) be submitted to the Secretary for approval within 6 months of the Secretary requiring preparation of the strategy by notice to the Proponent;
- (b) provide the strategic framework for environmental management of the project;
- (c) identify the statutory approvals that apply to the project;
- (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;
- (e) describe the procedures to be implemented to:
  - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
  - receive, record, handle and respond to complaints;
  - resolve any disputes that may arise during the course of the project;
  - respond to any non-compliance;
  - respond to emergencies; and
- (f) include:
  - copies of any strategies, plans and programs approved under the conditions of this approval; and
  - a clear plan depicting all the monitoring to be carried out under the conditions of this approval. The Proponent must implement any Environmental Management Strategy as approved from time to time by the Secretary.

### **Compliance Statement**

The Environmental Management Strategy for the quarry was updated and endorsed by DPE in 2018. A copy of the updated plan (Rev 3.1) is available on the Council website.

### **4.1.2 Schedule 5 - Condition 2 (Consultation with Agencies)**

Where consultation with any State or local agency is required by the conditions of this approval, the Proponent must:

- (a) consult with the relevant agency prior to submitting the required document to the Secretary for approval;
- (b) submit evidence of this consultation as part of the relevant document;
- (c) describe how matters raised by the agency have been addressed and any matters not resolved; and
- (d) include details of any outstanding issues raised by the agency and an explanation of disagreement between any agency and the Proponent.

## **Compliance Statement**

Consultation with State agencies (DPE and EPA) occurred in relation the development of an Out of Work Hours Works Protocol for campaign asphalt operations during the night period. This document was approved by DPE on 16 February 2022.

No other documents (or updates to documents) requiring consultation with State or local agencies were prepared or submitted during the reporting period.

### **4.1.3 Schedule 5 - Condition 3 (Management Plan Requirements)**

The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:

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

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

## **Compliance Statement**

No management plans (or updates to management plans) required by the approval were prepared during the reporting period. Revised versions of the approved management plans shall be submitted for review and subsequent endorsement (where required) in the proceeding reporting period (2022) as per the document control schedule contained within the sites integrated management system.

#### **4.1.4 Schedule 5 - Condition 4 (Application of Existing Management Plans)**

The Proponent must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this approval, until the approval of a similar plan, strategy or program under this approval.

##### **Compliance Statement**

Council has confirmed that the most recently approved versions of management plans, strategies and monitoring programs are being applied.

#### **4.1.5 Schedule 5 - Condition 4A (Review of Strategies and Plans)**

Within 3 months of the submission of an:

- (a) incident report under condition 9 below;
- (b) Annual Review under condition 11 below;
- (c) audit report under condition 12 below; and,
- (d) any modifications to this approval,

the Proponent must review the strategies, plans and programs required under this approval, to the satisfaction of the Secretary. The proponent must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.

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

##### **Compliance Statement**

Council advises that they utilise an integrated electronic document and records management system (Content Manager (TRIM)) to assist in capturing, managing and securing site related information in order to meet governance and regulatory compliance obligations. All corrective actions or modifications associated with items a – d of the condition is assessed and entered into this programme to ensure compliance.

#### **4.1.6 Schedule 5 - Condition 5 (Updating Strategies and Plans)**

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

The Secretary may approve a revised strategy, plan or program required under this approval, or the staged submission of any of these documents, at any time. With the agreement of the Secretary, the Proponent may prepare the revised or staged strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this approval.

While any strategy, plan or program may be submitted on a staged basis, the proponent will need to ensure that the operations associated with the project are covered by suitable strategies, plans or programs at all times.

If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the project to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.

### **Compliance Statement**

Noted. A modification (MP 07\_20 Modification 3) to the Projects approvals was approved by the Minister of Planning on the 20 July 2021. Subsequently as per the conditions, an Out of Work Hours Protocol for night asphaltting and emergency works was developed. This document was developed in consultation with the State regulatory agencies.

Revised versions of the approved management plans shall be submitted for review and subsequent endorsement (where required) in the proceeding reporting period (2022) as per the document control schedule contained within the sites integrated management system.

#### **4.1.7 Schedule 5 – Condition 6 (Adaptive Management)**

The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and,
- (c) implement reasonable remediation measures as directed by the Planning Secretary

### **Compliance Statement**

No exceedances of the conditions were observed during the reporting period.

#### **4.1.8 Schedule 5 - Condition 7 (Community Consultative Committee)**

The Proponent must establish and operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. The CCC must be operated in general accordance with the Department's Community Consultative Committee Guidelines, November 2016 (or later version).

*Notes:*

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.*
- *In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Proponent, Council and the local community.*

### **Compliance Statement**

As outlined within Section 4.1 of the Community Consultative Guidelines for State Significant Projects (2019) the frequency of committee meetings shall be determined on a number of factors including:

- Size and complexity
- Stage of the project
- Level of public interest
- Sensitivity of the site and surrounds

As outlined in the 2018 AEMR, the CCC decided to convene annually due to the lack of attendance. In keeping with this, the CCC met on one occasion during the reporting period on 8 December 2021. The minutes of this meeting are provided within Appendix S and are also available on the Council website.

#### **4.1.9 Schedule 5 - Condition 8 (Incident Notification)**

The Proponent must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

##### **Compliance Statement**

During the reporting period, there were no incidents, defined as a set of circumstances that causes or threatens to cause material harm to the environment.

#### **4.1.10 Schedule 5 - Condition 9 (Reporting of Incidents)**

Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

##### **Compliance Statement**

During the reporting period there was one (1) exceedance relating to Schedule 3, condition 33 – Waste. Council self-reported the incident to EPA and DPE and acted in accordance with reporting conditions. EPA have advised via email on 1 April 2022 that no further action would be taken at this time.

#### **4.1.11 Schedule 5 - Condition 10 (Reporting of Environmental Performance)**

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

##### **Compliance Statement**

The Council website contains comprehensive information regarding the environmental performance of the project, including the Annual Environmental Monitoring Reports and ancillary monitoring reports specific to various environmental impacts and aspects (i.e. Noise, Dust, Vibration, Water Quality and Revegetation).

#### **4.1.12 Schedule 5 - Condition 11 (Annual Review)**

By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent must submit a review to the Department reviewing the environmental performance of the project to the satisfaction of the Secretary. This review must:

- (a) describe the project (including any progressive rehabilitation) that was carried out in the previous calendar year, and the project that is proposed to be carried out over the current calendar year;
- (b) include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - requirements of any plan or program required under this approval;
  - monitoring results of previous years; and
  - relevant predictions in the documents listed in condition 2(a) of Schedule 2;
- (c) evaluate and report on:
  - the effectiveness of the air quality and noise management systems; and
  - compliance with the performance measures, criteria and operating conditions in this approval.
- (d) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
- (e) identify any trends in the monitoring data over the life of the project;
- (f) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies;
- (g) describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.

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

#### **Compliance Statement**

The Annual Environmental Monitoring Reports (AEMR) for 2020 was compiled and submitted to DPE in March 2021 in accordance with the required timeframe. The AEMR 2021 is due for submission to DPE by 30 June 2022, as an extension granted due to extensive regional flooding at the original submission time. The AEMR has been structured to provide clear reporting against each condition within the approval.

#### **4.1.13 Schedule 5 - Condition 12 (3 Year Independent Audit)**

Within three years of the date of grant of this project approval, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent must commission, commence and pay the full cost of an Independent Environmental Audit of the project.

This audit must:

- (a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
- (b) include consultation with the relevant agencies and the CCC;

- (c) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL or necessary water licences for the project (including any assessment, strategy, plan or program required under these approvals);
- (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals;
- (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and
- (f) be conducted and reported to the satisfaction of the Secretary.

### **Compliance Statement**

The most recent three yearly Independent Environmental Audit was undertaken in November 2018. The current Independent Environmental Audit (IEA) was delayed due to unavailability of consultants in November 2021, then extensive regional flooding in early 2022. DPE granted a request to allow extension of the 2019-2021 Audit report to 11 July 2022, with all corrective actions reviewed and implemented in the proceeding reporting period.

#### **4.1.14 Schedule 5 - Condition 13 (Implementation of Audit Recommendations)**

Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Proponent must implement these recommendations, to the satisfaction of the Secretary.

### **Compliance Statement**

In accordance with the three-yearly cycle, an Independent Environmental Audit is currently in progress. This audit report shall be submitted to the DPE by 11 July 2022.

#### **4.1.15 Schedule 5 - Condition 14 (Information to be Available Online)**

Within 3 months of the determination of Modification 1, until the completion of all works, including rehabilitation and remediation the Proponent must:

- (a) make the following information is publicly available on its website:
  - the documents listed in condition 2(a) of Schedule 2;
  - current statutory approvals for the project;
  - all approved strategies, plans and programs required under the conditions of this approval;
  - a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs;
  - a complaints register, updated monthly;
  - the annual reviews of the project;
  - any independent environmental audit as described in condition 12 above, and the Proponent's
  - response to the recommendations in any audit; and
  - any other matter required by the Secretary; and



(b) keep this information up-to-date, to the satisfaction of the Secretary.

**Compliance Statement**

Appendix T provides a schedule confirming that the information listed above is available on the Council website.

Appendix U provides a copy of the Complaint Register for the reporting period. The register is available on the Council website and has been updated monthly as required.

**4.2 Appendix 5 – Noise Compliance Assessment**

**4.2.1 Appendix 5 - Condition 1 (Weather Parameters)**

The noise criteria in Table 2 (of Mod 3 and listed in Table 2-13) are to apply under all meteorological conditions except the following:

- (a) wind speeds greater than 3 m/s at 10 m above ground level; or
- (b) temperature inversion conditions between 1.5°C and 3°C/100 m and wind speed greater than 2 m/s at 10 m above ground level; or
- (c) temperature inversion conditions greater than 3°C/100 m.

Table 2-1 Noise Criteria

Receiver	Day LAeq (15 minutes)
Location 2	36
All other locations	35

**Compliance Statement**

Noted.

**4.2.2 Appendix 5 - Condition 2 (Meteorological Station)**

Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station required under Condition 13 of Schedule 3.

**Compliance Statement**

The meteorological station was installed onsite in early 2018. The 2021 Noise Monitoring Report includes reference to the on-site weather data as well as available external meteorological data.

**4.2.3 Appendix 5 - Condition 3 (Timing of Assessment)**

A noise compliance assessment must be undertaken within two months of commencing mining operations under EA (Mod 1). The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with the noise criteria in Table 2. A report must be provided to the Secretary and EPA within 1 month of the assessment.

## **Compliance Statement**

Mod 1 was approved in September 2017. The required noise compliance assessment was completed in November 2017 in accordance with this requirement.

### **4.2.4 Appendix 5 - Condition 4 (Methodology of Assessment)**

Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:

- (a) monitoring locations for the collection of representative noise data;
- (b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;
- (c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and
- (d) the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing. This should be undertaken in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA, 2017).

## **Compliance Statement**

The 2021 Noise Assessment has been completed in accordance with the NSW Industrial Noise Policy. Frequency adjustments were required for measurement collected from each monitoring site to remove extraneous noise sources. These adjustments were carried out in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA, 2017).

The noise monitoring report is provided at Appendix J.

## 5 SUMMARY OF FINDINGS AND ACTIONS

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### 5.1 Summary of Non-Compliances

The findings of the AEMR indicated that there was one (1) non-compliance with the conditions during the reporting period, as per Schedule 3, condition 33. In addition, the following items were observed in the assessment that require further action or noting:

1. Council reported a non-compliance to the EPA on Friday 10 December (ref 8147). Excavated Road Material intended for reuse offsite, pursuant to *The Excavated Public Road Material Order 2014* was incorrectly brought into the Quarry for temporary storage between 28 October 2021 and 8 December 2021. Discussions with involved parties highlighted the extremely confined nature of the road reserve in the project area, lack of other appropriate storage areas for the material and extreme challenges with road construction and meeting project deadlines in the ongoing wet weather. EPA advised on 1 April 2022 that no further action would be taken at this time. Council are progressively transporting this material offsite (in line with the Excavated Public Road Material Order 2014) and providing regular updates to the EPA.
2. One complaint was registered in regard to the blasting event that occurred on the 13 December 2021. The complaint was managed by Council's Commercial Services Compliance division as per the requirements specified within Section 8.7 of the approved Noise and Blasting Management Plan (2018). The complaint was responded to within the specified timeframes. Subsequently Council engaged a building consultant to investigate and document structural damage at the complainant's property on 20 January 2022, with a report due by 13 March 2022. This report was delayed due to major flooding across the region in February/March and was provided to the property owner upon receipt on 27 April 2022. Following this, Council engaged a third-party consultant (specialised blast expert) to conduct additional monitoring and review the dilapidation report and blast circumstances. This investigation is in progress and once complete a property investigation report will be provided to both parties including DPE.
3. Site specific targets of surface water quality within the receiving environment need to be updated and included in the revised Soil and Water Management Plan for each of the analysed parameters as stipulated in Attachment 6 – *Site specific surface water quality monitoring requirements and targets* of the approved SWMP (2019). Elevated pH was observed during monitoring of surface water within the receiving environment during the reporting period. These elevated results are not anticipated to be influenced by activities associated with quarrying operations. Based on the assessment of the quarterly field monitoring reports and associated monitoring results, the site complies with the requirements of the SWMP. Baseline data was completed in the March 2022 monitoring. This will establish trigger limits and be incorporated into the updated SWMP due to be completed in the coming months.
4. Correlation of groundwater results against site specific water quality triggers (for TPH, BTEX and Major Cations and Anions) is required as per Attachment 7 of the approved SWMP. Based on the assessment of the quarterly field monitoring reports and associated monitoring results, the site complies with the requirements of the SWMP. Baseline data was completed in the March 2022 monitoring. This will establish trigger limits and be incorporated into the updated

SWMP due to be completed in the coming months. These site-specific water quality trigger values, in addition to trigger values provided within the Australian water quality guidelines are required to be included and reported as per Section 3.5.5 of the SWMP.

Overall, this AEMR has found that the operations demonstrate a high level of compliance with the conditions of approval.

## 5.2 Status of Actions Identified in 2020 AEMR

The 2020 AEMR identified a number of actions and measures to improve environmental performance of the project. The individual actions and advice with respect to progress on the completion of these tasks is provided below:

- (a) Continuation of groundwater data collection to establish 12 data points for each monitoring well;  
**Response:** Additional groundwater monitoring data to establish 12 data points for each monitoring well was completed in March 2022. Site specific trigger limits are now to be calculated and incorporated into the updated SWMP due to be completed in the coming months to provide Council with the ability to assess compliance.
  
- (b) Continuation of surface water data collection to establish 8 data points for each sampling location; and,  
**Response:** Additional surface water monitoring data to establish 8 data points for each background (receiving environment) monitoring location was completed in March 2022. Site specific trigger limits are now to be calculated and incorporated into the updated SWMP due to be completed in the coming months to provide Council with the ability to assess compliance with regards to the discharge of sediment basins.
  
- (c) Continuation of work with DPE to finalise the current modification request to Part 3A Approval No.07\_0020.  
**Response:** MR (Mod 3) application was submitted and subsequently approved by DPE on 20 July 2021. All amendments to the conditions have been reviewed by Council and incorporated into the sites environmental management system.

## 6 CONCLUSION

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This Annual Environmental Monitoring Report (AEMR) has been prepared in response to Schedule 5 Condition 11 of the Blakebrook Quarry Part 3A Approval No. 07\_0020 (Mod 3). Each condition of approval has been reproduced in full and followed by a compliance statement addressing the findings.

One (1) non compliance was identified during the reporting period and during the compilation of this annual review. Several actions are recommended from environmental aspects assessed during the compilation of the report.

These include the provision of site-specific water quality triggers for all analytes specified within the approved Soil and Water Management Plan at each of the surface water and groundwater monitoring locations required to be assessed under this plan. Internal auditing will be required within the quarterly monitoring reports to enable Council to demonstrate compliance with these triggers or initiate an investigation to ascertain whether elevated results are influenced by site activities or extraneous sources. This discussion should include an assessment of water quality trends to assess for deteriorating water quality that may require further investigation.

Overall, this AEMR has found a high level of compliance with the conditions of approval.

## 7 REFERENCES

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Environmental Resources Management Australia (ERM), (2018a). Blakebrook Quarry Air Quality Management Plan (Rev 3.1). August 2018 for Lismore City Council.

ERM, (2018b). Blakebrook Quarry Noise & Blast Management Plan (Rev 3.1). August 2018 for Lismore City Council. ERM, (2019).

Blakebrook Quarry Biodiversity & Rehabilitation Management Plan (Rev 4.1). March 2019 for Lismore City Council.

Gilbert & Sutherland, (2019). Soil & Water Management Plan (Rev 4). February 2019 for Lismore City Council.

██ D (2015) Current water accounts and water quality for the Clarence-Moreton bioregion. Product 1.5 from the Clarence-Moreton Bioregional Assessment. Department of the Environment, Bureau of Meteorology, CSIRO and Geoscience Australia, Australia.

# APPENDIX A

Part 3A Approvals No.07\_0020 (Mod 3)



# Project Approval

## Section 75J of the *Environmental Planning & Assessment Act 1979*

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

These conditions are required to:

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

**Director-General  
as delegate for the Minister for Planning**

Sydney 2009

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### SCHEDULE 1

**Application No.:** 07\_0020  
**Proponent:** Lismore City Council  
**Approval Authority:** Minister for Planning  
**Land:** Extraction Areas Lot 53 DP1254990  
Asphalt Plant Lot 54 DP1254990  
Access Road Lot 53 DP1254990  
**Project:** Blakebrook Quarry Project

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Red type represents May 2021 Modification

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## DEFINITIONS

Aboriginal item or object	Any item or object that provides evidence of the use of an area by Aboriginal people, as defined under the <i>National Parks and Wildlife Act 1974</i>
Annual Review	The review required by condition 11 of Schedule 5.
AHD	Australian Height Datum
Asphalt plant operations	The transportation, on site processing and storage of material to produce asphalt paving material
BCA	Building Code of Australia
BCD	The Biodiversity and Conservation Division within the Department
Biodiversity Offset Strategy	The conservation and enhancement program as described in the EA (see also Table 5 and Appendix 4).
CCC	Community Consultative Committee
Council	Lismore City Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning, Industry and Environment
DPIE Water	Water Group within the Department
EA	Environmental Assessment titled <i>Blakebrook Quarry Expansion, Environmental Assessment Report, Final Report</i> , January 2009, and the Proponent's response to submissions titled <i>Blakebrook Quarry Expansion, Response to Submissions, Final Report</i> , August 2009
EA (Mod 1)	Environmental Assessment titled <i>Blakebrook Quarry Modification Application August 2017</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
Heritage NSW	Heritage Branch of the Department of Premier and Cabinet
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance
INP	NSW Industrial Noise Policy (NSW EPA, 2000)
Laden	Trucks transporting quarry products from the site and/or trucks transporting topsoil or mulch to the site
Land	As defined in the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this approval, where it is defined as the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
MEG	Mining, Exploration and Geoscience within the Department of Regional NSW
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the project
MR (Mod 3)	Modification Report titled <i>Statement of Environmental Effects dated 24 July 2019, prepared by Mitchel Hanlon Consulting Pty Ltd including the Response to Submissions dated November 2019, and additional information accompanying the Response to Submissions</i>
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not owned by a public agency or the Proponent (or its subsidiary)
Project	The project as described in the documents listed in condition 2(a) of Schedule 2
Proponent	Lismore City Council, or its successors in title
Quarrying operations	The extraction, processing, stockpiling and transportation of extractive materials carried out on the site and the associated removal of vegetation, topsoil and overburden
Quarry products	Includes all saleable quarry products, but excludes tailings, other wastes and rehabilitation material
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements.
SEPP 44	<i>State Environmental Planning Policy No. 44 – Koala Habitat Protection</i>
Secretary	Planning Secretary under the EP&A Act, or nominee

Site	The land referred to in Schedule 1
TfNSW	Transport for NSW

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## SCHEDULE 2 ADMINISTRATIVE CONDITIONS

### OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance measures and criteria established under this approval, the Proponent must implement all reasonable and feasible measures to prevent 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 must carry out the project:
  - (a) generally in accordance with the EA, EA (Mod 1) and MR (Mod 3); and
  - (b) in accordance with the conditions of this approval, Project Layout Plan and the Statement of Commitments.

*Notes:*

- The Project Layout Plan is shown in Appendix 1;
- The Statement of Commitments is reproduced in Appendix 2.

3. If there is any inconsistency between the documents in condition 2(a), the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.
4. The Proponent must comply with any written requirement/s of the Secretary arising from the Department's assessment of:
  - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval (including any stages of these documents);
  - (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with this approval;
  - (c) and the implementation of any actions or measures contained in these documents.
5. By 30 June 2010, the Proponent shall surrender development consent DA 95/239 to the relevant consent authority to the satisfaction of the Secretary.

- 5A. Within 12 months of the date of commencement of development under this consent, or other timeframe agreed by the Secretary, the Proponent must surrender development consent DA90/341 to the satisfaction of the Secretary, in accordance with the EP&A Regulation.**

### LIMITS ON APPROVAL

6. The Proponent may carry out quarrying operations and Asphalt plant operations on the site until 31 December 2039.

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

7. The Proponent must not undertake quarrying operations below 55 m AHD in the northern pit or 105 m AHD in the southern pit.

*Note: Drainage sumps may be constructed below this level with the agreement of the Secretary.*

8. The Proponent must not:
  - (a) transport more than 600,000 tonnes of quarry products from the site per calendar year;
  - (b) transport more than 50,000 tonnes of asphalt from the site per calendar year;
  - (c) dispatch more than 120 laden trucks from the site on any calendar day prior to the completion of intersection upgrade required by Condition 21(f) of Schedule 3 to the satisfaction of TfNSW; and
  - (d) dispatch more than 150 laden trucks from the site on any calendar day following completion of the intersection upgrade required by Condition 21(f) of Schedule 3 to the satisfaction of TfNSW.

*Note: Dispatch of laden trucks is also controlled under condition 1 of Schedule 3.*

### STRUCTURAL ADEQUACY

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

*Notes:*

- Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for any proposed building works;

- Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.

## DEMOLITION

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

## PROTECTION OF PUBLIC INFRASTRUCTURE

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

*Note: This condition does not apply to damage to roads caused as a result of general road usage or otherwise addressed by contributions required by condition 13 of Schedule 2.*

## OPERATION OF PLANT AND EQUIPMENT

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

## SECTION 94 CONTRIBUTIONS

13. The Proponent must pay Council an annual financial contribution toward the maintenance of local roads used for haulage of quarry products. The contribution must be determined in accordance with the *Lismore City Council Section 94 Contribution Plan, 2004*, or any subsequent relevant contributions plan adopted by Council.

## PRODUCTION DATA

14. The Proponent must:
  - (a) from the commencement of quarrying operations provide calendar year annual quarry production data to MEG using the standard form for that purpose; and
  - (b) include a copy of this data in the Annual Review.

## COMPLIANCE

15. The Proponent must ensure that all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

## IDENTIFICATION OF BOUNDARIES

16. The Proponent must ensure that the boundaries of the approved limits of extraction are clearly marked at all times in a permanent manner that allows operating staff and inspecting officers to clearly identify those limits.

**SCHEDULE 3  
SPECIFIC ENVIRONMENTAL CONDITIONS**

**NOISE**

**Hours of Operation**

1. The Proponent must comply with the operating hours set out in Table 1.

*Table 1: Operating hours*

<b>Activity</b>	<b>Permissible Hours</b>
Quarrying operations, <b>Asphalt plant operations and</b> loading and dispatch of laden trucks	7 am to 6 pm Monday to Friday
	7 am to 3 pm Saturday
	At no time on Sundays or public holidays
Blasting	10 am to 3 pm Monday to Friday (except public holidays)
	At no time on Sundays or public holidays
Maintenance	May be conducted at any time, provided that these activities are not audible at any privately-owned residence

2. The following activities may be carried out outside the hours specified in condition 1 above:
- delivery or dispatch of materials as requested by Police or other public authorities; and
  - emergency work to avoid the loss of lives, property or to prevent environmental harm.

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

- 2A. **With the prior written agreement of the Secretary, the Proponent may undertake limited campaign asphalt plant operations (within the limits imposed under condition 8 of Schedule 2) outside of the operating hours prescribed in condition 1 of this Schedule, as requested by public authorities.**

**In such circumstances, the applicant must prepare an Out of Work Hours Work Protocol. This protocol must:**

- be prepared in consultation with the EPA and any residents who may be affected by the noise generated by these works; and**
  - be approved by the Secretary prior to the commencement of any out of hours Asphalt plant operations.**
3. The Proponent must ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land.

*Table 2: Noise criteria dB(A)*

<b>Receiver<sup>a</sup></b>	<b>Day L<sub>Aeq</sub> (15 minute)</b>
<b>Location 2 and Location 7</b>	<b>36</b>
<b>All other locations</b>	<b>35</b>

<sup>a</sup> *Receiver locations are shown in Appendix 3*

Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW *Industrial Noise Policy*. Appendix 5 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 2 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

**Operating Conditions**

4. The Proponent must:
- implement best practice management to minimise the construction, operational and road transportation noise of the project;

- (b) minimise the noise impacts of the project during meteorological conditions when the noise criteria in this approval do not apply (see Appendix 5);
- (c) carry out noise monitoring (at least every 3 months or as otherwise agreed with the Secretary) to determine whether the project is complying with the relevant conditions of this approval; and
- (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval, to the satisfaction of the Secretary.

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

### Noise Management Plan

5. The Proponent must prepare a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:
- (a) be prepared in consultation with the EPA;
  - (b) be submitted to the Secretary within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
  - (c) describe the measures to be implemented to ensure:
    - compliance with the noise criteria and operating conditions of this approval;
    - best practice management is being employed; and
    - the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply (see Appendix 5);
  - (d) describe the proposed noise management system; and
  - (e) include a monitoring program to be implemented to measure noise from the project against the noise criteria in Table 2.

The Proponent must implement the Noise Management Plan as approved from time to time by the Secretary.

### BLASTING

#### Blasting Impact Assessment Criteria

6. The Proponent must ensure that blasting on site does not cause any exceedance of the criteria in Table 3.

*Table 3: Blasting Criteria*

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

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

#### Blasting Frequency

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

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

#### Operating Conditions

8. During blasting operations, the Proponent must:
- (a) implement best practice management to:
    - protect the safety of people and livestock;
    - protect public or private infrastructure and property from damage; and
    - minimise the dust and fume emissions;
  - (b) operate a suitable system to enable the local community to get up-to-date information on the proposed blasting schedule on site; and
  - (c) carry out regular monitoring to determine whether the project is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.



## Blast Management Plan

9. The Proponent must prepare a Blast Management Plan for the project to the satisfaction of the Secretary. This plan must:
- be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
  - describe the measures to be implemented to ensure compliance with the blast criteria and operating conditions of this approval;
  - include measures to manage flyrock to ensure the safety of people and livestock and to protect property;
  - include a monitoring program for evaluating and reporting on compliance with the blasting criteria in this approval;
  - include local community notification procedures for the blasting schedule, in particular to nearby residences; and
  - include a protocol for investigating and responding to complaints related to blasting operations.

The Proponent must implement the Blast Management Plan as approved from time to time by the Secretary.

## AIR QUALITY

### Air Quality Impact Assessment Criteria

10. The Proponent must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not cause exceedances of the criteria in Table 4 at any residence on privately-owned land.

Table 4: Air quality criteria

Pollutant	Averaging Period	Criterion
Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	a,d 25 µg/m <sup>3</sup>
Particulate matter < 10 µm (PM <sub>10</sub> )	24 hour	b 50 µg/m <sup>3</sup>
Total suspended particulates (TSP)	Annual	a,d 90 µg/m <sup>3</sup>
<sup>c</sup> Deposited dust	Annual	b 2 g/m <sup>2</sup> /month      a,d 4 g/m <sup>2</sup> /month

#### Notes to Table 4:

a Cumulative impact (ie increase in concentrations due to the project plus background concentrations due to all other sources).

b Incremental impact (ie increase in concentrations due to the project alone, with zero allowable exceedances of the criteria over the life of the project).

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

d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

e "Reasonable and feasible avoidance measures" includes, but is not limited to, the operational requirements in conditions 11, 12 and 13 to develop and implement an air quality management system that ensures operational responses to the risks of exceedance of the criteria.

## Operating Conditions

11. The Proponent must:
- implement best practice management to minimise the dust emissions of the project;
  - regularly assess meteorological and air quality monitoring data and relocate, modify and/or stop operations on site to ensure compliance with the air quality criteria in this approval;
  - minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d under Table 4);
  - monitor and report on compliance with the relevant air quality conditions in this approval; and
  - minimise the area of surface disturbance and undertake progressive rehabilitation of the site, to the satisfaction of the Secretary.

## Air Quality Management Plan

12. The Proponent must prepare an Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
- (b) describe the measures to be implemented to ensure:
  - compliance with the air quality criteria and operating conditions of this approval;
  - best practice management is being employed; and
  - the air quality impacts of the project are minimised during adverse meteorological conditions and extraordinary events;
- (c) describe the proposed air quality management system;
- (d) include an air quality monitoring program that:
  - is capable of evaluating the performance of the project;
  - includes a protocol for determining any exceedances of the relevant conditions of approval; and
  - effectively supports the air quality management system.

The Proponent must implement the approved Air Quality Management Plan as approved from time to time by the Secretary.

### **Meteorological Monitoring**

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

### **Greenhouse Gas Emissions**

- 14. The Proponent must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.

### **SOIL AND WATER**

#### **Water Supply**

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

#### **Water Discharges**

- 16. The Proponent must comply with the discharge limits in any EPL, or with section 120 of the POEO Act.

#### **Groundwater Assessment**

- 17. The Proponent must undertake a detailed groundwater assessment to the satisfaction of the Secretary. This assessment must be:
  - (a) prepared by a suitably qualified expert in consultation with DPIE Water;
  - (b) submitted to the Secretary for approval by 30 December 2018;
  - (c) approved by the Secretary before any extraction below 105 m AHD in the northern pit or below 118.5 m AHD in the southern pit;
  - (d) adequately assess groundwater resources affected by the northern and southern pits, to the proposed full extraction depths of those pits;
  - (e) adequately assess all groundwater impacts associated with proposed extraction;
  - (f) provide data for predicted groundwater pit inflows during and following extraction; and
  - (g) propose management measures to address pit inflows and impacts to groundwater resources.

The Proponent must implement the management measures proposed in the groundwater assessment to the satisfaction of the Secretary.

#### **Soil and Water Management**

- 18. If groundwater is encountered during quarrying operations in the South Pit under EA (Mod 1), the Proponent must cease quarrying operations until authorised to recommence by the Secretary.
- 19. The Proponent must prepare a Soil and Water Management Plan for the project to the satisfaction of the Secretary. This plan must:
  - (a) be prepared by suitably qualified and experienced person/s approved by the Secretary;
  - (b) be prepared in consultation with the EPA and DPIE Water;
  - (c) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary; and
  - (d) include a:
    -

- (i) Site Water Balance that includes:
  - details of:
    - sources and security of water supply;
    - water use and management on site;
    - any off-site water transfers; and
    - reporting procedures; and
  - measures to be implemented to minimise clean water use on site;
- (ii) Surface Water Management Plan, that includes:
  - a program for obtaining detailed baseline data on surface water flows and quality in water bodies that could potentially be affected by the project;
  - a detailed description of the surface water management system on site including the:
    - clean water diversion system;
    - erosion and sediment controls;
    - dirty water management system; and
    - water storages; and
  - a program to monitor and report on:
    - any surface water discharges;
    - the effectiveness of the water management system,
    - the quality of water discharged from the site to the environment;
    - surface water flows and quality in local watercourses;
- (iii) Groundwater Management Plan that includes:
  - a provision that requires the Proponent to obtain appropriate water licence(s) to cover the volume of any unforeseen groundwater inflows into the quarry from the quarry face or floor; and
  - a monitoring program to manage potential impacts, if any, on any alluvium and associated surface water source near the proposed extraction area that includes:
    - identification of a methodology for determining threshold water level criteria;
    - contingency measures in the event of a breach of thresholds; and
    - a program to regularly report on monitoring.

The Proponent must implement the approved Soil and Water Management Plan as approved from time to time by the Secretary.

## TRANSPORT

### Monitoring of Product Transport

20. The Proponent must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of records on its website every 6 months.

### Road Upgrades

21. The Proponent must undertake the following road upgrade works generally in accordance with the recommendations in the EA, and to the satisfaction of the TfNSW:
- (a) upgrade the intersection of the Quarry Access and Nimbin Road to a 'Type AUR Intersection Treatment', prior to 31 December 2010;
  - (b) upgrade the guard rails on the approaches to Boorie Creek Bridge prior to 31 December 2010;
  - (c) upgrade the Boorie Creek Road and Nimbin Road intersection to a 'Type BAR Right Turn Treatment on the Through Road' prior to 31 December 2010;
  - (d) upgrade the Wilson Street and Nimbin Road intersection to a 'Type CHR Right Turn Bay Treatment' prior to 31 December 2010;
  - (e) re-align Nimbin Road and the Quarry Access intersection to meet the AUSTRROADS sight distance requirements for vehicles travelling in both directions through the intersection prior to 31 December 2011; and
  - (f) upgrade the intersection at Nimbin Road and the Quarry Access from the current Type AUR intersection to a Type CHR-S (Shortened Channelised Right Hand Turn) to the satisfaction of TfNSW.

*Note: The road works must be constructed in accordance with the relevant TfNSW or AUSTRROADS standards, and signposted and lit in accordance with AS:1742 – Manual of Uniform Traffic Control Devices and AS/NZ 1158:2005 – Lighting for Roads and Public Spaces.*

### Operating Conditions

22. The Proponent must:
- (a) restrict truck movements from the quarry to an average of 50 laden trucks a day until all road upgrades works required by condition 21 (a) – (e) of Schedule 3, are met or unless otherwise approved by the Secretary;

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

### Traffic Management Plan

23. The Proponent must prepare a Traffic Management Plan for the project to the satisfaction of the Secretary. This plan must:
- (a) be prepared in consultation with the **TfNSW** and Council;
  - (b) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
  - (c) describe the processes in place for the control of truck movements entering and exiting the site;
  - (d) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers transporting products to and from the quarry;
  - (e) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; and
  - (f) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry.

The Proponent must implement the approved Traffic Management Plan as approved from time to time by the Secretary.

## ABORIGINAL HERITAGE

### Aboriginal Heritage Management Plan

24. The Proponent must prepare an Aboriginal Heritage Management Plan for the project to the satisfaction of the Secretary. The plan must:
- (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
  - (b) be prepared in consultation with **Heritage NSW** and the Registered Aboriginal Parties;
  - (c) be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary; and
  - (d) include a description of the measures that would be implemented to:
    - protect, monitor and manage known sites of archaeological significance;
    - manage any new Aboriginal objects or relics that are discovered;
    - store Aboriginal heritage items salvaged on site; and
    - ensure ongoing consultation and involvement of the Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site.

The Proponent must implement the approved Aboriginal Heritage Management Plan as approved from time to time by the Secretary.

25. If any item or object of Aboriginal heritage significance is identified on site, the Proponent must ensure that:
- (a) all work in the immediate vicinity of the suspected Aboriginal item or object ceases immediately;
  - (b) a 10 m buffer area around the suspected item or object is cordoned off; and
  - (c) the **Heritage NSW** is contacted immediately.

Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974*.

## BIODIVERSITY AND REHABILITATION

### Biodiversity Offset Strategy

- 25A. The Proponent must:
- (a) implement the Biodiversity Offset Strategy (see Table 5);
  - (b) ensure that adequate resources are dedicated towards the implementation of this strategy;
  - (c) provide appropriate long term security for the offset area; and
  - (d) provide a timetable for the implementation of the offset strategy prior to 30 June 2010, or as otherwise agreed by the Secretary,
- to the satisfaction of the Secretary.

Table 5: Biodiversity Offset Strategy

Offset Areas	Minimum Size
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On-site offset (Protection Zone in Appendix 4)	17.6 hectares
Off-site offset (within Lismore local government area, and not already within a conservation area)	45 hectares
Total	62.6 hectares

*Note: Mechanisms to provide appropriate long-term security to the land within the Biodiversity Offset Strategy in accordance with the NSW Biodiversity Offset Policy for Major Projects 2014, include a BioBanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome.*

### Rehabilitation Objectives

26. The Proponent must rehabilitate the site to the satisfaction of the Secretary. This rehabilitation must be generally consistent with the rehabilitation strategy in the EIS and must comply with the objectives in Table 6.

Table 6: Rehabilitation Objectives

Feature	Objective
All areas of the site affected by the project	<ul style="list-style-type: none"> <li>• Safe</li> <li>• Hydraulically and geotechnically stable</li> <li>• Non-polluting</li> <li>• Fit for the intended post-mining land use(s)</li> <li>• Final landform integrated with surrounding natural landforms as far as is reasonable and feasible, and minimising visual impacts when viewed from surrounding land</li> </ul>
Surface Infrastructure	<ul style="list-style-type: none"> <li>• Decommissioned and removed, unless otherwise agreed by the Secretary</li> </ul>
Quarry benches and pit floor	<ul style="list-style-type: none"> <li>• Landscaped and vegetated using native tree and understorey species</li> </ul>
Final Void	<ul style="list-style-type: none"> <li>• Minimise the size, depth and slope of the batters of the final void</li> <li>• Minimise the drainage catchment of the final void</li> </ul>

### Progressive Rehabilitation

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

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

### Biodiversity and Rehabilitation Management Plan

28. The Proponent must prepare a Biodiversity and Rehabilitation Management Plan for the project to the satisfaction of the Secretary. This plan must:
- be prepared by a suitably qualified expert;
  - be prepared in consultation with BCD and Council;
  - be submitted to the Secretary for approval within 3 months of the determination of Modification 1, unless otherwise agreed by the Secretary;
  - provide details of the conceptual final landform and associated land uses for the site;
  - describe how the implementation of the Biodiversity Offset Strategy will be integrated with the overall rehabilitation of the site;
  - include a Koala Management Plan prepared in accordance with SEPP 44;
  - include detailed performance and completion criteria for evaluating the performance of the Biodiversity Offset Strategy and rehabilitation of the site (including progressive rehabilitation), including triggers for any necessary remedial action;
  - describe the short, medium and long term measures to be implemented to:
    - manage remnant vegetation and habitat on site, including within the Biodiversity Offset Strategy area; and
    - ensure compliance with the rehabilitation objectives and progressive rehabilitation obligations in this approval;
  - include a detailed description of the measures described in paragraph (h) to be implemented over the next 3 years (to be updated for each 3 year period following initial approval of the plan) including the procedures to be implemented for:
    - maximising the salvage of environmental resources within the approved disturbance area, including tree hollows, vegetative and soil resources, for beneficial reuse in the enhancement of the offset area or site rehabilitation;

- restoring and enhancing the quality of native vegetation and fauna habitat in the biodiversity offset and rehabilitation areas through assisted natural regeneration, targeted vegetation establishment and the introduction of fauna habitat features;
  - protecting vegetation and fauna habitat outside the approved disturbance area on-site, including core Koala habitat;
  - minimising the impacts on native fauna, including undertaking pre-clearance surveys;
  - establishing vegetation screening to minimise the visual impacts of the site on surrounding receivers;
  - ensuring minimal environmental consequences for threatened species, populations and habitats;
  - collecting and propagating seed;
  - controlling weeds and feral pests;
  - controlling erosion; and
  - managing bushfire risk;
- (j) include a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
- (k) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate these risks; and
- (l) include details of who is responsible for monitoring, reviewing, and implementing the plan.

The Proponent must implement the Biodiversity and Rehabilitation Management Plan as approved from time to time by the Secretary.

### **Biodiversity and Rehabilitation Bond**

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

*Notes:*

- *Alternative funding arrangements for long term management of the Biodiversity Offset Strategy, such as provision of capital and management funding as agreed by BCD as part of a BioBanking Agreement, or transfer to conservation reserve estate can be used to reduce the liability of the Biodiversity and Rehabilitation Bond.*
- *If capital and other expenditure required by the Biodiversity and Rehabilitation Management Plan is largely complete, the Secretary may waive the requirement for lodgement of a bond in respect of the remaining expenditure.*
- *If the Biodiversity Offset Strategy and/or rehabilitation of the site area are completed (or partially completed) to the satisfaction of the Secretary, then the Secretary will release the bond (or relevant part of the bond). If the Biodiversity Offset Strategy and rehabilitation of the site are not completed to the satisfaction of the Secretary, then the Secretary will call in all or part of the bond, and arrange for the completion of the relevant works.*

30. Within 3 months of each Independent Environmental Audit (see condition 12 of Schedule 5), the Proponent must review, and if necessary revise, the sum of the Biodiversity and Rehabilitation Bond to the satisfaction of the Secretary. This review must consider the:
- (a) effects of inflation;
  - (b) likely cost of implementing the Biodiversity Offset Strategy and rehabilitating all disturbed areas of the site (taking into account the likely surface disturbance over the next 3 years of the project); and
  - (c) performance of the implementation of the Biodiversity Offset Strategy and rehabilitation of the site to date.

### **VISUAL**

31. The Proponent must implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project to the satisfaction of the Secretary.

### **WASTE**

32. The Proponent must:
- (a) manage on-site sewage treatment and disposal in accordance with the requirements of its EPL, and to the satisfaction of the EPA and Council;

- (b) minimise the waste generated by the project;
  - (c) ensure that the waste generated by the project is appropriately stored, handled, and disposed of; and
  - (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.
33. Except as expressly permitted in an EPL, the Proponent must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

#### **LIQUID STORAGE**

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

#### **DANGEROUS GOODS**

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

#### **BUSHFIRE**

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

## SCHEDULE 16 ADDITIONAL PROCEDURES

### NOTIFICATION OF LANDOWNERS

1. As soon as practicable, and no longer than 7 days, after obtaining monitoring results showing:
  - (a) an exceedance of any criteria in Schedule 3, the Proponent must notify the affected landowners in writing of the exceedance, and provide regular monitoring results, at least every 3 months, to each affected landowner until the project is again complying with the relevant criteria; and
  - (b) an exceedance of any air quality criteria in Schedule 3, the Proponent must send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and current tenants of the land (including the tenants of land which is not privately-owned).

### INDEPENDENT REVIEW

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

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

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

### PROPERTY INSPECTIONS

3. Prior to 30 June 2010, the Proponent must advise all owners of privately-owned land within 2 kilometres of proposed blasting activities, and any other landowner nominated by the Secretary, that they are entitled to a property inspection to establish the baseline condition of the property.
4. If the Proponent receives a written request for a property inspection from any such landowner, the Proponent must:
  - (a) commission a suitably qualified person, whose appointment has been approved by Secretary, to inspect and report on the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and
  - (b) give the landowner a copy of this property inspection report.

*Note: It is preferable for the property inspection to be carried out prior to the commencement of blasting activities on the site, and the Proponent should facilitate this occurring wherever possible.*

### PROPERTY INVESTIGATIONS

5. If any owner of privately-owned land within 2 kilometres of proposed blasting activities, or any other landowner nominated by the Secretary, claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:
  - (a) commission a suitably qualified person whose appointment has been approved by the Secretary to investigate the claim and prepare a property investigation report; and
  - (b) give the landowner a copy of the report.

If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damage to the satisfaction of the Secretary.

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



**SCHEDULE 17**  
**ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING**

**ENVIRONMENTAL MANAGEMENT**

**Environmental Management Strategy**

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

The Proponent must implement any Environmental Management Strategy as approved from time to time by the Secretary.

**Evidence of Consultation**

2. Where consultation with any State or local agency is required by the conditions of this approval, the Proponent must:
  - (a) consult with the relevant agency prior to submitting the required document to the Secretary for approval;
  - (b) submit evidence of this consultation as part of the relevant document;
  - (c) describe how matters raised by the agency have been addressed and any matters not resolved; and
  - (d) include details of any outstanding issues raised by the agency and an explanation of disagreement between any agency and the Proponent.

**Management Plan Requirements**

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

- (h) a protocol for periodic review of the plan.

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

#### **Application of Existing Management Plans**

- 4. The Proponent must continue to apply existing approved management plans, strategies or monitoring programs that have most recently been approved under this approval, until the approval of a similar plan, strategy or program under this approval.

#### **Revision of Strategies, Plans & Programs**

- 4A. Within 3 months of the submission of an:

- (a) incident report under condition 9 below;
- (b) Annual Review under condition 11 below;
- (c) audit report under condition 12 below; and
- (d) any modifications to this approval

the Proponent must review the strategies, plans and programs required under this approval, to the satisfaction of the Secretary. The proponent must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.

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

#### **Updating and Staging of Strategies, Plans or Programs**

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

The Secretary may approve a revised strategy, plan or program required under this approval, or the staged submission of any of these documents, at any time. With the agreement of the Secretary, the Proponent may prepare the revised or staged strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this approval.

While any strategy, plan or program may be submitted on a staged basis, the proponent will need to ensure that the operations associated with the project are covered by suitable strategies, plans or programs at all times.

If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the project to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.

#### **Adaptive Management**

- 6. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement reasonable remediation measures as directed by the Planning Secretary.

## COMMUNITY CONSULTATIVE COMMITTEE

7. The Proponent must establish and operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. The CCC must be operated in general accordance with the Department's *Community Consultative Committee Guidelines, November 2016* (or later version).

### Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.*
- *In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Proponent, Council and the local community.*

## REPORTING AND AUDITING

### Incident Notification

8. The Proponent must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

### Non-Compliance Notification

9. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

### Regular Reporting

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

### Annual Review

11. By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent must submit a review to the Department reviewing the environmental performance of the project to the satisfaction of the Secretary. This review must:
  - (a) describe the project (including any progressive rehabilitation) that was carried out in the previous calendar year, and the project that is proposed to be carried out over the current calendar year;
  - (b) include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the:
    - relevant statutory requirements, limits or performance measures/criteria;
    - requirements of any plan or program required under this approval;
    - monitoring results of previous years; and
    - relevant predictions in the documents listed in condition 2(a) of Schedule 2;
  - (c) evaluate and report on:
    - the effectiveness of the air quality and noise management systems; and
    - compliance with the performance measures, criteria and operating conditions in this approval.
  - (d) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
  - (e) identify any trends in the monitoring data over the life of the project;
  - (f) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies;
  - (g) describe what measures will be implemented over the current calendar year to improve the environmental performance of the project.

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

## INDEPENDENT ENVIRONMENTAL AUDIT

12. Within three years of the date of grant of this project approval, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent must commission, commence and pay the full cost of an Independent Environmental Audit of the project. This audit must:

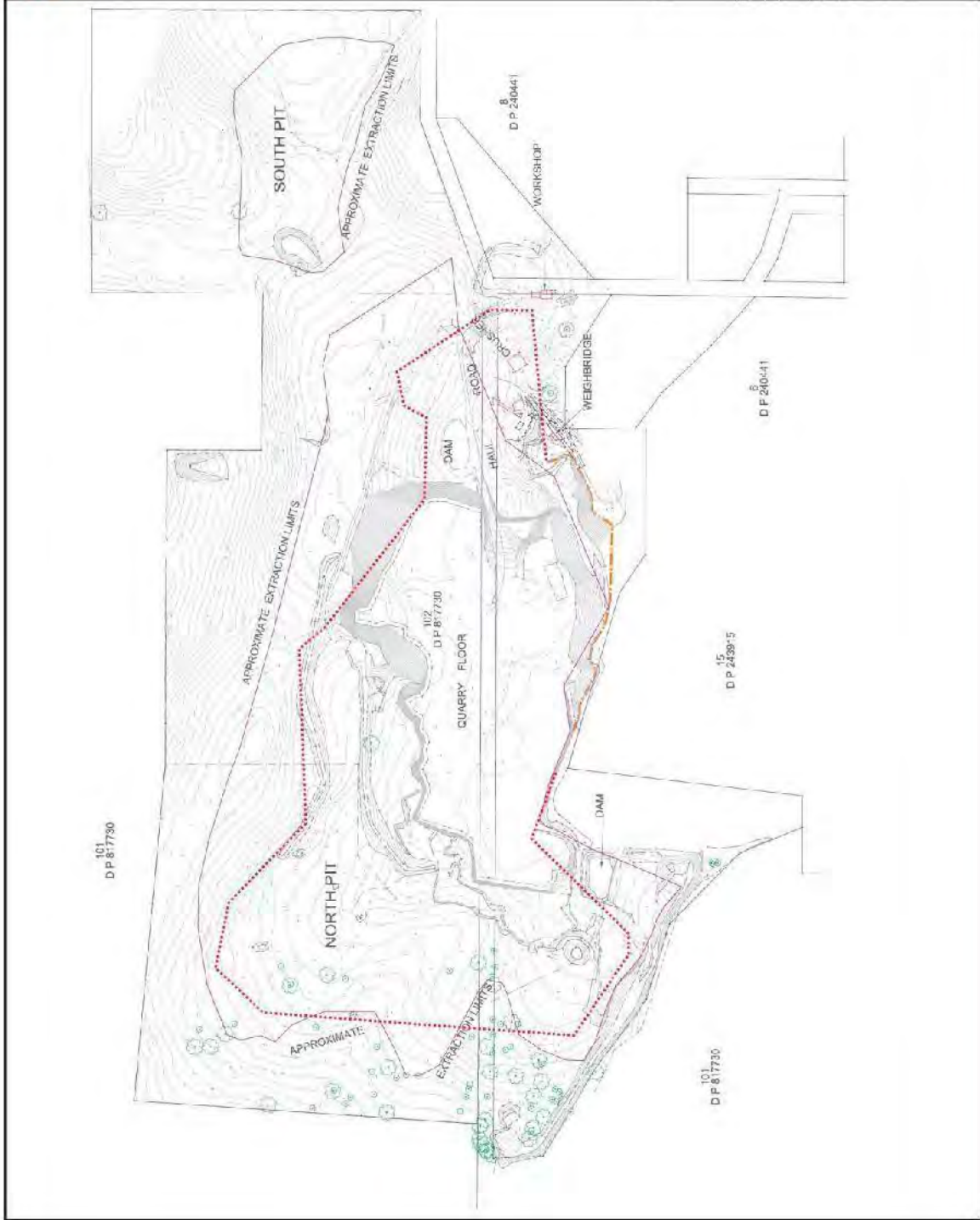
- (a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
  - (b) include consultation with the relevant agencies and the CCC;
  - (c) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL or necessary water licences for the project (including any assessment, strategy, plan or program required under these approvals);
  - (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals;
  - (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and
  - (f) be conducted and reported to the satisfaction of the Secretary.
13. Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Proponent must implement these recommendations, to the satisfaction of the Secretary.

#### **ACCESS TO INFORMATION**

14. Within 3 months of the determination of Modification 1, until the completion of all works, including rehabilitation and remediation the Proponent must:
- (a) make the following information publicly available on its website:
    - the documents listed in condition 2(a) of Schedule 2;
    - current statutory approvals for the project;
    - all approved strategies, plans and programs required under the conditions of this approval;
    - a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs;
    - a complaints register, updated monthly;
    - the annual reviews of the project;
    - any independent environmental audit as described in condition 12 above, and the Proponent's response to the recommendations in any audit; and
    - any other matter required by the Secretary; and
  - (b) keep this information up-to-date, to the satisfaction of the Secretary.

# APPENDIX 1 PROJECT LAYOUT PLAN

**Legend:**  
 - - - - - Approximate Existing Extraction Limit  
 - - - - - Approximate Proposed Extraction Limit  
 - - - - - Inactive Quarry/Pit



**Figure E1.2  
Existing Site Layout Plan**

Client	Lionor (a) Group
Project	Blaxcreek Quarry
Utility No	0.89841
Drawn	14/07/08
Drawn by	J. [unreadable]
Scale	As shown (approximate) A/D

**ERM**  
 Environmental Resources Management Australia Pty Ltd  
 100 Phillip Street, Suite 3000  
 Sydney NSW 2000  
 Telephone: +61 2 9584 7125

## APPENDIX 2

### STATEMENT OF COMMITMENTS

Item Number	Item	Commitment	Responsibility	Timing
1.1	<b>Scope of Development</b>			
1.1		<p>The development will be carried out as outlined in the documentation and plans listed below, except where amended by other items of this Statement of Commitments.</p> <ul style="list-style-type: none"> <li>• Environmental Assessments (EA), prepared by ERM, 2009 and supporting reports; and</li> <li>• Quarry Plans (refer Figures 2.3 to 2.5 of the EA (ERM, 2009))</li> </ul>	Lismore City Council and/or its successors	Ongoing.
2	<b>Roads</b>			
2.1		The proponent shall provide the following roadworks with associated stormwater drainage structure that have been designed and constructed in accordance with Council's Development, Design and Construction Manual (as amended). The proponent shall be responsible for any costs, including maintenance, for a period of six months from the date of approval of completion of the work. Required roadworks include:	Lismore City Council	Prior to the operation of the expanded quarry.
2.1.1		Construction of a type CHR intersection layout at the junction of the quarry access and Nimbin Road in accordance with AUSTROADS Pt 5 " <i>Intersections at Grade</i> " giving particular attention to sight distance. The access road will remain sealed from at least 50m back from Nimbin Road to prevent fouling of the road surface, as per existing conditions.	Lismore City Council	Prior to the operation of the expanded quarry.
2.1.2		Construction of a type CHR intersection layout at the junction of Nimbin Road and Wilson Street in accordance with AUSTROADS Pt 5 " <i>Intersections at Grade</i> ".	Lismore City Council	Prior to the operation of the expanded quarry.
2.1.3		Construction of a 1m wide gravel shoulder and repair existing pavement of Nimbin Road for a length of 200 metres at a location 2.8 kilometres north of the intersection of Nimbin Road and Wilson Street as recommended within Appendix G, Traffic Impact Study, of the Environmental Assessment.	Lismore City Council	Prior to the operation of the expanded quarry.
2.1.4		Installation of a guard rail in accordance with the relevant standard at Boerie Creek Bridge approaches as recommended within Appendix G, Traffic Impact Study, of the Environmental Assessment.	Lismore City Council	Prior to the operation of the expanded quarry.
2.1.5		Works identified in Tables 1 and 2 of Appendix G, Traffic Impact Study, of the Environmental Assessment that have not been individually detailed within conditions of consents.	Lismore City Council	Prior to the operation of the expanded quarry.

**Prior to the operation of the expanded quarry** the applicant shall obtain a certificate of completion for the above works from Council. Prior to obtaining this certificate a practicing qualified surveyor or engineer shall submit to Council for approval, a "works-as-executed" set of plans, completed asset record forms and construction certification. The certification shall certify that all roads, drainage and civil works required by this development consent and the approved design plans have been completed in accordance with Council's Development and Construction Manual (as amended).

2.2	The proponent shall provide the following roadworks with associated stormwater drainage structures that have been designed and constructed in accordance with the Council's Development, Design and Construction Manual (as amended). The proponent shall be responsible for any costs, including maintenance, for a period of six months from the date of approval of completion of the work. Required roadworks include:		
2.2.1	Construction of a type BAR intersection layout at the junction of Nimbin Road and Boerie Creek Road in accordance with AUSTRROADS Pt 5 " <i>Intersections at Grade</i> ".	Lismore City Council	Once production rates reach 350,000 tonnes/annum.
<b>Prior to exceeding an annual extraction rate of 350,000 tonnes in any one year</b> the applicant shall obtain a certificate of completion for the above works from Council. Prior to obtaining this certificate a practicing qualified surveyor or engineer shall submit to Council for approval, a "works-as-executed" set of plans, completed asset record forms and construction certification. This certification shall certify that all roads, drainage and civil works required by this development consent and the approved design plans have been completed in accordance with Council's Development and Construction Manual (as amended).			
2.3	Prior to the operation of the expanded quarry a review of the Road Safety Audit contained within Tables 1 and 2 of Appendix G, Traffic Impact Study, of the Environmental Assessment shall be undertaken. All required works identified within the review that are not individually detailed within conditions of consents shall be completed prior to operation of the expanded quarry.	Lismore City Council	Prior to the operation of the expanded quarry.
2.4	Prior to the operation of the expanded quarry hinged "Truck Entering" warning signage, W5-22 signs, shall be erected at suitable locations, approximately 200 metres either side of the access, upon Nimbin Road advising of the traffic hazard. Signs shall be displayed during hours of haulage operations only.	Lismore City Council	Prior to the operation of the expanded quarry.
2.5	<b>Prior to the commencement of works required by the above conditions</b> the applicant shall obtain approval under section 138 of the Roads Act for the works upon the public road. For this approval full design plans of the proposed engineering works required upon the public road shall be submitted to and approved by Council. Plans shall include details of works required to satisfy condition(s) RD1. Such plans shall be accompanied with the fee, as adopted at the time of the relevant payment as indicated in Councils Fees and Charges.	Lismore City Council	Prior to the commencement of works required by the above conditions.
2.6	<b>Prior to the issue of the section 138 approval for works upon the public road</b> the proponent shall have approved by Council a plan of management for the construction of all civil works outside the real property boundaries of the proposed development. The plan shall table scheduling of works so as to be completed in the shortest possible time with minimal impact on the general community. Such plan shall include a Traffic Control Plan prepared by an RTA	Lismore City Council	Prior to the issue of the section 138 approval for works upon the public road.

accredited person. All works shall comply with the Occupational Health and Safety Act.

2.7	The plan of management for the operation of the quarry shall incorporate a code of practice for trucking operations associated with the development. This code shall include a requirement for the use of CB radios for communication with buses and garbage trucks within all haulage vehicles as recommended within Appendix G, Traffic Impact Study, of the Environmental Assessment.	Lismore City Council	Prior to the issue of the section 138 approval for works upon the public road.
2.8	The development shall provide adequate on site parking for all vehicles, plant and equipment associated with the development.	Lismore City Council	Prior to the operation of the expanded quarry.
2.9	The proposed access shall be sealed for the first 50 metre length from Nimbin Road. Driveways, access aisles and parking areas shall be provided with a suitable pavement, constructed and maintained in accordance with Council's Development, Design and Construction Manual (as amended)	Lismore City Council	Prior to the operation of the expanded quarry.
2.10	All loading and unloading shall take place within the property boundaries, as will the parking of construction and private vehicles associated with the development	Lismore City Council	Ongoing.
2.11	Vehicles using any off street loading/unloading and/or parking area must enter and leave in a forward direction in accordance with Council's Development Control Plan No.1, Part A, Chapter 7 – Off Street Parking Requirements. All driveways and turning areas shall be kept clear of obstructions that prevent compliance with this condition.	Lismore City Council	Ongoing.
2.12	The proponent shall provide MEG, on or before January 31, April 30, July 31 and October 31 in each year, with extraction figures detailing quantities of all material removed from the site for the previous quarter of operations	Lismore City Council	Ongoing.
2.13	Annual payment of contributions levied under Section 94 of the Environmental Planning and Assessment Act and Lismore City Council S94 Contributions Plan 2004 (as amended) are required. Such levies shall contribute towards the provision of public services and/or amenities identified. Such levies shall be calculated utilising <b>dispatched tonnages with consideration to the below:</b>	Lismore City Council	Ongoing.

Quarry Operations

The rates and amounts applying at the date of this notice for the approved extraction rate of 600,000 tonnes, totalling \$560,628 annually, have been calculated as set out below for your information.

Levies set out below shall be increased in accordance with the percentage increase as notified by the Consumer Price Index (Sydney) annually. Levies shall be paid within 30 days of the Council issuing an assessment for the preceding year.



The contributions set out in the schedule are exclusive of any GST (if any) and where the provision of any services or the construction of any infrastructure or any other thing with those contributions occurs, then in addition to the amount specified above the Applicant will pay to the Council the GST (as defined below) which is payable by the Council in respect of the provision of such services or the construction of any infrastructure or any other thing.

GST means any tax levy charge or impost under the authority of any GST law (as defined by the GST Act) and includes GST within the meaning of the GST Act.

The GST Act means A New Tax System (Goods and Services Tax) Act 1999 or any amending or succeeding legislation.

The levy shall be calculated in accordance with Councils adopted section 94 plan as at this date and be based on the following information:

- Road construction cost of \$369,000 per kilometre indexed for CPI annually from December 2003)
- Average haulage distance of 15 kilometres
- For use in calculations a conversion factor 1.7 from m<sup>3</sup> to tonnes has been adopted
- The first 5,000m<sup>3</sup> (8,500 tonnes) per annum shall be exempt from levies.

Levy calculation for yearly extraction will be:

$$(\$396,000/6.74 \times 10^6) \times 15\text{km} \times (\text{Annual tonnage extracted} - 8,500) \times 1.025 \times \text{CPI}$$

$$= (396,000 / 6.74 \times 10^6) \times 15\text{km} \times (600,000 - 8,500) \times 1.025 \times 1.126$$

$$= \$560,628$$

#### Asphalt Operations

The levy shall be calculated in accordance with Councils adopted section 94 plan

e.g. 10 cents for each tonne of bituminous mix produced, and road transported from the site. This levy will be increased annually in accordance with Consumer Price Index as calculated by the

Australian Bureau of Statistics. The levy shall apply from the date of this consent and shall be paid in monthly instalments based on tonnage measured on the applicant's weighbridge.

This condition does not in any way prevent the Council from increasing the abovementioned levy at any time if this were so agreed with the operator.

2.14	A Traffic Noise Management Strategy (TNMS) be developed by the proponent to ensure that feasible and reasonable noise management strategies for vehicle movements associated with the facility are identified and applied, that include but are not necessarily limited to the following:	Lismore City Council	Prior to the operation of the expanded quarry.
2.14.1	Driver training to ensure that noisy practices such as the use of compression engine brakes are not unnecessarily used near sensitive receivers;		
2.14.2	Best noise practice in the selection and maintenance of fleet vehicles;		
2.14.3	Movement scheduling where practicable to reduce impacts during sensitive times of the day;		
2.14.4	Communication and management strategies for non licensee/proponent owned and operated vehicles to ensure the provision of the TNMS are implemented;		
2.14.5	A system of audited management practices that identified non conformances, initiates and monitors corrective and preventative action (including disciplinary action for breaches of noise minimisation procedures) and assesses the implementation and improvement of the TNMS;		
2.14.6	Specific procedures to minimise impacts to identified sensitive receivers;		
2.14.7	Clauses in conditions of employment, or in contracts, of drivers that require adherence to noise minimisation procedures and facilitate effective implementation of the disciplinary actions for breaches of the procedures.		

### 3 Ecological Considerations

3.1	The vegetation on the site will be cleared and managed in accordance with the approved Management Plans.	Lismore City Council	Ongoing.
3.2	The Koala Plan of Management prepared by Conacher Travers (2006) (refer to Appendix f) will be implemented including: <ul style="list-style-type: none"> <li>Habitat protection works;</li> <li>Habitat restoration works;</li> <li>Traffic management controls;</li> <li>Dog/Feral Animal Management measures; and</li> <li>Bushfire Management.</li> </ul>	Lismore City Council	Ongoing
3.3	Lismore City Council will provide at least 45 hectares of mature, vegetated land to be retained to offset the 10.2 hectares to be lost as a result of the proposed development. The offset will be provided at a rate of approximately 4:1. The 45 hectares will be the same vegetation type as that to be removed (Tall Open	Lismore City Council	Prior to the removal of existing vegetation.

Forest) or a type of higher ecological significance (such as Lowland Rainforest EEC or Koala Habitat) and may be located at a single site or numerous sites that Council own in the LGA, which are suitable to be set aside for ecological preservation. Lismore City Council will undertake ecological assessments of any land proposed to be identified as a vegetation offset site and develop an offset strategy for submission to the **Secretary** and **BCD** for approval, taking into consideration **BCD's** document *Principles for the Use of Biodiversity Offsets in NSW (Office of Environment and Heritage, 2014)*.

The provision of nest and roost boxes will only be a short term measure, that is, provided as a measure for the protection and conservation of fauna during felling of hollow-bearing trees.

4	<b>Aboriginal Heritage</b>			
4.1	All site employees/ contractors will undergo site induction training that includes stop work procedures if archaeological sites are discovered.	Lismore City Council	Ongoing.	
4.2	Information regarding heritage requirements will be made available on site for employees/contractors.	Lismore City Council	Ongoing.	
4.3	If an Aboriginal item is found all work will cease and the police, relevant Aboriginal community groups and a suitably qualified archaeologist contracted.	Lismore City Council	Ongoing.	
5	<b>Noise</b>			
5.1	The quarry will operate <b>in accordance with the Conditions of Approval (Condition 1 of Schedule 3)</b> .	Lismore City Council	Ongoing.	
5.2	Speed limits within the quarry site will be restricted to 40km/h and compression braking <b>limited</b> .	Lismore City Council	Ongoing.	
5.3	4 metre earth bunds will be constructed to the north east and south west of the new southern quarry pit and a 5 metre earth bund will be constructed to the south of the existing Jaw Crusher as illustrated in Figures C.2 and C.3 in Annex C of the revised Noise Assessment (ERM, 2009) provided as Annex B to the report. During the short construction period for these bunds, the noise limits will be relaxed. Nearby residents will be notified when this work will take place.	Lismore City Council	Prior to the operation of the expanded quarry.	
5.4	Attended noise monitoring and plant equipment audits will be undertaken.	Lismore City Council	Annually.	
5.5	Plant will be relocated to greater pit depths as the floor of the quarry gets deeper.	Lismore City Council	Ongoing.	
5.6	Noise Management Plan – the licensee must develop a Noise Management Plan for the quarry which must incorporate but not be limited to, the following: <ul style="list-style-type: none"> <li>• noise compliance;</li> <li>• noise limits;</li> </ul>	Lismore City Council	Prior to the operation of the expanded quarry.	

- blasting noise; and
- road traffic noise.

5.7	A noise compliance assessment (including airblast overpressure and ground vibration from blasting) shall be submitted to the EPA within three (3) months of commencement of expanded operations at the premises. The assessment shall be prepared by a suitable qualified and experienced acoustical consultant and shall assess compliance with noise and blasting limits presented in conditions 5.8 and 6.1 – 6.4	Lismore City Council	Within 3 months of commencement of expanded operations.
5.8	Noise from the premises must not exceed the limits presented in condition 3 of Schedule 3.	Lismore City Council	Ongoing.
5.9	Noise from Blakebrook Quarry is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise level limits in Condition 5.8 unless otherwise stated.	Lismore City Council	Ongoing.
5.10	Where it can be demonstrated that direct measurement of noise from the Blakebrook Quarry is impractical, the EPA may accept alternative means of determining compliance. See Chapter 11 of the <i>NSW Industrial Noise Policy</i> . The modification factors presented in Section 4 of the <i>NSW Industrial Noise Policy</i> shall also be applied to the measured noise levels where applicable.	Lismore City Council	Ongoing.
5.11	The noise emission limits identified in Condition 5.8 apply under meteorological conditions of wind speed up to 3 metres per second at 10 metres above ground level.	Lismore City Council	Ongoing.
<b>6</b>	<b>Blasting Limits</b>		
6.1	The overpressure level from blasting operations at the Blakebrook Quarry must not exceed 115dB (Lin Peak) for more than 5 per cent of the total blasts over each reporting period of 12 months. Error margins associated with any monitoring equipment used to measure this area are not to be taken into account in determining whether or not the limit has been exceeded	Lismore City Council	Ongoing.
6.2	The overpressure level from blasting operations at the Blakebrook Quarry must not exceed 120dB (Lin Peak) at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded	Lismore City Council	Ongoing.
6.3	Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec for more than 5 per cent of the total number of blasts over each reporting period of 12 months. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded	Lismore City Council	Ongoing.
6.4	Blasting operations at the premises may only take place between 9.00am-5.00pm Monday to Friday. (Where compelling safety reasons exist, the Authority may permit a blast to occur outside the abovementioned hours. Prior	Lismore City Council	Ongoing.

written (or facsimile) notification of any such blast must be made to the Authority.

To determine compliance with Conditions 6.1-6.4:

- a) airblast overpressure and ground vibration levels must be measured and electronically recorded at the closest and potentially most exposed receiver location in L6.1 to the blast activity for all blasts carried out in or on the premises; and
- b) Instrumentation used to measure the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006.

7 Air Quality				
7.1	All unsealed haul routes on the site will be watered at a rate of 2 L/m <sup>2</sup> /minute as required.	Lismore City Council	Ongoing.	
7.2	Water sprays will be used on all mobile crushing, stockpiles and screening equipment to minimise airborne particulate matter.	Lismore City Council	Ongoing.	
7.3	All road trucks must have tarpaulin covers in place prior to leaving the weighbridge	Lismore City Council	Ongoing.	
7.4	A dust deposition gauge network will be developed to ensure compliance with cumulative dust deposition criteria.	Lismore City Council	At or before production rates at the quarry reach 337,500 tonnes/annum.	
7.5	Stockpiles are to be seeded to minimize the potential for fugitive dust	Lismore City Council	Ongoing.	
8 Groundwater Management				
8.1	A detailed groundwater assessment will be undertaken prior to the commencement of vertical extraction. This will involve the installation of nested ground water monitoring wells. The wells will be installed to at least two depths at a minimum of three separate locations around the perimeter of the quarry in order to intercept identified distinct water bearing zones.	Lismore City Council	Following approval of the quarry expansion and prior to the commencement of vertical extraction	
8.2	A quarterly groundwater monitoring program will be undertaken as detailed in Section 8.4.1 of the EA (ERM, 2009) and will involve analysis by a NATA Laboratory.	Lismore City Council	Quarterly following approval of the quarry expansion and prior to the commencement of vertical extraction.	
8.3	Should it be determined that environmental flows from springs are being reduced by extraction activities, investigation will commence on supplementing flows using water collected in the quarry pit. Water collected in the quarry will have to meet water quality criteria before it is discharged, with discharge to be licensed under the EPA.	Lismore City Council	Ongoing.	

9	<b>Surface Water Management</b>		
9.1	Clean run-off from the surround small sub-catchments will be diverted away from the quarry pits to existing ephemeral water courses. Water collected within the pits will be stored in in-pit dams and used for processing and dust suppression purposes. <b>Discharge of quarry water from the site will occur via approved surface water discharge locations only.</b>	Lismore City Council	Ongoing.
10	<b>Quarry Rehabilitation</b>		
10.1	A progressive rehabilitation approach will be undertaken to make safe the site and to rehabilitate the site and benches to tie into the surrounding woodland. All on-site infrastructure will be removed.	Lismore City Council	Ongoing and on completion of quarrying.
10.2	Lismore City Council will commit to the ongoing allocation of funds for the progressive rehabilitation of the Quarry in the determination of its annual operational budget. The allocation of funds will be tied to demand and the output of the Quarry, with the allocation to be in the order of \$30 000 to \$50 000. The allocated money will be accumulated pending the availability of areas to be rehabilitated. The budget allocation may also be increased over the lifetime of the quarry to reflect inflationary changes and rehabilitation need as necessary.	Lismore City Council	Ongoing and on completion of quarrying.
10.3	A suitably qualified and experienced professional will be engaged to carry out on-going maintenance and monitoring. This will involve activities such as bushland rehabilitation, weed removal and nest box erection.	Lismore City Council	Upon commencement of rehabilitation activities and upon completion of quarrying.
10.4	The success of the rehabilitation program will be monitored in accordance with the <i>Mine Rehabilitation Handbook</i> .	Lismore City Council	Upon commencement of rehabilitation activities and upon completion of quarrying.

## APPENDIX RECEIVER LOCATION PLAN



**Legend**

- # Noise Logger
- # Noise Assessment Locations

Client:	Lismore City Council		
Project:	Blakebrook Quarry Noise Assessment		
Drawing No:	0068641s_01_R1		
Date:	11/06/2009	Drawing size:	A4
Drawn by:	GC	Reviewed by:	MS
Source:	-		
Scale:	Not to Scale		



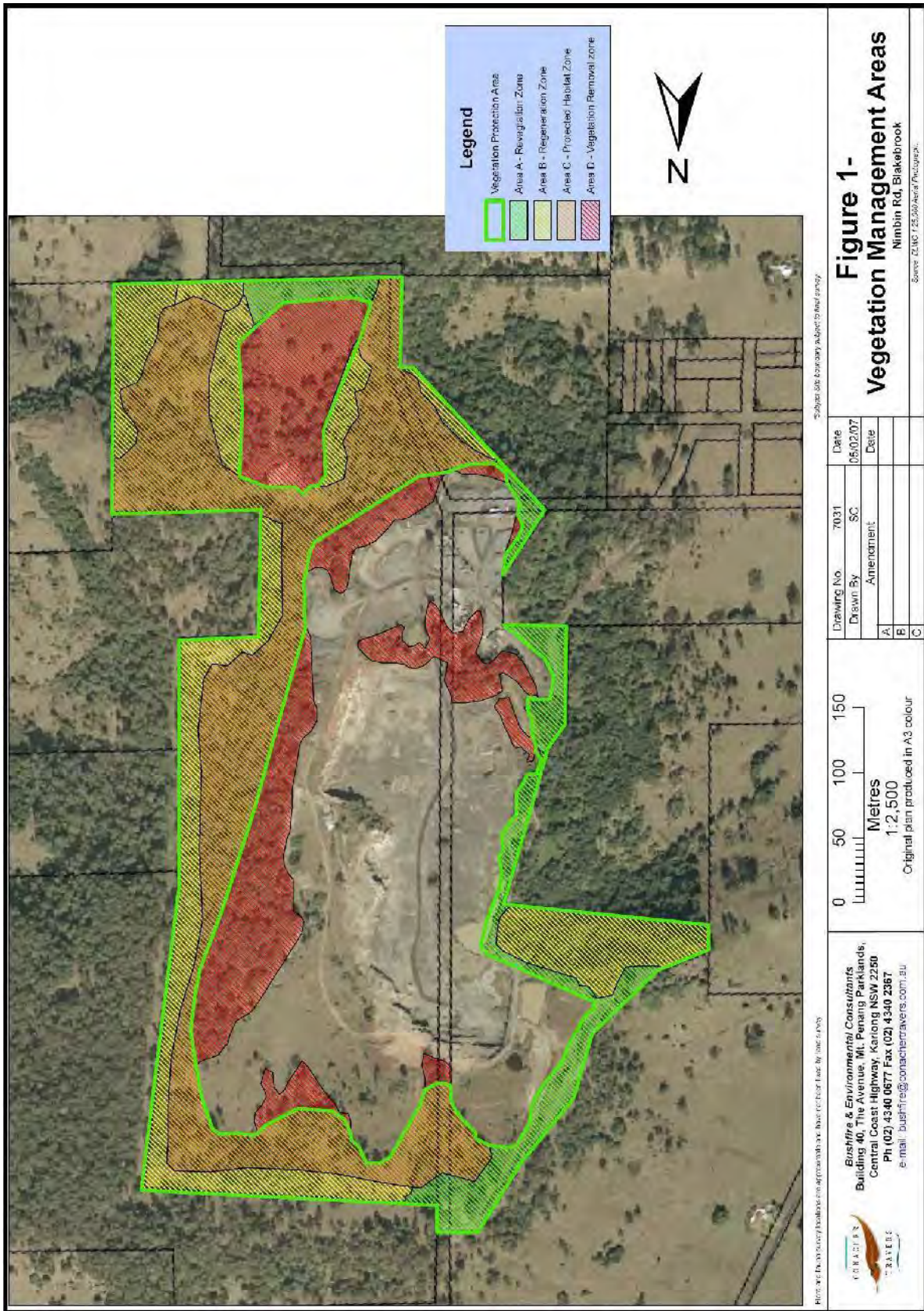
**Figure 2.1**

**Noise Assessment and Logging Locations**

Environmental Resources Management Australia Pty Ltd  
Building C, 33 Saunders St, Pyrmont, NSW 2009  
Telephone +61 2 8564 8888



# APPENDIX BIODIVERSITY OFFSET STRATEGY





## APPENDIX NOISE COMPLIANCE ASSESSMENT

### Applicable Meteorological Conditions

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

### Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station required under condition 13 of Schedule 3.

