Lynwood Quarry

2024 Annual Review

Site Details

Name of operation	Lynwood Quarry
Name of operator	Holcim (Australia) Pty Ltd
Development consent #	DA 128-5-2005
Document title	2024 Annual Review
Document version	A
Annual review start date	1 January 2024
Annual review end date	31 December 2024

I, Wayne Beattie, certify that this audit report is a true and accurate record of the compliance status of Lynwood Quarry for the period 1 January 2024 to 31 December 2024 and that I am authorised to make this statement on behalf of Holcim.

Note.

a) *The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement – maximum penalty 5 years imprisonment): sections 307A, 307B and 307C (False or misleading applications/information/documents – maximum penalty 2 years imprisonment or $22,000, or both).*

Name of authorised reporting officer	Wayne Beattie
Title of authorised reporting officer	Lynwood Quarry Manager
Signature of authorised reporting officer	
Date	31/03/2025

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1 Statement of Compliance

This Annual Review has been prepared to provide a summary of the performance of the Lynwood Quarry operations over the period 1 January 2024 to 31 December 2024 (referred to hereafter as the reporting period). The compliance of the operation with relevant approvals is summarised in **Table 1**. The non-compliances have been ranked according to the risk matrix included in **Table 2**. A description of each non-compliance is provided in **Table 3**.

Table 1: Compliance Status 2024

Relevant Approval	All Conditions Complied With?
Development Consent (DA) 128-5-2005 (Mod 5)	No, refer to **Table 3**
Environment Protection Licence (EPL) 12939	No, refer to **Table 3**.

Table 2: Compliance Status Key

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

Source: Annual Review Guideline (NSW Government, 2015)

Table 3: Non-Compliances

Relevant approval	Condition	Condition Description	Compliance status	Comment	Section addressed in Annual Review
DA128-5-2005 (Mod 5)	Schedule 3, Condition 23	***Water Management Plan***	**Low Non-Compliance**	Two or more exceedances of trigger levels were recorded: Oil and Grease exceeded criteria levels more than twice at SW4, SW10 and SW11. Holcim is reporting the exceedances to the DPHI as part of this Annual Review.	**Section 6.4**
DA128-5-2005 (Mod 5)	Schedule 3, Condition 20	***Water Management Plan***	**Non-Compliance**	Holcim acknowledges the exceedances and notified the DPHI. External consultants, Ramboll Australia Pty Ltd, were engaged to investigate the pH exceedance occurring in: • April and May at SW09 and SW11 • July and August at SW10 and SW11. Oil and Grease occurrences: • SW4: visualised March 6th, 2024, 86mg/L April 3rd, 2024 • SW10 visualised April 3rd, 2024, and 11mg/L, visualised may 2nd, 2024, visualised June 4th, 2024 • SW11 visualised March 6th, 2024, and 15mg/L April 3rd, 2024.	**Section 6.4**
DA128-5-2005 (Mod 5)	Schedule 3, Condition 24	***Groundwater Monitoring Program***	**Non-Compliance**	Holcim acknowledges there were two or more exceedances of trigger levels recorded over consecutive months, including: • pH exceedance at GPZ6 in Q3 and Q4, and • Water level at groundwater bore MP1 remained below the minimum trigger level of 1.64 m throughout the 2024 reporting period.	**Section 6.5**

Relevant approval	Condition	Condition Description	Compliance status	Comment	Section addressed in Annual Review
				Holcim is reporting the exceedances to the DPHI as part of this Annual Review.	
DA128-5-2005 (Mod 5)	Schedule 3, Condition 24	***Groundwater Monitoring Program***	Non-compliance	Holcim acknowledges that monitoring of depth to water level for all bores was not performed during Q1.	**Section 6.5**
DA128-5-2005 (Mod 5)	Schedule 3, Condition 15	Air Quality Management Plan	**Low Non-Compliance**	There were multiple invalid PM_{10} samples during the reporting period were due to HVAS 1 failure to operate on: • 2 May 2024 • 9 May 2024 • 9 December 2024 • 15 December 2024. Samples were missed due to HVAS 2 failure to operate on 6 June 2024. This was due to power supply issues to the stations, which have since been resolved.	**Section 6.3**
EPL 12939	Condition M2.2	Air Monitoring Requirements			

2 Introduction

Holcim (Australia) Pty Ltd (Holcim) owns and operates Lynwood Quarry, a hard rock quarry located west of Marulan, approximately 160 kilometres (km) southwest of Sydney and 27 km northeast of Goulburn in New South Wales (NSW), as seen in **Figure 1** and **Figure 2**.

Holcim is the trading name for Holcim (Australia) Pty Ltd which, as a member of the Large Holcim group, is one of the leading suppliers of heavy construction material products in Australia, operating over 80 quarries, over 200 fixed concrete plants and a fleet of over 900 concrete delivery trucks. Holcim began quarry operations at Lynwood Quarry in 2015 and since this time has provided high quality sand and aggregates for use in construction and landscaping across the local, regional and Sydney markets.

Holcim was granted Development Consent in December 2005 (DA 128-5-2005) (Development Consent) by the then NSW Minister for Planning for the construction and operation of Lynwood Quarry. There have been 5 modifications approved to the Development Consent under section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act) since 2005.

On 18 May 2016, Lynwood Quarry was granted modification to commence quarrying and associated activities in an alternative resource known as the Granite Pit located to the north-west of the Approved Pit area. The approval also allowed for the reduction in the extent of the approved pit to reflect limitations within the ignimbrite resource. Operations have continued in the Granite Pit since this time.

2.1 Quarry Contacts

The Lynwood Quarry Manager is responsible to the regulatory authorities for all aspects of environmental compliance at the site. Key personnel at Lynwood Quarry are described in **Table 4.**

Table 4: Key personnel responsible for environmental management

Name	Role	Company	Contact Details
Wayne Beattie	Quarry Manager	Holcim	Office 4820 7007 M +61 419 476 900
Dozie Egeonu	Environment Manager - NSW	Holcim	M +61 429 557 493

2.2 Annual review Requirements

Condition 10 of Schedule 5 of the Lynwood Quarry Development Consent requires an Annual Review (AR) to be prepared and submitted to the Department of Planning, Housing, and Infrastructure (DPHI) (the Department). This report has been prepared in accordance with the Department's Annual Review Guideline (DPE, 2015) and details the operational and environmental management activities of Lynwood Quarry during the reporting period 1 January 2024 to 31 December 2024. Development Consent requirements along with an explanation of where each requirement is addressed within this document are provided in **Table 5**.

Table 5: Development Consent 128-5-2005 (MOD 5) conditions for the Annual Review

Conditions		Addressed in Section
Schedule 2 – General Administrative Conditions **Production Data**		
13.	The Applicant must (a) Provide annual quarry production data to DRG using the standard form for that purpose; and (b) Include a copy of this data in the Annual Review.	**Section 4.2**
Schedule 3 – Specific Environmental Conditions **Monitoring of Quarry Product Transport**		
33A.	The Applicant must keep accurate records of all laden truck movements from the site (weekly, monthly, and annually) and publish a summary of records in its Annual Review.	**Section 4.2.2**
Schedule 3 – Specific Environmental Conditions **Retirement of Biodiversity Credits**		
48A.	The Applicant must retire the biodiversity credits specified in Table 11 to the satisfaction of the Secretary and OEH. The retirement of credits must be undertaken in accordance with the Framework for Biodiversity Assessment – NSW Biodiversity Offsets Policy for Major Projects by: (a) Acquiring or retiring credits under the Biobanking Scheme in the TSC Act; (b) Making payments into an offset fund that has been developed by the NSW Government; or (c) Providing supplementary measures.	**Section 6.7**
Schedule 3 – Specific Environmental Conditions **Waste Management**		
53	The Applicant must: (d) Report on waste management and minimisation on the Annual Review to the satisfaction of the Secretary.	**Section 6.10**
Schedule 5 – Environmental Management, Reporting and Auditing **Annual Review**		
10	By the end of September each year, or other timing as may be agreed by the Secretary, the Applicant must review the environmental performance of the development to the satisfaction of the Secretary. This review must:	
	(a) Describe the development (including rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;	**Section 4.0, Section 6.0,** and **Section 8.0**
	(b) Include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against: ○ The relevant statutory requirements, limits, or performance measures/criteria; ○ The requirements of any plan or program required under this consent; ○ The monitoring results of previous years; and	**Section 6.0** and **Section 9.2**

Conditions		Addressed in Section
	○ The relevant predictions in the documents listed in condition 2(a) of Schedule 2;	
	(c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	**Section 1.0** and **Section 11.0**
	(d) Identify any trends in the monitoring data over the life of the development;	**Section 6.0**
	(e) Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of significant discrepancies;	**Section 6.1**
	(f) Describe what measures will be implemented over the current financial year to improve the environmental performance of the development;	**Section 6.0**
	(g) Describe the area of vegetation cleared as part of the development and identify the area proposed to be cleared over the next 5 years;	**Section 4.1** and **Section 8.0**
	(h) Calculate the number of additional Bio Banking (or equivalent) credits that will need to be purchased, before that clearing can be done; and	**Section 6.7**
	(i) Report on the number of Bio Banking (or equivalent) credits that have been purchased to allow ongoing clearing and completion of stages.	**Section 6.7**

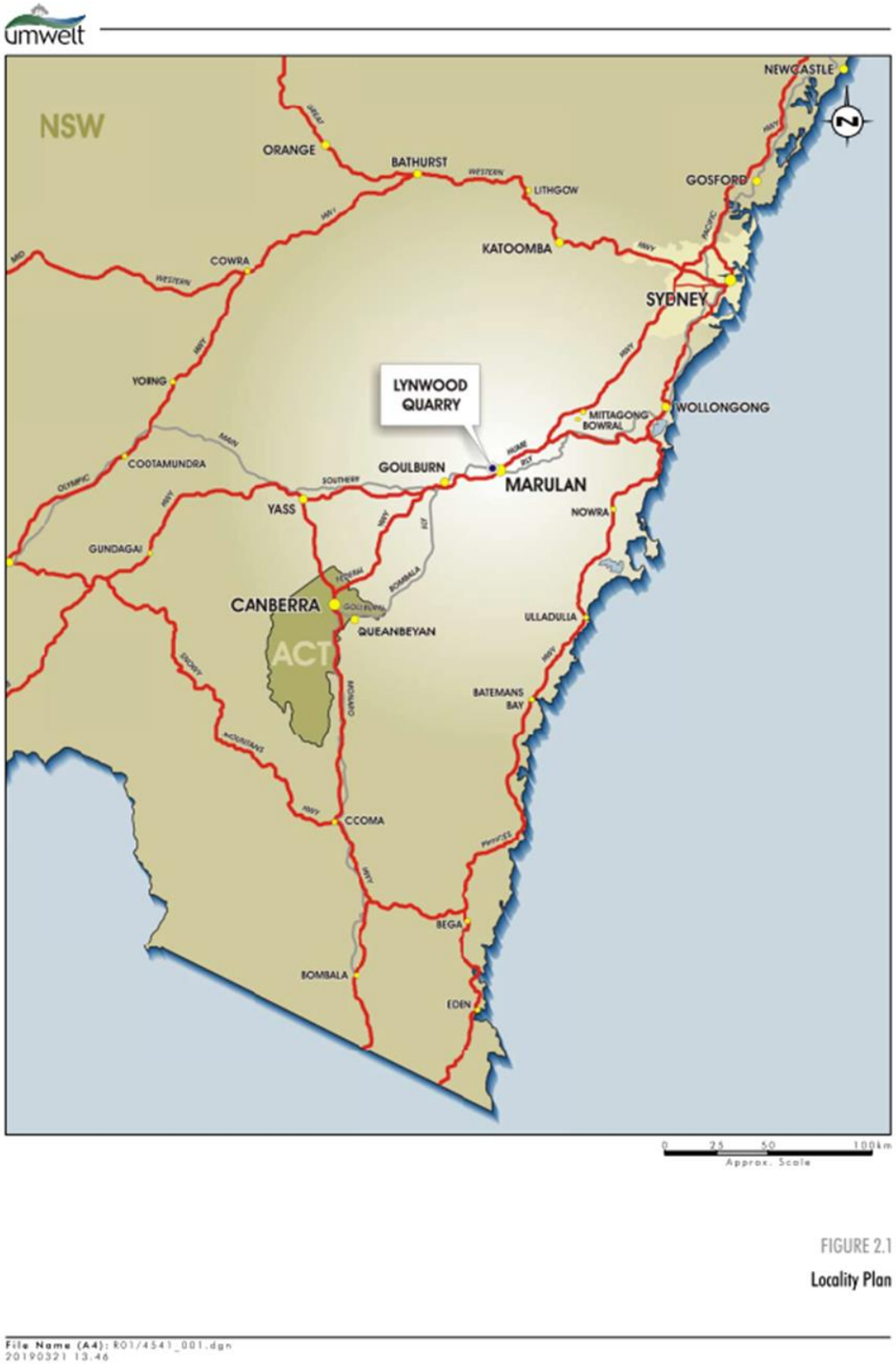

Figure 1: Locality Plan (Umwelt, 2016)

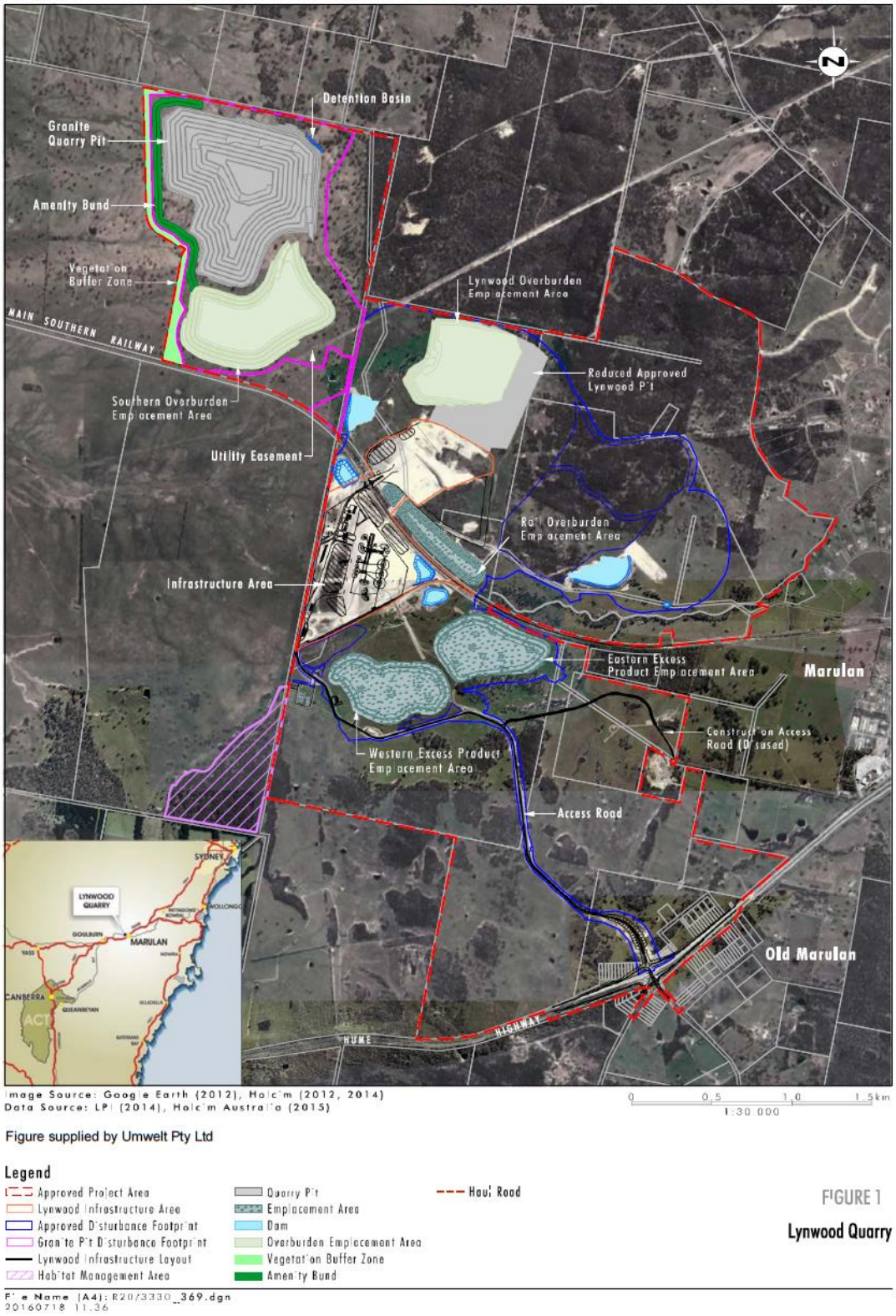

Figure 2: Overview of Operations (Environmental Management Strategy, 2020)