### Compliance Monitoring

3. A noise compliance assessment must be undertaken within two months of commencing mining operations under EA (Mod 1). The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with the noise criteria in Table 2. A report must be provided to the Secretary and EPA within 1 month of the assessment.
4. Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:
  - (a) monitoring locations for the collection of representative noise data;
  - (b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;
  - (c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and
  - (d) the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing. *This should be undertaken in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA, 2017).*

# APPENDIX B

EPA Licence 3384

Section 58(5) Protection of the Environment Operations Act 1997

## Licence Variation

Licence - 3384

LISMORE CITY COUNCIL  
ABN 60 080 932 837  
PO BOX 23A  
GOONELLABAH NSW 2480

Attention: [REDACTED]

Notice Number 1598877  
File Number [REDACTED]  
Date 16-Sep-2020

### NOTICE OF VARIATION OF LICENCE NO. 3384

#### BACKGROUND

- A. LISMORE CITY COUNCIL ("the licensee") is the holder of Environment Protection Licence No. 3384 ("the licence") issued under the *Protection of the Environment Operations Act 1997* ("the Act"). The licence authorises the carrying out of activities at NIMBIN ROAD, BLAKEBROOK, NSW, 2480 ("the premises").
- B. The Environment Protection Authority (EPA) has instigated a variation of the licence.
- C. The variation is to implement amendments made to Schedule 1 of the Act relating to the definition of Extractive Activities.
- D. On 13 March 2020 the EPA wrote to extractive activity licensees in the North Coast Region advising Schedule 1 amendments were to be implemented.
- E. Other changes have been made to the licence to ensure industry sector consistency.

#### VARIATION OF LICENCE NO. 3384

1. By this notice the EPA varies licence No. 3384. The attached licence document contains all variations that are made to the licence by this notice.
2. The following variations have been made to the licence:
  - The fee-based activity scale has been changed from Land-based Extractive Activities to Extractive Activities
  - Added condition A1.3 in regards to what the licence authorises and regulates in regards to extractive activity

# Licence Variation

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- Added a notation under L6 Hours of operation in regards to outside hours blasting
- Added condition L2.5 in regards to concentration limits
- Added conditions L2.6, L2.7, L2.8 and L2.9 which set out a process for utilising a turbidity (NTU) correlation for conclusive sediment basin water quality.
- Added condition L2.10 which relates to controlled discharges
- Added condition O4.11 with regards to sediment basin management
- Added condition O4.12 which correlates to bunded storage of liquid and chemical fuels and oils
- Added condition L5.4 which requires notification if blasting limits are exceeded
- Added condition L4.3 and a notation to define a noise sensitive location
- Condition M8.1 has been added to provide guidance for noise monitoring
- New condition R1.9 has been included to require annual reporting of extraction amounts. This was communicated in the letter to Lismore City Council date 13 March 2020



.....



**Unit Head**  
**Regional Waste Compliance**  
(by Delegation)

## INFORMATION ABOUT THIS NOTICE

- This notice is issued under section 58(5) of the Act.
- Details provided in this notice, along with an updated version of the licence, will be available on the EPA's Public Register (<http://www.epa.nsw.gov.au/prpoeo/index.htm>) in accordance with section 308 of the Act.

### Appeals against this decision

- You can appeal to the Land and Environment Court against this decision. The deadline for lodging the appeal is 21 days after you were given notice of this decision.

### When this notice begins to operate

# Licence Variation

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- The variations to the licence specified in this notice begin to operate immediately from the date of this notice, unless another date is specified in this notice.
- If an appeal is made against this decision to vary the licence and the Land and Environment Court directs that the decision is stayed the decision does not operate until the stay ceases to have effect or the Land and Environment Court confirms the decision or the appeal is withdrawn (whichever occurs first).

# Environment Protection Licence

Licence - 3384

<b>Licence Details</b>	
Number:	3384
Anniversary Date:	17-January

<b>Licensee</b>
LISMORE CITY COUNCIL
PO BOX 23A
GOONELLABAH NSW 2480

<b>Premises</b>
LISMORE OR BLAKEBROOK QUARRY
NIMBIN ROAD
BLAKEBROOK NSW 2480

<b>Scheduled Activity</b>
Extractive activities

<b>Fee Based Activity</b>	<b>Scale</b>
Extractive activities	> 100000-500000 T annually extracted or processed

<b>Region</b>
Regional North - Grafton
NSW Govt Offices, 49 Victoria Street
GRAFTON NSW 2460
Phone: (02) 6640 2500
Fax: (02) 6642 7743
PO Box 498
GRAFTON NSW 2460



# Environment Protection Licence

Licence - 3384

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# Environment Protection Licence

Licence - 3384

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# **Environment Protection Licence**

Licence - 3384



## **Information about this licence**

### **Dictionary**

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

### **Responsibilities of licensee**

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

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

### **Variation of licence conditions**

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

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

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

### **Duration of licence**

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

### **Licence review**

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

### **Fees and annual return to be sent to the EPA**

For each licence fee period you must pay:

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

# Environment Protection Licence

Licence - 3384

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

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

## **Transfer of licence**

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

## **Public register and access to monitoring data**

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

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

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

## **This licence is issued to:**

<b>LISMORE CITY COUNCIL</b>
<b>PO BOX 23A</b>
<b>GOONELLABAH NSW 2480</b>

subject to the conditions which follow.

# Environment Protection Licence

Licence - 3384

## 1 Administrative Conditions

### A1 What the licence authorises and regulates

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

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

Scheduled Activity	Fee Based Activity	Scale
Extractive activities	Extractive activities	> 100000 - 500000 T annually extracted or processed

A1.2 This licence regulates water pollution resulting from the activity/ies carried out at the premises specified in A2.

A1.3 Notwithstanding the maximum scale at condition A1.1, the maximum scale of extractive activity authorised under this licence must not exceed the extraction limit approved by the current development consent granted under the *Environmental Planning and Assessment Act 1979* for the premises specified in condition A2.

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
LISMORE OR BLAKEBROOK QUARRY
NIMBIN ROAD
BLAKEBROOK
NSW 2480
LOT 201 DP 1227138

### A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Bitumen Pre-mix or Hot-mix Industries

# Environment Protection Licence

Licence - 3384

## A4 Information supplied to the EPA

- A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

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

## 2 Discharges to Air and Water and Applications to Land

### P1 Location of monitoring/discharge points and areas

- P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.
- P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

#### *Water and land*

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Wet weather overflow	Wet weather overflow	Spillway of the settlement dam at the southern end of the site nearest the weighbridge as identified on site map entitled Blake Brook Quarry Water Management dated 21 July 2005

## 3 Limit Conditions

### L1 Pollution of waters

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.
- L1.2 Discharge of TSS to waters from Point 1 is permitted when the discharge occurs solely as a result of rainfall at the premises exceeding a total of 60.2 millimetres over any consecutive five day period.

# Environment Protection Licence

Licence - 3384

L1.3 The licensee must take all practical measures to avoid or minimise generation of total suspended solids

## L2 Concentration limits

L2.1 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\.

L2.2 Water and/or Land Concentration Limits

### POINT 1

Pollutant	Units of Measure	50 Percentile concentration limit	90 Percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	Visible				Nil
pH	pH				6.5 -8.5
Total suspended solids	milligrams per litre				50

L2.3 For each monitoring/discharge point or utilisation area specified in the table\ below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.4 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.5 The concentration limits in the table above do not apply to any discharge from the sediment pond(s) solely arising from a rainfall event exceeding 60.2 mm (the 90 percentile 5 day rain event) in total falling over any consecutive five day period.

L2.6 If the licensee uses turbidity (NTU) in place of TSS to determine compliance with Condition L2.2, the licensee must develop a statistical correlation which identifies the relationship between NTU and TSS for water quality in the sediment basin/s in order to determine the NTU equivalent of 50 mg/L TSS before its use.

L2.7 The licensee must provide the EPA with a copy of the statistical correlation assessment methodology and results before using NTU in place of TSS.

L2.8 The licensee must develop and implement a method to enable the ongoing verification of the relationship between NTU and TSS.

# Environment Protection Licence



Licence - 3384

- L2.9 The licensee must provide the EPA with any amendments the licensee makes to the statistical correlation as a result of the ongoing verification required by Condition L2.8 before using the revised statistical correlation.
- L2.10 Controlled discharges from any sediment basins must not exceed a 100th percentile limit for Total Suspended Solids concentration of 50mg/L. All discharges are to fall within the pH range of between 6.5 and 8.5. There is to be no visible oils and greases in any controlled discharges from sediment basins.

## **L3 Waste**

- L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal, excluding the following:
  - a) Glass sand recovered from the Lismore Recycling and Recovery Centre.

## **L4 Noise limits**

- L4.1 Noise from the licenced premise must not exceed an LAeq (15 minute) noise emission criterion of 36db(A) at Location 2 and 35db(A) at all other sensitive receivers, except as expressly provided by this licence.
- L4.2 Noise from the premises is to be measured at the most affected noise sensitive receiver who has not given written permission for an exceedance of condition L4.1 to determine compliance with this condition.

Note: Noise sensitive locations means buildings used as a residence, hospital, school, childcare centre, places of public worship and nursing homes. A noise sensitive location includes the land within 30m of the building.

- L4.3 The noise limits set out in the Noise Limits table apply under all meteorological conditions except for the following:
  - a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
  - b) Temperature inversion conditions up to 3°C/100m and wind speeds greater than 2 metres/second at 10 metres above ground level; or
  - c) Temperature inversion conditions greater than 3°C/100m.

## **L5 Blasting**

- L5.1 The airblast overpressure level from blasting operations in or on the premises must not exceed:
  - a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
  - b) 120 dB (Lin Peak) at any time.as measured at the nearest sensitive receiver
- L5.2 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:
  - a) 5mm/s for more than 5% of the total number of blasts carried out on the premises during each

# Environment Protection Licence

Licence - 3384

reporting period; and  
b) 10 mm/s at any time.

At the most affected residence or noise sensitive location that is not owned by the licensee or subject to a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative ground vibration level .

L5.3 All sensitive receivers are to be given at least 24 hours notice when blasting is to be undertaken.

L5.4 The licensee must report any exceedance of the licence blasting limits to the EPA within 24 hours of the exceedance becoming known to the licensee or to one of the licensee's employees or agents.

## L6 Hours of operation

L6.1 Activities covered by this licence must be in accordance with the operating hours set out in the table below

Activity	Permissible Hours
Quarrying activities including loading and dispatch of trucks	07:00 to 18:00 Monday to Friday; 07:00 to 15:00 on Saturday and at no time on Sundays and Public Holidays
Blasting	10:00 to 15:00 Monday to Friday and at no time on Saturday, Sunday and Public Holidays
Asphalt plant	06:00 to 17:30 Monday to Saturday and at no time on Sundays and Public Holidays
Maintenance	May be conducted at any time provided that these activities are not audible at any privately-owned residence

L6.2 The following activities may be carried out outside the hours specified in Condition L6.1 above:

- delivery or despatch of material outside the hours of as requested by police or other public authorities
- emergency work to avoid the loss of lives, property or to prevent environmental harm
- operation of the asphalt plant with the permission of Lismore City Council for emergency or specific works where a traffic management problem is involved.

In such circumstances, prior notification must be provided to the EPA and affected residents as prior to undertaking the activity or as soon as possible thereafter.

Note: Where a blast failure has occurred or there are compelling safety reasons, the EPA may permit a blast to occur outside the above hours. The licensee must provide prior notice of any such blast to the EPA by contacting 131 555.

## 4 Operating Conditions

### O1 Activities must be carried out in a competent manner

# Environment Protection Licence

Licence - 3384

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

## **O2 Maintenance of plant and equipment**

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

## **O3 Dust**

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

## **O4 Processes and management**

O4.1 Sediment Basins shall be treated, if required, to reduce the Total Suspended Solids level to the licenced concentration limit of 50mg/L before being released to the environment. Treatment can be with gypsum or any other material that has been approved by the EPA.

O4.2 The licensee must maximise the diversion of run-on waters from lands upslope and around the site whilst land disturbance activities are being undertaken.

O4.3 The licensee must maximise the diversion of stormwater runoff containing suspended solids to sediment basins installed on the premises.

O4.4 Where sediment basins are necessary, all sediment basins and associated drainage must be installed and commissioned prior to the commencement of any clearing or grubbing works within the catchment area of the sediment basin that may cause sediment to leave the site.

O4.5 The licensee must ensure the design storage capacity of the sediment basins installed on the premises is reinstated within 5 days of the cessation of a rainfall event that causes runoff to occur on or from the premises.

O4.6 The licensee must ensure that sampling point(s) for water discharged from the sediment basin(s) are provided and maintained in an appropriate condition to permit:

- a) the clear identification of each sediment basin and discharge point;
- b) the collection of representative samples of the water discharged from the sediment basin(s); and
- c) access to the sampling point(s) at all times by an authorised officer of the EPA.

O4.7 The licensee must endeavour to maximise the reuse of captured stormwater on the premises.



# Environment Protection Licence

Licence - 3384

- O4.8 Each sedimentation basin must have a marker (the “sedimentation basin marker”) that identifies the upper level of the sediment storage zone.
- O4.9 Whenever the level of liquid and other material in any sedimentation basin exceeds the level indicated by the sedimentation basin marker, the licensee must take all practical measures as soon as possible to reduce the level of liquid and other material in the sedimentation basin.
- O4.10 The sediment basins must meet the design and operational standards of Managing Urban Stormwater Soils and Construction: Volume 1 and Volume 2 E. Mines and quarries. The sediment basin sizes have been calculated to total 20.05 ML as outlined in the Blakebrook Quarry Expansion - Soil and Water Management Sub-Plan - April 2011, prepared by Environmental Resources Management Australia on behalf of Lismore City Council
- O4.11 The sites sediment basin(s) must be maintained and operated to ensure that:
- All 5-day rainfall events up to 60.2 mm (the 90th percentile 5 day rain event) are captured.
  - Any discharge from the sediment basin that occurs as a result of rainfall below the 5-day total of 60.2 mm must meet the limit conditions specified in condition L2.2.
- O4.12 All liquid chemicals, fuels and oils must be stored in tanks or containers inside suitable bund(s). Bund(s) are to be designed, constructed and maintained in accordance with the relevant Australian Standard for the Storage and Handling of Flammable and Combustible Liquids.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;
  - b) kept for at least 4 years after the monitoring or event to which they relate took place; and
  - c) produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- a) the date(s) on which the sample was taken;
  - b) the time(s) at which the sample was collected;
  - c) the point at which the sample was taken; and
  - d) the name of the person who collected the sample.

### M2 Requirement to monitor concentration of pollutants discharged

- M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee

# Environment Protection Licence

Licence - 3384

must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

## M2.2 Water and/ or Land Monitoring Requirements

### POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Oil and Grease	Visible	Special Frequency 1	Visual Inspection
pH	pH	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample

M2.3 For the purposes of the table(s) above Special Frequency 1 means the collection of samples once during each discharge event arising from rainfall not exceeding the 90 percentile five day rainevent of 60.2mm falling in total over a period of up to five days..

## M3 Testing methods - concentration limits

M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

## M4 Environmental monitoring

M4.1 The licensee is required to install and maintain a rainfall depth measuring device.

M4.2 Rainfall at the premises must be measured and recorded in millimetres per 24 hour period, at the same time each day.

## M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:

- the date and time of the complaint;
- the method by which the complaint was made;
- any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;

# Environment Protection Licence

Licence - 3384

- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## **M6 Telephone complaints line**

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

## **M7 Blasting**

M7.1 To determine compliance with condition(s) L5.2 and L5.3:

- a) Airblast overpressure and ground vibration levels must be measured at the most affected residence or noise sensitive location that is not owned by the licensee or subject to a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative level - for all blasts carried out in or on the premises; and
- b) Instrumentation used to measure the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006.

## **M8 Other monitoring and recording conditions**

M8.1 Noise monitoring must be carried out in accordance with Australian Standard AS 2659.1 – 1998: Guide to the use of sound measuring equipment – Portable sound level meters, and the compliance monitoring guidance provided in the NSW Industrial Noise Policy.

# **6 Reporting Conditions**

## **R1 Annual return documents**

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

1. a Statement of Compliance,

# Environment Protection Licence



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

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.
- R1.3 Where this licence is transferred from the licensee to a new licensee:
- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
  - b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.
- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
  - b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.
- R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').
- R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.
- R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
- a) the licence holder; or
  - b) by a person approved in writing by the EPA to sign on behalf of the licence holder.
- R1.8 The licensee must report any exceedence of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedence becomes known to the licensee or to one of the licensee's employees or agents.

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

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

- R1.9 The licensee must also include the following information with the Annual Return:

# Environment Protection Licence



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- A statement detailing the total volume of material extracted from the quarry for the reporting period; and
- The total volume of extracted material transported from the premises for the reporting period.

## **R2 Notification of environmental harm**

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

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

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

## **R3 Written report**

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

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

R3.3 The request may require a report which includes any or all of the following information:

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

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

# **Environment Protection Licence**

Licence - 3384



## **7 General Conditions**

### **G1 Copy of licence kept at the premises or plant**

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

# Environment Protection Licence

Licence - 3384

## Dictionary

### General Dictionary

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

# Environment Protection Licence

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



# Environment Protection Licence

Licence - 3384

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

  
Environment Protection Authority

(By Delegation)

Date of this edition: 28-August-2000

# Environment Protection Licence

Licence - 3384

## End Notes

- 1 Licence varied by notice 1012134, issued on 02-Apr-2002, which came into effect on 27-Apr-2002.
- 2 Licence varied by notice 1017834, issued on 03-Jun-2002, which came into effect on 28-Jun-2002.
- 3 Licence varied by notice 1020616, issued on 12-Sep-2002, which came into effect on 07-Oct-2002.
- 4 Licence varied by notice 1026159, issued on 31-Mar-2003, which came into effect on 25-Apr-2003.
- 5 Licence varied by notice 1031250, issued on 03-Oct-2003, which came into effect on 28-Oct-2003.
- 6 Licence varied by notice 1045315, issued on 11-Mar-2005, which came into effect on 05-Apr-2005.
- 7 Licence varied by notice 1049382, issued on 25-Aug-2005, which came into effect on 19-Sep-2005.
- 8 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 9 Licence varied by notice 1508293 issued on 22-Aug-2012
- 10 Licence varied by notice 1525659 issued on 30-Nov-2015
- 11 Licence varied by notice 1558031 issued on 27-Nov-2017
- 12 Licence varied by notice 1568156 issued on 06-Aug-2018
- 13 Licence format updated on 13-Feb-2019
- 14 Licence varied by notice 1577148 issued on 11-Mar-2019

# APPENDIX C

DPIE Comments on 2020 AEMR



[REDACTED]  
Lismore City Council  
PO Box 23A  
LISMORE NSW 2480

06/05/2021

**Blakebrook Quarry (MP07\_0020)  
Annual Review 2020 Response**

Dear [REDACTED]

Reference is made to the Annual Review for the period 1 January 2020 to 31 December 2020, submitted to the Department of Planning and Environment (the "Department") as required under Schedule 5, Condition 11 of MP 07\_0020 (the approval, as modified).

The Department has reviewed the Annual Review and considers it to satisfy the reporting requirements of the approval and the Department's *Annual Review Guideline* (October 2015). Please make publicly available a copy of the 2020 Annual Review on the company website.

An opportunity for improvement, would be the inclusion of a map(s) in future Annual Reviews, showing the local and regional context and the surrounding sensitive landuses. Please include site context of current operational disturbance footprint and environmental offset areas (where relevant).

Please note that the Department's acceptance of this Annual Review is not endorsement of the compliance status of the project. Non-compliances identified in the Annual Review will be assessed in accordance with the Department's Compliance Policy. Further correspondence may be sent in relation to non-compliances.

Should you need to discuss the above, please contact [REDACTED] on (02) 6670 8657.

[REDACTED]  
Compliance Team Leader  
Compliance

As nominee of the Planning Secretary

# APPENDIX D

Extractive Materials Return – July 2020 – June 2021

# Extractive Materials Return 2020-2021



Regional  
NSW

Form S1 – Period Ending 30 June 2021

## Quote RIMS ID in all correspondence

Quarry Id: 1116001 Rims ID: 400286  Operators Name: LISMORE CITY COUNCIL Address: PO BOX 23A LISMORE NSW 2480  Email: council@lismore.nsw.gov.au attn [REDACTED] Quarry Name: BLAKEBROOK QUARRY Quarry Address: 540 NIMBIN RD, BLAKEBROOK NSW 2480	Inquiries please telephone: (02) 4063 6713 <b>Completed or Nil Returns</b>  Email – <a href="mailto:mineral.royalty@planning.nsw.gov.au">mineral.royalty@planning.nsw.gov.au</a>  Postal Address (see below)
<b>Please amend name, postal address and location of mine or quarry if incorrect or incomplete.</b>	

The return should be completed and forwarded to **Senior Advisory Officer, RESOURCE ECONOMICS, STRATEGY, PERFORMANCE & INDUSTRY DEVELOPMENT, DEPARTMENT OF REGIONAL NSW, PO BOX 344 HUNTER REGION MAIL CENTRE NSW 2310** on or before **31 October 2021**. If completion of the return is unavoidably delayed, an application for extension of time should be requested **before** the due date. If no work was done during the year, a **NIL** return must be forwarded.

The return should relate to the **above quarrying establishment** and should cover the operations of quarrying and treatment (such as crushing, screening, washing etc.) carried out at or near the quarry. A return is required even if the operations are solely of a developmental nature and whether the area being worked is held under a mining title or otherwise.

**Director, Resources Policy**

Please complete all the following information to assist in identifying the location of the Quarry

Typical Geology

Basalt

Nearest Town to Quarry Lismore

Local Council Name Lismore City Council

Deposited Plan and Lot Number/s of Quarry LOT: 53 DP:  
1254990

Email Address of Operator Council@lismore.nsw.gov.au  
[REDACTED]@lismore.nsw.gov.au

Name of Owner or Licensee Lismore City  
Council

Postal Address of Licensee PO box 23A Lismore NSW 2480

Licence/Lease Number/s (if any)  
From Mining, Exploration & Geoscience (NSW Mineral Resources) N/A

From Crown Lands or other NSW Department  
N/A

If any output was obtained from land NOT held under licence from the above Departments, state the Name/s and Address/es of the Owners of the land

# Extractive Materials Return

## 2020-2021



Regional  
NSW

Form S1 – Period Ending 30 June 2021

To the best of my knowledge, information entered in this return is correct and no blank spaces left where figures should have been inserted.



- **SIGNATURE of PROPRIETOR or MANAGER** \_\_\_\_\_ **DATE** 15/09/2021 \_\_\_\_\_
- **CONTACT PERSON for this return** \_\_\_\_\_ **Quarry Operations**  
**Coordinator** \_\_\_\_\_
- **NAME (Block letters)** \_\_\_\_\_  
\_\_\_\_\_@lismore.nsw.gov.au \_\_\_\_\_ **Telephone**

# Extractive Materials Return

## 2020-2021



Regional  
NSW

Form S1 – Period Ending 30 June 2021

### Sales During 2020-2021

Production information may be published in aggregated form for statistical reporting. However, production data for individual operations is kept strictly confidential.

Product	Description	Quantity Tonnes
<b>Virgin Materials</b>		
<b>Crushed Coarse Aggregates</b>		
Over 75mm	100mm drainage aggregate, rockfill, raw feed & gabion	3691.00
Over 30mm to 75mm	Drainage aggregates & leachate aggregates	465.94
5mm to 30mm	5mm, 7mm, 10mm, 14mm & 20mm aggregates	27264.69
Under 5mm	Crusher dust	29084.01
Natural Sand		
Manufactured Sand		
Prepared Road Base & Sub Base	DGB20, DGS20, DGS40, RB20, RB40 & crusher run	50838.07
Other Unprocessed Materials	Overburden	63633.42
<b>Recycled Materials</b>		
<b>Crushed Coarse Aggregates</b>		
Over 75mm		
Over 30mm to 75mm		
5mm to 30mm		
Under 5mm		
Natural Sand		
Manufactured Sand		
Prepared Road Base & Sub Base		
Other Unprocessed Materials		
<b>River Gravel</b>		
Over 30mm		
5mm to 30mm		
Under 5mm		
<b>Construction Sand</b>	Excluding Industrial	
<b>Industrial Sand</b>		
Foundry, Moulding		
Glass		
Other (Specify)		
<b>Dimension Stone</b>	Building, Ornamental, Monumental	
Quarried in Blocks		
Quarried in Slabs		
<b>Decorative Aggregate</b>	Including Terrazzo	
<b>Loam</b>	Soil for Topdressing, Garden soil, Horticultural purposes)	
<b>TOTAL SITE PRODUCTION</b>		<b>174977.13</b>
<b>Gross Value (\$) of all Sales</b>		<b>\$2829488.99</b>
<b>Type of Material</b>	<b>Basalt</b>	
<b>Number of Full-Time Equivalent (FTE) Employees</b>	<b>Employees 5</b>	<b>Contractors 2</b>

Please Note: A return for clay-based products can be obtained by contacting the inquiry number.



# APPENDIX E

Stockpile and Production Report - 2021

Product Name	Nett Weight Tonnes
--------------	--------------------

**Location Name: Pit 1 - Main**

Crushing - 10mm Aggregate	(8,845.85)
Crushing - 14mm Aggregate	(6,424.98)
Crushing - 20mm Aggregate	(3,274.85)
Crushing - 20mm Roadbase	(47,672.85)
Crushing - 30mm minus	(37,618.35)
Crushing - 7mm Aggregate	(4,450.25)
Crushing - Coarse Dust	(16,648.07)
Crushing - Fine Dust	(810.35)
Crushing - Gabien	(17,585.35)
Crushing - Scalps	(5,526.05)
Crushing Cobble	(1,142.05)
Location Name: Pit 1 - Main	(149,999.00)
	(149,999.00)

# APPENDIX F

Asphalt Production Report - 2021

**Product Sales summary (no GST) - Asphalt 20/07/21 - 31/12/21**



Product Name	Ticket Number	Avg. Price (t)	Qty	Total Ex Tax
Trico AC10 COLMIX	49	\$0.00	563.20	\$0.00
Trico AC10 Type A CVC	14	\$0.00	208.96	\$0.00
Trico AC10H 450	114	\$0.00	1,444.03	\$0.00
Trico AC10Std 450	475	\$0.00	3,216.08	\$0.00
Trico AC14H 450	965	\$0.00	14,204.34	\$0.00
Trico AC14H A15E	180	\$0.00	2,785.80	\$0.00
Trico AC14Std 450	3	\$0.00	27.04	\$0.00
Trico AC20H 450	148	\$0.00	2,111.41	\$0.00
Trico AC7 Std 450	4	\$0.00	35.54	\$0.00
Trico Asphalt Plant Waste	1	\$0.00	2.58	\$0.00
	1953	\$0.00	24,598.98	\$0.00

# APPENDIX G

Quarry Truck Movements - 2021

Date	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
1st		6	16	14		30	23	140	34	2	65	10
2nd		7	4		266	65	8	59	38		37	52
3rd	0	4	11		87	36		10	24	117	51	60
4th	6	1	13	101	93	36	94	37	19		57	26
5th	5	5	3		17	24	50	58	204	32	37	181
6th	5			0	6	245	48	30	33			43
7th	0	23	47	3	56	58	39	6	43		247	68
8th		3	6	3		40	42	200	23	37	20	76
9th		1	1	4	259	36	15	41	23	22	58	50
10th	16	8	7		36	17		76	40	91	31	70
11th	3	9	5	10	21		194	59		25	27	30
12th	5	1	8	41	10		25	17	162	21	1	337
13th	9	0		50	24	151	18	22	33	11	8	57
14th	14	22	27	55	43		16		53	9	145	55
15th	4	0	2	69		56	4	215	33	11	61	35
16th		12	9	49	134	42		50	39		61	52
17th	35	5	7		37	17		44	12	77	51	36
18th	0	1	14	264	89	19	63	26		44	49	22
19th	4	1	1	13	80		51	40	170	45	59	257
20th	2			24	86	134	56	42		29		40
21st	2	19	33	21	51	71	98		39	17	281	34
22nd	1	13	0	51		44	115	202	33	19	16	19
23rd		11	4	39	343	66	95	42		9	37	3
24th	9	2	3		51	13	14	30	22	163	38	
25th	0	3	11	148	61	43	429	55	21	38	24	
26th		7	19	100	69		69	47	115	61	1	96
27th	3		0	45	69	237	44	48	39	51		
28th	14	36	37	56	57	13		5	25	92	116	
29th	6		23	48		23	27	227	45	29	27	
30th			25	17	307	27		46	6	6	6	
31st	23		39		54			43		277		
Total	83	100	231	702	1097	776	857	933	677	610	822	838
Avg	3.46	4.17	8.56	30.52	42.19	31.04	31.74	35.88	26.04	24.40	31.62	33.52

# APPENDIX H

Tank Decommissioning and Disposal Report

## DECOMMISSIONING REPORT

Tank Decommissioning and Disposal – Blakebrook Quarry

**540 Nimbin Road Blakebrook NSW**

ENV21265

For:

 – Lismore City Council

By:

 – ENV Solutions

Date:

25/06/2021

### ENV Solutions

313 River Street, Ballina NSW 2478

T: 1300 861 325

E: [admin@envsolutions.com.au](mailto:admin@envsolutions.com.au)

[www.envsolutions.com.au](http://www.envsolutions.com.au)



## DOCUMENT CONTROL

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<b>Job No:</b>	ENV21265
<b>Client:</b>	██████████ – Lismore City Council
<b>Filename:</b>	██

	<b>Name:</b>	<b>Date:</b>	<b>Signature:</b>
Prepared By:	██████████	25/06/21	██████████
Reviewed By:	██████████	25/06/21	██████████████████
Approved By:	██████████	25/06/21	██████████

<b>Revision:</b>	<b>Date:</b>	<b>Details:</b>

## SCOPE OF ENGAGEMENT AND LIMITATIONS

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This report has been prepared by ENV Solutions at the request of ██████████ – Lismore City Council for the purpose of a Decommissioning Report. No other parties may rely on the contents of this report for any purposes except those stated.

This report has been prepared based on the information provided to us and from other information obtained as a result of enquiries made by us. ENV accepts no responsibility for any loss or damage suffered howsoever arising to any person or corporation who may use or rely on this document for a purpose other than that described above.

No part of this report may be reproduced, stored, or transmitted in any form without the prior consent of ENV.

ENV declares that it does not have, nor expects to have, a beneficial interest in the subject project.

To avoid this advice being used inappropriately, it is recommended that you consult with ENV before conveying the information to another who may not fully understand the objectives of the report. This report is meant only for the subject site/project and should not be applied to any other.

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## 1 INTRODUCTION

---

Lismore City Council (Council) engaged ENV Solutions Pty Ltd (ENV) to undertake the decommissioning and disposal of diesel and bitumen storage equipment at the Blakebrook Quarry. ENV's Tender response proposed a team consisting of ENV and Tweed Coast Demolitions and Excavations (TCDE). The works were to be complete by the end of June 2021. A project inception site visit attended by Council, ENV and TCDE representatives occurred on 13 May 2021.

During the inception meeting, the following points were discussed:

- Concrete pads x2 at 10,000 L diesel tank were not included in tender scope of work.
- The outlet line from the 10,000 L diesel tank was identified as possibly un-purged. Council nominated their staff to clear this line.
- Possible asbestos identified on pipework lagging of 32,000 L bitumen tank. Council asked ENV to investigate and sample this material. From this discussion, it was determined that ENV shall review the asbestos register and conduct an additional site asbestos audit in relation to this area of works.
- Bitumen contained in the 32,000 L tank was of an estimated weight of only 8 – 9 tonnes in the tender scope of work. TCDE noted that the crane used to remove this tank, with bitumen contained, will need to be selected with reference to this estimated weight. A possible variation was discussed with Council, should this weight be considerably under-estimated.

The remainder of works were expected to be consistent with ENV's Tender Response. As per ENV's Tender Response, the Decommissioning Report (this deliverable) contains the following details:

- Summary of all decommissioning works conducted.
- Photographs of the field work activities and final site condition.
- Summary of any control air monitoring conducted (if required).
- Copies of all landfill dockets.
- Copies of all dockets for receipt of materials at recycling facilities.
- Copies of all waste transport certificates (as required).

## 2 SCOPE OF WORKS

---

The scope of works of this project included the decommissioning and / or disposal of five (5) tanks located at the Blakebrook Quarry. The tanks and works included are:

- Decommission and disposal of a 27,000 L bulk diesel storage tank (including associated infrastructure; walkway, ladders etc).
- Decommission and disposal of a 32,000 L bitumen tank (including associated infrastructure; walkway, ladders etc).
- Disposal of 2 x 30,000 L bitumen tanks, including adjacent scrap metal pile.
- Decommission and disposal of a 10,000 L diesel tank (including associated infrastructure; roof structure, ladders and block walls).

## 3 WORKS AS COMPLETED

---

Works, including pre-demo works on site, were conducted in the period 1 June – 21 June 2021, with Demolition works occurring from 9 June – 21 June. Works in relation to the areas of demolition and disposal were as follows.

### 3.1 Tank Purging

All tanks were purged, as per AS4976-2008, prior to demolition or removal. Details of purging are available in Appendix C.

### 3.2 Decommission and disposal of a 27,000 L bulk diesel storage tank

This tank and its associated infrastructure were removed from site. The connected safety and access infrastructure was removed to a point, on the remaining diesel tank, as per instruction from Council at the project inception site meeting.

Photos of this safety and access infrastructure, after completion of works, are available in Appendix A, Figure 12.

For comparison photographs prior to and after completion of works see Appendix A, Figure 1 and 2.

### 3.3 Decommission and disposal of a 32,000 L bitumen tank

The tank and its associated infrastructure were removed from site. During works it was noted that each tank contained bitumen of significantly higher quantity than that stipulated in the RFQ documentation. This point was discussed with Council during the inception meeting onsite and it was determined likely a larger crane would be required. Due to the increased weight of bitumen - 20 tonnes as opposed to 8 – 9 tonnes - a larger crane with 20 tonne counterweight was required. In addition, the bitumen and tank material were separated for ease of transport.

The separation of the materials required the bitumen to be stockpiled temporarily on the ground in the loading area of the old bitumen plant. This area was photographed at the completion of works to ensure the area was returned to its previous condition. This photo is available in Appendix A, Figure 11.

During the site asbestos investigation, lagging on pipework and a gasket on this tank were identified as materials unlikely to contain asbestos. As part of our due diligence, these materials were sent for analysis. Upon analysis, both the gasket and lagging were found not to contain asbestos. The analysis results for these materials are available in Appendix B.

As the bitumen from this tank was disposed of as general waste, at the designated waste disposal facility, a waste transport form was not required. A Letter of Acceptance and proof of disposal are available in Appendix D.

For comparison photographs prior to and after completion of works see Appendix A, Figure 3 and 4.

### 3.4 Disposal of 2 x 30,000 L bitumen tanks

The tanks and associated infrastructure were removed from site. During the demolition of these tanks, it was identified that both vessels contained some amount of bitumen in solid form. TCDE discussed this matter with Council, and it was decided that Council would deal with this bitumen as a separate issue. TCDE was advised to stockpile it at the location it was removed from the tank materials. This stockpile is visible in the Appendix A, Figure 6. Should Council require further help with the management of this material ENV would be glad to provide relevant assistance.

During the site asbestos investigation, material from each of the tank walls was identified as unlikely to contain asbestos. As part of our due diligence, these materials were sent for analysis. Upon analysis, these materials were found not to contain asbestos. The analysis results for this material are available in Appendix B.

For comparison photographs prior to and after completion of works see Appendix A, Figure 5 and 6.

### 3.5 Decommission and disposal of a 10,000 L diesel tank

The tank and its associated infrastructure were removed from site. During the site asbestos investigation, a gasket on this tank was identified as possible and likely to contain asbestos. Upon analysis this gasket was found to contain asbestos. The analysis results for this asbestos are available in Appendix B.

The small amount of non-friable asbestos contained in the gasket was collected along with surrounding tank components and bagged for disposal as part of a larger load of asbestos managed by TDCE.

For comparison photographs prior to and after completion of works see Appendix A, Figure 7 - 10.

### 3.6 Control air monitoring

No air monitoring was required for works. Any asbestos identified during works was not disturbed, which included one gasket (non-friable asbestos). The gasket containing asbestos was removed whole along with connecting materials.

## 4 DOCUMENTATION

---

All documentation relating to the transport and disposal of materials from this project are available in Appendix D.

## 5 REFERENCES

---

1. Lismore City Council Request for Quotation (RFQ) Q21/59, Tank Decommissioning & Disposal – Blakebrook Quarry (Issued 11/03/2021)
2. AS4976-2008 The Removal and Disposal of Underground Petroleum Storage Tanks

# APPENDIX A

Site Photographs

Figure 1. 27,000L Diesel tank (Council RFQ)



Figure 2. 27,000L Diesel tank location - On completion of works



Figure 3. 32,000L Bitumen tank (Council RFQ)



Figure 4. 32,000L Bitumen tank location - On completion of works





Figure 5. 2 x 30,000L Bitumen tank (Council RFQ)



Figure 6. 30,000L Bitumen tank location - On completion of works



Figure 7. 10,000L Diesel tank (Council RFQ)



Figure 8. 10,000L Diesel tank location - On completion of works



Figure 9. 10,000L Diesel tank associated infrastructure (Council RFQ)



Figure 10. 10,000L Diesel tank associated infrastructure location - On completion of works



Figure 11. Area of Bitumen layout - On completion of works



Figure 12. Remaining safety and access infrastructure after demolition of 27,000L diesel tank



# APPENDIX B

Laboratory Analysis

## RESULTS OF BITUMEN ANALYSIS

1 sample supplied by Env Solutions Pty Ltd on 4/06/2021 . Lab Job No. K7737.

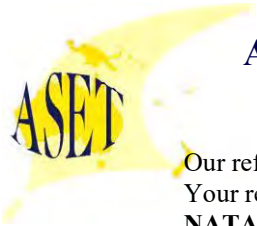
Samples submitted by [REDACTED] . Your Job: 21265

PO Box 248 BALLINA NSW 2478

Sample Identification	EAL Job No.	SAMPLE DESCRIPTION <sup>1</sup>	ASBESTOS IDENTIFICATION <sup>1</sup>	COAL TAR IDENTIFICATION <sup>1</sup>
Bitumen	K7737/1	69g sand, soil, rocks, plant matter	No Asbestos Found at RL of 0.1g/kg Organic fibres detected	ABSENT

### Notes:

- Subcontracted - Polarized Light Microscope and dispersion staining method & Envirolab # 271403
- Analysis conducted between sample arrival date and reporting date.
- \*\* NATA accreditation does not cover the performance of this service.
- .. Denotes not requested.
- This report is not to be reproduced except in full.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions.  
These Terms and Conditions are available on the EAL website: [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs), or on request.
- Results relate only to the samples tested.
- Subcontracting results from SGS Australia SE 220464
- This report was issued on 16/06/2021.



# AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET93902 / 97082 / 1 - 5  
Your ref : ENV21265 - Blakebrook Quarry  
**NATA Accreditation No: 14484**

4 June 2021

ENV Solutions  
P O Box 248  
Ballina NSW 2478



Attn: [REDACTED]

**Accredited for compliance with ISO/IEC 17025 - Testing.**

Dear [REDACTED]

## Asbestos Identification

This report presents the results of five samples, forwarded by ENV Solutions on 4 June 2021, for analysis for asbestos.

**1. Introduction:** Five samples forwarded were examined and analysed for the presence of asbestos.

**2. Methods :** The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method (**Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction**) (**Qualitative Analysis only**).

**3. Results :** **Sample No. 1. ASET93902 / 97082 / 1. ENV21265 - AS01 – Fibres to tank adjacent lab.**

Approx dimensions 5.0 cm x 3.0 cm x 0.5 cm

The sample consisted of a fibrous mass of synthetic mineral fibres.

**No asbestos detected.**

**Sample No. 2. ASET93902 / 97082 / 2. ENV21265 - AS02 – Piping between tank.**

Approx dimensions 7.0 cm x 3.0 cm x 1.0 cm

The sample consisted of a fibrous mass of synthetic mineral fibres.

**No asbestos detected.**

**Sample No. 3. ASET93902 / 97082 / 3. ENV21265 - AS03 – Insulation to pipe on top of tank.**

Approx dimensions 3.0 cm x 1.5 cm x 0.25 cm

The sample consisted of fragment and powder of soft plaster material containing synthetic mineral fibres.

**No asbestos detected.**

**Sample No. 4. ASET93902 / 97082 / 4. ENV21265 - AS04 – Gasket to pipe head on top of tank.**

Approx dimensions 2.0 cm x 1.0 cm x 0.35 cm

The sample consisted of a hard fibrous material containing organic fibres and synthetic mineral fibres.

**No asbestos detected.**

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635  
PHONE: (02) 99872183 FAX: (02) 99872151 EMAIL: [info@ausset.com.au](mailto:info@ausset.com.au) WEBSITE: [www.Ausset.com.au](http://www.Ausset.com.au)

OCCUPATIONAL HEALTH & SAFETY STUDIES • INDOOR AIR QUALITY SURVEYS • HAZARDOUS MATERIAL SURVEYS • RADIATION SURVEYS • ASBESTOS SURVEYS  
ASBESTOS DETECTION & IDENTIFICATION • REPAIR & CALIBRATION OF SCIENTIFIC EQUIPMENT • AIRBORNE FIBRE & SILICA MONITORING



**Sample No. 5. ASET93902 / 97082 / 5. ENV21265 - AS05 – 10,000L diesel tank – Gasket.**  
Approx dimensions 2.5 cm x 1.0 cm x 0.4 cm  
The sample consisted of a soft fibrous material.  
**Chrysotile asbestos detected.**

Reported by,



**BSc, MSc, Grad Dip (Occ Hyg)**  
**Occupational Hygienist / Approved Identifier.**  
**Approved Signatory**



**Accredited for compliance with ISO/IEC 17025 - Testing.**

*The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by A4964-2004. Trace / respirable level asbestos will be reported only when detected.*




# APPENDIX C

Purging Certificates

9 June 2021

  
Office Manager  
Tweed Coast Demolition & Excavations  
PO Box 6117  
Tweed Heads South, NSW 2486

  
**re: Tank purging – Blakebrook Quarry**

On 3 and 4 June 2021, ENV Solutions conducted LEL level testing and purges on tanks (Refer to Lismore City Council Request for Quotation (RFQ) Tank Decommissioning & Disposal – Blakebrook Quarry) at the Blakebrook Quarry which are included in the scope of works for the current decommissioning and disposal project. These tanks included:

- 2 x 30,000 L Bitumen tanks
- 1 x 10,000 L Diesel tanks
- 1 x 39,000 L Bitumen tank

LEL in all tanks was recorded prior to and following testing and the results are shown below.

Tank	LEL prior purge (%)	LEL following purge (%)
30,000 L Bitumen (Front)	0	0
30,000 L Bitumen (Behind)	0	0
10,000 L Diesel	3	0
39,000 L Bitumen	0	0

The PID unit used for the above measurements was:

- BW Gas Alert Micro 5 PID serial SR314-003681 (ENV PID2)
- Calibration date: 27 Jan 2021 (Cal due 28 July 2021)


This certifies the process of purging these tanks has been conducted in line with Appendix B3 of AS4976-2008 The Removal and Disposal of Underground Petroleum Storage Tanks, at the time of purging. It is recommended that anyone conducting works which require gas free conditions conduct appropriate safety testing at the time of works.

Yours Faithfully,


Snr Process Engineer and Project Manager  
ENV Solutions

16 June 2021

  
Office Manager  
Tweed Coast Demolition & Excavations  
PO Box 6117  
Tweed Heads South, NSW 2486

  
**re: Tank purging – Blakebrook Quarry**

On 16 June 2021, ENV Solutions conducted LEL level testing and purges on tanks (Refer to Lismore City Council Request for Quotation (RFQ) Tank Decommissioning & Disposal – Blakebrook Quarry) at the Blakebrook Quarry which are included in the scope of works for the current decommissioning and disposal project. These tanks included:

- 1 x 27,000L Diesel tank

LEL in all tanks was recorded prior to and following testing and the results are shown below.

Tank	LEL prior purge (%)	LEL following purge (%)
27,000L Diesel	0	0


The PID unit used for the above measurements was:

- BW Gas Alert Micro 5 PID serial SR314-003681 (ENV PID2)
- Calibration date: 27 Jan 2021 (Cal due 28 July 2021)

This certifies the process of purging this tank has been conducted in line with Appendix B3 of AS4976-2008 The Removal and Disposal of Underground Petroleum Storage Tanks, at the time of purging. It is recommended that anyone conducting works which require gas free conditions conduct appropriate safety testing at the time of works.

Yours Faithfully,



  
Snr Process Engineer and Project Manager  
ENV Solutions

# APPENDIX D

Waste Documents



Our ref: Q21/59

Your ref: Q21/59

Contact: [REDACTED]

3<sup>rd</sup> May 2021

By email: [REDACTED]@envsolutions.com.au

Dear [REDACTED]

## Letter of Acceptance

Council would like to thank you for your application and contribution to our projects and are pleased to advise that your submission for the Tank Decommissioning & Disposal at Blakebrook Quarry has been successful.

### 1. Contract Details

The following documents will form the Contract:

- a. Request for Quote documentation Q21/59
- b. Completed quote submission from ENV Solutions Pty Ltd, dated 7<sup>th</sup> April 2021:
  - reference number VPR417723
  - contract price quoted as \$ [REDACTED] (inclusive of GST)
- c. This Letter of Acceptance dated 3<sup>rd</sup> May 2021.
- d. Purchase Order Terms & Conditions (attached)

Please note the following terms in relation to invoicing requirements:

- A maximum of one (1) itemised invoice per month. Invoices must be supplied within one (1) month of the work being completed for remittance purposes.
  - Invoices to display the **Purchase Order (PO) number** [REDACTED]
  - Invoices to display Quote number and title Q21/59 - Tank Decommissioning & Disposal – Blakebrook Quarry
  - Invoices to be sent to [creditors@lismore.nsw.gov.au](mailto:creditors@lismore.nsw.gov.au) and [cscpliance@lismore.nsw.gov.au](mailto:cscpliance@lismore.nsw.gov.au)
  - Final Invoice for the financial year must display *Final Invoice*.
  - All other invoices must display *Part Invoice*.
  - No variations from scope of works that is provided in your quote. Any variations must be pre-approved, or payment will not be honoured
- e. The attached Acknowledgement Letter of Acceptance - completed and signed by you.

### 2. Starting Date

The starting date is yet to be confirmed in consultation with yourselves and [REDACTED], Compliance Officer. Council will be in contact with you soon to discuss details.

### 3. Term of the Contract

The anticipated completion date for the project is 30<sup>h</sup> June 2021.

### 4. Documents to be provided by you

- a. The Acknowledgement Letter of Acceptance (attached)  
*Please complete, sign and return to Council within five working days* of receipt.
- b. Site specific Safety Management Plan
- c. Initialled Purchase Order Terms and Conditions

Council wish to thank you for taking interest in our projects and look forward to a good working relationship.

Should you have any enquiries, please contact [REDACTED] or  
[REDACTED][@lismore.nsw.gov.au](mailto:[REDACTED]@lismore.nsw.gov.au)

Yours faithfully

[REDACTED]  
**Compliance Officer**

**Enclosed:** Acknowledgement of Letter of Acceptance,  
General Purchase Order Terms and Conditions.

## ACKNOWLEDGEMENT OF LETTER OF ACCEPTANCE

**This form must be fully completed, signed and returned within five days.**

RFQ 21/59 – Tank Decommissioning & Disposal	
LETTER OF ACCEPTANCE DATED:	3 <sup>rd</sup> May 2021
POSTAL ADDRESS:	Compliance Team Commercial Services Lismore City Council PO Box 23A LISMORE NSW 2480
EMAIL ADDRESS:	<a href="mailto:cscompliance@lismore.nsw.gov.au">cscompliance@lismore.nsw.gov.au</a> [REDACTED]@lismore.nsw.gov.au
REFERENCE:	Your Reference: Quote Number VPR417723 Dated 7 <sup>th</sup> April 2021
The Works referred to in the "Letter of Acceptance" relating to the above contract will be executed in accordance with the conditions therein.	
NAME AND ADDRESS OF CONTRACTOR:	ENV Solutions Pty Ltd 313 River Street BALLINA NSW 2478 [REDACTED]@envsolutions.com.au
SIGNATURE OF CONTRACTOR	[REDACTED]
NAME AND POSITION TITLE IN BLOCK LETTERS:	[REDACTED] SENIOR ENVIRONMENTAL SCIENTIST
DATE:	6 May 2021

# Tonnage Summary by Approval

Where transaction occurred between 1/06/2021 10:18:21 AM and 24/06/2021 10:18:21 AM



<b>Approval:</b>	I-5464	<b>Material Desc:</b>	Commercial & Industrial Waste	<b>Chem Analysis Req:</b>	
<b>Transporter:</b>	Tweed Coast Demoliton & Excavations	<b>Acceptance Class:</b>	Waste Disposal	<b>Status:</b>	Open
<b>Generator:</b>	Tweed Coast Demoliton & Excavations	<b>Enquiry Date:</b>	24/06/2021 3:32 PM		

Station Visit Count	Exit Date / Time	Transaction	Manifest	Registration	Net
1	21/06/21 4:06 PM	SW81425M\1		CJ37PV	20.26
<b>Totals for I-5464</b>		<b>1</b>			<b>20.26 t</b>
<b>Grand Totals</b>		<b>1</b>			<b>20.26 t</b>



**To:** [REDACTED]  
**Subject:** RE: Steel - Blakebrook

**From:** [REDACTED]  
**Sent:** Friday, 25 June 2021 1:44 PM  
**To:** [REDACTED] >  
**Subject:** Steel - Blakebrook

10/06/2021		FHOS - HMS-OVERSIZE	20539908	11.480
16/06/2021		FHOS - HMS-OVERSIZE	20543502	10.140
17/06/2021		FHOS - HMS-OVERSIZE	20545844	5.320
18/06/2021		FHOS - HMS-OVERSIZE	20546629	5.180
21/06/2021		FHOS - HMS-OVERSIZE	20548149	5.380

With thanks and kind regards

[REDACTED]  
Office Manager



M [REDACTED]  
E [REDACTED] web [www.tcde.com.au](http://www.tcde.com.au)  
Post: PO Box 6117 Tweed Heads South NSW 2486

# APPENDIX I

Section 94 Levies 2021

lgr_acc	trn_dte	pst_yer	pst_per	trn_cde	trn_ref	hrs_qty	act_kms	act_val	com_val	act_onc	tot_val	src_mdu	acc_nme	trn_des
Ledger Account	Date	Posting Year	Posting Period	Type	Reference	Hours/Qty	Kilometers	Actual	Committed	Oncost	Total Value	Source	Account Name	Transaction Description
001721.0785.9915	31/01/2021	2021		7	9901 13143/2021	0	0	2131.43	0	0	2131.43	GL	Internal Charges - Expenses	S94 Levies Quarry January 2021
001721.0785.9915	28/02/2021	2021		8	9901 13197/2021	0	0	1682.85	0	0	1682.85	GL	Internal Charges - Expenses	Section 94 Levies Quarry February 2021
001721.0785.9915	31/03/2021	2021		9	9901 13338/2021	0	0	4277.46	0	0	4277.46	GL	Internal Charges - Expenses	Blakebrook Quarry S94 Levies March 2021
001721.0785.9915	30/04/2021	2021		10	9901 13489/2021	0	0	13525.79	0	0	13525.79	GL	Internal Charges - Expenses	Section 94 Levies April 2021
001721.0785.9915	31/05/2021	2021		11	9901 13698/2021	0	0	19227.81	0	0	19227.81	GL	Internal Charges - Expenses	S94 Levies Quarry May
001721.0785.9915	30/06/2021	2021		12	9901 14023/2021	0	0	20002.67	0	0	20002.67	GL	Internal Charges - Expenses	S94 Levies Quarry June 2021
001721.0785.9915	31/07/2021	2022		1	9901 14314/2022	0	0	16920.54	0	0	16920.54	GL	Internal Charges - Expenses	Section 94 S 7.11 Levies July 2021
001721.0785.9915	31/08/2021	2022		2	9901 14576/2022	0	0	10578.42	0	0	10578.42	GL	Internal Charges - Expenses	S94 Levies Quarry August 2021
001721.0785.9915	30/09/2021	2022		3	9901 14780/2022	0	0	8369.45	0	0	8369.45	GL	Internal Charges - Expenses	S94 Levies Quarry September 2021
001721.0785.9915	31/10/2021	2022		4	9901 14943/2022	0	0	4513.26	0	0	4513.26	GL	Internal Charges - Expenses	Section 94 Levies Asphalt Plant Oct 2021
001721.0785.9915	30/11/2021	2022		5	9901 15147/2022	0	0	12968.2	0	0	12968.2	GL	Internal Charges - Expenses	S94 Levies Quarry November 2021
001721.0785.9915	31/12/2021	2022		6	9901 15359/2022	0	0	9642.44	0	0	9642.44	GL	Internal Charges - Expenses	S94 Levies - Blakebrook Quarry - December

# APPENDIX J

Noise Monitoring Assessment Report

## Ambience Audio Services

\_\_\_\_\_Acoustic Measurement and Analysis

15 Tamarind Close  
Richmond Hill NSW 2480  
ambienceaudio.com.au

Mobile: [REDACTED]

### **Results of Noise Monitoring**

**Blakebrook Quarry  
550 Nimbin Road  
Blakebrook NSW 2480**

Prepared for

**Ecoteam  
13 Ewing Street  
Lismore NSW 2480**

Prepared by  
[REDACTED]  
December 22<sup>nd</sup> 2021

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## 1 INTRODUCTION

Ambience Audio Services have been engaged by Ecoteam to conduct noise monitoring at Blakebrook Quarry, 550 Nimbin Road, Blakebrook NSW.

Noise monitoring was conducted on the 18<sup>th</sup> of November and 16<sup>th</sup> of December 2021 with the quarry and asphalt plant operating under normal conditions and suitable weather conditions. The noise monitoring was conducted over two days, due to breakdowns with some of the crushing equipment, unsuitable weather, the asphalt plant did not operate at some times, and other scheduled work commitments.

Quarry operations while noise monitoring was conducted included: crushing, screening and stockpiling on the southern side of the quarry floor, asphalt production at the mobile plant at the top of the quarry, and trucks and loader on the quarry floor and internal haul roads. A diagram of equipment operating on the quarry floor during noise monitoring at residential receivers is provided in Appendix C.

To assist with the interpretation of some of the terminology used in this report, Appendix A provides definitions of acoustic terms. Appendix B is a chart of everyday sound pressure levels.

## 2 NOISE MONITORING REQUIREMENTS

The noise monitoring requirements for the Blakebrook Quarry are outlined in Section 2.2, Sections 7.1, 7.2, 7.4, 7.5 and 7.7 of the Noise and Blast Management Plan Revision 3.1 (Aug 2018) prepared by Environmental Resources Management Australia Pty Ltd (ERM).

Extracts of the relevant parts are copied below.

### Section 2.2

*3. The Proponent must ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land.*

Table 2: Noise criteria dB(A)

Receiver	Day L <sub>eq</sub> (15 minute)
Location 2	36
All other locations	35

*Noise generated by the project is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy. Appendix 5 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.*

*However, the noise criteria in Table 2 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of this agreement.*

*L6.1 Noise from the premises must not exceed:*

(a) 35dB(A) LAeq(15 minute) during the day (7am to 6pm) Monday to Saturday;

Where LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

7.1 **MONITORING OBJECTIVES**

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of AS 1055-1997 “Acoustics - Description and Measurement of Environmental Noise” and the NSW EPA Noise Policy for Industry (EPA, 2017).

7.2 **MONITORING LOCATIONS**

The Noise Assessment (ERM, 2009) included seven noise monitoring locations that were used throughout the assessment, based on proximity to nearby potentially sensitive receptors. Given the proximity between monitoring locations and the location of anticipated noise-generating plant and equipment, the monitoring locations have been revised and separated into **primary** and **supplementary** acoustic monitoring locations for the purposes of this NBMP.

Primary and supplementary acoustic monitoring locations are identified in *Figure 1.3*. Primary acoustic monitoring locations consist of **locations 2, 4 and 8**, with the remainder consisting of supplementary acoustic monitoring locations.

An agreement was reached with the landowner located along Nimbin Road (previously identified as location 8, ERM 2009) in April 2016, wherein the landowner has agreed to exceedances in noise levels from quarry operations. As such the location has been removed as a primary acoustic monitoring location, and a new monitoring location selected.

Primary monitoring locations will be utilised during noise compliance monitoring and are considered representative in determining compliance with the relevant Conditions of Approval.

7.4 **METHODOLOGY**

*Noise*

Operator attended noise measurements shall be conducted at all primary acoustic measurement locations (Locations 2, 4 and 9 - refer *Figure 1.3*) to quantify and characterise the maximum (LAmax), the energy equivalent (LAeq), and background (LA90) noise levels from ambient noise sources and quarrying operations over a 15 minute measurement period.

The operator shall quantify noise emissions and estimate the LAeq (Period) noise contribution during day time activities from each of the quarrying operations, as well as the overall level of ambient noise.

During attended monitoring, digital recordings will be conducted to allow for additional post analysis of the quarry noise levels and source identification.



All acoustic instrumentation employed throughout the monitoring program shall meet with the requirements of AS 1259.2-1990, "Sound Level Meters".

Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding  $\pm 0.5$  dBA.

## 7.5 METEOROLOGICAL PARAMETERS

Adverse meteorological conditions have the potential to increase noise levels, for example wind speeds up to 3m/s or temperature inversions, however wind speeds above 5m/s (and rainfall) have the potential to generate extraneous and erroneous noise events, which reduce the accuracy and confidence in measured data.

As such, meteorological parameters will be evaluated prior to undertaking works on site, to gain an understanding of the weather conditions and the potential for variations in noise levels.

All noise measurements shall be accompanied by both qualitative description (including cloud cover, approximate wind direction and speed) and quantitative measurements of prevailing local weather conditions throughout the survey period. Rainfall data will be collected from the rain gauge located on-site. All other weather data for the monitoring period will be purchased from the Bureau of Meteorology (BoM) website for the Lismore Observation Station, which is programmed to continuously record the meteorological parameters as shown in *Table 7.1*.

**Table 7.1 Meteorological Measurement Parameters**

Measured Parameter	Unit	Sample Interval
Mean Wind Speed	m/s	15 minutes
Mean Wind Direction	degrees	15 minutes
Aggregate Rainfall	Mm	15 minutes
Mean Air Temperature	C°	15 minutes

## Modifying Factor Corrections

Factor	Assessment and Measurement	When to Apply	Correction	Comment
Tonal Noise	One third octave or narrow band analysis.	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: <ul style="list-style-type: none"> <li>5 dB or more if the centre frequency of the band containing the tone is above 400 Hz.</li> <li>8 dB or more if the centre frequency of the band containing the tone is 160 to 400 Hz inclusive.</li> <li>15 dB or more if the centre frequency of the band containing the tone is below 160 Hz.</li> </ul>	5 dB	Narrow band frequency analysis may be required to precisely detect occurrence.
Low Frequency Noise	Measurement of C weighted and A-weighted level.	Measure/ assess C and A weighted levels over same time period. Correction to be applied if the difference between the two levels is 15 dB or more.	5 dB	C-weighting is designed to be more responsive to low frequency noise.

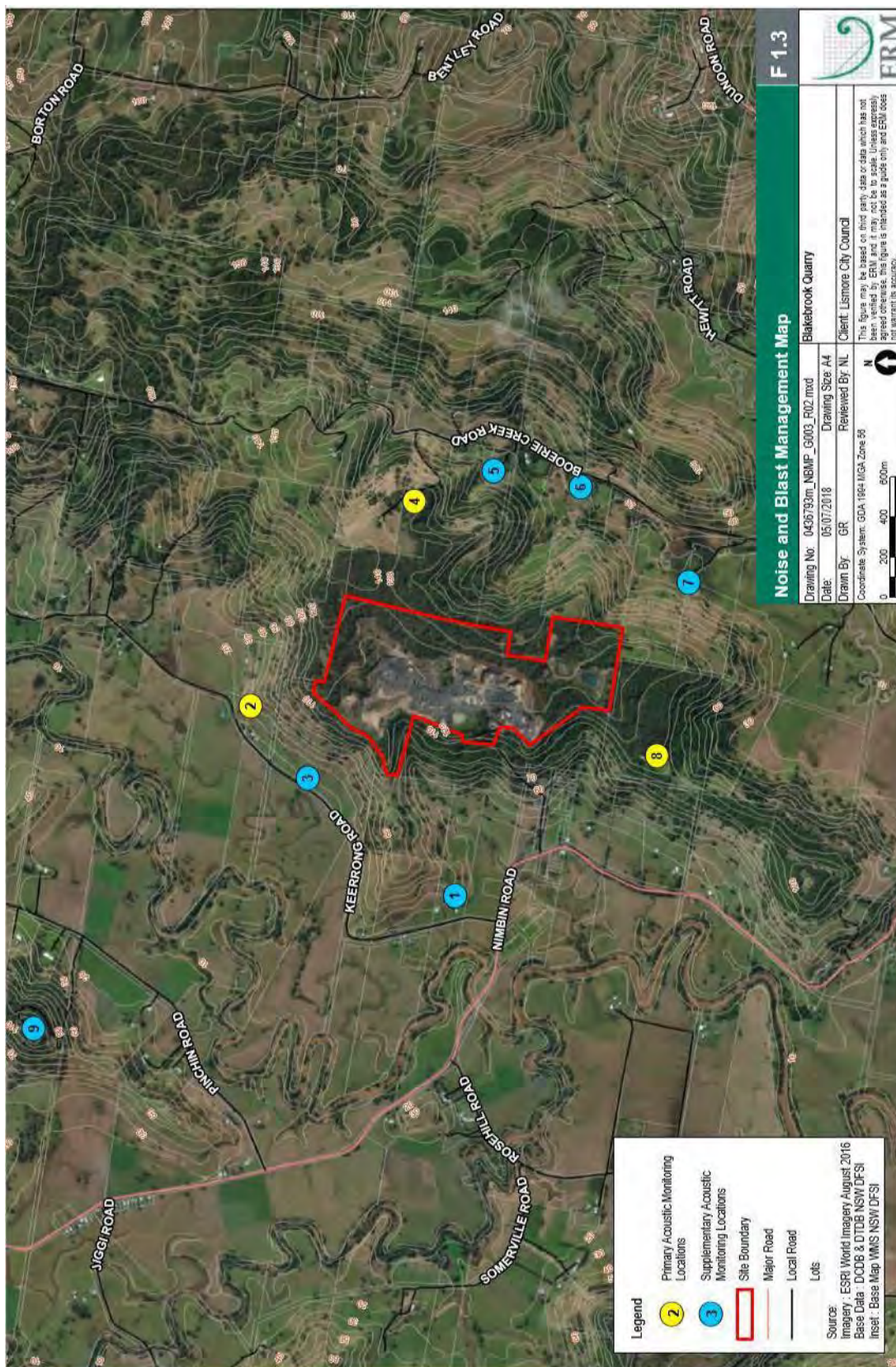
The latest project approval by the NSW Department of Planning, Industry and Environment (Mod 3 May 2021) requires the asphalt plant to be included in the noise assessment at receiver locations. Appendix 5 of Mod 3 requires additional assessment of low frequency noise in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA,2017).

Section 7.4 (Methodology – Noise) in the ERM NBMP v3.1 indicates noise monitoring to be conducted at receiver locations 2, 4 and 9, and refers to figure F1.3. Monitoring was conducted at receiver location 8 instead of Receiver 9 as F1.3 identifies Receiver 8 as the primary receiver and receiver 9 as a supplementary receiver.

Noise monitoring at the receiver locations were conducted within 30m of the residential dwelling in the direction of the quarry.

Table 2.1 Primary Receiver Locations	
Receiver	Street Address
2	[REDACTED]
4	[REDACTED]
8	[REDACTED]

Figure 2.1 Noise Monitoring Locations NBMP v3.1



### 3 MEASUREMENT PROCEDURE AND RESULTS

#### 3.1 Instrumentation

Table 3.1 Instrumentation		
Instrument	Serial #	Calibration Date
Brüel and Kjaer 2250L G4 Sound Level Meter	3006868	July 2021
Bruel & Kjaer 2250 G4 Sound Level Meter	3008548	Dec 2019, Dec 2021
Brüel and Kjaer 2250 G4 Sound Level Meter	3028735	Jan 2020
Bruel & Kjaer 4231 Calibrator	2292735	Jan 2021, Dec 2021

*Note : Two of the instruments were sent for calibration between the 2 monitoring days -18<sup>th</sup> of November and the 16<sup>th</sup> of December 2021.*

The sound level meters (SLM) used during the noise survey conform to Australian Standard 1259 "Acoustics - Sound Level Meters", (1990) as type 1 precision sound level meters, and have an accuracy suitable for both field and laboratory use. The meters' calibrations were checked before and after the measurement periods with a Bruel & Kjaer acoustic calibrator. No significant system drift occurred over the measurement periods.

The SLMs and calibrator have been checked, adjusted and aligned to conform to the factory specifications and issued with conformance certificates by a certified NATA facility.

#### 3.2 Measurement Procedure

Measurements were made in general accordance with procedures laid down in:

1. Australian Standard AS 1055 : 2018 *Acoustics - Description and measurement of environmental noise*
2. The NSW Government *Noise Policy for Industry* (EPA Oct 2017)

The microphone of a B&K 2250 G4 SLM was mounted at a height of 1.5m above the ground and a Bruel and Kjaer outdoor windscreen fitted to the microphone. The SLM was located above the cliff face where the working equipment was operating to monitor noise levels while measurements were being conducted at the receiver locations.

The microphone of a B&K 2250L G4 was mounted on a 1.5m high tripod, a Bruel and Kjaer outdoor windscreen fitted to the microphone, and located near the asphalt plant to monitor noise levels of the asphalt plant while measurements were being conducted at the receiver locations.

Both SLMs were set to record continuously for the duration of receiver monitoring with 1 second samples. A sound recording was conducted simultaneously.

A third SLM (B&K 2250 G4) was mounted on a 1.2m high tripod and a Bruel and Kjaer outdoor windscreen fitted to the microphone. The SLM was used at the receiver locations to monitor noise levels while the quarry and asphalt plant were operating.

A 15 minute period was recorded at each receiver location with A and C weighting, fast response, and 1 second samples with a simultaneous sound recording.

### 3.3 Weather Conditions

Weather conditions were generally good for acoustic measurements. Observations were taken at each receiver location with a Kestrel 3000 pocket weather meter.

Table 3.2 Receivers Weather Summary Nov Dec 2021							
Date	Time	Receiver	Temp	Relative Humidity	Wind Speed (m/s)	Wind Dir	Cloud Cover
			°C	%			
18/11/2021	7:45am	2	21	82	Calm		8/8
18/11/2021	9:00am	8	22	75	Calm		8/8
16/12/2021	8:15am	4	21	78	Calm		7/8

Table 3.3 Blakebrook Quarry Local Weather Station					
Time	Temp °C	Relative Humidity %	Wind		
			Dir.	Speed	
				(km/h)	(m/s)
<b>18/11/2021</b>					
7:00 AM	17.5	86	E	0	0.0
7:30 AM	18.3	85	E	0	0.0
8:00 AM	18.9	84	ENE	0	0.0
8:30 AM	19.9	82	ESE	0	0.0
9:00 AM	21.7	75	SSE	0	0.0
9:30 AM	23.7	70	ENE	1.6	0.4
<b>16/12/2021</b>					
7:00 AM	17.0	92	—	0	0.0
7:30 AM	17.3	92	E	0	0.0
8:00 AM	18.1	92	SE	0	0.0
8:30 AM	19.6	92	E	0	0.0
9:00 AM	21.7	88	E	0	0.0
9:30 AM	24.2	82	E	0	0.0

### 3.3 Measurement Results

Table 3.4 Blakebrook Quarry Measurements Summary Nov Dec 2021									
Measurement Location	Date	Start Time	Elapsed Time	LAeq [dB]	LCEq [dB]	LAFmax [dB]	LAFmin [dB]	LAF10.0 [dB]	LAF90.0 [dB]
Receiver 2	18/11/2021	7:42 AM	0:15:00	50.0	70.0	67.8	31.0	51.7	37.3
Receiver 8	18/11/2021	8:31 AM	0:15:00	41.2	53.4	64.4	35.2	42.3	37.5
Receiver 4	16/12/2021	8:07 AM	0:15:00	39.1	55.8	66.8	31.7	41.6	33.8
Top of Quarry	18/11/2021	6:32 AM	3:40:24	75.6	79.8	89.4	36.9	79.0	57.5
Top of Quarry	16/12/2021	7:00 AM	2:27:22	68.8	74.1	82.7	42.2	72.4	49.3
Asphalt Plant	18/11/2021	6:39 AM	3:38:16	61.8	78.4	90.2	42.8	62.7	60.0
Asphalt Plant	16/12/2021	6:54 AM	2:39:02	63.5	79.0	84.2	53.4	64.5	62.1

**Note:**

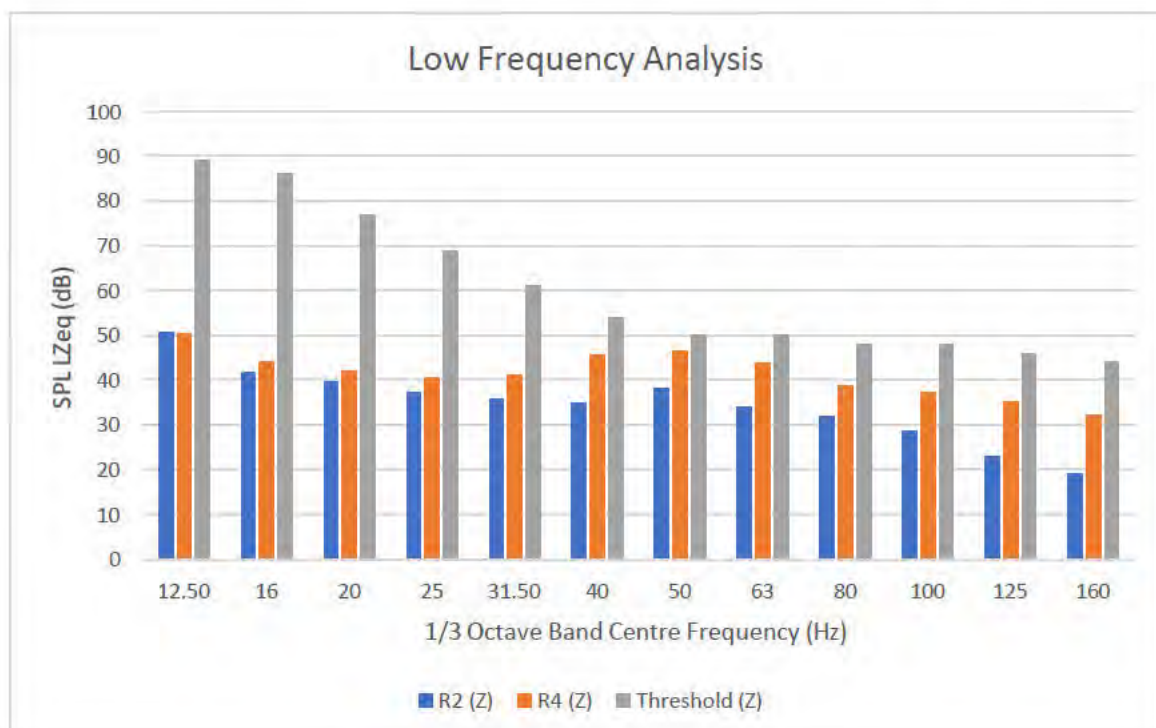
*The above results are the ambient noise levels and includes noise from the rural surroundings and quarry noise if audible.*

Table 3.5 Noise Observations at Receiver Locations (All measurements 15 mins)				
Receiver	Date	Start Time	Observed Noise Sources	Quarry Noise
2	18/11/2021	7:42am	Birds, insects consistent, occasional local traffic on Keerrong Rd, semi trailer on Keerrong Road	Quarry not audible
8	18/11/2021	8:31am	Insects, birds, distant traffic on Nimbin Rd, occasional dog barking, occasional truck on entry haul road	Quarry barely audible. Low frequency of machine just audible at times.
4	16/12/2021	8:07am	Birds, occasional insects, distant aircraft, helicopter	Quarry not audible

### 3.4 Low Frequency Analysis

The C-A for Receivers 2 and 4 was greater than 15 decibels. Even though the quarry operations were not audible at these receivers a low frequency analysis is provided as information only.

Table 3.6 Low Frequency Analysis								
1/3 Octave band Centre Frequency (Hz)	Measured A Weighted		Z Correction	Z Weighted		Threshold	Difference	
	R2	R4		R2	R4		R2	R4
12.50	-12.9	-13.0	63.4		50.4	89	-38.5	-38.6
16	-15.0	-12.5	56.7	41.7	44.2	86	-44.3	-41.8
20	-10.9	-8.6	50.5	39.6	41.9	77	-37.4	-35.1
25	-7.5	-4.1	44.7	37.2	40.6	69	-31.8	-28.4
31.50	-3.7	1.8	39.4	35.8	41.2	61	-25.3	-19.8
40	0.1	10.9	34.6	34.7	45.5	54	-19.3	-8.5
50	8.0	16.2	30.2	38.2	46.4	50	-11.8	-3.6
63	7.7	17.5	26.2	33.9	43.7	50	-16.1	-6.3
80	9.4	16.2	22.5	31.9	38.7	48	-16.1	-9.3
100	9.6	18.2	19.1	28.7	37.3	48	-19.3	-10.7
125	6.9	19.2	16.1	23.0	35.3	46	-23.0	-10.8
160	5.6	18.8	13.4	19.0	32.2	44	-25.0	-11.9



## 4 DISCUSSION OF RESULTS

The noise loggers above the quarry and near the asphalt plant indicated that there was consistent quarry and asphalt plant noise during the measurement periods at receiver locations.

**Receiver 2** - quarry noise was not audible. The  $L_{A90,15\text{min}}$  was 37.3 dB(A) and mainly due to consistent insects. The C-A was greater than 15 decibels. The low frequency analysis (Table 3.6 and Chart 3.1) indicates the corrected Z weighted 1/3 octave band noise levels are below the threshold specified in Table C2 in Fact Sheet C of the NSW NPfl.

The  $L_{Aeq,15\text{min}}$  of the quarry operations is estimated to be below 35 dB(A).

**Receiver 4** - quarry noise was not audible. Insect noise was consistent. The  $L_{A90,15\text{min}}$  was 33.8 dB(A). The C-A was greater than 15 decibels. The low frequency analysis indicates the corrected Z weighted 1/3 octave band noise levels are below the threshold specified in Table C2 in Fact Sheet C of the NSW NPfl.

The  $L_{Aeq,15\text{min}}$  of the quarry operations is estimated to be below 33 dB(A).

The resident noted at times the quarry was audible and mainly dependent on the wind.

**Receiver 8** - quarry noise was barely audible. Low frequency from quarry machinery was audible at times. The  $L_{A90,15\text{min}}$  was 37.8 dB(A) and mainly attributed to insects.

The  $L_{Aeq,15\text{min}}$  of the quarry operations is estimated to be below 35 dB(A).

The resident noted that the quarry was audible at times depending on wind conditions and the equipment being used. The resident had noted that recently noise levels were higher for some periods of the day, but were not audible during the noise monitoring.

The asphalt plant is the closest quarry operation to receiver 8. A screener was temporarily located near the asphalt plant which may have attributed to the additional noise level. The screener was not operating during the noise monitoring and has since been located on the quarry pit floor.

The resident also noted that sometimes on start up of the asphalt plant, machinery noise is audible inside the residential dwelling. During a site visit at 9am on the 16<sup>th</sup> of December the noise was not audible.

Analysis of the logged noise levels of the noise logger at the asphalt plant on the 16<sup>th</sup> of December showed an increase of approximately 4 decibels in the C weighting, with no change in the A weighting for approximately 15 minutes from 7am. The spectrum data indicated an increase in the 50 Hz 1/3 octave band.



## **Top of Quarry**

Graphs D.4 and D.5 in Appendix D indicates that quarry operations on the pit floor are approximately 6-8 decibels lower on the 16<sup>th</sup> of December compared to the 18<sup>th</sup> of November. This is mainly due to machinery (the excavator in particular) operating at a further distance on the 16<sup>th</sup> of December, from the noise logger located at the top of the quarry.

## 5 SUMMARY

A noise monitoring survey was conducted to assess compliance of the quarry and asphalt plant operational noise levels at Blakebrook Quarry, Blakebrook, via Lismore NSW. Measurements were undertaken with calibrated noise monitoring equipment on the 18<sup>th</sup> of November and the 16<sup>th</sup> of December 2021 and conducted in general accordance with procedures laid down in Australian Standard AS 1055:2018 and the NSW Noise Policy for Industry.

The Blakebrook Quarry operates under EPL No. 3384. Condition L6.1 stipulates that noise from the premises must not exceed 35dB(A)  $L_{Aeq,15min}$  during the day (7am to 6pm) Monday to Saturday at residential receiver locations. The current Noise and Blast Management Plan v3.1 (Aug 2018) allows a limit of 36dB(A)  $L_{Aeq,15min}$  at Receiver 2.

The latest project approval by the NSW Department of Planning, Industry and Environment (Mod 3 May 2021) requires the asphalt plant to be included in the noise assessment at receiver locations. Appendix 5 of Mod 3 requires additional assessment of low frequency noise in accordance with Fact Sheet C of the NSW Noise Policy for Industry (EPA,2017).

Measurements were conducted at the 3 primary receiver locations while the quarry and asphalt plant was operating. The quarry and asphalt plant operations were not audible at receiver locations 2 and 4, and occasional low frequency was observed at Receiver 8.

The quarry operational noise levels ( $L_{Aeq,15min}$ ) were not able to be accurately assessed at residential receiver monitoring locations, as the quarry noise was not audible, or barely audible against other noise sources such as distant traffic, insects and birds.

It is estimated from the recorded  $L_{A90,15min}$  levels, listening to the sound recordings and observations, that the combined quarry and asphalt plant noise levels are below the Project Specific Noise Level of 35 dB(A)  $L_{eq,15min}$  at receiver locations 4 and 8, and below the Project Specific Noise Level of 36 dB(A)  $L_{eq,15min}$  at receiver location 2.

The current crushing, screening, rock hammering and stock piling operations are on the main pit floor, which provides a substantial noise barrier to receivers. If crushing, screening, rock hammering and stock piling operations change to a higher ground level, then there is potential for increased noise impact at receivers and it is recommended that noise monitoring be conducted at residential receivers.

Receiver 8 is close to the southern cell. It is recommended that noise monitoring be conducted at Receiver 8 when work in the southern cell is undertaken, to assess the noise impact at Receiver 8.



Acoustic Consultant  
Ambience Audio Services

## APPENDIX A

### Definitions of Terms

**Sound pressure level ( $L_p$ ):** A measurable quantity of the size or amplitude of the pressure fluctuations (sound waves) above and below normal atmospheric pressure compared to a reference pressure. Sound pressure levels are measured in decibels whereas sound pressure is measured in pascals ( $N/m^2$ ).

**Decibels (dB):** a ratio of energy flows. When used for sound measurement, it is the ratio between a measured quantity of sound pressure and an agreed reference sound pressure. The dB scale is logarithmic and uses the threshold of hearing of  $20 \mu Pa$  (micro pascals) as the reference pressure. This reference level is defined as 0 dB.

**Frequency (Hz):** The number of pressure variations per second (cycles per second) is called the **frequency** of sound and is measured in **Hertz (Hz)**. The rumble of distant thunder has a low frequency, while a whistle has a high frequency. The normal range of hearing for a healthy young person extends from approximately 20Hz up to 20 000 Hz (20 kHz) while the range from the lowest to highest note on a piano is approximately 27.5 Hz to 4.2 kHz.

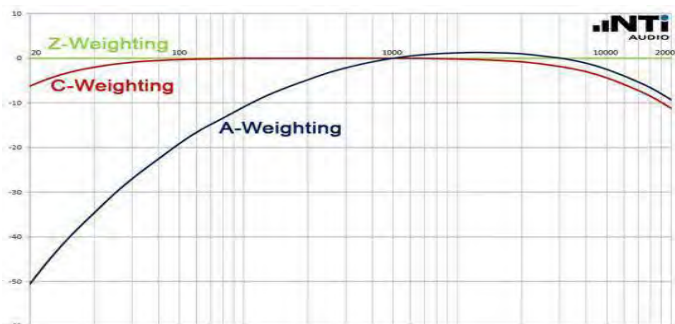
**Spectral characteristics:** The frequency content of noise.

**Octave:** a logarithmic unit for ratios between frequencies, with one octave corresponding to a doubling of frequency. For example, the frequency one octave above 40 Hz is 80 Hz.

**1/3 Octave:** a logarithmic unit of frequency ratio equal to one third of an octave.

**“A” frequency weighting:** The method of frequency weighting the electrical signal within a noise-measuring instrument to give a very approximate simulate to the human perception of loudness. The symbols for the noise parameters often include the letter “A” (e.g.,  $L_{Aeq}$ , dBA) to indicate that frequency weighting has been included in the measurement. “A” weighting is most commonly used with regard to noise control issues, regulations and environmental standards.

**“C” frequency weighting:** The filters used in C weighting captures lower frequencies than A weighting as indicated in the chart below.



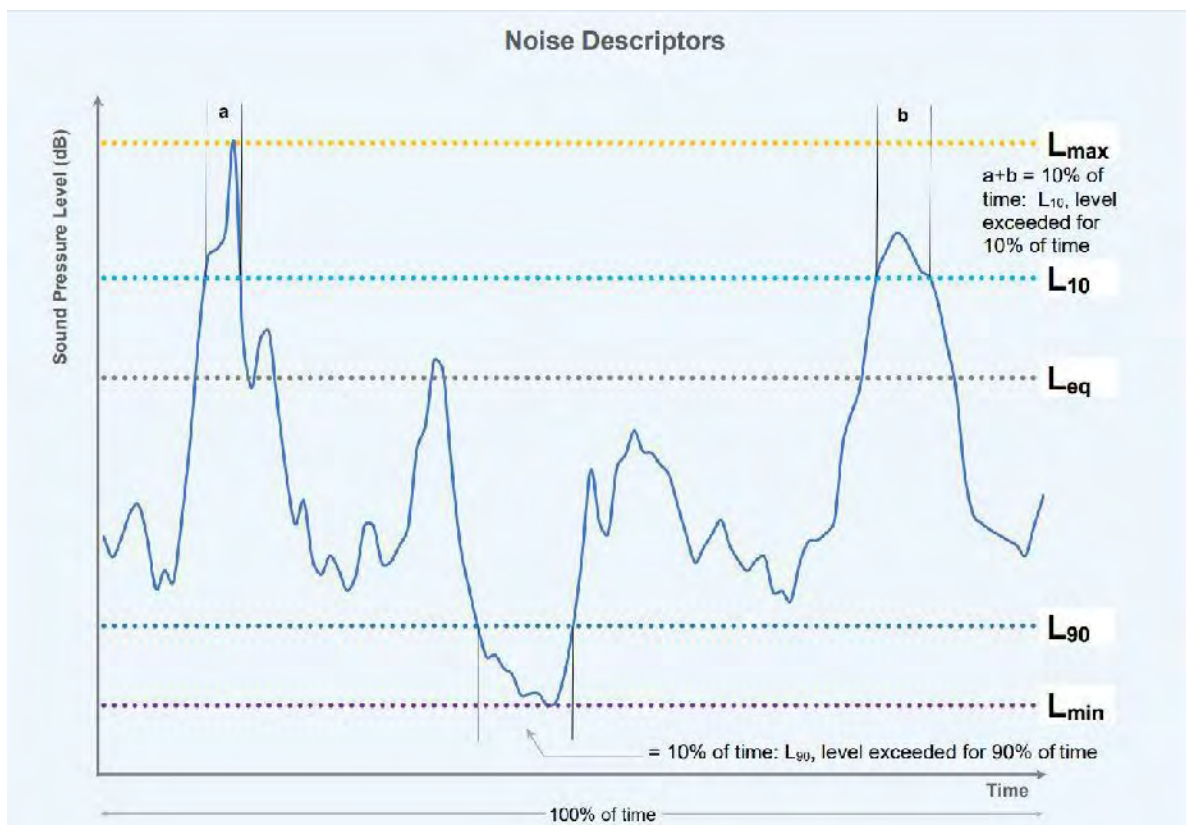
The A-weighting curve is used extensively for general purpose noise measurements but the C-weighting correlates better with the human response to high noise levels.

**Fast, Slow and Impulse time weightings:** Standardised root-mean-square (rms) averaging times to help define fluctuating noise levels. Impulsive noises have high peak levels with a very short duration (e.g., gun shot), or a sequence of such peaks. The 'Slow' time weighting averages the fluctuations over a one second time base whilst the 'Fast' time weighting averages the fluctuations over a one-eighth of a second time base. Environmental assessment standards usually specify the time weighting (**F**, **S**, or **I**) to be used.

**L<sub>Aeq</sub>:** The A-weighted equivalent continuous noise level. A widely used noise descriptor which provides an average of the energy of a constant level of noise which is the same as the varying noise signal being measured. The time in which the measurement was sampled, is indicated with a subscripted number e.g. L<sub>Aeq,15 minute</sub> is a 15-minute sample.

**Percentile Levels L<sub>N</sub>:** The sound pressure level that is exceeded for N per cent of the time over which a given sound is measured. e.g. L<sub>A90</sub> is the A-weighted sound pressure level that is exceeded for 90% of the time over which a given sound is measured.

L<sub>A90</sub> is commonly used to describe the **background noise level** for community noise assessments.



**Ambient noise:** The all-encompassing noise associated within a given environment. It is the composite of sounds from many sources, both near and far.

**Extraneous noise:** Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods and by events such as concerts or sporting events. Normal daily traffic is not to be considered extraneous.

**Background noise:** The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is described using the **L<sub>A90</sub>** descriptor, fast time weighting.

**Intrusive Noise:** Refers to noise that intrudes above the background level by more than 5 decibels.

**Noise limits:** Enforceable noise levels that appear in consents and licences. The noise limits are based on achievable noise levels, which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.

#### **References:**

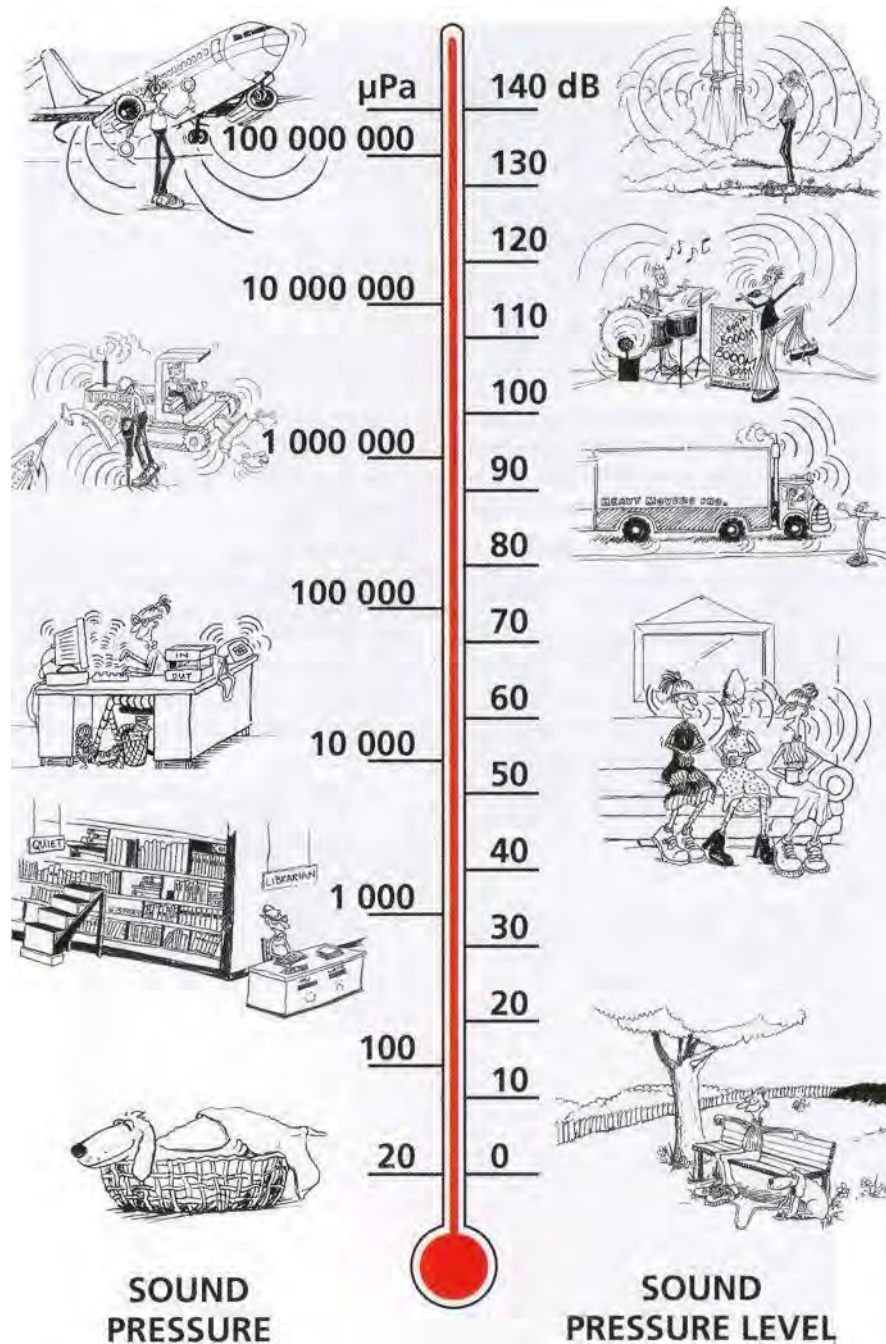
*Measuring Sound* Brüel and Kjær Sound & Vibration Measurements A/S  
September 1984

*Environmental Noise* Brüel and Kjær Sound & Vibration Measurements A/S  
2000, 2001

*New South Wales Industrial Noise Policy* NSW Environment Protection  
Authority January 2000

<https://www.nti-audio.com/en/support/know-how/frequency-weightings-for-sound-level-measurements>

## APPENDIX B Comparison of Sound Pressure Levels



Our hearing covers a wide range of sound pressures – a ratio of over a million to one. The dB scale makes the numbers manageable.

Reproduced from

*Environmental Noise* Brüel and Kjær Sound & Vibration Measurements A/S  
2000, 2001

**Appendix C**  
**Quarry Operations November, December 2021**



Image Source – Lismore City Council Online Mapping  
Note : Aerial photo not of November\, December 2021 operations



## Quarry Pit Floor Operations 18<sup>th</sup> November 2021



### Quarry equipment in use during noise monitoring

- 1 x Hyundai 520 excavator
- 1 x Kleeman MC110Z jaw crusher
- 1 x Powerscreen Warrior 1400 reclaimer
- 1 x 12/75 hydraulic stockpile
- 1 x Kleeman MC09S cone crusher
- 1 x Komatsu 500 loader
- 1 water truck
- various haul trucks
- various service vehicles

The mobile asphalt plant was also operating

## Quarry Pit Floor Operations 16<sup>th</sup> December 2021



### Quarry equipment in use during noise monitoring

- 1 x Hyundai 430 excavator
- 1 x Kleeman MC110Z jaw crusher
- 1 x Powerscreen Warrior 1400 reclaimer
- 1 x 16/75 hydraulic stockpile
- 1 x Precision Screenn 350VSI
- 1 x Powerscreen Horizon 6203 flat deck screen
- 1 x Komatsu 500 loader
- 1 water truck
- various haul trucks
- various service vehicles

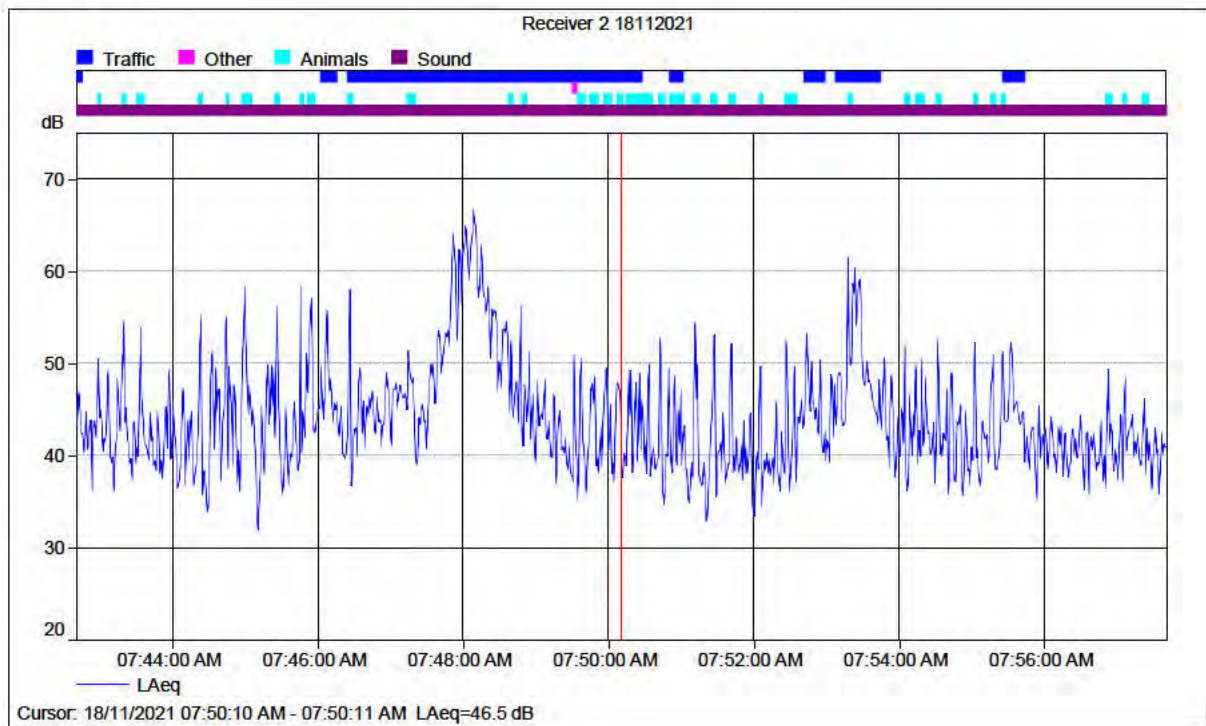
The mobile asphalt plant was also operating

Mobile Asphalt Plant November, December 2021

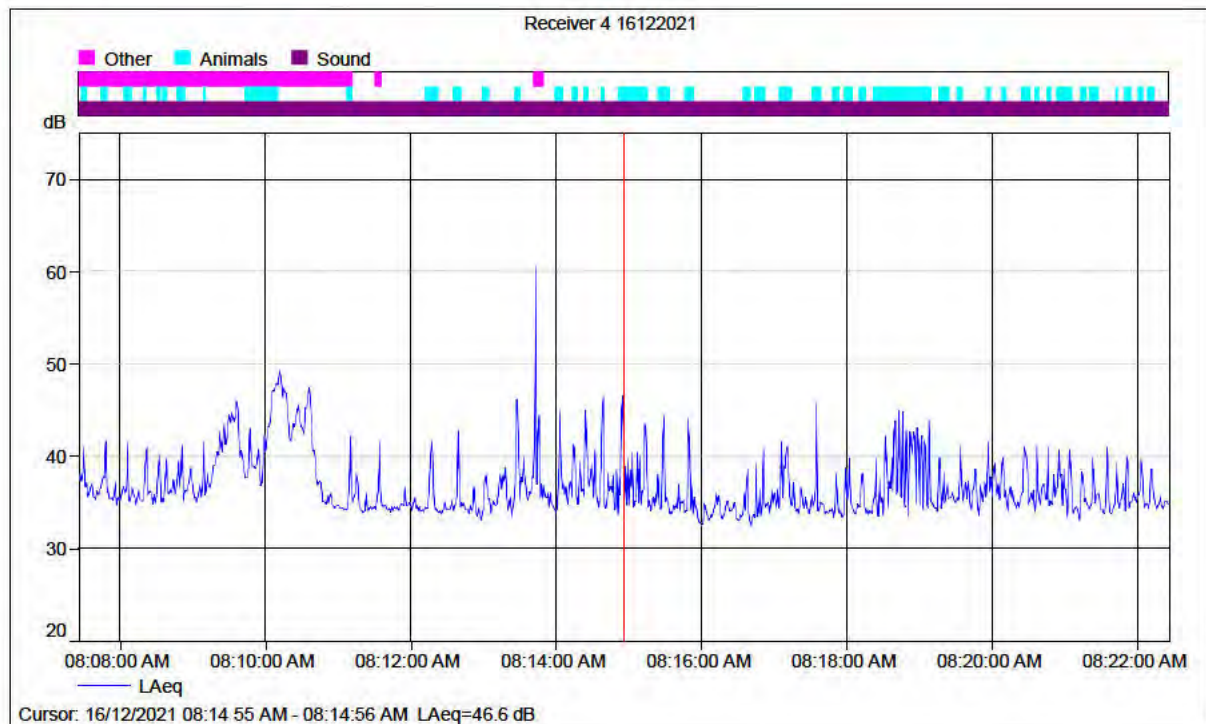


## Appendix D Logged Noise Profiles

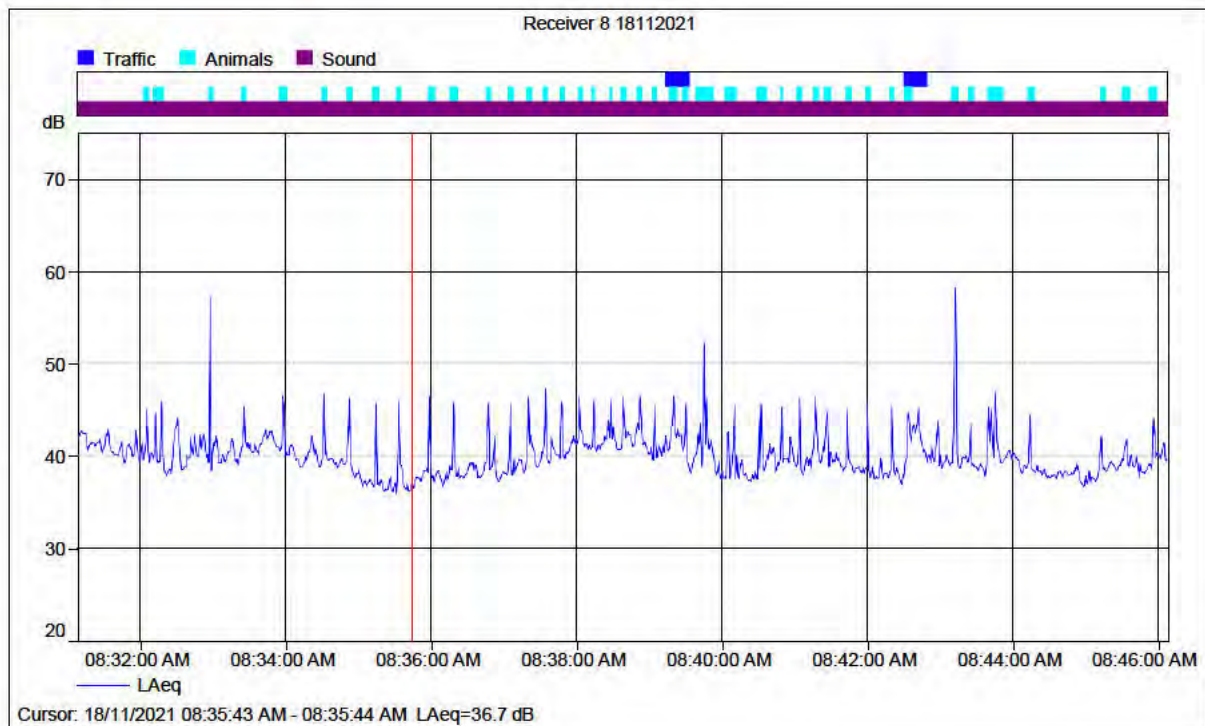
Graph D.1



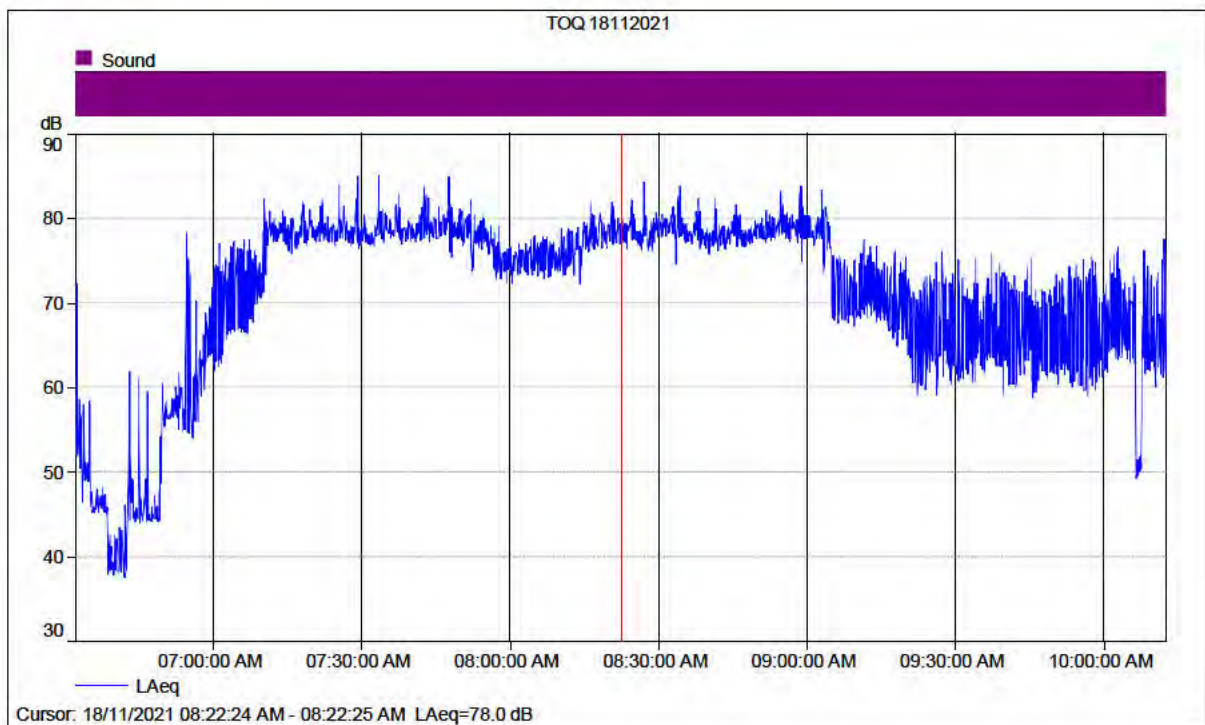
Graph D.2



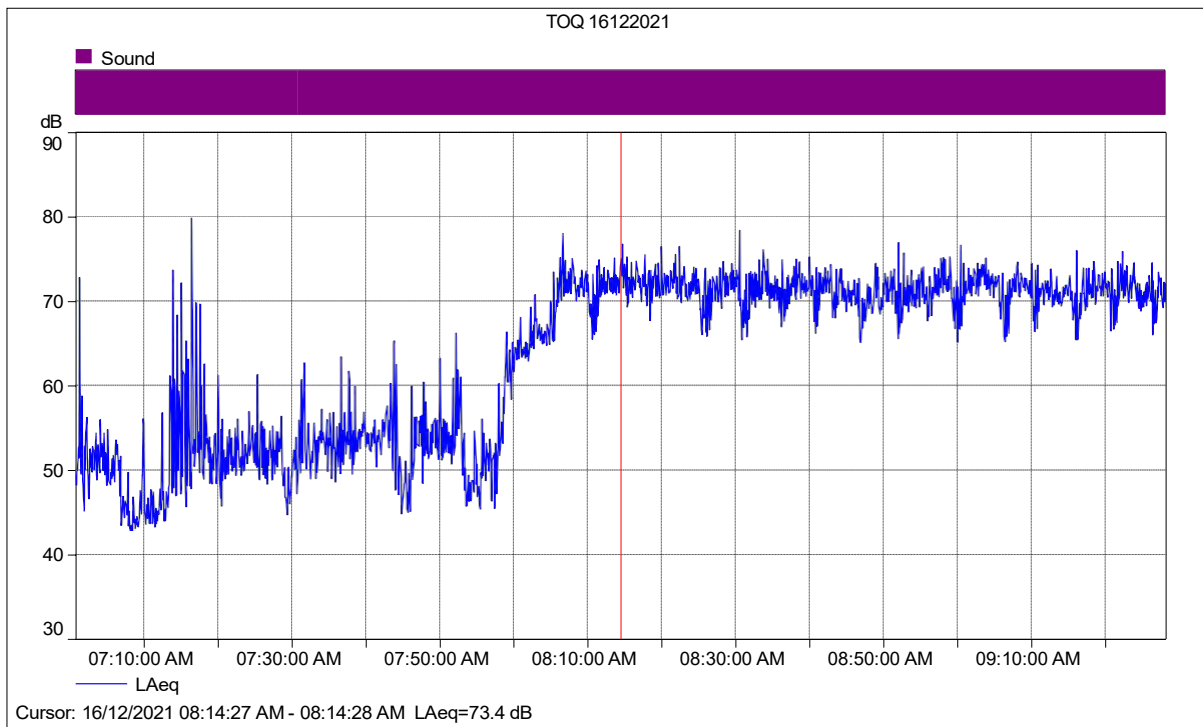
**Graph D.3**



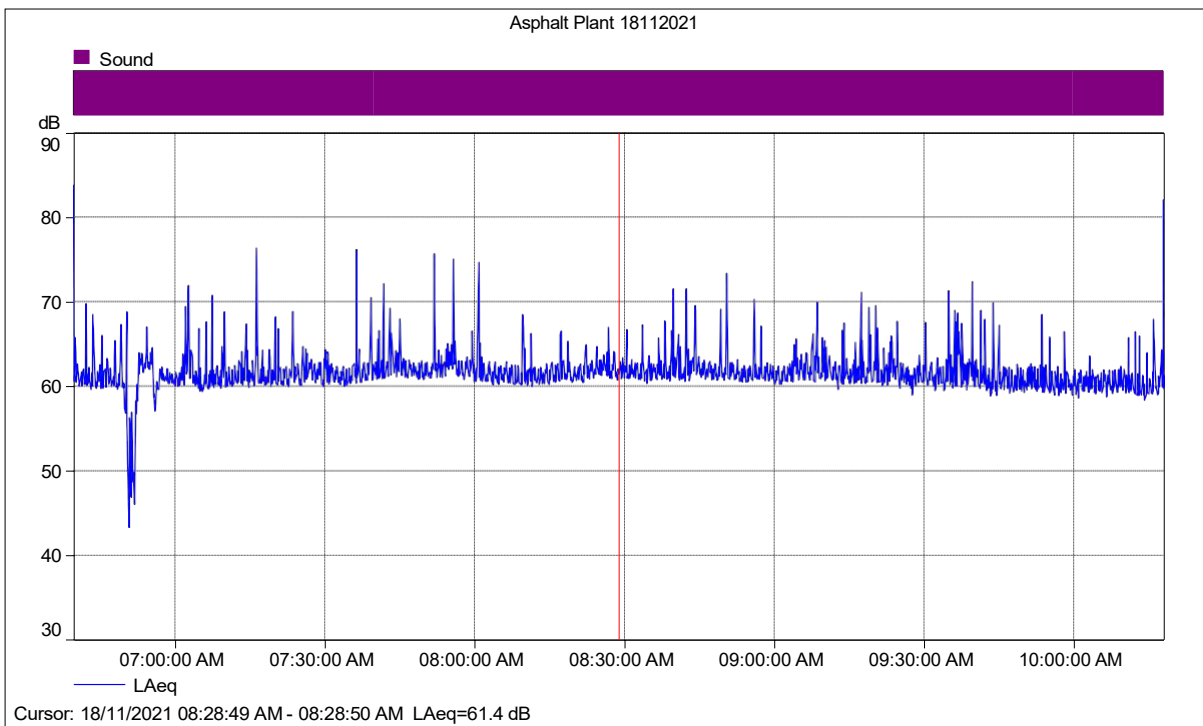
**Graph D.4**



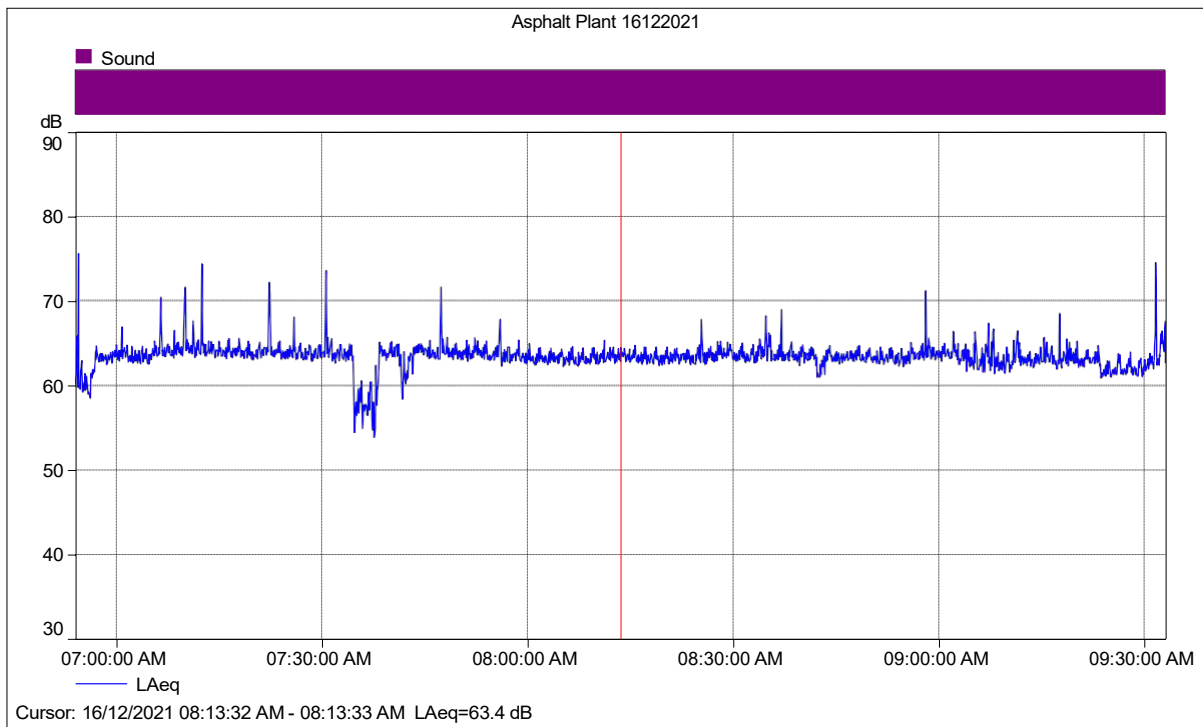
**Graph D.5**



**Graph D.6**



# Graph D.7



# APPENDIX K

Blast Reports - 2021



**Date/Time** Vert at 13:03:37 January 18, 2021  
**Trigger Source** Geo: 0.900 mm/s  
**Range** Geo: 254.0 mm/s  
**Record Time** 6.0 sec at 1024 sps

**Serial Number** BE13371 V 10.72-1.1 Minimate Blaster  
**Battery Level** 6.1 Volts  
**Unit Calibration** July 29, 2020 by Saros Int  
**File Name** O3711TAH.M10

**Notes**

**Post Event Notes**

Client NRQA. Location Blakebrook.  
 Shot id BLA39. Shot firer [REDACTED].  
 Monitor location [REDACTED].

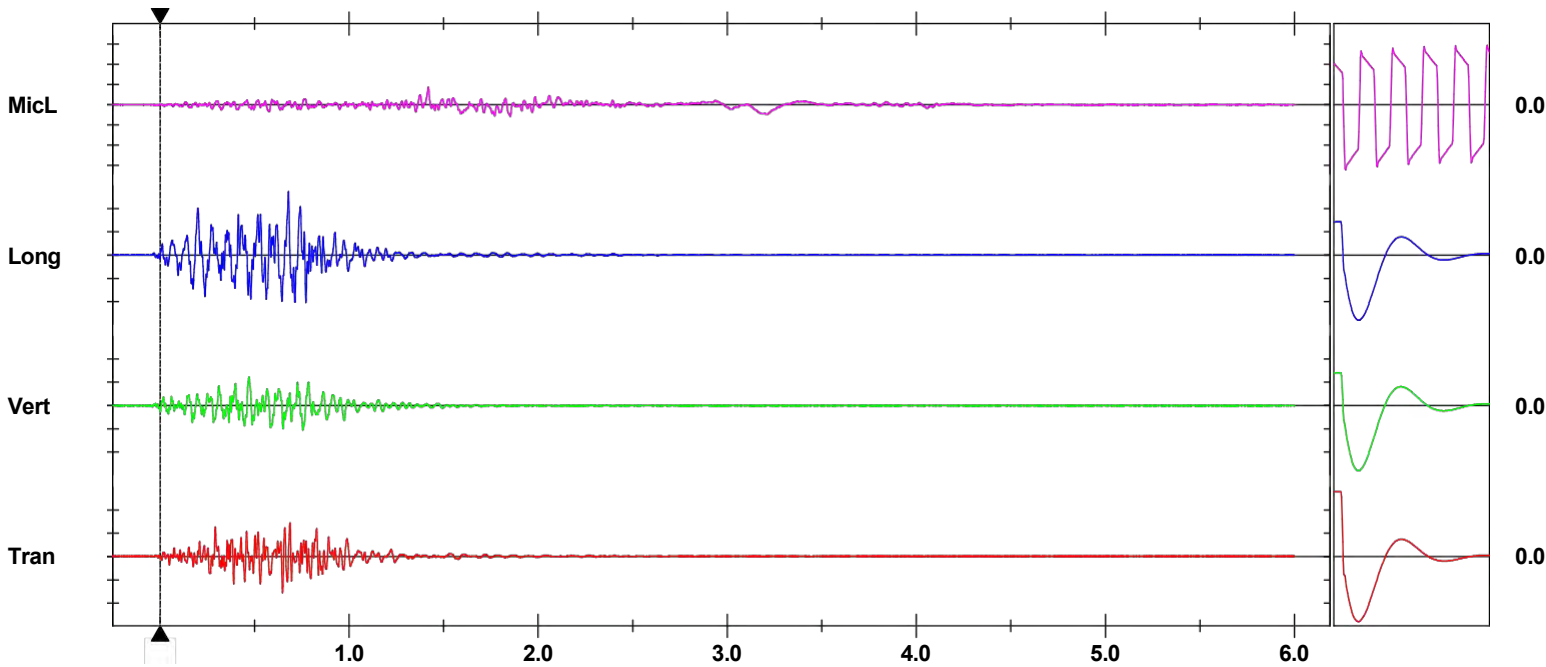
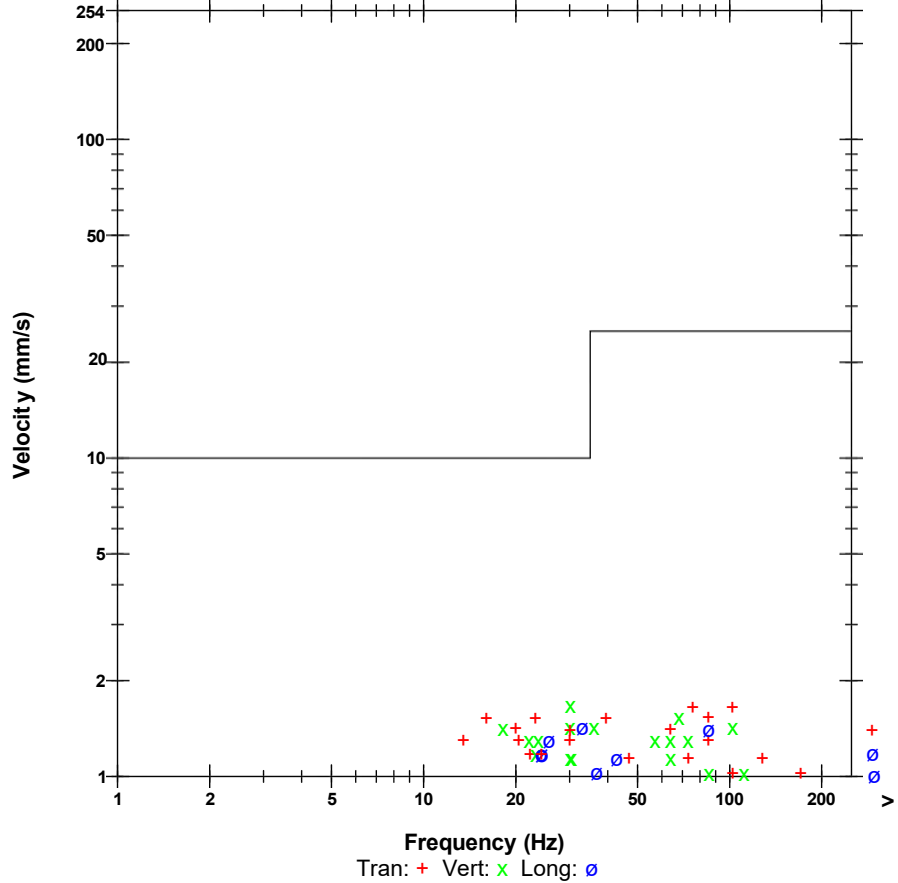
**Extended Notes**

**Microphone** Linear Weighting  
**PSPL** 112.6 dB(L) at 1.419 sec  
**ZC Freq** 15 Hz  
**Channel Test** Passed (Freq = 20.1 Hz Amp = 496 mv )

	Tran	Vert	Long	
PPV	0.980	1.121	1.354	mm/s
ZC Freq	43	22	18	Hz
Time (Rel. to Trig)	0.648	0.471	0.680	sec
Peak Acceleration	0.252	0.133	0.318	g
Peak Displacement	0.036	0.044	0.100	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.4	7.5	7.4	Hz
Overswing Ratio	3.8	3.5	3.6	

**Peak Vector Sum** 1.368 mm/s at 0.680 sec

**QLD APP Standard**



**Time Scale:** 0.50 sec/div    **Amplitude Scale:** Geo: 5.000 mm/s/div Mic: 10.000 pa.(L)/div  
**Trigger =**

Sensor Check

**Date/Time** Long at 13:03:37 January 18, 2021  
**Trigger Source** Geo: 0.910 mm/s  
**Range** Geo: 254.0 mm/s  
**Record Time** 6.0 sec at 1024 sps

**Serial Number** BE13456 V 10.72-1.1 Minimate Blaster  
**Battery Level** 6.3 Volts  
**Unit Calibration** April 6, 2020 by Saros Int  
**File Name** O456ITAH.M10

**Notes**

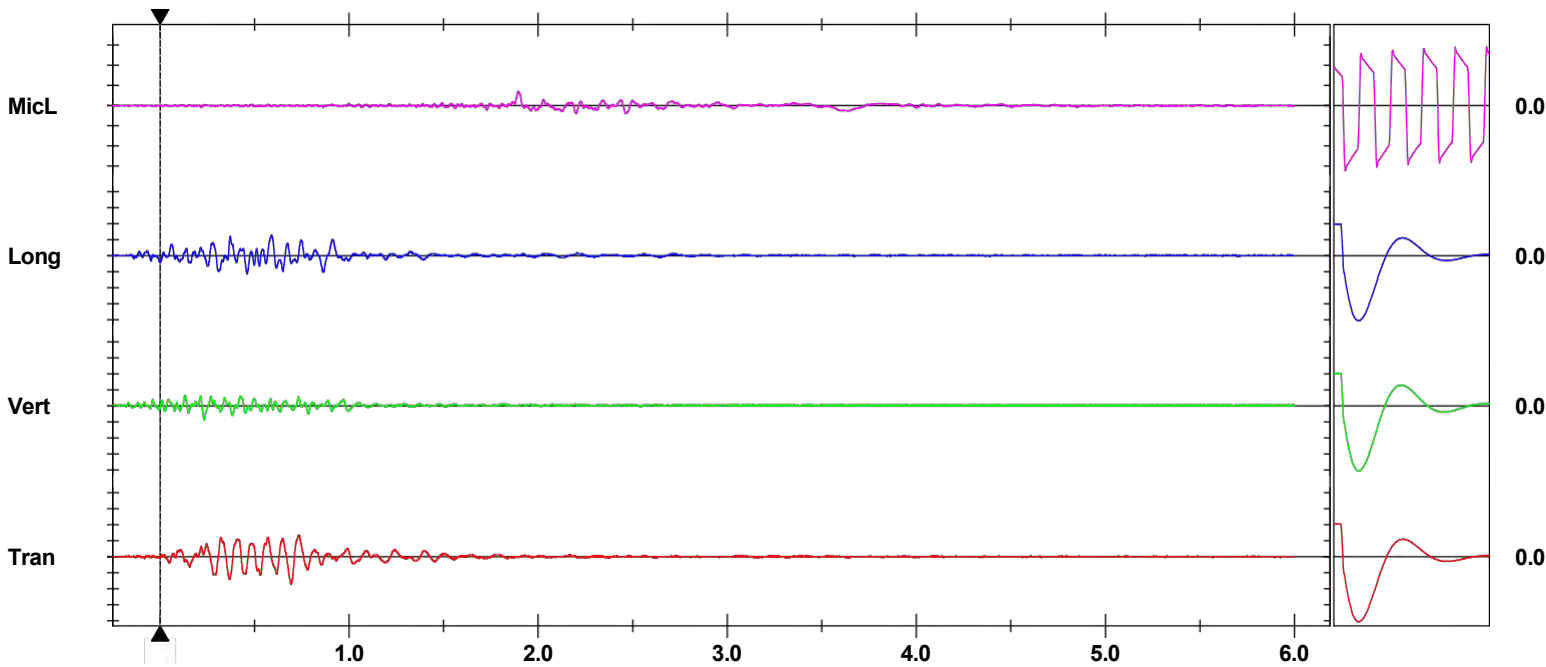
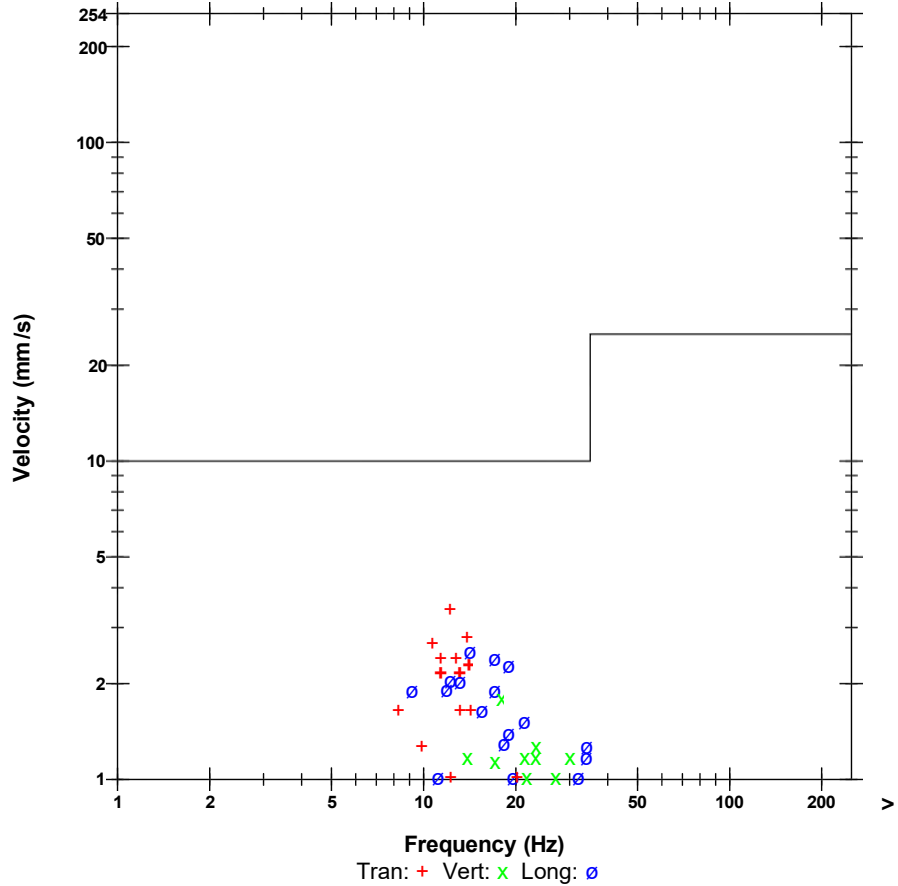
**Post Event Notes**

Client NRQA. Location Blackbrook  
 Shot id BLA39. Shot firer [REDACTED]  
 Monitor location [REDACTED]

**Microphone** Linear Weighting  
**PSPL** 110.9 dB(L) at 1.893 sec  
**ZC Freq** 8.3 Hz  
**Channel Test** Passed (Freq = 20.1 Hz Amp = 581 mv )

	Tran	Vert	Long	
<b>PPV</b>	3.429	1.778	2.540	mm/s
<b>ZC Freq</b>	12	17	14	Hz
<b>Time (Rel. to Trig)</b>	0.692	0.234	0.588	sec
<b>Peak Acceleration</b>	0.040	0.027	0.040	g
<b>Peak Displacement</b>	0.043	0.014	0.030	mm
<b>Sensor Check</b>	Passed	Passed	Passed	
<b>Frequency</b>	7.2	7.5	7.3	Hz
<b>Overswing Ratio</b>	3.8	3.2	3.7	
<b>Peak Vector Sum</b>	3.619 mm/s at 0.370 sec			

**QLD APP Standard**



**Time Scale:** 0.50 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 10.000 pa.(L)/div  
**Trigger =**

Sensor Check



ABN 53 607 162 612  
 ACN 607 162 612  
 20-22 Surry Street  
 Coraki NSW 2471  
 Tel: (02) 6683 2941  
 Mob: [REDACTED]  
 office@grandedb.com.au

Shot Report: LCC 01 Date: 22/09/2021

Total Holes	94
Total Meters	1,280.74m
Bench Height	13.62m avg
Hole Diameter	89mm
Burden	2.7m
Spacing	3.0m
Bank Cubic Meters	10,373.99BCM
Bulk Explosive	8,300kg
Powder Factor	0.80kg/bcm
Sub Drill	0.4m
Angle of Holes	0 degrees
Stemming	2.6m - 3m
Wet Holes	All
Time Fired	2:22PM
Shotfirer	[REDACTED] XBLS201341
Blast Monitor - [REDACTED]	94.9DBL - 0.14mm/s
Blast Monitor - [REDACTED]	104.1DBL - 0.41mm/s
Weather	Fine
Comments: <p style="text-align: center;">Heavy slumping across entire shot due to cavities and clay seams.</p> <p style="text-align: center;">Air decks utilised to keep stemming depth to a minum may result in larger cap rock then if holes did not slump.</p>	



ABN 53 607 162 612  
 ACN 607 162 612  
 20-22 Surry Street  
 Coraki NSW 2471  
 Tel: (02) 6683 2941  
 Mob: [REDACTED]  
 office@grandedb.com.au

Shot Report: LCC 02 Date: 07/10/2021

Total Holes	80
Total Meters	1,750.97m
Bench Height	21.86m avg
Hole Diameter	89mm
Burden	3.0m
Spacing	3.0m
Bank Cubic Meters	15,758.73 BCM
Bulk Explosive	12,180KG
Powder Factor	0.77kg/bcm
Sub Drill	0.4m
Angle of Holes	0 - 10 degrees
Stemming	2.6m - 10m
Wet Holes	50/50 Wet , Dry
Time Fired	2:33PM
Shotfirer	[REDACTED] XBLS201341
Blast Monitor - [REDACTED]	113.9DBL - 4.26mm/s
Blast Monitor - [REDACTED]	113.3DBL - 2.72mm/s
Weather	Scattered Clouds
Comments:	<p>Face holes had to be downloaded in accordance with the face scan data, due to some significant downloads on face holes oversize rocks occurred as a result. Heavily fractured surface near face contributed to the use of download. Undulating ground on crest of shot resulting in some holes stemmed deeper</p> <p>Refrence for next blast stemming height to be reduced by 200mm - 300 mm</p>



ABN 53 607 162 612  
 ACN 607 162 612  
 20-22 Surry Street  
 Coraki NSW 2471  
 Tel: (02) 6683 2941  
 Mob: [REDACTED]  
 office@grandedb.com.au

Shot Report: LCC 03 Date: 13/12/2021

Total Holes	76
Total Meters	1,666.40
Bench Height	21.9m avg
Hole Diameter	89mm
Burden	3.0m
Spacing	3.3m
Bank Cubic Meters	16,504.38BCM
Bulk Explosive	11,100KG
Powder Factor	0.67kg/bcm
Sub Drill	0.4m
Angle of Holes	0 degrees
Stemming	2.4m
Wet Holes	Yes - All
Time Fired	2:43PM
Shotfirer	[REDACTED] XBLS201341
Blast Monitor - [REDACTED]	110.5DBL - 3.63mm/s
Blast Monitor - [REDACTED]	111.8DBL - 2.27mm/s
Weather	Partly Cloudy / Sunny
Comments: <p style="text-align: center;">             Bench stripped &amp; uneven, Fill used to get drill on bench. Slumping across shot in general 0.3 - 0.8m on average.              Side face downloaded due to facing infrastructure. Front Face loaded up           </p>	

# APPENDIX L

Dust Deposition Monitoring Analytical Reports - 2021

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 11/01/2021. Lab Job No. K2253.

Exposure Period: 14/12/20 - 11/01/2021

Samples submitted by [REDACTED]. Your Job: PO 11495.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (Sst)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0001, D1	K2253/1	-	150	28	5.000	1.0	32	0.1	0.9	1.5	2.5
S21-0001, D2	K2253/2	-	150	28	5.000	1.5	51	0.3	1.2	1.9	3.4
S21-0001, D3	K2253/3	-	150	28	5.000	3.3	111	0.1	3.2	2.4	5.7

### METHODS REFERENCE:

*a* . Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- .. No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 25/01/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 9/02/2021 . Lab Job No. K3232.

Exposure Period 11/01/2021 - 08/02/2021

Samples submitted by [REDACTED] Your Job: PO 20201.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of			
						Total Suspended Solids (SS <sub>T</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
<b>S21-0027, D1</b>	K3232/1	..	150	29	1.010	0.4	14	0.0	0.4	1.6	2.0
<b>S21-0027, D2</b>	K3232/2	Cloudy	150	29	0.880	0.7	24	0.5	0.2	6.4	7.1
<b>S21-0027, D3</b>	K3232/3	Cloudy	150	29	0.800	2.5	83	1.4	1.0	1.9	4.4

### METHODS REFERENCE:

*a* . Australian Standard AS 3580.10.1 8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- .. No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 12/02/2021.



## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 9/03/2021 . Lab Job No. K4448.

Exposure Period 08/02/2021 - 08/03/2021

Samples submitted by [REDACTED] . Your Job: PO 20211.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of			
						Total Suspended Solids (SS <sub>T</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0051, D1	K4448/1	-	150	28	5.190	0.6	21	0.0	0.6	3.0	3.7
S21-0052, D2	K4448/2	Cloudy, Yellow	150	28	3.470	2.1	70	0.3	1.8	24.1	26.2
S21-0052, D3	K4448/3	-	150	28	4.890	4.8	160	1.4	3.4	4.3	9.1

### METHODS REFERENCE:

*a* . Australian Standard AS 3580.10.1 8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- .. No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 12/03/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 8/04/2021 . Lab Job No. K5466.

Exposure Period 08/03/2021 - 06/04/2021

Samples submitted by [REDACTED]. Your Job: PO 20217.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of			
						Total Suspended Solids (SSt)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
<b>S21-0089, D1</b>	K5466/1	..	150	35	5.180	10	34	0.5	0.6	1.1	2.1
<b>S21-0089, D2</b>	K5466/2	Cloudy, Yellow	150	35	5.240	12.7	424	1.7	11.0	15.1	27.8
<b>S21-0089, D3</b>	K5466/3	Cloudy	150	35	5.140	4.6	154	2.5	2.1	2.1	6.8

### METHODS REFERENCE:

*a* . Australian Standard AS 3580.10.1 8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- .. No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 16/04/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 3/05/2021 . Lab Job No. K6477.

Exposure Period 06/04/2021 - 03/05/2021

Samples submitted by [REDACTED]. Your Job: PO 20228.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SS <sub>t</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0142, D1	K647711	Bugs	150	27	1.400	0.6	20	0.1	0.5	1.1	1.7
S21-0142, D2	K647712	~	150	27	1.330	0.5	17	0.0	0.5	0.7	1.2
S21-0142, D3	K647713	Cloudy	150	27	1.090	1.5	51	0.4	1.1	1.2	2.8

### METHODS REFERENCE:

*a.* Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 11/05/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 1/06/2021 . Lab Job No. K7541.

Exposure Period 03/05/2021 - 31/05/2021

Samples submitted by [REDACTED]. Your Job: PO 77464.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (Sst)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0176, D1	K7541/1	org matter, yellow	150	28	0.530	0.3	10	0.1	0.1	0.2	0.5
S21-0176, D2	K7541/2	org matter, cloudy, yellow	150	28	0.680	1.3	45	0.5	0.8	12.4	13.7
S21-0176, D3	K7541/3	org matter, cloudy, yellow	150	28	0.660	1.8	61	0.8	1.1	1.2	3.0

### METHODS REFERENCE:

a. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 10/06/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 30/06/2021. Lab Job No. K8713.

Exposure Period 31/05/21 - 28/06/21

Samples submitted by [REDACTED]. Your Job: PO 77464.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SS <sub>t</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0218 D1	K8713/1	org matter	150	28	0.420	0.4	12	0.2	0.2	0.5	0.9
S21-0218 D2	K8713/2	org matter	150	28	0.610	0.7	25	0.4	0.4	0.4	1.1
S21-0218 D3	K8713/3	org matter, brown	150	28	0.550	4.8	158	2.0	2.8	2.6	7.3

### METHODS REFERENCE:

*a.* Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/tbcs](http://scu.edu.au/eal/tbcs) or on request).
- Results relate only to the samples tested.
- This report was issued on 05/07/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 29/07/2021. Lab Job No. K9710.

Exposure Period: 28/06/2021 - 26/07/2021

Samples submitted by [REDACTED], Your Job: PO 20244.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SS <sub>t</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0252, D1	K9710/1	org matter	150	28	0.790	0.1	3	0.1	0.0	0.6	0.7
S21-0252, D2	K9710/2	org matter	150	28	0.840	0.4	12	0.2	0.2	0.4	0.8
S21-0252, D3	K9710/3	org matter, cloudy	150	28	0.780	1.9	63	0.7	1.2	1.2	3.1

### METHODS REFERENCE:

a. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- No data/ information
- Total Suspended Solids = Mass deposition rate of insoluble solids
- Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request)
- Results relate only to the samples tested
- This report was issued on 03/08/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 24/08/2021. Lab Job No. M0587.

Exposure Period: 26/07/2021 - 23/08/2021.

Samples submitted by [REDACTED] Your Job: PO 77464 Dust Monitoring.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (Sst)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0283-D1	M0587/1	sticks, fine org matter	150	28	0.136	0.3	10	0.1	0.2	0.0	0.3
S21-0283-D2	M0587/2	fine org matter, cloudy	150	28	0.180	1.3	44	0.4	0.9	3.5	4.8
S21-0283-D3	M0587/3	fine org matter, cloudy	150	28	0.110	1.0	34	0.6	0.4	0.4	1.4

### METHODS REFERENCE:

a. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&c](http://scu.edu.au/eal/t&c) or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 25/08/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 20/09/2021. Lab Job No. M1552.

Exposure Period: 23/08/2021 - 20/09/2021

Samples submitted by [REDACTED]. Your Job: PO 77464.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SS <sub>t</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0321-D1	M1552/1	ant, flies, large org matter, yellow	150	28	0.430	0.3	11	0.1	0.2	0.5	0.8
S21-0321-D2	M1552/2	ants, fine org matter	150	28	0.600	0.4	14	0.3	0.2	0.4	0.9
S21-0321-D3	M1552/3	fine org matter, cloudy	150	28	0.510	1.4	46	0.5	0.9	0.8	2.2

### METHODS REFERENCE:

*a*. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/tbcs](http://scu.edu.au/eal/tbcs) or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 22/09/2021.



## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 18/10/2021. Lab Job No. M2509.

Exposure Period: 20/09/2021 - 18/10/2021

Samples submitted by [REDACTED]. Your Job: PO 84432 Dust Monitoring.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (SS <sub>T</sub> )		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0366-D1	M2509/1	pine needles, large org. matter, brown	150	28	2.150	0.3	10	0.0	0.3	2.3	2.6
S21-0366-D2	M2509/2		150	28	2.180	0.6	20	0.5	0.1	1.1	1.7
S21-0366-D3	M2509/3	fine org matter, cloudy	150	28	2.180	2.1	70	1.2	0.9	2.6	4.7

### METHODS REFERENCE:

*a*. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 .. No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 22/10/2021 and replaces the report published 21/10/2021. The PO has been updated.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 15/11/2021. Lab Job No. M3509.

Exposure Period 18/10/21 - 15/11/21

Samples submitted by [REDACTED]. Your Job: PO: 84432.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (Sst)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0408-D1	M3509/1	fine org. matter, yellow	150	28	1.800	0.9	30	0.2	0.7	2.1	3.0
S21-0408-D2	M3509/2	fine org. matter, cloudy	150	28	1.660	1.8	60	1.1	0.7	4.0	5.8
S21-0408-D3	M3509/3	fine org. matter, cloudy	150	28	1.680	3.5	115	1.5	2.0	4.7	8.2

### METHODS REFERENCE:

*a*. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 .. No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [SCU.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request).
- 5 Results relate only to the samples tested.
- 6 This report was issued on 19/11/2021.

## RESULTS OF DUST ANALYSIS

3 samples supplied by Lismore City Council on 14/12/2021. Lab Job No. M4479.

Exposure Period: 15/11/21 - 13/12/21

Samples submitted by [REDACTED]. Your Job: PO: 84432.

PO Box 23a LISMORE NSW 2480

Sample Site	EAL Code	Sample Comments	Diameter of Funnel (mm)	Sampling Days (days)	Sample Volume (L)	Deposit rate of Insoluble Solids		Deposit rate of:			
						Total Suspended Solids (Sst)		Ash (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Total Solids (g/m <sup>2</sup> /month)
						(g/m <sup>2</sup> /month)	(mg/m <sup>2</sup> /day)				
<i>Method Reference</i>						<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>	<i>a</i>
S21-0444-D1	M4479/1	fine org. matter	150	28	4.460	2.8	95	0.3	2.6	2.7	5.6
S21-0444-D2	M4479/2	fine org. matter	150	28	4.650	5.1	168	1.9	3.2	2.3	7.4
S21-0444-D3	M4479/3	fine org. matter	150	28	4.770	5.9	197	1.6	4.3	5.0	10.9

### METHODS REFERENCE:

*a*. Australian Standard AS 3580.10.1.8.2.2-2016 (1mm pre-sieving then using Whatman 42 Ashless filter)

### NOTES:

- 1 .. No data/ information
- 2 Total Suspended Solids = Mass deposition rate of insoluble solids
- 3 Per Month calculations incorporate 'Sampling Days' hence per Month actually refers to number of days sampled.
- 4 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- 5 Results relate only to the samples tested.
- 1 This report was issued on 22/12/2021.

# APPENDIX M

Site Meteorological Data - 2021

MONTHLY CLIMATOLOGICAL SUMMARY for J.Ai"J. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (cc), RAIN (mm), WIND SPEED (km/hr)

ME Ai"U	HEAT DEG	COOL DEG	AVG WIND		DOM							
DAY	TEMP	HIGH	TIME	LOW	TIME	mWS	D.IWS	RP.IN	SPEED	HIGH	TIME	DIR
1	22.9	28.0	4:00p	20.0	5:30a	0.0	4.6	2.8	0.6	19.3	1:30p	W
2	23.1	28.8	2:30p	19.8	6:30a	0.0	4.7	3.2	0.2	11.3	1:00p	W
3	23.9	31.7	1:00p	20.1	8:30a	0.0	5.6	2.8	0.0	12.9	1:30p	W
4	24.6	30.3	1:00p	20.9	4:00a	0.0	6.3	0.0	0.0	6.4	1:30p	W
5	27.0	40.7	2:30p	20.9	4:30a	0.0	8.7	0.2	0.0	9.7	6:30p	W
6	25.1	36.1	2:00p	21.1	11:30p	0.0	6.8	54.4	0.2	12.9	3:00p	W
7	20.0	21.7	2:00a	18.7	8:00p	0.0	1.7	21.8	0.2	19.3	3:30p	WSW
8	18.4	20.7	12:30p	17.4	8:00p	0.2	0.3	9.8	0.5	12.9	2:30p	W
9	19.9	23.9	5:00p	16.8	5:30a	0.3	1.8	2.6	0.2	12.9	12:00p	W
10	21.6	29.7	3:00p	17.3	6:00a	0.2	3.4	0.4	0.5	12.9	11:30a	W
11	22.3	30.3	3:00p	18.2	4:30a	0.0	3.9	0.0	0.2	11.3	4:30p	W
12	22.9	34.1	2:30p	16.1	6:30a	0.4	5.0	0.0	0.0	8.0	3:30p	W
13	23.1	32.2	2:00p	16.8	5:00a	0.3	5.0	0.0	0.0	8.0	4:30p	W
14	24.6	37.6	3:30p	17.8	6:30a	0.0	6.3	0.0	0.0	4.8	3:30p	W
15	27.6	42.6	3:00p	18.7	6:30a	0.0	9.3	9.8	0.0	4.8	12:30p	WSW
16	24.4	32.7	2:30p	20.6	6:30a	0.0	6.1	0.8	0.0	11.3	11:30a	W
17	25.0	37.6	2:30p	18.1	6:00a	0.0	6.7	0.0	0.0	4.8	1:30p	N
18	23.1	32.6	11:30a	19.3	12:00m	0.0	4.8	30.2	0.0	8.0	1:30p	N
19	24.2	36.2	2:00p	18.2	6:00a	0.0	5.9	1.0	0.0	14.5	4:00p	W
20	21.7	25.1	2:00p	18.8	12:00m	0.0	3.3	1.0	0.0	4.8	2:30p	NW
21	20.6	24.3	4:00p	17.7	12:00m	0.1	2.3	3.4	0.0	0.0		
22	23.2	35.2	12:30p	15.9	6:30a	0.5	5.4	0.0	0.0	0.0		
23	24.1	36.1	4:00p	17.3	7:00a	0.1	5.9	0.0	0.0	0.0		
24	23.5	35.2	3:30p	16.4	6:30a	0.3	5.4	0.0	0.0	0.0		
25	24.6	34.8	2:30p	19.1	4:30a	0.0	6.2	0.0	0.0	3.2	3:00p	SW
26	25.8	37.8	1:00p	17.6	7:00a	0.1	7.5	0.0	0.0	3.2	11:30a	SSW
27	26.7	38.4	3:00p	19.8	6:30a	0.0	8.4	0.0	0.0	4.8	1:30p	SW
28	25.9	33.5	3:00p	22.7	6:30a	0.0	7.6	0.0	0.0	6.4	9:00a	WSW
29	25.3	34.8	2:00p	20.7	7:00a	0.0	6.9	0.0	0.0	1.6	10:30a	SW
30	25.4	36.3	2:00p	19.1	6:00a	0.0	7.1	0.0	0.0	1.6	12:30p	SSW
31	23.9	30.1	4:00p	20.8	6:00a	0.0	5.6	7.0	0.0	1.6	1:30p	SSW
	23.7	42.6	15	15.9	22	2.4	168.4	151.2	0.1	19.3	1	W

Max >= 32.0: 19  
 Max <= 0.0: 0  
 Min <= 0.0: 0  
 Min <= -18.0: 0

Max Rain: 54.41 ON 06/01/21

Days of Rain: 16 (> .2 mm) 11 (> 2 mm) 3 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMA... Y for FEE. 202:..