3 Approvals

Approvals currently held by Lynwood Quarry are listed in **Table 6.**

Table 6: Approvals and licences held by Holcim

Approval and Relevant Legislation	Details
Development Consent (DA) 128-5-2005 (Mod 5) *NSW Environmental Planning and Assessment Act 1979*	The MOD 5 Development Consent applied through the reporting period. Mining operations permitted to 1 January 2038 in accordance with the MOD 5 Development Consent.
Part 3A permit *Water Management Act 2000*	Obtained for works within 40 m of stream.
Part 2 Licence *Water Act 1912 Part 2*	Obtained for surface water capture and use.
Part 5 Licence *Water Act 1912 Part 5*	Obtained for groundwater monitoring.
Controlled Activity Approval (CAA) No. 10 ERM 2011/0446 *Rivers and Foreshores Improvement Act 1948*	Works within the riparian zones on site.
Environment Protection Licence (EPL) 12939 *Protection of the Environment Operations Act 1997*	Held by Holcim over the Lynwood Quarry premises. EPL 12939 was varied 20 September 2024.
Water Access Licence (WAL) No. 25575 *Water Act 1912*	Obtained under the water sharing plan for the Upper Nepean and Upstream Warragamba Water source (refer to **Section 7.2**)
Aboriginal Heritage Impact Permit (AHIP) No. 1100264 *National Parks and Wildlife Act 1974*	Discussed further in **Section 6.1.1**.
EPBC 2012/6560 *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*	Obtained to manage matters of national environmental significance (MNES) including *Leucochrysum albicans var. tricolor* (Hoary Sunray) and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Compliance with this approval is assessed in the Annual Compliance Report.

3.1 2024 EPL Variation

Holcim submitted an application to vary EPL 12939 on 10 July 2024 to modify the following:

- Add a Licensed Discharge Point (LDP) to the project site;
- Amend the location of a HVAS monitor due to a neighbouring block completing a housing development, resulting in a change in sensitive receptor locations.

Following an on-site inspection and review of the Water Management Plan (WMP) alongside the EPA, Holcim identified errors in the WMP and the need to submit an EPL variation. The EPA issued the EPL variation on 20 September 2024. In consultation with specialists, Holcim is continuing to update the WMP in 2025.

In addition to these changes to the EPL, a Pollution Study and Reduction Program - PM2.5 Monitoring Program was introduced in the September variation. PM2.5 monitoring commenced in November 2024. The PM2.5 results will not be included in this Annual Review but will be reported as per Condition U1.4 of the EPL.

3.2 Developmental Consent History

The original Lynwood Quarry Development Consent 128-5-2005 was granted on 21 December 2005. Subsequent modifications to the Development Consent were approved in 2009, 2011, 2016, and 2018.

In May 2018, Lynwood Quarry was granted approval (MOD 5) to modify Condition 48A of Schedule 3 of the Development Consent. This condition related to the retirement of biodiversity credits for the site. All references to Development Consent conditions within this document refer to the MOD 5 unless stated otherwise.

3.3 Management Plan Approvals

Environmental monitoring data and a copy of the current Lynwood Quarry Management Plans are published on the Holcim website (https://www.holcim.com.au/lynwood). During the preparation of this Annual Review, Holcim has assessed the need to review or update Management Plans.

Following the IEA, Holcim reviewed the Lynwood environmental managemental plans in accordance with Schedule 5, Condition 5.

In 2024 Holcim updated and submitted an updated version of the Rehabilitation and Landscape Management Plan.

In 2024, the following management plans were also determined as requiring update:

- Air Quality Management Plan.
- Water Management Plan.
- Box Gum Woodland Management Plan.

Holcim continues to suitably update these management plans to reflect the development. Holcim will submit the management plans for approval by DPHI once updated.

4 Operations Summary

A summary of the operations undertaken at Lynwood Quarry during the reporting period is presented in the following sections.

4.1 Quarrying Operations

Quarrying operations commenced in the Granite Pit in 2017 and have continued through the 2024 reporting period.

The quarrying process on site consists of the following four stages:

- Clearing and topsoil stripping – typically undertaken using a dozer and/or excavator in accordance with Lynwood Quarry's clearing procedure, with selected material stockpiled for later use in rehabilitation;
- Overburden removal and emplacement – overlain material is typically removed via blasting and hauled to emplacement areas;
- Blasting, loading and haulage of primary raw feed (PRF) material – target resource removed via drill and blast then loaded by front-end loaders into haul trucks for transportation to the primary crusher; and
- Crushing and screening – resources are processed by the primary crusher and are then transported via conveyor to the infrastructure area for tertiary processing and screening. Products are stockpiled awaiting transport to local, regional and Sydney markets via road and rail transportation methods.

Lynwood Quarry did not complete any clearing or surface disturbance works in the reporting period.

4.2 Production Limits

Production in 2024 met the limits on total saleable product and amount of product transported by road outlined in Schedule 2 Condition 13 of the Development Consent. During the reporting period, a total of 2,087,683 tonnes of quarry products were transported from the quarry by road and rail. This is less than the total production for the previous reporting period. In 2023 a total of 1,129,000 tonnes were transported from the quarry by road transport using Hume Highway.

Table 7 provides the annual production and transportation volumes from 2021 to 2024 reporting periods and provides a forecast for the 2025 reporting period.

Table 7: Long-term Production Summary (tonnes)

Material	Approved limit	2021 (actual)	2022 (actual)	2023 (actual)	2024 (Actual)	2025 (Forecast)	Compliance
Product - total	5 million tonnes from the site in a year	2,018,000	2,085,790	2,185,343	2,087,683	2,100,000	Yes
Product Transported - Rail	5 million tonnes from the site in a year	696,409	897,015	1,135,082	1,029,941	1,100,000	Yes
Product Transported - Road	1.5 million tonnes from the site in a year by road	1,129,000	1,188,775	1,050,261	1,057,743	1,000,000	Yes

4.2.1 Hours of Operation

Lynwood Quarry operates in accordance with the operating hours specified in **Table 8**.

Table 8: Operating hours at Lynwood Quarry

Activity	Day	Time	Compliance with Operating Hours during this reporting period
Construction works	Monday – Friday	7am to 6pm	Yes
	Saturday	8am to 1pm	Yes
	Sunday and Public Holidays	None	Yes
Topsoil/overburden removal/emplacement; drilling	Any day	7am to 6pm	Yes
Blasting	Monday – Saturday	9am to 5pm	Yes
	Sunday and Public Holidays	None	Yes
Extraction	Any day	7am to 10pm	Yes
Processing (crushing, screening, stockpiling); loading, delivery, and distribution; maintenance	Any day	Anytime	Yes

4.2.2 Vehicle Movements

In accordance with Condition 33A of Schedule 3 of the Development Consent, the number of laden truck movements from Lynwood Quarry are summarised in **Table 9.** Product transported by road from Lynwood Quarry is restricted to less than 1.5 million tonnes per annum. The 2024 reporting period road transport tonnages comply with the approved limits.

Table 9: Summary of Laden Trucks Movements

Month	Laden Truck Movements	Product by Road Transport (tonnes)
January	1,640	59,900
February	2,403	86,747
March	2,519	90,049
April	2,227	75,357
May	2,371	85,256
June	2,475	87,591

Month	Laden Truck Movements	Product by Road Transport (tonnes)
July	1,933	65,936
August	2,672	95,185
September	2,753	100,758
October	3,070	109,239
November	4,059	144,934
December	1,525	56,790
Total	**29,647**	**1,057,743**

4.3 Construction Activities

No construction activities occurred during the reporting period.

4.4 Next Reporting Period

Development activities proposed to be carried out at Lynwood Quarry in 2025 will be in line with the activities that were conducted in the 2024 reporting period.

5 Actions Required from Previous Annual Review

5.1 Actions from the 2023 Annual Review – DPHI Actions

Holcim received a letter on 2 May 2024 from DPHI following the submission of the 2023 Annual Review. Holcim reviewed and resubmitted in the 2023 Annual Review by 24 May 2024. Changes made to the Annual Review included additional detail in the naming surface water monitoring points in **Section 6.4**.

This report has followed the same structure as the 2023 Annual Review resubmission.

5.2 Actions from the 2023 Annual Review – Holcim Proposed 2024 Actions

Actions proposed to be undertaken at Lynwood Quarry during this reporting period based on the previous Annual Review are detailed in **Table 10.**

Table 10: Status of Actions in previous Annual Review (proposed by Holcim)

Action from Previous Annual Review	Works Undertaken in Reporting period	Section addressed in this document
Complete implementation of the actions identified in the IEA (2020) Action Plan	A review into the status of actions from the 2020 IEA was completed as part of the scope of the most recent IEA. Holcim will continue to address the Audit Action Plan from the most recent IEA in 2025.	**Section 10**
Implementation of approved environmental Management Plans	Management measures and monitoring was generally completed in accordance with management plans. Some issues occurred with these summarized in **Section 11**. As per **Section 3.3**, some management plans were updated and are not yet approved by DPHI.	**Sections 6, 7, and 8.**
Continued extraction within the Granite Pit	Holcim continued to operate	**Section 4**
Maintenance of visual amenity bund to the west of the Granite Pit	Topsoil stockpiles were seeded with the aim of establishing ground cover and reducing soil substrate loss via erosion.	**Section 8.1**

Continued weed and feral animal management	Holcim completed weed maintenance	**Section 6.8**

6 Environmental Performance

The following sections provide a summary of environmental monitoring and management undertaken during the reporting period. In accordance with the Development Consent, Lynwood Quarry has prepared several management plans in consultation with relevant stakeholders.

The environmental monitoring network is shown in **Figure 3**

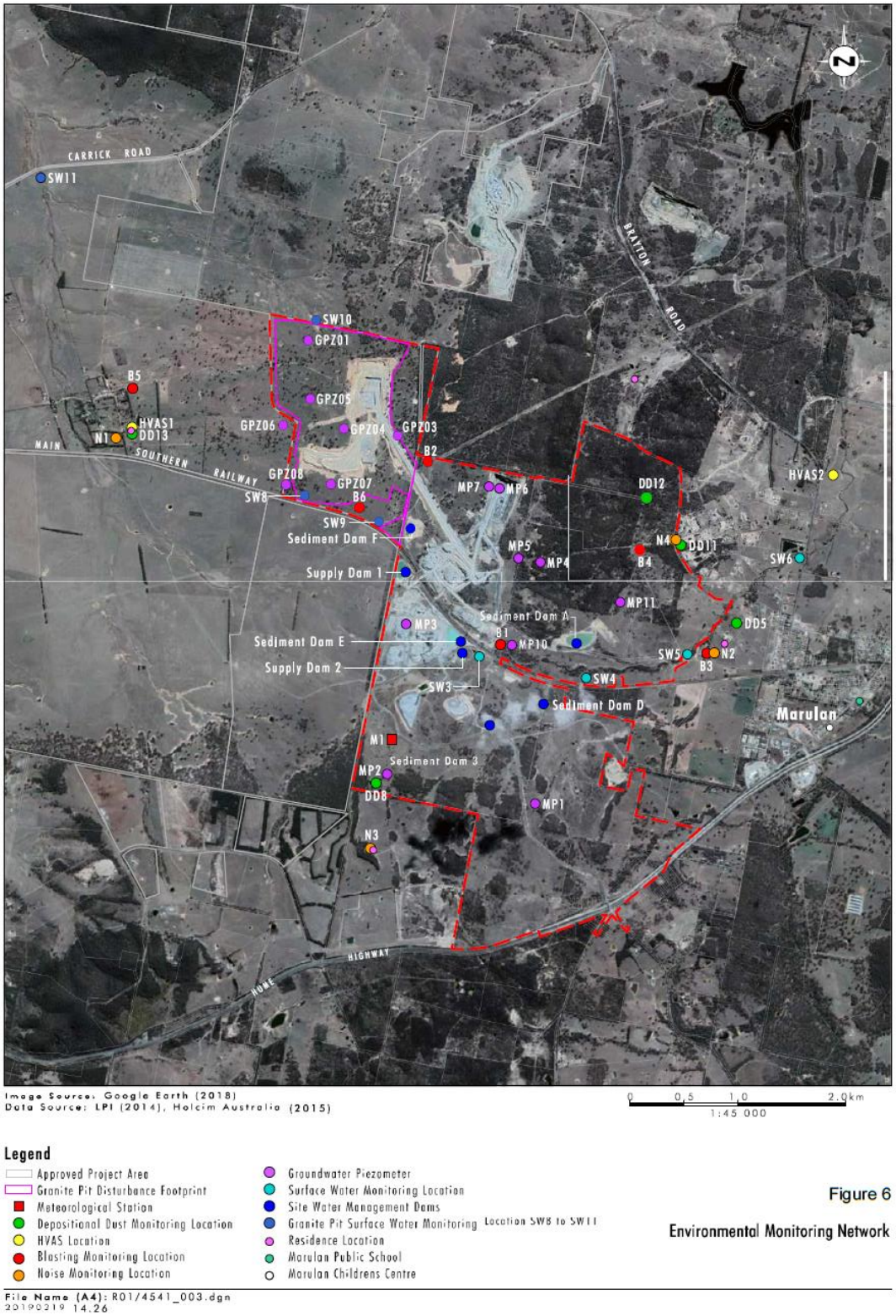

Figure 3: Environmental Monitoring Network (Water Management Plan, 2020)

6.1 Summary of Performance Against EA Predictions

The Lynwood Quarry has been subject to four environmental assessments (EA) and five modifications since the original environmental impact statement and development application was approved in 2005. MOD 4 involved expanding quarrying operations to the west of the existing operations. This was assessed by the most recent EA dated November 2015 (Umwelt, 2015). The results of environmental monitoring data obtained during the reporting period have been compared to the predictions in the EA dated November 2015 within this Annual Review. During the reporting period, monitoring was undertaken at Lynwood Quarry for meteorological, noise, air quality, surface water and groundwater.

A summary of environmental performance during the reporting period is given in **Table 11**.