N.LUJIE: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (°C), R.1\ .IN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	24.0	32.8	3:30p	19.6	11:30p	0.0	5.7	0.0	0.0	3.2	3:00p	W
2	22.4	26.1	12:00p	19.4	6:00a	0.0	4.1	0.2	0.0	0.0		
3	22.0	29.6	4:00p	19.2	12:00m	0.0	3.7	2.6	0.0	0.0		
4	23.7	35.8	3:30p	17.1	6:30a	0.2	5.6	0.0	0.0	3.2	3:30p	SSW
5	23.7	32.0	4:00p	18.4	6:30a	0.0	5.4	0.0	0.8	17.7	3:00p	W
6	24.2	33.6	3:00p	18.9	6:30a	0.0	5.8	0.8	0.6	12.9	5:30p	W
7	26.1	35.6	2:00p	21.3	5:30a	0.0	7.8	1.8	0.5	19.3	4:30p	W
8	23.6	27.6	2:00p	21.5	4:30a	0.0	5.2	0.0	1.6	25.7	3:30p	W
9	22.4	26.6	3:aap	19.1	7:00a	a.a	4.1	0.2	1.8	22.5	4:00p	W
10	21.4	27.8	12:30p	17.8	11:30p	0.0	3.1	2.0	1.1	20.9	2:30p	W
11	21.4	28.4	2:30p	17.5	7:00a	0.2	3.2	0.6	0.6	12.9	3:30p	W
12	24.3	35.2	3:00p	17.6	7:00a	0.1	6.0	0.0	0.6	12.9	5:30p	W
13	25.6	34.8	1:00p	19.7	7:00a	0.0	7.3	16.8	0.2	9.7	1:30p	WSW
14	20.6	22.3	12:30a	18.8	11:30p	0.0	2.2	20.2	1.3	20.9	7:00p	W
15	22.1	27.2	4:00p	18.4	7:00a	0.0	3.7	0.0	1.3	22.5	4:00p	W
16	20.1	22.9	2:00p	18.3	12:00m	0.0	1.8	27.4	1.1	20.9	2:30p	W
17	20.3	25.2	1:30p	18.0	11:00p	0.0	2.0	17.6	2.4	25.7	6:00p	W
18	21.0	26.5	3:00p	18.2	2:30a	0.0	2.7	56.2	1.1	20.9	1:00p	W
19	21.3	23.2	12:00p	20.4	6:30a	0.0	3.0	74.4	0.3	16.1	12:30p	W
20	22.3	27.6	3:30p	19.5	4:30a	0.0	4.0	0.6	0.8	16.1	6:30p	WSW
21	23.9	28.4	1:30p	21.1	3:30a	0.0	5.6	0.0	0.8	16.1	12:00p	W
22	25.4	35.8	2:30p	19.4	7:00a	0.0	7.1	0.0	0.8	16.1	6:00p	l-l
23	24.5	35.2	2:00p	20.5	8:00p	0.0	6.2	39.0	0.8	19.3	8:30p	W
24	21.7	27.4	2:00p	19.5	6:30a	0.0	3.3	0.0	0.5	17.7	3:00p	W
25	23.7	30.3	2:00p	20.1	6:30a	0.0	5.4	0.0	0.6	12.9	3:30p	W
26	26.1	36.7	3:00p	20.8	7:00a	0.0	7.8	0.0	0.5	11.3	7:00p	WSW
27	25.6	31.2	3:00p	22.4	6:30a	0.0	7.3	0.0	0.5	12.9	5:30p	W
28	26.6	35.7	3:00p	22.3	4:30a	0.0	8.2	0.0	0.3	11.3	3:30p	W
	23.2	36.7	26	17.1	4	0.4	137.1	260.4	0.8	25.7	8	W

Max>= 32.0: 11  
 Max<= 0.0: 0  
 Min<= 0.0: 0  
 Min<= -18.0: 0  
 Max Rain: 74.40 ON 19/02/21  
 Days of Rain: 15 (> .2 mm) 9 (> 2 mm) 5 (> 20 mm)  
 Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53n S LONG: 153° 15' 01t E

TEMPERATURE (OC), RAIN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	23.9	30.3	2:00p	19.9	10:30p	0.0	5.6	9.8	0.0	9.7	7:30p	NE
2	23.4	32.4	1:30p	18.4	6:30a	0.0	5.1	0.2	1.0	19.3	5:00p	W
3	21.9	24.4	5:30p	19.8	7:00a	0.0	3.6	1.6	0.2	12.9	5:00p	W
4	20.0	26.1	4:00p	17.3	12:00m	0.1	1.8	32.0	0.5	14.5	2:00p	W
5	22.7	33.0	3:00p	15.2	7:00a	0.8	5.2	0.2	0.6	17.7	6:30p	W
6	21.5	25.9	3:30p	19.3	5:30a	0.0	3.2	3.0	0.8	16.1	4:00p	W
7	22.4	29.2	3:00p	18.4	7:00a	0.0	4.1	0.2	0.6	20.9	2:30p	W
8	22.0	29.4	12:00p	18.7	10:30p	0.0	3.7	7.0	0.2	14.5	7:00p	NE
9	23.3	33.8	3:30p	18.7	12:30a	0.0	5.0	7.8	0.5	22.5	8:00p	NE
10	22.7	28.5	1:30p	17.9	6:30a	0.0	4.4	0.2	1.0	17.7	4:30p	W
11	21.0	23.0	4:30p	19.6	12:00m	0.0	2.7	14.4	0.3	14.5	1:30p	W
12	21.5	27.2	3:30p	18.7	5:30a	0.0	3.2	0.2	0.5	11.3	5:30p	W
13	23.2	30.6	3:30p	18.4	8:00a	0.0	4.9	0.0	0.3	12.9	6:00p	W
14	25.1	35.2	3:30p	18.8	7:00a	0.0	6.8	4.0	0.5	11.3	12:30p	W
15	19.2	20.9	12:30a	18.1	9:00a	0.0	0.9	37.0	0.3	12.9	6:30a	W
16	18.6	22.3	11:30a	16.4	7:00a	0.4	0.7	1.6	0.6	19.3	12:30p	W
17	18.6	20.2	1:00p	17.3	12:30a	0.2	0.5	11.6	0.3	12.9	5:00p	W
18	20.3	24.8	2:00p	18.7	2:00a	0.0	2.0	7.8	0.5	14.5	1:00p	W
19	21.3	28.8	3:30p	18.4	10:30p	0.0	3.0	29.2	0.3	11.3	7:00p	W
20	21.2	25.7	2:00p	18.6	12:30a	0.0	2.8	2.2	0.3	16.1	4:30p	WSW
21	20.9	22.1	1:30p	20.2	5:30a	0.0	2.6	45.2	0.6	12.9	5:00p	W
22	20.1	20.9	12:30a	19.4	8:00p	0.0	1.8	45.8	1.1	22.5	1:00p	W
23	21.0	22.7	6:00p	18.9	4:30a	0.0	2.7	35.8	0.5	14.5	1:00a	W
24	23.8	30.1	3:30p	21.0	7:30a	0.0	5.5	0.0	0.8	9.7	1:00p	NNW
25	23.3	33.4	3:30p	16.8	6:30a	0.2	5.2	0.0	0.2	6.4	8:30a	NNW
26	21.1	29.2	2:00p	16.3	7:00a	0.3	3.1	0.8	0.5	12.9	12:30p	W
27	22.6	33.0	3:30p	16.6	6:30a	0.3	4.6	0.0	0.2	11.3	5:30p	ENE
28	22.2	32.1	2:30p	16.2	6:30a	0.3	4.1	0.0	0.3	9.7	10:30a	W
29	21.8	30.6	1:30p	16.9	6:30a	0.2	3.7	0.0	0.5	20.9	2:30p	W
30	20.7	26.3	2:30p	18.1	5:30a	0.0	2.4	1.4	1.4	20.9	10:00a	W
31	19.6	25.7	1:00p	16.0	6:30a	0.5	1.8	2.4	1.4	25.7	1:00p	W
21.	7	35.2	14	15.2	5	3.3	106.3	301.4	0.5	25.7	31	W

Max >= 32.0: 7  
 Max <= 0.0: 0  
 Min <= 0.0: 0  
 Min <= -18.0: 0

Max Rain: 45.80 ON 22/03/21

Days of Rain: 25 (> .2 mm) 16 (> 2 mm) 6 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for APR. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (oc) ' RAIN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	17.4	19.8	1:00p	15.6	6:30a	0.9	0.1	23.8	0.2	16.1	1:30p	WSW
2	19.8	25.3	1:00p	16.9	4:00a	0.4	1.8	1.4	1.0	20.9	3:30p	W
3	19.3	23.2	12:00p	16.8	7:00a	0.3	1.3	0.0	0.6	17.7	11:30a	W
4	19.2	20.9	12:30p	17.8	5:00a	0.1	0.9	0.0	0.0	8.0	1:30p	W
5	19.8	21.2	11:00a	18.7	2:00a	0.0	1.5	0.0	0.2	11.3	12:30p	W
6	19.6	21.3	12:00p	18.3	7:00a	0.0	1.3	12.6	1.0	17.7	5:00a	W
7	20.5	25.0	1:00p	19.2	2:00a	0.0	2.2	11.4	1.3	22.5	2:00p	WSW
8	19.7	23.7	2:00p	17.2	12:00m	0.1	1.4	4.4	0.6	16.1	1:30p	WSW
9	21.6	32.2	2:00p	15.7	6:30a	0.7	3.9	0.0	0.0	6.4	3:00p	N
10	23.4	35.4	2:00p	16.2	5:30a	0.4	5.4	0.0	0.2	4.8	11:00a	NW
11	21.8	31.8	2:00p	17.1	6:00a	0.2	3.6	0.0	0.0	11.3	12:00m	NNW
12	17.2	23.9	2:30p	12.7	7:00a	2.1	1.0	0.0	0.5	11.3	11:00a	WSW
13	16.6	27.4	2:30p	10.4	6:30a	3.2	1.5	0.0	0.3	9.7	11:30a	WSW
14	18.6	29.5	1:30p	11.1	6:30a	2.3	2.5	0.0	0.0	12.9	6:00p	ENE
15	21.0	32.3	2:00p	14.2	6:30a	0.9	3.6	0.0	0.0	8.0	4:30p	NNW
16	20.3	28.4	1:30p	15.8	4:30a	0.7	2.7	0.2	1.0	16.1	4:00p	WSW
17	17.0	20.2	1:00p	13.7	12:00m	1.7	0.3	16.0	0.2	17.7	6:30p	WSW
18	16.9	24.6	2:00p	13.4	4:30a	2.3	0.8	0.0	0.5	16.1	11:30a	WSW
19	17.6	25.9	2:30p	12.1	6:00a	2.3	1.6	0.0	0.2	12.9	3:30p	NNW
20	19.1	29.9	2:00p	12.7	5:30a	1.9	2.7	0.0	0.0	8.0	3:00p	N
21	19.9	30.7	2:00p	12.9	6:00a	1.6	3.2	0.0	0.3	9.7	11:30a	NNW
22	15.9	22.3	11:00a	12.0	6:30a	2.8	0.3	0.0	0.0	4.8	10:30a	ENE
23	15.9	25.8	12:30p	9.2	7:00a	3.6	1.2	0.6	0.2	9.7	5:00p	WSW
24	16.7	27.7	1:30p	9.9	6:00a	3.2	1.6	0.0	0.0	8.0	12:00p	WSW
25	17.8	27.7	2:30p	11.7	6:00a	2.3	1.8	0.0	0.2	9.7	4:00p	WSW
26	17.1	25.1	1:00p	12.8	6:00a	2.3	1.1	0.8	0.2	11.3	1:30p	N
27	17.7	25.3	1:30p	12.2	6:30a	2.1	1.4	1.4	0.5	12.9	2:00p	WSW
28	15.7	18.6	10:30a	13.2	6:00a	2.6	0.0	2.8	0.2	17.7	12:00p	SW
29	16.6	23.4	2:00p	12.8	5:00a	2.3	0.7	1.8	0.0	9.7	4:00p	WSW
30	16.9	22.3	1:30p	13.4	7:00a	1.8	0.4	27.6	0.2	9.7	2:30p	W
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	18.6	35.4	10	9.2	23	45.2	51.7	104.8	0.3	22.5	7	WSW

Max >= 32.0: 3  
 Max <= 0.0: 0  
 Min <= 0.0: 0  
 Min <= -18.0: 0

Max Rain: 27.61 ON 30/04/21  
 Days of Rain: 13 (> .2 mm) 7 (> 2 mm) 2 (> 20 mm)  
 Heat Base: 18.3 Cool Base: 18.3 Method: Integration



MONTHLY CLIMATOLOGICAL SUMMP-RY for MAY. 2021

NAME: NRQ CITY: STATE:  
ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/hr)

DAY	MEAN			LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RF.IN	AVG		DOM DIR	
	TEMP	HIGH	TIME						WIND SPEED	HIGH		TIME
1	17.7	20.4	3:30p	15.9	6:30a	1.0	0.3	15.6	0.0	11.3	4:30p	N
2	18.0	24.6	2:30p	14.6	6:00a	1.3	1.0	2.4	0.2	12.9	1:30p	N
3	18.4	28.2	1:30p	15.2	6:30a	1.2	1.3	0.8	0.2	9.7	2:00p	N
4	19.1.	26.B	1:30p	15.0	3:30a	0.9	1.8	0.2	0.0	4.8	11:00a	N
5	14.2	17.1	12:30a	11.1	11:00p	4.1	0.0	15.6	0.0	4.8	3:30p	N
6	15.7	21.1	1:00p	11.3	12:30a	2.9	0.3	1.8	0.0	8.0	3:30p	N
7	19.8	30.9	1:30p	14.2	5:00a	1.2	2.7	0.0	0.0	4.8	8:30a	N
8	20.7	30.2	2:00p	15.1	7:00a	0.B	3.1	0.0	0.0	4.8	2:30p	N
9	19.4	29.9	2:30p	14.9	6:30a	0.9	2.1	1.2	0.0	4.8	2:00p	N
10	20.1	33.0	2:30p	16.0	2:30a	0.8	2.6	0.0	0.0	3.2	11:00a	N
11	17.7	22.8	2:00p	16.1	6:00a	1.0	0.3	6.6	0.0	8.0	10:30a	N
12	18.2	20.6	11:30a	16.3	7:30a	0.6	0.4	3.4	0.0	6.4	2:00a	N
13	18.3	25.3	2:00p	13.1	12:00m	1.3	1.2	0.0	0.2	8.0	9:30a	NW
14	16.2	26.9	2:30p	10.4	7:00a	3.4	1.3	0.4	0.0	8.0	9:30a	NE
15	16.2	27.4	2:00p	9.7	6:00a	3.5	1.4	0.0	0.0	4.8	1:00p	NW
16	13.6	21.B	1:30p	7.7	7:00a	5.1	0.2	0.0	0.5	17.7	11:00a	WSW
17	13.4	23.4	1:00p	7.2	6:30a	5.6	0.7	0.0	0.3	11.3	1:00p	WSW
18	13.7	21.7	2:00p	8.4	5:30a	4.8	0.2	0.0	0.2	9.7	1:00p	WSW
19	15.7	24.7	2:00p	11.0	6:30a	3.4	0.8	0.0	0.2	9.7	11:30a	WSW
20	15.1	24.7	2:30p	9.9	5:30a	3.9	0.7	0.0	0.2	12.9	3:30p	WSW
21	14.8	22.7	12:30p	9.7	6:30a	4.0	0.4	1.6	0.6	14.5	1:30p	WSW
22	14.1	19.2	1:30p	11.2	6:30a	4.3	0.0	11.2	0.0	6.4	1:30p	WSW
23	15.1	22.3	2:30p	11.2	7:30a	3.5	0.3	0.6	0.3	14.5	1:00p	WSW
24	1S.8	21.B	2:00p	12.3	5:00a	2.9	0.4	2.6	1.0	16.1	1:30p	WSW
25	15.0	18.B	2:00p	12.2	3:30a	3.3	0.0	0.6	0.0	4.8	11:30a	W
26	16.6	28.3	2:30p	10.1	7:30a	3.2	1.4	0.2	0.0	6.4	12:30p	NE
27	15.3	21.1	2:00p	11.2	12:00m	3.3	0.3	0.0	0.6	16.1	11:30a	WSW
28	12.8	20.2	12:30p	9.8	3:30a	1.5	0.0	0.0	0.0	9.7	11:00a	N
29	15.2	20.5	1:30p	8.4	7:30a	2.4	0.1	0.0	0.3	16.1	1:00p	WSW
30	14.8	20.0	11:30a	9.3	3:00a	2.9	0.1	0.0	0.5	20.9	12:00p	WSW
31	15.8	22.9	2:00p	10.4	12:00m	2.6	0.5	0.0	0.5	11.3	10:30a	WSW
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	16.3	33.0	10	7.2	17	81.8	25.9	64.8	0.2	20.9	30	N

Max>= 32.0: 1  
Max<= 0.0: 0  
Min<= 0.0: 0  
Min<= -18.0: 0

Max Rain: 15.60 ON 01/05/21

Days of Rain: 16 (> .2 mm) 7 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for JUN. 2021

NA.ME: NRQ CITY: ST1'.TE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (°C) / RJI.IN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	R. IN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	16.6	26.3	2:00p	10.0	1:30a	2.3	0.9	0.0	0.0	6.4	1:30p	WSW
2	16.9	27.0	2:00p	11.7	7:30a	2.1	0.9	0.0	0.0	8.0	8:00a	W
3	16.2	20.7	12:00p	13.6	8:00a	1.9	0.2	1.8	0.0	12.9	7:30p	NNE
4	17.1	24.6	2:00p	12.2	12:00m	1.8	0.8	0.6	0.3	11.3	11:00a	t"NE
5	13.8	20.9	2:00p	9.2	7:30a	4.8	0.3	0.0	0.5	14.5	11:00a	W
6	13.2	24.2	1:30p	7.4	7:00a	5.7	0.6	0.0	0.0	8.0	6:00p	ESE
7	13.2	24.1	1:30p	7.0	7:00a	5.7	0.5	0.0	0.0	9.7	11:00a	NE
8	14.5	21.8	1:30p	7.6	8:00a	4.1	0.3	0.0	0.3	11.3	12:00p	W
9	13.2	17.9	3:00a	9.7	9:00p	5.1	0.0	7.2	1.4	14.5	1:30p	NNW
10	12.3	19.7	1:30p	8.2	6:30a	6.1	0.1	0.0	0.8	14.5	2:00p	ENE
11	12.8	20.4	2:30p	7.4	6:30a	5.7	0.1	0.0	0.5	8.0	11:00a	NNW
12	13.1	22.6	2:00p	7.6	7:00a	5.6	0.4	0.0	0.3	6.4	11:00a	N
13	13.1	22.9	2:30p	7.7	7:00a	5.7	0.4	0.0	0.0	6.4	1:00p	N
14	13.2	24.9	2:30p	6.6	7:00a	5.7	0.6	0.0	0.0	6.4	11:30a	ESE
15	12.6	18.8	2:00p	9.4	5:00a	5.7	0.0	3.2	0.0	8.0	4:00p	ENE
16	15.1	25.6	2:00p	8.8	6:00a	4.2	0.9	0.2	0.0	6.4	8:30a	ENE
17	15.8	23.3	2:00p	12.9	11:30p	3.1	0.6	4.2	0.6	11.3	1:00p	NNW
18	14.4	22.1	2:00p	8.7	7:30a	4.4	0.4	0.0	1.0	16.1	5:30p	NNW
19	14.6	21.6	2:00p	11.1	7:30a	4.0	0.3	0.0	1.4	14.5	4:30p	NNW
20	14.6	21.4	12:30p	10.3	7:30a	3.9	0.2	0.0	0.8	17.7	11:00a	WSW
21	14.5	20.7	2:30p	10.3	1:30a	4.0	0.2	0.0	0.5	14.5	4:30p	W
22	14.8	21.4	2:30p	11.1	7:00a	3.8	0.3	0.2	1.0	16.1	3:00p	W
23	14.9	20.0	2:30p	12.5	6:00a	3.5	0.1	0.8	0.0	8.0	12:00p	E
24	15.4	18.1	3:30p	12.8	3:30a	2.9	0.0	0.4	0.0	8.0	3:30p	W
25	17.4	21.4	11:30a	14.6	3:30a	1.4	0.5	0.6	0.2	14.5	12:30p	ENE
26	13.3	15.1	10:00a	9.3	12:00m	5.1	0.0	11.4	0.0	1.6	2:00a	ESE
27	11. S	20.3	1:30p	6.2	7:00a	6.9	0.1	0.0	0.2	8.0	3:00p	WSW
28	12.4	21.8	2:00p	6.8	5:00a	6.1	0.2	0.6	0.5	14.5	5:00p	W
29	13.5	16.7	12:30p	11.7	2:00a	4.8	0.0	15.6	0.2	12.9	3:30p	WSW
30	14.3	18.6	2:00p	12.3	12:30a	4.1	0.0	6.8	0.0	6.4	2:00p	NE
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	14.3	27.0	2	6.2	27	130.2	9.7	53.6	0.3	17.7	20	W

Max >= 32.0: 0  
 Max <= 0.0: 0  
 Min <= 0.0: 0  
 Min <= -18.0: 0  
 Max Rain: 15.60 ON 29/06/21  
 Days of Rain: 14 (> .2 mm) 6 (> 2 mm) 0 (> 20 mm)  
 Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for JUL. 2021

NAME: NRQ CITY: STATE:  
ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE {oc} , RIUN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	14.9	17.9	12:30p	13.4	7:00a	3.4	0.0	16.8	0.0	11.3	4:00p	W
2	16.1	19.1	1:30p	14.5	6:00a	2.3	0.0	14.4	0.0	6.4	12:30p	W
3	15.4	16.2	12:00p	14.4	12:00m	2.9	0.0	4.8	0.0	1.6	9:30a	t
4	13.9	16.6	3:00p	10.3	12:00m	4.4	0.0	0.0	0.2	11.3	10:30a	WSW
5	11.8	19.1	1:30p	8.0	10:30p	6.5	0.0	0.0	0.0	6.4	11:30a	NE
6	9.7	16.7	2:30p	6.4	5:00a	8.6	0.0	0.2	0.0	8.0	12:30p	NE
7	10.7	21.5	2:30p	4.4	6:30a	7.8	0.2	0.0	0.0	8.0	1:00p	WSW
8	12.9	20.3	1:00p	6.7	6:30a	5.6	0.2	0.0	0.0	6.4	1:00p	NE
9	13.3	17.0	2:30p	10.6	11:30p	5.0	0.0	19.6	0.0	8.0	3:00p	ENE
10	14.6	21.5	2:30p	9.1	7:00a	4.0	0.3	0.0	0.8	9.7	10:30a	NNE
11	14.6	20.9	1:30p	10.3	11:30p	4.0	0.2	0.0	1.0	20.9	12:00p	SSW
12	13.1	19.5	12:30p	9.8	1:00a	5.2	0.0	0.0	0.3	12.9	2:30p	ENE
13	14.0	23.4	2:30p	7.6	7:30a	4.9	0.6	0.0	0.0	8.0	5:30p	NE
14	16.3	22.9	12:30p	11.6	2:30a	2.8	0.7	0.0	0.3	16.1	2:00p	NNE
15	17.2	20.7	3:00p	14.2	5:00a	1.5	0.3	0.6	0.8	14.5	4:00a	N
16	17.8	23.3	12:00p	14.4	12:00m	1.3	0.9	0.2	1.3	17.7	10:30a	NW
17	15.7	21.7	1:30p	12.3	7:00a	3.1	0.4	0.0	2.3	16.1	4:30p	NW
18	14.1	23.1	2:30p	8.1	6:00a	4.7	0.4	0.0	0.6	14.5	1:30a	NW
19	13.7	23.3	2:30p	7.8	4:00a	5.2	0.6	0.0	0.2	6.4	11:30a	N
20	12.7	19.8	1:00p	7.0	6:00a	5.7	0.1	0.0	0.5	14.5	11:00a	NW
21	12.4	20.1	1:30p	7.6	11:30p	6.0	0.1	0.0	0.6	14.5	2:00p	NW
22	11.8	20.4	1:00p	4.8	6:00a	6.7	0.2	0.0	0.2	9.7	2:30p	N
23	12.4	19.2	1:30p	8.6	1:30a	6.0	0.1	1.0	0.0	9.7	2:30p	N
24	14.9	22.6	2:30p	10.0	6:30a	4.1	0.6	0.2	1.6	20.9	12:00p	NW
25	15.1	23.5	2:00p	9.8	2:30a	3.9	0.7	0.0	1.0	12.9	12:00p	NW
26	13.8	23.6	2:30p	6.6	7:00a	5.2	0.6	0.0	0.2	11.3	8:30a	NNW
27	14.5	26.3	2:00p	6.8	7:00a	4.9	1.1	0.0	0.2	9.7	2:00p	NNE
28	16.5	25.9	1:00p	8.7	5:30a	3.3	1.5	0.0	0.6	16.1	12:30p	NNE
29	18.5	26.6	2:30p	10.3	12:00m	1.5	1.7	0.0	0.6	16.1	3:30p	SW
30	12.7	22.7	2:00p	5.6	7:00a	6.1	0.4	0.0	0.3	9.7	7:30a	SW
31	14.9	25.9	2:00p	6.9	7:00a	4.7	1.3	0.0	0.2	12.9	12:30p	WNW
	14.2	26.6	29	4.4	7	141.4	13.1	57.8	0.4	20.9	11	NW

Max >= 32.0: 0  
Max <= 0.0: 0  
Min <= 0.0: 0  
Min <= -18.0: 0  
Max Rain: 19.61 ON 09/07/21  
Days of Rain: 9 (> .2 mm) 4 (> 2 mm) 0 (> 20 mm)  
Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for Aug. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE ( C) / RAIN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	19.7	31.2	2:30p	11.6	7:00a	2.0	3.4	0.0	0.5	12.9	12:30p	NNE
2	18.1	21.4	12:00p	16.2	12:00m	0.7	0.5	0.0	0.6	14.5	10:30a	SW
3	17.6	22.2	4:00p	13.4	10:30p	1.7	0.9	1.4	0.6	20.9	3:00p	NW
4	14.6	21.9	1:30p	10.9	11:30p	4.1	0.4	0.0	1.6	19.3	2:00p	NW
5	13.9	23.6	2:00p	7.1	7:00a	5.1	0.6	0.0	0.5	11.3	10:00a	NW
6	14.1	24.3	2:30p	7.3	6:30a	5.1	0.9	0.0	0.2	9.7	3:00p	NE
7	14.1	25.3	2:30p	7.6	5:30a	5.2	0.9	0.0	0.0	11.3	1:00p	NE
8	14.2	20.8	1:00p	8.3	5:00a	4.4	0.3	8.2	0.6	17.7	2:00p	SW
9	13.8	18.8	3:00p	10.3	12:00m	4.5	0.0	1.4	0.3	17.7	4:30p	SW
10	13.5	21.9	1:30p	8.1	6:30a	5.2	0.3	0.0	0.3	9.7	11:30a	SW
11	14.8	20.8	12:00p	9.2	7:00a	3.9	0.3	0.0	0.0	9.7	6:00p	SW
12	17.3	27.7	2:00p	11.5	5:30a	2.7	1.6	0.4	0.2	9.7	11:00a	NE
13	17.8	24.4	1:00p	13.4	1:30a	1.6	0.9	0.0	0.2	12.9	1:30p	NNE
14	17.4	26.7	2:00p	13.6	5:00a	1.9	1.0	0.0	0.2	14.5	3:30p	E
15	18.7	28.6	1:30p	12.8	7:00a	1.5	1.9	0.0	0.0	9.7	2:00p	NE
16	18.1	27.9	2:00p	11.7	7:00a	2.2	1.9	0.0	0.2	12.9	1:30p	NE
17	15.1	22.9	12:30p	8.9	6:00a	3.9	0.7	0.0	0.6	14.5	2:30p	WSW
18	15.2	21.4	12:00p	10.9	3:00a	2.9	0.3	0.0	0.5	14.5	12:30p	WSW
19	14.8	25.2	2:00p	8.9	4:30a	4.3	0.8	0.0	0.5	12.9	3:00p	NE
20	17.0	27.3	2:30p	11.0	7:00a	2.9	1.6	0.0	0.3	9.7	12:00p	WSW
21	20.4	31.3	2:30p	11.7	7:30a	1.2	2.9	0.0	0.2	11.3	8:30p	NE
22	21.0	30.2	2:00p	14.2	7:00a	0.6	2.8	0.0	0.2	11.3	4:30p	NE
23	21.0	30.7	2:00p	13.3	7:30a	0.6	2.7	0.0	0.6	14.5	12:00m	WSW
24	15.9	20.7	1:30p	10.3	11:30p	2.6	0.3	11.0	2.3	20.9	1:00p	NNE
25	15.4	22.7	1:00p	9.3	7:00a	3.2	0.7	0.2	1.1	11.3	9:00a	ENE
26	13.6	22.6	2:00p	6.7	7:00a	5.3	0.6	0.0	0.3	16.1	5:30p	E
27	14.4	24.3	2:30p	6.9	7:00a	4.8	0.9	0.0	0.6	14.5	12:00p	ENE
28	14.9	25.8	2:00p	6.0	7:00a	4.8	1.4	0.0	0.5	11.3	2:30p	ENE
29	16.0	27.9	2:00p	6.2	7:00a	4.2	1.8	0.0	0.3	14.5	3:00p	WNW
30	16.8	27.6	2:00p	9.8	6:30a	3.2	1.6	0.0	0.3	16.1	4:30p	WNW
31	17.7	28.5	2:00p	10.7	4:00a	2.6	1.9	0.0	0.5	14.5	4:30p	WNW
	16.3	31.3	21	6.0	28	98.7	36.9	22.6	0.5	20.9	3	NE

Max >= 32.0: 0  
 Max <= 0.0: 0  
 Min <= 0.0: 0  
 Min <= -18.0: 0  
 Max Rain: 11.00 ON 24/08/21  
 Days of Rain: 6 (> .2 mm) 2 (> 2 mm) 0 (> 20 mm)  
 Heat Base: 18.3 Cool Base: 18.3 Method: Integration

## MONTHLY CLIMATOLOGIC.;L;SUMMA.. Y for SEP. 2021

NAME: NRQ CITY: STATE:  
 ELZV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (°c), RAIN (mm)' WIND SPEED {km/hr}

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DlWS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	20.3	29.2	1:00p	15.0	6:30a	0.8	2.8	0.0	0.3	16.1	3:30p	E
2	17.8	24.2	2:00p	13.6	11:30p	1.6	1.1	0.0	0.6	24.1	2:30p	SE
3	16.2	23.3	1:00p	12.7	6:30a	2.6	0.5	0.0	0.5	19.3	12:30p	SE
4	16.6	22.8	2:00p	12.3	4:30a	2.4	0.6	0.0	0.3	11.3	12:30p	WNW
5	15.9	24.1	11:30a	10.8	12:00m	3.3	0.8	0.0	0.6	20.9	12:00p	ENE
6	14.4	25.2	2:30p	8.6	6:30a	4.8	0.9	0.8	0.3	12.9	5:00p	ENE
7	14.8	24.9	2:30p	8.2	4:30a	4.6	1.1	0.0	0.5	12.9	9:30a	ENE
8	14.5	24.3	12:30p	6.3	6:00a	4.3	1.0	0.0	0.5	16.1	5:00p	W
9	17.0	29.4	2:00p	8.8	6:30a	3.3	2.0	0.2	0.5	14.5	3:30p	ENE
10	20.1	31.3	12:30p	12.8	12:00m	1.0	3.4	0.0	0.6	12.9	2:30p	ENE
11	18.7	31.2	12:30p	8.7	6:30a	3.0	3.3	0.0	0.5	16.1	2:30p	WNW
12	20.9	31.3	1:30p	13.8	6:30a	1.2	3.8	0.0	0.8	17.7	4:30p	ENE
13	21.3	33.6	2:30p	15.9	2:30a	0.4	3.4	0.0	1.0	17.7	3:00p	ENE
14	15.6	24.2	1:30p	11.4	6:30a	3.3	0.6	0.2	1.6	25.7	3:00p	ENE
15	15.9	22.8	2:30p	10.4	7:00a	3.1	0.7	0.0	1.1	17.7	10:30a	W
16	15.3	24.2	1:00p	9.4	6:00a	3.8	0.7	0.0	0.8	16.1	2:00p	WNW
17	16.7	27.8	1:30p	9.8	5:30a	3.2	1.6	0.0	0.6	14.5	4:00p	WNW
18	20.0	29.6	2:00p	11.3	5:30a	2.0	3.6	0.0	0.6	12.9	12:00p	ENE
19	20.4	26.8	12:30p	15.8	12:00m	0.4	2.4	0.0	1.0	17.7	2:30p	WNW
20	21.4	33.2	2:00p	12.8	6:00a	1.5	4.6	0.4	1.0	16.1	2:30p	ENE
21	17.6	25.2	1:30p	10.8	12:00m	1.8	1.0	0.2	1.8	19.3	12:30p	ENE
22	15.1	23.4	2:30p	8.9	5:30a	4.0	0.8	0.0	1.1	19.3	10:30a	ENE
23	16.9	28.5	2:00p	9.2	6:00a	3.4	2.0	0.0	0.6	12.9	4:00p	ENE
24	21.3	31.9	2:00p	13.2	5:30a	1.3	4.3	0.0	1.0	16.1	3:00p	ENE
25	22.0	33.3	2:30p	13.8	6:00a	0.9	4.6	0.0	0.6	20.9	10:00p	ENE
26	16.9	23.1	1:30p	13.5	11:30p	1.9	0.6	6.4	1.3	24.1	2:00p	W
27	16.7	20.6	2:00p	12.4	5:00a	3.8	0.1	1.2	0.3	16.1	2:00p	W
28	15.8	25.7	2:00p	9.3	5:30a	3.4	0.9	0.0	0.6	16.1	12:00p	WNW
29	16.1	21.7	1:00p	11.4	5:00a	2.9	0.7	1.4	0.2	14.5	1:00p	ENE
30	19.1	26.9	2:00p	14.3	5:30a	1.2	2.0	13.2	0.3	14.5	1:00p	WNW
	17.6	33.6	13	6.3	8	76.5	55.8	24.0	0.7	25.7	14	ENE

Max >= 32.0: 3

Max < 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 13.21 ON 30/09/21

Days of Rain: 9 (> .2 mm) 2 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

## MONTHLY CLIMATOLOGICAL SUMMARY for OC':'. 2021

NAME: NRQ CITY: STATE:

ELEV: 0 m LLT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/hr)

DAY	MEP.N	HIGH	TIME	LOW	TIME	HEAT	COOL	RAIN	AVG	HIGH	TIME	DOM
	TEL'1P					DEG	DEG		WIND			
1	17.3	28.4	2:00p	12.8	12:00m	2.3	1.2	22.8	0.6	20.9	12:30a	ENE
2	17.8	27.1	12:30p	10.9	5:30a	2.6	2.1	0.0	0.6	14.5	2:30p	NE
3	21.1	31.9	2:00p	12.7	6:00a	1.5	4.2	0.0	0.8	14.5	3:30p	NE
4	24.2	36.2	1:30p	14.1	6:00a	0.8	6.7	0.0	1.8	22.5	3:30p	NE
5	22.3	32.6	1:30p	14.8	6:00a	0.6	4.6	0.0	1.1	14.5	1:30p	ENE
6	18.7	29.6	2:00p	11.4	6:00a	2.0	2.4	0.0	0.6	16.1	6:00p	WNW
7	20.4	30.4	1:00p	11.0	6:00a	1.9	4.1	0.0	0.5	12.9	2:00p	WNW
8	21.4	27.8	1:30p	17.4	12:00m	0.1	3.2	0.0	1.0	12.9	11:00a	WNW
9	22.4	31.8	12:00p	16.4	4:30a	0.4	4.4	0.0	0.5	16.1	3:30p	WN1'1'
10	24.0	35.8	2:00p	15.6	6:30a	0.6	6.2	0.0	0.3	14.5	1:00p	ENE
11	20.7	31.1	11:00a	15.0	12:00m	0.7	3.0	23.0	1.0	14.5	1:00p	ENE
12	15.6	17.4	1:30p	14.1	7:00a	2.7	0.0	56.6	0.5	14.5	6:30p	ENE
13	17.2	19.1	12:30p	15.8	4:30a	1.2	0.1	29.6	0.2	17.7	4:00p	WNW
14	19.8	24.6	2:00p	16.9	12:30a	0.3	1.8	1.4	0.2	11.3	11:30a	WN1'1'
15	22.3	30.8	1:30p	16.7	12:00m	0.2	4.1	0.0	1.3	19.3	10:00a	ENE
16	20.6	29.4	2:00p	14.4	6:00a	1.0	3.2	0.0	1.0	16.1	3:00p	NE
17	18.8	29.7	1:30p	10.6	5:30a	2.2	2.6	0.0	0.5	16.1	2:30p	WSW
18	17.3	29.2	12:00p	13.2	5:00a	2.7	1.7	34.8	0.3	19.3	1:30p	WNW
19	19.0	29.9	2:30p	12.8	6:00a	1.7	2.3	0.2	0.2	12.9	4:30p	ENE
20	18.6	28.9	1:30p	13.2	5:30a	2.0	2.3	1.6	0.5	17.7	5:30p	WNW
21	18.1	24.9	1:30p	14.6	3:00a	1.2	1.0	4.6	0.0	12.9	1:00p	SE
22	20.5	27.8	2:30p	15.7	5:30a	0.5	2.7	0.2	0.2	11.3	3:30p	SE
23	24.7	35.1	1:30p	17.4	4:00a	0.1	6.5	0.0	0.0	17.7	7:00p	E
24	24.2	32.4	12:30p	20.0	12:00m	0.0	5.9	0.0	0.3	17.7	9:30a	ENE
25	20.0	22.3	10:30a	18.0	5:00a	0.0	1.7	4.2	0.0	12.9	7:00p	ENE
26	20.7	26.6	11:00a	17.3	6:00a	0.1	2.4	0.0	0.0	14.5	12:30p	WNW
27	22.3	31.5	12:30p	17.7	4:30a	0.1	4.1	0.2	0.0	11.3	4:30p	NW
28	25.9	37.8	2:00p	18.3	5:00a	0.0	7.6	0.2	0.0	9.7	3:00p	ENE
29	21.7	27.2	10:00a	18.9	6:00p	0.0	3.4	2.8	0.3	11.3	12:30p	ENE
30	24.0	32.8	12:30p	19.2	8:30p	0.0	5.7	0.8	0.3	12.9	4:30p	WN1'1'
31	17.8	21.2	4:30p	15.1	10:30a	1.0	0.5	2.6	0.5	14.5	6:30a	WN1'1'
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20.6	37.8	28	10.6	17	30.5	101.5	185.6	0.5	22.5	4	WNW	

Max &gt;= 32.0: 7

Max &lt;= 0.0: 0

Min &lt; 0.0: 0

Min &lt;= -18.0: 0

Max Rain: 56.59 ON 12/10/21

Days of Rain: 16 (≥ .2 mm) 9 (≥ 2 mm) 5 (&gt; 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for NOV. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53" S LONG: 153° 15' 01" E

TEMPERATURE {oc}' RAIN (mm), WIND SPEED (km/hr)

mW	MEAN		TIME	LOW	TIME	HEAT	COOL	RAIN	AVG		TIME	DOM
	TEMP	HIGH				DEG	DEG		WIND	DIR		
1	18.2	24.1	10:30a	13.6	6:30a	1.4	1.3	0.0	0.0	6.4	10:00a	W
2	16.7	19.8	2:00p	15.1	3:30a	1.7	0.1	9.4	0.0	14.5	5:30p	SE
3	18.6	26.9	1:30p	14.1	6:00a	1.6	1.8	0.2	0.2	16.1	4:30p	SE
4	19.3	28.2	2:30p	12.8	5:30a	1.7	2.6	0.0	0.2	14.5	3:30p	SE
5	16.8	18.8	2:30p	14.8	5:30a	1.5	0.0	5.6	0.0	4.8	2:00p	ENE
6	19.1	27.6	3:00p	15.8	4:30a	0.8	1.6	0.2	0.0	9.7	1:00p	WNW
7	21.8	31.8	2:30p	15.1	6:00a	0.7	4.2	0.8	0.0	11.3	3:00p	ENE
8	21.1	26.2	2:00p	19.1	7:00a	0.0	2.7	15.2	0.0	19.3	4:00p	ENE
9	22.3	31.1	3:00p	17.1	6:30a	0.2	4.2	0.0	0.5	17.7	4:00p	SE
10	22.8	31.9	12:30p	18.1	6:00a	0.0	4.4	21.6	0.2	16.1	1:00p	NW
11	23.3	28.7	11:30a	20.7	5:30a	0.0	4.9	32.6	0.2	16.1	12:00p	NNE
12	25.1	31.5	3:30p	22.0	3:30a	0.0	6.8	-1.8	1.0	24.1	7:30a	ENE
13	21.2	27.9	2:00p	15.B	7:00a	0.4	3.2	0.0	2.1	22.5	12:00p	ENE
14	21.4	30.2	2:30p	14.8	7:00a	0.9	3.9	0.0	1.0	12.9	12:30p	ENE
15	22.7	32.9	1:30p	14.2	5:00a	0.9	5.3	0.0	0.8	14.5	5:30p	ENE
16	22.3	31.8	2:30p	15.B	6:00a	0.4	4.4	0.0	0.8	16.1	6:00p	WNW
17	20.5	27.4	2:00p	16.9	4:30a	0.3	2.4	0.0	1.0	20.9	1:00p	SE
18	20.6	28.2	1:30p	15.9	6:30a	0.6	2.8	1.0	0.6	14.5	12:30p	WNW
19	22.7	33.6	3:00p	14.1	5:00a	1.1	5.4	0.0	0.5	9.7	11:00a	E
20	25.6	35.2	12:30p	18.8	7:00a	0.0	7.3	0.0	0.2	11.3	9:00p	E
21	20.9	22.6	3:30p	19.4	6:30a	0.0	2.6	19.2	0.0	4.8	12:30a	SE
22	20.8	24.2	2:00p	19.3	6:30a	0.0	2.4	3.0	0.8	12.9	2:30p	WNW
23	21.3	26.7	12:30p	18.5	4:30a	0.0	2.9	12.0	1.0	20.9	5:30p	SE
24	21.2	24.7	12:00p	19.1	1:00a	0.0	2.8	41.6	0.5	14.5	11:00a	NW
25	21.9	24.2	12:00p	20.3	6:00a	0.0	3.6	1.8	0.2	9.7	12:30p	WNW
26	23.4	29.7	3:30p	20.4	4:00a	0.0	5.1	23.4	0.2	16.1	1:00p	NW
27	20.7	24.4	1:30p	18.6	12:00m	0.0	2.4	1.8	1.4	14.5	4:30p	WNW
28	19.7	24.6	3:30p	17.1	5:00a	0.2	1.6	0.4	1.0	16.1	3:30p	WNW
29	21.7	26.6	12:00p	18.1	6:00a	0.0	3.3	0.0	0.6	11.3	11:30a	WNW
30	19.9	20.9	12:30p	18.9	9:00a	0.0	1.6	136.6	0.2	11.3	6:00p	W
	21.1	35.2	20	12.8	4	14.5	97.8	336.1	0.5	24.1	12	WNW

Max >= 32.0: 3  
 Max <= 0.0: 0  
 Min < 0.0: 0  
 Min <= -18.0: 0  
 Max Rain: 136.60 ON 30/11/21  
 Days of Rain: 19 (> .2 mm) 12 (> 2 mm) 5 (> 20 mm)  
 Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for DEC. 2021

NAME: NRQ CITY: STATE:  
 ELEV: 0 m LAT: 28° 45' 53 n S LONG: 153° 15' 01" E

TEMPERATURE (OC), RAIN (mm), WIND SPEED (km/hr)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	20.5	23.3	6:00p	18.7	5:00a	0.0	2.2	59.4	0.0	6.4	4:00p	E
2	23.1	28.8	3:30p	19.4	6:00a	0.0	4.7	0.4	0.8	19.3	7:00p	WNW
3	24.2	32.1	2:30p	19.7	5:30a	0.0	5.8	0.2	0.5	11.3	5:00p	WNW
4	23.3	33.7	2:30p	17.4	8:00p	0.1	5.1	63.0	0.8	38.6	7:00p	WNW
5	19.2	21.9	12:30p	17.7	6:30a	0.1	0.9	9.2	0.8	17.7	2:30p	WNW
6	19.5	23.9	4:00p	17.3	6:00a	0.2	1.3	17.2	0.3	11.3	1:30p	E
7	22.0	29.2	3:30p	18.7	5:30a	0.0	3.7	4.4	0.5	12.9	5:00p	NW
8	21.6	28.4	1:30p	18.4	4:30a	0.0	3.2	2.4	0.2	9.7	11:30a	E
9	23.6	34.6	2:30p	16.6	5:30a	0.2	5.4	30.0	0.5	14.5	4:30a	E
10	23.7	32.0	3:30p	18.8	6:30a	0.0	5.3	0.0	0.3	9.7	10:30a	NE
11	21.9	29.0	1:30p	15.6	6:30a	0.5	4.1	0.0	1.1	17.7	2:30p	WNW
12	22.0	27.9	3:00p	17.6	5:00a	0.1	3.7	0.2	0.6	11.3	10:30a	WNW
13	21.7	28.5	3:00p	17.6	5:30a	0.1	3.4	0.0	0.6	11.3	2:30p	WNW
14	21.9	30.4	3:00p	15.9	6:00a	0.4	4.1	0.4	0.8	17.7	1:30p	WNW
15	22.6	32.0	2:30p	15.0	6:00a	0.7	4.9	0.2	0.5	12.9	5:00p	E
16	23.7	34.2	3:00p	16.4	6:30a	0.3	5.7	0.4	0.2	8.0	3:00p	E
17	23.3	28.6	12:30p	20.2	7:00a	0.0	4.9	0.0	0.6	12.9	12:30p	E
18	24.2	34.2	3:00p	17.9	6:30a	0.0	5.9	0.0	0.5	14.5	4:30p	WNW
19	25.6	36.2	3:30p	18.1	6:30a	0.0	7.3	0.0	0.3	14.5	6:30p	E
20	27.3	37.6	3:00p	19.8	6:00a	0.0	8.9	0.0	0.2	11.3	5:30p	E
21	28.0	37.7	1:00p	22.6	5:30a	0.0	9.7	0.0	0.6	17.7	5:30p	SE
22	26.7	36.9	2:00p	21.4	11:00p	0.0	8.4	0.6	0.6	14.5	2:00p	E
23	24.1	32.2	3:00p	20.1	5:30a	0.0	5.8	0.2	0.5	14.5	3:30p	WNW
24	24.3	30.9	2:00p	20.5	5:00a	0.0	5.9	0.0	0.5	14.5	3:30p	WNW
25	22.8	29.8	3:00p	19.9	12:00m	0.0	4.4	2.8	0.5	12.9	10:00a	WNW
26	22.8	29.1	3:00p	19.5	5:30a	0.0	4.4	0.2	0.3	12.9	6:00p	ESE
27	21.7	26.7	4:00p	18.7	11:30p	0.0	3.4	36.2	1.9	22.5	6:30p	WNW
28	19.2	22.6	1:00p	16.9	6:00a	0.3	1.2	41.8	1.6	19.3	12:30p	WNW
29	18.1	23.9	3:30p	15.8	6:30a	0.8	0.7	5.8	0.3	16.1	4:00p	WNW
30	19.7	26.2	12:30p	15.6	6:00a	0.7	2.1	1.6	0.6	16.1	2:30p	WSW
31	19.9	27.2	2:30p	16.3	6:00a	0.4	2.1	10.8	0.5	20.9	2:30p	SSE
-----												
	22.6	37.7	21	15.0	15	4.9	138.6	287.4	0.6	38.6	4	WNW

Max >= 32.0: 12

Max <= 0.0: 0

**Min** <= 0.0: 0

**Min** <= -18.0: 0

Max **Rain**: 62.99 ON 04/12/21

Days of **Rain**: 22 (> .2 mm) 12 (> 2 mm) 5 (> 20 mm)

**Heat Base**: 18.3 **Cool Base**: 18.3 Method: **Integration**



# APPENDIX N

Water Access Licence – Notice of Decision



---

**Application details**

**Application number** D1018857

**Application type** New water access licence - controlled allocation (s65)  
under the *Water Management Act 2000*.

**Applicant/s** LISMORE CITY COUNCIL

---

**Decision**

**Decision** **Granted, subject to conditions**

This decision was made under section 63 of the *Water Management Act 2000*.

For the terms and conditions of the new water access licence, see Schedule 1.

**Reference number** 30AL324037

**Date of decision** 25 June 2020

**Date of notice** 25 June 2020

**Registration expiry date** 24 December 2020

**Determining officer** [REDACTED]

by delegation from the Minister administering the *Water Management Act 2000* under the *Instrument of Delegation (Water Management Act) 2011*

---

**Reasons for decision**

This water access licence was granted on the basis DPI Water is satisfied adequate arrangements are in force to ensure that no more than minimal harm will be done to any water source as a consequence of water being taken from the water source under the licence.

Any conditions identified with the first letter "D" were applied for the purpose of protecting the environment from impacts associated with the licence, or to give effect to any agreement between the applicant and a person who objected to the application.

## Right of appeal

---

Section 368 of the *Water Management Act 2000* provides a right of appeal to the Land and Environment Court in certain circumstances:

- The applicant/s may appeal against a decision **imposing certain conditions** on an access licence or **fixing the term** of an access licence.  
Conditions identified with the first letter “D” can be appealed during the appeal period. This right of appeal also applies to conditions which are amended or added after an access licence is granted.
- A person who objected to the granting of the water access licence under section 62 of the *Water Management Act 2000* may appeal against a decision **granting** the water access licence.

If you wish to make an appeal you must do so **within 28 days** from the date of this notice.

## Schedule 1 – Terms and conditions of water access licence

**Important: This water access licence will take effect when it is recorded in the Water Access Licence Register.**

<b>WAL number</b>	The WAL number will be issued when this water access licence is recorded in the Water Access Licence Register.
<b>Reference number</b>	30AL324037
<b>Name of holder/s</b>	<b>1. Holder/s</b> <hr/> <b>1.1 Water access licence holder/s</b> LISMORE CITY COUNCIL
<b>Date of effect</b>	<b>2. Terms of this water access licence</b> <hr/> <b>2.1 Duration</b> This water access licence takes effect when it is recorded in the Water Access Licence Register.
<b>Expiry</b>	This water access licence continues to be in force until it is cancelled.  <i>Note. In accordance with section 77A(2) of the Water Management Act 2000, the Minister is to cancel this water access licence if the Minister is of the opinion that the purpose for which this water access licence was granted no longer exists.</i>
<b>Category/subcategory</b>	<b>2.2 Category</b> LOCAL WATER UTILITY  <i>Note. This category or subcategory of water access licence is a specific purpose access licence. A specific purpose access licence can only be used for the purpose for which it was granted.</i>
<b>Water sharing plan</b>	<b>2.3 Share component</b> <i>North Coast Fractured and Porous Rock Groundwater Sources 2016</i>

<b>Water source</b>	North Coast Volcanics Groundwater Source
<b>Specified shares (ML/units)</b>	70
	<b>2.4 Extraction component</b>
<b>Times, rates circumstances</b>	At any time or rate.
<b>Areas or locations</b>	Extraction from: River, lake or surface water runoff Extraction zone: Whole Water Source
	<b>2.5 Nominated water supply work/s</b>
	This water access licence does not nominate any water supply works.
	<b>3. Conditions of this water access licence</b>
	<hr/>
	This water access licence is subject to the following conditions.
	<b>Plan conditions</b>
<b>Water sharing plan</b>	<i>North Coast Fractured and Porous Rock Groundwater Sources 2016</i>
	<b>Take of water</b>
	<hr/>
<b>MW0604-00001</b>	Water allocations remaining in the account for this access licence must not be carried over from one water year to the next water year.
	<hr/>
<b>MW0603-00001</b>	The total volume of water taken under this access licence in any water year must not exceed a volume equal to: A. the sum of water in the account from the available water determination for the current year, plus B. the net amount of water assigned to or from the account under a water allocation assignment, plus C. any water re-credited by the Minister to the account.
	<b>Use of water</b>
	<hr/>
<b>MA2455-00001</b>	Water must be used for town water supply purposes.

## Monitoring and recording

---

**MW2338-00001** The completed logbook must be retained for five (5) years from the last date recorded in the logbook.

---

**MW2339-00001** A logbook must be kept, unless the work is metered and fitted with a data logger. The logbook must be produced for inspection when requested by the relevant licensor.

---

**MW2337-00001** The following information must be recorded in the logbook for each period of time that water is taken:

- A. date, volume of water, start and end time when water was taken as well as the pump capacity per unit of time, and
- B. the access licence number under which the water is taken, and
- C. the approval number under which the water is taken, and
- D. the volume of water taken for domestic consumption and/or stock watering.

---

**MW0606-00001** The volume of water taken in the water year must be recorded in the logbook at the end of each water year. The maximum volume of water permitted to be taken in that water year must also be recorded in the logbook.

---

## Reporting

---

**MW6037-00002** Once the water access licence holder becomes aware of a breach of any condition on this water access licence, the water access licence holder must notify the Minister as soon as practicable. The Minister must be notified by:

- A. email: [nrar.enquiries@nrar.nsw.gov.au](mailto:nrar.enquiries@nrar.nsw.gov.au), or
- B. telephone: 1800 633 362. Any notification by telephone must also be confirmed in writing within seven (7) days of the telephone call.

---

## Other conditions

*No other conditions applicable*

## Glossary

**available water determination** - An Available water determination (AWD) is a water allocation which specifies the amount of water that can be taken during the water year. AWDs are made for each access licence category in each water source. AWDs are defined under the Water Management Act 2000, s. 59.

**domestic consumption** - Domestic consumption is the use of water for normal household purposes in domestic premises situated on the land.

**licensor** - WaterNSW or DPI Water, depending on which organisation administers your licences and/or approvals

**logbook** - A logbook is a document, electronic or hard copy, that records specific required information.

**metered water supply work** - A metered water supply work is a water supply work fitted with a data logger and a water meter that complies with Australian Standard AS 4747: Meters for non-urban water supply.

**stock watering** - Stock watering is the use of water for stock animals being raised on the land. It does not include the use of water for the raising of stock animals on an intensive commercial basis (kept in feedlots or buildings for all, or a substantial part, of the period during which the stock animals are being raised).

**water allocation assignment** - A water allocation assignment is where licence holders assign water allocations from one licence to another licence; the water allocation account of one licence is debited by a volume and the water allocation account of the receiving licence is credited by that volume.

**water year** - A water year starts on 1 July and ends on 30 June in the following year.

Note. All conditions on a water access licence require compliance. An appeal to the Land and Environment Court against a decision to impose certain conditions on a water access licence can be made **within 28 days** after the date the decision is made. Conditions identified with the first letter "D" are those that can be appealed during the appeal period.

Certain dealings and other matters relating to this water access licence or a holding in this water access licence must be registered in the Access Register in accordance with section 71A of the *Water Management Act 2000*. For information about the Access Register, contact Land and Property Information (<http://www.lpi.nsw.gov.au>).





# APPENDIX O

Water Access Licence – Certificate

NSW LAND REGISTRY SERVICES - INTEGRATED TITLING SYSTEM

CERTIFICATES OF TITLE DELIVERED

on 20/1/2021 7:10:17 AM

lw

████████████████████  
PO BOX 23A  
LISMORE 2480

<u>Dealing</u>	<u>Certificate(s) of Title</u>	<u>Lodging Party Reference</u>	<u>Invoice</u>
AQ558382 WP	WAL43542	30AL324037	D1347002

CERTIFICATE(S) OF TITLE: 1

MULTI PAGE CERTIFICATE(S) OF TITLE: 0

BOX 1W  
(AQ558382)



NEW SOUTH WALES  
**CERTIFICATE OF TITLE**

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
<b>WAL43542</b>	
EDITION	DATE OF ISSUE
<b>1</b>	<b>19/1/2021</b>
CERTIFICATE AUTHENTICATION CODE	
<b>VCRN-YS-MZ7S</b>	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: SPECIFIC PURPOSE

HOLDER(S)

LISMORE CITY COUNCIL

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: LOCAL WATER UTILITY

SHARE COMPONENT:

SHARE - 70 MEGALITRES PER YEAR

WATER SOURCE - NORTH COAST VOLCANICS GROUNDWATER SOURCE

WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK  
GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER  
ACCESS LICENCE

EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - NIL

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE  
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM  
WATERNSW

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE WATERNSW  
WEBSITE AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.  
WATERNSW PHONE 1300 662 077, EMAIL CUSTOMER.HELPDESK@WATERNSW.COM.AU  
LICENCE REFERENCE NUMBER: 30AL324037

\*\*\*\* END OF CERTIFICATE \*\*\*\*

*Water Access Licence Certificate*

*Water Access Licence Certificate*

# APPENDIX P

Surface Water Monitoring Reports - 2021

Wednesday 17<sup>th</sup> March 2021

Environmental Engineer & Director

██████████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123

To: ██████████  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

## Re: Surface Water Quality Monitoring Results & Report for Blakebrook Quarry

*Reporting period: 1<sup>st</sup> December 2020 to 1<sup>st</sup> March 2021*

### 1.0 INTRODUCTION

Ecoteam is engaged to undertake quarterly surface water quality on behalf of Lismore City Council for the Blakebrook Quarry. This report presents results from the March 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

### 2.0 PROJECT AIMS AND SAMPLING OBJECTIVES

The aim of the surface water monitoring program is to monitor surface water quality surrounding the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Surface Water) - Work Method Statement 3. The project objectives are to detect changes in water quality within surface water which may be a result of the Blakebrook Quarry activities.

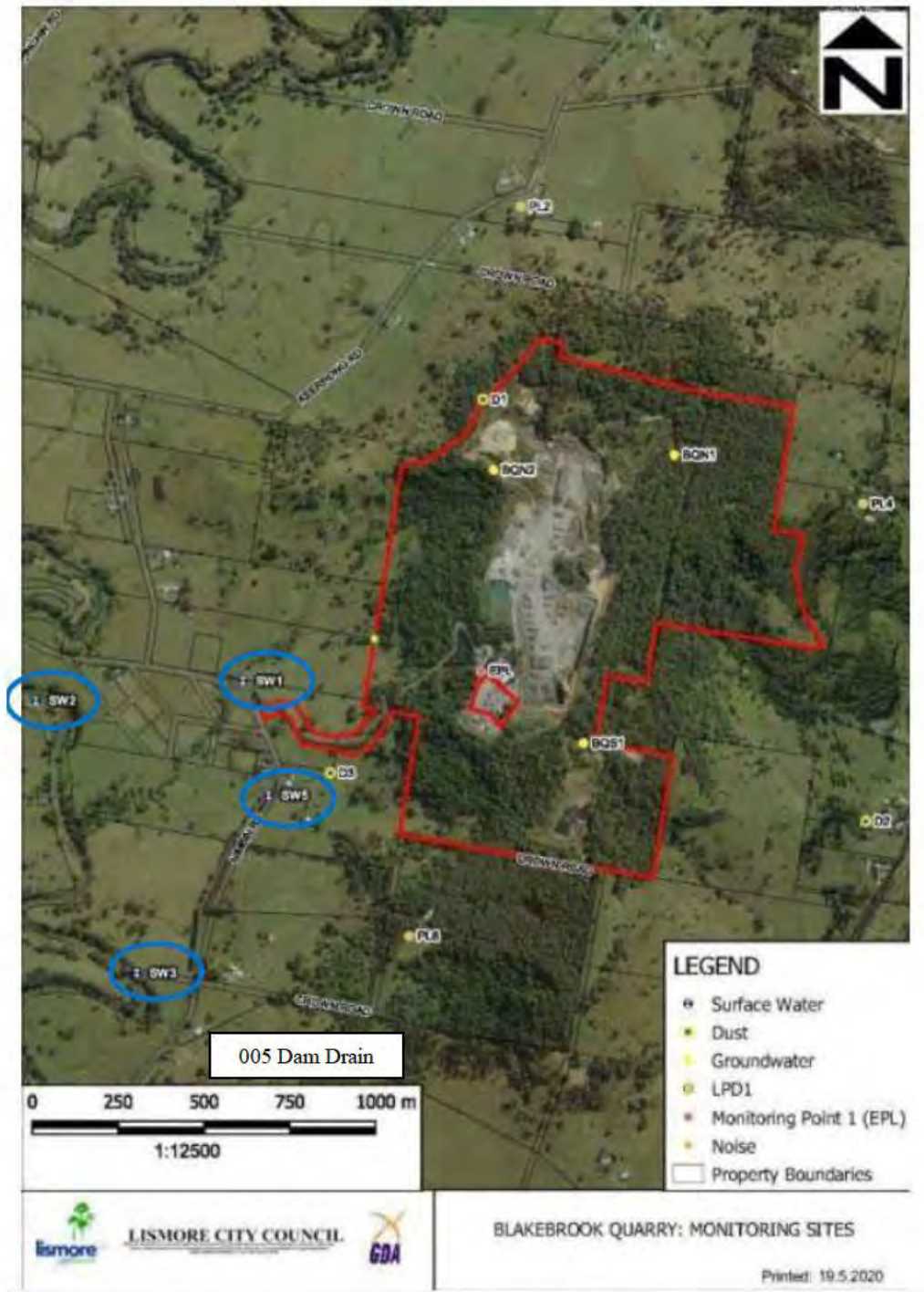
### 4.0 SAMPLING LOCATIONS

Samples were collected from 3 of the 4 surface water sample sites. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly surface water sampling sites, sample codes and site information.

Location	Easting	Northing	Description
SW1	523693	6818008	Flow under Nimbin Road, downstream of LPD1 and LPD2
SW2	523124	6817955	Upstream of site, discharges in Terania Creek
SW3	523422	6817156	Downstream of site, discharges in Terania Creek
SW5	523807	6817669	Flow under Nimbin Road, downstream of LPD3

**Appendix A - Sampling Locations in blue**



**Figure 1.** Map of monthly of surface water sampling sites (Source: Lismore City Council)

**5.0 SAMPLING METHODOLOGY**

Sampling was undertaken by [REDACTED] on Wednesday 1<sup>st</sup> March 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe. Oil and Grease was visually assessed. The calibration certificate for the AquaTROLL is included as **Appendix C**. Sample collection methods and in-situ results are presented in **Appendix A (Table 2)**.

Samples were stored on ice and dropped off the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix D**.

## 6.0 RESULTS

### 7.1 Physico-chemical Results

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**. There were no surface sheens visible at any sites, therefore Oil and Grease was not present.

### 7.2 Laboratory Results

The chain of custody form is included in **Appendix E**. A full copy of the laboratory results is included as **Appendix F**.

Kind regards,

██████████

**Environmental Engineer & Director**

██████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123



## APPENDIX A – Water Quality Result comparison to WQOs

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Blakebrook Surface Water Sample Information				
Site name	SW1	SW2	SW3	SW5
Site Type	Downstream	Upstream	Downstream	Downstream
Date	01/03/21	01/03/21	01/03/21	01/03/21
Time	14:45	15:20	16:00	15:45
Sample Method	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 300mm deep	Not Sampled No water present
Oil and Grease	Not Present	Not Present	Not Present	Not Present
Odour	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Moderate flow, Slightly turbid	Moderate flow, Very turbid, disturbance from high flows	Moderate flow, Very turbid, disturbance from high flows	No Flow- Brown water present
Analyte	Water Quality Observations			
pH	9.21	8.15	8.09	N/A
EC $\mu\text{S}/\text{cm}$	210.10	99.05	106.11	N/A
DO (%)	86.61	87.13	87.63	N/A
Temperature ( $^{\circ}\text{C}$ )	26.54	25.26	25.87	N/A
ORP	70.58	136.26	110.55	N/A
Turbidity	35.0	41.5	52.6	N/A

## Appendix B - Site Photos



**Site SW1 –  
Creek (Downstream)  
Not Flowing  
(01/03/2020)**



**Site SW2 –  
Leycester Creek (Upstream)  
(01/03/2020)**



**Site SW3  
Leycester Creek (Upstream)  
(01/03/2020)**



**Site SW5  
Drain (Downstream)  
Not Flowing  
(01/03/2020)**

# Appendix C - Calibration certificate for AquaTROLL



Innovation in Water Monitoring

## Calibration Report

### Instrument Details:

Instrument Model: Aqua TROLL® 400  
 Full Scale Pressure Range: 0 - 250 ft (0 - 76 m)  
 Serial Number: 746352  
 Manufacture Date: 2020-06-08

### Calibration Details:

Calibration Result: PASS  
 Calibration Date: 2020-05-14  
 Nominal Range of Applied Temperature: 0 C to +50 C  
 Temperature Accuracy Specification: +/-0.1 C from 0 C to +50 C  
 Nominal Range of Applied Pressure: 0 - 250 feet  
 Pressure Accuracy Specification: +/-0.3% FS  
 Conductivity Calibration: Pass with a cell constant of 1.00.  
 Rugged Dissolved Oxygen Calibration: Pass with an optical phase difference of +/- 2 degrees.  
 pH/ORP Check: Pass with mV readings of +/- 5 mV.

### Post-Calibration Check:

Parameter	Applied (PSI)	Reported (PSI)	Deviation (PSI)
Pressure	7	7.005	-0.005
Pressure	65	64.991	0.009
Pressure	123	122.995	0.005
Pressure	84.333	84.346	-0.013
Pressure	45.667	45.692	-0.025
Pressure	7	7.002	-0.002

### Calibration Procedures and Equipment Used:

Automated calibration procedures used.  
 Calibrated in 900, 9000, & 90000 µS/cm conductivity standards.  
 Manu MENSOR Model 8100 Serial No 570135  
 Manu HART Model 1504 Serial No B42917  
 Manu Instrulab Model 406 Serial No 1-31154

### Notes:

- Standards used in the calibration are traceable to the National Institute of Standards and Technology.
- This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
- A calibration interval of 12 to 18 months is recommended.
- The post-calibration data is collected at nominal +15C.
- 1.0 PSI = 6.894757 kPa.

## **Appendix D. Full List of Sampling Analytes**

### **Field**


- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential
- Oil and Grease
- Turbidity

### **Laboratory**

- Nitrate
- Nitrite
- Phosphate
- Ammonium
- Total suspended Solids (TSS)

## Appendix E - Chain of Custody Form

### CHAIN OF CUSTODY

 <p>PO Box 157 (Military Road) LISMORE NSW 2480 P  02 6620 3678 F  02 6620 3957 eal@scu.edu.au, www.scu.edu.au/ea</p>	<b>Submitting Client Details</b> Quote Id: EALO5821 Job Ref: SMC010 Biskebrook WC- Surface Water- MARCH21 Company Name: Ecoteam Contact Person: [REDACTED] Phone: 66216123 Mobile: [REDACTED] Fax: [REDACTED] Email: [REDACTED] Postal Address: 13 Ewing Street Lismore	<b>Billing Client Details</b> ABN: Company Name: Ecoteam Contact Person: [REDACTED] Phone: 02 66216123 Mobile: [REDACTED] Fax: Email: [REDACTED] Postal Address: 13 Ewing Street, Lismore
--	--	---

This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL.

Date: \_\_\_\_\_ Signed: \_\_\_\_\_

**Payment Method:**

- Purchase Order
- Cheque
- Invoice (prior approval required)
- Credit Card Mastercard / Visa No: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CVV: \_\_\_\_\_

Relinquished By: [REDACTED]
Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: _____
Received By: [REDACTED] <span style="float: right;">2-3-21</span>
Condition on receipt: Ambient / Cool / Frozen / Other: _____

**Comments:**

**Marketing Survey – where did you find us?**

- Word of mouth
- Magazine
- Google search
- Other

**Sample Analysis Request**

Price List Code (e.g. SW-PACK-006)

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	TSS- SWSINC-003	Nutrients- Dissolved- SWPACK-020					
1	SW1	300	1/3/21			Water	X	X					
2	SW2	300	1/3/21			Water	X	X					
3	SW3	300	1/3/21			Water	X	X					

## Appendix F. Full Laboratory Results

## RESULTS OF WATER ANALYSIS

3 samples supplied by Ecoteam on 2/03/2021 . Lab Job No. K4179.

Samples submitted by [REDACTED] . Your Job: SMC010-Blakebrook WQ-Surface Water-March21

13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1 SW1 1/3/21	Sample 2 SW2 1/3/21	Sample 3 SW3 1/3/21
	<i>Job No.</i>	<i>K4179/1</i>	<i>K4179/2</i>	<i>K4179/3</i>
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	14	43	33
Phosphate (mg/L P)	APHA 4500 P-G	0.057	0.036	0.038
Nitrate (mg/L N)	APHA 4500 NO <sub>3</sub> <sup>-</sup> -F	0.013	0.216	0.217
Nitrite (mg/L N)	APHA 4500 NO <sub>2</sub> <sup>-</sup> -I	<0.005	<0.005	0.006
Ammonia (mg/L N)	APHA 4500 NH <sub>3</sub> -H	0.114	0.109	0.111

### Notes

- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion).
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- Analysis conducted between sample arrival date and reporting date.
- \*\* NATA accreditation does not cover the performance of this service.
- ... Denotes not requested.
- This report is not to be reproduced except in full.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 11/03/2021.





Friday 18<sup>th</sup> June 2021

Environmental Engineer & Director

██████████@ecoteam.com.au

To: ██████████  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

mob: ██████████  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Surface Water Quality Monitoring Results & Report for Blakebrook Quarry**

*Reporting period: 1<sup>st</sup> March 2021 to 1<sup>st</sup> June 2021*

**1.0 INTRODUCTION**

Ecoteam is engaged to undertake quarterly surface water quality on behalf of Lismore City Council for the Blakebrook Quarry. This report presents results from the June 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

**2.0 PROJECT AIMS AND SAMPLING OBJECTIVES**

The aim of the surface water monitoring program is to monitor surface water quality surrounding the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Surface Water) - Work Method Statement 3. The project objectives are to detect changes in water quality within surface water which may be a result of the Blakebrook Quarry activities.

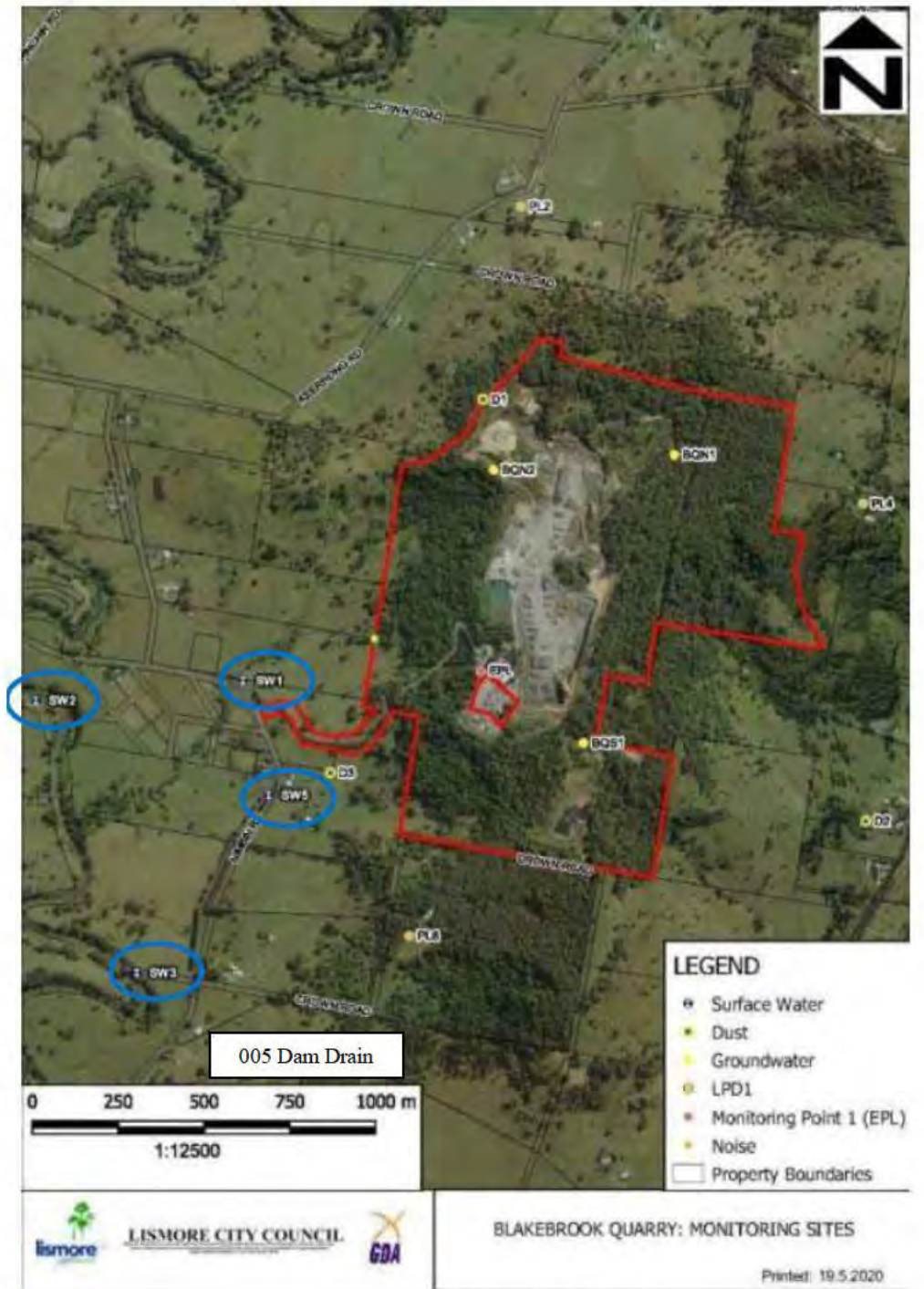
**4.0 SAMPLING LOCATIONS**

Samples were collected from 3 of the 4 surface water sample sites. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly surface water sampling sites, sample codes and site information.

Location	Easting	Northing	Description
SW1	523693	6818008	Flow under Nimbin Road, downstream of LPD1 and LPD2
SW2	523124	6817955	Upstream of site, discharges in Terania Creek
SW3	523422	6817156	Downstream of site, discharges in Terania Creek
SW5	523807	6817669	Flow under Nimbin Road, downstream of LPD3

**Appendix A - Sampling Locations in blue**



**Figure 1.** Map of monthly of surface water sampling sites (Source: Lismore City Council)

**5.0 SAMPLING METHODOLOGY**

Sampling was undertaken by [REDACTED] on Friday 4<sup>th</sup> June 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe. Oil and Grease was visually assessed. The calibration certificate for the AquaTROLL is included as **Appendix C**. Sample collection methods and in-situ results are presented in **Appendix A (Table 2)**.

Samples were stored on ice and dropped off the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix D**.

## 6.0 RESULTS

### 7.1 Physico-chemical Results

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**. There were no surface sheens visible at any sites, therefore Oil and Grease was not present.

### 7.2 Laboratory Results

The chain of custody form is included in **Appendix E**. A full copy of the laboratory results is included as **Appendix F**.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123

## APPENDIX A – Water Quality Result comparison to WQOs

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Blakebrook Surface Water Sample Information				
Site name	SW1	SW2	SW3	SW5
Site Type	Downstream	Upstream	Downstream	Downstream
Date	04/06/21	04/06/21	04/06/21	04/06/21
Time	12:30	12:50	1:22	12:58
Sample Method	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 300mm deep	Not Sampled No water present
Oil and Grease	Not Present	Not Present	Not Present	Not Present
Odour	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Moderate flow, Slightly turbid	Moderate flow, Slightly turbid	Moderate flow, Slightly turbid	No Flow- Brown water present
Analyte	Water Quality Observations			
pH	8.64	8.80	8.62	N/A
EC $\mu\text{S}/\text{cm}$	445.71	153.12	146.90	N/A
DO (%)	83.66	94.26	92.37	N/A
Temperature ( $^{\circ}\text{C}$ )	18.03	16.02	16.40	N/A
ORP	190.90	269.49	273.47	N/A
Turbidity	16.5	15.5	15.0	N/A

## Appendix B - Site Photos



**Site SW1 –  
Creek (Downstream)  
(04/06/2021)**



**Site SW2 –  
Leycester Creek (Upstream)  
(04/06/2021)**



**Site SW3  
Leycester Creek (Upstream)  
(04/06/2021)**



**Site SW5  
Drain (Downstream)  
Not Flowing  
(04/06/2021)**

## Appendix C - Calibration certificate for AquaTROLL

 <p>Thermo Fisher Scientific Australia Pty Ltd ABN 52 058 390 917 5 Canbbean Drive Scoresby VIC 3179 Phone: 1 300 735 295 Fax: 03 9763 1169</p>	<h3>ELECTROCHEMICAL INSTRUMENT MAINTENANCE &amp; CALIBRATION REPORT</h3>	
	<p>Customer: Ecotechnology Australia PTY Ltd Address: 13 Ewing st Lismore NSW 2480</p> <p>Attention: <span style="background-color: black; color: black;">[REDACTED]</span></p>	

Make:	In-Situ	Lab.ID/Assett No.	NA	Calibration Date:	27-05-2021
Model:	AquaTroll 400	Customer O/No.	PO-0063	Next Calibration:	05-2022
Serial No.:	741219 / 746352	Location:	NA	Call Number:	SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

#### Calibration/ Accuracy Tests

Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 +/- 30	-7.7	175.5 +/- 30	163.1			Pass
✓ Slope (pH)		-59.1 +/- 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass

#### Reference Instruments Used

Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

#### General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction.  
Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV.  
Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Engineer's Name  
[REDACTED]

Date  
27<sup>th</sup> May 2021

Issue 1

Oct 06

G0232

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Page 1 of 1

## **Appendix D. Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential
- Oil and Grease
- Turbidity

### **Laboratory**

- Nitrate
- Nitrite
- Phosphate
- Ammonium
- Total suspended Solids (TSS)



# Appendix E - Chain of Custody Form

## CHAIN OF CUSTODY

<p>Environmental Analysis Laboratory Southern Cross University</p> <p>PO Box 157 (Military Road) LISMORE NSW 2480 P  02 6620 3678 F  02 6620 3957 eal@scu.edu.au; www.scu.edu.au/eal</p>	<b>Submitting Client Details</b> Quote Id: EALQ5821 Job Ref: SMC010-Blakelock WQ- Surface Water- JUNE21 Company Name: Ecoteam Contact Person: [Redacted] Phone: 66215123 Mobile: [Redacted] Fax: [Redacted] Email: [Redacted] Postal Address: 13 Ewing Street, Lismore	<b>Billing Client Details</b> ABN: [Redacted] Company Name: Ecoteam Contact Person: [Redacted] Phone: 02 66215123 Mobile: [Redacted] Fax: [Redacted] Email: [Redacted] Postal Address: 13 Ewing Street Lismore
	This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL.	

<b>Payment Method:</b> <input type="checkbox"/> Purchase Order <input type="checkbox"/> Cheque <input type="checkbox"/> Invoice (prior approval required) <input type="checkbox"/> Credit Card: Mastercard / Visa No: _____ Exp. Date: _____ Name on Card: _____ CVV: _____	Relinquished By: [Redacted] Preservation: None (Ice) Ice packs / Acidified / Filtered / Other: Received By: [Redacted] 4/6/21 Condition on receipt: Ambient / Cool / Frozen / Other:
--	---

**Comments:**

---

**Marketing Survey - where did you find us?**  
 Word of mouth  Magazine  Google search  Other

Sample Analysis Request																										
Price List Code (e.g. SWPACK-06)																										
TSS- SW51MG-003  Nutrients- Dissolved- SWPACK-020	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td></tr> <tr><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td></tr> <tr><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td></tr> <tr><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td></tr> <tr><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td><td style="width: 20%;"></td></tr> </table>																									

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	TSS- SW51MG-003	Nutrients- Dissolved- SWPACK-020
	SW1	300	4/6/21			Water	X	X
	SW2	300	4/6/21			Water	X	X
	SW3	300	4/6/21			Water	X	X

## Appendix F. Full Laboratory Results

## RESULTS OF WATER ANALYSIS

3 samples supplied by Ecoteam on 4/06/2021 . Lab Job No. K7741.

Samples submitted by [REDACTED] . Your Job: SMC010-Blakebrook WQ-Surface Water-June 21

13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1	Sample 2	Sample 3
		SW1	SW2	SW3
		<i>Job No.</i>	<i>K7741/1</i>	<i>K7741/2</i>
		<i>K7741/1</i>	<i>K7741/2</i>	<i>K7741/3</i>
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	14	11	10
Phosphate (mg/L P)	APHA 4500 P-G	<0.005	0.025	0.024
Nitrate (mg/L N)	APHA 4500 NO <sub>3</sub> -F	<0.005	0.178	0.120
Nitrite (mg/L N)	APHA 4500 NO <sub>2</sub> -I	<0.005	<0.005	0.043
Ammonia (mg/L N)	APHA 4500 NH <sub>3</sub> -H	0.025	0.019	0.014

### Notes:

1. 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion).
- 2 Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- 3 Analysis conducted between sample arrival date and reporting date.
- 4 \*\* NATA accreditation does not cover the performance of this service.
- 5 .. Denotes not requested.
- 6 This report is not to be reproduced except in full.
- 7 All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request).
- 8 Results relate only to the samples tested.
- 9 This report was issued on 11/06/2021.



Monday 20<sup>th</sup> September 2021

Environmental Engineer & Director

██████████@ecoteam.com.au

To: ██████████  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

mob: ██████████  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Surface Water Quality Monitoring Results & Report for Blakebrook Quarry**

*Reporting period: 1<sup>st</sup> July 2021 to 1<sup>st</sup> September 2021*

**1.0 INTRODUCTION**

Ecoteam is engaged to undertake quarterly surface water quality on behalf of Lismore City Council for the Blakebrook Quarry. This report presents results from the September 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

**2.0 PROJECT AIMS AND SAMPLING OBJECTIVES**

The aim of the surface water monitoring program is to monitor surface water quality surrounding the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Surface Water) - Work Method Statement 3. The project objectives are to detect changes in water quality within surface water which may be a result of the Blakebrook Quarry activities.

**4.0 SAMPLING LOCATIONS**

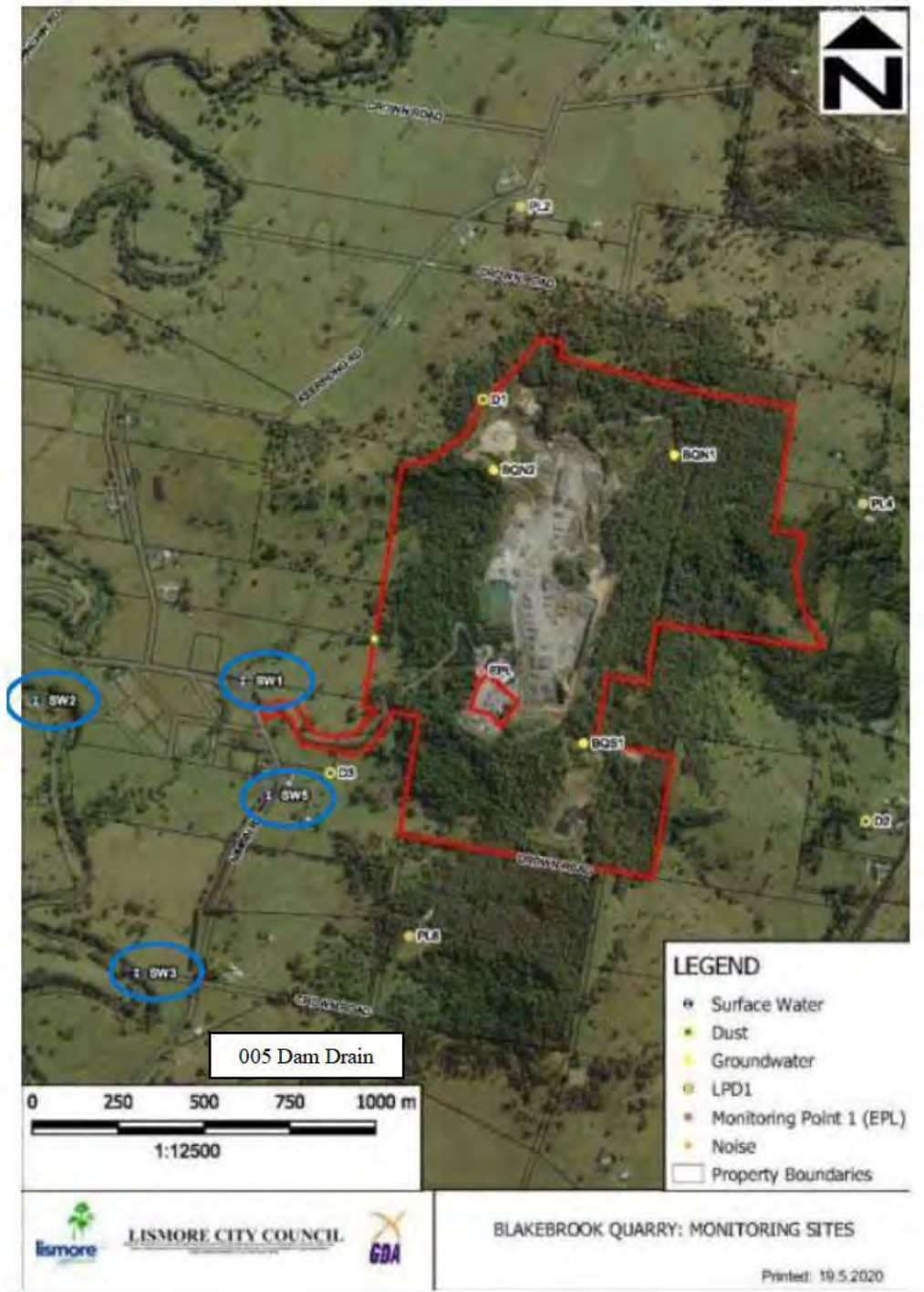
Samples were collected from 4 of the 4 surface water sample sites. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly surface water sampling sites, sample codes and site information.

Location	Easting	Northing	Description
SW1	523693	6818008	Flow under Nimbin Road, downstream of LPD1 and LPD2
SW2	523124	6817955	Upstream of site, discharges in Terania Creek
SW3	523422	6817156	Downstream of site, discharges in Terania Creek
SW5	523807	6817669	Flow under Nimbin Road, downstream of LPD3

A stockpile was situated above sample location SW1. No sediment and erosion controls were present around the bottom edge of the stockpile (see **Appendix B** for site photos).

**Appendix A - Sampling Locations in blue**



**Figure 1.** Map of monthly of surface water sampling sites (Source: Lismore City Council)

**5.0 SAMPLING METHODOLOGY**

Sampling was undertaken by [REDACTED] and [REDACTED] on Thursday 2<sup>nd</sup> September 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe. Oil and Grease was visually assessed. The calibration certificate for the AquaTROLL is included as **Appendix C**. Sample collection methods and in-situ results are presented in **Appendix A (Table 2)**.

Samples were stored on ice and dropped off the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix D**.

## 6.0 RESULTS

### 7.1 Physico-chemical Results

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**. There were no surface sheens visible at any sites, therefore Oil and Grease was not present.

### 7.2 Laboratory Results

The chain of custody form is included in **Appendix E**. A full copy of the laboratory results is included as **Appendix F**.

Kind regards,

██████████  
Environmental Engineer & Director

██████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123

## APPENDIX A – Water Quality Result comparison to WQOs

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Blakebrook Surface Water Sample Information				
Site name	SW1	SW2	SW3	SW5
Site Type	Downstream	Upstream	Downstream	Downstream
Date	02/09/21	02/09/21	02/09/21	02/09/21
Time	9:35	10:00	10:45	10:15
Sample Method	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 200mm deep
Oil and Grease	Not Present	Not Present	Not Present	Not Present
Odour	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Moderate flow, Slightly turbid	Moderate flow, Slightly turbid	Moderate flow, Slightly turbid	Slight flow
Analyte	Water Quality Observations			
pH	9.53	9.22	8.41	8.33
EC $\mu\text{S/cm}$	413.16	151.19	223.05	185.13
DO (%)	73.98	87.66	94.09	70.04
Temperature ( $^{\circ}\text{C}$ )	19.01	19.17	19.44	18.24
ORP	1,379.3	1,484.6	1,442.2	1,470.3
Turbidity	50.0	15.7	21.9	24.5

## Appendix B - Site Photos



**Site SW1 –  
Creek (Downstream)  
(02/09/2021)**



**Site SW1 –  
Creek (Downstream)  
Stockpile located above  
sample site  
(02/09/2021)**





**Site SW2 –  
Leycester Creek (Upstream)  
(02/09/2021)**



**Site SW3  
Leycester Creek (Upstream)  
(02/09/2021)**



**Site SW5  
Drain (Downstream)  
Flowing  
(02/09/2021)**

# Appendix C - Calibration certificate for AquaTROLL

<p>Thermo Fisher Scientific Australia Pty Ltd          ABN 52 058 390 917          5 Canbbean Drive          Scoresby VIC 3179          Phone: 1 300 735 295          Fax: 03 9763 1169</p>	<h2 style="margin: 0;">ELECTROCHEMICAL INSTRUMENT          MAINTENANCE &amp; CALIBRATION REPORT</h2>
<p>Customer: Ecotechnology Australia PTY Ltd          Address: 13 Ewing st          Lismore NSW 2480</p>	
<p>Attention: <span style="background-color: black; color: black;">[REDACTED]</span></p>	

Make: In-Situ	Lab.ID/Assett No. NA	Calibration Date: 27-05-2021
Model: AquaTroll 400	Customer O/No. PO-0063	Next Calibration: 05-2022
Serial No: 741219 / 746352	Location: NA	Call Number: SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

Calibration/ Accuracy Tests								
Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 +/- 30	-7.7	175.5 +/- 30	163.1			Pass
✓ Slope (pH)		-59.1 +/- 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass

Reference Instruments Used			
Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

**General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service**

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction.  
 Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV.  
 Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Date  
27<sup>th</sup> May 2021

## **Appendix D. Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential
- Oil and Grease
- Turbidity

### **Laboratory**

- Nitrate
- Nitrite
- Phosphate
- Ammonium
- Total suspended Solids (TSS)

## Appendix E - Chain of Custody Form

CHAIN OF CUSTODY																					
 <p>PO Box 157 ( Military Road) LISMORE NSW 2480 P  02 6620 3678 F  02 6620 3957 eal@scu.edu.au www.scu.edu.au/eal</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Submitting Client Details</th> <th style="width: 50%;">Billing Client Details</th> </tr> </thead> <tbody> <tr> <td>Quote Id: EALQ5821</td> <td>ABN:</td> </tr> <tr> <td>Job Ref: SMC010-Blakebrook WQ- Surface Water- SEPT21</td> <td>Company Name: Ecoteam</td> </tr> <tr> <td>Company Name: Ecoteam</td> <td>Contact Person: [REDACTED]</td> </tr> <tr> <td>Contact Person: [REDACTED]</td> <td>Phone: 02 6621 5123</td> </tr> <tr> <td>Phone: 66215123</td> <td>Mobile: [REDACTED]</td> </tr> <tr> <td>Mobile: [REDACTED]</td> <td>Fax:</td> </tr> <tr> <td>Fax:</td> <td>Email: [REDACTED]</td> </tr> <tr> <td>Email: [REDACTED]</td> <td>Postal Address: 13 Ewing Street, Lismore</td> </tr> <tr> <td>Postal Address: 13 Ewing Street, Lismore</td> <td></td> </tr> </tbody> </table>	Submitting Client Details	Billing Client Details	Quote Id: EALQ5821	ABN:	Job Ref: SMC010-Blakebrook WQ- Surface Water- SEPT21	Company Name: Ecoteam	Company Name: Ecoteam	Contact Person: [REDACTED]	Contact Person: [REDACTED]	Phone: 02 6621 5123	Phone: 66215123	Mobile: [REDACTED]	Mobile: [REDACTED]	Fax:	Fax:	Email: [REDACTED]	Email: [REDACTED]	Postal Address: 13 Ewing Street, Lismore	Postal Address: 13 Ewing Street, Lismore	
Submitting Client Details	Billing Client Details																				
Quote Id: EALQ5821	ABN:																				
Job Ref: SMC010-Blakebrook WQ- Surface Water- SEPT21	Company Name: Ecoteam																				
Company Name: Ecoteam	Contact Person: [REDACTED]																				
Contact Person: [REDACTED]	Phone: 02 6621 5123																				
Phone: 66215123	Mobile: [REDACTED]																				
Mobile: [REDACTED]	Fax:																				
Fax:	Email: [REDACTED]																				
Email: [REDACTED]	Postal Address: 13 Ewing Street, Lismore																				
Postal Address: 13 Ewing Street, Lismore																					

This section will be destroyed after being processed. Only Complete CWV number if you are supplying the original hardcopy to EAL.

Date: \_\_\_\_\_ Signed: \_\_\_\_\_

**Payment Method:**

- Purchase Order
- Cheque
- Invoice (prior approval required)
- Credit Card: Mastercard / Visa No: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CWV: \_\_\_\_\_

**Comments:**

**Marketing Survey – where did you find us?**

- Word of mouth
- Magazine
- Google search
- Other

Relinquished By: [REDACTED]
Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: _____
Received By: [REDACTED] 3.9.21 [REDACTED]
Condition on receipt: Ambient / <u>Cooly Frozen</u> / Other: _____

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	TSS- SWSING-003		Nutrients- Dissolved- SW-PACK -020		Sample Analysis Request					
							X	X	X	X	Price List Code (e.g. SW-PACK-06)					
	SW1	300	2/9/21			Water	X	X								
	SW2	300	2/9/21			Water	X	X								
	SW3	300	2/9/21			Water	X	X								
	SW5	300	2/9/21			Water										

*110998x 9 Water*

## **Appendix F. Full Laboratory Results**

## RESULTS OF WATER ANALYSIS

4 samples supplied by Ecoteam on 3/09/2021 . Lab Job No. M0998.

Samples submitted by [REDACTED] Your Job: SMC010-Blakebrook WQ- Surface Water-SEPT21

13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1 SW1	Sample 2 SW2	Sample 3 SW3	Sample 4 SW5
	<i>Job No.</i>	<i>M0998/1</i>	<i>M0998/2</i>	<i>M0998/3</i>	<i>M0998/4</i>
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	34	9	19	6
Nitrate (mg/L N)	APHA 4500 NO <sub>3</sub> -F	0.276	0.014	0.070	1.420
Nitrite (mg/L N)	APHA 4500 NO <sub>2</sub> -I	0.011	<0.005	<0.005	<0.05
Phosphate (mg/L P)	APHA 4500 P-G	0.028	0.016	0.024	0.468
Ammonia (mg/L N)	APHA 4500 NH <sub>3</sub> -H	0.081	0.083	0.086	0.154

### Notes:

- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion).
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- Analysis conducted between sample arrival date and reporting date.
- \*\* NATA accreditation does not cover the performance of this service.
- .. Denotes not requested.
- This report is not to be reproduced except in full.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request).
- Results relate only to the samples tested.
- This report was issued on 20/09/2021.



**NATA**  
ACCREDITATION

Accreditation No. 14960  
Accredited for compliance  
with ISO/IEC 17025 Testing

Wednesday 15<sup>th</sup> September 2021

Environmental Engineer & Director

██████████@ecoteam.com.au

To: ██████████  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

mob: ██████████  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Surface Water Quality Monitoring Results & Report for Blakebrook Quarry**

*Reporting period: 1<sup>st</sup> September 2021 to 1<sup>st</sup> December 2021*

**1.0 INTRODUCTION**

Ecoteam is engaged to undertake quarterly surface water quality on behalf of Lismore City Council for the Blakebrook Quarry. This report presents results from the December 2021 sampling round.

**2.0 PROJECT AIMS AND SAMPLING OBJECTIVES**

The aim of the surface water monitoring program is to monitor surface water quality surrounding the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Surface Water) - Work Method Statement 3. The project objectives are to detect changes in water quality within surface water which may be a result of the Blakebrook Quarry activities.

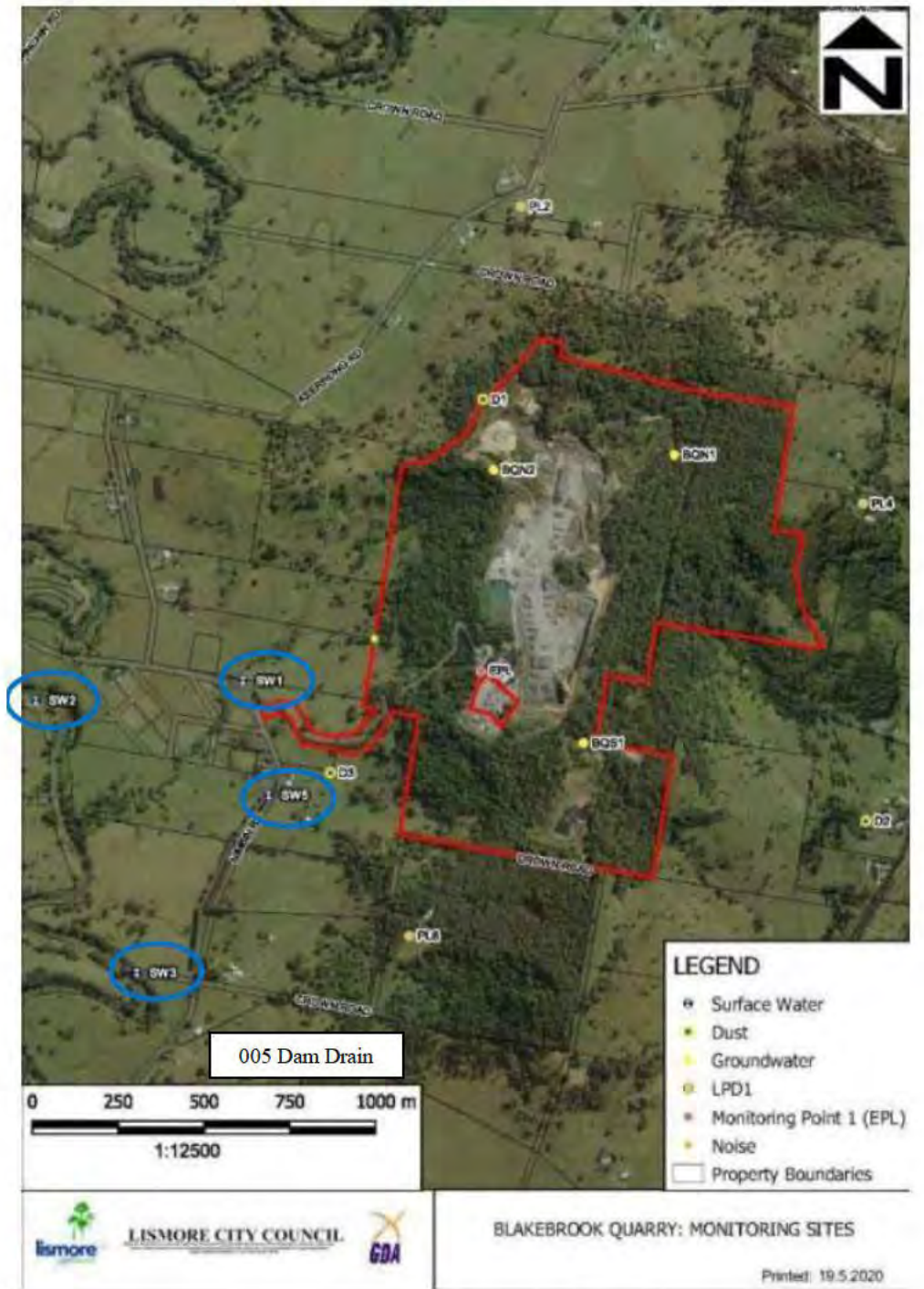
**3.0 SAMPLING LOCATIONS**

Samples were collected from 4 of the 4 surface water sample sites. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly surface water sampling sites, sample codes and site information.

Location	Easting	Northing	Description
SW1	523693	6818008	Flow under Nimbin Road, downstream of LPD1 and LPD2
SW2	523124	6817955	Upstream of site, discharges in Terania Creek
SW3	523422	6817156	Downstream of site, discharges in Terania Creek
SW5	523807	6817669	Flow under Nimbin Road, downstream of LPD3

**Appendix A - Sampling Locations in blue**



**Figure 1.** Map of monthly of surface water sampling sites (Source: Lismore City Council)

**4.0 SAMPLING METHODOLOGY**

Sampling was undertaken by [REDACTED] and [REDACTED] on Thursday 1<sup>st</sup> December 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe. Oil and Grease was visually assessed. The calibration certificate for the AquaTROLL is included as **Appendix B**. Sample collection methods and in-situ results are presented in **Appendix A (Table 2)**.

Samples were stored on ice and dropped off the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix C**.



## 5.0 RESULTS

### 5.1 Physico-chemical Results

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**. There were no surface sheens visible at any sites, therefore Oil and Grease was not present. River and creek levels were high due to a heavy rainfall event prior to sampling.

### 5.2 Laboratory Results

The chain of custody form is included in **Appendix D**. A full copy of the laboratory results is included as **Appendix F**.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123


ABN: 82 106 758 123

## APPENDIX A – Water Quality Result comparison to WQOs

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Blakebrook Surface Water Sample Information				
Site name	SW1	SW2	SW3	SW5
Site Type	Downstream	Upstream	Downstream	Downstream
Date	01/12/2021	01/12/2021	01/12/2021	01/12/2021
Time	16:05	16:20	16:45	16:30
Sample Method	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 300mm deep	Grab Sample 200mm deep
Oil and Grease	Not Present	Not Present	Not Present	Not Present
Odour	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	High flow, Very turbid	High flow, Very turbid	High flow, Very turbid	High flow, Moderately turbid
Analyte	<b>Water Quality Observations</b>			
pH	8.77	8.20	7.53	7.70
EC $\mu\text{S}/\text{cm}$	145.36	74.73	84.71	74.53
DO (%)	94.49	84.26	78.68	79.32
Temperature ( $^{\circ}\text{C}$ )	23.34	22.32	21.99	24.31
ORP	1167.01	1259.11	1316.41	1300.06
Turbidity	128.0	130.0	140.1	91.2

## Appendix B - Calibration certificate for AquaTROLL

 <p>Thermo Fisher Scientific Australia Pty Ltd ABN 52 058 390 917 5 Canbbean Drive Scoresby VIC 3179 Phone: 1 300 735 295 Fax: 03 9763 1169</p>	<h3>ELECTROCHEMICAL INSTRUMENT MAINTENANCE &amp; CALIBRATION REPORT</h3>	
	Customer: Ecotechnology Australia PTY Ltd Address: 13 Ewing st Lismore NSW 2480  Attention: <span style="background-color: black; color: black;">XXXXXXXXXX</span>	

Make:	In-Situ	Lab.ID/Assett No.	NA	Calibration Date:	27-05-2021
Model:	AquaTroll 400	Customer O/No.	PO-0063	Next Calibration:	05-2022
Serial No.:	741219 / 746352	Location:	NA	Call Number:	SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

#### Calibration/ Accuracy Tests

Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 +/- 30	-7.7	175.5 +/- 30	163.1			Pass
✓ Slope (pH)		-59.1 +/- 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass

#### Reference Instruments Used

Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

#### General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction.  
 Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV.  
 Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Engineer's Name  
XXXXXXXXXX

Date  
 27<sup>th</sup> May 2021

Issue 1

Oct 06

G0232

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Page 1 of 1

## **Appendix C. Full List of Sampling Analytes**

### **Field**


- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential
- Oil and Grease
- Turbidity

### **Laboratory**

- Nitrate
- Nitrite
- Phosphate
- Ammonium
- Total suspended Solids (TSS)

## Appendix D - Chain of Custody Form

### CHAIN OF CUSTODY

 <p>PO Box 157 (Military Road) LISMORE NSW 2480 P  02 6620 3678 F  02 6620 3957 eal@scu.edu.au www.scu.edu.au/eal</p>	<b>Submitting Client Details</b> Quote Id: EALQ5821 Job Ref: SMC010-Blakebrook WQ- Surface Water- DEC21 Company Name: Ecoteam Contact Person: [Redacted] Phone: 66215123 Mobile: [Redacted] Fax: [Redacted] Email: [Redacted] Postal Address: 13 Ewing Street, Lismore	<b>Billing Client Details</b> ABN: [Redacted] Company Name: Ecoteam Contact Person: [Redacted] Phone: 02 66215123 Mobile: [Redacted] Fax: [Redacted] Email: [Redacted] Postal Address: 13 Ewing Street, Lismore
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This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL. Date \_\_\_\_\_ Signed \_\_\_\_\_

**Payment Method:**

Purchase Order

Cheque

Invoice (prior approval required)

Credit Card Mastercard / Visa No: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CVV: \_\_\_\_\_

Relinquished By: [Redacted]

Preservation: None (ice) / Ice bricks / Acidified / Filtered / Other: \_\_\_\_\_

Received By: [Redacted] 2/12/21 12PM

Condition on receipt: Ambient / Cool / Frozen / Other: \_\_\_\_\_

**Comments:**

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**Marketing Survey – where did you find us?**

Word of mouth  Magazine  Google search  Other

		Sample Analysis Request														
		Price List Code (e.g. SW-PACK-06)														
Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)										
							TSS- SW-SING-003	Nutrients- Dissolved- SW-PACK-023								
	SW1	300	1/12/21			Water	X	X								
	SW2	300	1/12/21			Water	X	X								
	SW3	300	1/12/21			Water	X	X								
	SW5	200	1/12/21			Water	X	X								

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)
	SW1	300	1/12/21			Water
	SW2	300	1/12/21			Water
	SW3	300	1/12/21			Water
	SW5	200	1/12/21			Water

## Appendix E. Full Laboratory Results

## RESULTS OF WATER ANALYSIS

4 samples supplied by Ecoteam on 2/12/2021 . Lab Job No. M4071.

Samples submitted by [REDACTED] . Your Job: 5MCO10-Blakebrook WQ- Surface Water - DEC21

13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1 SW1	Sample 2 SW2	Sample 3 SW3	Sample 4 SW5
	<i>Job No.</i>	<i>M4071/1</i>	<i>M4071/2</i>	<i>M4071/3</i>	<i>M4071/4</i>
Total Suspended Solids (mg/L)	GFC equiv. filter - APHA 2540-D	21	48	66	13
Phosphate (mg/L P)	APHA 4500 P-G	0.099	0.110	0.138	0.473
Nitrate (mg/L N)	APHA 4500 NO <sub>3</sub> -F	0.332	0.184	0.176	<0.005
Nitrite (mg/L N)	APHA 4500 NO <sub>2</sub> -I	0.008	0.015	0.017	0.015
Ammonia (mg/L N)	APHA 4500 NH <sub>3</sub> -H	0.050	0.044	0.051	0.050

### Notes:

- 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion).
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- Analysis conducted between sample arrival date and reporting date.
- \*\* NATA accreditation does not cover the performance of this service.
- ... Denotes not requested.
- This report is not to be reproduced except in full.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 10/12/2021.



# APPENDIX Q

Ground Water Monitoring Reports - 2021



Thursday 18<sup>th</sup> March 16, 2021

Environmental Engineer &  
Director

To: [REDACTED]  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

[REDACTED]@ecoteam.com.au  
mob: [REDACTED]  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Groundwater Quality Monitoring Results & Report for Blakebrook Quarry**

*Reporting period: 1<sup>st</sup> December 2020 to 1<sup>st</sup> March 2021*

**1.0 INTRODUCTION**

Ecoteam is engaged to undertake quarterly groundwater quality and water level monitoring on behalf of Lismore City Council for the Blakebrook Quarry, Blakebrook, NSW. This report presents results from the March 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

**2.0 PROJECT AIMS AND SAMPLING OBJECTIVES**

The aim of the groundwater monitoring is to monitor groundwater quality and water levels at the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Groundwater) -Work Method Statement 2. The project objectives are to detect any potential changes in water quality or water levels within groundwater wells which may be a result of the Blakebrook Quarry activities, to calibrate the level meters, and assess the functioning of water levels meters at the site.

**4.0 SAMPLING LOCATIONS**

Water samples and level data were collected from all 9 groundwater bores. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly groundwater sampling sites, sample codes and well information

Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
Northern Two Clusters of Monitoring Bores (re. BQN1A, BQN1B, BQN2A, BQN2B, NOW & Cook p4 (2016))									
BQN1-B (BQN1-S)	GW307 323	524993.7	6818662.9	25/7/13	30	15 - 19	30	12 - 21	4.5
BQN1-A (BQN1-I)	GW307 322	524757.0	6818728.0	26/7/13	60	52 - 60	48	48 - 60	42.5
BQN1-D		524994	6818654.5	29/8/16	115	56 - 63; 99 - 109	115	97 - 109	?
BQN2-B (BQN2-S)	GW307 325	524437.7	6818619	28/7/13	42	28 - 38	42	30 - 42	28.5
BQN2-A (BQN2-S)	GW307 324	524436.7	6818615.5	27/7/13	60	52 - 60	60	51 - 60	31.3
BQN2-D		524447.5	6818616.5	29/8/16	133	19 - 24; 44 - 46.5; 112 - 117	133	109 - 121	
Southern Cluster of Monitoring Bores (re. Form A - particulars of completed work, 25/08/16 & GS letter 27/07/17)									
Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
BQS1-S		524684.5	6817848.6	25/8/16	55	38 - 43	55	40 - 52	30
BQS1-I		524681.5	6817842.8	24/8/16	73	34 - 39; 64 - 70	73	58 - 70	30
BQS1-D		524678	6817837.2	23/8/16	102.7	34 - 39; 64 - 72; 95 - 99	102.7	87.7 - 99.7	30



**Figure 1.** Map of monthly of groundwater sampling sites (Source: Lismore City Council)

## 5.0 SAMPLING METHODOLOGY

Sampling was undertaken by [REDACTED] on Monday 1<sup>st</sup> and Tuesday 2<sup>nd</sup> March 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe and level information was downloaded using the Vu-Situ APP and Wireless TROLL Com instrument and cable connector. Samples collection methods and in-situ results are presented in **Appendix A (Table 2)**. The calibration certificate for the AquaTROLL is included as **Appendix B**.

Samples were stored on ice and dropped off at the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix C**.

## **6.0 RESULTS**

### **7.1 Physico-chemical Results**

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**.

### **7.2 Laboratory Results**

The chain of custody form is included in **Appendix D**. A full copy of the laboratory results is included as **Appendix E**.

### **7.2 Well Level Results**

Well level results for the past three months and the last five years are presented in **Appendix F**. Groundwater levels have risen significantly in all shallow and intermediate wells (BQS1-S, BQS1-I BQN1-B BQN1-A BQN2-B and BQN2-A) and remained consistent in deep wells in the South (BQS1-D) and North 1 clusters (BQN1-D) over the past three months. Groundwater levels have risen in the North 2 Cluster deep well (BQN1-D).

## **9.0 Summary of Results and Recommendations**

- Groundwater levels have risen significantly in all shallow and intermediate wells (BQS1-S, BQS1-I BQN1-B BQN1-A BQN2-B and BQN2-A)
- Groundwater levels have remained consistent in deep wells in the South (BQS1-D) and North 1 cluster (BQN1-D)
- Groundwater levels have risen in the North 2 Cluster deep well (BQN1-D).
- Battery levels in all water level meters remain above 50%.
- All level meters appear to be functioning adequately.
- All level meters have been upgraded and calibrated.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123

## APPENDIX A- Physicochemical and sample Information

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Sample Information	Blakebrook Quarry Groundwater Well Sampling Information								
	SOUTH			NORTH 1			NORTH 2		
Site Name	BQS1S	BQS1I	BQSID	BQN1B	BQN1A	BQN1D	BQN2B	BQN2A	BQN2D
Well Type	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep
Date	02/03/21	02/03/21	02/03/21	01/03/21	01/03/21	01/03/21	01/03/21	01/03/21	01/03/21
Time	10:40	11:20	12:00	11:20	12:30	13:30	8:15	10:10	9:00
Recorded Depth 1	25.99	43.67	80.40	5.70	47.20	100.20	29.41	30.20	88.14
Recorded Depth 2	26.15	44.23	80.40	5.76	47.10	100.13	29.70	30.90	88.19
Level Meter Calibrated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Level	66%	66%	66%	66%	66%	66%	66%	66%	66%
Memory Level	74%	75%	71%	71%	84%	74%	68%	78%	81%
Sample Method	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	12 volt submersible pump	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone
Odour	Not Present	Yes	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Clear water	Slightly turbid water	Clear water	Clear water- Film present on level meter	Clear water	Slightly turbid water	Clear water	Clear water	Slightly turbid
Fresh Water WQOs	Water Quality Observations								
pH	7.90	6.59	7.88	7.04	8.14	8.82	9.04	8.19	8.81
EC $\mu$ S/cm	229.6	1,254.2	728.4	893.1	1,635.2	1,260.3	1,123.3	594.82	808.3
DO (%)	60.4	50.7	97.4	18.0	62.7	50.5	100.1	67.7	51.1
Temperature (°C)	24.3	24.3	25.9	20.9	25.1	25.6	25.0	23.7	23.7
ORP	122.4	-26.6	9.6	-17.0	58.7	86.7	62.3	68.7	50.0

## Appendix B - Calibration certificate for AquaTROLL



Innovation in Water Monitoring

### Calibration Report

**Instrument Details:**

Instrument Model: Aqua TROLL® 400  
 Full Scale Pressure Range: 0 - 250 ft (0 - 76 m)  
 Serial Number: 746352  
 Manufacture Date: 2020-06-08

**Calibration Details:**

Calibration Result: PASS  
 Calibration Date: 2020-05-14  
 Nominal Range of Applied Temperature: 0 C to +50 C  
 Temperature Accuracy Specification: +/-0.1 C from 0 C to +50 C  
 Nominal Range of Applied Pressure: 0 - 250 feet  
 Pressure Accuracy Specification: +/-0.3% FS  
 Conductivity Calibration: Pass with a cell constant of 1.00.  
 Rugged Dissolved Oxygen Calibration: Pass with an optical phase difference of +/- 2 degrees.  
 pH/ORP Check: Pass with mV readings of +/- 5 mV.

**Post-Calibration Check:**

Parameter	Applied (PSI)	Reported (PSI)	Deviation (PSI)
Pressure	7	7.005	-0.005
Pressure	65	64.991	0.009
Pressure	123	122.995	0.005
Pressure	84.333	84.346	-0.013
Pressure	45.667	45.692	-0.025
Pressure	7	7.002	-0.002

**Calibration Procedures and Equipment Used:**

Automated calibration procedures used.  
 Calibrated in 900, 9000, & 90000 µS/cm conductivity standards.  
 Manu MENSOR Model 8100 Serial No 570135  
 Manu HART Model 1504 Serial No B42917  
 Manu Instrulab Model 406 Serial No 1-31154

**Notes:**

- Standards used in the calibration are traceable to the National Institute of Standards and Technology.
- This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
- A calibration interval of 12 to 18 months is recommended.
- The post-calibration data is collected at nominal +15C.
- 1.0 PSI = 6.894757 kPa.

## **Appendix C - Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential

### **Laboratory**

- Total Petroleum Hydrocarbons (TPH,) C10-C40
- Benzene, Toluene, Ethylbenzene Xylene (BTEX)
- Total iron
- Total lead
- Dissolved iron
- Dissolved lead
- Total oils and grease -Hexane Extractable
- Major ions (Sulfate, Chloride)
- Major cations (Calcium, Magnesium, sodium, potassium)

# Appendix D - Chain of Custody Form

## CHAIN OF CUSTODY

<p>Environmental Analysis Laboratory Southern Cross University</p> <p>PO Box 157 ( Military Road) LISMORE NSW 2480 P  02 6620 3578 F  02 6620 3957 ea@scu.edu.au, www.scu.edu.au/eal</p>	<b>Submitting Client Details</b> Quote ID: EALQ5821 Job Ref: SMO10-Dlakesbrook WC- Groundwater- MARCI21 Company Name: Ecoteam Contact Person: [REDACTED] Phone: 66215123 Mobile: [REDACTED] Fax: [REDACTED] Email: [REDACTED] Postal Address: 13 Ewing Street, Lismore	<b>Billing Client Details</b> ABN [REDACTED] Company Name: Ecoteam Contact Person: [REDACTED] Phone: 02 66215123 Mobile: [REDACTED] Fax: [REDACTED] Email: [REDACTED] Postal Address: 13 Ewing Street, Lismore
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This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original harmony to EAL.

Date: \_\_\_\_\_ Signed: \_\_\_\_\_

**Payment Method:**

- Purchase Order
- Cheque
- Invoice (prior approval required)
- Credit Card: Mastercard / Visa No: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CVV: \_\_\_\_\_

**Comments:**

DO NOT TEST FOR Ph or EC

**Marketing Survey - where did you find us?**

- Word of mouth
- Magazine
- Google search
- Other

Relinquished By: [REDACTED]

Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: \_\_\_\_\_

Received By: [REDACTED] 2/3/21

Condition on receipt: Ambient / Cool / Frozen / Other: \_\_\_\_\_

**Sample Analysis Request**

Price List Code (e.g. SW-PAK-06)

	Salt Suite- (no pH or EC) SW-PAK-014	IP11 and BTEX SW-PAK-042	TOG SW-SING-001	Dissolved Iron SW-SING-103	Dissolved Lead SW-SING-103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104
Water	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x
Water	x	x	x	x	x	x	x

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)
1	BQN1-B		1/3/21			Water
2	BQN1-A		1/3/21			Water
3	BQN1-D		1/3/21			Water
4	BQN2-B		1/3/21			Water
5	BQN2-A		1/3/21			Water
6	BQN2-D		1/3/21			Water

EAL Chain of Custody Issue: V1.1 27/09/2018

EAL Project Reference:

OFORM 4.2 Page 1 of 2

K4177 x 9 water

CHAIN OF CUSTODY

Comments:

DO NOT TEST FOR Ph or EC

Marketing Survey – where did you find us?

Word of mouth  Magazine  Google search  Other

**Sample Analysis Request**

Price List Code (e.g. SW-PACK-06)

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Salt Suite- (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-001	Dissolved Iron SW-SING103	Dissolved Lead SW-SING103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104				
7	BQS1-S		2/3/21			Water	x	x	x	x	x	x	x				
8	BQS1-I		2/3/21			Water	x	x	x	x	x	x	x				
9	BQS1-D		2/3/21			Water	x	x	x	x	x	x	x				

Tab through for extra lines



## Appendix E - Full Laboratory Results

## RESULTS OF WATER ANALYSIS

9 samples supplied by Ecoteam on 2/03/2021. Lab Job No. K4177.

Samples submitted by [REDACTED] Your Job SMC010- Blakebrook WQ - Groundwater - March21

13 Living Street LisMORE NSW 2100

Parameter	Methods reference	Sample 1 BQN1-B	Sample 2 BQN1-A	Sample 3 BQN1-D	Sample 4 BQN2-B	Sample 5 BQN2-A	Sample 6 BQN2-D	Sample 7 BQS1-S	Sample 8 BQS1-I	Sample 9 BQS1-D
	Job No.	K4177/1	K4177/2	K4177/3	K4177/4	K4177/5	K4177/6	K4177/7	K4177/8	K4177/9
pH	APHA 4500-H -B	7.00	9.22	8.43	9.06	7.75	8.77	8.38	8.01	8.19
Conductivity (EC) (dS/m)	APHA 2510-B	1.001	1.767	1.378	1.044	0.680	0.908	0.252	1.442	1.763
Total Dissolved Solids (mg/L)	** Calculation using EC x 500	681	1,202	937	710	462	616	171	981	1,199
Bicarbonate (Alkalinity) (mg/L CaCO <sub>3</sub> equivalent)	** Total Alkalinity - APHA 2320	198	121	124	120	187	342	96	181	117
Water Hardness (mg/L CaCO <sub>3</sub> equivalent)	** Using Ca and Mg calculation	137	182	59	78	97	11	47	99	41
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	<2	<2	<2	2	3	5	<2	<2	<2
Sodium (mg/L)	APHA 3125 ICPMS <sup>1004 102</sup>	163	298	278	184	112	205	35.5	254	348
Potassium (mg/L)	APHA 3125 ICPMS <sup>1004 102</sup>	4.21	6.69	2.78	6.70	7.08	2.15	2.38	5.79	4.11
Calcium (mg/L)	APHA 3125 ICPMS <sup>1004 102</sup>	28.3	60.4	13.0	23.9	23.7	3.58	11.9	30.4	13.3
Magnesium (mg/L)	APHA 3125 ICPMS <sup>1004 102</sup>	16.0	7.55	6.42	4.54	9.17	0.44	4.15	5.48	1.80
Sodium Absorption Ratio (SAR)	** By calculation	8.1	9.6	15.7	9.0	4.9	27.2	2.3	11.1	23.7
Chloride (mg/L)	APHA 3125 ICPMS <sup>1004 102</sup>	232	508	320	244	100	101	17	356	477
Sulfate (mg/L SO <sub>4</sub> <sup>2-</sup> )	APHA 3125 ICPMS <sup>1004 102</sup>	7	21	83	28	19	19	7	12	38
Chloride/Sulfate Ratio	** Calculation	31.7	24.6	3.8	8.7	5.3	5.3	2.6	28.9	12.4
Iron (mg/L)	Total Available - APHA 3125 ICPMS <sup>1004 102</sup>	1.63	2.33	12.2	0.203	0.052	0.083	0.245	0.099	0.455
Lead (mg/L)	Total Available - APHA 3125 ICPMS <sup>1004 102</sup>	0.001	0.003	0.002	0.077	0.001	0.001	<0.001	<0.001	<0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS <sup>1004 102</sup>	0.013	0.055	0.007	<0.005	<0.005	<0.005	<0.005	0.046	<0.005
Lead (mg/L)	Dissolved - APHA 3125 ICPMS <sup>1004 102</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<b>BTEX</b>										
Benzene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report SE 217176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Total Recoverable Hydrocarbons (TRH)</b>										
C8-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<40	<40	<40	<40	<40	<40	<40	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<50	<50	<50	<50	<50	<50	<50	<50	<50
C16-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<100	<100	<100	<100	<100	<100	<100	<100	<100
C28-C38 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<50	<50	<50	<50	<50	<50	<50	<50	<50
C16-C18 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<80	<80	<80	<80	<80	<80	<80	<80	<80
C18-C34 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<200	<200	<200	<200	<200	<200	<200	<200	<200
C34-C48 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<100	<100	<100	<100	<100	<100	<100	<100	<100
Sum C16-C38 Fraction (µg/L or ppb)	Subcontracted: SGS report SE 217176	<100	<100	<100	<100	<100	<100	<100	<100	<100

## Notes:

- Total metals - samples digested with nitric acid; Total available (acid soluble/ extractable) metals - samples acidified with nitric acid to pH <2;  
Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysis
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS).
- 1 mg/L (milligram per litre) 1 ppm (part per million) 1000 µg/L (micrograms per litre) 1000 ppb (part per billion).
- For conductivity 1 dS/m 1 mS/cm 1000 µS/cm.
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise.
- Analysis conducted between sample arrival date and reporting date.
- \*\* NATA accreditation does not cover the performance of this service.
- \_ Denotes not requested.
- This report is not to be reproduced except in full.
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
- Results relate only to the samples tested.
- This report was issued on 16/03/2021.



## Appendix F - Hydrographs

exce



## Blakebrook Quarry- Groundwater Monitoring

# Groundwater Hydrographs

## March 2021



13 Ewing Street, LISMORE  
NSW 2480 Australia

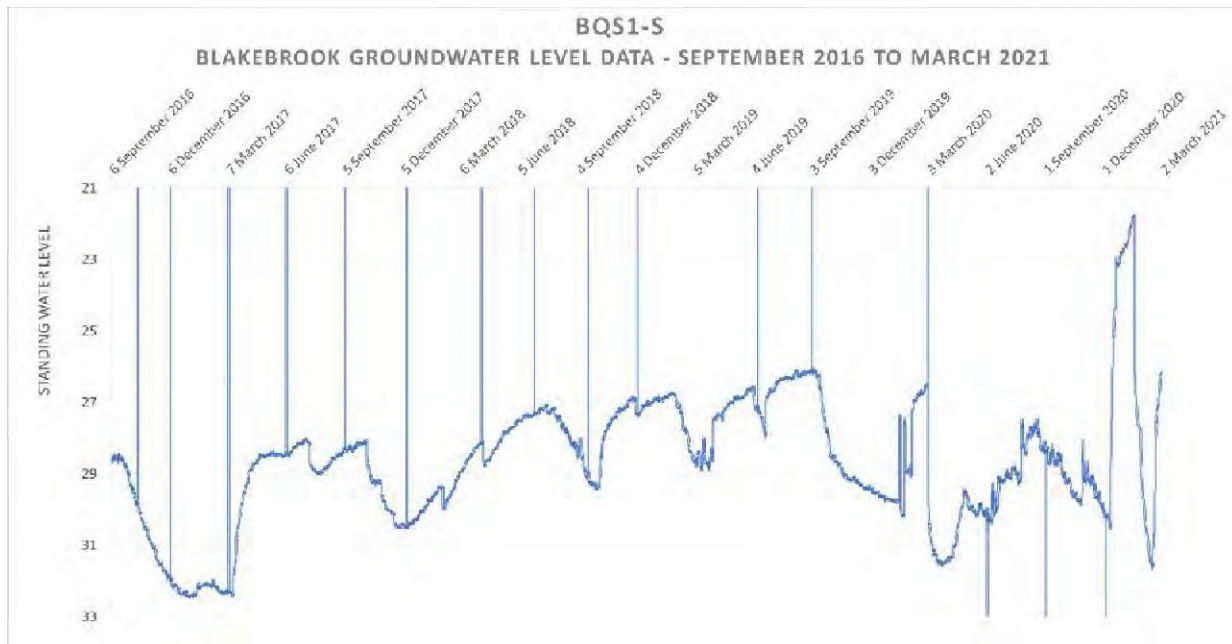
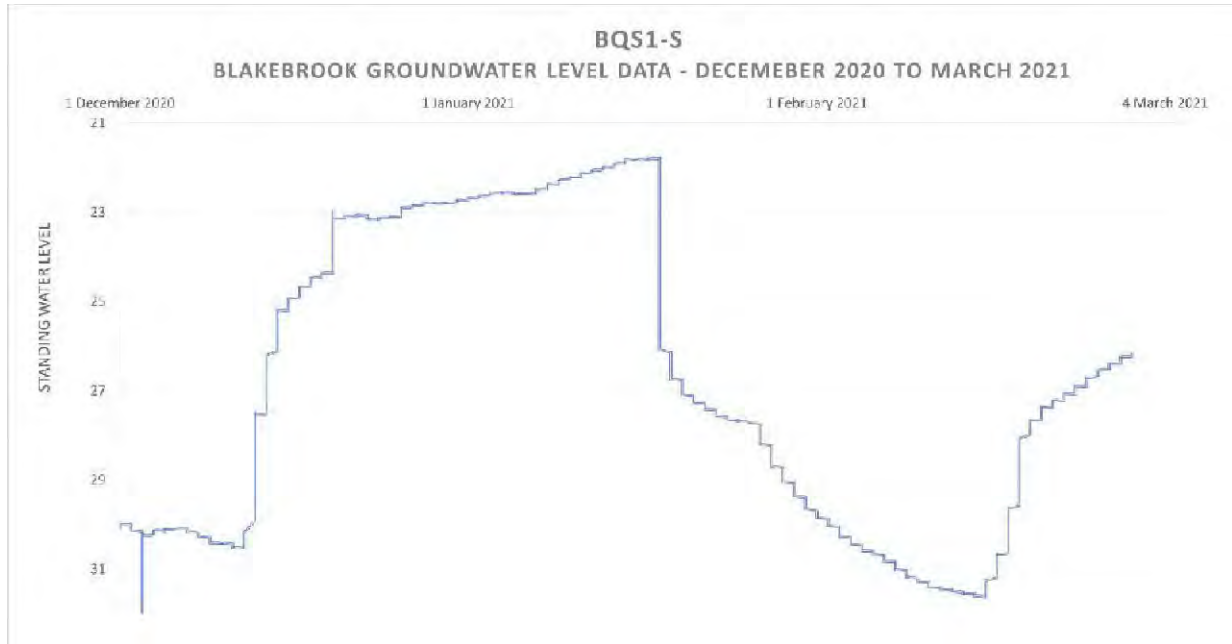
Phone: (02) 6621 5123

Fax: (02) 6621 8123

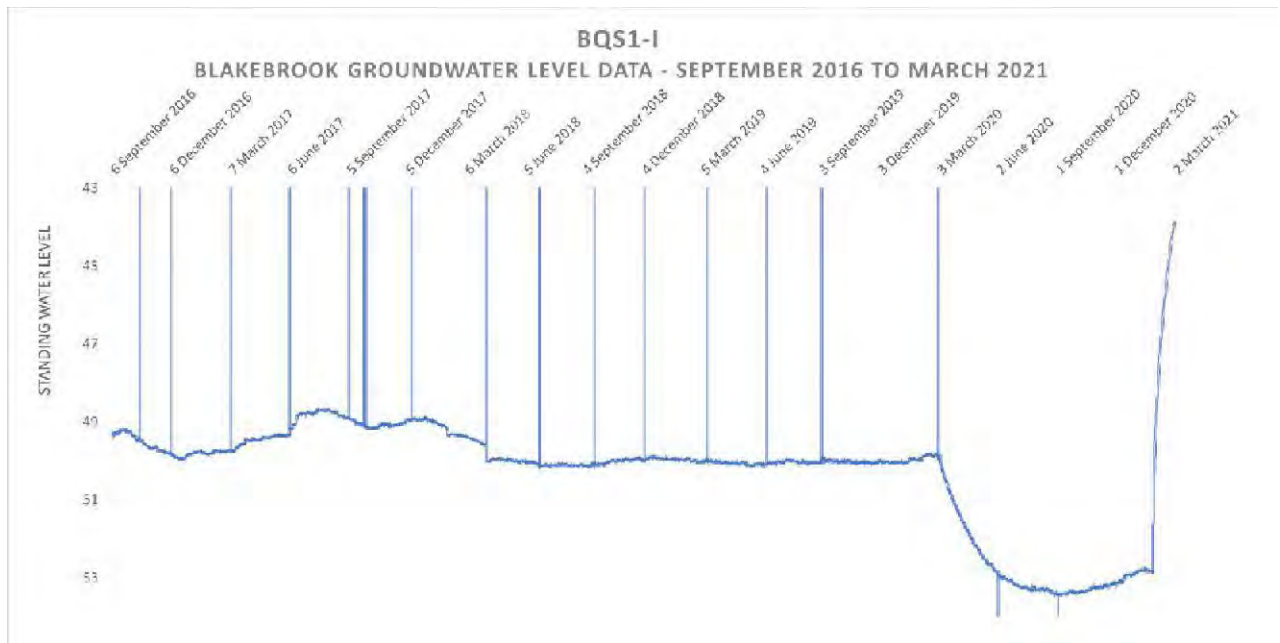
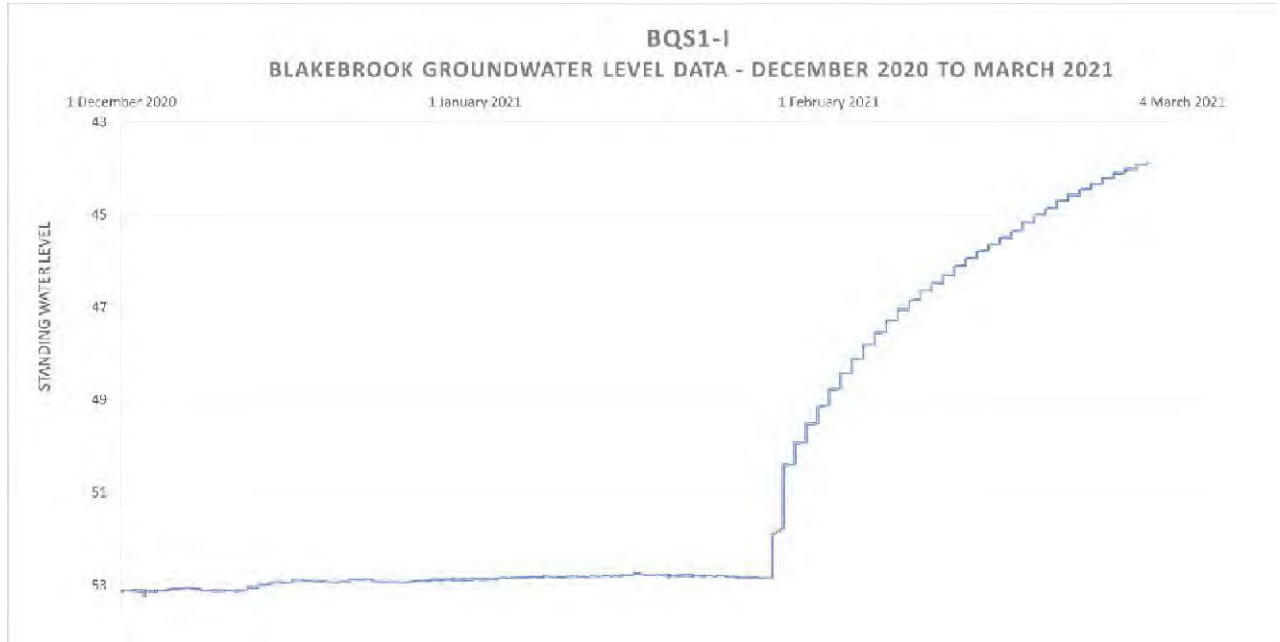
Email: [info@ecoteam.com.au](mailto:info@ecoteam.com.au)

Web: [www.ecoteam.com.au](http://www.ecoteam.com.au)

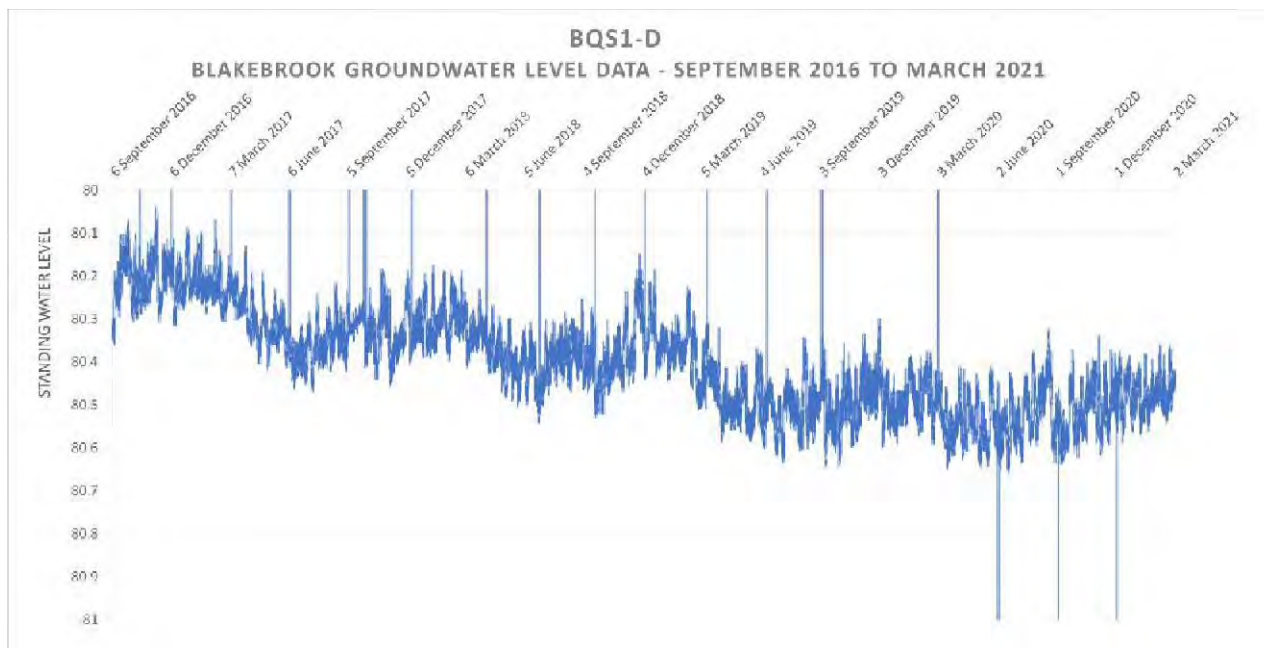
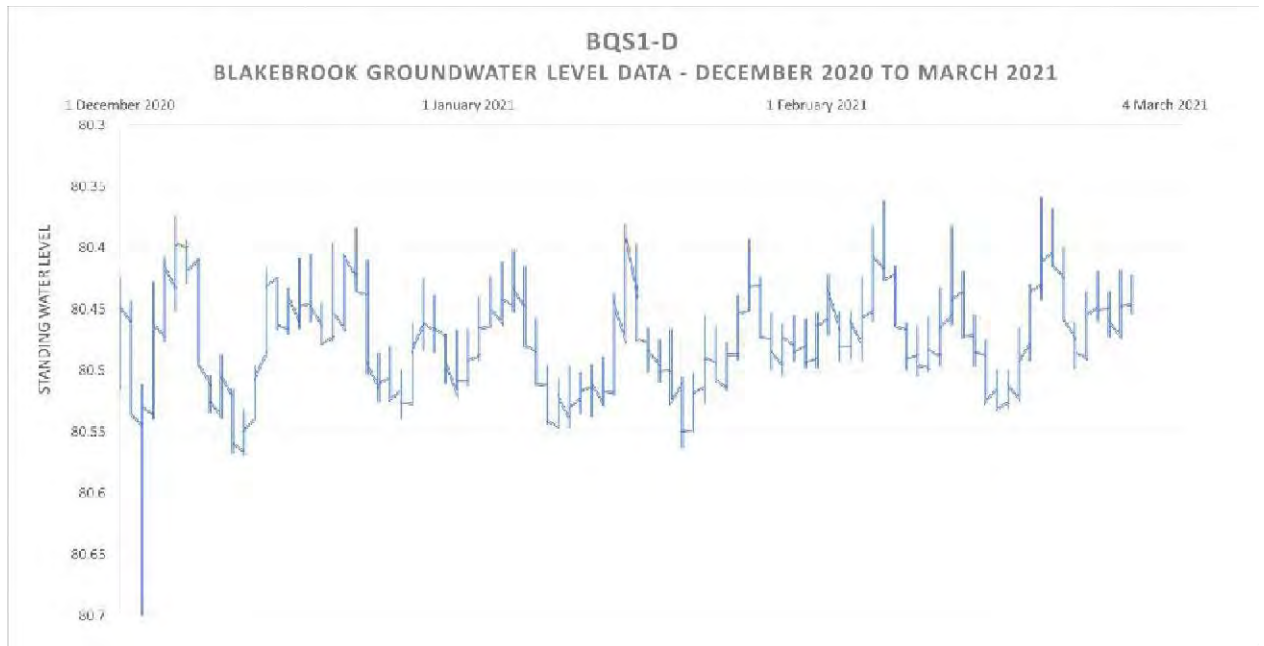
# Blakebrook Groundwater Wells – SOUTH 1 BQS1- S (Shallow)



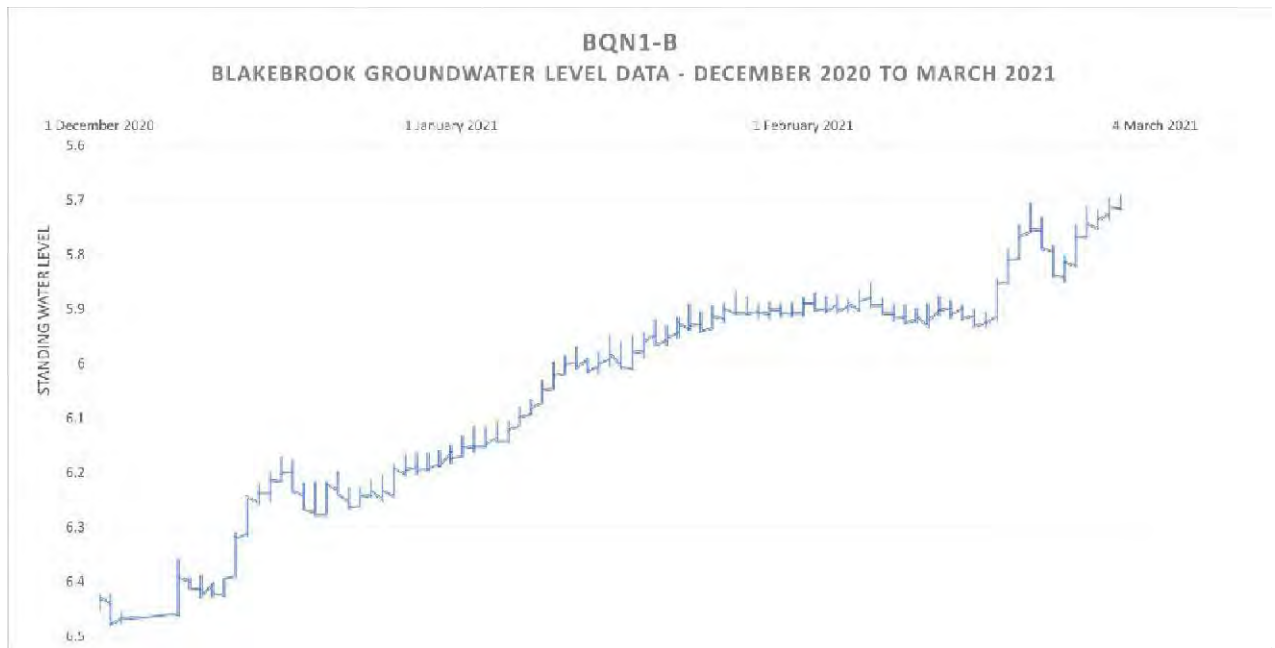
# Blakebrook Groundwater Wells – SOUTH 1 BSQS1- I (Intermediate)



# Blakebrook Groundwater Wells -SOUTH 1 BQS1- D (Deep)

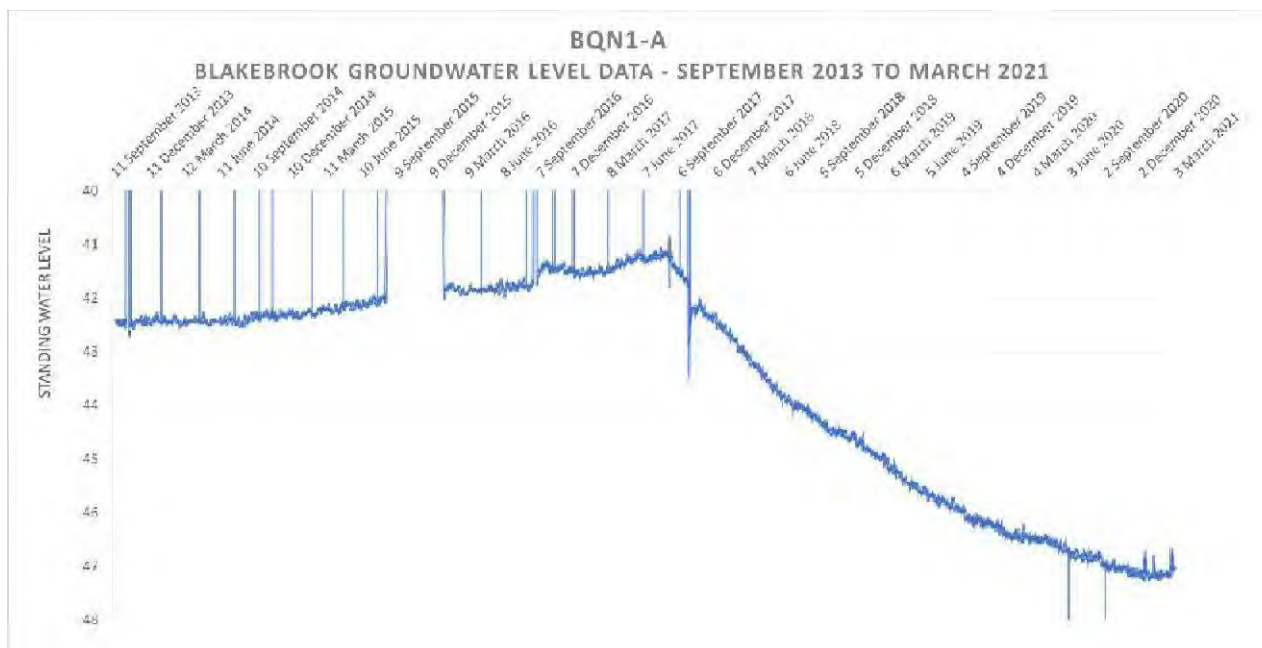
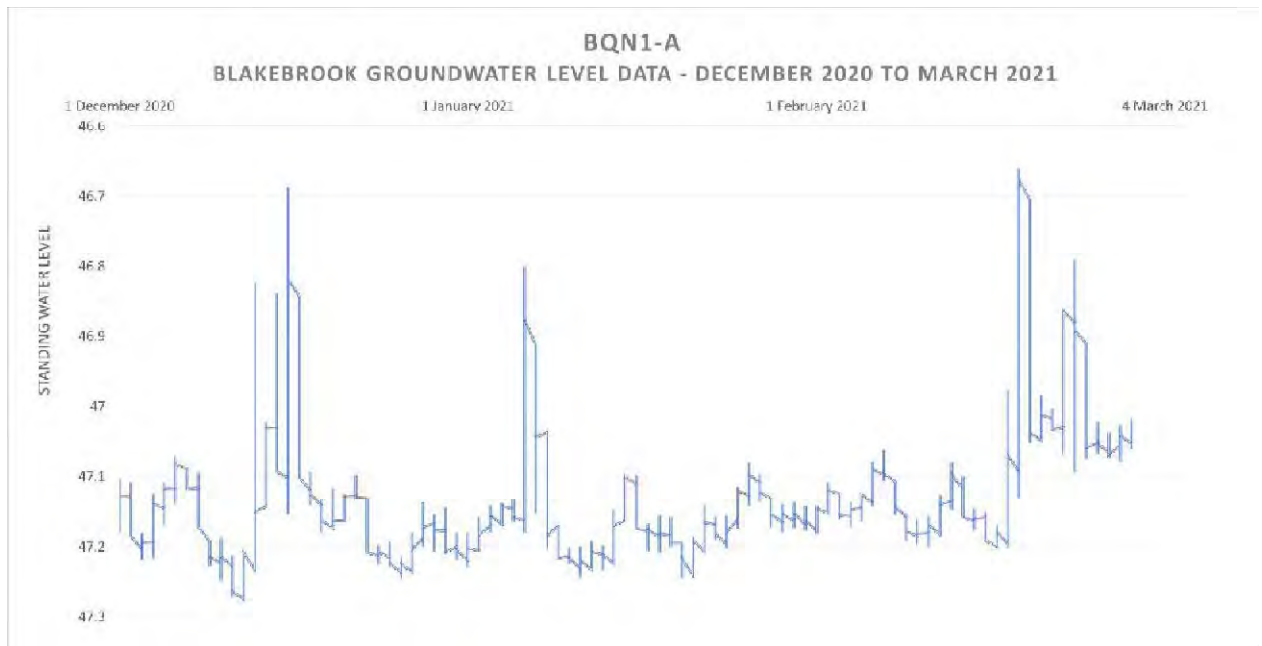


# Blakebrook Groundwater Wells -NORTH 1 BQN1- B (Shallow)

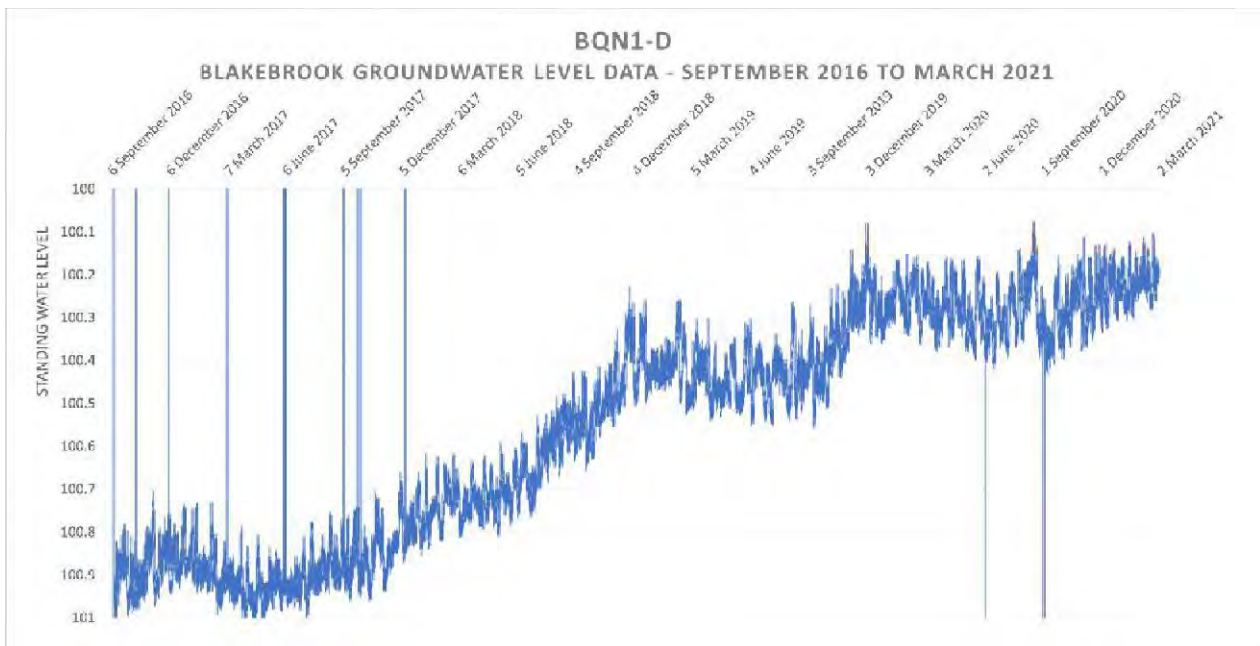
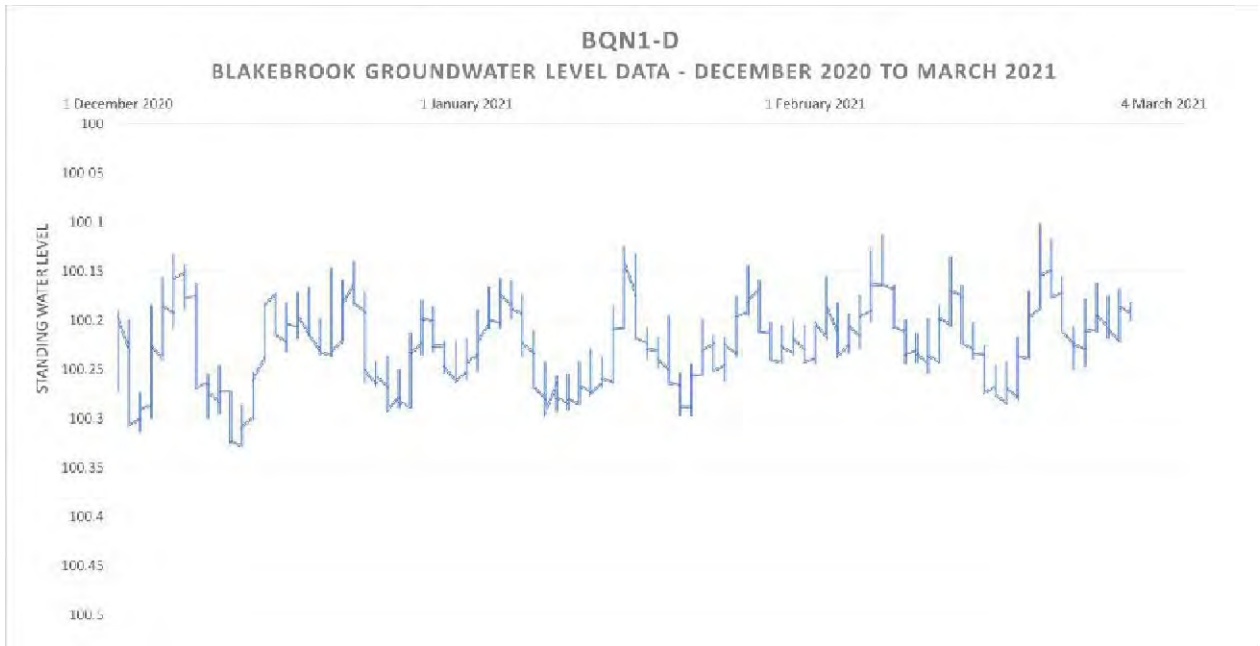




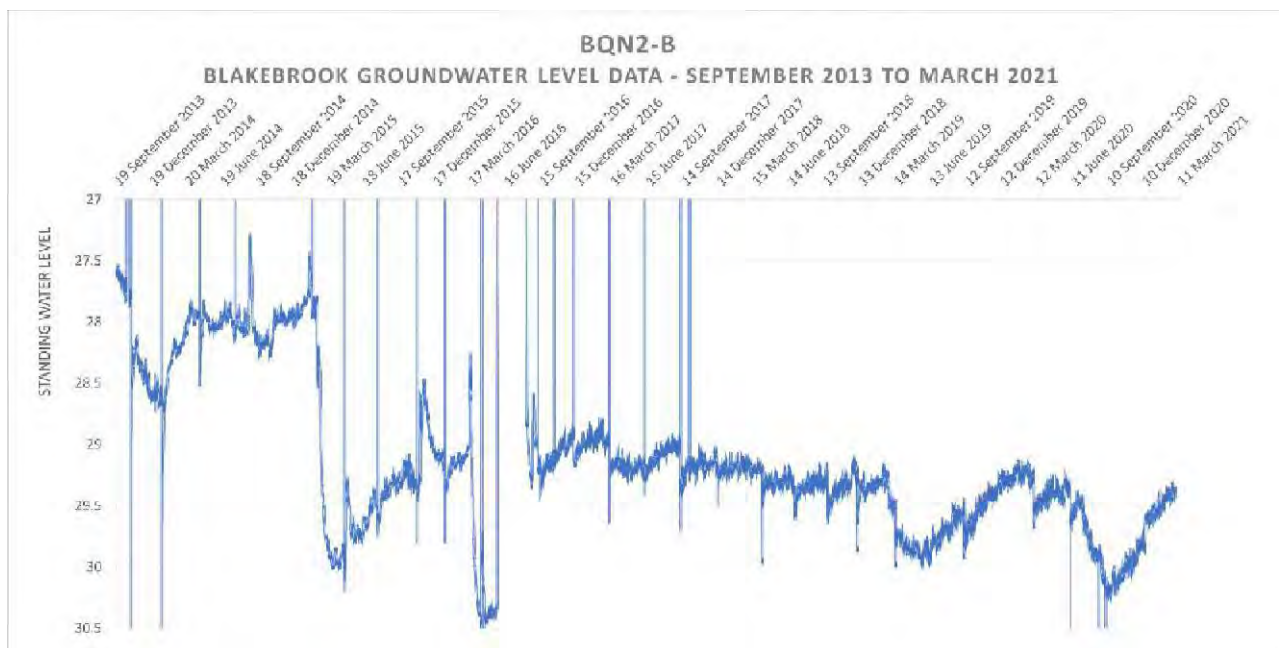
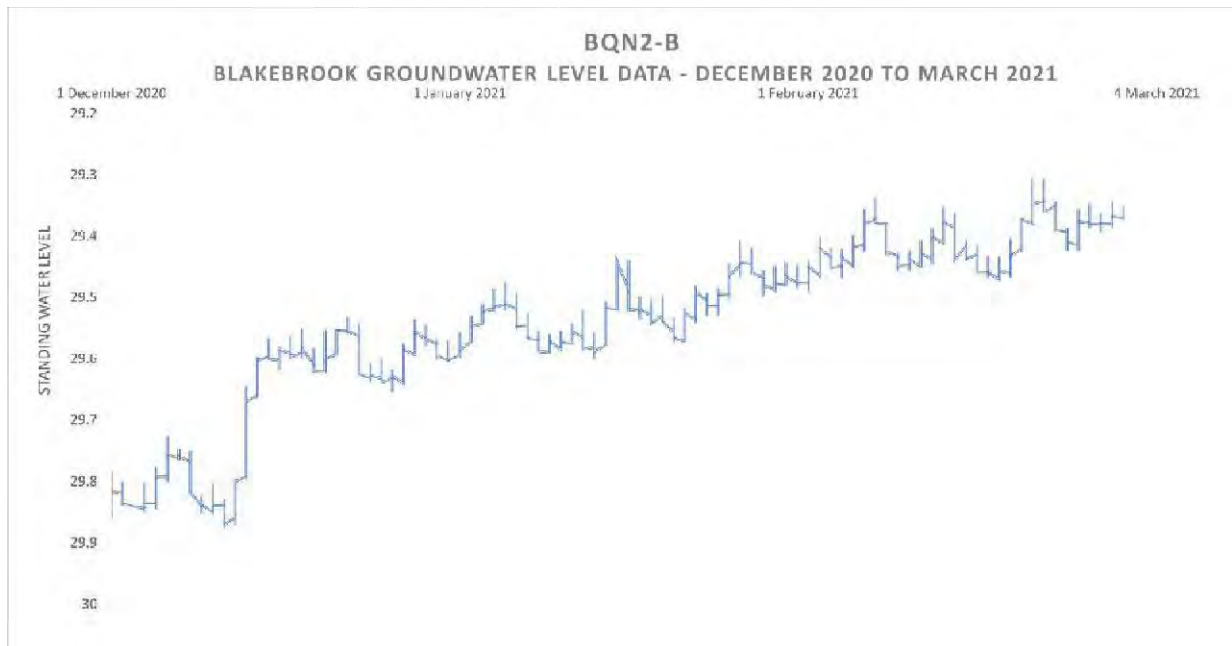
# Blakebrook Groundwater Wells -NORTH 1 BQN1- A (Intermediate)



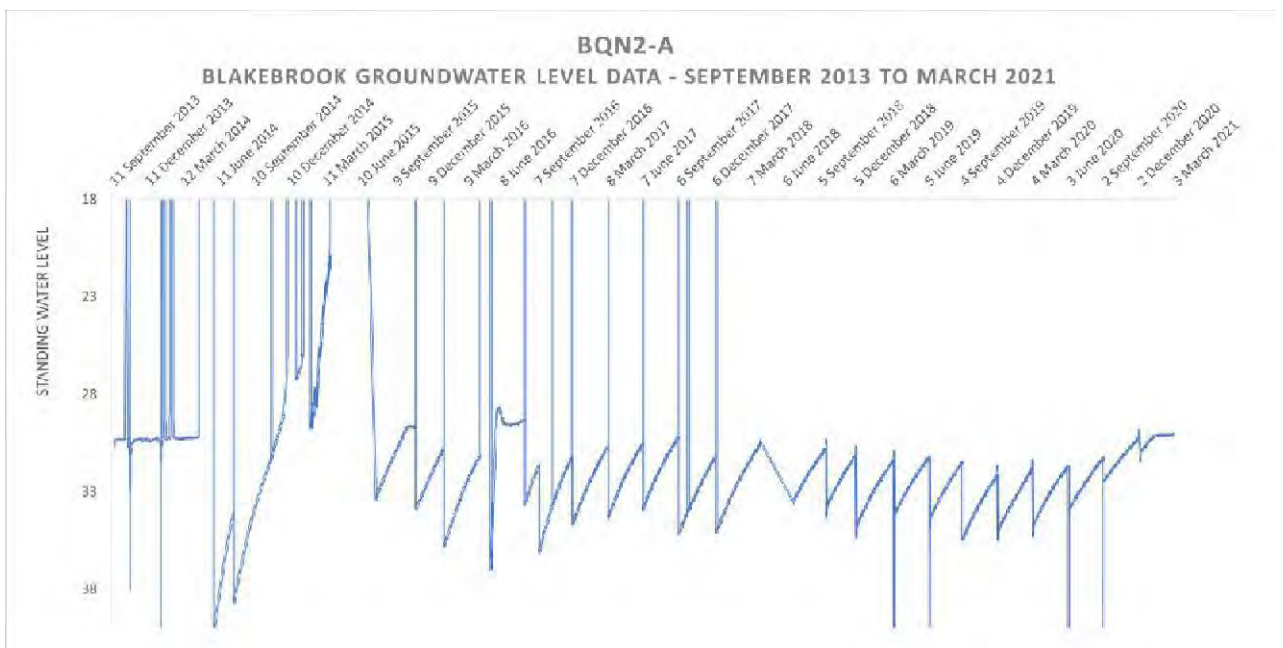
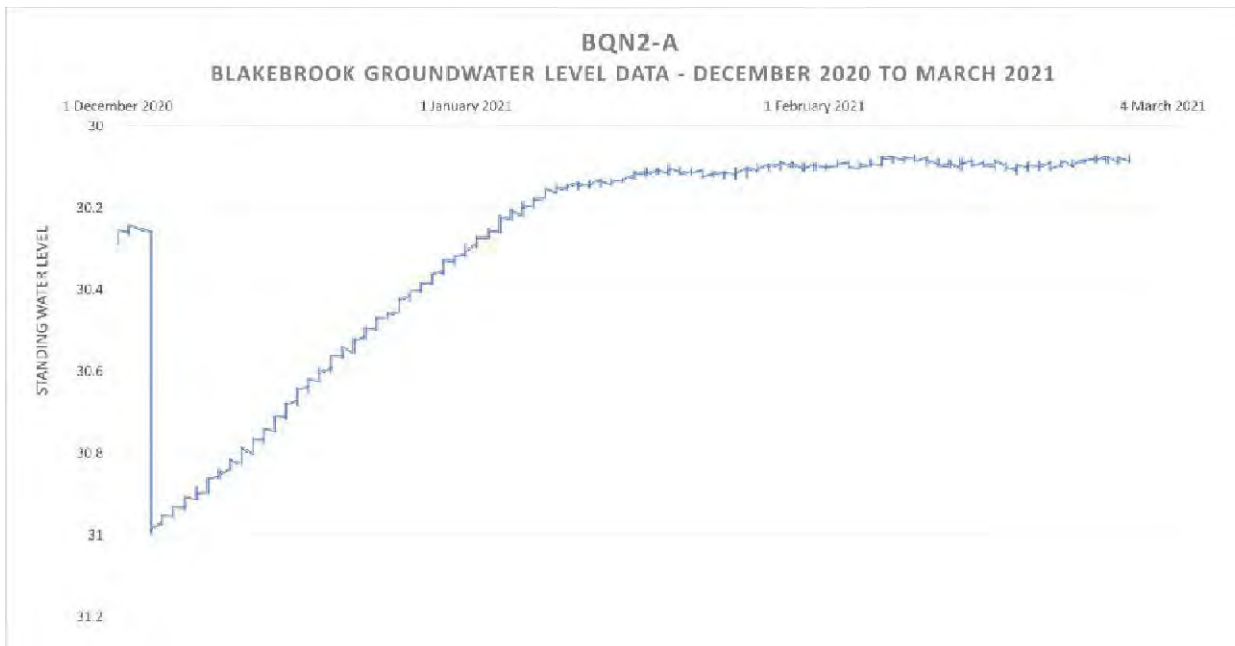
# Blakebrook Groundwater Wells -NORTH 1 BQN1- D (Deep)



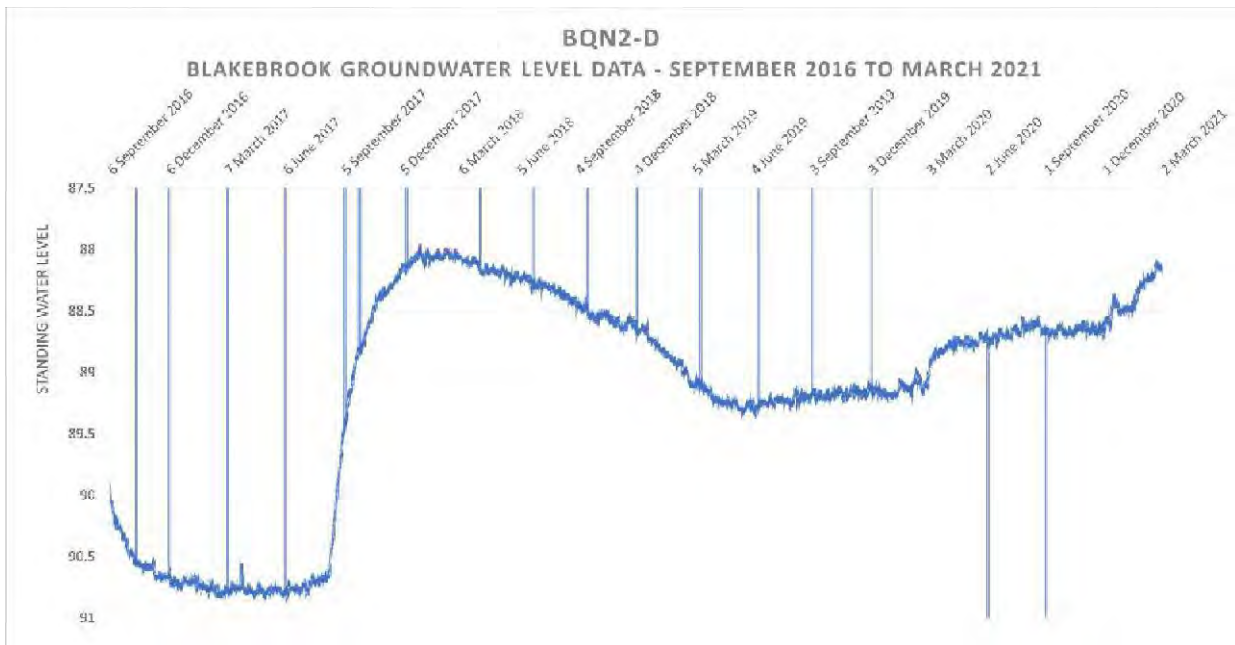
# Blakebrook Groundwater Wells -NORTH 2 BQN2- B (Shallow)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- A (Intermediate)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- D (Deep)



Friday 18<sup>th</sup> June, 2021

Environmental Engineer &  
Director

To: [REDACTED]  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

[REDACTED]@ecoteam.com.au  
mob: [REDACTED]  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Groundwater Quality Monitoring Results & Report for Blakebrook Quarry**  
*Reporting period: 1<sup>st</sup> March 2020 to 1<sup>st</sup> June 2020*

## 1.0 INTRODUCTION

Ecoteam is engaged to undertake quarterly groundwater quality and water level monitoring on behalf of Lismore City Council for the Blakebrook Quarry, Blakebrook, NSW. This report presents results from the June 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

## 2.0 PROJECT AIMS AND SAMPLING OBJECTIVES

The aim of the groundwater monitoring is to monitor groundwater quality and water levels at the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Groundwater) -Work Method Statement 2. The project objectives are to detect any potential changes in water quality or water levels within groundwater wells which may be a result of the Blakebrook Quarry activities, to calibrate the level meters, and assess the functioning of water levels meters at the site.