Table 11: Summary of the environmental performance during the reporting period

Aspect	Approval Criteria/ EIS Prediction	Performance during the reporting period	Trend / key management implications	Implemented / proposed management actions
Air Quality	Refer to **Section 6.1.1 and 6.3.2**	Five instances in 2024 when monitoring equipment failed to monitor for the full 24-hour period and collect a valid sample. These were reported to DPHI as non-compliances at the time.	Average depositional dust and PM_{10} monitoring results continued to trend below impact assessment criteria limits during the reporting period and remained within historical range.	Issues affecting monitoring equipment were addressed and closed out in 2024. Actions that were undertaken to address these are detailed in **Section 6.3**
Surface Water Quality	Refer to **Section 6.1.2 and 6.4.2**	Surface Water monitoring generally compliant during the 2024 reporting period. Site SW8 was dry throughout the entire 2024 reporting period. There were 14 exceedances of surface water pH through 2024. 4 consecutive exceedances occurred and were reported. Oil and Grease compliance exceeded trigger levels 24 times through 2024. Of these, 3 were consecutive but were not reported to the DPHI or the EPL; resulting in a non-compliance with the WMP. Monitoring of Total suspended solids and Electrical conductivity were compliant throughout 2024.	Generally, surface water monitoring results were below impact assessment criteria during the reporting period and remained within historical range. There were some increased levels of oil and grease in 2024 compared to 2023.	Actions to be undertaken are detailed in **Section 6.4.**
Groundwater	Refer to **Section 6.1.3 and 6.5.2**	Groundwater monitoring was generally conducted as per the WMP, with the exception of missed sampling of depth to water level in Q1 6 pH exceedances occurred at during in 2024. One consecutive occurrence (GPZ6) was not reported to the DPHI. MP1 bore level was below the minimum trigger level from Q2-Q4.	Generally, groundwater results were below impact assessment criteria during the reporting period and remained within historical ranges. There were some exceptions to this which are discussed further in **Section 6.5** and **Table 3**.	Actions to be undertaken are detailed in **Section 6.5**.

Aspect	Approval Criteria/ EIS Prediction	Performance during the reporting period	Trend / key management implications	Implemented / proposed management actions
Noise	Refer to **Section 6.1.4 and 6.6.2**	Compliant with the monitoring program and criteria levels.	Noise results were below impact assessment criteria in 2024.	Any further actions to be undertaken are in **Section 6.6**.
Biodiversity	Refer to **Section 6.7.2**	Ecological monitoring was completed in 2024.	Holcim continues to consult with authorities on the status of conservation areas as well as appropriate Management Plans for these areas.	Any further actions to be undertaken are in **Section 6.7.**
Blasting	Refer to **Section 6.9.2**	All blasts were compliant in 2024.	Blasting monitoring was undertaken in 2024 and complied with the Consent and EPL Criteria.	Any further actions to be undertaken are in **Section 6.9.**.

6.1.1 Air Quality Predictions Against the EA

An Air Quality Impact Assessment (PEL, 2015) was completed as part of the Lynwood Quarry Extraction Area Modification EA (Umwelt, 2015). The assessment predicted that as operations move in a westerly direction, there would be no predicted exceedances of the assessment criteria for all PM10 and Depositional Dust at private residences during the operational phase of the quarry. In summary, the EA concluded that:

- EPA air quality impact assessment criteria were not predicted to the exceeded at nearby residences; and
- The modification is not anticipated to cause adverse impacts offsite.

A discussion of air quality monitoring results recorded during the reporting period is provided in **Section 6.3.** The annual depositional dust averages were below the impact assessment criteria and EA predictions for this reporting period. Depositional dust averages were calculated from 12 months of data.

PM10 results for 2024 were similarly below impact assessment criteria and EA predictions. There were five short-term exceedances recorded during 2024. A summary of the monitoring events for PM10 is presented in **Table 15.**

6.1.2 Surface Water Quality Predictions Against the EA

The outcomes of the surface water assessment (Umwelt 2005 & 2015) indicated that Lynwood Quarry would not significantly alter the flow regimes or annual flow volumes in the surrounding creek network in terms of peak discharges, flood levels or peak in-stream velocities either upstream or downstream of Lynwood. No adverse impacts are predicted in terms of channel stability, in-stream habitat of either Joarimin Creek or Lockyersleigh Creek systems. No adverse impacts are predicted in terms of water quality in Joarimin Creek, Lockyersleigh Creek or the downstream drainage systems.

A discussion of the surface water quality results recorded during the reporting period is provided in **Section 6.4**. All surface water quality results were generally consistent with criteria. Little to low flow was observed at several sampling events. There was no evidence that the site caused impact to water quality downstream. Oil and Grease, and pH exceeded trigger criteria more than twice over consecutive months during 2024.

6.1.3 Groundwater Predictions Against the EA

Drawdown impacts are expected within the immediate vicinity of the quarry pit. As the expansion of the granite pit continues, a progressively deepening and slightly expanding cone of depression surrounding the pit is expected (Umwelt, 2015). Groundwater inflow rates are predicted to be negligible given the early stage of operations in the extension area.

Groundwater results for 2024 were generally consistent with the historical minimum and maximum bounds reaching back to 2010. Groundwater results indicated there has been no considerable impact on the local groundwater from operations. Consecutive exceedances of the maximum pH trigger level occurred at GPZ6, while MP1 remained consistently below the minimum trigger level for depth to water

throughout 2024. All other parameters complied with the criteria outlined in the WMP. A discussion of groundwater level and water quality results is provided in **Section 7**.

6.1.4 Noise Predictions Against the EA

The results of the noise impact assessment identified that noise impacts from the operations will meet the existing development consent criteria at all locations and time of day periods except receiver location 11 (Monitoring Location – N3) where a minor 1 dB exceedance is predicted at night (Umwelt, 2015).

No noise monitoring exceedances were recorded during the reporting period and all results remained below impact assessment criteria. A discussion of noise monitoring results recorded during the reporting period is provided in **Section 6.6** and all noise monitoring reports are presented in **Appendix A**.

6.2 Meteorological Monitoring

A summary of monthly rainfall and daily temperatures was retrieved from the onsite meteorological station. The site uses this meteorological monitoring data to inform daily operations as per the Development Consent.

A summary of meteorological results for the reporting period are outlined in **Table 12**.

Table 12: Meteorological monitoring results summary

Month	Total Rainfall (mm)	Minimum Temperature (°C)	Maximum Temperature (°C)
January	93.20	11.13	31.53
February	145.00	7.7	34.4
March	42.00	4.2	31.5
April	143.60	0.6	27.1
May	110.80	-1.5	19.3
June	171.40	-2.9	16.1
July	29.60	-2.5	17.9
August	38.40	-3.3	21.5
September	21.60	-3.4	22.7
October	13.20	1.0	25.8
November	67.00	7.5	32.2
December	34.60	8.0	33.4
Annual TOTAL	910.40		

Lynwood Quarry received a total of 910.40 of rainfall over the 2024 reporting period. The highest monthly rainfall occurred in June, with 171.40 mm falling during this period. The least amount of monthly rainfall occurred in October with only 13.2mm received. The minimum recorded temperature in the region occurred in September (-3.4°C), with February recording the maximum 34.4°C.

6.3 Air Quality

6.3.1 Environmental Management Measures

Lynwood's Air Quality Management Plan (AQMP) was approved in September 2023.

The air quality monitoring network consists of five dust deposition gauges (DD5, DD8, DD11, D12, DD13) and two High Volume Air Samplers (HVAS1 and HVAS2), which are used to measure depositional dust and particulate matter <10µm (PM_{10}), respectively. Dust monitoring locations are provided in **Figure 3.**

In the reporting period, new housing developments commenced around the township of Marulan and near Lynwood's south-eastern boundary. On 7 December 2023 Ramboll submitted a report reviewing the location of the air quality monitors at Lynwood, following changes in the locations of Lynwood receptors. Based on this review, Holcim amended the location of HVAS 2 to better reflect receptor locations. HVAS 2 was relocated in May 2024. This was included as part of the EPL Variation dated September 2024.

Following historical and ongoing issues with the power supply, Lynwood upgraded the two HVAS units in 2024. The HVAS were fitted with solar arrays and back-up generators to minimise the risk of missed sampling for PM10, PM2.5, and TSP.

6.3.2 Performance Criteria

Holcim is required to ensure that dust and particulate emissions do not cause exceedances of the criteria specified in the Development Consent. The air quality assessment criteria specified in the Development Consent are provided in **Table 13**.

Table 13: Air quality impact assessment criteria

Pollutant	Averaging Period	Criterion
Total suspended particulate (TSP) matter	Annual average	90 µg/ m^3
Particulate matter <10µm (PM_{10})	Annual average	30 µg/ m^3
	24-hour average	50 µg/m^3
Deposited dust	Annual average (maximum total)	4 g/m^2/month
	Annual average (maximum increase)	2 g/m^2/month

6.3.3 Environmental Outcomes

Depositional Dust

As noted in **Table 14**, depositional dust monitoring during the reporting period took place on a monthly basis. All sampling sites complied with Development Consent criteria for annual average total deposited dust and ranged between 0.7 – 1.7 g/m2/month.

It should be noted that on approval of the AQMP (2023) that DD6 became an internal comparison monitor and is not used to measure offsite air quality nor is it intended for reporting as part of the monitoring network. As such, results recorded at DD6 are not included in **Table 14.**

Throughout the reporting period, the site was compliant with the annual average all recording below the annual criteria. The highest reading during the reporting period was 11.0 g/m2/month.

Table 14: Depositional Dust Monitoring Results

Month	Total Insoluble Solids (g/m2/month)				
	DD5	DD8	DD11	DD12	DD13
January	1.4	3.3	1.8	0.6	2.2
February	0.8	1.0	0.9	1.3	0.1
March	1.1	0.6	0.4	0.6	4.0
April	0.5	0.5	1.3	0.7	0.8
May	11.0	4.4	0.4	0.8	0.5
June	2.0	0.8	1.0	0.8	0.1
July	0.4	0.3	0.5	0.5	0.4
August	0.2	0.2	0.3	0.4	0.3
September	0.3	0.6	0.3	0.1	0.3
October	0.4	0.3	0.6	0.5	0.5
November	1.6	0.9	0.5	0.3	0.9
December	0.7	2.4	0.5	1.5	2.1
Annual Average	1.7	1.3	0.7	0.7	1.0
Minimum	0.2	0.2	0.3	0.1	0.1
Maximum	11	4.4	1.8	1.5	4.0

Note: Contaminated samples are marked with an asterisk (*) and have been removed from the annual average. NS indicates where a sample was invalidated due to contamination. Values in bold are exceedances.

PM_{10} / TSP

PM_{10} monitoring via HVAS units 1 (Lockyersleigh) and 2 (Brayton Road) was undertaken during the reporting period. There were 57 sampling events at HVAS 1 and 58 at HVAS 2 in the reporting period, as shown in **Table 15**. An assessment by Ramboll recommended that HVAS2 be relocated as it was no longer representative of the nearest residential receivers; as such relocation of HVAS2 occurred on 22/5/24.

Table 15: PM_{10} Compliance Summary

Category	HVAS 1	HVAS 2
Total number of HVAS monitoring rounds required in 2024	60	60
Number of completed monitoring rounds	57	58
Number of incomplete monitoring rounds, contamination, or equipment failure	4	1
Number of valid samples	53	57

During the 2024 reporting period, five non-compliances were recorded at Lynwood Quarry. All five related to issues impacting Holcim's ability to continuously monitor. There were two instances (2/5/2024 and 9/5/2024) where HVAS 1 failed to operate for the required minimum of 23 hours under EPL 12939. The issue was traced to a damaged backup power control cable, which had been compromised by vermin, resulting in generator backup failure. The cable was repaired, and subsequent system tests confirmed proper functionality. The DPHI was notified of the non-compliance. HVAS1 experienced two additional instances (9/12/2024 and 25/12/2024) of invalidated samples due to a unit error limiting operation to three minutes. The DPHI was notified. HVAS4 (PM2.5), located alongside HVAS1, successfully completed sampling on both dates. Holcim deemed HVAS4's samples sufficient to maintain compliance with site sampling requirements.

On 6/6/2024, HVAS2 experienced a unit error due to the failure of the temporary power supply following its relocation on 22/5/2024. The issue was addressed by installing a solar power supply with battery and generator backup. It is noted Holcim does not have a record of notification to DPHI regarding this missed event.

Table 16 summarises the non-compliances for 2024.

Table 16: Summary of Non-Compliant or Invalid PM_{10} Monitoring Results

Date	PM_{10} ($\mu g/m^3$)	Cause
HVAS1		
May 2, 2024	3.7	Generator failed to run for the required amount of time
May 9, 2024	2.0	Generator failed to run for the required amount of time
December 9, 2024	5.7	Unit error caused the unit to only run for 3 minutes
December 15, 2024	3.7	Unit error caused the unit to only run for 3 minutes
HVAS2		
June 6, 2024	4.5	Unit error due to failure of the temporary power supply following the units relocation on 22/5/2024

Table 17 display the PM_{10} monitoring results at HVAS 1 and HVAS 2, respectively. It should be noted that there were no results which exceeded the 24-hour criteria in this reporting period.

Table 17: HVAS PM_{10} Monitoring Results

Sampling Date	HVAS 1 (Lockyersleigh)			Sampling Date	HVAS 2 (Brayton Road)		
	PM_{10}	TSP[5]	Compliance Status		PM_{10}	TSP	Compliance Status
2/1/2024	14.3	23.7	Compliant	2/1/2024	11.1	18.4	Compliant
8/1/2024	7.6	12.6	Compliant	8/1/2024	8.7	14.4	Compliant
14/1/2024	8.5	14.1	Compliant	14/1/2024	10.2	16.9	Compliant
20/1/2024	11.2	18.6	Compliant	20/1/2024	11.5	19.1	Compliant
26/1/2024	13.6	22.6	Compliant	26/1/2024	13.6	22.6	Compliant
1/2/2024	11.1	18.4	Compliant	1/2/2024	9.3	15.4	Compliant
7/2/2024	7.7	12.8	Compliant	7/2/2024	5.7	9.5	Compliant
13/2/2024	9.3	15.4	Compliant	13/2/2024	8.0	13.3	Compliant
19/2/2024	6.3	10.5	Compliant	19/3/2024	5.3	8.8	Compliant
25/2/2024	8.2	13.6	Compliant	25/3/2024	5.7	9.5	Compliant
3/3/2024	10.6	17.6	Compliant	03/03/2024	7.4	12.3	Compliant
9/3/2024	14	23.2	Compliant	9/3/2024	5.3	8.8	Compliant
15/3/2024	15.2	25.2	Compliant	15/3/2024	11.8	19.6	Compliant
21/3/2024	10.3	17.1	Compliant	21/3/2024	6.8	11.3	Compliant
27/3/2024	10.8	17.9	Compliant	27/3/2024	11.0	18.3	Compliant
8/4/2024	6	10.0	Compliant	8/4/2024	5.4	9.0	Compliant
18/4/2024	12	19.9	Compliant	18/4/2024	7.4	12.3	Compliant
24/4/2024	13.2	21.9	Compliant	24/4/2024	9.3	15.4	Compliant
30/4/2024	13.2	21.9	Compliant	30/4/2024	16.0	26.6	Compliant
2/5/2024	3.7	6.1	**Non-Compliant[1]**	2/5/2024	7.7	12.8	Compliant
9/5/2024	2	3.3	**Non-Compliant[2]**	9/5/2024	4.9	8.1	Compliant
16/5/2024	3.5	5.8	Compliant	16/5/2024	6.3	10.5	Compliant
22/5/2024	6.1	10.1	Compliant	24/5/2024	6.5	10.8	Compliant
6/6/2024	**7**	11.6	Compliant	6/6/2024	4.5	7.5	**Non-Compliant[5]**
12/6/2024	4.4	7.3	Compliant	12/6/2024	6.0	10.0	Compliant
18/6/2024	2.7	4.5	Compliant	18/6/2024	4.9	8.1	Compliant
24/6/2024	3.4	5.6	Compliant	24/6/2024	3.5	5.8	Compliant
30/6/2024	4.9	8.1	Compliant	30/6/2024	3.3	5.5	Compliant
6/7/2024	16.4	27.2	Compliant	6/7/2024	7.1	11.8	Compliant
12/7/2024	4.2	7.0	Compliant	12/7/2024	4.7	7.8	Compliant
18/7/2024	13.2	21.9	Compliant	18/7/2024	15.9	26.4	Compliant
24/7/24	34	56.4	Compliant	24/7/24	8.8	14.6	Compliant
30/7/2024	17.6	29.2	Compliant	30/7/2024	14.8	24.6	Compliant