## 4.0 SAMPLING LOCATIONS

Water samples and level data were collected from all 9 groundwater bores. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly groundwater sampling sites, sample codes and well information

Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
Northern Two Clusters of Monitoring Bores (re. BQN1A, BQN1B, BQN2A, BQN2B, NOW & Cook p4 (2016))									
BQN1-B (BQN1-S)	GW307 323	524993.7	6818662.9	25/7/13	30	15 - 19	30	12 - 21	4.5
BQN1-A (BQN1-I)	GW307 322	524757.0	6818728.0	26/7/13	60	52 - 60	48	48 - 60	42.5
BQN1-D		524994	6818654.5	29/8/16	115	56 - 63; 99 - 109	115	97 - 109	?
BQN2-B (BQN2-S)	GW307 325	524437.7	6818619	28/7/13	42	28 - 38	42	30 - 42	28.5
BQN2-A (BQN2-S)	GW307 324	524436.7	6818615.5	27/7/13	60	52 - 60	60	51 - 60	31.3
BQN2-D		524447.5	6818616.5	29/8/16	133	19 - 24; 44 - 46.5; 112 - 117	133	109 - 121	
Southern Cluster of Monitoring Bores (re. Form A - particulars of completed work, 25/08/16 & GS letter 27/07/17)									
Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
BQS1-S		524684.5	6817848.6	25/8/16	55	38 - 43	55	40 - 52	30
BQS1-I		524681.5	6817842.8	24/8/16	73	34 - 39; 64 - 70	73	58 - 70	30
BQS1-D		524678	6817837.2	23/8/16	102.7	34 - 39; 64 - 72; 95 - 99	102.7	87.7 - 99.7	30



Figure 1. Map of monthly of groundwater sampling sites (Source: Lismore City Council)

## 5.0 SAMPLING METHODOLOGY

Sampling was undertaken by [REDACTED] on Thursday 3<sup>rd</sup> and Friday 4<sup>th</sup> June 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe and level information was downloaded using the Vu-Situ APP and Wireless TROLL Com instrument and cable connector. Samples collection methods and in-situ results are presented in **Appendix A (Table 2)**. The calibration certificate for the AquaTROLL is included as **Appendix B**.

Samples were stored on ice and dropped off at the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix C**.

## 6.0 RESULTS

### 7.1 Physico-chemical Results

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**.

### 7.2 Laboratory Results

The chain of custody form is included in **Appendix D**. A full copy of the laboratory results is included as **Appendix E**.

### 7.2 Well Level Results

Well level results for the past three months and the last five years are presented in **Appendix F**. Groundwater levels have risen in South and North1 shallow wells, all intermediate wells and the North2 deep well (BQS1-S, BQS1-I, BQN1-B BQN1-A BQN2-A and BQN2-D) and remained consistent in the North 2 shallow well and South and North1 deep wells (BQS1-D, BQN1-D, BQN2-B) over the past three months.

## 9.0 Summary of Results and Recommendations

- Groundwater levels have risen in South and North1 shallow wells, all intermediate wells and the North2 deep well (BQS1-S, BQS1-I, BQN1-B BQN1-A BQN2-A and BQN2-D)
- Groundwater levels have remained consistent in the North 2 shallow well and South and North1 deep wells (BQS1-D, BQN1-D, BQN2-B)
- Battery levels in all water level meters remain above 50%.
- All level meters appear to be functioning adequately.
- All level meters have been upgraded and calibrated.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

ABN: 82 106 758 123



## APPENDIX A- Physicochemical and sample Information

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Sample Information	Blakebrook Quarry Groundwater Well Sampling Information								
	SOUTH			NORTH 1			NORTH 2		
Site Name	BQS1S	BQS1I	BQSID	BQN1B	BQN1A	BQN1D	BQN2B	BQN2A	BQN2D
Well Type	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep
Date	03/06/21	03/06/21	03/06/21	03/06/21	03/06/21	03/06/21	04/06/21	04/06/21	04/06/21
Time	9:00	9:50	10:40	12:30	15:15	14:05	10:00	10:40	11:20
Recorded Depth 1	19.15	42.82	80.55	5.03	46.88	100.25	29.36	30.23	88.10
Recorded Depth 2	19.27	43.34	80.54	5.25	46.89	100.25	29.68	30.06	88.16
Level Meter Calibrated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Level	65%	65%	65%	65%	65%	65%	65%	65%	65%
Memory Level	96%	96%	93%	93%	93%	93%	93%	96%	96%
Sample Method	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	12 volt submersible pump	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone
Odour	Not Present	Yes	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Clear water	Slightly turbid water	Clear water, some particles	Clear water- Film present on level meter	Clear water, some particles	Slightly turbid water	Slightly turbid	Clear water	Clear water
Fresh Water WQOs	Water Quality Observations								
pH	8.20	6.58	7.71	7.09	7.24	9.14	10.2	9.68	8.30
EC $\mu$ S/cm	349.1	1,281.8	1,590.5	979.4	1,755.8	1,252.2	969.6	662.8	836.39
DO (%)	57.1	57.8	63.7	18.1	64.4	52.6	55.4	56.7	60.45
Temperature (°C)	18.9	18.8	19.4	20.6	19.7	20.5	18.7	20.7	21.03
ORP	221.8	101.0	97.5	-14.8	118.0	115.8	9.1	116.2	50.0

## Appendix B - Calibration certificate for AquaTROLL

<b>ThermoFisher</b> SCIENTIFIC  Thermo Fisher Scientific Australia Pty Ltd ABN 52 058 390 917 5 Canbbean Drive Scoresby VIC 3179 Phone: 1 300 735 295 Fax: 03 9763 1168	<b>ELECTROCHEMICAL INSTRUMENT          MAINTENANCE &amp; CALIBRATION REPORT</b>	
	Customer: Address:  Attention:	Ecotechnology Australia PTY Ltd 13 Ewing st Lismore NSW 2480  <div style="background-color: black; width: 100px; height: 20px; margin: 5px auto;"></div>

Make:	In-Situ	Lab.ID/Assett No.	NA	Calibration Date:	27-05-2021
Model:	AquaTroll 400	Customer O/No.	PC-0063	Next Calibration:	05-2022
Serial No:	741219 / 746352	Location:	NA	Call Number:	SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

### Calibration/ Accuracy Tests

Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 ±/- 30	-7.7	175.5 +/- 30	163.1			Pass
✓ Slope (pH)		-59.1 +/- 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass

### Reference Instruments Used

Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

### General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction. Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV. Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Engineer's Name

Date  
 27<sup>th</sup> May 2021

Issue 1

Oct 06  
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G0232  
 Page 1 of 1

## **Appendix C - Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential

### **Laboratory**

- Total Petroleum Hydrocarbons (TPH,) C10-C40
- Benzene, Toluene, Ethylbenzene Xylene (BTEX)
- Total iron
- Total lead
- Dissolved iron
- Dissolved lead
- Total oils and grease -Hexane Extractable
- Major ions (Sulfate, Chloride)
- Major cations (Calcium, Magnesium, sodium, potassium)

**CHAIN OF CUSTODY**



PO Box 157 ( Military Road)  
LISMORE NSW 2480  
P| 02 6620 3678 F| 02 6620 3957  
[eal@scu.edu.au](mailto:eal@scu.edu.au), [www.scu.edu.au/eal](http://www.scu.edu.au/eal)

**Submitting Client Details**

Quote Id: EALQ5821  
Job Ref: SMC010-Blakebrook WQ Groundwater- JUNE21  
Company Name: Ecoteam  
Contact Person: [REDACTED]  
Phone: 66215123  
Mobile: [REDACTED]  
Fax: [REDACTED]  
Email: [REDACTED]  
Postal Address: 13 Ewing Street, Lismore

**Billing Client Details**

ABN: [REDACTED]  
Company Name: Ecoteam  
Contact Person: [REDACTED]  
Phone: 02 66215123  
Mobile: [REDACTED]  
Fax: [REDACTED]  
Email: [REDACTED]  
Postal Address: 13 Ewing Street, Lismore

This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL.

**Payment Method:**

- Purchase Order
- Cheque
- Invoice (prior approval required)
- Credit Card Mastercard / Visa No. \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CVV: \_\_\_\_\_

**Comments:**

DO NOT TEST FOR Ph or EC

**Marketing Survey – where did you find us?**

- Word of mouth
- Magazine
- Google search
- Other

Relinquished By: [REDACTED]

Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: \_\_\_\_\_

Received By: [REDACTED] 4/6/21

Condition on receipt: Ambient / Cool / Frozen / Other: \_\_\_\_\_

**Sample Analysis Request**

Price List Code (e.g. SWPACK-06)

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Salt Suite- (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-001	Dissolved Iron SW-SING-103	Dissolved Lead SW-SING-103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104
	BQN1-B		3/6/21			Water	X	X	X	X	X	X	X
	BQN1-A		3/6/21			Water	X	X	X	X	X	X	X
	BQN1-D		3/6/21			Water	X	X	X	X	X	X	X
	BQN2-B		4/6/21			Water	X	X	X	X	X	X	X
	BQN2-A		4/6/21			Water	X	X	X	X	X	X	X
	BQN2-D		4/6/21			Water	X	X	X	X	X	X	X

EAL Chain of Custody  
Issue: V1.1 27/09/2016

EAL Project Reference:

QFORM 4.2  
Page 1 of 2

KT140 = 9 water

CHAIN OF CUSTODY

Comments:

DO NOT TEST FOR Ph or EC

Marketing Survey – where did you find us?  
 Word of mouth  Magazine  Google search  Other

**Sample Analysis Request**  
Price List Code (e.g. SW PACK-06)

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Salt Suite- (no pH or FC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-001	Dissolved Iron SW-SING-103	Dissolved Lead SW-SING-103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104				
	BQS1-S		3/6/21			Water	X	X	X	X	X	X	X				
	BQS1-I		3/6/21			Water	X	X	X	X	X	X	X				
	BQS1-D		3/6/21			Water	X	X	X	X	X	X	X				

Tab through for extra lines

## Appendix E - Full Laboratory Results

### RESULTS OF WATER ANALYSIS

9 samples supplied by Eooteam on 4/06/2021 Lab Job No K7740  
 Samples submitted by [redacted] Your Job SMC010-Blakebrook WQ - Groundwater-JUNE21

13 Irving Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9
		BQN1-B	BQN1-A	BQN1-D	BQN2-B	BQN2-A	BQN2-D	BQS1-S	BQS1-I	BQS1-D
Job No.		K7740/1	K7740/2	K7740/3	K7740/4	K7740/5	K7740/6	K7740/7	K7740/8	K7740/9
Bicarbonate (Alkalinity) (mg/L CaCO <sub>3</sub> equivalent)	** Total Alkalinity - APHA 2320	198	120	<1	85	190	318	120	180	115
Water Hardness (mg/L CaCO <sub>3</sub> equivalent)	** Using Ca and Mg calculation	135	132	26	59	96	10	51	92	40
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	6	2	2	<2	<2	3	<2	2	<2
Sodium (mg/L)	APHA 3125 ICPMS <sup>7000</sup> 102	157	318	260	151	107	199	34.7	250	340
Potassium (mg/L)	APHA 3125 ICPMS <sup>7000</sup> 102	3.52	6.27	2.13	6.25	6.37	1.76	2.10	4.86	3.68
Calcium (mg/L)	APHA 3125 ICPMS <sup>7000</sup> 102	26.6	42.7	9.06	23.2	23.6	3.23	12.6	28.4	13.0
Magnesium (mg/L)	APHA 3125 ICPMS <sup>7000</sup> 102	16.7	6.24	0.89	0.37	8.93	0.45	4.66	5.21	1.74
Sodium Absorption Ratio (SAR)	** By calculation	5.9	12.0	22.0	8.5	4.7	27.4	2.1	11.3	23.5
Chloride (mg/L)	APHA 3125 ICPMS <sup>7000</sup> 102	189	478	266	182	80	79	16	295	416
Sulfate (mg/L SO <sub>4</sub> <sup>2-</sup> )	APHA 3125 ICPMS <sup>7000</sup> 102	8	25	69	39	21	19	8	13	36
Chloride/Sulfate Ratio	** Calculation	22.5	19.2	3.8	4.7	3.8	4.2	1.9	22.6	11.5
Iron (mg/L)	Total Available - APHA 3125 ICPMS <sup>7000</sup> 102	1.63	0.038	0.365	0.018	0.018	0.062	0.112	0.039	0.167
Lead (mg/L)	Total Available - APHA 3125 ICPMS <sup>7000</sup> 102	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS <sup>7000</sup> 102	0.82	0.003	0.002	0.005	0.008	0.003	0.004	0.023	0.002
Lead (mg/L)	Dissolved - APHA 3125 ICPMS <sup>7000</sup> 102	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<b>BTX</b>										
Benzene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report SE220 58	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Total Recoverable Hydrocarbons (TRH)</b>										
C6-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<40	<40	<40	<40	<40	<40	<40	<40	<40
C10-C11 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C16 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<60	<60	<60	<60	<60	<60	<60	<60	<60
C16-C3 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<200	<200	<200	<200	<200	<200	<200	<200	<200
C3 -C 0 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<100	<100	<100	<100	<100	<100	<100	<100	<100
Sum C10-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report SE220 58	<100	<100	<100	<100	<100	<100	<100	<100	<100

- Notes:
- Total metals - samples digested with nitric acid; Total available (acid soluble/ extractable) metals - samples acidified with nitric acid to pH <2; Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysis
  - Metals and salts analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
  - 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre) = 1000 ppb (part per billion)
  - For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm
  - Analysis performed according to APHA (2017) Standard Methods for the Examination of Water & Wastewater 23rd Edition, except where stated otherwise
  - Analysis conducted between sample arrival date and reporting date
  - \*\* NATA accreditation does not cover the performance of this service
  - Denotes not requested
  - This report is not to be reproduced except in full
  - All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/terms](http://scu.edu.au/eal/terms) or on request)
  - Results relate only to the samples tested
  - This report was issued on 17/06/2021



## Appendix F - Hydrographs



exce



## Blakebrook Quarry- Groundwater Monitoring

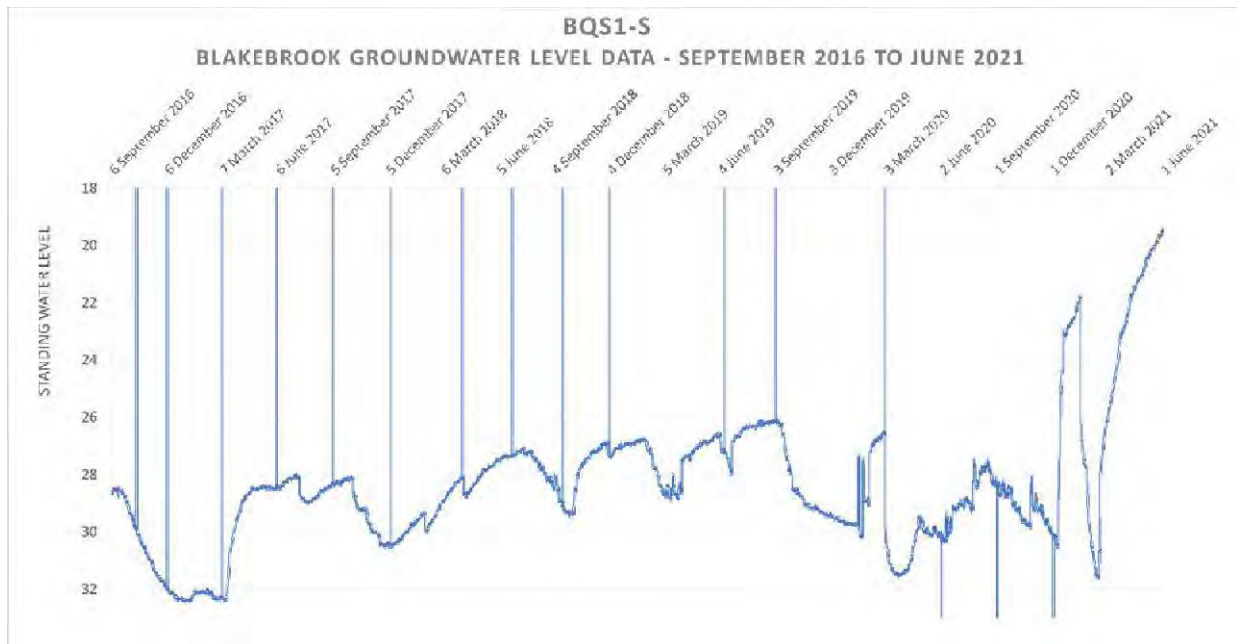
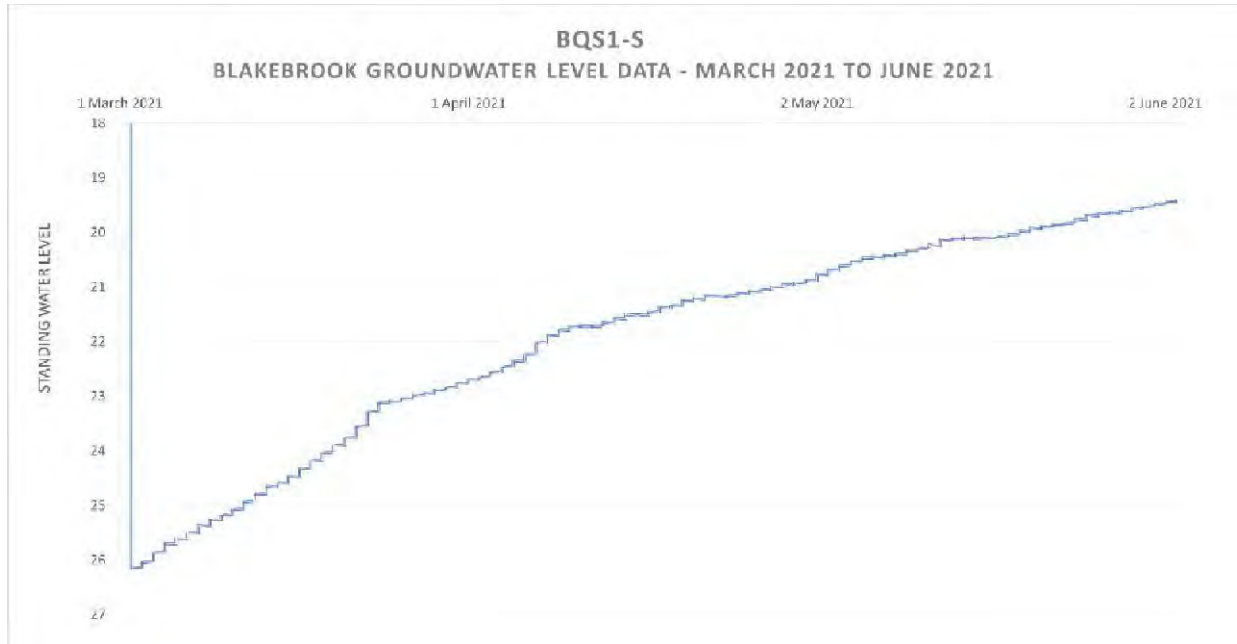
# Groundwater Hydrographs

**June 2021**

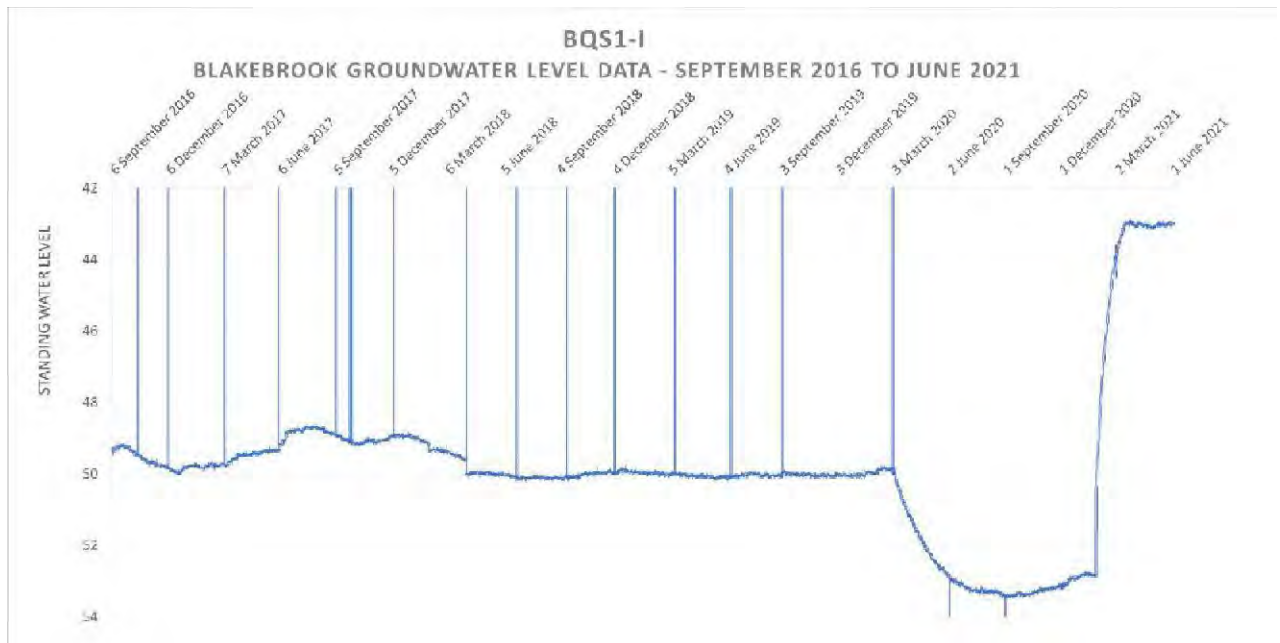
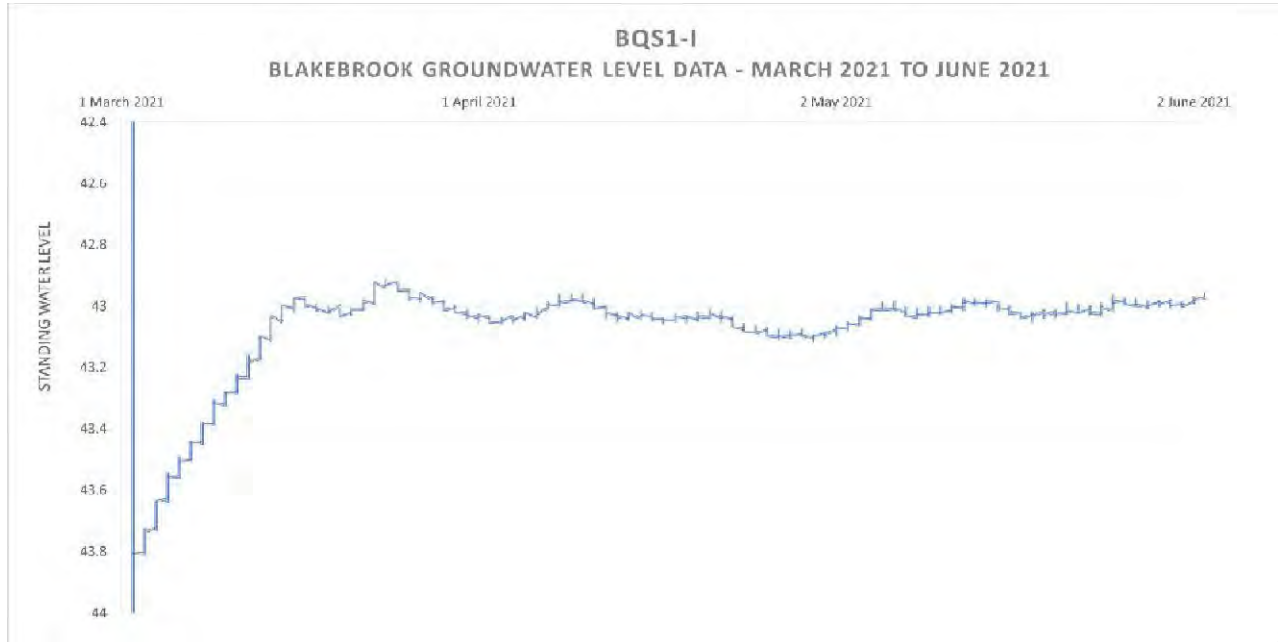


13 Ewing Street, LISMORE  
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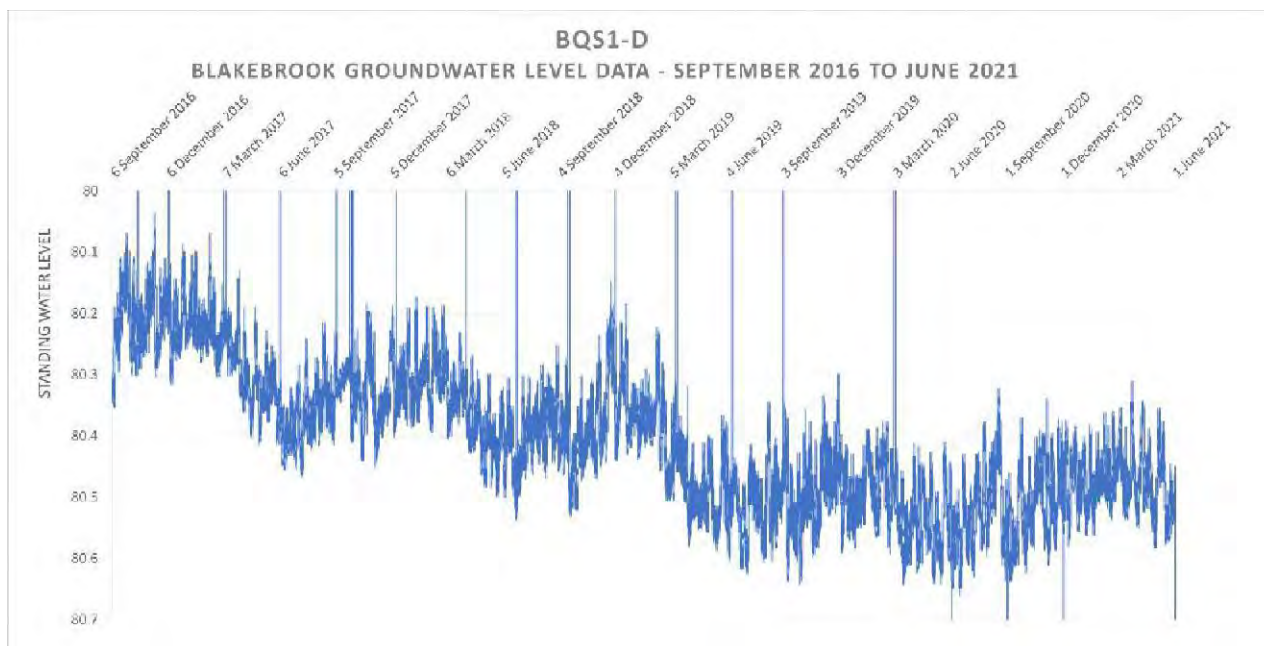
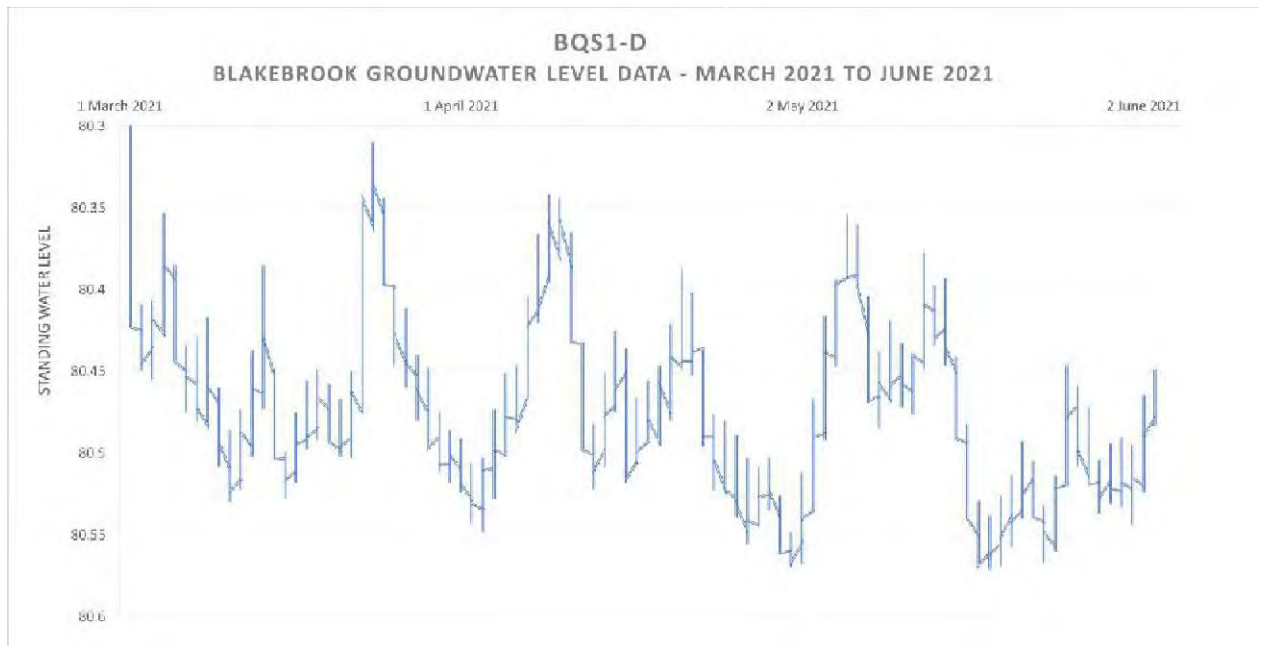
# Blakebrook Groundwater Wells – SOUTH 1 BQS1- S (Shallow)



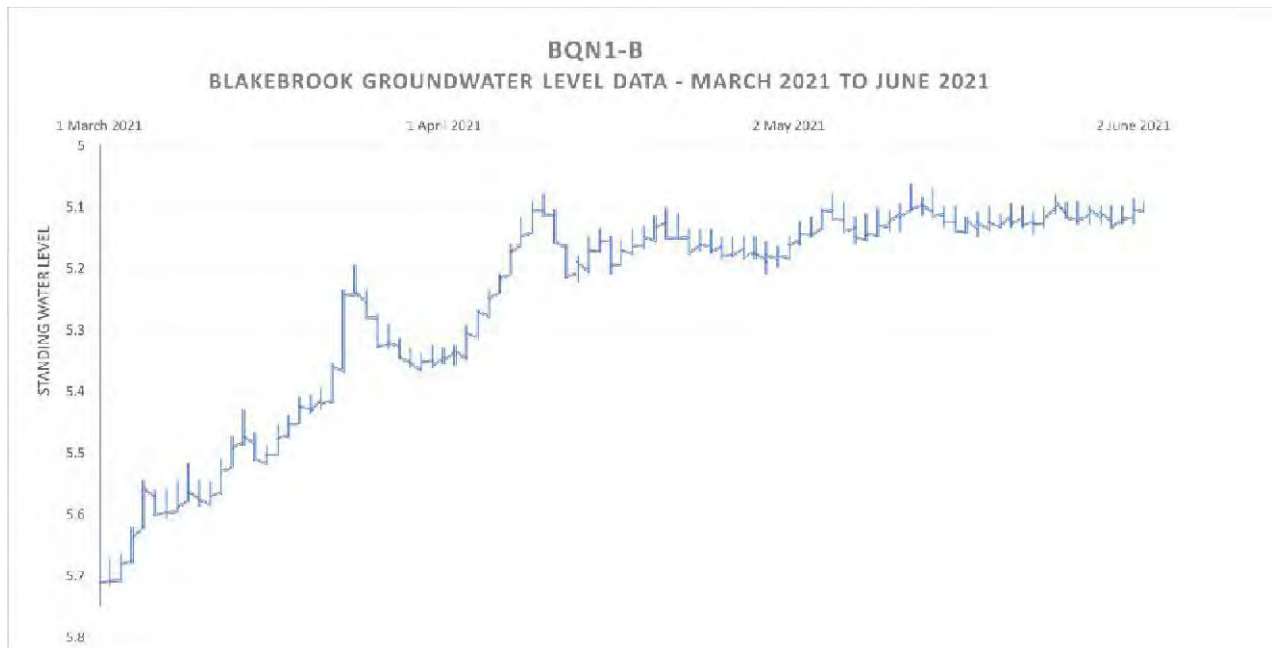
# Blakebrook Groundwater Wells – SOUTH 1 BSQS1- I (Intermediate)



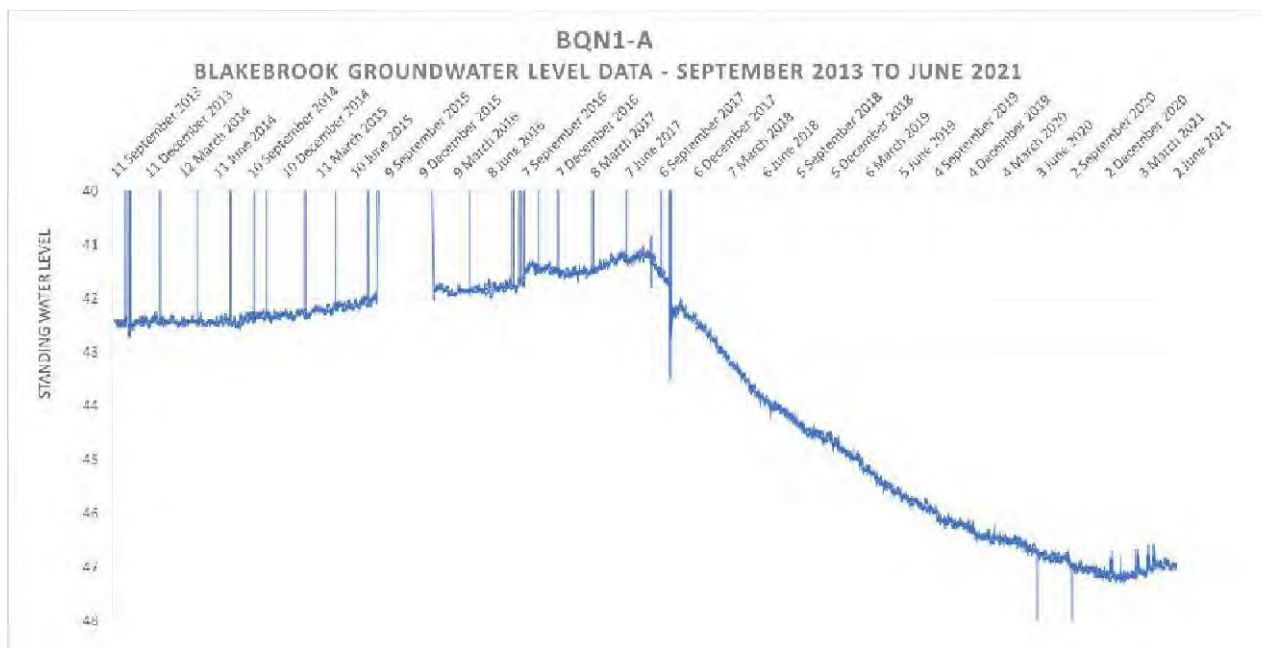
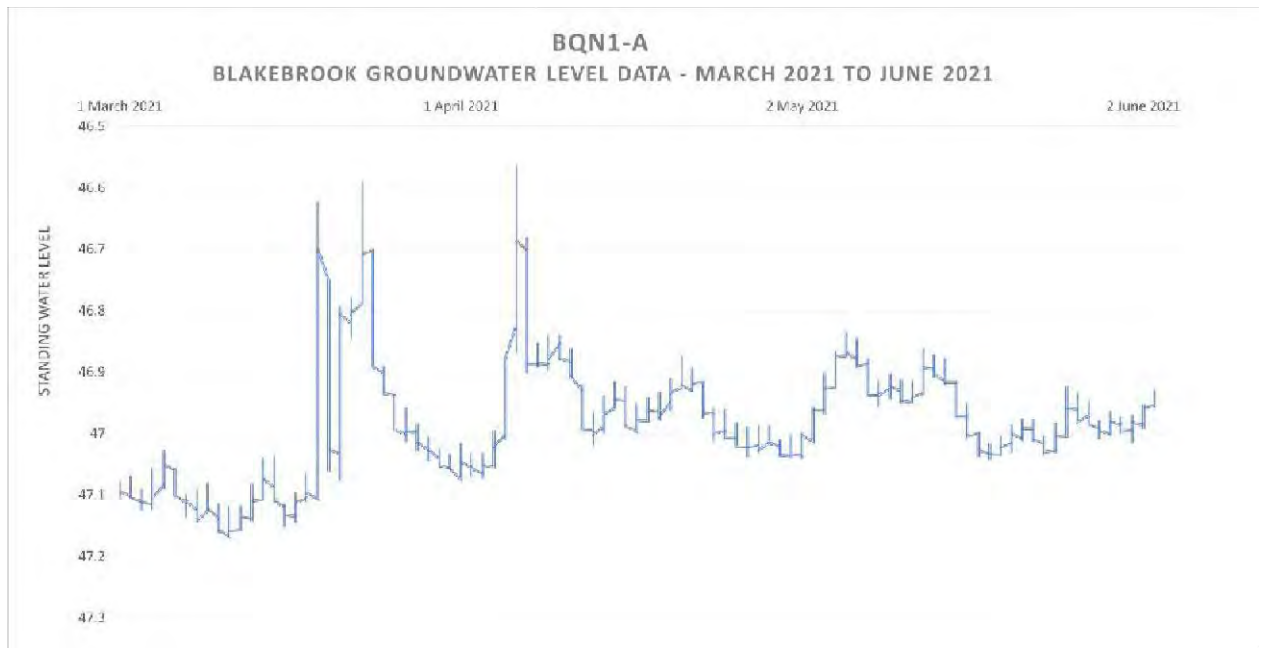
# Blakebrook Groundwater Wells -SOUTH 1 BQS1- D (Deep)



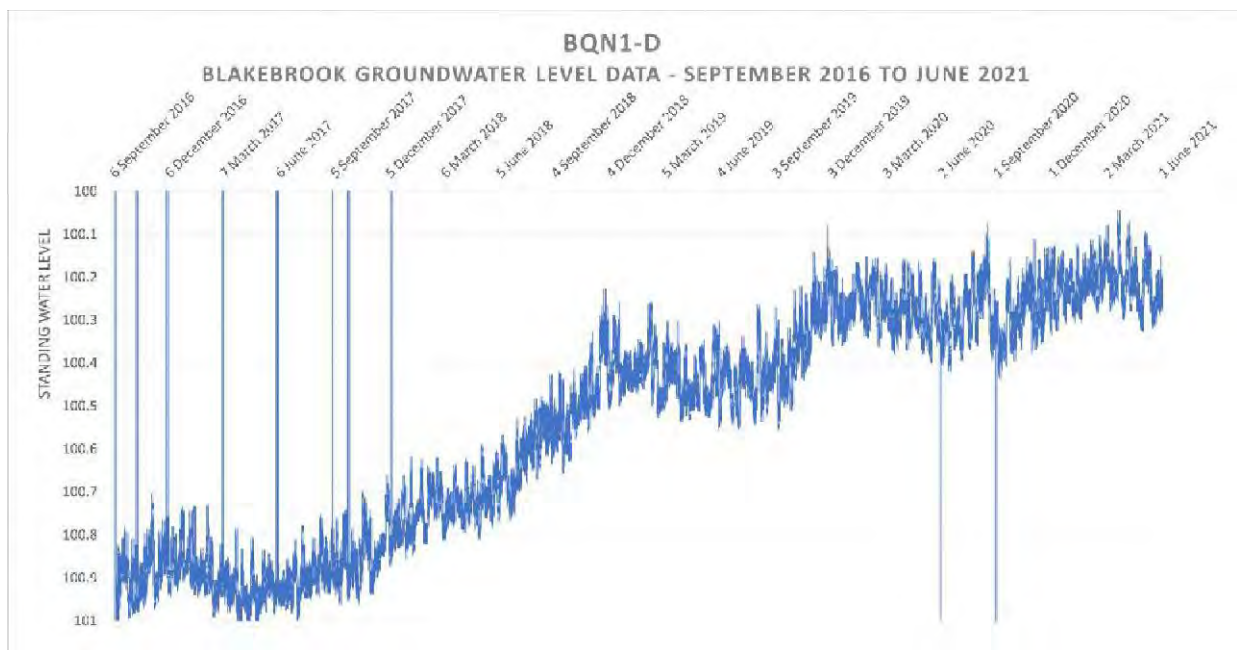
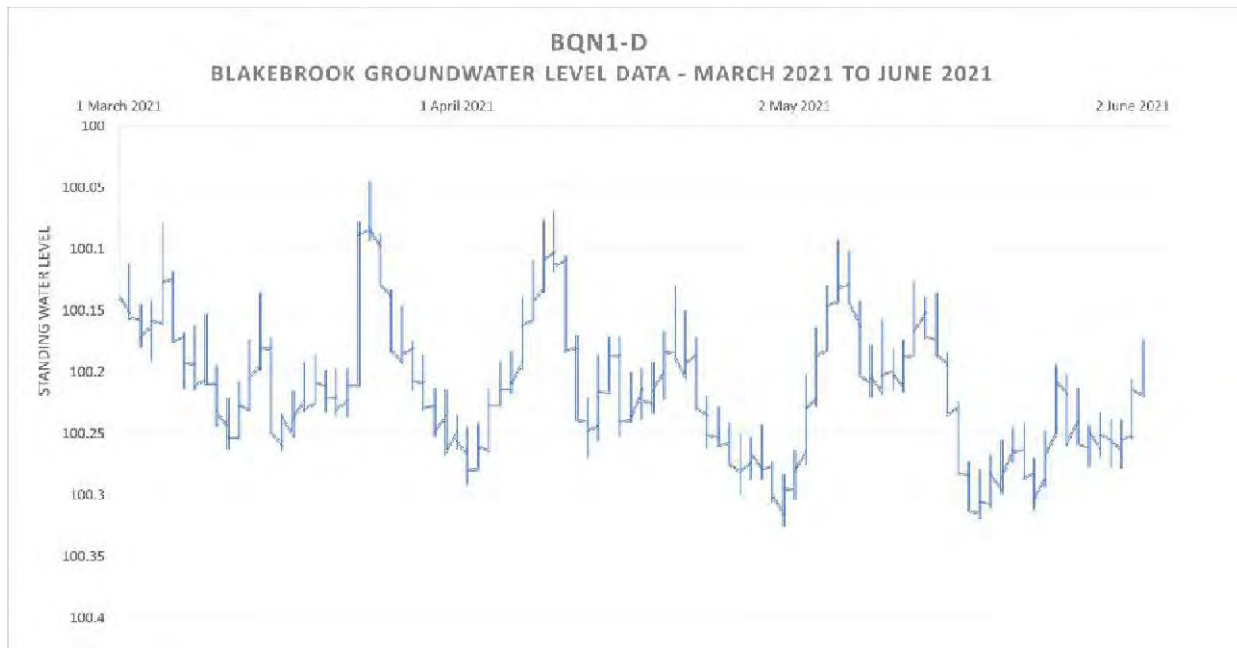
# Blakebrook Groundwater Wells -NORTH 1 BQN1- B (Shallow)



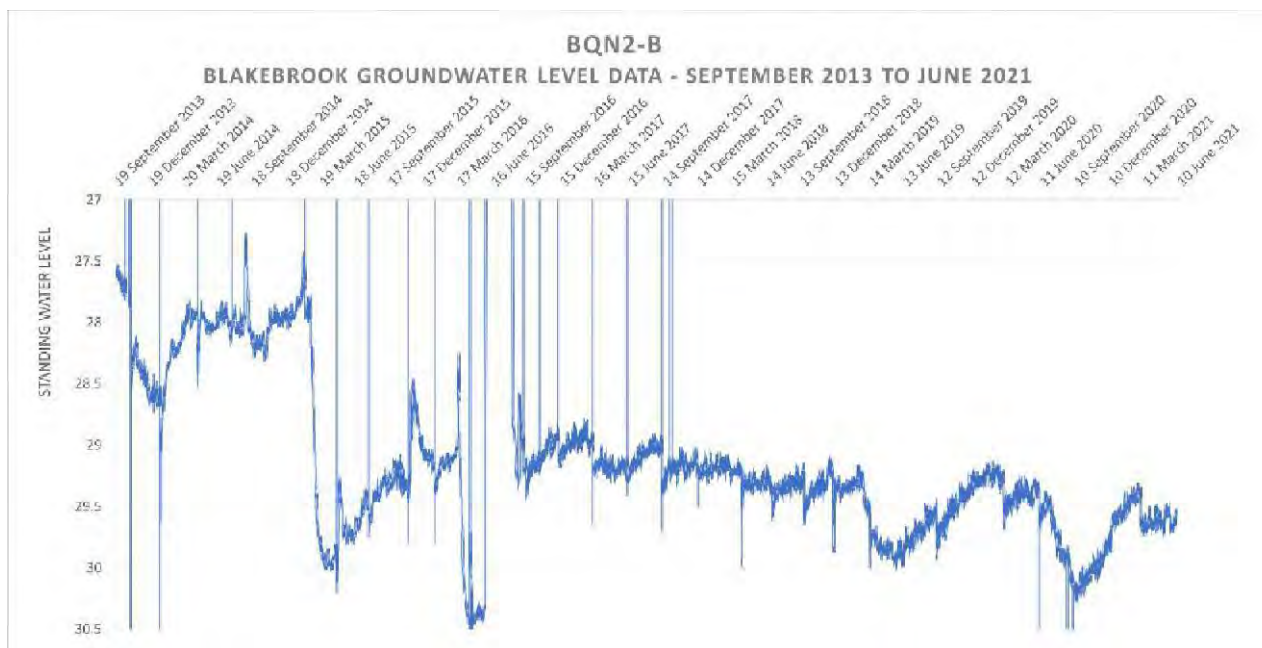
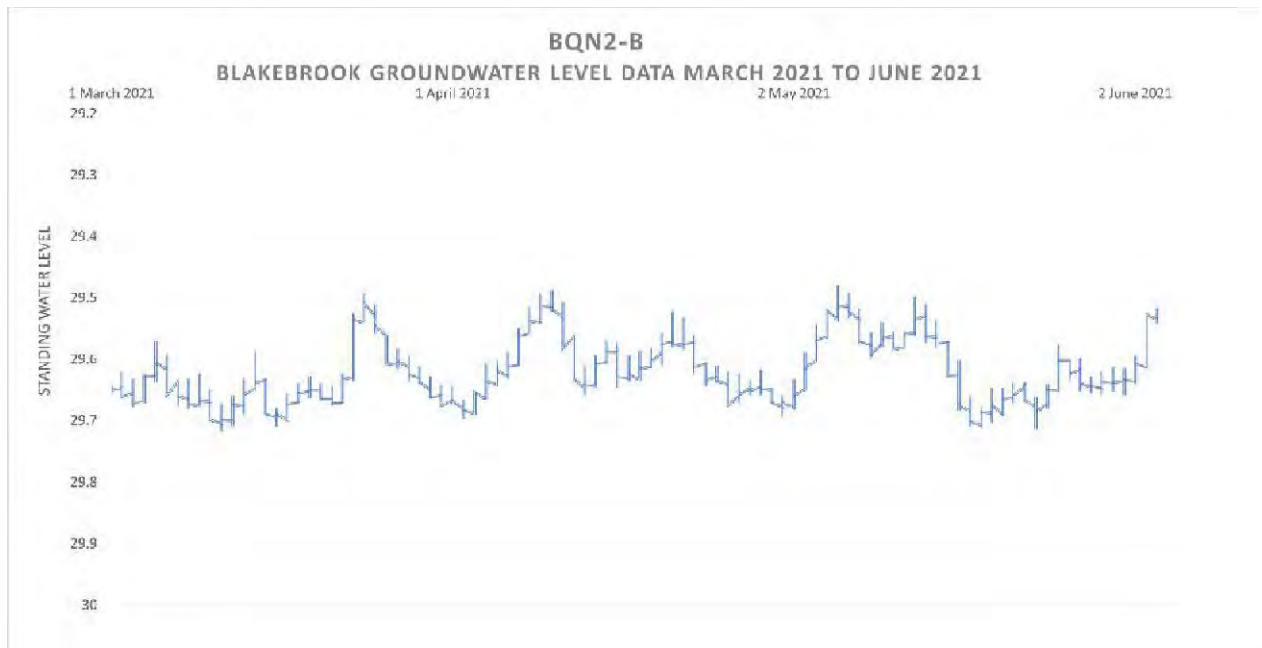
# Blakebrook Groundwater Wells -NORTH 1 BQN1- A (Intermediate)



# Blakebrook Groundwater Wells -NORTH 1 BQN1- D (Deep)

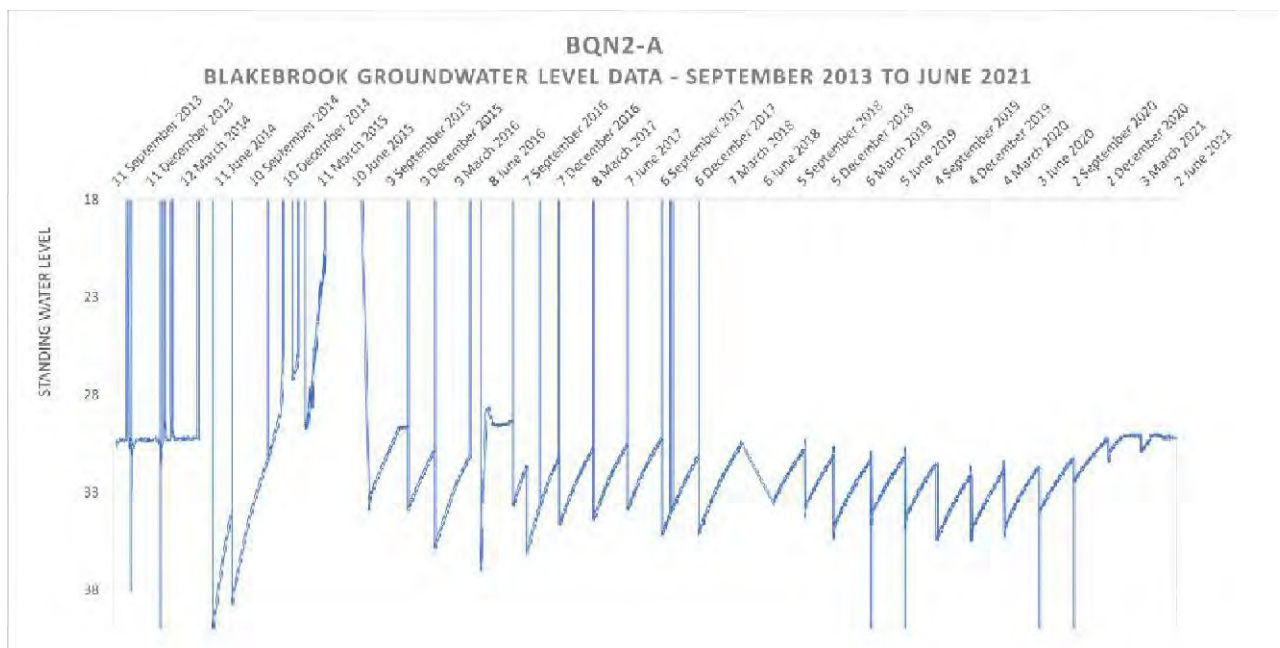
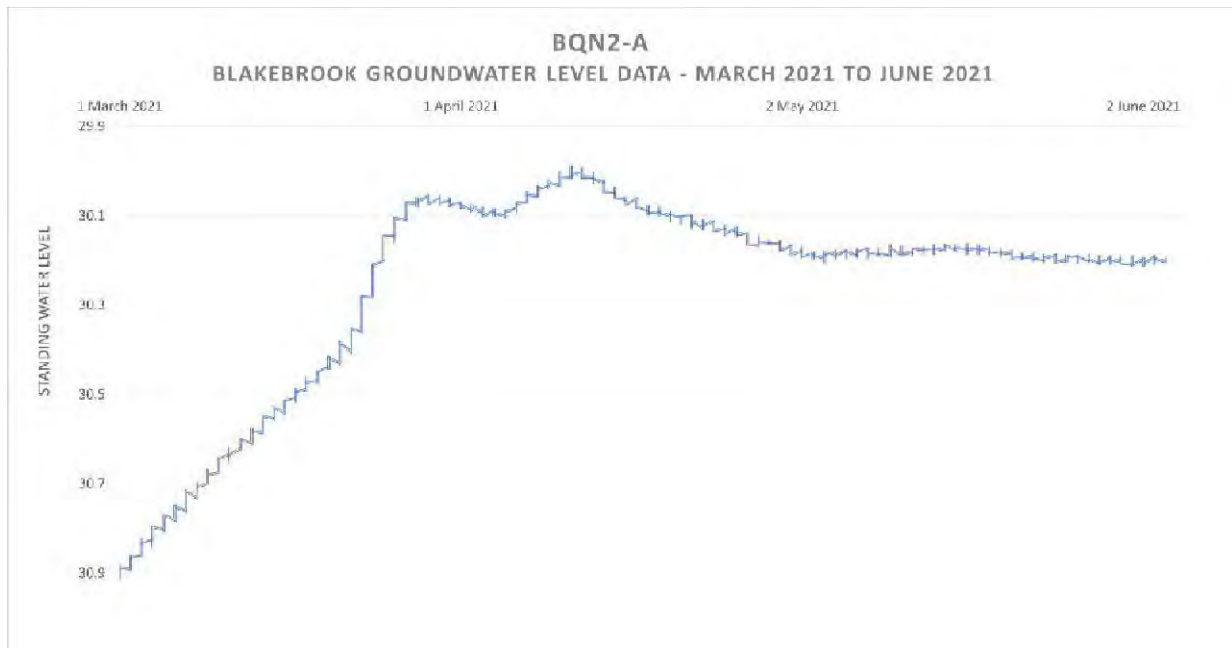


# Blakebrook Groundwater Wells -NORTH 2 BQN2- B (Shallow)

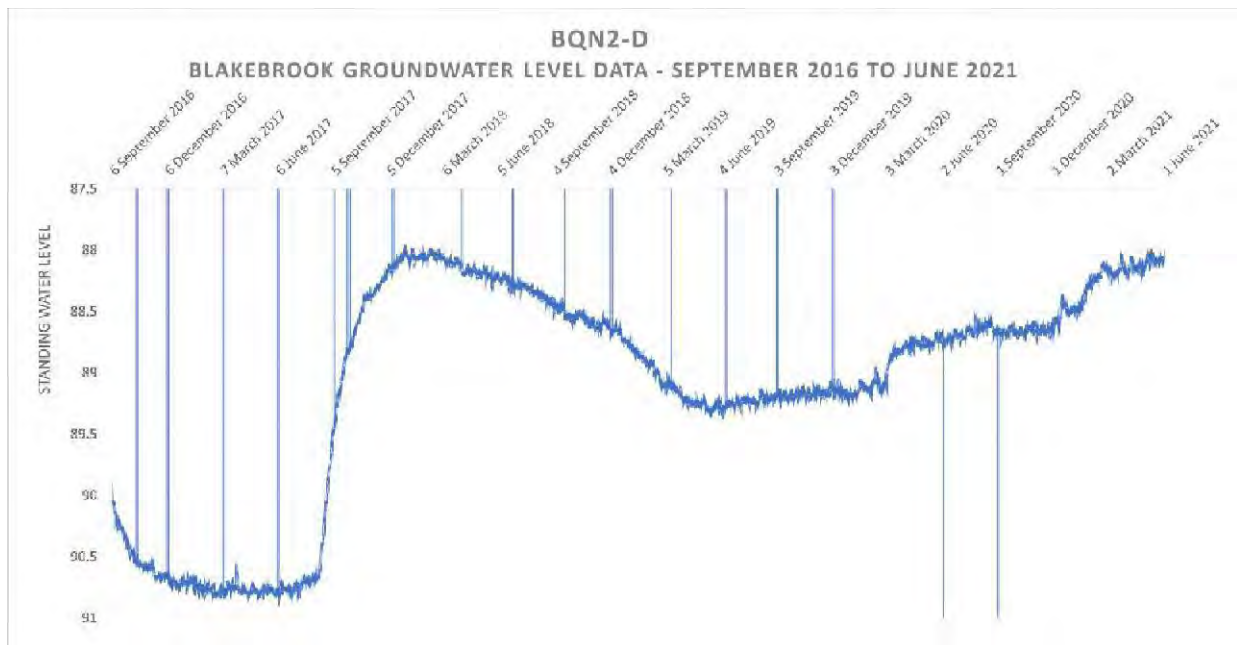
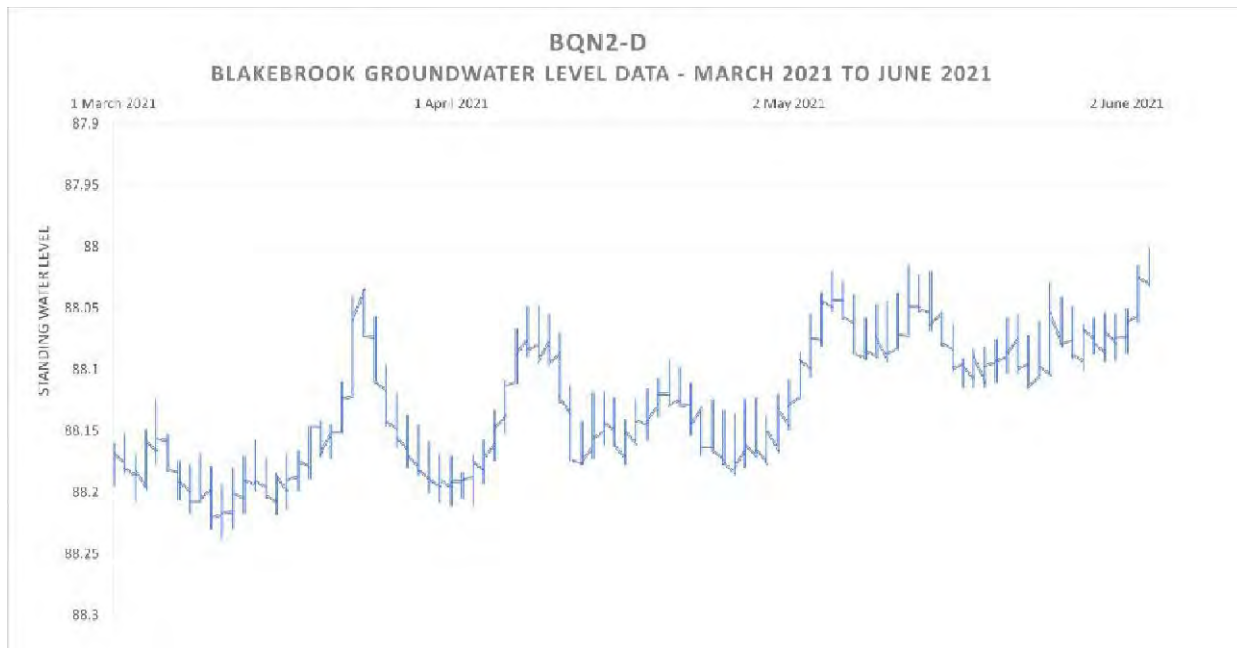




# Blakebrook Groundwater Wells -NORTH 2 BQN2- A (Intermediate)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- D (Deep)



Monday 20<sup>th</sup> September, 2021

Environmental Engineer &  
Director

To: [REDACTED]  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

[REDACTED]@ecoteam.com.au  
mob: [REDACTED]  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Groundwater Quality Monitoring Results & Report for Blakebrook Quarry**  
*Reporting period: 1<sup>st</sup> July 2020 to 1<sup>st</sup> September 2020*

## 1.0 INTRODUCTION

Ecoteam is engaged to undertake quarterly groundwater quality and water level monitoring on behalf of Lismore City Council for the Blakebrook Quarry, Blakebrook, NSW. This report presents results from the September 2021 sampling round. No controlled or uncontrolled releases from the sediment basins occurred during the reporting period.

## 2.0 PROJECT AIMS AND SAMPLING OBJECTIVES

The aim of the groundwater monitoring is to monitor groundwater quality and water levels at the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Groundwater) -Work Method Statement 2. The project objectives are to detect any potential changes in water quality or water levels within groundwater wells which may be a result of the Blakebrook Quarry activities, to calibrate the level meters, and assess the functioning of water levels meters at the site.

## 4.0 SAMPLING LOCATIONS

Water samples and level data were collected from all 9 groundwater bores. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly groundwater sampling sites, sample codes and well information

Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
Northern Two Clusters of Monitoring Bores (re. BQN1A, BQN1B, BQN2A, BQN2B, NOW & Cook p4 (2016))									
BQN1-B (BQN1-S)	GW307 323	524993.7	6818662.9	25/7/13	30	15 - 19	30	12 - 21	4.5
BQN1-A (BQN1-I)	GW307 322	524757.0	6818728.0	26/7/13	60	52 - 60	48	48 - 60	42.5
BQN1-D		524994	6818654.5	29/8/16	115	56 - 63; 99 - 109	115	97 - 109	?
BQN2-B (BQN2-S)	GW307 325	524437.7	6818619	28/7/13	42	28 - 38	42	30 - 42	28.5
BQN2-A (BQN2-S)	GW307 324	524436.7	6818615.5	27/7/13	60	52 - 60	60	51 - 60	31.3
BQN2-D		524447.5	6818616.5	29/8/16	133	19 - 24; 44 - 46.5; 112 - 117	133	109 - 121	
Southern Cluster of Monitoring Bores (re. Form A - particulars of completed work, 25/08/16 & GS letter 27/07/17)									
Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
BQS1-S		524684.5	6817848.6	25/8/16	55	38 - 43	55	40 - 52	30
BQS1-I		524681.5	6817842.8	24/8/16	73	34 - 39; 64 - 70	73	58 - 70	30
BQS1-D		524678	6817837.2	23/8/16	102.7	34 - 39; 64 - 72; 95 - 99	102.7	87.7 - 99.7	30



**Figure 1.** Map of monthly of groundwater sampling sites (Source: Lismore City Council)

## 5.0 SAMPLING METHODOLOGY

Sampling was undertaken by [REDACTED] and [REDACTED] on Thursday 3<sup>rd</sup> and Friday 4<sup>th</sup> September 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe and level information was downloaded using the Vu-Situ APP and Wireless TROLL Com instrument and cable connector. Samples collection methods and in-situ results are presented in **Appendix A (Table 2)**. The calibration certificate for the AquaTROLL is included as **Appendix B**.

Samples were stored on ice and dropped off at the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix C**.

## **6.0 RESULTS**

### **7.1 Physico-chemical Results**

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**.

### **7.2 Laboratory Results**

The chain of custody form is included in **Appendix D**. A full copy of the laboratory results is included as **Appendix E**.

### **7.2 Well Level Results**

Well level results for the past three months and the last five years are presented in **Appendix F**. Groundwater levels have risen in the South intermediate well (BQS1-I), fallen in the North 1 shallow and intermediate and South shallow wells (BQS1-S, BQN1-B and BQN1-A) and remained consistent in the North 2 shallow and intermediate and all deep wells (BQS1-D, BQN1-D, BQN2-B, BQN2-A and BQN2-D) over the past three months.

## **9.0 Summary of Results and Recommendations**

- Groundwater levels have risen in the South intermediate well (BQS1-I), fallen in the North 1 shallow and intermediate and South shallow wells (BQS1-S, BQN1-B and BQN1-A)
- Groundwater levels have fallen in the North 1 shallow and intermediate and South shallow wells (BQS1-S, BQN1-B and BQN1-A)
- Groundwater levels remained consistent in the North 2 shallow and intermediate and all deep wells (BQS1-D, BQN1-D, BQN2-B, BQN2-A and BQN2-D)
- Battery levels in all water level meters remain above 50%.
- All level meters appear to be functioning adequately.
- All level meters have been upgraded and calibrated.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████████@ecoteam.com.au

mob: ██████████

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ABN: 82 106 758 123

## APPENDIX A- Physicochemical and sample Information

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Sample Information	Blakebrook Quarry Groundwater Well Sampling Information								
	SOUTH			NORTH 1			NORTH 2		
Site Name	BQS1S	BQS1I	BQSID	BQN1B	BQN1A	BQN1D	BQN2B	BQN2A	BQN2D
Well Type	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep
Date	02/09/21	02/09/21	02/09/21	01/09/21	02/09/21	02/09/21	01/09/21	02/09/21	02/09/21
Time	13:00	13:30	13:55	11:04	11:30	12:05	9:30	15:15	14:44
Recorded Depth 1	20.13	42.58	80.58	5.37	47.14	100.30	29.40	30.23	88.10
Recorded Depth 2	20.35	43.20	80.59	5.47	47.23	100.29	29.70	30.06	88.16
Level Meter Calibrated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Level	63%	63%	64%	64%	63%	63%	63%	64%	64%
Memory Level	93%	90%	93%	92%	93%	93%	93%	96%	96%
Sample Method	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	12 volt submersible pump	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone
Odour	Not Present	Yes	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Clear water	Clear water	Clear water, some particles	Clear water- Film present on level meter	Clear water, some particles	Slightly turbid water	Clear water, some particles	Clear water	Clear water, some particles
Fresh Water WQOs	Water Quality Observations								
pH	8.15	7.54	7.68	7.18	7.62	9.06	9.77	8.10	8.47
EC $\mu\text{S/cm}$	253.13	1,369.2	1,689.8	1017.0	1,937.8	1,323.0	952.72	429.47	906.24
DO (%)	75.78	42.6	57.48	7.8	72.15	56.95	54.69	90.92	56.37
Temperature ( $^{\circ}\text{C}$ )	21.05	21.52	21.17	20.8	22.82	21.88	22.75	20.77	23.09
ORP	1,344.0	1,376.0	1,382.6	1,392	1,300.8	1,287.9	1,256.3	1,399.8	1,323.0

## Appendix B - Calibration certificate for AquaTROLL

<b>ThermoFisher</b> SCIENTIFIC  Thermo Fisher Scientific Australia Pty Ltd ABN 52 058 390 917 5 Canbbean Drive Scoresby VIC 3179 Phone: 1 300 735 295 Fax: 03 9763 1168	<b>ELECTROCHEMICAL INSTRUMENT MAINTENANCE &amp; CALIBRATION REPORT</b>	
	Customer: Address:  Attention:	Ecotechnology Australia PTY Ltd 13 Ewing st Lismore NSW 2480  <div style="background-color: black; width: 100px; height: 20px; margin: 5px 0;"></div>

Make:	In-Situ	Lab.ID/Assett No.	NA	Calibration Date:	27-05-2021
Model:	AquaTroll 400	Customer O/No.	PC-0063	Next Calibration:	05-2022
Serial No:	741219 / 746352	Location:	NA	Call Number:	SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

### Calibration/ Accuracy Tests

Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 ± 0.30	-7.7	175.5 ± 0.30	163.1			Pass
✓ Slope (pH)		-59.1 ± 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass

### Reference Instruments Used

Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

### General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction. Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV. Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Engineer's Name: XXXXXXXXXX Date: 27<sup>th</sup> May 2021

Issue 1

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G0232  
Page 1 of 1

## **Appendix C - Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential

### **Laboratory**

- Total Petroleum Hydrocarbons (TPH,) C10-C40
- Benzene, Toluene, Ethylbenzene Xylene (BTEX)
- Total iron
- Total lead
- Dissolved iron
- Dissolved lead
- Total oils and grease -Hexane Extractable
- Major ions (Sulfate, Chloride)
- Major cations (Calcium, Magnesium, sodium, potassium)



# Appendix D - Chain of Custody Form

## CHAIN OF CUSTODY

PO Box 157 ( Military Road)  
LISMORE NSW 2480  
P| 02 6620 3878 F| 02 6620 3957  
eal@scu.edu.au www.scu.edu.au/eal

**Submitting Client Details**

Quote Id: EALQ5821  
Job Ref: SMC010-Blekenrock WQ- Groundwater- SEPT21  
Company Name: Ecoteam  
Contact Person: [Redacted]  
Phone: 66215123  
Mobile: [Redacted]  
Fax: [Redacted]  
Email: [Redacted]  
Postal Address: 13 Ewing Street, Lismore

**Billing Client Details**

ABN: [Redacted]  
Company Name: Ecoteam  
Contact Person: [Redacted]  
Phone: 02 66215123  
Mobile: [Redacted]  
Fax: [Redacted]  
Email: [Redacted]  
Postal Address: 13 Ewing Street, Lismore

This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL.