Sampling Date	HVAS 1 (Lockyersleigh)			Sampling Date	HVAS 2 (Brayton Road)		
	PM_{10}	TSP[5]	Compliance Status		PM_{10}	TSP	Compliance Status
5/8/2024	8.6	14.3	Compliant	6/8/2024	9.7	16.1	Compliant
11/8/2024	13.8	22.9	Compliant	8/11/2024	9.2	15.3	Compliant
15/8/2024	15	24.9	Compliant	17/8/24	2.9	4.8	Compliant
22/8/2024	15	24.9	Compliant	22/8/2024	2.9	4.8	Compliant
28/8/2024	6.1	10.1	Compliant	28/8/2024	7.4	12.3	Compliant
4/9/2024	32.5	54.0	Compliant	29/8/2024	13.8	22.9	Compliant
10/9/2024	12.7	21.1	Compliant	4/9/2024	10.7	17.8	Compliant
16/9/2024	24	39.8	Compliant	10/9/2024	8.7	14.4	Compliant
22/9/2024	27.7	46.0	Compliant	16/9/2024	32.2	53.5	Compliant
9/28/2024	4.4	7.3	Compliant	22/9/2024	26.4	43.8	Compliant
4/10/2024	29.9	49.6	Compliant	28/9/2024	5.0	8.3	Compliant
10/10/2024	6.1	10.1	Compliant	4/10/2024	13.0	21.6	Compliant
16/10/2024	11.1	18.4	Compliant	10/10/2024	9.3	15.4	Compliant
22/10/2024	10.5	17.4	Compliant	16/10/2024	8.5	14.1	Compliant
28/10/2024	13.8	22.9	Compliant	22/10/2024	10.1	16.8	Compliant
3/11/2024	44.4	73.7	Compliant	28/10/2024	15.9	26.4	Compliant
15/11/2024	7.4	12.3	Compliant	9/11/2024	20.3	33.7	Compliant
21/11/2024	15.4	25.6	Compliant	15/11/2024	5.7	9.5	Compliant
27/11/2024	14.4	23.9	Compliant	21/11/2024	12.6	20.9	Compliant
3/12/2024	7.2	12.0	Compliant	27/11/2024	17.2	28.6	Compliant
9/12/2024	5.7	9.5	Non-Compliant[3]	3/12/2024	9.5	15.8	Compliant
15/12/2024	3.7	6.1	Non-Compliant[4]	9/12/2024	15.1	25.1	Compliant
21/12/2024	35.9	59.6	Compliant	15/12/2024	19.7	32.7	Compliant
27/12/2024	27.3	45.3	Compliant	21/12/2024	23.2	38.5	Compliant
Annual Average	12.6	20.9	Compliant	27/12/2024	27.8	46.1	Compliant
Minimum	2	3.3	Compliant	Annual Average	10.4	17.3	Compliant
Maximum	44.4	73.7	Compliant	Minimum	2.9	4.8	Compliant
				Maximum	32.2	53.5	Compliant

Notes: [1] HVAS1 Generator failed to run for the required amount of time
[2] HVAS1 Generator failed to run for the required amount of time
[3] HVAS1 Unit error caused the unit to only run for 3 minutes
[4] HVAS1 Unit error caused the unit to only run for 3 minutes
[5] HVAS2 Unit error due to failure of the temporary power supply
[6] TSP calculated based on PM_{10} results (1.66 x PM_{10}). This was approved in 2010 by DPHI as part of the EMP (Umwelt, 2010).

6.3.4 Trends in data

Depositional Dust

Gauges DD11, DD12 and DD13 were installed in December 2016 following a revision to the depositional dust monitoring network and the approval of the Development Consent (Mod 4). As a result, limited data is available to compare against historical operations. Gauges DD5 and DD8 provide a longer-term comparison of monitoring results.

As shown in **Figure 4** a comparison of depositional dust monitoring results indicates all sites were compliant with the development consent against maximum allowable annual increase criteria. Depositional dust results continue to be below the impact assessment criteria of 4(g/m^2/month) at all sites. In 2024 all gauges had a slight increase in annual averages compared to the previous three years.

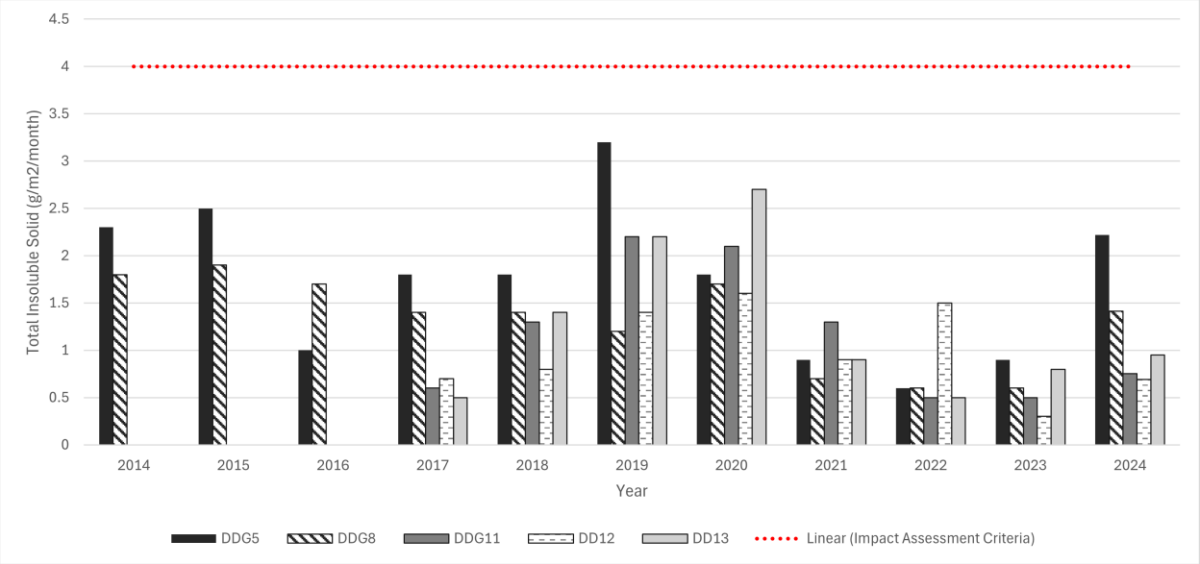

Figure 4: Historical Depositional Dust Monitoring

PM_{10}

Annual average PM_{10} monitoring results from this reporting period to 2011 are provided in **Figure 5.** All results are below the annual average impact assessment criteria. As seen in **Figure 6**, a gap in data occurs in 2013 for HVAS 2 as a result of the unit not recording the required number of samples due to power supply issues.

The 2024 annual averages at HVAS 1 and HVAS 2 were 12.6 µg/m^3 and 10.4 µg/m^3 respectively. Annual averages at HVAS 1 and HVAS 2 in 2019 are higher than all the other years represented. High 2019 results were attributed to excessive dust generated by drought conditions and particulate matter from heavy bushfire smoke. 2020, 2021 and 2022 results are more consistent with levels seen prior to 2019. Holcim notified the DPHI of 4 out of 5 non-recorded samples during the 2025 reporting period.

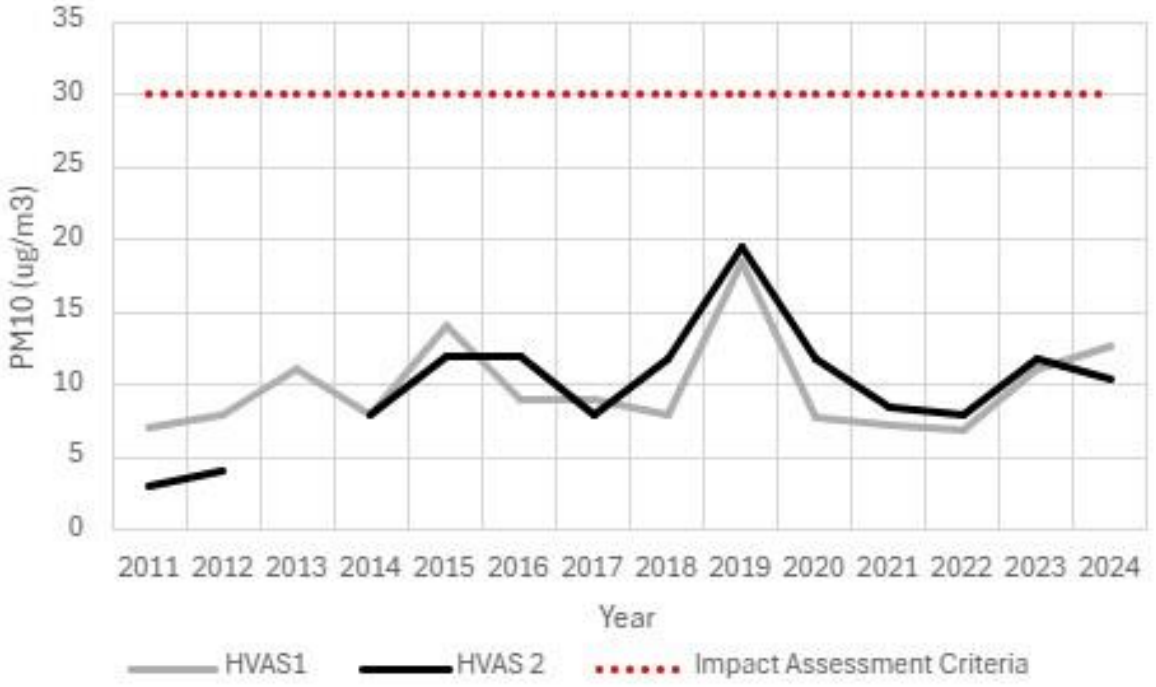

Figure 5: Historical PM_{10} Monitoring Results

6.3.5 Proposed Improvements

Improvements were made to the air quality monitors in 2024 which will address historical issues with power supply.

In 2021 Lynwood trialed the use of an automatic water spray system in the site production area for dust suppression. In 2022 Lynwood trialed a fog cannon machine. Lynwood commenced the commissioning of an automated dust control spray system on the haul road in 2024, anticipating the trial will commence in 2025.

Lynwood will continue to review the effectiveness of dust control measures in 2025.

6.4 Surface Water

6.4.1 Environmental Management Measures

Lynwood has developed and implemented a Surface Water Monitoring Program in accordance with the requirements of the Development Consent. The overall Water Management Plan (WMP) (including component plans) was revised in 2020, with DPHI approving the WMP on 16 November 2020.

The SWMP provides details on:

- Baseline water quality data;
- Surface water impact criteria;

- Monitoring surface water flow and quality;
- Surface water impact trigger levels and management actions; and
- Erosion and sediment controls implemented onsite.

Surface water management infrastructure at the Quarry was established during the initial construction and operational phase of the Quarry. The water management system includes a series of clean water diversion drains, catch drains and sedimentation dams. These structures have been constructed to minimise the interaction between clean and dirty water and to provide controls to treat captured dirty water to a standard acceptable for discharge off-site.

As of September 2021, on the approval of the Riparian Management Plan for Joarimin Creek Catchment Area, quarterly inspections of Joarimin Creek undertaken by Holcim staff commenced. The riparian quality inspections assess sediment and erosion controls, creek stability, and riparian zone conditions.

6.4.2 Performance Criteria

Surface Water Monitoring Criteria/Trigger Levels

Trigger levels are provided in the 2020 Water Management Plan within the Surface Water Monitoring Program. These trigger levels are outlined in **Table 18** and have been based on an extended period of monitoring data from Lynwood surface water (SW) locations.

Table 18: Trigger Values for Key Water Parameters – from Surface Water Management Plan (2020)

Water Quality	Trigger Value			
Variable	**[3] Marulan Creek (SW 1 and 2), Joarimin Creek (SW 3 and 4), Lockyersleigh Creek (SW 7)**	**Joarimin Creek (SW4-SW6)**	**SW8 to SW11**	**[4] Site Water Management System Dams (excluding SW5, SW6 and SW8 to SW11)**
pH	No longer monitored. No trigger levels proposed.	5.3 to 9.7	6.4 to 7.8	6.5 to 8.5[1]
Electrical Conductivity		Maximum of 3255 µS/cm	Maximum of 3922 µS/cm	No criteria listed in the Development Consent. No trigger levels proposed.
Oil and Grease		10 mg/L or nonvisible	10 mg/L or nonvisible	10 mg/L or nonvisible[1]
Total Suspended Solids		Less than 320 mg/L	Less than 320 mg/L [2]	50 mg/L[1]

Notes:

[1] Triggers marked with [1] are from Schedule 3 Condition 17;

[2] For SW8 to 11 there has been very few samples obtained. The highest TSS level recorded across a total of four sampling events has been low (16 mg/L). Holcim have therefore used the Joarimin Creek TSS range for the TSS trigger value for SW8 to 11.

[3] SW1 – 3 are no longer monitored, hence there are no proposed criteria. SW7 is also no longer monitored.

[4] Criteria associated with site water dams are only applicable during discharge events offsite from these dams (controlled discharge dam.

6.4.3 Environmental Outcomes

There were no discharges from Lynwood Quarry during the reporting period. During discharge, surface water quality sampling is undertaken at Sediment Dam E, Sediment Dam F, and Supply Dam 1 in addition to the required monitoring points presented below.

Surface Water Monitoring Program

Lynwood is required to conduct surface water monitoring across the site on a monthly basis at monitoring locations consistent with those shown in **Figure 3**. Surface water monitoring records captured during the reporting period are provided in a summary provided in **.**

Table 19. Surface water monitoring is undertaken when an appropriate volume of water is available to enable a representative sample to be obtained.

Table 19: Summary of Results – Surface Water

Site	EC (µs/cm)			pH			TSS (mg/L)			Oil & Grease (mg/L)			Flow
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	
SW4	167	819	2390	6.0	7.6	8.7	6.7	16	33	5	**15**	**86**	No Flow (12)
SW5	299	1045	**4870**	6.7	8	9	5	8	14	5	10	**28**	No Flow (12)
SW6	269	601	795	7.8	8	8.8	5	21	61	5	7	**17**	No Flow (12)
SW8[1]	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	No Flow
SW9	189	975	1680	7.5	**8**	**8.2**	5	34	110	5	10	27	No Flow (10) Dry (2)
SW10	256	896	2720	6.5	**8**	**8.55**	5	**394**	**1900**	5	9	**20**	No Flow (12)
SW11	1020	1696	2360	7.3	**8**	**8.2**	5	19	64	0.02	7	**15**	No Flow (12)

*Notes: Minimum and maximum values which are below or above the trigger values are in **bold**.*
[1] Sediment and Supply Dams did not discharge during 2024 reporting period.
[2] SW8 was dry for 2024 reporting period.