Date Signed

**Payment Method:**

- Purchase Order
- Cheque
- Invoice (prior approval required)
- Credit Card Mastercard / Visa No: \_\_\_\_\_

Exp. Date: \_\_\_\_\_ Name on Card: \_\_\_\_\_ CVV: \_\_\_\_\_

**Comments:**

DO NOT TEST FOR Ph or EC

**Marketing Survey - where did you find us?**

- Word of mouth
- Magazine
- Google search
- Other

Relinquished By: [Redacted]

Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: \_\_\_\_\_

Received By: [Redacted] 3.9 [Signature]

Condition on receipt: Ambient / Cool / Frozen / Other: \_\_\_\_\_

### Sample Analysis Request

Price List Code (e.g. SWPACK 06)

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Salt Suite - (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-011	Dissolved Iron SW-SING103	Dissolved Lead SW-SING103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104			
	BQN1 B		1/9/21			Water	x	x	x	x	x	x	x			
	BQN1 A		2/9/21			Water	x	x	x	x	x	x	x			
	BQN1 D		2/9/21			Water	x	x	x	x	x	x	x			
	BQN2 B		1/9/21			Water	x	x	x	x	x	x	x			
	BQN2 A		2/9/21			Water	x	x	x	x	x	x	x			
	BQN2 D		2/9/21			Water	x	x	x	x	x	x	x			

EAL Chain of Custody Issue: V1.1 27/09/2016

EAL Project Reference:

M0999 x 9 Water

QFORM 4.2 Page 1 of 2

CHAIN OF CUSTODY

Comments:

---

DO NOT TEST FOR Ph or EC

---

Marketing Survey – where did you find us?  
 Word of mouth  Magazine  Google search  Other

Sample Analysis Request												
Price List Code (e.g. SW-PACK-05)												
Salt Suite- (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-041	Dissolved Iron SW-SING103	Dissolved Lead SW-SING103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104						
X	X	X	X	X	X	X						
X	X	X	X	X	X	X						
X	X	X	X	X	X	X						

Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)
	BQS1-S		2/9/21			Water
	BQS1-I		2/9/21			Water
	BQS1-D		2/9/21			Water

Tab through for extra lines

## Appendix E - Full Laboratory Results

## RESULTS OF WATER ANALYSIS

9 samples supplied by Ecoteam on 3/09/2021 Lab Job No M0999  
 Samples submitted by [redacted] Your Job SMC010-Blakebrook WQ-Groundwater-SEPT21  
 13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9
		BQN1-B	BQN1-A	BQN1-D	BQN2-B	BQN2-A	BQN2-D	BQS1-S	BQS1-I	BQS1-D
	Job No.	M0999/1	M0999/2	M0999/3	M0999/4	M0999/5	M0999/6	M0999/7	M0999/8	M0999/9
Bicarbonate (Alkalinity) (mg/L CaCO <sub>3</sub> equivalent)	** Total Alkalinity - APHA 2320	203	108	125	87	140	305	103	180	116
Water Hardness (mg/L CaCO <sub>3</sub> equivalent)	** Using Ca and Mg calculation	145	245	196	89	82	11	56	99	49
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	<2	<2	5	<2	<2	5	10	4	11
Sodium (mg/L)	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	177	350	277	167	70.2	218	38.0	277	371
Potassium (mg/L)	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	4.03	6.8	3.0	6.4	4.5	2.2	2.5	5.6	4.26
Calcium (mg/L)	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	28.3	77.7	24.7	30.5	20.1	3.6	14.7	30.3	15.2
Magnesium (mg/L)	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	18.0	12.4	32.5	3.1	7.7	0.5	4.7	5.7	2.59
Sodium Absorption Ratio (SAR)	** By calculation	6.4	9.7	8.6	7.7	3.4	28.3	2.2	12.1	23.1
Chloride (mg/L)	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	202	504	288	203	52	96	22	315	419
Sulfate (mg/L SO <sub>4</sub> <sup>2-</sup> )	APHA 3125 ICPMS <sup>note 1&amp;2</sup>	6	21	65	29	8	15	4	7	33
Chloride/Sulfate Ratio	** Calculation	35.5	23.6	4.4	7.0	6.8	6.2	6.0	42.5	12.6
Iron (mg/L)	Total Available - APHA 3125 ICPMS <sup>note 1&amp;2</sup>	1.77	7.34	66.6	0.535	0.138	0.314	0.326	0.112	1.97
Lead (mg/L)	Total Available - APHA 3125 ICPMS <sup>note 1&amp;2</sup>	<0.001	0.004	0.004	0.001	0.001	0.001	0.001	<0.001	0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS <sup>note 1&amp;2</sup>	0.038	0.002	0.013	0.003	0.002	0.003	0.001	0.023	0.003
Lead (mg/L)	Dissolved - APHA 3125 ICPMS <sup>note 1&amp;2</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
<b>BTEX</b>										
Benzene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<0.5	<0.5	<0.5	<0.5	<0.5	6.9	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted: SGS report: SE223311	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Total Recoverable Hydrocarbons (TRH)</b>										
C6-C9 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<40	<40	<40	<40	<40	<40	<40	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C16 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<60	<60	<60	<60	<60	<60	<60	<60	<60
C16-C34 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<200	<200	<200	<200	<200	<200	<200	<200	<200
C34-C40 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<100	<100	<100	<100	<100	<100	<100	<100	<100
Sum C10-C36 Fraction (µg/L or ppb)	Subcontracted: SGS report: SE223311	<100	<100	<100	<100	<100	<100	<100	<100	<100

**Notes:**

- Total metals - samples digested with nitric acid; Total available (acid soluble / extractable) metals - samples acidified with nitric acid to pH <2;  
Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysis
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
- 1 mg/L (milligram per litre) 1 ppm (part per million) 1000 µg/L (micrograms per litre) 1000 ppb (part per billion)
- For conductivity 1 dS/m 1 mS/cm 1000 µS/cm
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater', 23rd Edition, except where stated otherwise
- Analysis conducted between sample arrival date and reporting date
- \*\* NATA accreditation does not cover the performance of this service
- Denotes not requested
- This report is not to be reproduced except in full
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer [scu.edu.au/eal/t&cs](http://scu.edu.au/eal/t&cs) or on request)
- Results relate only to the samples tested
- This report was issued on 16/09/2021



## Appendix F - Hydrographs

exce



## Blakebrook Quarry- Groundwater Monitoring

# Groundwater Hydrographs

## September 2021



13 Ewing Street, LISMORE

NSW 2480 Australia

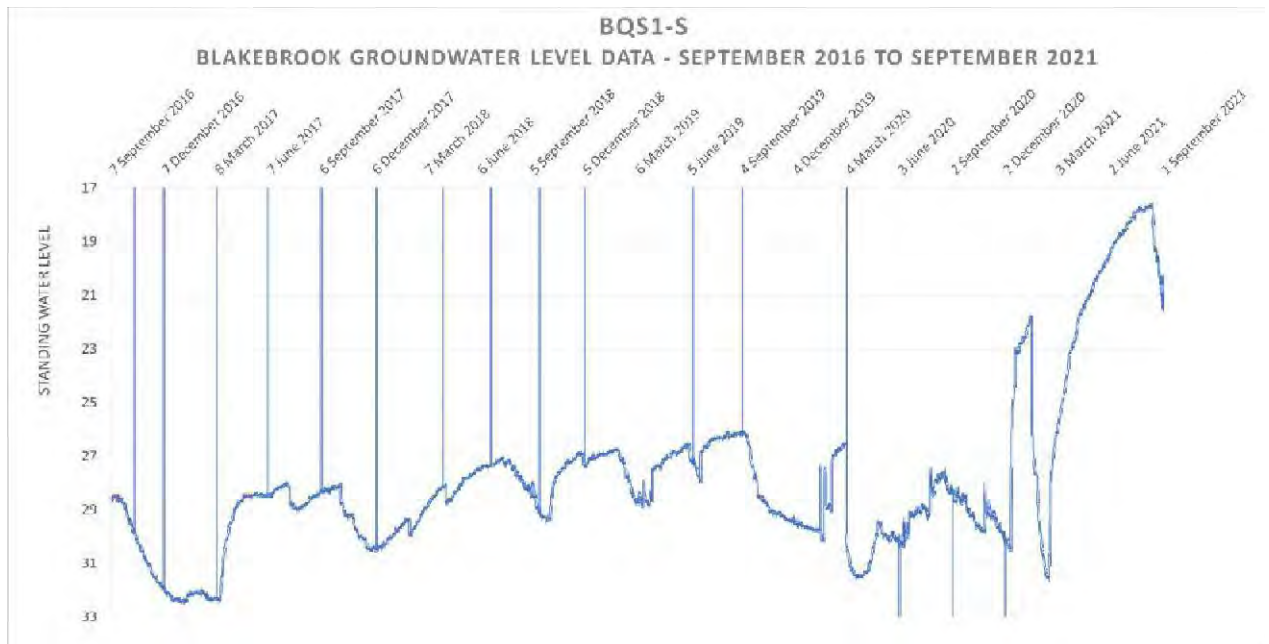
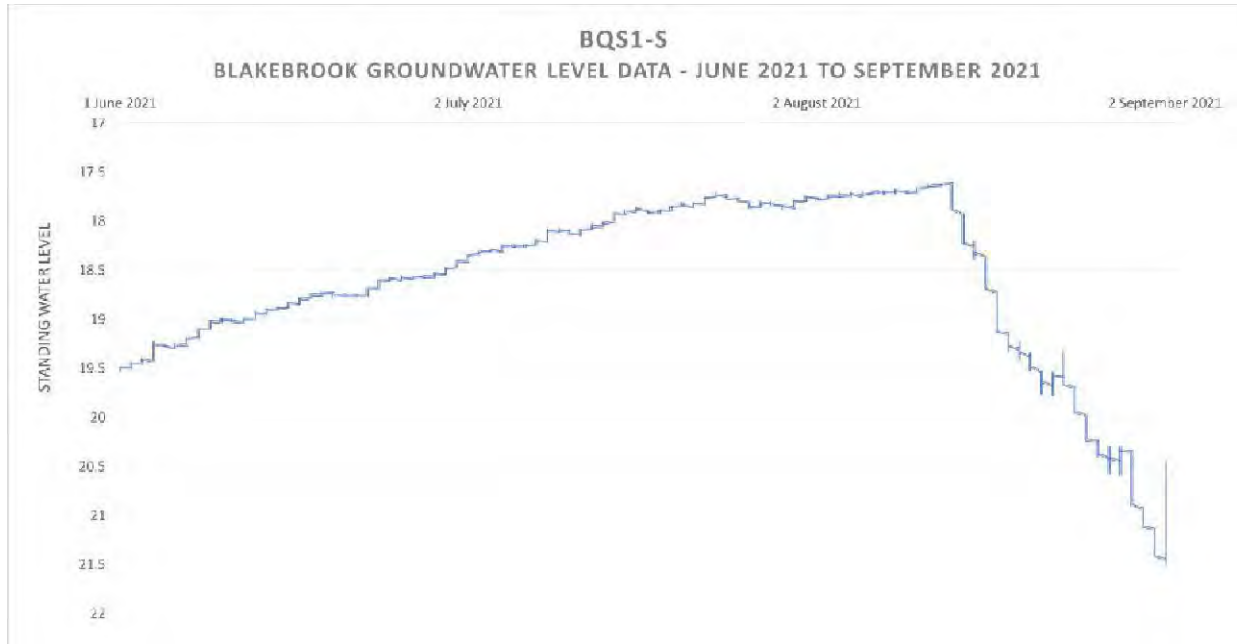
Phone: (02) 6621 5123

Fax: (02) 6621 8123

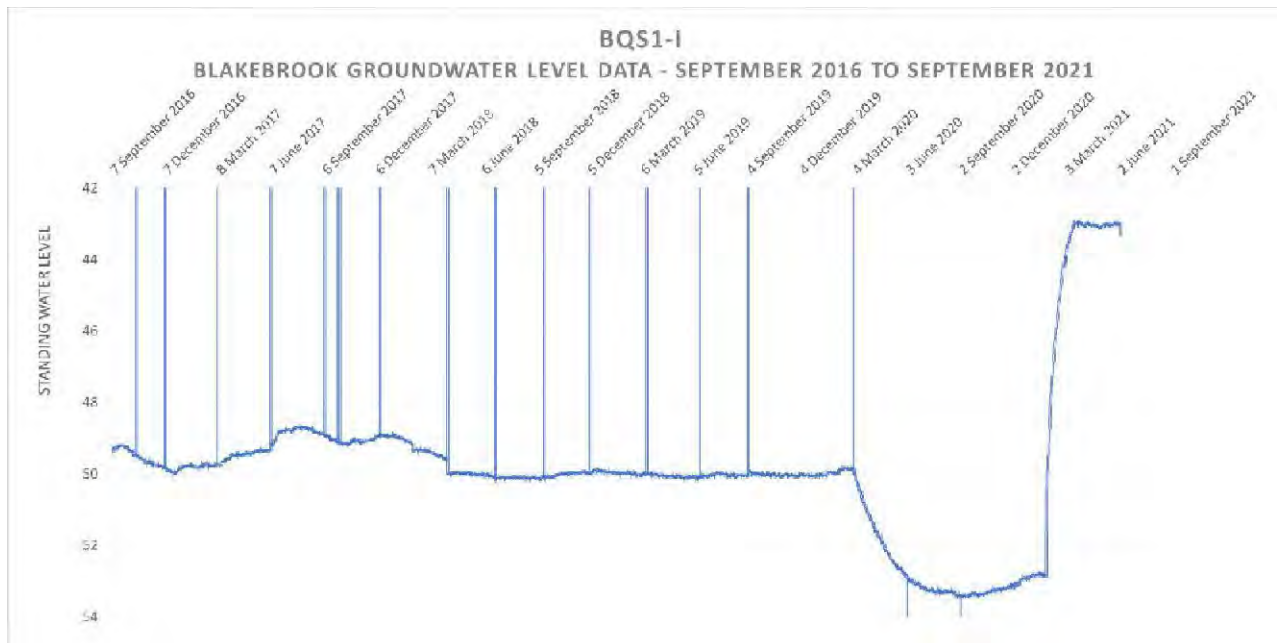
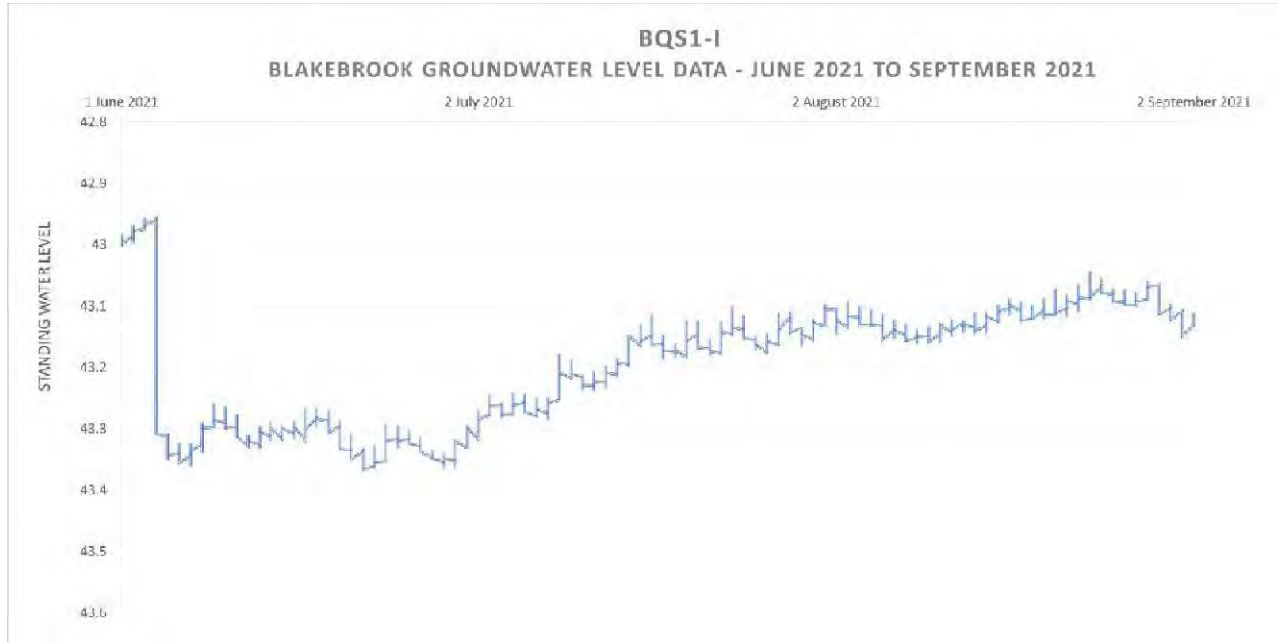
Email: [info@ecoteam.com.au](mailto:info@ecoteam.com.au)

Web: [www.ecoteam.com.au](http://www.ecoteam.com.au)

# Blakebrook Groundwater Wells – SOUTH 1 BQS1- S (Shallow)

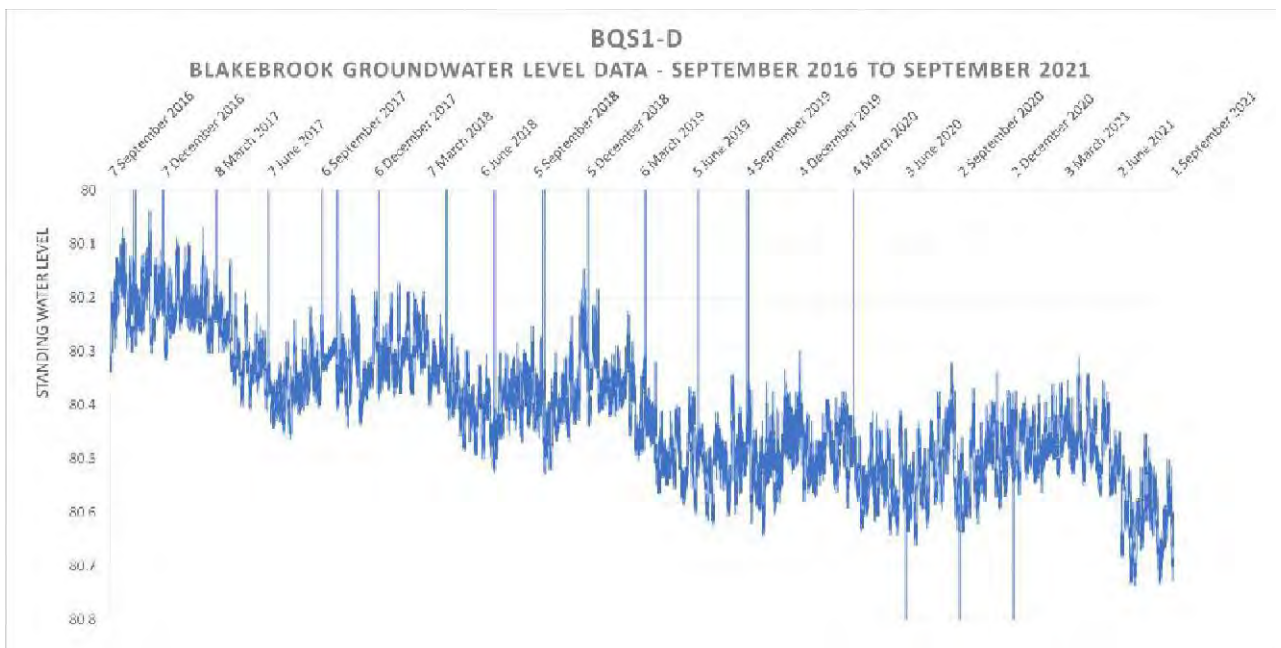
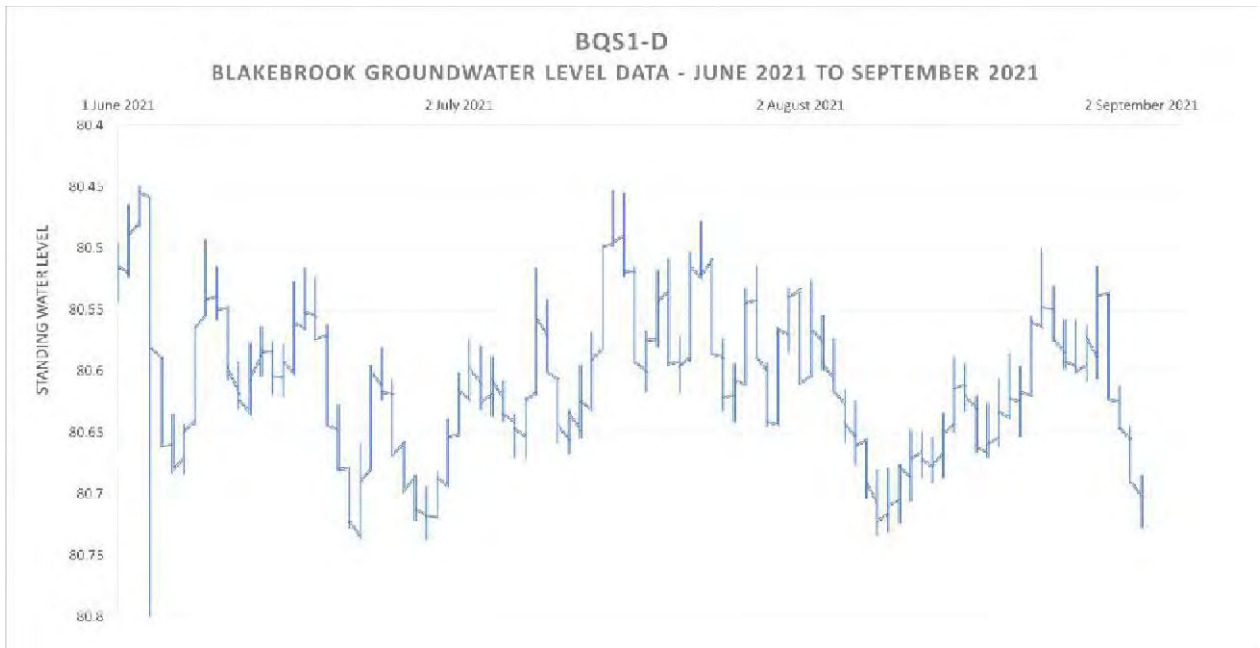


# Blakebrook Groundwater Wells – SOUTH 1 BSQS1- I (Intermediate)

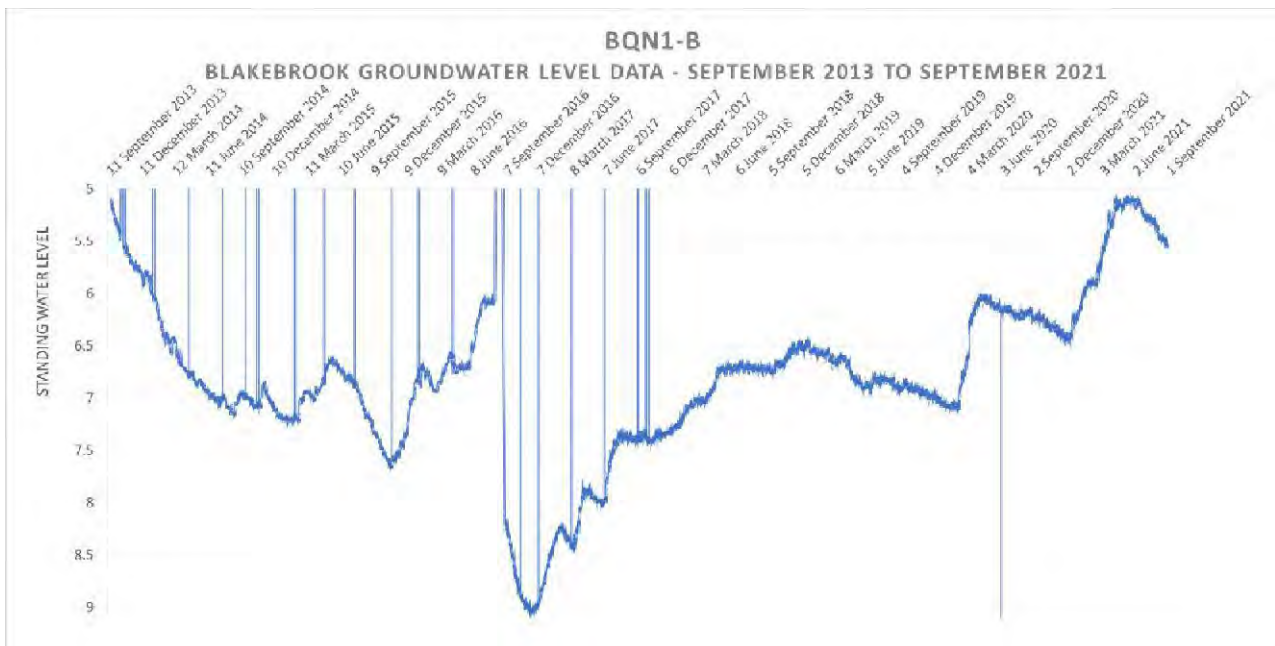
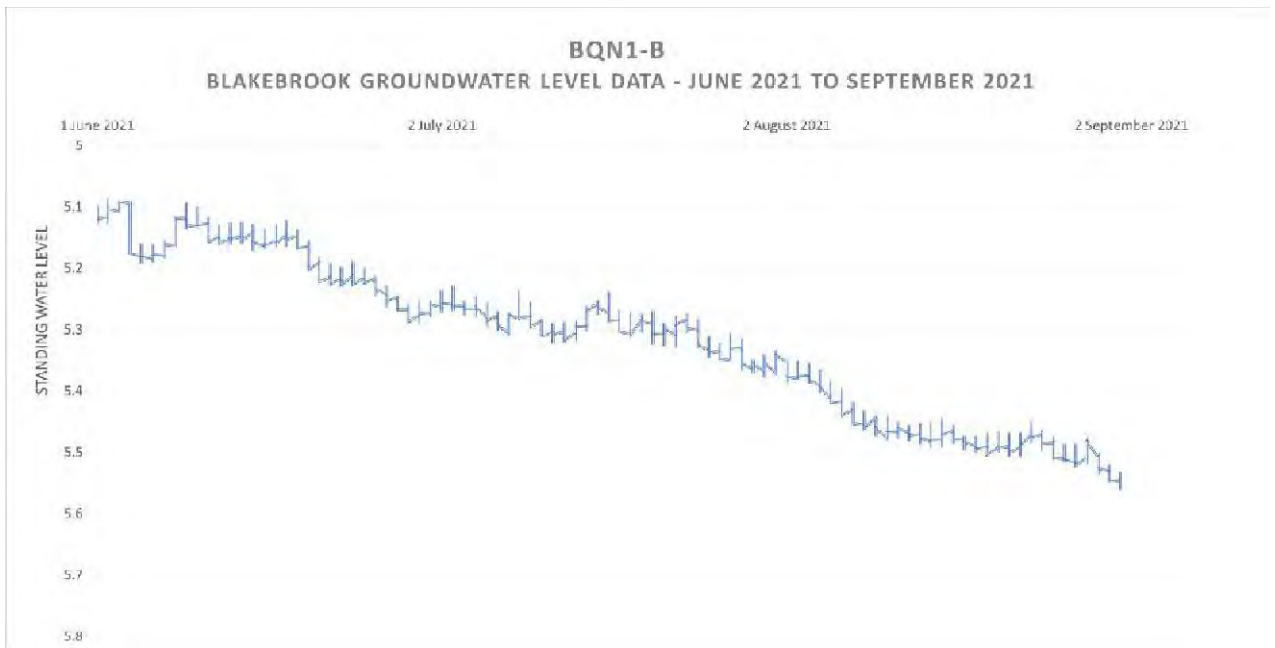




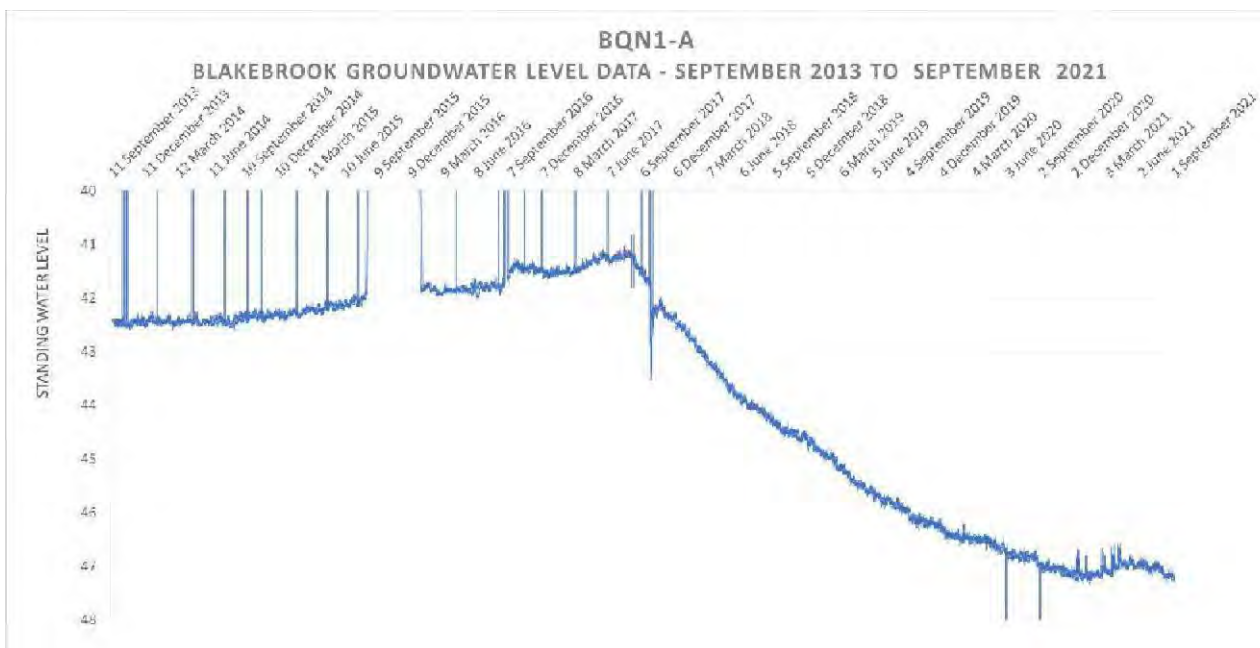
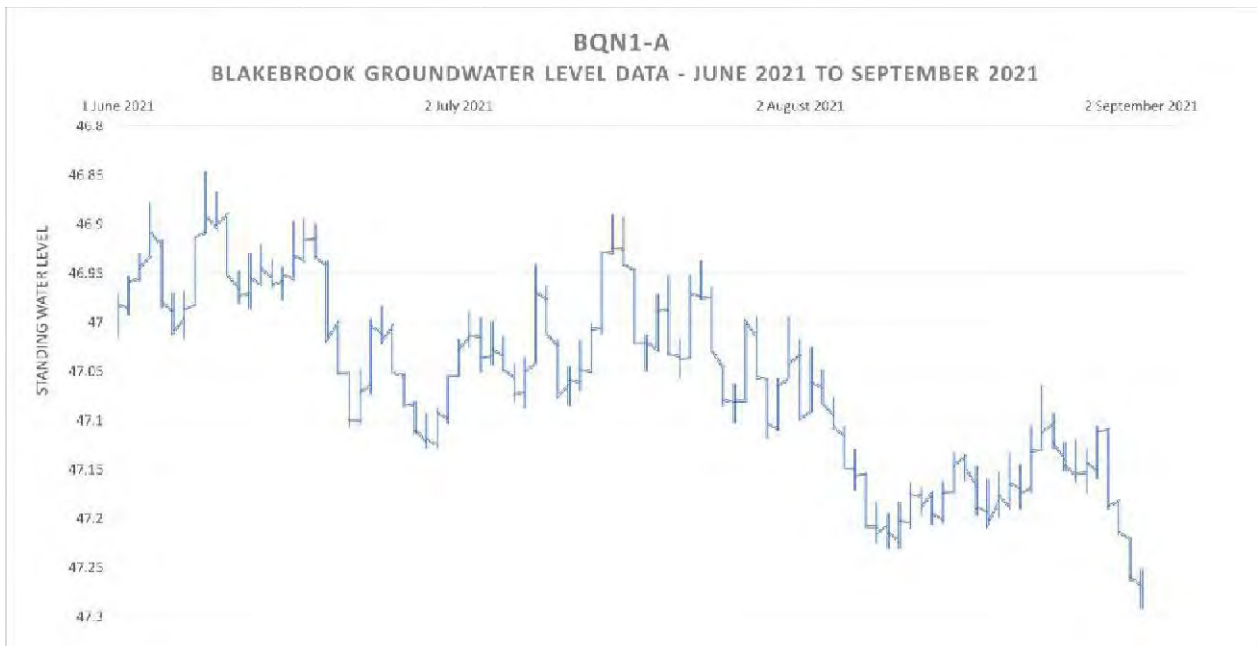
# Blakebrook Groundwater Wells -SOUTH 1 BQS1- D (Deep)



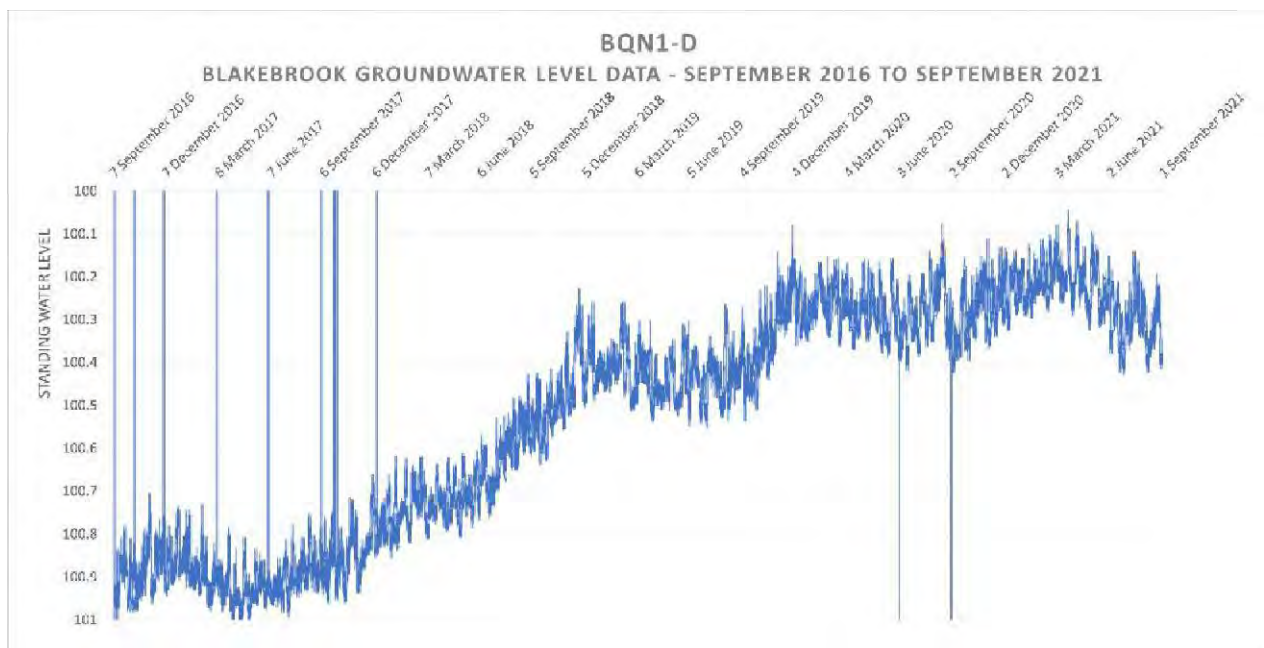
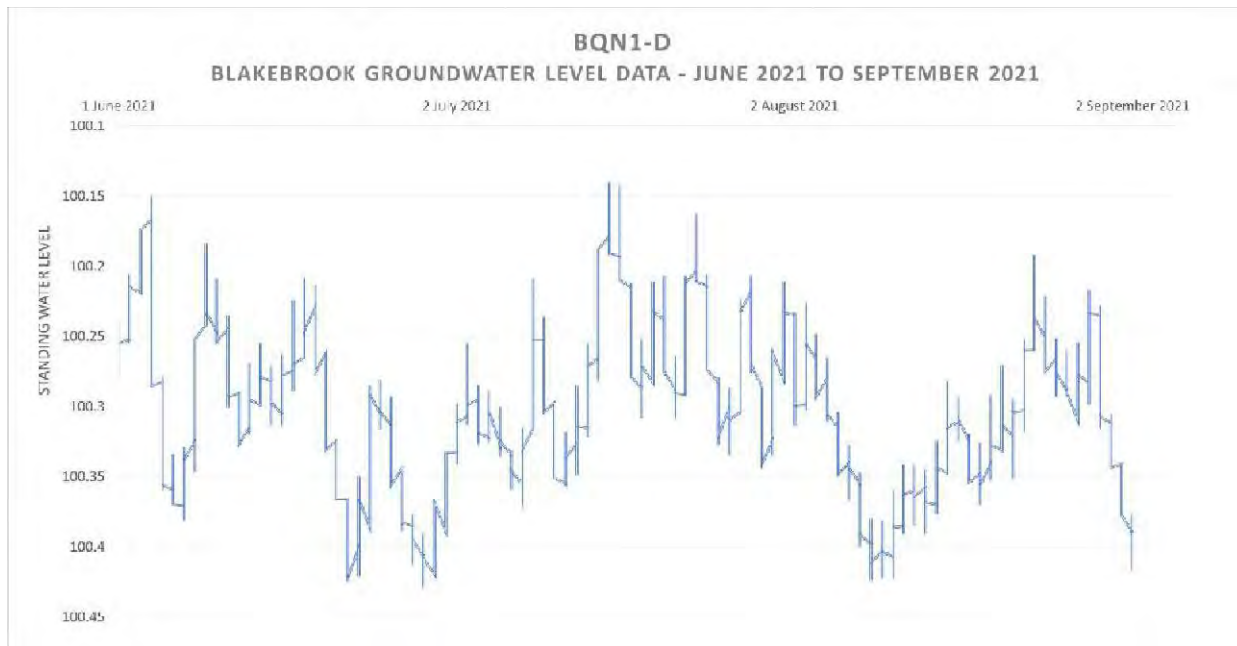
# Blakebrook Groundwater Wells -NORTH 1 BQN1- B (Shallow)



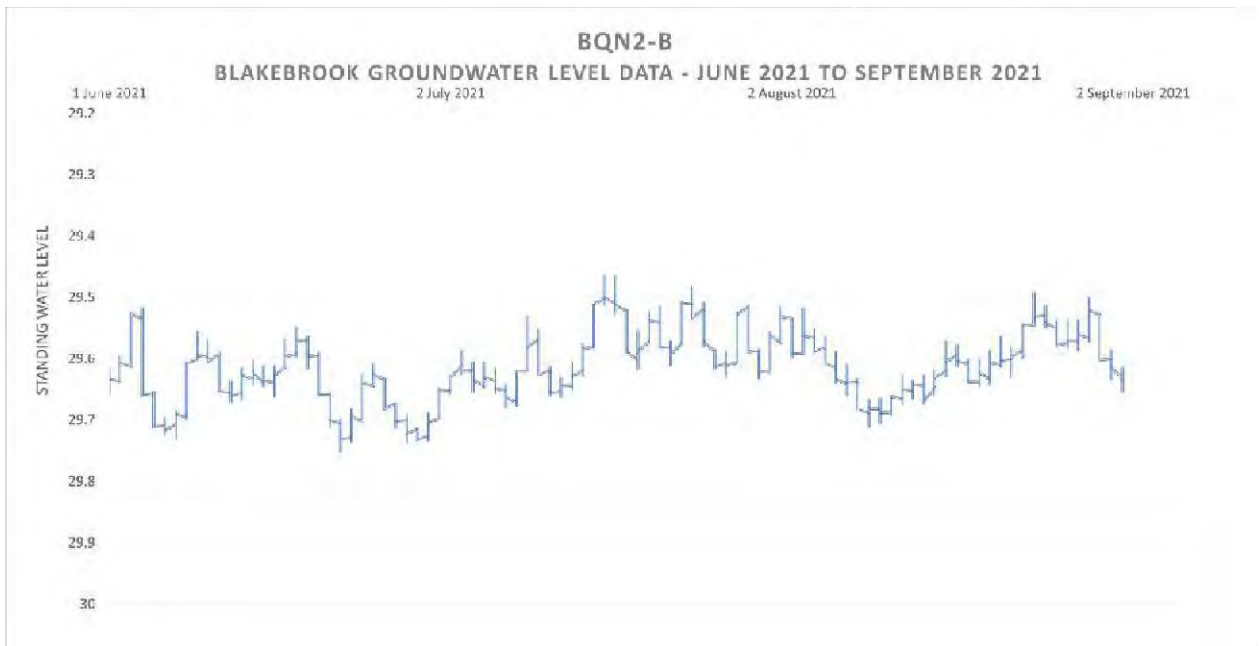
# Blakebrook Groundwater Wells -NORTH 1 BQN1- A (Intermediate)



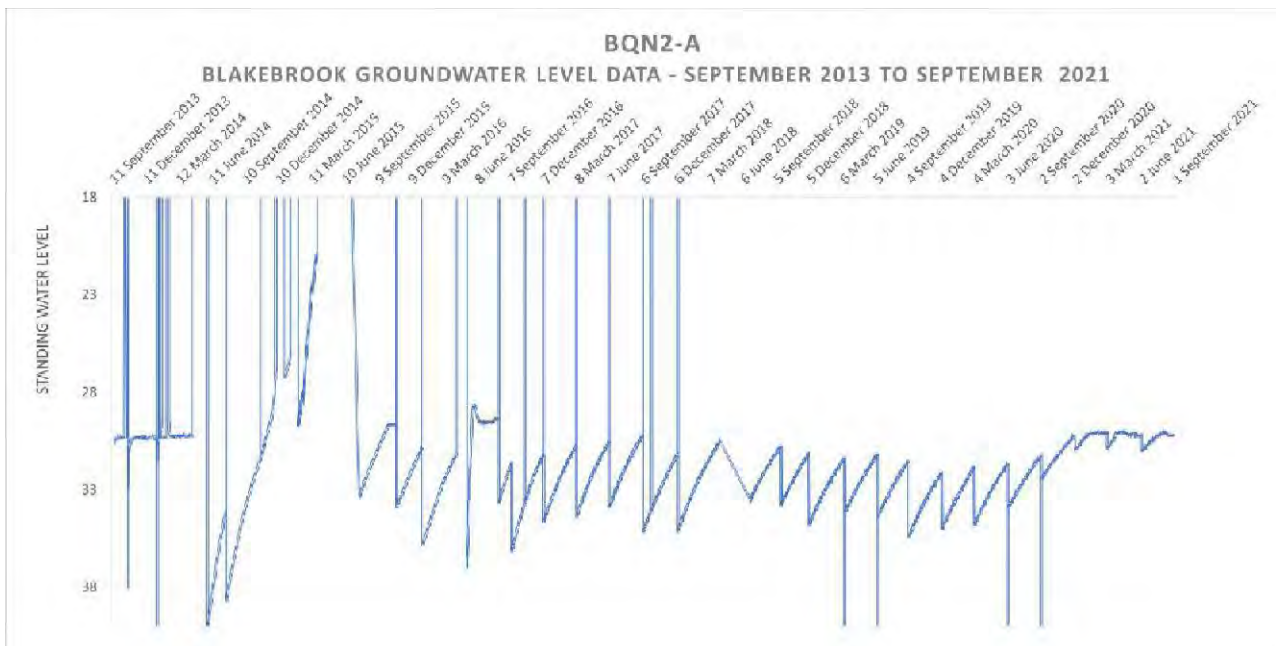
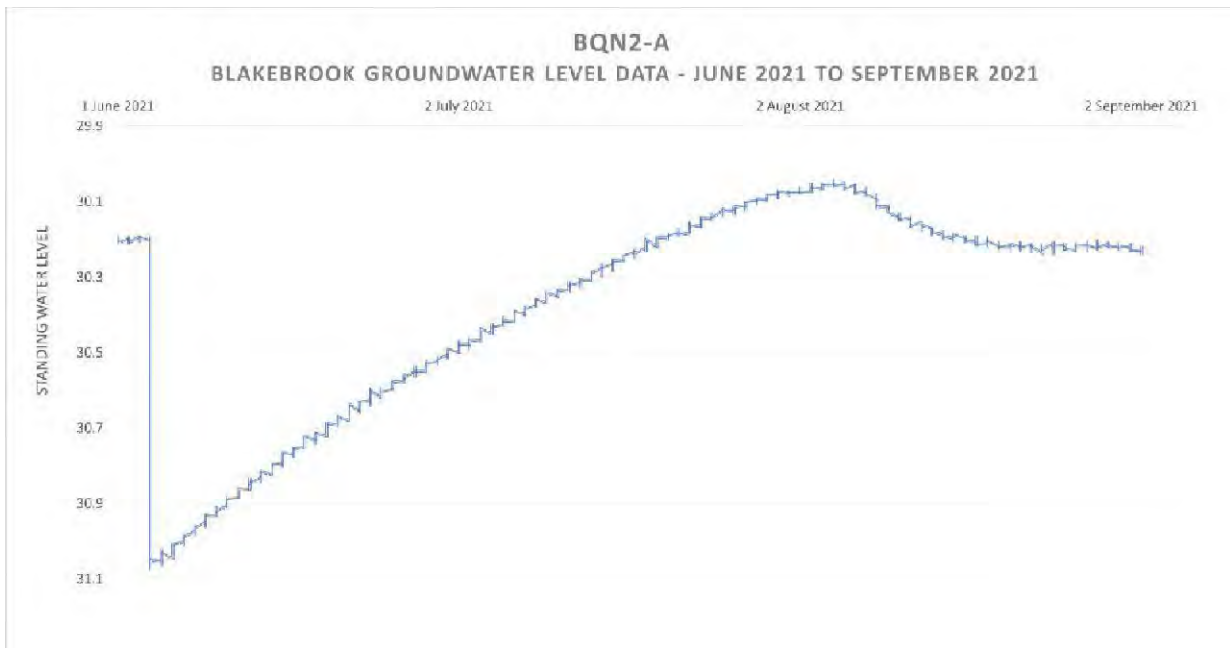
# Blakebrook Groundwater Wells -NORTH 1 BQN1- D (Deep)



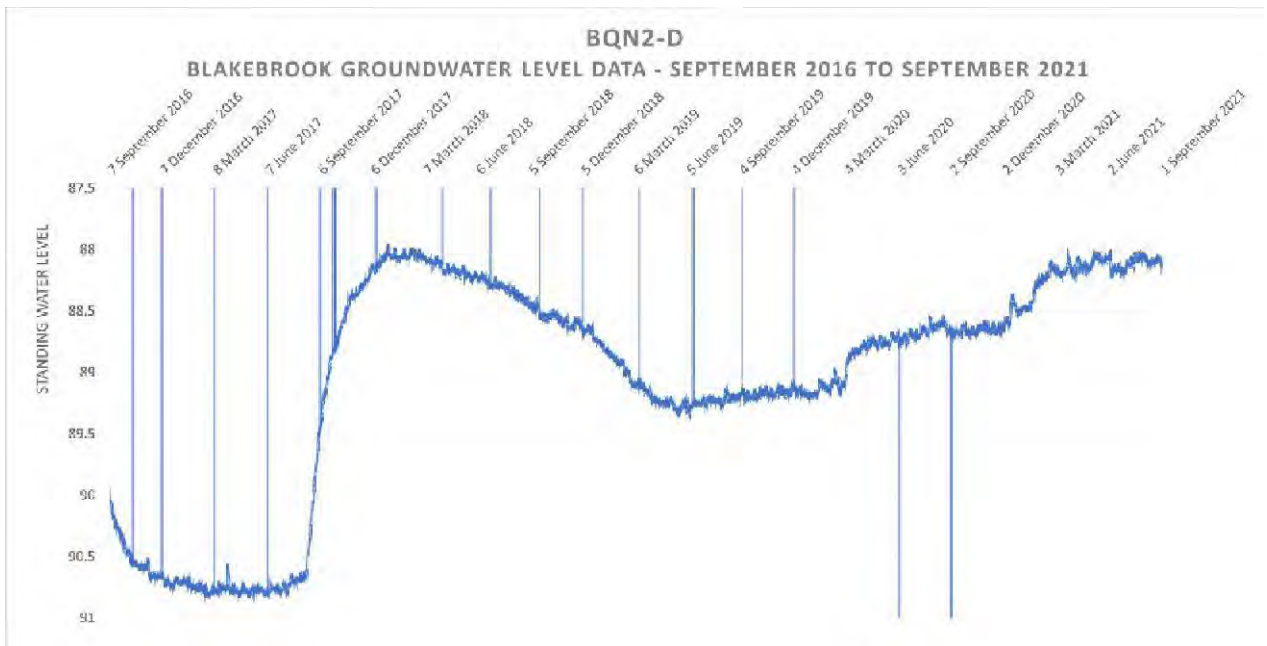
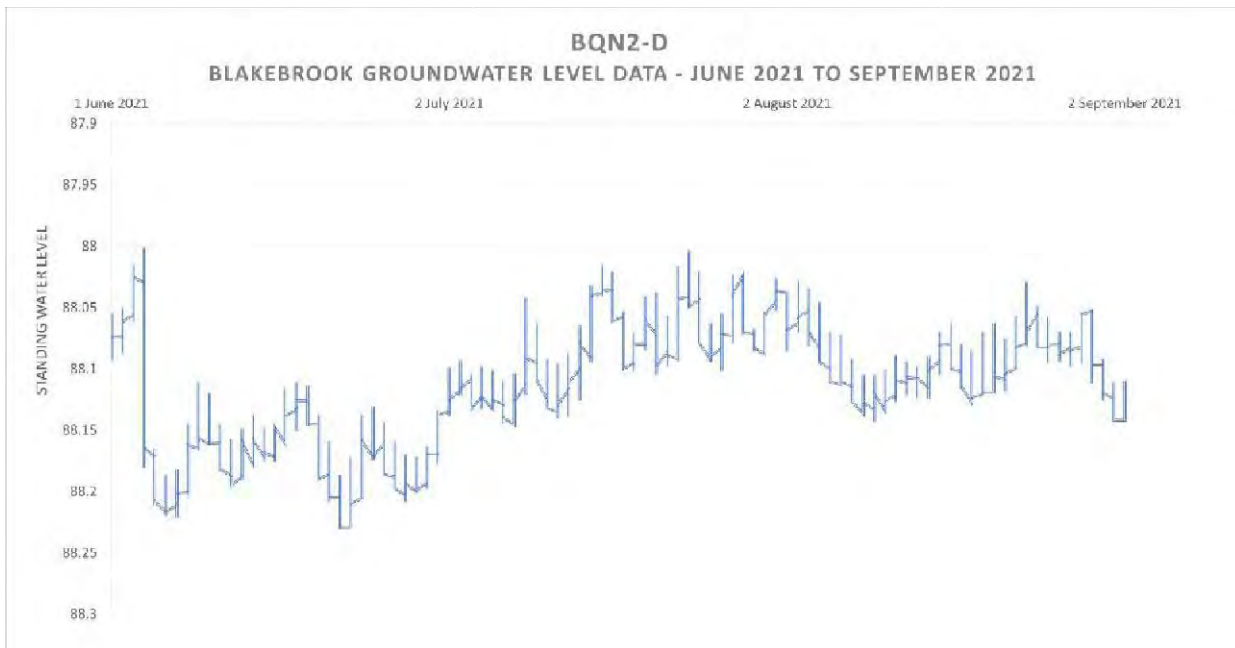
# Blakebrook Groundwater Wells -NORTH 2 BQN2- B (Shallow)



## Blakebrook Groundwater Wells -NORTH 2 BQN2- A (Intermediate)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- D (Deep)



Wednesday 15<sup>th</sup> December, 2021

Environmental Engineer &  
Director

To: [REDACTED]  
Compliance Officer, Lismore City Council  
Blakebrook Quarry Water Quality Sampling

[REDACTED]@ecoteam.com.au  
mob: [REDACTED]  
office: (02) 66-215-123  
fax: (02) 66-218-123  
ABN: 82 106 758 123

**Re: Groundwater Quality Monitoring Results & Report for Blakebrook Quarry**  
*Reporting period: 1<sup>st</sup> September 2021 to 1<sup>st</sup> December 2021*

### 1.0 INTRODUCTION

Ecoteam is engaged to undertake quarterly groundwater quality and water level monitoring on behalf of Lismore City Council for the Blakebrook Quarry, Blakebrook, NSW. This report presents results from the September 2021 sampling round.

### 2.0 PROJECT AIMS AND SAMPLING OBJECTIVES

The aim of the groundwater monitoring is to monitor groundwater quality and water levels at the Blakebrook Quarry site as per Northern Rivers Quarry - Blakebrook Quarry Monitoring Procedure (Groundwater) -Work Method Statement 2. The project objectives are to detect any potential changes in water quality or water levels within groundwater wells which may be a result of the Blakebrook Quarry activities, to calibrate the level meters, and assess the functioning of water levels meters at the site.

### 3.0 SAMPLING LOCATIONS

Water samples and level data were collected from all 9 groundwater bores. Sample codes and corresponding sampling locations are shown in **Table 1** and **Figure 1**.

**Table 1.** Quarterly groundwater sampling sites, sample codes and well information

Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
Northern Two Clusters of Monitoring Bores (re. BQN1A, BQN1B, BQN2A, BQN2B, NOW & Cook p4 (2016))									
BQN1-B (BQN1-S)	GW307 323	524993.7	6818662.9	25/7/13	30	15 - 19	30	12 - 21	4.5
BQN1-A (BQN1-I)	GW307 322	524757.0	6818728.0	26/7/13	60	52 - 60	48	48 - 60	42.5
BQN1-D		524994	6818654.5	29/8/16	115	56 - 63; 99 - 109	115	97 - 109	?
BQN2-B (BQN2-S)	GW307 325	524437.7	6818619	28/7/13	42	28 - 38	42	30 - 42	28.5
BQN2-A (BQN2-S)	GW307 324	524436.7	6818615.5	27/7/13	60	52 - 60	60	51 - 60	31.3
BQN2-D		524447.5	6818616.5	29/8/16	133	19 - 24; 44 - 46.5; 112 - 117	133	109 - 121	
Southern Cluster of Monitoring Bores (re. Form A - particulars of completed work, 25/08/16 & GS letter 27/07/17)									
Bore ID	RN (NOW)	Easting	Northing	Completion date	TD (mBGL)	Water strike (mBGL)	Casing Depth (mBGL)	Screened (mBGL)	SWL (mBGL)
BQS1-S		524684.5	6817848.6	25/8/16	55	38 - 43	55	40 - 52	30
BQS1-I		524681.5	6817842.8	24/8/16	73	34 - 39; 64 - 70	73	58 - 70	30
BQS1-D		524678	6817837.2	23/8/16	102.7	34 - 39; 64 - 72; 95 - 99	102.7	87.7 - 99.7	30





**Figure 1.** Map of monthly of groundwater sampling sites (Source: Lismore City Council)

#### 4.0 SAMPLING METHODOLOGY

Sampling was undertaken by [REDACTED] and [REDACTED] on Wednesday 1<sup>st</sup> and Thursday 2<sup>nd</sup> December 2021. In situ physico-chemical measurements were collected using an AquaTROLL400 multi-parameter probe and level information was downloaded using the Vu-Situ APP and Wireless TROLL Com instrument and cable connector. Samples collection methods and in-situ results are presented in **Appendix A (Table 2)**. The calibration certificate for the AquaTROLL is included as **Appendix B**.

Samples were stored on ice and dropped off at the Environmental Analysis Laboratory (EAL) in Lismore. Samples were not field filtered. A full list of analytes for the project are included in **Appendix C**.

## **5.0 RESULTS**

### **5.1 Physico-chemical Results**

In situ physico-chemical sampling results are shown in **Appendix A (Table 2)**.

### **5.2 Laboratory Results**

The chain of custody form is included in **Appendix D**. A full copy of the laboratory results is included as **Appendix E**.

### **5.3 Well Level Results**

Well level results for the past three months and the last five years are presented in **Appendix F**. Groundwater levels have risen in the South intermediate and deep wells and the North 2 shallow and deep wells (BQS1-I, BQS1-D, BQN2-B, BQN2-D), fallen in the North 1 intermediate and deep wells and the North 2 intermediate well (BQN1-A, BQN1-D, BQN2-A) and remained consistent in the South shallow well and North 1 shallow well (BQS1-S BQN1-B) over the past three months.

## **6.0 SUMMARY OF RESULTS**

- Groundwater levels have risen in the South intermediate and deep wells and the North 2 shallow and deep wells (BQS1-I, BQS1-D, BQN2-B, BQN2-D),
- Groundwater levels have fallen in the North 1 intermediate and deep wells and the North 2 intermediate well (BQN1-A, BQN1-D, BQN2-A).
- Groundwater levels remained consistent in the South shallow well and North 1 shallow well (BQS1-S BQN1-B).
- Battery levels in all water level meters remain above 50%.
- All level meters appear to be functioning adequately.
- All level meters have been upgraded and calibrated.

Kind regards,

██████████  
**Environmental Engineer & Director**

██████████@ecoteam.com.au

mob: ██████████

office: (02) 66-215-123

fax: (02) 66-218-123

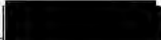
ABN: 82 106 758 123

## APPENDIX A- Physicochemical and sample Information

Table 2. Results of physico-chemical parameters collected in situ at quarterly sampling.

Sample Information	Blakebrook Quarry Groundwater Well Sampling Information								
	SOUTH			NORTH 1			NORTH 2		
Site Name	BQS1S	BQS1I	BQSID	BQN1B	BQN1A	BQN1D	BQN2B	BQN2A	BQN2D
Well Type	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep	Shallow	Intermediate	Deep
Date	01/12/21	01/12/21	01/12/21	01/12/21	01/12/21	01/12/21	01/12/21	01/12/21	01/12/21
Time	12:25	13:04	12:31	11:15	9:53	10:30	14:30	14:05	14:00
Recorded Depth 1	27.51	42.28	80.38	5.66	46.96	100.14	29.72	29.94	87.80
Recorded Depth 2	27.54	43.00	80.35	6.05	46.86	100.14	29.67	30.78	87.92
Level Meter Calibrated	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Level	62%	62%	62%	62%	62%	62%	62%	62%	62%
Memory Level	87%	87%	87%	90%	90%	90%	90%	90%	90%
Sample Method	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Hydro sleeve Bailer from screen zone	12-volt submersible pump	Bottom filling Bailer from screen zone	Hydro sleeve Bailer from screen zone	Bottom filling Bailer from screen zone	Bottom filling Bailer from screen zone	Hydro sleeve Bailer from screen zone
Odour	Not Present	Yes	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present
Site/Water Observations	Clear water	Clear water	Clear water	Clear water	Clear water, some particles	Slightly turbid water	Clear water, some particles	Clear water	Clear water, some particles
Fresh Water WQOs	<b>Water Quality Observations</b>								
pH	7.00	9.02	8.47	7.00	9.02	8.47	10.53	7.32	8.69
EC $\mu\text{S}/\text{cm}$	260.46	1,423.9	1,723.2	1,041.3	1,975.8	1,379.3	1,061.5	533.6	914.1
DO (%)	76.31	52.88	39.96	10.98	69.45	60.32	76.23	88.36	45.9
Temperature ( $^{\circ}\text{C}$ )	21.56	21.92	22.02	22.72	21.24	22.22	23.73	22.51	23.14
ORP	1,215.1	1,138.2	1,167.1	1,209.0	1,100.7	1,124.9	886.8	1,128.4	1,069.7

## Appendix B - Calibration certificate for AquaTROLL

<b>ThermoFisher</b> <b>SCIENTIFIC</b>  Thermo Fisher Scientific Australia Pty Ltd ABN 52 058 390 917 5 Canbbean Drive Scoresby VIC 3179 Phone: 1 300 735 295 Fax: 03 9763 1168	<b>ELECTROCHEMICAL INSTRUMENT          MAINTENANCE &amp; CALIBRATION REPORT</b>	
	Customer: Address:  Attention:	Ecotechnology Australia PTY Ltd 13 Ewing st Lismore NSW 2480  

Make:	In-Situ	Lab.ID/Assett No.	NA	Calibration Date:	27-05-2021
Model:	AquaTroll 400	Customer O/No.	PC-0063	Next Calibration:	05-2022
Serial No:	741219 / 746352	Location:	NA	Call Number:	SV2105240050

Service and Safety Checks	Pass/Fail	Check and Adjust	Pass/Fail
Consult operator regarding performance/problems	Pass	Probes, leads and connectors	Pass
Check general operation, note additional problems	Pass	Keypad / user controls	Pass
Electrical safety if applicable to AS/NZS 3760:2003	N/A	Power supply / battery voltage and condition	Pass
Initialization Procedure	Pass	Probe(s) performance (response slow or acceptable)	Acceptable
Instrument Condition	Pass	Internal and external cleaning	Pass

### Calibration/ Accuracy Tests

Standard Type	Serial Number (if applicable)	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Standard Value ± Variation	Displayed Value	Pass/Fail
✓ pH	20945	7.00 ± 0.02	7.00	4.00 ± 0.02	4.00			Pass
✓ mV (pH)		0.0 +/- .30	-7.7	175.5 +/- .30	163.1			Pass
✓ Slope (pH)		-59.1 +/- 3	-56.93					Pass
✓ DO	745063	8.3mg/L @21.5oC	8.27mg/L @21.66oC	0.0	0.03			Pass
ISE								
✓ ORP	20945	234.5mV @22.0oC	234.5 @22.1oC					Pass
✓ Conductivity	746352	1413us/cm	1413us/cm					Pass
TDS								
✓ Temp C	746352	22.5	22.47					Pass


### Reference Instruments Used

Make	Model / Part Number	Serial / Batch Number	Expiry / Reference #
Thermo Scientific	ECBU4BTC1LIT	450/01	Nov 2023
Thermo Scientific	ECBU7BTC1LIT	450/02	Nov 2023
FLUKE	179 True RMS multimeter	91610338	Feb 2022
Thermo Scientific	ECCON1413BT	270/01	Jun 2023
ACR	Zobell A & B (0608/0609)	362211 (A) & 357174 (B)	Oct 2021 (A & B)
TPS	Sodium Sulphite for Zero DO	10640	Aug 2021

### General Comments and Recommendations on Instrument Condition, Location Details and Parts Used in Service

Instrument inspected and noted operation. Refilled pH reference filling solution and replaced reference junction. Cleaned sensors and instrument. Calibrated individual sensor parameters. DO Sensor slope of 1.070123. ORP sensor offset of 5.5mV. Conductivity cell constant:0.979

Issued Maintenance Kit and Reference junction kit.

Engineer's Name  


Date  
 27<sup>th</sup> May 2021

Issue 1

Oct 06  
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G0232  
 Page 1 of 1

## **Appendix C - Full List of Sampling Analytes**

### **Field**

- pH
- Electrical Conductivity (EC)
- Dissolved Oxygen (DO)
- Temperature
- Oxidation Reduction Potential

### **Laboratory**

- Total Petroleum Hydrocarbons (TPH,) C10-C40
- Benzene, Toluene, Ethylbenzene Xylene (BTEX)
- Total iron
- Total lead
- Dissolved iron
- Dissolved lead
- Total oils and grease -Hexane Extractable
- Major ions (Sulfate, Chloride)
- Major cations (Calcium, Magnesium, sodium, potassium)

# Appendix D - Chain of Custody Form

## CHAIN OF CUSTODY

 <p>PO Box 157 ( Military Road) LISMORE NSW 2480 P  02 6620 3678 F  02 6620 3957 eal@scu.edu.au www.scu.edu.au/eal</p>	<b>Submitting Client Details</b> Quote Id: EALQ5821 Job Ref: SMC010-Batebrook WQ- Groundwater- DEC21 Company Name: Ecoteam Contact Person: [REDACTED] Phone: 86215123 Mobile: [REDACTED] Fax: [REDACTED] Email: [REDACTED] Postal Address: 13 Ewing Street, Lismore	<b>Billing Client Details</b> ABN: Company Name: Ecoteam Contact Person: [REDACTED] Phone: 02 66215123 Mobile: [REDACTED] Fax: Email: [REDACTED] Postal Address: 13 Ewing Street, Lismore
	This section will be destroyed after being processed. Only Complete CVV number if you are supplying the original hardcopy to EAL.	

<b>Payment Method:</b> <input type="checkbox"/> Purchase Order <input type="checkbox"/> Cheque <input type="checkbox"/> Invoice (prior approval required) <input type="checkbox"/> Credit Card Mastercard / Visa No: _____ Exp. Date: _____ Name on Card: _____ CVV: _____	Relinquished By: [REDACTED] Preservation: None / Ice / Ice bricks / Acidified / Filtered / Other: Received By: [REDACTED] <span style="float: right;">2/12/21 12PM</span> Condition on receipt: Ambient / Cool / Frozen / Other:
---	---

**Comments:**

DO NOT TEST FOR Ph or EC

**Marketing Survey – where did you find us?**  
 Word of mouth  Magazine  Google search  Other

		Sample Analysis Request											
		Price List Code (e.g. SW-PACK-06)											
Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Group ID	Sample Type (e.g. water, leaf, soil)	Salt Suite- (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-001	Dissolved Iron SW-SING103	Dissolved Lead SW-SING108	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104
	BQN1-B		1/12/21			Water	X	X	X	X	X	X	X
	BQN1-A		1/12/21			Water	X	X	X	X	X	X	X
	BQN1-D		1/12/21			Water	X	X	X	X	X	X	X
	BQN2-B		1/12/21			Water	X	X	X	X	X	X	X
	BQN2-A		1/12/21			Water	X	X	X	X	X	X	X
	BQN2-D		1/12/21			Water	X	X	X	X	X	X	X

CHAIN OF CUSTODY

**Comments:**

DO NOT TEST FOR Ph or EC

---

**Marketing Survey – where did you find us?**

Word of mouth  Magazine  Google search  Other

Sample Analysis Request													
Price List Code (e.g. SW-PACK-06)													
Lab Sample No.	Sample ID	Sample Depth	Sampling Date	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Salt Suite- (no pH or EC) SW-PACK-014	TPH and BTEX SW-PACK-042	TOG SW-SING-001	Dissolved Iron SW-SING103	Dissolved Lead SW-SING103	Total Available Iron SW-SING-104	Total Available Lead SW-SING-104
	BQS1-S		1/12/21			Water	X	X	X	X	X	X	X
	BQS1-I		1/12/21			Water	X	X	X	X	X	X	X
	BQS1-D		1/12/21			Water	X	X	X	X	X	X	X

Tab through for extra lines

## Appendix E - Full Laboratory Results



## RESULTS OF WATER ANALYSIS

9 samples supplied by Ecoteam on 2/12/2021 Lab Job No M4070

Samples submitted by [REDACTED] Your Job SMCD10-Blakebrook WQ- Groundwater DEC21

13 Ewing Street LISMORE NSW 2480

Parameter	Methods reference	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9
		BNQ1-B	BNQ1-A	BNQ1-D	BNQ2-B	BNQ2-A	BNQ2-D	BNS1-S	BNS1-I	BNS1-D
	Job No.	M4070/1	M4070/2	M4070/3	M4070/4	M4070/5	M4070/6	M4070/7	M4070/8	M4070/9
Bicarbonate (Alkalinity) (mg/L CaCO <sub>3</sub> equivalent)	** Total Alkalinity - APHA 2320	237	61	127	90	159	360	112	187	112
Water Hardness (mg/L CaCO <sub>3</sub> equivalent)	** Using Ca and Mg calculation	149	152	110	75	106	11	59	96	39
Total Oils and Grease (mg/L)	APHA 5520-D (hexane extractable)	2	<2	2	5	5	7	8	6	17
Sodium (mg/L)	APHA 3125 ICPMS <sup>***</sup> **	181	357	294	168	93.2	220	38.0	271	344
Potassium (mg/L)	APHA 3125 ICPMS <sup>***</sup> **	3.98	7.26	2.85	6.58	5.58	2.00	2.38	5.23	3.71
Calcium (mg/L)	APHA 3125 ICPMS <sup>***</sup> **	28.7	47.6	16.4	26.7	24.9	3.57	14.9	29.4	12.7
Magnesium (mg/L)	APHA 3125 ICPMS <sup>***</sup> **	18.8	7.92	16.7	2.01	10.5	0.49	5.21	5.39	1.70
Sodium Absorption Ratio (SAR)	** By calculation	6.4	12.6	12.2	8.4	3.9	28.9	2.2	12.0	24.0
Chloride (mg/L)	APHA 3125 ICPMS <sup>***</sup> **	211	541	309	221	77	93	22	317	438
Sulfate (mg/L SO <sub>4</sub> <sup>2-</sup> )	APHA 3125 ICPMS <sup>***</sup> **	8	25	76	31	14	18	6	10	38
Chloride/Sulfate Ratio	** Calculation	25.7	21.4	4.1	7.1	5.5	5.1	3.4	31.1	11.5
Iron (mg/L)	Total Available - APHA 3125 ICPMS <sup>***</sup> **	1.77	0.362	31.1	0.246	0.134	0.183	0.269	0.636	0.344
Lead (mg/L)	Total Available - APHA 3125 ICPMS <sup>***</sup> **	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (mg/L)	Dissolved - APHA 3125 ICPMS <sup>***</sup> **	0.086	0.010	0.011	0.005	0.006	0.006	0.005	0.022	0.005
<b>BTEX</b>										
Benzene (µg/L or ppb)	Subcontracted SGS report SE 226623	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene (µg/L or ppb)	Subcontracted SGS report SE 226623	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene (µg/L or ppb)	Subcontracted SGS report SE 226623	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene (µg/L or ppb)	Subcontracted SGS report SE 226623	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene (µg/L or ppb)	Subcontracted SGS report SE 226623	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene (µg/L or ppb)	Subcontracted SGS report SE 226623	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<b>Total Recoverable Hydrocarbons (TRH)</b>										
C6-C9 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<40	<40	<40	<40	<40	<40	<40	<40	<40
C10-C14 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<100	<100	<100	<100	<100	<100	390	<100	<100
C29-C36 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C16 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<100	<100	<100	<100	<100	<100	390	<100	<100
C16-C34 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<200	<200	<200	<200	<200	<200	370	<200	<200
C34-C40 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<100	<100	<100	<100	<100	<100	<100	<100	<100
Sum C10-C36 Fraction (µg/L or ppb)	Subcontracted SGS report SE 226623	<100	<100	<100	<100	<100	<100	390	<100	<100

## Notes:

- Total metals - samples digested with nitric acid; Total available (acid soluble/ extractable) metals - samples acidified with nitric acid to pH <2;  
Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysis
- Metals and salts analysed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)
- 1 mg/L (milligram per litre) 1 ppm (part per million) 1000 µg/L (micrograms per litre) 1000 ppb (part per billion)
- For conductivity 1 dS/m 1 mS/cm 1000 µS/cm
- Analysis performed according to APHA (2017) 'Standard Methods for the Examination of Water & Wastewater' 23rd Edition, except where stated otherwise
- Analysis conducted between sample arrival date and reporting date
- \*\* NATA accreditation does not cover the performance of this service
- ... Denotes not requested.
- This report is not to be reproduced except in full
- All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request)
- Results relate only to the samples tested
- This draft report was issued on 15/12/2021



## Appendix F - Hydrographs

exce



## Blakebrook Quarry- Groundwater Monitoring

# Groundwater Hydrographs

## December 2021



13 Ewing Street, LISMORE

NSW 2480 Australia

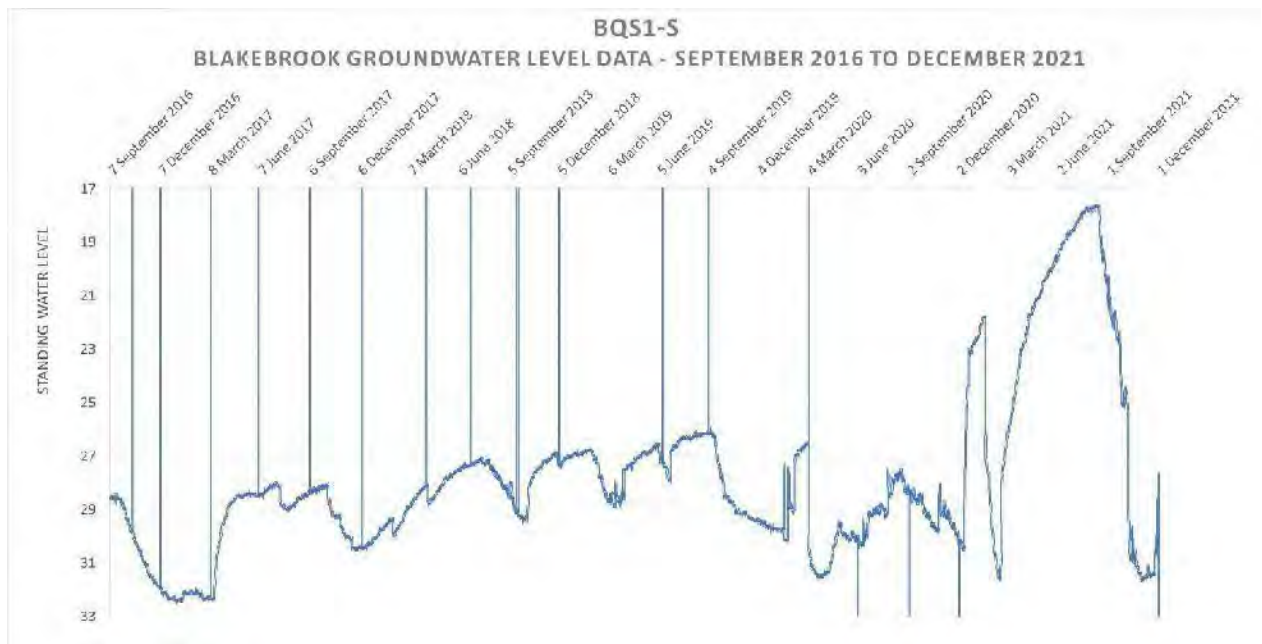
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Fax: (02) 6621 8123

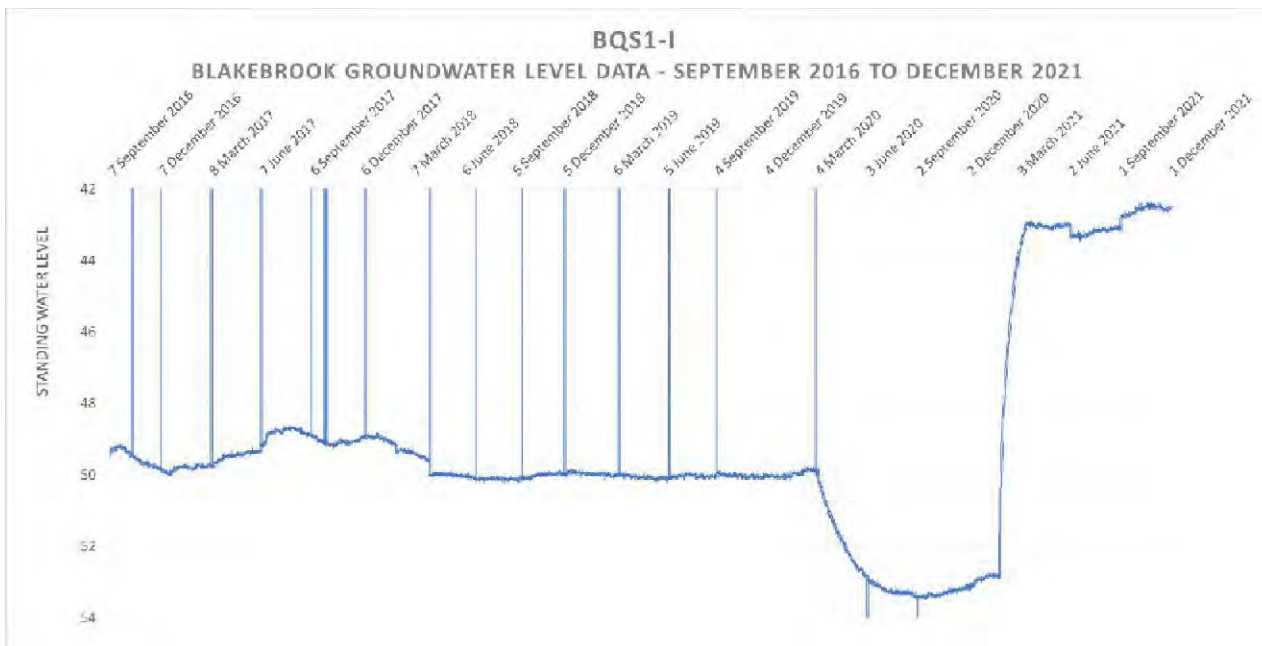
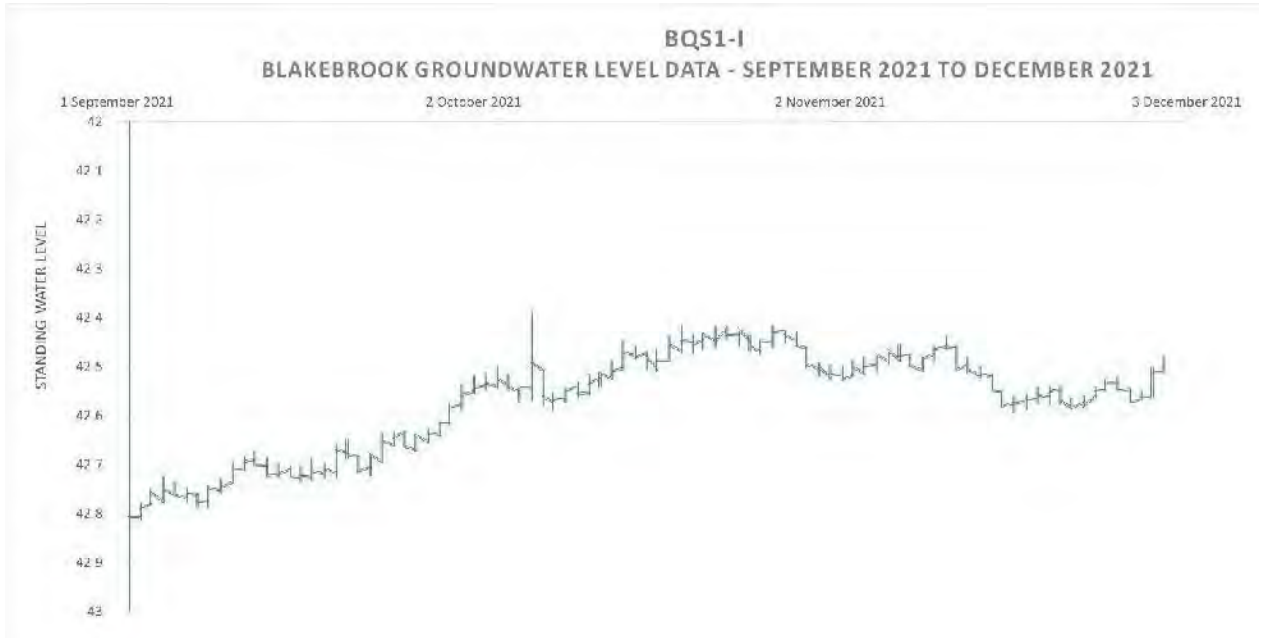
Email: [info@ecoteam.com.au](mailto:info@ecoteam.com.au)

Web: [www.ecoteam.com.au](http://www.ecoteam.com.au)