Surface water monitoring recorded multiple consecutive exceedances of oil and grease during the 2024 monitoring period. The DPHI was not notified of these exceedances.

- SW4: 6/3/24 visualised, 3/4/24 86 mg/L
- SW10 3/4/24 visualised and 11 mg/L, also visualised 2/5/24 and 4/6/24
- SW11 6/3/24 visualised and 3/4/24 15 mg/L.

Surface water monitoring recorded multiple consecutive exceedances of pH during the 2024 monitoring period. The DPHI was notified of these exceedances:

- April and May SW09 and SW11 (8.2, 8.2 and 7.9, 8.1 respectively)
- July and August SW10 and SW11 (8.55, 8.2 and 8.2, 8.0 respectively).

Table 20: Yearly Comparison of Average Surface Water Results

Site	2024				2023				2022				2021			
	EC (µs/cm)	pH	TSS (mg/L)	Oil & Grease (mg/L)	EC (µs/cm)	pH	TSS (mg/L)	Oil & Grease (mg/L)	EC (µs/cm)	pH	TSS (mg/L)	Oil & Grease (mg/L)	EC (µs/cm)	pH	TSS (mg/L)	Oil & Grease (mg/L)
SW4	818	7.6	16	**15**	1483	6.9	17.2	7.9	251.3	7.3	19.9	8.2	595.4	6.6	29.8	7.9
SW5	1045	8	8	10	1626	8.0	9.5	**11.4**	397.6	7.8	8.4	7.5	754.3	7.5	9.7	5.7
SW6	601	8	21	7	1148	8.1	41	8.7	373.5	7.4	11.5	**11.4**	640.9	7.3	9.1	6.5
SW8	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	NS	NS	NS	NS	NS	NS	NS	NS
SW9	975	8	34	10	1887	8.25	265.7	**10.2**	632.1	8	135.3	13.1	1091.8	7.4	64.7	6.0
SW10	896	8	**394**	9	1150	8.1	51.1	7.3	448.3	7.3	190.4	10.4	2750.3	7.0	118.4	6.8
SW11	1596	8	19	7	1604	7.8	11.8	6.8	1106.3	7.5	7.7	9.2	2717.2	7.5	36.4	6.2

As there were no discharges during the reporting period, Lynwood believes that these exceedances may originate offsite. Lynwood also note that SW6 monitoring location is within close proximity to a road and bridge that drain into Joarimin Creek.

Across all sites, the average pH in 2024 has remained stable since 2023, with a slight increase compared to 2022 and 2021 as outlined in **Table 20.** In 2024, electrical conductivity levels declined from 2023. Conversely, average oil and grease levels showed a slight increase

SW4 - Joarimin Creek (Upstream)

A summary of SW4 monitoring results is provided in **.**

Table 19. Surface water results were generally compliant in 2024, with the exception of oil and grease.

Oil and Grease at SW4 recorded four exceedances in January, April, August and November, recording 13 mg/L, 86 mg/L, 14 mg/L and 15 mg/L respectively. Oil and grease were visible in January and March. These represent an exceedance in the trigger levels outlined in the Surface Water Monitoring Program and **Table 18**. The oil and grease visualisation in March followed by the exceedance in April qualified as condition red in the Trigger Action Response Plan. Lynwood believes that the oil and grease exceedances reported in SW4 originate offsite, as no discharges occurred during these time periods, and this monitoring locations being upstream from site. During the preparation of this Annual Review, it was identified that the TARP required these oil and grease exceedances to be reported to DPHI as an incident. Holcim does not have a record of notification being provided to DPHI. As such, this is included as an administrative non-compliance in **Table 3**.

SW5 - Joarimin Creek (Downstream)

A summary of SW5 monitoring results is provided in **.**

Table 19. Surface water results were generally compliant in 2024. There was one exceedance in electrical conductivity in July 2024 recording 4870 µs/cm, above the limit of 3255 µS/cm, however this was an isolated exceedance.

Monthly monitoring at SW5 found pH within trigger values. The pH at SW5 ranged from a minimum of 6.7 in October to a maximum of 9.0 in March 2024.

During the 2024 reporting period, SW5 recorded four (4) exceedances of Oil and Grease in January, April, August and November recording 23mg/L, 28mg/L, 13mg/L, and 11mg/L respectively; however, no Oil or Grease were noted as being visible during these times. As these were one off exceedance no reporting was required. It is noted that minimal evidence suggests that the development was the cause of the oil and grease exceedances in Joarimin Creek.

SW6 - Joarimin Creek (Downstream)

A summary of SW6 monitoring results is provided in **.**

Table 19. Monitoring was undertaken on 12 occasions during the reporting period.

The pH results were within the minimum and maximum trigger values and consistent with long-term results, as was the total suspended solids which were within trigger levels.

Oil and grease for April was not visible but was measured to be 17mg/L. This is an exceedance of the total oil and grease trigger of 10 mg/L. This exceedance did not trigger a notification to the DPHI and EPA because it was a once off occurrence in accordance to the trigger response plan. The oil and grease exceedances at SW6 are likely to be influenced by the sample location's proximity to a road and bridge drain into Joarimin Creek.

SW8 – Lockyersleigh Creek (Upstream)

During 2024 no sampling was recorded for SW8, as the sample location was too dry for all twelve occasions.

SW9 - Lockyersleigh Creek (Upstream)

A summary of SW9 monitoring results is provided in **.**

Table 19. Monitoring was undertaken on 10 occasions in 2024, with November and December being dry.

The SW9 annual average pH was 8.0 which exceeds the maximum trigger of 7.8. The pH results exceeded the maximum trigger level on four occasions which occurred during February, April, May, and July. Holcim notified the DPHI of the consecutive exceedances in April and May in accordance with the Trigger Action Response Plan outlined in the Water Management Plan when the exceedances were identified.

There were three (3) oil and grease exceedances occurring in January, April, and August recording 15mg/L, 27mg/L and 13 mg/L respectively. The maximum total oil and grease was 27mg/L which was recorded in April however no oil and grease was recorded as being visible. An annual average of 10.0 mg/L was recorded. Oil and grease were visible for the exceedance occurring in January. In June, oil and grease were visible, but the measurement remained below the maximum trigger level. These exceedances did not require a notification to the DPHI and EPA because they were not consecutive.

SW10 - Lockyersleigh Creek (Downstream)

A summary of SW10 monitoring results is provided in **.**

Table 19. Monitoring was undertaken on 12 occasions in 2024.

In 2024 there were four (4) exceedances in pH recorded at SW10 in March, May, June, July, and August; with July recording the highest reading with pH 8.55. The consecutive exceedances (July and August) in the trigger levels were identified by Holcim and reported to the DPHI.

Total Suspended solids saw three exceedances in March, June, and November recording 1100 mg/L, 400 mg/L and 1900 mg/L respectively. As these were one off exceedances no notification to the DPHI or EPA were required.

Total oil and grease exceeded the trigger level 10 mg/L on four occasions, recording 20 mg/L in January, 11mg/L in April, 15mg/L in August and 11mg/L in November. Oil and Grease were visible on the surface in April, May, June and August. The DPHI or EPA was not notified of these consecutive exceedances, which triggered a condition red under the Water Management Plan's Trigger Action Response Plan. This constitutes an administrative non-compliance.

SW11 - Lockyersleigh Creek (Downstream)

A summary of SW11 monitoring results is provided in **.**

Table 19.

Monthly monitoring at SW11 found all electrical conductivity results were within the trigger levels.

During the reporting period, there were six exceedances in pH, which occurred in January, April, May, July, August, and December. July and December recorded the highest pH of 8.2, with the other months recording a pH level between 7.9-8.1. Holcim reported the two consecutive exceedances (April–May and July–August) to the DPHI.

There were two recorded exceedances of Oil and Grease during the reporting period, with April recording 15mg/L and August recording 11mg/L. Oil and Grease were not visible for either of these exceedances. Oil and Grease were recorded as visible in January and March. The visualisation of oil and grease in March, followed by the April exceedance of 15 mg/L, required notification to the DPHI for the consecutive exceedance. Notification was not provided, resulting in an administrative non-compliance.

6.4.4 Trends in Data

Joarimin Creek

Oil and grease levels exceeded the trigger levels several times in 2024 at Joarimin Creek locations. Oil and grease results from the previous reporting periods noted that the parameter has increased compared to previous years.

Electrical conductivity and total suspended solids were generally consistent with long-term results. 2024 pH results at Joarimin locations were consistent with long-term results.

Lockyersleigh Creek

Lockyersleigh Creek monitoring locations identified pH levels outside of the target criteria on a number of occasions. Electrical conductivity was less in 2024 than in 2023. TSS levels have varied significantly from year to year, with no clear upward or downward trend. The range of TSS values in 2024 appears to be more extreme, with two significantly high results (SW10), suggesting a possible episodic event or site-

specific conditions contributing to the spike. Oil and grease levels have remained relatively stable over the years, with a peak in 2022 followed by a gradual decline. The 2024 values are consistent with 2023, suggesting a stabilisation in recent trends.

6.4.5 Proposed Improvements

Holcim propose to continue to monitor the oil and grease levels at Joarimin Creek and pH at Lockyersleigh Creek to identify any emerging trends. Holcim will continue to monitor unusual monitoring results and investigate exceedances in 2025 relating to pH and Oil and Grease

There were no additional surface water improvements identified in this reporting period. Holcim will continue to compare results against longer term trends and trigger levels from the WMP.

6.5 Groundwater

6.5.1 Environmental Management Measures

The Lynwood Quarry WMP was revised and approved by DPHI in 2020. This 2020 WMP includes a revision of trigger levels which are used in this annual review. Lynwood has developed and implemented a Groundwater Monitoring Program (GMP) in accordance with the requirements of the Development Consent.

The GMP provides details on:

- Baseline water quality;
- Groundwater Impact Criteria;
- Monitoring regional groundwater level and quality; and
- Groundwater impact trigger levels and management actions.

The groundwater water management system includes a series of piezometers and groundwater monitoring bores.

6.5.2 Performance Criteria

Groundwater Inflow and Level Monitoring

As outlined in the Water Management Plan and Groundwater Monitoring Program, groundwater level monitoring will be reviewed against long-term monitoring trends and further compared against drawdowns predicted within the Lynwood Quarry EIS (Umwelt, 2005) and Modification EA (Umwelt, 2015). Triggers for groundwater depth are shown in **Table 21**.

Groundwater Quality Monitoring Criteria/Trigger Levels

Trigger levels have been updated in the 2020 WMP and are included in **Table 21**. These new trigger levels are based on an extended period of monitoring data from Lynwood GW locations.

Groundwater monitoring is required to occur quarterly.

Table 21: Groundwater Monitoring Criteria (WMP, 2020)

Parameter	Minimum Trigger	Maximum Trigger	General comment
MP Bores			
Depth to groundwater (metres)	1.64	28.05	This was the minimum and maximum levels since regular monitoring commenced in 2010
EC (µS/cm)	No minimum trigger required	11,521	This was the highest EC reading since monitoring commenced for the MP bores.
pH	4.2	9.5	These were the highest and lowest pH readings since monitoring commenced for the MP bores.
Sulphate (mg/L)	No minimum trigger required	152	This was the maximum level recorded since monitoring commenced for sulphate.
Total Nitrogen (mg/L)	No minimum trigger required	2.20	This was the maximum level recorded since monitoring commenced for total nitrogen.
Total Phosphorus(mg/L)	No minimum trigger required	3.02	This was the maximum levels recorded since monitoring commenced for total phosphorus.
GPZ Bores			
Depth to groundwater (metres)	2.13	23.9	This was the minimum and maximum levels since regular monitoring commenced of GPZ bores in April 2017.
EC (µS/cm)	No minimum trigger	8,020	This was the highest EC reading since monitoring commenced for the GPZ bores.
pH	6.1	7.8	These were the highest and lowest pH readings since monitoring commenced for the GPZ bores.
Sulphate (mg/L)	No minimum trigger required	76	This was the maximum levels recorded since monitoring commenced for the GPZ bores.
Total Nitrogen (mg/L)	No minimum trigger required	5.0	This was the maximum levels recorded since monitoring commenced for the GPZ bores.
Total Phosphorus (mg/L)	No minimum trigger required	1.20	This was the maximum levels recorded since monitoring commenced for the GPZ bores.

6.5.3 Environmental Trends and Outcomes

Lynwood Quarry conducts groundwater monitoring via a network of monitoring bores across site on a quarterly basis. A summary of groundwater monitoring results is provided in **Table 22**. Further monitoring results are presented in **Appendix B.**

Monitoring was undertaken at the required frequency for all monitoring bore sites with the exception of GPZ2 at which monitoring ceased after Quarter 2 of 2020 due to the extension of the pit over this area.

Table 22: Summary of Quarterly Results – Groundwater

Site	Depth to Water Level (m)			pH			EC (µS/cm)			Sulphate (mg/L)			Total Nitrogen[1] (mg/L)	Total Phosphorous (mg/L)
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Annual	Annual
MP Bores														
MP1	**1.5**	**1.5**	**1.5**	7.2	7.7	8.2	823	929	982	14	19.5	23	0.22	0.05
MP2	14.6	14.7	15.0	7.5	8.1	8.4	259	289	327	2	2.5	4	0.51	0.05
MP4	17.2	17.5	18.0	6.4	7.0	7.5	219	281	327	2	2	2	0.93	0.39
MP5	17.7	17.8	18.0	6.8	7.6	8.0	549	653	705	2	2	2	3.9	0.05
MP7	17.2	17.4	17.9	7.2	7.6	8.5	4600	4893	5390	30	37.5	46	0.4	0.05
MP10	4.6	4.7	5.0	6.1	6.7	7.3	6340	6708	7050	22	30	47	0.31	0.05
MP11	9.2	9.5	10.2	7.4	7.6	8.0	566	681	796	2	12.5	43	0.22	0.05
GPZ Bores														
GPZ1	10.4	10.7	11.1	7.4	7.7	8.3	687	781	876	10	11	14	0.63	0.26
GPZ2														
GPZ5	9.1	9.1	9.1	7.4	7.8	**8.2**	3370	3540	3730	3	8.575	19	0.23	0.12
GPZ6	4.9	5.3	5.5	7.6	**8.0**	**8.7**	494	552	666	4	18.75	30	2.0	0.38
GPZ8	6.3	6.5	6.7	7.1	7.6	**7.9**	1960	2150	2350	2	11.4	29	0.97	0.05

Note: [1]Total Nitrogen equals TKN+Nox

Depth to Groundwater

Groundwater levels at MP series bores generally remained within the historical range of depth; however, five out of seven bores were slightly lower in 2024 than for 2023. It should be noted that groundwater level monitoring was not conducted for any bores in Q1. MP1 was not within the Groundwater Monitoring Criteria as it remained consistently under the minimum trigger level of 1.64 m throughout the reporting period at 1.5 m. This constitutes a reportable exceedance (Condition Red under the Trigger Action Response Plan in the Water Management Plan). The DPHI was not notified of these consecutive exceedances, resulting in an administrative non-compliance.

Groundwater levels at the GPZ bores were consistent with baseline levels and previous results. All GPZ bores were well within the monitoring criteria.

pH

All pH results at MP series bores were well within the monitoring criteria. The MP bores were consistently between 6.1 and 8.5 pH for the quarterly monitoring in 2024. The most acidic (minimum) result was 6.1 pH at MP10.

GPZ bores recorded six exceedances of the GPZ pH maximum trigger. GPZ1 and GPZ5 exceeded the limit in Q2 (30 April 2024), with pH values of 8.3 and 8.2, respectively. GPZ6 recorded exceedances in Q3 (6 August 2020) and Q4 (5 November 2024), with pH values of 8.0 and 8.7, occurring over consecutive monitoring events. The DPHI or EPA was not notified of these consecutive exceedances, as such, this constitutes an administrative non-compliance. Additionally, GPZ5 and GPZ8 recorded non-consecutive exceedances in Q4 (5 November 2024), both measuring a pH of 7.9. Holcim will continue to assess trends in groundwater results to identify when further mitigation measures are required.

As a result of consecutive exceedances of groundwater pH levels at GPZ6, Holcim requested an external review, performed by Ramboll on 12 December 2024. This report confirmed an increasing pH trend in GPZ6 and an early increasing trend for GPZ08. Both bores are on the boundary of Lockyersleigh farm and the potential for offsite contributions could not be ruled out. As groundwater pH levels were currently only marginally outside the ANZECC 2000 upper pH range of 6.5-8.5 for NSW lowland rivers it was recommended that the areas around each sample location be inspected during the next quarterly monitoring visit to determine the potential for external influences. Further review of the results and trends should be undertaken at that time.

Electrical Conductivity

The electrical conductivity levels varied between each MP series bore. However, all 2024 samples were within the trigger levels and historical range of 15 µS/cm to 7,578 µS/cm.

All results for electrical conductivity were compliant.

Sulphate

The sulphate levels in the MP bores over 2024 were compliant with the maximum trigger value. The sulphate results over 2024 decreased compared with 2023 and 2022 averages.

The sulphate levels in the GPZ bores over 2024 were compliant with the maximum trigger value.

Total Nitrogen

All MP monitoring sites were well within the trigger levels. MP series bores ranged from a minimum of 0.22 mg/L to a maximum of 3.9 milligrams per litre (mg/L). These 2024 results have slightly increased when compared to 2023 results for total nitrogen.

The GPZ series bores ranged from a minimum 0.23 mg/L to 0.97 mg/L. There were no exceedances in 2024 with levels mostly decreasing when compared to 2023.

Phosphorous

All total phosphorous monitoring results at MP series bores were below the maximum trigger level of 3.02 mg/L. This is consistent with the results of previous years.

The phosphorous levels at GPZ series bores were below the maximum trigger value of 1.2 mg/L for 2024. All groundwater bores were compliant with total phosphorous criteria.

6.5.4 Proposed Improvements

Future Annual Reviews will continue to compare results against longer term trends and trigger levels from the WMP. As determined in the investigation into pH results in December, Lynwood Quarry will inspect the areas around groundwater bores GPZ06 and GPZ08 for potential external influences of increased pH levels.

Holcim will continue groundwater data collection at Lynwood Quarry.

6.6 Noise

6.6.1 Environmental Management Measures

The Lynwood Noise Management Plan (NMP) has been prepared in accordance with the Development Consent and outlines measures for monitoring and managing noise emissions at Lynwood Quarry. The NMP outlines a range of design controls, ongoing operational controls, and a noise monitoring program which the site has undertaken in 2024.

6.6.2 Performance Criteria

Noise impact assessment criteria for monitoring are specified in the Development Consent are outlined in **Table 23** below.

Table 23: Noise Criteria

Location	Day (7am to 6pm)	Evening (6pm to 10pm)	Night (10pm to 7am)	
	dBA, $LA_{eq(15min)}$	dBA, $LA_{eq(15min)}$	dBA, $LA_{eq(15min)}$	dBA, $LA1_{(1min)}$
1	35	35	35	45
2	35	35	35	45
3	35	35	35	45
4	35	37	35	46
5	35	35	35	46
6	35	37	36	46
7	38	38	35	55
8	39	38	36	55
9	39	39	37	56
10	42	42	40	53
11	35	35	35	47
12	37	37	36	47
13	40	38	37	47
14	35	35	35	47
15	35	35	35	47
16	35	35	35	45

Noise monitoring occurred at the locations shown in **Figure 3,** and listed in **Table 24**. As noted in the NMP, monitoring at these locations are considered representative of all locations assessed as part of the Noise Impact Assessment (Umwelt, 2015).

Table 24: Noise Monitoring locations

Location	Address	Day LAeq(15min)	Evening LAeq(15min)	Night LAeq(15min)	Night LA1 (1min)
N1	Residence west of the project area at 1114 Carrick rd., Marulan (L1)	35	35	35	45
N2	End of Maclura Drive, Marulan	35	37	36	46
N3	Residence to the south of the site at Northern Boundary (16038 Hume Highway, Marulan)	35	35	35	47
N4	North-eastern boundary of the project area at rural residential subdivision, (Dorsett Road). Corner of Dorsett and Suffolk Road, Marulan	37	37	36	47

6.6.3 Environmental Outcomes

Attended noise monitoring was conducted on a quarterly basis during the reporting period. Attended noise monitoring was conducted by Ramboll Australia Pty Ltd (Ramboll) at four representative monitoring locations surrounding the site during quarrying activities. These noise monitoring reports are provided in **Appendix A**. Noise monitoring locations are generally considered representative of the nearest private receivers in various directions of the operational area.

Noise monitoring was undertaken on the following dates:

- 22 and 23 of January, and 06 of March 2024
- 03, 04 and 19 of June 2024
- 04 and 05 of September 2024
- 04 and 06 of November 2024.

The noise monitoring results from 2024 are summarised in **Table 25**. There were no exceedances in the noise criteria in 2024. Quarry noise was below the consent criteria and was assessed as being inaudible at all locations. Extraneous sources of noise included birds, insects, distant traffic, trains, aircraft, and wind.

Further discussion on the findings is found in the Ramboll Noise Monitoring Assessment reports in **Appendix A**.

Table 25: Noise Monitoring Summary

Location	Criteria	Q1	Q2	Q3	Q4	Compliance Status
Day dBA, $LA_{eq(15min)}$						
N1	35	<35	<35	<35	<35	Compliant
N2	35	<35	<35	<35	<35	Compliant
N3	35	<35	<35	<35	<35	Compliant
N4	37	<37	<37	<37	<37	Compliant
Evening dBA, $LA_{eq(15min)}$						
N1	35	<35	<35	<35	<35	Compliant
N2	37	<37	<37	<37	<37	Compliant
N3	35	<35	<35	<35	<35	Compliant
N4	37	<37	<37	<37	<37	Compliant
Night dBA, $LA_{eq(15min)}$						
N1	35	<35	<35	<35	<35	Compliant
N2	36	<36	<36	<36	<36	Compliant
N3	36	<35	<35	<35	<35	Compliant
N4	36	<36	<36	<36	<36	Compliant
Night dBA, LA1(1min)						
N1	45	<45	<45	<45	<48	Compliant - Refer to reports for external sources
N2	46	<46	<46	<46	<46	Compliant - Refer to reports for external sources
N3	47	<47	<47	<47	<47	Compliant - Refer to reports for external sources
N4	47	<47	<47	<47	<47	Compliant - Refer to reports for external sources

6.6.4 Trends in Data

Monitoring results recorded during the reporting period indicates noise levels continue to trend below noise impact assessment criteria as stipulated within Development Consent. There have been no noise exceedances against the noise impact assessment criteria since the 2016 reporting period. The raw noise monitoring results are included in **Appendix A**.

6.6.5 Proposed Improvements

No additional management or mitigation measures are proposed to be implemented which are outside of the existing approved NMP.

6.7 Biodiversity

6.7.1 Environmental Management Measures

Lynwood Quarry takes a multifaceted approach to managing biodiversity values within the broader landscape with biodiversity and rehabilitation management controls detailed in the Lynwood Quarry Rehabilitation and Landscape Management Plan (RLMP) and Box Gum Woodland Management Plan (BGWMP). Areas managed in accordance with the RLMP include habitat management areas, riparian zones, and wildlife corridors. Pre-clearance inspections are undertaken to identify the presence of habitat features such as tree hollows or stags and fauna within the disturbance area that can be relocated. Pre-clearance surveys also identify if nest boxes are required to be the installed following the removal of habitat features within the disturbance boundary.

6.7.2 Performance Criteria

As noted in **Section 5.0** and in accordance with Schedule 3 Condition 48A of the Development Consent, Lynwood Quarry must retire Biodiversity Credits to the satisfaction of the Secretary and OEH. A summary of Biodiversity Credits required to be retired by Lynwood Quarry is summarised in **Table 26** below.

Table 26: Summary of Biodiversity Credits to be Retired.

Credit Type	Credits to be Retired
Ecosystem Credits	
HN614 *Yellow Box – Blakey's Red Gum grassy woodland on the tablelands. South Eastern Highland Bioregion*	2,124
HN570 *Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands. South Eastern Highlands Bioregion*	881
HN515 *Broad-leaved Peppermint – Ribbon Gum grassy open forest in the north-east of the South Eastern Highlands Bioregion*	33
Total	**3,038**
Species Credits	
Squirrel Glider (*Petaurus norfolcensis*)	1,725
Total	**1,725**

6.7.3 Environmental Outcomes

A summary of the credits retired in 2018, and the number of credits required to be retired into the future (credit balance) is detailed in **Table 27**.

Table 27: Summary of Retired Biodiversity Credits

Credit Type	Credits Retired (2018)	Stage of Retirement	Credit Balance
HN614 *Yellow Box – Blakey's Red Gum grassy woodland on the tablelands. South Eastern Highland Bioregion*	1,063	Partially retired – credits retired for years 2016 – 2030 (inclusive)	1,061
HN570 *Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands. South Eastern Highlands Bioregion*	881	Complete	0
HN515 Broad-leaved Peppermint – Ribbon Gum grassy open forest in the north-east of the South Eastern Highlands Bioregion	0	Not required – Area not be disturbed until 2036.	33
Squirrel Glider (*Petaurus norfolcensis*)	1,725	Complete	0

In accordance with the Development Consent and Lynwood Quarry Extraction Quarry Area Modification Biodiversity Assessment Report (2015), pre-clearing and post-clearing reports were prepared to identify significant habitat features when clearing was undertaken.

Ecological monitoring was undertaken by an external contractor during the reporting period. In 2024 Holcim engaged SLR Consulting Australia Pty Ltd (SLR) to perform ecological monitoring to satisfy requirements outlined in the RLMP and GWMP.

The following observations were made when completing the Box Gum Woodland monitoring:

- Box-Gum monitoring sites have undergone a slight decrease on canopy condition due to storm activity, but shrub diversity and cover remain high, and grass, forb, fern, and other growth forms are stable.
- Natural regeneration is occurring, cover and abundance of natives is good, overall health is moderate to good and weed covers are low. Some of the cover and abundance scores are within benchmark of the respective PCTs at the Box-Gum monitoring sites.
- No threatened or significant species, feral animals or erosion were recorded at the rehabilitation inspections. No recent fire was recorded, and fuel loads were thought to be moderate. Signs of disturbance were minor and include animal (Kangaroo/Wallaby) activity and grazing. Fencing is in good condition at these sites. Overall, the vegetation integrity has remainder stable at the Box-Gum monitoring sites.
- Follow up actions for the Box-Gum monitoring sites include minor weed control.

The annual nest box monitoring observed a high rate of usage by native fauna and general good

condition of most nest boxes. Removal of pests (one instance of an inactive bee nest) and ongoing monitoring of the boxes, particularly along Joarimin Creek, is recommended to prevent further impacts on the native fauna using the boxes.

Hoary Sunray monitoring in 2024 found the population is in moderate health with a large population estimated, however estimates are significantly lower than the previous estimate in 2020. This may be due to climatic conditions or competition with native shrubs. Most plots showed recent evidence of light grazing, as well as possible competition with surrounding native shrubs (Cassinia sifton and Kunzea sp.).

6.7.4 Trends in Data

Holcim continues to consult with authorities on the status of conservation areas as well as appropriate Management Plans for these areas.

6.7.5 Proposed Improvements or Actions Next Reporting period

No additional management, mitigation measures or monitoring is proposed to be implemented outside of the scope of the approved RLMP.

6.8 Weeds and Feral Animals

6.8.1 Weeds

Historically, the dominant weed species on site have included Fireweed (Chamerion angustifolium), Optunia sp., Serrated tussock (Nassella trichotoma), Blackberry (Rubus fruticosus) and St John's Wort (Hypercium perforate). In the 2024 ecological and rehabilitation monitoring, Sifton Bush (Cassinia Sifton) was also observed. Weed management is conducted in accordance with the RLMP.

In 2024 Holcim engaged a contractor to complete a targeted program on Serrated Tussock. The contractor used a drone to apply granular herbicide, a method which avoids spray drift.

Weed spraying will continue in 2025.

6.8.2 Feral Animals

Lynwood Quarry engaged a contractor to complete feral animal inspections on five occasions in 2024. A summary of pest animals identified and taken is included in **Table 28**.

Table 28: Pest Report

Date and Time	Species	Sighted	Taken
10/02/2024 **8:34pm** **NPWS permit (H12024005)**	Kangaroos Goats Feral Deer Rabbits Foxes	+400 11 3 Not specified Not specified	150 0 0 0 1
02/03/2024 **8:28 PM**	Foxes Rabbits Other (Feral Deer, Feral Sheep, Hare)	13 30+ 7	13 29 0
15/06/2024 **8:11PM**	Foxes Rabbits Other (feral sheep)	8 45+ 1	8 24 0
23/11/2024 **8:02pm** **NPWS Permit (H12024106)**	Kangaroos	300+	153
14/12/2024 **8:19pm**	Rabbits Foxes Deer	50+ 8+ 1	42 8 1

6.9 Blasting and Vibration

6.9.1 Environmental Management Measures

The Blast Management Plan (BMP) was revised in 2020, with this sent to DPHI for comment and approval. The 2020 BMP sets out the criteria, monitoring frequencies, and management measures for blasting during quarrying operations.

Blast monitoring is undertaken at four monitoring locations. All blasts in 2024 met air blast overpressure and ground vibration criteria.

6.9.2 Performance Criteria

Blasting performance criteria are set out in the EPL and Development Consent as outlined in **Table 29.**

Table 29: Blast Criteria Summary

Airblast Overpressure Criteria		
Location	**Level (dB)**	**Allowable Exceedance**
Residence on Privately owned land	115	5% of the total number of blasts over a period of 12 months
	120	0%
Ground Vibration Impact Assessment Criteria		
Location	**Peak Particle Velocity (mm/s)**	**Allowable Exceedance**
Residence on Privately owned land	5	5% of the total number of blasts over a period of 12 months
	10	0%
Main Southern Railway Line	25	0%
Reservoir*		Not applicable
Gas Pipeline	100	0%

** Reservoir is not constructed. Blast monitoring not undertaken at this location.*

6.9.3 Environmental Outcomes

A summary of blast monitoring performance during the reporting period is provided in **Table 30**. Blast monitoring data is provided in **Appendix B**. All blasts during the reporting period were undertaken between 9 am – 5 pm Monday – Saturday. No blasts were undertaken on Sundays or Public Holidays.

There was a total of 59 blasts in 2024. This is lower than 2023 which recorded total number of 75 blasts.