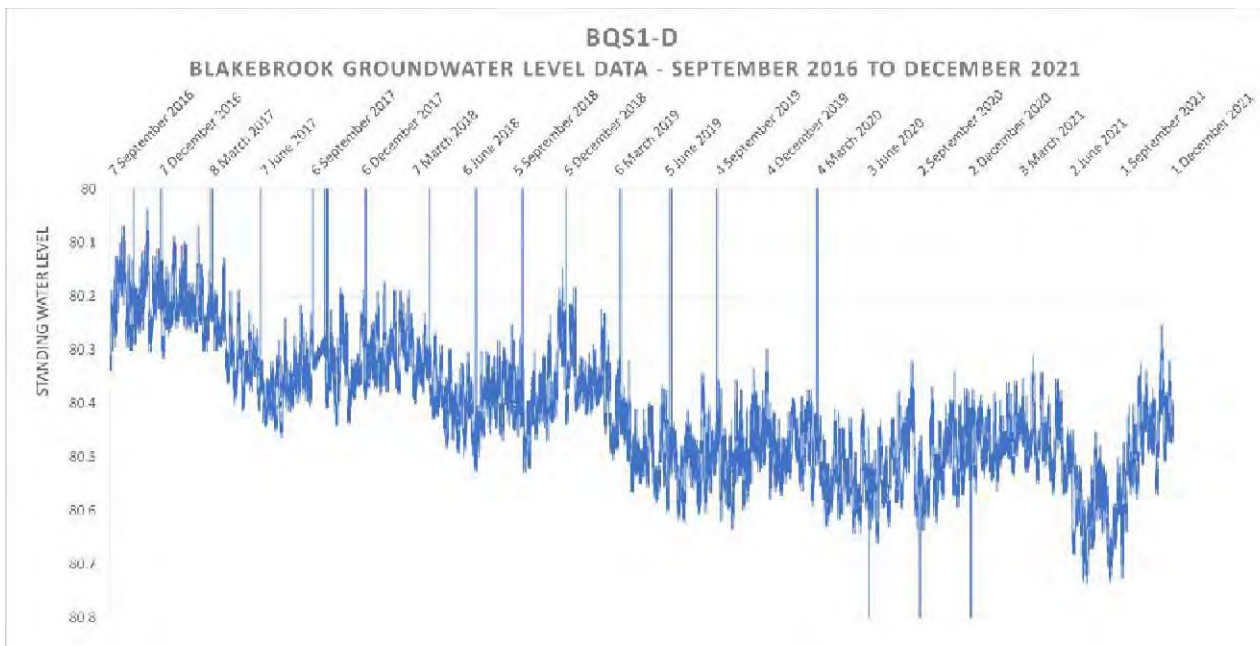
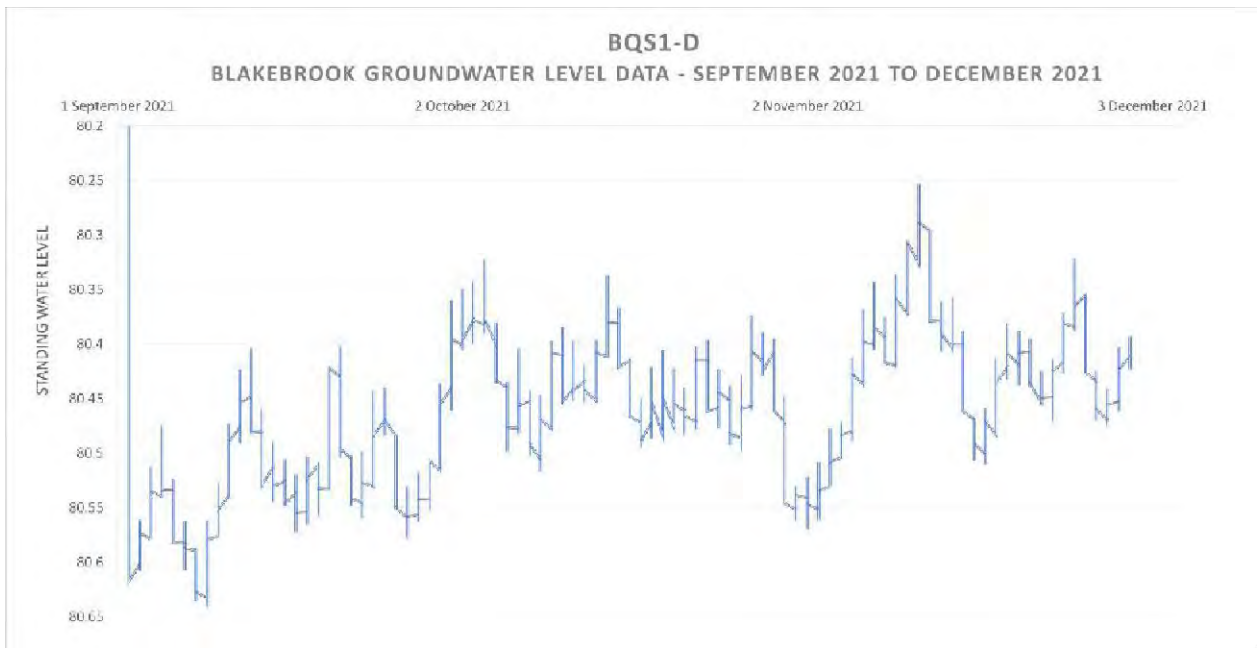
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# Blakebrook Groundwater Wells – SOUTH 1 BSQS1- I (Intermediate)



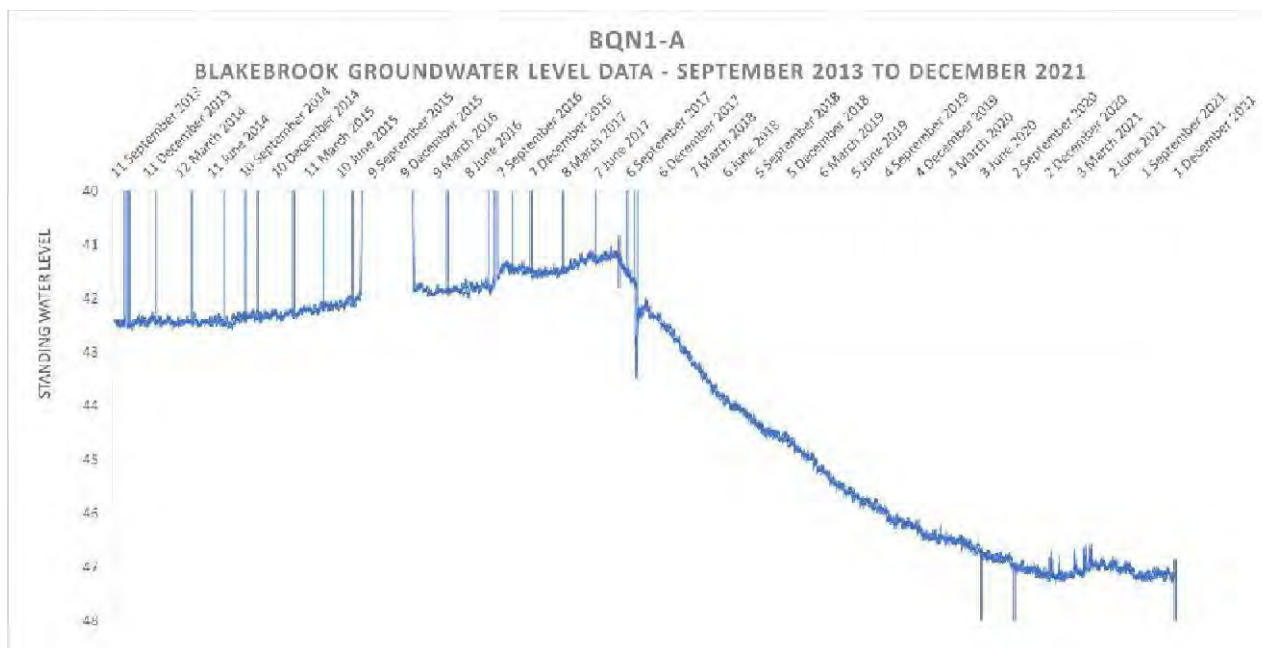
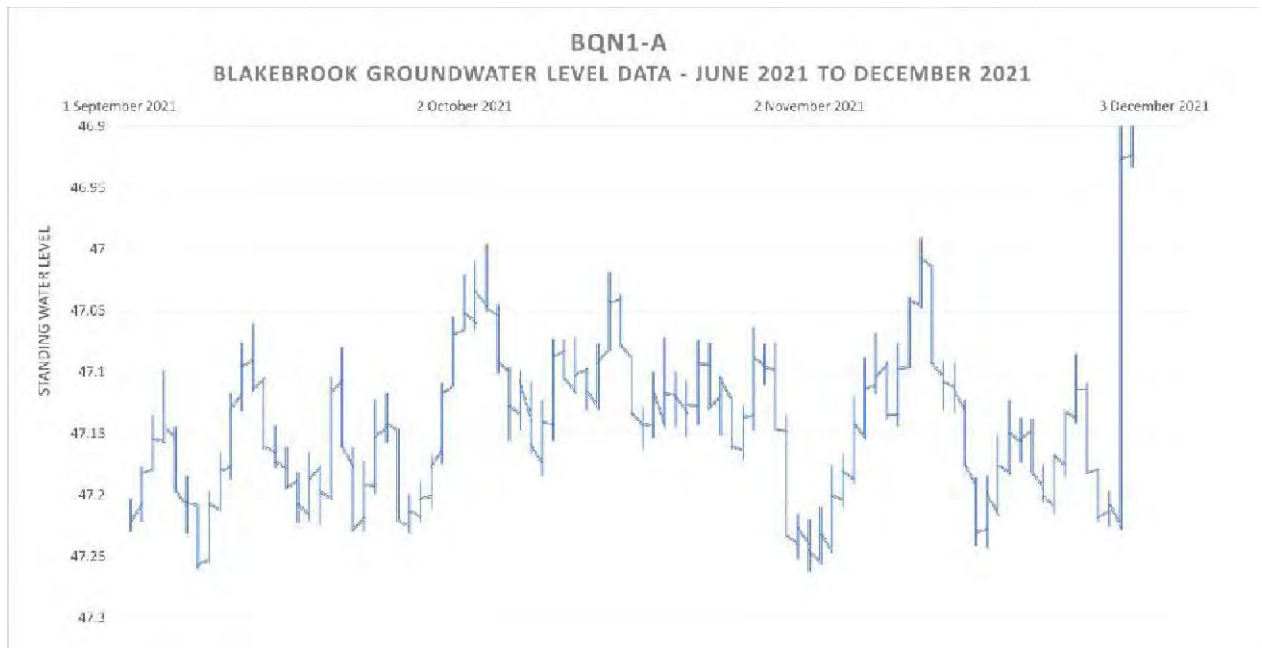
# Blakebrook Groundwater Wells -SOUTH 1 BQS1- D (Deep)



# Blakebrook Groundwater Wells -NORTH 1 BQN1- B (Shallow)

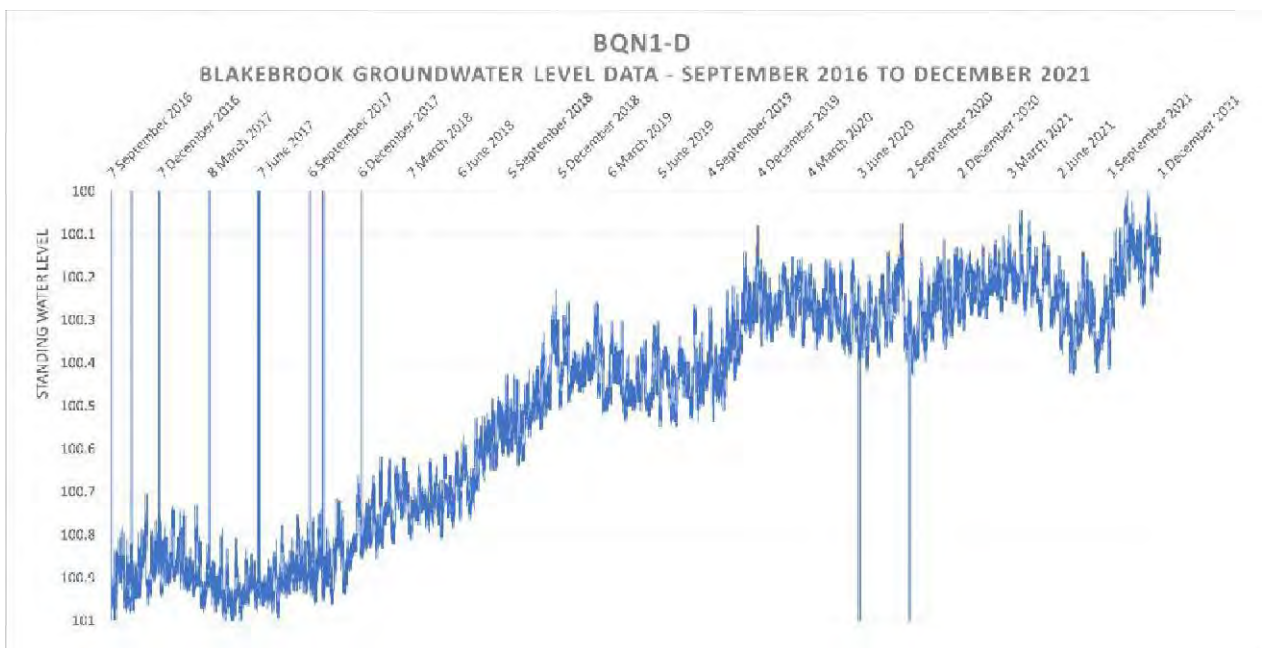
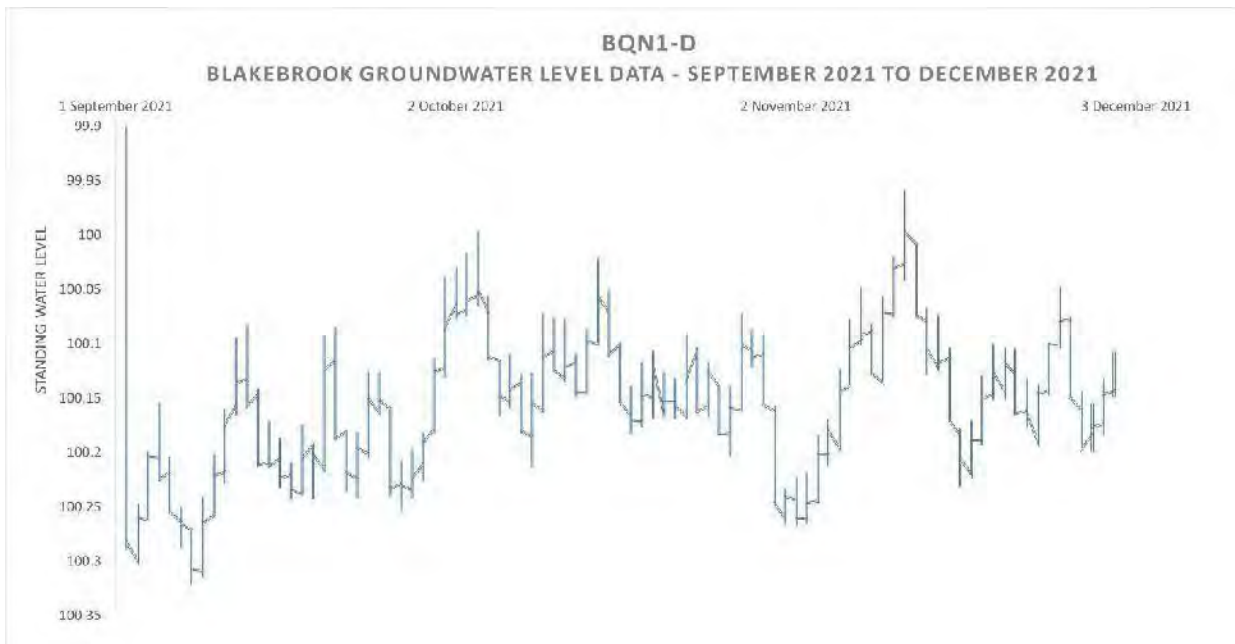


# Blakebrook Groundwater Wells -NORTH 1 BQN1- A (Intermediate)

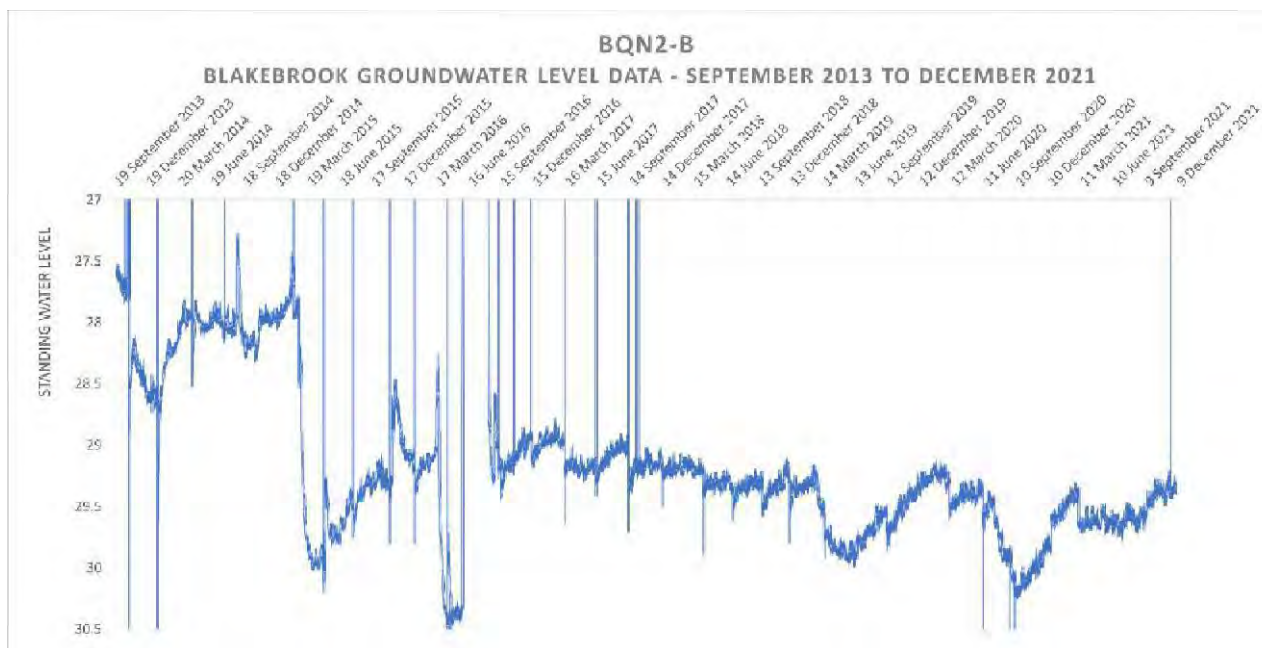
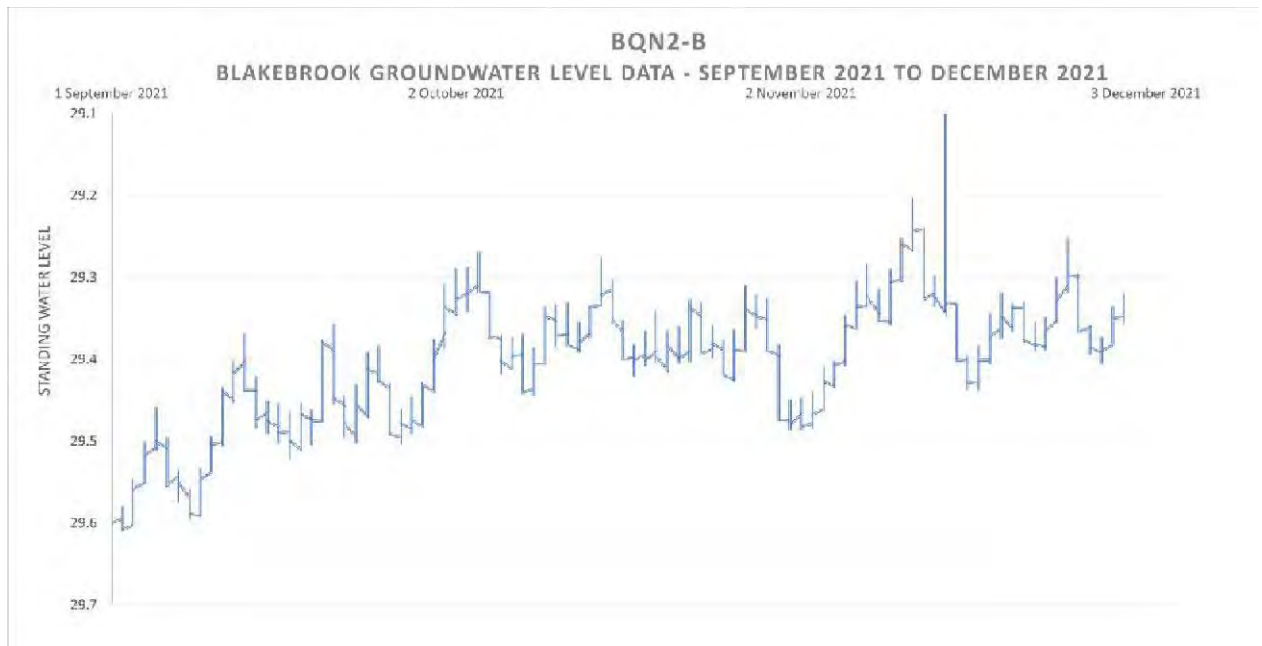




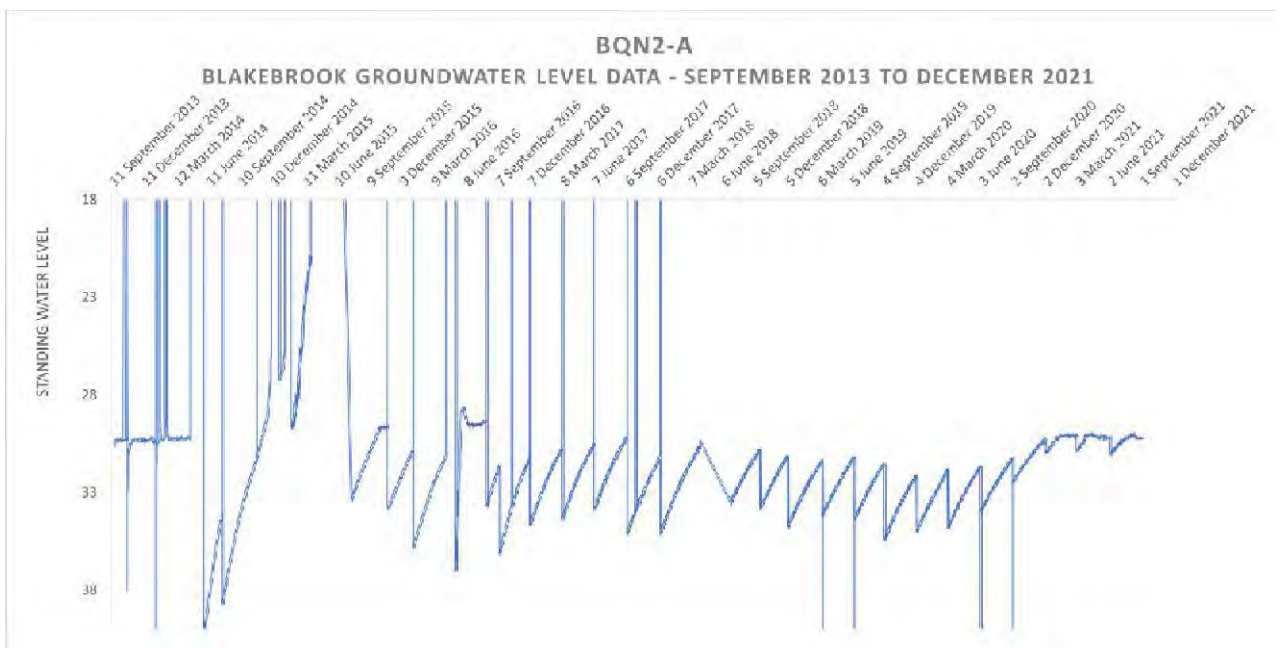
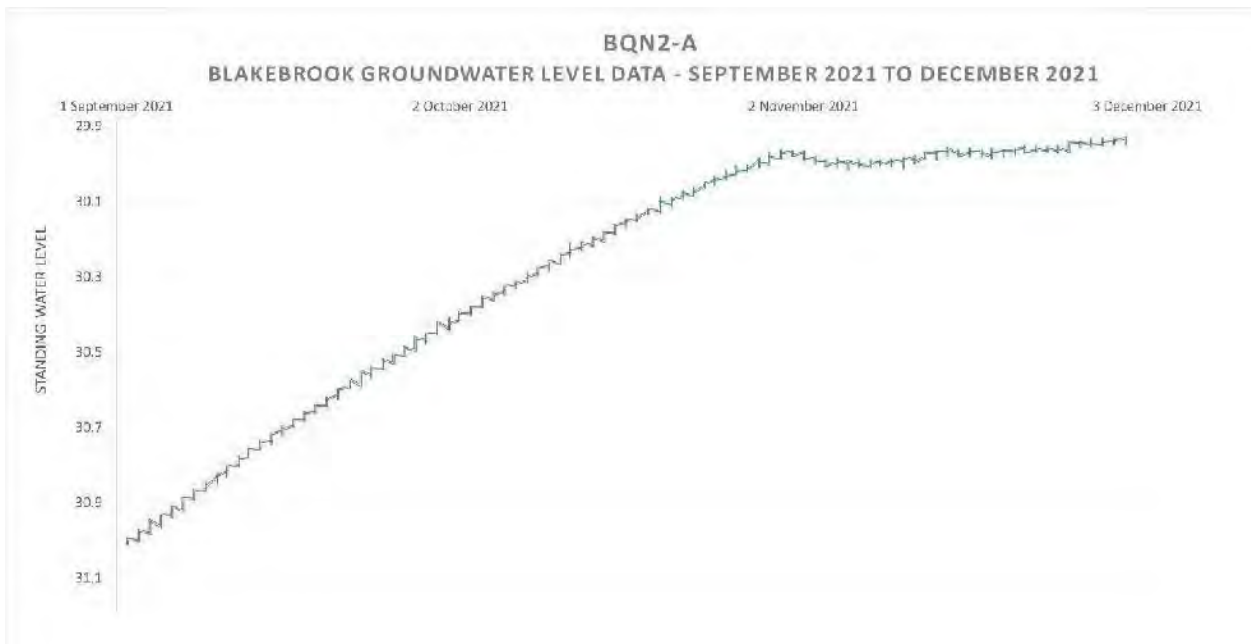
# Blakebrook Groundwater Wells -NORTH 1 BQN1- D (Deep)



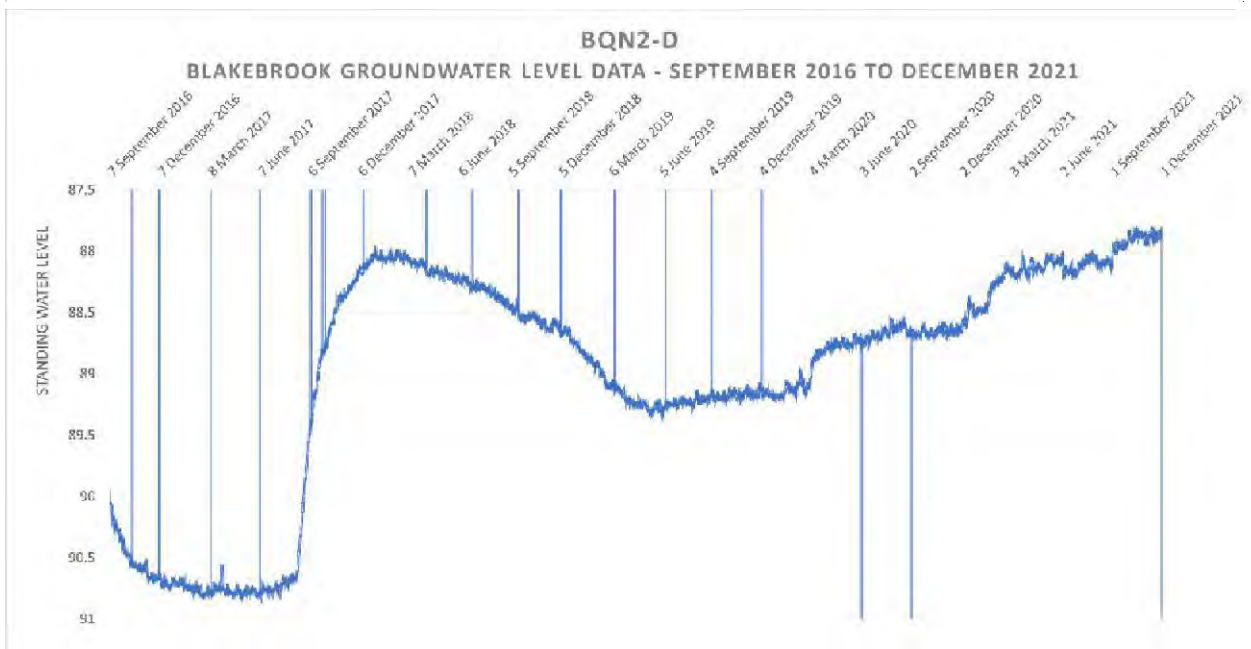
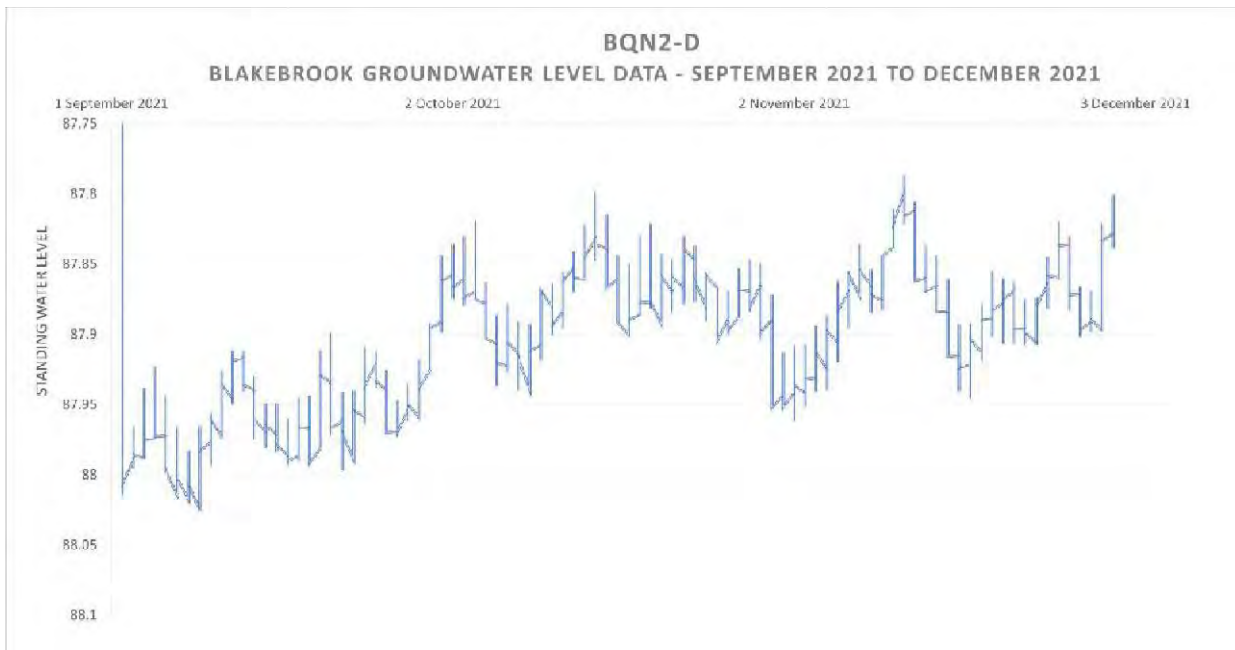
# Blakebrook Groundwater Wells -NORTH 2 BQN2- B (Shallow)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- A (Intermediate)



# Blakebrook Groundwater Wells -NORTH 2 BQN2- D (Deep)



# APPENDIX R

Bush Regeneration Monitoring Report - 2021

Blakebrook Quarry  
Lot 53 & 54 DP 1254990 (previously Lot 201 DP 1227138)  
Bush Regeneration Plan  
Annual Monitoring Report Three (2021)



*Roots Down Bush Regeneration crew, zone e1, August 2021 ( [REDACTED] )*

*Prepared by:*

[REDACTED]

*Ecologist*

*BEnvSc (SCU); BCom (AKU); CLM Cert 3&4, AABR*

*BAM Accredited Assessor*

*Friends of the Koala (Honorary Life Membership)*

*January 2021 Final*



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## Introduction

This Bush Regeneration Plan Monitoring Report is the third to report on the progress of bush regeneration activities at Blakebrook Quarry and covers the period January to December 2021 (Year Three).

### Monitoring framework

The Bush Regeneration Plan (BRP) (██████████, 2018) and Bush Regeneration Plan Monitoring Addendum (BRPMA) (██████████, 2019) are contained within Annex B of the Biodiversity Offset Strategy (BOS) (ERM, 2018) which in turn is subject to the Blakebrook Quarry Biodiversity & Rehabilitation Management Plan (BRMP) (ERM, 2018a). The BOS requires the maintenance and monitoring of offset sites (including assisted regeneration) to be integrated into the wider schedule for rehabilitation works provided in Chapter 9, 11 and 13 of the BRMP (ERM, 2018).

### Frequency of monitoring

As recommended in the BRPMA, reporting is to be conducted on a bi-annual basis for the first three years following commencement of regeneration works and then annually for the following seven years until the ten-year review. During preparation of the Year One report, it was determined that this was an excessive reporting requirement and that annual external reporting would be adequate. This was considered appropriate due to the ongoing extended dry season of 2020 and 2021. All external reporting for Blakebrook Quarry is to be approved by the Manager of Commercial Services (ERM, 2018).

### Monitoring methods

The BOS recommends that a suitably qualified professional be engaged to perform ongoing monitoring of bush regeneration activities against the performance indicators provided in Annex C (ERM, 2018).

Best practice requires adaptive management as a standard monitoring approach for any ecological restoration project (SERA, 2017). This is achieved by an independent and suitably qualified person routinely inspecting the site to determine whether restoration actions assessed against performance indicators are being achieved, using fixed photo points as evidence (SERA, 2017).

Photo points identified by GPS coordinates have been established in each zone prior to work commencing. Baseline photos were provided either by Eco Connections in July 2012 for the on-site work zones (which existed prior to the acquisition of an additional 45ha by council in 2017) or by ██████████ in December 2018 for the off-site work zones within the 45ha acquired in 2017. Refer to the BRPMA. Current comparison photos were taken in late December 2021.

Daily Work Records (DWR's) were collated from Roots Down Bush Regeneration and were used to assess the effectiveness of weed control techniques and rates of recruitment of native plant species (available on request). As stated in the BRPMA, monitoring reports will consist of comparison photos and a brief progress report based on the Key Performance Indicators (KPI's) summarised in Table 2 of the BRPMA (Dawson, 2019).

## Summary of work zone review 2021

- Based on the methods outlined in the introduction, the author is of the opinion that to date all KPI's have been met and work continues to progress as planned and as detailed in the following review by work zone. The status of the current work zones is summarised in Table 1 and mapped in Figure 1.
- As outlined in Monitoring Report Two (refer Page 2) and in accordance with the BRP (██████████, 2018), the focus in 2021 has consisted of:
  - Ensuring that the maintenance of all zones worked to date is conducted in a planned and timely manner to prevent regression. Work comprised regular spot sprays within the completed northern and eastern zones adjacent to the main pit (n2, n3, e5) and in particular, zone w4 adjacent to the quarry access road. Zone w4 is a challenging and labour-intensive zone with difficult terrain and vigorous exotic and native vines. Maintenance costs are minimised due to the proximity of the northern and eastern zones, as outlined in the BRP (Dawson, 2018).
  - Primary works in Core Koala Habitat (CEG,2006) zone e1. As at the end of December 2021, primary works in this 7.8ha zone are 95% complete. Follow-up will continue into Year Four.
- It is anticipated that by the end of Report Four (2022) the following will be achieved:
  - Regular maintenance of the completed northern and eastern zones adjacent to the main pit (n2, n3, e5) and adjacent to the quarry access road (w4) to prevent regression.
  - Regular follow-up of recently completed zone e1.
  - Commencement of primary works in Core Koala Habitat (CEG,2006) zone e2, which was scheduled to commence in Year Five in the BRP (██████████, 2018). However, the continuing extended dry period has contributed to this zone commencing ahead of schedule (see key environmental factors below).
- The continued presence of koalas was confirmed with two sightings this year (zone s1 and e5, refer Figure 1). Regeneration of primary koala food species Forest Red Gum (*Eucalyptus tereticornis*) and Tallowwood (*E. microcorys*) in addition to a suite of secondary species (*E. amplifolia*, *E. acmenoides*, *E. grandis*, *Lophostemon confertus*) post weed control and targeting of selected rainforest pioneers is evident within the koala habitat zones (n2, n3, e5, e1).
- The key environmental factor in Year Three was the ongoing extended dry period, broken by a La Nina event towards the end of the year. This was beneficial in terms of the reduced frequency of follow-up and maintenance spot sprays required in 2019 – 2021 and has contributed to zone e2 primary works commencing ahead of schedule in 2022.
- Work additional to the activities outlined in the BRP is required from time to time, for example, maintenance spot sprays of the quarry access road verge (approx. 1 km) and newly constructed fence lines (zone s1/s2).

- The listed Threatened Species Native Guava (*Rhodomyrtus psidioides*) was observed fruiting in zone n2. A sample was sent to the Royal Botanic Gardens but was deemed immature (██████████, personal communication, 8/11/2021).
- Approximately 20 Rusty Figs (*Ficus rubignosa*) were planted in zone w4 to assist with stabilising the steep slope of boulders in the future.

## Map of work zones, photo points and work zone status

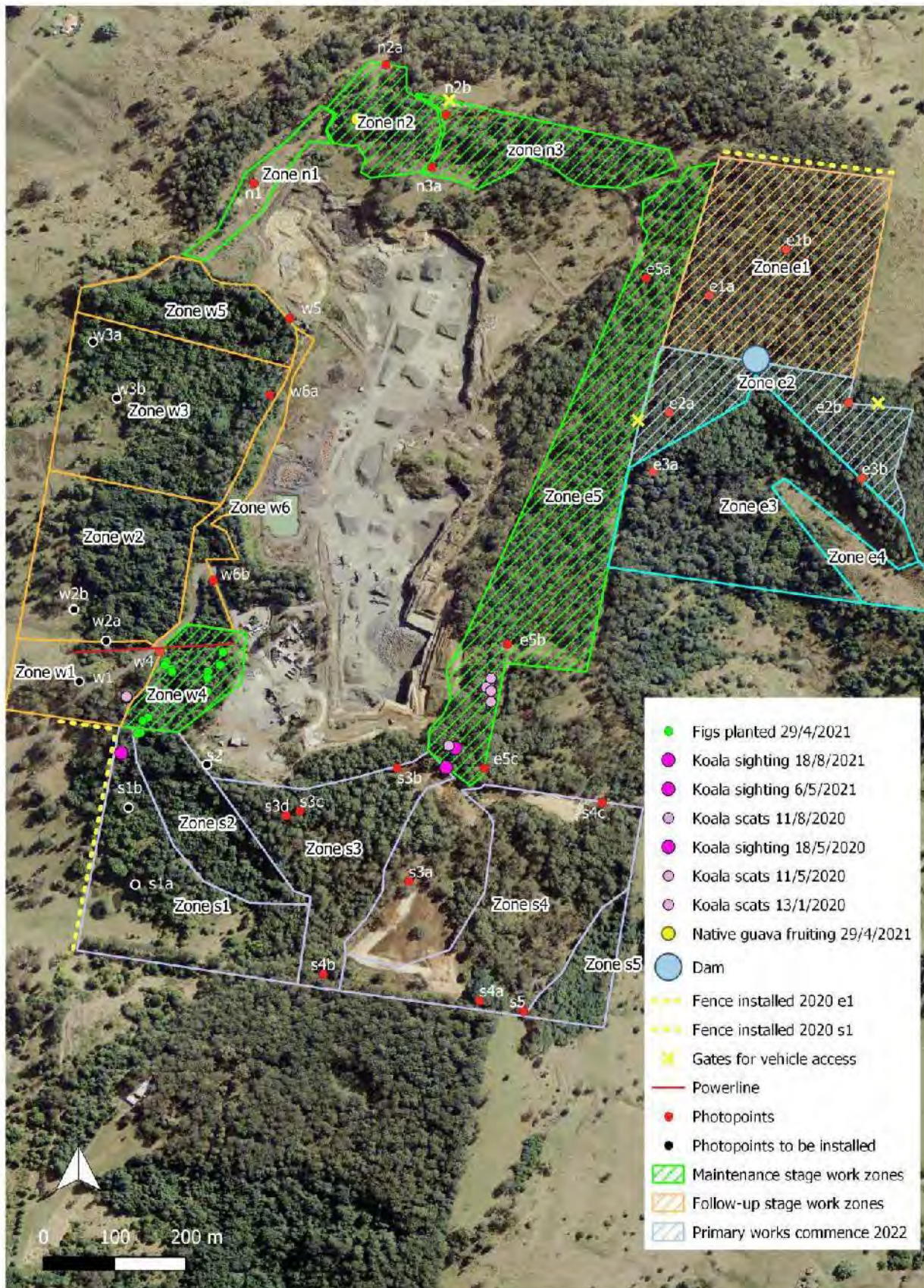


Figure 1 Blakebrook Quarry work zones status as at the end of Year Three (source [redacted], 22/01/2022)

**Table 1 Status of current work zones December 2021**

*P (primary), FU (follow-up), ANR (assisted natural regeneration), CKH (core koala habitat), DG (disturbed grassland), CF (closed forest),*

*Onsite (workzones in the original offset area pre acquisition of the 45ha in 2017), offsite (workzones in the 45ha 2017 acquisition), BRP (Bush Regeneration Plan, Table 1)*

Offset area	Workzone name	Photopoints in work zone	Veg type	Strategy	Status or Priority	Start year per BRP	Completion year per BRP	Photopoints in Monitoring Report 3	Photopoints anticipated Monitoring Report 4	Status @ 31/12/2021	Primary & follow-up work to do	Area (ha)	Note
Onsite	n2	n2a, n2b	CKH	ANR	Completed	2	End Yr 2 (completed ahead of schedule but see e5)	n2a, n2b	n2a, n2b	Primary work completed in 2019 apart from small area of follow-up (Lantana to overspray and Jacararanda to drill on northern boundary) delayed as conditions were too dry until early 2020. At maintenance stage.	-	2.0	
Onsite	n3	n3a	CKH	ANR	Completed	work started prior to BRP	n/a (completed prior to Year 1)	n3a	n3a	Primary works completed. At maintenance stage.	-	2.9	
Onsite	e5	e5a, e5b, e5c	CKH	ANR	Completed	1 (60% worked prior to BRP)	End Yr 1 (completed behind schedule but see n2)	e5a, e5b, e5c	e5a, e5b, e5c	Primary and follow-up work completed mid-2020 after work moved to n2 in 2019 due to dry windy conditions. At maintenance stage.	-	6.2	
Offsite	e1	e1a, e1b	CKH	ANR	High	3	End Yr 4	e1a, e1b	e1a, e1b	Primary work 95% completed Year 3. Follow-up to continue into Year 4.	5% P, 100% FU	7.8	200m fencing & gate installed 2020
Offsite	e2	e2a, e2b	CKH	ANR	High	5	End Yr 5	-	e1a, e1b	Primary works to commence ahead of schedule in 2022 (Year 4).	100% P/FU	3.5	fencing per BRP not necessary per LCC Jan 2022
Offsite	w4	w4	DG/CF	ANR	High	2	End Yr 2 (follow-up Year 3)	w4	w4	Primary and follow-up work completed end Year 3. Vigilant maintenance required to prevent regression of this challenging zone.	-	1.7	
Offsite	s1	not yet installed	CKH linkage	ANR	Medium	9	End Yr 10	-	-	Minor primary work along northern boundary adjacent to w4 to maintain fenceline.	-	5.7	360m fencing & gate installed 2020

## Work zone review 2021

### Zone n2 (photo points n2a, n2b)

Off-site zone	Area	Description & status	Value	Objective	Performance Indicator	Actions
n2	2ha	Tall Open Forest – Tall Open Forest/Woodland, moderate condition  <i>Maintenance</i>	Core Koala Habitat	Enhance koala habitat by removing weeds in mid and ground strata which prevent germination of natives, particularly Eucalypts	All strata 95% natives, Eucalypt species germinating	<ul style="list-style-type: none"> <li>➤ Weed control (working in lines from east to west from the eastern vehicle track adjacent to completed zone n3) Primary: clear around natives, hand weed/cut &amp; paint/overspray Lantana, cut &amp; paint/drill Privet &amp; Camphor &amp; Jacaranda, cut &amp; paint/drill or spot spray Devil's Fig, Tobacco &amp; exotic vines. Spot spray Crofton. Follow-up: spot spray as required/to prevent seeding.</li> <li>➤ Remove rainforest pioneers</li> <li>➤ Slash vehicle trails</li> </ul>

- As this zone is at maintenance stage, the focus of works during 2021 was ensuring that regular spot sprays were conducted in a planned and timely manner to prevent regression.
- KPI's are achieved with less than 1% weeds in the mid and upper strata and approximately 5% exotic grasses in the ground stratum (refer comparison and general photos below). The targeted removal of rainforest pioneers has resulted in an increase in eucalypt germination, particularly Tallowood and Forest Red Gum, both primary food species for the koala (refer general photos below).
- The listed Threatened Species Native Guava (*Rhodomyrtus psidioides*) was observed fruiting in zone n2. A sample was sent to [REDACTED] at the Royal Botanic Gardens in Sydney for DNA testing but was immature (refer general photos below).

Comparison photos zone n2a (Source [REDACTED], Dec 2021)



*North to boundary and bund, north western corner of zone n2*



*East along northern boundary bund of zone n2*



*South into zone n2*



*West into north western corner of zone n2*

Comparison photos zone n2b (Source [REDACTED], Dec 2021)



*North to boundary gate along access track between zone n2 and n3*



*East into zone n3*



*South along eastern boundary of zone n2*



*West into northern portion of zone n2*



General photos zone n2 (Source [REDACTED], 2021)



*Zone n2 From Monitoring Report Two: northern boundary near photo point n2a looking south. Lantana patch treatment delayed due to extended dry period in 2019 and completed early 2020.*



*Zone n2 same view at the end of 2021 with regenerating Red Kamala, Macaranga and Red Ash*



*Native Guava (listed as Critically Endangered in NSW due to Myrtle Rust) fruiting in zone n2. Sample sent to Royal Botanic Gardens, Sydney for DNA testing May 2021.*



*Zone n2 Adjacent to monitoring point n2a, evidence of transition with regenerating Forest Red Gum in an area comprised of exotic grasses (Rhodes Grass) prior to treatment. Although approximately 5% exotic grasses remain, this area is now dominated by native grasses (Blady Grass and Kangaroo Grass), following regular maintenance spot sprays.*



*Zone n2 Looking southwest along the eastern edge of the zone at regenerating Forest Red Gum and Tallowwood post weed control and targeted removal of rainforest pioneers.*

### Zone n3 (photo point n3a)

Off-site zone	Area	Description & status	Value	Objective	Performance Indicator	Actions
n3	2.9ha	Tall Open Forest – Tall Open Forest/Woodland, moderate condition  <i>Maintenance</i>	Core Koala Habitat	Enhance koala habitat by removing weeds in mid and ground strata which prevent germination of natives, particularly Eucalypts	All strata 95% natives, Eucalypt species germinating	<ul style="list-style-type: none"> <li>➤ Weed control (working in lines from west to east in a southerly direction): Primary: clear around natives, hand weed/cut &amp; paint/overspray Lantana, cut &amp; paint/drill Privet &amp; Camphor, cut &amp; paint/drill or spot spray Devil’s Fig, Tobacco &amp; exotic vines. Spot spray Crofton. Follow-up: spot spray as required/to prevent seeding.</li> <li>➤ Remove rainforest pioneers in patches/adjacent to eucalypts to improve eucalypt recruitment</li> <li>➤ Slash vehicle trails</li> </ul>

- As this zone is at maintenance stage, the focus of works during 2021 was ensuring that regular spot sprays were conducted in a planned and timely manner to prevent regression.
- KPI’s continue to be achieved into 2021 with less than 5% weeds in all strata apart from exotic grasses on the southern access track edge originating from the perimeter of the mine pit.
- Zone n3 comprises dense patches of native grasses Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Tall Sedge (*Carex appressa*) particularly along the southern boundary, previously dominated by exotic species.

Comparison photos zone n3a (Source [REDACTED], Dec 2021)



*North from southern portion of access track between zone n2 and n3*



*East into southern portion of zone n3*



*South towards southern boundary zone n2*



*West into southern portion of zone n2*

### Zone e5 (photo points e5a, e5b & e5c)

Off-site zone	Area	Description & status	Value	Objective	Performance Indicator	Actions
e5	10.4ha	Tall Open Forest, moderate condition  <i>Maintenance</i>	Core Koala Habitat	Enhance koala habitat by removing weeds in mid and ground strata which prevent germination of natives, particularly Eucalypts	All strata 95% natives, Eucalypt species germinating	<ul style="list-style-type: none"> <li>➤ Weed control (working in lines from west to east in a southerly direction): Primary: clear around natives, hand weed/cut &amp; paint/overspray Lantana, cut &amp; paint/drill Privet &amp; Camphor, cut &amp; paint/drill or spot spray Devil's Fig, Tobacco &amp; exotic vines. Spot spray Mistflower &amp; Paspalum. Follow-up: spot spray as required/to prevent seeding.</li> <li>➤ Remove rainforest pioneers in patches/adjacent to eucalypts to improve eucalypt recruitment.</li> <li>➤ Slash vehicle trails</li> </ul>

- Zone e5 is now at maintenance stage, hence the focus of works during 2021 was ensuring that regular spot sprays were conducted in a planned and timely manner to prevent regression. Comparison of current and baseline (2012) photo points confirm that KPI's are achieved with less than 5% weeds in all strata. Eucalypt regeneration (seedlings and saplings) was observed by the author throughout this zone (refer comparison and general photos below), with Kangaroo Grass and Blady Grass dominating the eastern boundary.
- A patch of the recently declared Threatened Species, Native Guava (*Rhodomyrtus psidioides*) was observed coppicing on the ground along the eastern boundary late in 2020 (refer Report Two) and these seedlings continue to grow. The lack of parent trees in the vicinity of this patch may indicate that the seedlings originate from birds situated on a large overhanging Tallowood. This patch will be monitored by the regeneration crew.
- Cumulative koala and scat sightings observed by the regeneration crew predominantly in zone e5:
  - Koala sighting Aug 2021 (18/8/2021) (refer general photos e5 following)
  - Koala sighting May 2020 (18/5/2020) (refer Monitoring Report Two)
  - Scats April 2020 (refer Monitoring Report Two)
  - Scats Jan 2020 (refer Monitoring Report Two)

In addition to zone e5, a sighting in zone s1 has now been recorded twice (18/5/2020 and 6/5/2021). As zone s1 works have not yet commenced, this zone has not been reported on in the monitoring report to date). A koala sighting was also documented by Quarry staff (refer to Monitoring Report Two) at the south pit on the 18/5/2020, but none were recorded in the current year. See Figure 1 for all mapped observations.

Comparison photos zone e5a (Source [REDACTED], Dec 2021)



*North along north western boundary of e5*



*East into north eastern portion of zone e5*



*South along western boundary of zone e5*



*West towards western boundary of zone e5*

Comparison photos zone e5b (Source [REDACTED], Dec 2021)



*North into lower mid-section of zone e5*



*East along access track eastern boundary of zone e5*



*South along eastern boundary of zone e5*



*West into lower mid-section of zone e5*

Comparison photos zone e5c (Source [REDACTED], Dec 2021)



*North along southern end of eastern boundary access track zone e5*



*East towards old cattle infrastructure on adjacent property outside of work zones*



*South towards future zone s4*



*West into southern section of zone e5*



General photos zone e5 (Source [REDACTED], 2021)



*Regenerating Cabbage Gum along the eastern boundary of zone e5, adjacent to the vehicle track*



*Koala changing trees early morning 18/8/2021 zone e5 (D de Nardi)*

## Zone e1 (photo point e1a, e1b)

Off-site zone	Area	Description & status	Value	Objective	Performance Indicator	Actions
e1	7.8ha	Tall Open Forest, good condition  <i>Primary work 95% completed end of Year 3, follow-up Year 4</i>	Core Koala Habitat	Enhance existing koala habitat by removing weeds in mid and ground strata which prevent germination of natives, particularly Eucalypts	All strata 95% natives, Eucalypt species germinating	<ul style="list-style-type: none"> <li>➤ Weed control (working in lines from west to east in a southerly direction): Primary: clear around natives, hand weed/cut &amp; paint/overspray Lantana, cut &amp; paint/drill Privet &amp; Camphor, cut &amp; paint/drill or spot spray Devil's Fig, Tobacco &amp; exotic vines. Spot spray Mistflower &amp; Paspalum but ensure fringing native vegetation around dam is encouraged to prevent cane toad access. Follow-up: spot spray as required/to prevent seeding</li> <li>➤ Remove rainforest pioneers in patches/adjacent to eucalypts to improve eucalypt recruitment</li> <li>➤ Replace existing gate on western boundary for improved access</li> <li>➤ Install fencing and gate on northern boundary to exclude cattle (approx. 200m) just prior to commencement of work with wildlife friendly fencing</li> <li>➤ Control minor scattered Lantana north of new fence as gesture of good will or liaise with landowner to ensure controlled</li> <li>➤ Resolve adjoining landowner (Birney) cattle water access needs</li> </ul>

- Bush regeneration work in zone e1 commenced in December 2020, at the dam situated on the boundary of zone e1 and e2, working in lines from west to east in a northerly direction. During the year, as works progressed, the northern end adjacent to the new fence and gate became the base for the regeneration crew (refer general photos zone e1 below). As at the end of Year Three, the primary works are 95% complete and follow-up will continue into Year Four.
- Refer to the BRPMA [REDACTED], 2019) for 2018 baseline photos of monitoring point e1a and e1b. Following the removal of scattered Lantana patches and clumps of Privet and Camphor, the mid stratum has regenerated with shrubs typical of wet sclerophyll communities such as Hairy Psychotria (*Psychotria loniceroides*), Mock olive (*Notelaea spp.*), Poison Peach (*Trema aspera*) and Myrsine (*Myrsine variabilis*), including rainforest pioneers such as Macaranga (*Macaranga tanarius*) some of which have been selectively and successfully targeted to encourage eucalypt regeneration (refer general photos below). The ground stratum has a diverse range of herbs and ferns including Prickly Rasp Fern (*Doodia aspera*), Showy Violet (*Viola betonicifolia*), Common Fringe Lily (*Thysanotus tuberosus*), Blue Trumpet (*Brunoniella australis*) and Austrel Bugel (*Ajuga australis*). See Table 2 for additional species identified on site.

Comparison photos e1a (Source [REDACTED], Dec 2021)



*North into north western portion of zone e1*



*East into zone e1*



*South into south western portion of zone e1*



*West towards western boundary and access track of zone e1*

Comparison photos e1b (Source [REDACTED], Dec 2021)



*North into northern portion of zone e1*



*East into eastern portion of zone e1*



*South into southern portion of zone e1*



*West towards western portion of zone e1*

General photos zone e1 (Source [REDACTED], 2021)



*Northern end of zone e1 post primary works with upper stratum of Tallowwood, Blackbutt, White Mahogany, Cabbage Gum and Pink Bloodwood, mid stratum Poison Peach, ground stratum Blady Grass*



*Mid-section zone e1 during primary works targeting Lantana. The overall condition of this zone was classified as good and cost low in the Bush Regeneration Plan [REDACTED], 2018)*



*Regenerating Tallowwood and Bloodwood, zone e1 to the west of monitoring point e1b, post weed control and targeted removal of rainforest pioneers*

## Zone w4 (photo point w4)

Off-site zone	Area	Description & status	Value	Objective	Performance Indicator	Actions
w4	1.7ha	Degraded rocky slope and powerlines above plateau of Closed Forest (Lowland Rainforest)  <i>Primary Year 2, Follow-up Year 3, Maintenance Year 4</i>	EEC  TS	Restore EEC by treating weed infestations and prevent dispersal to other zones.  Protect and expand TS	All strata 95% natives  TS maintained and expanded	<ul style="list-style-type: none"> <li>➤ Weed control: (utilizing area under powerlines for access with general work direction north and south outwards. Zone w1 may provide access in parts). Primary: Flag and hand weed/cut &amp; paint a buffer zone around TS. Arrowhead is entangled in Lantana below the top edge. Hand pull larger woody Coral Berry, spot spray smaller plants. Skirt the Balloon vine (spray regrowth), clear around natives, cut &amp; paint/drill Privet, overspray Lantana. Consider use of splatter gun for Lantana on rocky slope from top edge. Overspray smaller Devil's Fig. Drill taller Devil's Fig. Follow up: spot spray as required/to prevent seeding particularly Coral Berry and Balloon Vine. Ensure powerlines slashed.</li> <li>➤ Identify western and northern boundary with flagging tape</li> </ul>

- Much of the crew's work in 2021 has focused on follow-up in this zone with regular spot sprays to ensure that the exotic seed bank is depleted and that vigorous vines (both native and weed) do not inhibit regeneration. The southern boundary adjoining zone s1/s2 where the new fence had been installed in 2020 also required maintenance.
- Zone w4 is problematic and challenging with very rocky terrain, which is difficult to traverse. It contains powerlines above weed infestations not receiving any visits by the powerline maintenance crew and the threatened species Arrowhead Vine (*Tinospora tinoporoides*) tangled up in exotic vines. In addition, the bulk of this zone comprises a very steep slope of large, unstable boulders. Monitoring Report Two indicated that the principle of adaptive management may require plantings of supplementary figs to secure the boulders on the slope into the future. Approximately 20 Rusty Figs (*Ficus rubignosa*) were propagated by the author from seed sourced from Firewheel Rainforest Nursery and planted in Autumn 2021 into a variety of rocky areas, on boulders and within drilled camphors and privets (Refer Figure 1). As indicated in the BRP (████████, 2018), this species also occurs on large boulders in zone w3.
- This zone is approaching the KPI of less than 5% weeds in all strata apart from exotic grasses along the road edge due to its proximity to weed sources from adjacent unworked zones. Refer Table 2 for additional species identified in this zone during Year Two.

Comparison photos w4 (Source [REDACTED], Dec 2021)



*North along main vehicle access road into quarry zone w4*



*East into western portion of zone w4 looking upslope*



*South zone w4*



*West towards main vehicle access road into quarry zone w4*



General photos zone w4 (Source [REDACTED], 2021)



*Zone w4 General view of the progress of zone w4 previously dominated by exotic vines and dense patches of Lantana post two years of primary and follow-up. Exotic grasses on the roads edge (Rhodes Grass) are due to proximity to weed source from adjacent unworked zones.*



*Zone w4 One of approximately 20 Rusty Figs planted in rocky areas, on boulders and in drilled camphors and privets to stabilise the terrain*

Table 2 Additional species identified post BRP (source [REDACTED])

Zone w4, 2020	Family	Scientific name	Common name	TS	
TREES & SHRUBS	Apocynaceae	<i>Carissa spinarum</i>	Carissa		
	Asteliaceae	<i>Cordyline spp.</i>	Palm Lily spp.		
	Atherospermataceae	<i>Daphnandra apetala</i>	Socketwood		
	Cannabaceae	<i>Aphananthe philippinensis</i>	Rough leaved Elm		
	Cannabaceae	<i>Trema tomentosa</i>	Poison Peach		
	Ebenaceae	<i>Diospyros australis</i>	Black Plum		
	Ebenaceae	<i>Diospyros pentamera</i>	Myrtle Ebony		
	Fabaceae	<i>Parachidendron pruinosum</i>	Snow Wood		
	Fabaceae	<i>Pedleya acanthoclada</i>	Thorny Pea	y	
	Lauraceae	<i>Cryptocarya laevigata</i>	Glossy laurel		
	Lauraceae	<i>Cryptocarya obovata</i>	Pepperberry		
	Lauraceae	<i>Endiandra muerelli sp.</i>	Green-leaved Rose Walnut		
	Lauraceae	<i>Endiandra pubens</i>	Hairy Walnut		
	Meliaceae	<i>Dysoxylum mollissimum</i>	Red Bean		
	Meliaceae	<i>Dysoxylum rufum</i>	Hairy Rosewood		
	Meliaceae	<i>Toona ciliata</i>	Red Cedar		
	Moraceae	<i>Ficus fraseri</i>	Sandpaper Fig		
	Moraceae	<i>Ficus rubignosa</i>	Rusty Fig		
	Moraceae	<i>Streblus brunonianus</i>	Whalebone		
	Pittosporaceae	<i>Pittosporum multiflorum</i>	Orange Thorn		
	Putranjivaceae	<i>Drypetes deplanchei</i>	Grey Boxwood		
	Rubiaceae	<i>Ixora beckleri</i>	Native Ixora		
	Rutaceae	<i>Acronychia oblongifolia</i>	White Aspen		
	Rutaceae	<i>Citrus australasica</i>	Finger lime		
	Rutaceae	<i>Pentaceras australe</i>	Bastard Crow's Ash		
	Sapindaceae	<i>Diploglottis australis</i>	Native tamarind		
	Sapindaceae	<i>Elattostachys nervosa</i>	Green tamarind		
	Sapindaceae	<i>Harpullia pendula</i>	Tulipwood		
	Urticaceae	<i>Dendrocnide photinophylla</i>	Shiny-leaved Stinging Tree		
	Urticaceae	<i>Pipterus argenteus</i>	White Nettle		
	VINES	Apocynaceae	<i>Hoya australis</i>	Native Hoya	
		Apocynaceae	<i>Parsonsia straminea</i>	Common Silkpod Vine	
		Arecaceae	<i>Calamus muelleri</i>	Lawyer Vine	
		Aristolochiaceae	<i>Aristolochia praevenosa</i>	Birdwing Butterfly Vine	
Bignoniaceae		<i>Pandorea pandorana</i>	Wonga Vine		
Fabaceae		<i>Austrosteenisia sp.</i>	Blood Vine		
Fabaceae		<i>Derris involuta</i>	Native Derris		
Flagellariaceae		<i>Flagaellaria indica</i>	Whip Vine		
Menispermaceae		<i>Sarcopetalum harveyanum</i>	Pearl Vine		
Menispermaceae		<i>Tinospora tinosporoides</i>	Arrow-head Vine	y	
Vitaceae		<i>Cissu hyperglauca</i>	Five-leaved Water Vine		
Vitaceae		<i>Cissus antartica</i>	Water Vine		

*Zone e1, 2021*

	<b>Family</b>	<b>Scientific name</b>	<b>Common name</b>	<b>TS</b>
<b>TREES &amp; SHRUBS</b>	Rutaceae	<i>Acronychia baeuerlenii</i>	Byron Bay Acronychia	
<b>HERBS</b>	Acanthaceae	<i>Brunoniella australis</i>	Blue Trumpet	
	Asparagaceae	<i>Thysanotus tuberosus</i>	Common Fringe Lily	
	Convolvulaceae	<i>Polymeria calycina</i>	Slender Bindweed	
	Lamiaceae	<i>Ajuga australis</i>	Austral Bugle	
	Violaceae	<i>Viola betonicifolia</i>	Showy Violet	

## References

Conacher Environmental Group (CEG). (2006). *Blakebrook Quarry: Koala Plan of Management*. Lismore, NSW

██████████ (2018). *Blakebrook Quarry Bush Regeneration Plan (Lot 201 DP 1227138)*. Lismore City Council

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ERM. (2018). *Blakebrook Quarry Biodiversity Offset Strategy*.

SERA. (2017). National Standards for the Practice of Ecological Restoration in Australia. *Standards Reference Group SERA (2017)* Retrieved from <http://www.seraustralia.com/standards/home.html>

# APPENDIX S

Community Consultative Committee Meeting Minutes - 2021

**Present:** Chairperson, Commercial Services Manager, Compliance Manager,  
Compliance Officer

Community Committee Members: Neighbour 1, Neighbour 10

**Apologies:** Quarry Operations Coordinator, Neighbour 7, Neighbour 2

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## Welcome

The meeting was opened at 4.00pm by the Chairperson and all members welcomed.

## Previous Minutes

Overview of previous meeting and minutes were accepted as being true and correct.

## Business arising from minutes of previous meeting:

### LEP AMMENDMENT – E2 Conservation Zoning

Rezoning for offset bush regen areas gazetted on 18 December 2020 as E2 Conservation. Neighbour 10 queried the fencing arrangement on behalf of Neighbour 2, as they understood upon the transfer of the land sale that a new barb wire boundary fence would be erected by Council – to date it is still an electric fence. Commercial Services Manager will follow up on the arrangements and provide a response.

Drill & Blast tender – finalised (2 yr + 2 yr extension option).

### Amalgamation of Asphalt and Quarry Development Application

- Mod 3 approved on 20<sup>h</sup> July 2021 with updated conditions of operation
- Upgrade Quarry access intersection to satisfaction of TfNSW, then laden truck movements can increase to 150 per day (currently 120 per day including asphalt)
- Out of Hours Work Protocol – submitted to DPIE for approval. OHWP is for night works and emergency works as required (notification sent to neighbours that night work would be conducted up to 5 nights per month),
- A new lease is being negotiated with Trico, continuance of existing arrangements.

### Traffic Management Assessment

- Intersection redesign approved and costed, not currently budgeted. Council will revisit the timing of the proposed intersection upgrade based on trends of truck movements and sales and including in budgets when required.

## Correspondence

- Correspondence from DPIE (MOD 3 & AEMR) as discussed
- Emails to neighbours inviting them to CCC meeting

## General Business

- Quarry Operation and Production
  - The Quarry being licenced as a State Significant Project means additional reporting and compliance requirements which has resulted in significant increases to costs.
  - Neighbour 10 commented that the noise from trucks has decreased and he was appreciative of the efforts that have been made.
  - Crushing operations are performed by a contractor on site – all going well.

- Drill & Blast - Two (2) blasts have occurred in recent months with new contractor. No environmental exceedances from reporting. Planned production blasts will be based on production needs.
- Production – Council did a production costings exercise (including all overhead costs) to fully capture expenses, enabling Council to employ strategies for servicing customer and LCC needs.
- The Quarry pays Section 94 levy on outgoing quarry material. Council receives this payment and is responsible for Nimbin Road maintenance. S94 Levies Jan-Nov 2021 = \$112,297.  
Neighbour 10 enquired about Quarry financials to better understand how S94 & other overhead costs are distributed. Commercial Services Manager explained the Quarry financials are on track for this FY.
- Project to dismantle old Asphalt Plant.  
Stage 1 – complete (install GPT system), Stage 2 - complete (decommission and removal of old tanks), Stage 3 – in progress (install new fuel tank & resurface area, then expand sediment basin).
- Customer feedback – no complaints.
  - Customer survey sent out each month via online platform for anonymous feedback. Positive feedback received so far (with some months no response).
  - Nil complaints via Council register or directly to the Quarry.

### **Annual Environmental Monitoring Report (AEMR)**

The 2020 AEMR was completed and submitted to the Department of Planning, Industry and Environment (DPIE) for review on 31 March 2021. The DPIE has responded to Council advising it has accepted this report in line with requirements of the Approval. The report can be found on Council's website.

Three (3) non-compliances

- Excess truck movement of one (1) additional truck on 8<sup>th</sup> September 2020, occurred due to internet disruption causing data delay. No further action required.
  - Dust exceedance at monitoring location D2 due to hot, dry & windy weather conditions. No further action required.
  - Surface water parameters (turbidity, nutrients, oil & grease) were not monitored in March & June 2020. Rectified for September & December 2020 monitoring. No further action required.
- Key action items for next reporting period
- Continuation of groundwater data collection to establish 12 data points for each monitoring well
  - Continuation of surface water data collection to establish 8 data points for each sampling location
  - Continuing to work with DPIE to finalise the current modification request to Part 3A Approval No.07\_0020.

### **Site Maintenance**

#### Wild dog baiting

There was little interest for a community bait, only one (1) neighbouring property participated with the Quarry.

Baiting commenced in September 2021 with Notification period of 6 months (ending March 2022). Two (2) rounds of baits have been put out with 100% uptake.

### Weed Control

- Regular weed control is undertaken in biodiversity areas by the Quarry's Bush Regeneration contractors. In accordance with Bushland Regeneration Plan and Biodiversity Offset Strategy.
- \$65,000 per year allocated to Bush Regen activities. Slightly ahead of schedule overall. All work zones are progressing as planned.
- Koala populations still present on site.
- Zones n2, n3, e5a and e5b – in maintenance stage.
- Zone w4 to be completed by end of 2021 and e1 by end of 2022 - on track.
- Bush Regen Monitoring Report Year Two 2020 – completed (ED21/1672)
- Rehabilitation Bond due 2022 (following Independent Environmental Audit early 2022)
- Neighbour 10 raised concerns about Devils Fig and other weeds on the Quarry site (namely the bund along the entrance road). This section is maintained by LCC internally. The Quarry will discuss the current maintenance program with Civic Pride and work towards improving the weed situation. Quarry staff have also recently obtained chemical application qualifications.

### Additional Other Business

External audit for ISO certification 1<sup>st</sup> & 2<sup>nd</sup> December 2021.

- Conducted online due to Covid restrictions.
- Auditor very happy with management of system and processes.
- 1 minor NCR, 2 observations.

Site security – Neighbour 10 raised concerns regarding contractors entering/exiting the site after hours, saying that he has witnessed some contractors trying to enter/exit the Quarry site via private property. Council suggested gates to be padlocked.

Commercial Services Manager committed to following this up with Quarry staff that:

- the induction process is very clear to include access through private property is trespassing and not allowed.
- ensuring communication with contractors is clear and safe to improve the current system.

Old roadworks debris – Neighbour 10 commented at times of high rainfall, that the culvert on Nimbin Road (adjacent Neighbour 1 front gate) becomes blocked with water. He approached Council road staff recently and the culvert drain contained old guard rail. The road staff cleaned some out however he believed it wasn't fully cleaned out and asked if it could be looked at, as it can affect surface water in his and Neighbour 1 paddocks.

Nimbin Road product disposal – Neighbour 10 has noticed that fill from the Nimbin Road roadworks has been taken into the Quarry site for stockpiling. Commercial Services Manager will investigate with Quarry and Roads staff to identify what is occurring.

The meeting closed at 5.20pm. Meetings are scheduled annually, due by December 2022.



<b>ACTION</b>	<b>ACTION OUTCOME</b>	<b>BY WHOM &amp; WHEN</b>
Site access and security	Communicate with contractors regarding access hours and revisit site induction to emphasise no private property access	Quarry – Ongoing
Nimbin Road roadworks material	Investigate with Quarry and Roads staff to identify what is occurring	Manager Commercial Services – December 2021
Old roadworks debris in culvert on Nimbin Rd	Undertake inspection and advise Civic Services via Contact Centre if further clean-up is required.	Compliance Team – January 2022
Weed control on entrance road bund	Revisit maintenance program to control noxious weeds	Quarry & Civic Pride – February 2022
Quarry/Neighbour 2 boundary fence installation	Clarify agreed arrangements and provide response to affected neighbour	Manager Commercial Services – June 2022
Wild dog baiting	To continue until Notification period lapses	Quarry staff – March 2022
Quarry entrance intersection upgrade	Plans approved however not budgeted yet (as needs basis)	To be monitored
RPQ/Trico Asphalt Plant – Out of Hours Work Protocol	Submitted to DPIE for approval. Will be available on the Quarry website once finalised.	Compliance Team – indicative March 2022
RPQ/Trico Asphalt Plant - lease agreement	Renew lease agreement	Council and Trico – in negotiation
Stage 3 Project	Installation of new fuel tank and resurface area. Expansion of sediment basin	Quarry staff and Compliance Team – June 2022

# APPENDIX T

Information Available on COUNCIL Website

Information to be provided on LCC website as per Schedule 5 Condition 14

Schedule 5 Condition 14 Specifications/Description (Reference) Document Title	Accessibility on LCC Website
<i>the documents listed in condition 2(a) of Schedule 2;</i>	
Environmental Assessment <sup>1</sup>	Y
Environmental Assessment (Mod 1) <sup>2</sup>	Y
Modification Report (Mod 3) <sup>3</sup>	Y
<i>Current statutory approvals for the project;</i>	
Part 3A Approval No.07_0020 (Mod 1)	Y
Part 3A Approval No.07_0020 (Mod 3)	Y
EPA Licence 3384	Y
<i>All approved strategies, plans and programs required under the conditions of this approval</i>	
(Sch 3.Cond. 5) Noise Management Plan	Y
(Sch. 3 Cond. 9) Blast Management Plan	Y
(Sch. 3 Cond. 9) Mine Safety Management Plan	Y
(Sch. 3 Cond. 12) Air Quality Management Plan	Y
(Sch. 3 Cond. 19) Soil and Water Management Plan	Y
(Sch. 3 Cond. 19) Groundwater Monitoring and Management Sub Plan	Y
(Sch. 3 Cond. 19) Pollution Response Management Plan	Y
(Sch. 3 Cond. 23) Traffic Management Plan	Y
(Sch. 3 Cond. 24) Aboriginal Heritage Management Plan	Y
(Sch. 3 Cond. 28) Biodiversity and Rehabilitation Management Plan	Y
(Sch. 3 Cond. 28) Biodiversity Strategy	Y
(Sch. 5 – Cond. 1) Environmental Management Strategy	Y
<i>A comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs;</i>	
Blast Reports – 2021	Y
Noise Monitoring Reports – 2021	Y
Dust Monitoring Summary Results – 2021	Y
Ground Water Monitoring Results – 2021	Y
Surface Water Monitoring Results – 2021	Y
Water Discharge Report – 2021	N/A <sup>4</sup>
<i>A complaints register, updated monthly;</i>	
Blakebrook Quarry Environmental Complaints Register	Y
<i>The annual reviews of the project;</i>	
Annual Environmental Monitoring Report 2012	Y
Annual Environmental Monitoring Report 2013	Y
Annual Environmental Monitoring Report 2014	Y
Annual Environmental Monitoring Report 2015	Y
Annual Environmental Monitoring Report 2016	Y
Annual Environmental Monitoring Report 2017	Y
Annual Environmental Monitoring Report 2018	Y
Annual Environmental Monitoring Report 2019	Y
Annual Environmental Monitoring Report 2020	Y
<i>Any other matter required by the Secretary; an</i>	

Schedule 5 Condition 14 Specifications/Description (Reference) Document Title	Accessibility on LCC Website
3 Year Environmental Audit	Y
Truck Dispatch Times	Y
<i>(b) keep this information up-to-date, to the satisfaction of the Secretary.</i>	Y <sup>5</sup>

<sup>1</sup> Blakebrook Quarry Expansion, Environmental Assessment Report, Final Report, January 2009, and the Proponent’s response to submissions titled Blakebrook Quarry Expansion, Response to Submissions, Final Report, August 2009

<sup>2</sup> Environmental Assessment titled Blakebrook Quarry Modification Application, August 2017

<sup>3</sup> MR Approved 20<sup>th</sup> July 2021

<sup>4</sup> No water discharge occurred during the reporting period.

<sup>5</sup> The review undertaken as part of this AEMR finds that the documentation available on the LCC website appears to be up-to-date.

# APPENDIX U

Complaints Register

# Environmental Complaints Register



Information received about an Environmental Complaint shall be added to the register.  
 These details shall then be added to the Register - Non-Conformance & Improvement and actioned via the Non-Conformance & Continuous Improvement Procedure.

To be kept for at least 4 years – date & time	Method of Complaint (phone, face to face)	Details of Complainant	Nature of Complaint	Action Taken	Reason for no Action (if applicable)	NCAR Report no:
2021						
01/01/2021 31/01/2021				Nil - No complaints received		
01/02/2021 28/02/2021				Nil - No complaints received		
01/03/2021 31/03/2021				Nil - No complaints received		
01/04/2021 30/04/2021				Nil - No complaints received		
01/05/2021 31/05/2021				Nil - No complaints received		
01/06/2021 30/06/2021				Nil - No complaints received		
01/07/2021 31/07/2021				Nil - No complaints received		
01/08/2021 31/08/2021				Nil - No complaints received		
01/09/2021 30/09/2021				Nil - No complaints received		
01/10/2021 31/10/2021				Nil - No complaints received		
01/11/2021 30/11/2021				Nil - No complaints received		
13/12/2021	Phone call and email to Quarry and LCC Customer Service	Local resident 2km from Quarry	Noise and vibration from blast	Internal investigation		223