Table 30: Blast Monitoring Summary

Parameter Summary		Number of Blasts	Percentage of Blasts
Total Number of Blasts		59	NA
Blasts in Ignimbrite Pit		0	NA
Blasts in Granite Pit		59	100%
Blasts exceeding allowable Overpressure criteria		**0**	**0%**
Blasts exceeding allowable Ground Vibration criteria		**0**	**0%**
Blasts triggering Overpressure measurement	B4 Resident	1	0.02%
	B5 Resident	15	25%
Blasts triggering Ground Vibration measurement	B4 Resident	1	0.02%
	B5 Resident	15	25%
	Southern Railway Line	48	81%
	Gas Pipeline	48	81%
Blasts with Data Captured		**59**	**100%**

6.9.4 Trends in Data

Blasting results continued to trend below compliance limits during the reporting period with this also being the case in previous Annual Review periods. During the 2024 reporting period, monitoring location B4 resident recorded the highest overpressure, recording 112.9 dBL on 18 January 2024. On 31 May 2024, location B6 rail and pipeline recorded the highest ground vibration, at 1.81mm/s. Full blast monitoring data is attached as **Appendix B.**

6.9.5 Proposed Improvements

No additional blast management improvements are proposed outside the current approved BMP during the next reporting period.

6.10 Waste Management

There were no changes to waste management practices during the reporting period. Waste streams at Lynwood Quarry are collected and disposed of by licensed waste contractors on an as-required basis. Holcim record when waste is collected from site and as well as volumes collected. A summary of the types and quantities of waste generated during the reporting period is provided in **Table 31**.

Table 31: Long-term Summary of Waste Generation

Waste Category	2024	2023	2022	2021	2020	2019
Cardboard (t)	0.270	0.3	0.4	0.04	0.37	1.8
General Waste (t)	98.82	78.29	53.91	56.92	48.8	54.7
Steel (t)	130.28	78.02	162.05	88.68	84	90.28
Rubber (t)	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*
Wood (t)	0	0	0	0	4.1	4.5
Oily Water (L)	109	9000	-	0	-	*Included in Used Oil*
Used Oil (L)	4800	17, 520	20,250	0	-	46,100
Oil Filter (number of bins)	0	0	-	0	18	20
Rags (number of bins)	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*	*Included in General Waste*
Grease (L)	0	0	0	0	40,000 *used in 2020*	0
Tyres (t)	0	0	15	-	-	-

The amount of general waste has been trending upwards since 2022, with 2024 producing 98.82 tonnes compared to 78.29 tonnes in 2023. Steel has increased from 78.02 tonnes in 2023 to 130.28 tonnes in 2024. In addition to the waste mentioned above, 0.67 tonnes of contaminated soil was generated.

6.11 Indigenous Heritage

An Aboriginal Heritage Management Plan (AHMP) (Revision 3) has been prepared in accordance with the Development Consent. Lynwood Quarry also holds an Aboriginal Heritage Impact Permit (AHIP #1100264) for Quarry operation. The AHMP and AHIP set out relevant monitoring frequencies and management measures required during quarrying operations.

6.11.1 Results of Aboriginal Heritage Site Monitoring

In compliance with the requirements of the Development Consent, the Lynwood Quarry had an existing Aboriginal Heritage Impact Permit (AHIP #1100264) for the life of the quarry for the Ignimbrite Pit development. Lynwood Quarry is required to undertake monitoring of Aboriginal sites located in proximity to the impact footprint boundary within the Ignimbrite Pit and Granite Pit areas. On a triennial basis,

Holcim is required to monitor all the Aboriginal sites within the broader Lynwood Quarry project area. The last triennial Aboriginal Heritage site monitoring was undertaken in November 2023 therefore additional monitoring was not required in this reporting period.

6.11.2 Meetings of the Aboriginal Heritage Management Committee

The Aboriginal Heritage Management Committee's (AHMC's) ongoing role is to provide guidance and contribute to indigenous related activities and initiatives at Lynwood Quarry, as well as review the implementation of the AHMP.

The Aboriginal Heritage Management Plan requires the AHMC to meet on at least a six-monthly basis. During the reporting period, Lynwood Quarry undertook four AHMC meetings.

Discussions at the AHMC meetings centred around the Aboriginal Heritage Management Plan, discovery of artifacts, annual monitoring outcomes, cultural heritage awareness training, cultural burns, and general business.

6.11.3 Keeping Place Contract Development

A meeting was held with the AHMC on 26 November 2018 to discuss the process for the construction and operation of the Keeping Place. At this time, a draft process was agreed and discussions with the AHMC are still ongoing. Progress towards finalisation of the agreed process for the Keeping Place construction and management was ongoing in this reporting period including some minor design modifications. It is proposed that the Keeping Place will have display facilities for a selection of the Aboriginal objects and teaching materials to educate Aboriginal and non-Aboriginal visitors.

The care of all 'Aboriginal objects' (stone artefacts) recovered from the Lynwood Quarry development footprint is detailed within 'Care' Permits #2761 and #2762 approved by DPC on 27 August 2007. Holcim, GAHAI, GTCAC, PLALC and PFC were all signatories to the Care Permit.

6.11.4 Revisions to the Aboriginal Heritage Management Plan

AHMP Revision 3 provides a framework for the ongoing management of Aboriginal sites and potential archaeological deposits (PADs) conserved in-situ for the life of Lynwood Quarry. The AHMP also sets out the requirements for long-term management of Aboriginal sites and PADs located within a Cultural Heritage Management Zone (CHMZ) set up within the broader Lynwood Quarry project area.

There have been no triggers to update the AHMP in the reporting period.

6.12 Non-Indigenous Heritage

No additional European Heritage management actions were undertaken during the reporting period. Actions from the Old Marulan European heritage report were reviewed and completed in 2017.

There are no proposed actions concerning European Heritage for the next reporting period.

6.13 Bushfire Management

Bushfire hazards are managed in accordance with the RLMP. Measures and safeguards included in the RLMP to minimise bushfire risk at Lynwood Quarry include:

- Fire breaks in the form of access and haul roads, rail lines, electricity easements, quarry pits and out-of-pit emplacement areas;
- Fuel reduction activities, as required, in consultation with the local Rural Fire Service;
- Selective grazing to assist with management of fuel loads;
- Asset protection zones in the form of hardstand areas, lawn, and bare earth around the quarry's permanent infrastructure;
- A range of onsite firefighting equipment including two water carts, fire hydrants and hose reels, to be used as required, and extinguishers located on infrastructure, mobile equipment, and light vehicles;
- Availability of water through the site water management system; and
- Emergency preparedness training for all quarry personnel.

No bushfires occurred in proximity to the site in 2024. Lynwood Quarry consulted with the RFS in the reporting period to plan hazard reduction burns and maintenance of containment lines. Fuel reduction activities to reduce the risk of severe bushfires will continue to be considered in future reporting periods.

6.14 Public Safety

Access to the site by members of the public is via contact at the quarry office where visitors or contractors can only be escorted by site personnel around the site. Warning signs have been placed on extremities of operations to make members of the public are aware of quarrying operations. There were no incidents related to public safety during the reporting period.

7 Water Management

7.1 Water Management System

Lynwood Quarry manages site inflows such as runoff, groundwater inflow, and external water sourced from Johnniefields Quarry Dam as well as discharge events as per the WMP. Lynwood Quarry is committed to the minimisation of water consumption through strategies outlined in the WMP including:

- Continued construction of water management devices to achieve the aims of the WMP;
- Vegetating non-operational areas;
- Calibration of water use for product quality; and
- The use of misting in fixed plant to reduce water used by dust suppression sprays.

Control structures have been constructed to minimise the interaction between clean and dirty water and to provide controls to treat captured dirty water to a standard acceptable for discharge off site. In addition to the storage of external water, storage dams are used to opportunistically capture run-off from the disturbed catchment area along with any groundwater seepage into the quarry pits. In 2019 a new stormwater sediment dam, G1, with capacity of 26 ML, was constructed at the Granite Pit. There were no changes to the water management system in 2024.

7.2 Water Take and Discharge

7.2.1 External Water Use

Water imported onto the project site on an “as needs” basis is continually tracked against its licensed allocation. In 2024 there was no water pumped from the Johnniefields Dam for use onsite. This is compliant with the water sourcing limit under the landholder’s agreement. In 2024, a total of 2.3 megalitres (ML) under this agreement, as shown in **Table 32**.

Table 32: Water Take Summary

Water Licence	Water sharing plan, source, and management zone (as applicable)	Entitlement	Passive take/ inflows (ML)	Active pumping (ML)	Total (units)
WAL: 25575 (continuing, unregulated river) 10UA119159 (expires May 2025) Reference: 10AL102708 Other reference numbers: 10WA102709 (lower Wollondilly management zone), 10BL164515.	Upper Nepean and Upstream Warragamba Water source.	130 units (ML) of which Holcim have access to 80 ML due to a landholder agreement.	0	0	0

7.2.2 Licensed Discharges

The Licensed Discharge Point (LDP) under EPL 12939 for Lynwood Quarry is at Dam F (EPA Identification number 20).

Lynwood Quarry did not have any controlled or uncontrolled discharges from site during the reporting period.

7.3 Erosion and Sedimentation

7.3.1 Environmental Management Measures

The WMP Erosion and Sediment Control (ESC) Plan provides a framework for the management of erosion and sedimentation at Lynwood Quarry. ESC measures are implemented to minimise impact on the surrounding environment. All ESC measures at Lynwood Quarry are designed and constructed to the standard consistent with:

- Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004); and
- Managing Urban Stormwater – Soils and Construction, Volume 2E Mines and Quarries (DECC 2008d).

No sediment dams or other major ESC structures were constructed, mined through, or decommissioned during this reporting period.

7.3.2 Proposed Improvements

There are currently no additional management or mitigation measures proposed for erosion and sediment control.

8 Rehabilitation

As with all quarry operations, the progression of the quarry pit will be based on market demand and will therefore be subject to change. The progression of the rehabilitation of the site is therefore also subject to market demand. Whilst every opportunity will be taken to rehabilitate areas not required for future operational use, rehabilitation opportunities were limited during the reporting period as the works undertaken during the reporting period focused on continued quarrying activities.

Rehabilitation of the Granite Pit benches will commence once the resource is exhausted and sufficient areas are available for rehabilitation. Due to the extent of the resource within the Granite Pit, rehabilitation of final benches will commence in approximately 30 years. Backfilling is proposed for the Lynwood Quarry Pit resulting in no final void located in this area. Once rehabilitated, these areas will be monitored and managed until self-sustaining. Final rehabilitation areas will achieve the rehabilitation completion criteria specified in the RLMP.

Ongoing opportunities for rehabilitation will be limited to rehabilitation following haul road construction, the western amenity bund, and the southern edge of the overburden emplacement area. Where appropriate, temporary land shaping, seeding and other revegetation works may be undertaken in disturbed areas to minimise the potential for offsite impacts associated with the migration of windblown dust, particularly from stockpiles and stripped soil surfaces not required for operational use. Topsoil stockpiles are temporarily stabilised via seeding to minimise the potential for loss of soil through wind or rainfall erosion.

8.1 Status of Quarrying and Rehabilitation

Construction of the visual amenity bund to the west of the Granite Pit also commenced in late 2018, continued throughout 2020, and was delayed due to adverse weather in 2021. Sections of the bund were temporarily stabilised in 2021. The construction of the visual amenity bund to the west of Granite pit was completed in October 2022 and the planting of tubestock was completed in 2023.

Topsoil stockpiles have been seeded with the aim of establishing ground cover and reducing soil substrate loss via erosion. This material is planned for use in the rehabilitation of the site following the completion of quarrying operations.

The rehabilitation status for Lynwood Quarry is presented in **Table 33**.

Table 33: Rehabilitation Status

Quarry Area Type	2018 (ha)	2019 (ha)	2020 (ha)	2021 (ha)	2022 (ha)	2023 (ha)	2024 (ha)	Next Reporting period (forecast)
A. Total quarry footprint (all areas including active disturbance areas and rehabilitation areas)	36	42	42	62.4	62.4	62.4	62.4	62.4

Quarry Area Type	2018 (ha)	2019 (ha)	2020 (ha)	2021 (ha)	2022 (ha)	2023 (ha)	2024 (ha)	Next Reporting period (forecast)
B. Total active disturbance (areas within the footprint still requiring rehabilitation)	208	216	216	236	236	242.2	242.2	242.2
C. Land being prepared for rehabilitation	0	0	0	3.85	2	2	2	2
D. Land under active rehabilitation*	0	0	11	15	17	17	11	11
E. Completed rehabilitation (areas that have achieved completion criteria and been signed-off by DRG)	0	0	0	0	0	0	0	0

8.2 Post Rehabilitation Land Uses

The proposed final land use aims to emulate the pre-mining environment. The final land use will enhance local and regional ecological linkages throughout the pit and surface infrastructure areas and with the adjacent surrounding landscape. The primary objective of site revegetation and regeneration is to create a stable final landform with acceptable post-quarrying land use.

8.3 Rehabilitation Activities

Ecological monitoring of revegetated areas, fauna, and nest boxes was completed in 2024 as per the approved RLMP and the BGWMP. The rehabilitation monitoring was undertaken by SLR in 2024 to determine the current condition of rehabilitation and retained vegetation areas through comparison with benchmarks.

The following observations were made during the 2024 monitoring of rehabilitation sites:

- Rehabilitation monitoring sites have a low cover and diversity of trees, high cover of shrubs which significantly increased in 2023/2024 (due to Sifton Bush), low to moderate cover and diversity in the grass, forb, fern, and other layers. Natural regeneration is low, and weeds are low, but RM1 and RM5 may benefit from minor weed control. These areas are below benchmark for the respective PCT and may benefit from Sifton Bush control, followed by native tree planting. The total length of logs is low at most rehabilitation sites and log emplacement could be considered where feasible.

- No threatened or significant species were recorded at the rehabilitation inspections. Feral animals recorded at the rehabilitation monitoring sites include sheep and deer. Erosion control requires ongoing maintenance at RM1. No recent fire was recorded, and fuel loads were thought to be low at all rehabilitation monitoring sites. Dense Sifton Bush was noted as a potential fuel source at RM2, RM3 and RM5.
- Signs of human disturbance include past clearing and tracks. Signs of disturbance by animals include wildlife grazing. Weed control is required, particularly at RM1 and RM5. Tree plantings appear to have successfully established at RM1 and fencing is in good condition at the BOA (RM5).

Baseline studies for the Box Gum Woodland were completed in 2024. It is anticipated that a soil assessment will be completed in 2025.

2024 Show Cause Notice – Rehabilitation Bond Update

On 29 May 2024, DPHI issued Holcim with a Show Cause alleging the failure to review and if necessary, revise the rehabilitation bond following the 2020 IEA as required by Schedule 3 Condition 48 of DA128-5-2005. This event is included under **Table 1**.

9 Community

9.1 Community Engagement

9.1.1 Community Consultative Committee Meetings

The Lynwood Quarry Community Consultative Group (CCG) meetings were held in the reporting period on 3 May 2024, and 29 November 2024. The meetings provided updates on the general operations at site, community engagement, complaints received by the site, environmental updates, and an outline on actions for the next 6 months. The outcomes of both CCC meetings are detailed in the meeting notes available on the Lynwood Quarry website (https://www.holcim.com.au/lynwood).

9.1.2 Community Activities

Lynwood Quarry supported several community-based activities during the reporting period. These activities are presented in **Table 34.** The site also supports the Chamber of Commerce, Goulburn, and District Show Jumping Club, and Gibraltarr Road residents. Activities of the Quarry are communicated to the general public through articles in the local newspaper (Discover Marulan), Community Information Sessions, and a Community Perception Survey.

Table 34: Community Engagement Activities and Sponsorship

Community Activity	Amount Funded in 2024
Tallong Apple Day Festival	$5040
Goulburn and District Showjumping Competition	$1000

Community Activity	Amount Funded in 2024
Aboriginal Rugby League Knockout Competition	$4000
Tallong Public School P&C	$900
Cystic Fibrosis Goulburn	$2000
Goulburn Rotary Charity Golf Day	$5000
Total	**$17,940**

9.1.3 Community Investment Fund

The Community Investment Fund (CIF), dedicated to the communities of Marulan and surrounds, is designed to improve the quality of life of the members of the Holcim workforce, their families, and the community. The CIF has been designed to improve economic, cultural, and social development throughout the region. Lynwood Quarry no longer has a set budget but rather assesses the level of financial support for each application as it is received.

Both the current CIF Plan and CIF Application Form are available to the public on the Lynwood Quarry website.

Appendix C lists the approved CIF funded projects since the inception of the CIF.

9.2 Complaints

In accordance with Condition M5 of the EPL, a community complaints line is operated by Lynwood Quarry during the hours of operation. The complaints line is also displayed on the Lynwood Quarry website. This contact point provides the community with a mechanism by which to raise any concerns that they have with operations at Lynwood Quarry.

The Lynwood Quarry Environment Management Strategy (EMS) details the complaints management and dispute resolution procedures for the site. The Quarry Manager is responsible for the implementation of the complaints management process so that complaints are responded to in a timely manner. Investigation findings and corrective actions implemented are communicated to the complainant as appropriate.

Lynwood Quarry maintains a Complaints Register to record complaints received from the community, with the register contained on the Lynwood Quarry website (https://www.holcim.com.au/lynwood).

A summary of complaints received by Lynwood Quarry between 2014 and 2024 is presented in **Table 35**. Lynwood Quarry received no complaints during the 2024 reporting period.

Table 35: Comparison of complaints 2014 - 2024

Complaint Type	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Noise	0	0	0	1	2	4	0	0	0	0	0
Air quality (dust)	0	1	0	1	6	41	2	0	0	0	0
Blasting	0	2	1	1	0	0	3	0	0	0	0
Traffic	0	0	0	0	0	0	1	0	0	0	0
Water	0	0	0	0	0	0	0	0	0	0	0
Other	3	0	0	0	0	2	1	2	0	0	0
Total	**3**	**2**	**1**	**3**	**8**	**47**	**7**	**2**	**0**	**0**	**0**

10 Independent Audit

Schedule 5 Condition 11 of DA 128-5-2005 states:

> *"By 30 September 2017, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:*
> *(a) be conducted by 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 development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals);*
> *(d) review the adequacy of any approved strategy, plan or program required under these approvals;*
> *(e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals; and*
> *(f) be conducted and reported to the satisfaction of the Secretary."*

An Independent Environmental Audit (IEA) was conducted on 12 January 2024 by EMM Consulting Pty Limited (EMM). This was the fifth IEA for the quarry.

11 Incidents and Non-Compliances during the Reporting period

A summary of Lynwood Quarry incidents and any internal or external actions undertaken by Lynwood to correct non-compliances or prevent future incidents is presented in **Table 36**.

Table 36: Summary of Incidents

Non-Compliance	Condition(s)	Date	Explanation and comments
Air Quality Monitoring Multiple invalidated samples during the 2024 reporting period.	Schedule 3, Condition 15 EPL12393 Condition M2.2	HVAS 1 PM_{10} missed samples occurred on: • 02 May 2024 • 09 May 2024 • 09 December 2024 • 15 December 2024. HVAS2 PM_{10} missed sample on 06 June 2024.	Samples across 2024 were missed due to the sample being invalidated as the unit did not run for 24 hours. This was due to power supply issues to the stations, which have since been resolved. The DPHI was not notified of the failure of HVAS2 occurring in June shortly after the monitor was installed.
Surface Water Monitoring Non-compliance for surface water exceedances during the 2024 reporting period (Oil and Grease).	Schedule 3, Condition 20	Oil and Grease exceedances: Multiple dates throughout 2024 – see Section 6.4 for details. pH exceedances: • April and May (SW09 and SW11) • July and August (SW10 and SW11)	The DPHI was not notified during the reporting period of consecutive oil and grease exceedances above criteria levels.
Groundwater Monitoring Non-compliance for multiple trigger level exceedances and missed monitoring of depth to water level monitoring for all bores in Q1 of 2024.	Schedule 3, Condition 24	Missed sampling of depth to water level for all bores in Q1. Multiple dates of pH exceedances in GPZ06 and GPZ 08 bores throughout 2024. See Section 6.5 for dates. 2024 reporting period: MP1 Depth to water level (m) below minimum trigger level.	Holcim acknowledges there were two or more exceedances of trigger levels recorded over consecutive months, including: • pH exceedance at GPZ6 in Q3 and Q4, and • Water level at groundwater bore MP1 remained below the minimum trigger level of 1.64 m throughout the 2024 reporting period. Holcim acknowledges that monitoring of depth to water level for all bores was not performed during Q1. Holcim is reporting the exceedances and missed monitoring of depth to water

Non-Compliance	Condition(s)	Date	Explanation and comments
			level in Q1 to the DPHI as part of this Annual Review.

12 Activities to be Completed in the Next Reporting period

Lynwood Quarry proposes to undertake a range of activities during the 2024 reporting period related to continued quarrying operations and also related to completion of actions required as a result of the 2020 IEA. Actions proposed to be undertaken by Holcim at Lynwood Quarry during 2025 include:

- Complete implementation of the actions identified in the IEA Action Plan;
- Implementation of approved environmental Management Plans;
- Continued extraction within the Granite Pit;
- Maintenance visual amenity bund to the west of the Granite Pit;
- Continued weed and feral animal management; and
- Continue to progress works for the Box Gum Woodland and update the BGWMP and RLMP to reflect this.

APPENDIX A –
Noise Monitoring Reports

Intended for
Holcim (Australia) Pty Ltd

Document type
Report

Date
May 2024

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 1 2024

RAMBOLL Bright ideas. Sustainable change.

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 1 2024

Project name	**NSW Environmental Monitoring 2023-2024**
Project no.	**318001799**
Recipient	**Wayne Beattie**
Document type	**Report**
Version	**1**
Date	**06/05/2024**
Prepared by	**Jake Bourke, Matilda Englert**
Checked by	**Arnold Cho**
Approved by	**Belinda Sinclair**
Description	**Data collected on 22 and 23 of January and 6 March 2024 for the quarterly period ending March 2024 at Marulan, NSW, as part of the noise monitoring program**

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Contents

Appendices

Abbreviations and Definitions

Ambient Noise	The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.
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 LA90 descriptor (see below).
dB	Abbreviation for decibel, a measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.
dB(A)	A measure of A-weighted sound levels. A Weighting is an adjustment made to the sound level measurement to approximate the response of the human ear.
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.
LA1	The noise level, measured in dB(A), which is exceeded for 1 per cent of the measurement period.
LA1(1min)	The noise level, measured in dB(A), which is exceeded for 1 per cent of the time over a 1-minute measurement period, i.e., is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.
LA10	The noise level, measured in dB(A), which is exceeded for 10 per cent of the time.
LA90	The noise level, measured in dB(A), which is exceeded for 90 per cent of the time, referred to as the background noise level. This is considered to represent the background noise (see above).
LAeq	The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.
LAeq (period)	The average equivalent noise level, measured in dB(A), during a measurement period (e.g., 15-minute, day, evening, or night).
LAmax	The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.
NMA	Noise Monitoring Assessment
NMP	Noise Management Plan
SPL	The Sound Pressure Level. Sound pressure is the fluctuation in air pressure, from the steady atmospheric pressure, created by sound. The sound pressure level is the sound pressure expressed on a decibel scale.

Source: Noise Guide for Local Government (NSW EPA, 2023)

1. Overview

1.1 Project Driver

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Lynwood Quarry ("the quarry") at Marulan, NSW.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPfI) (NSW EPA, 2017).
- Lynwood Quarry Noise Management Plan (NMP) (Holcim Australia, 2019).
- Environment Protection Licence (EPL) number 12939 (NSW EPA, 2021).
- Development Consent DA 128-5-2005 (Minister for Planning, 2017).
- Australian Standard AS 1055:2018 Acoustics — Description and measurement of environmental noise (Standards Australia, 2018).
- IEC 60942 Ed. 3.0 b:2003 Electroacoustics - Sound calibrators (Standards Australia, 2003).

This NMA has been undertaken for the quarterly period January to March 2024, and forms part of the monitoring program to determine compliance with conditions of the Development Consent.

1.2 Site Location and Sensitive Receptors

The quarry is located at 278 Stoney Creek Road, approximately 4 km to the west of the Marulan railway station and town centre. Sensitive receptors surrounding the quarry are primarily rural and residential (to the west of the site). The Hume Highway is located to the east and south of the quarry. Highway traffic (Hume Highway) is a dominant noise source.

The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan in **Figure 1**.

RAMBOLL AUSTRALIA - GIS MAP file: 318000911_GIS_P006_NoiseMonitoring | F002_NoiseMonitoring_Lynwood_V04 | 29/01/2024

Legend

- Noise monitoring location
- Residence/noise assessment location

Figure 1 : Noise monitoring locations at Lynwood Quarry

2. Noise Criteria

Table 2-1 includes the applicable noise criteria outlined in the Development Consent and the EPL for the 16 residential receivers surrounding the quarry (L1–L16), and the four monitoring locations adopted from the NMP that are deemed representative and applicable for this NMA (N1–N4). It should be noted that the original location of N3 (on the northern boundary of 16038 Hume Highway, Marulan) continues to be inaccessible and as such N3 has been relocated to a nearby residential receiver approximately 900 m to the west on Munro Road, Marulan (**Figure 1**) where all future monitoring will take place. This revised location is deemed representative and applicable for this NMA.

Table 2-1: Monitoring locations and noise criteria

EPL ID	Receiver Description	Monitoring Locations		Day[1]	Evening[2]	Night[3]	Night[3]
		NMP ID	Address	LAeq (15min)	LAeq (15min)	LAeq (15min)	LA1 (1min)
				dBA			
L1	West of the Granite Pit.	N1	1114 Carrick Road, Marulan	35	35	35	45
L2	Northeast of the site	-	-	35	35	35	45
L3	Northeast of the site	-	-	35	35	35	45
L4	East of the site in Marulan	-	-	35	37	35	46
L5	East of the site in Marulan	-	-	35	35	35	46
L6	East of the site in Marulan	N2	End of Maclura Drive, Marulan	35	37	36	46
L7	East of the site in Marulan	-	-	38	38	35	55
L8	East of the site in Marulan	-	-	39	38	36	55
L9	East of the site in Marulan	-	-	39	39	37	56
L10	Southeast of the site in Old Marulan	-	-	42	42	40	53
L11	South of the site	N3	Off Marulan South Road, near DD8	35	35	36	47
L12	East of the site in Marulan	N4	Corner of Dorsett and Suffolk Road, Marulan	37	37	36	47
L13	East of the site in Marulan	-	-	40	38	37	47
L14	South of the site	-	-	35	35	35	47
L15	South of the site	-	-	35	35	35	47
L16	Northeast of the site	-	-	35	35	35	45

[1] 7 am–6 pm Monday to Saturday and 8 am–6 pm Sunday and public holidays

[2] 6 pm–10 pm Monday to Sunday

[3] 10 pm–7 am Monday to Saturday and 10 pm–8 am Sunday and public holidays

3. Methodology

The monitoring program was designed in accordance with the procedures described in Australian Standard AS 1055:2018 and the Approval Documents referenced in Section 1. The measurements were carried out using a RION Sound Level Meter NL-52 on Monday 22 January, Tuesday 23 January and Wednesday 6 March 2024. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672-1:2013/2002 class 1. Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which carried a current NATA calibration and complies with IEC 60942:2003. Drift in calibration did not exceed ±0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the day, evening, and night periods over three days. Where possible, throughout each measurement the operator quantified the contribution of each significant noise source.

Where the quarry was not distinctly audible during the attended monitoring, the quarry contribution is estimated to be at least 10 dBA below the ambient noise level, as determined by the LA90.

3.1 Meteorological Conditions

Meterology has an important influence on noise monitoring assessment. Where an onsite meterological station with data recorded at 10m height has not been available, the nearest Bureau of Meteorology data has been adopted to inform this assessment and modelled using The Air Pollution Model (TAPM) to determine the atmospheric stability category as outline in **Table 3-1.**

Table 3-1: Classification of Atmospheric Stability (NSW EPA, 2014)

Stability Classification	Pasquill Stability Category	Ambient temperature change with height (°C/100m)
Extremely unstable	A	$\Delta T \leq -1.9$
Moderately unstable	B	$-1.9 < \Delta T \leq -1.7$
Slightly unstable	C	$-1.7 < \Delta T \leq -1.5$
Neutral	D	$-1.5 < \Delta T \leq -0.5$
Slightly stable	E	$-0.5 < \Delta T \leq 1.5$
Moderately stable	F	$1.5 < \Delta T \leq 4.0$
Extremely stable	G	$\Delta T > 4.0$

As stated in the Development Consent, the noise criteria in **Table 2-1** applies under all meteorological conditions except the following:

- Monitoring locations for the collection of representative noise data
- Wind speeds greater than 3 m/s at 10 metres above ground level
- Stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 metres above ground level
- Stability category G temperature inversion conditions.

Appendix 10 of the Development Consent also specifies that except for wind speed at microphone height, the data to be used for determing meterological conditons must be that recorded by a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.

4. Results and Discussion

4.1 Location N1

Noise monitoring at location N1 was conducted on Monday 22 January, Tuesday 23 January and Wednesday 6 March 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods, with the ambient noise environment dominated by birds, insects, trees/wind, motorway hum, dogs, and horses in surrounding paddocks. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N1 are presented in **Table 4-1**.

Table 4-1: Noise survey results and observations for Location N1

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq(15min) Contribution (dBA)	LAeq(15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1(1min) Criteria (dBA)
		LA1	LAeq	LA90							
23-01-24	7:00am to 7:15am (Day)	51.5	40.0	29.0	WD: n/a WS: 0 m/s Rain: Nil	WD: 146° WS: 1.3 m/s Rain: nil Stability Category: D[1]	Insects 25-31 Birds 33-56 Quarry inaudible	<19	35	n/a	n/a
22-01-24	6:03pm to 6:18pm (Evening)	52.2	43.6	38.6	WD: 271° WS: 0.5 m/s Rain: Nil	WD: 117° WS: 3.8 m/s Rain: nil Stability Category: D[1]	Wind/trees 35-48 Birds 39-53 Dogs 40-61 Quarry inaudible	<29	35	n/a	n/a
06-03-24	6:23am to 6:42am (Night)	41.9	32.4	28.3	WD: n/a WS: 0 m/s Rain: Nil	WD: 319° WS: 7.2 m/s Rain: nil Stability Category: E[1]	Motorway hum 26 Birds 40-47 Horses galloping 44-45 Quarry inaudible	<18	35	<42	45

[1] Temperature data modelled using TAPM to determine Stability Category.

4.2 Location N2

Noise monitoring at location N2 was conducted on Monday 22 January and Tuesday 23 January 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods, with the ambient noise environment dominated by motorway traffic, birds, and a passing train. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N2 are presented in **Table 4-2**.

Table 4-2 Noise survey results and observations for Location N2

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
23-01-24	8:43am to 8:58am (Day)	47.1	40.2	37.3	WD: n/a WS: 0 m/s Rain: Nil	WD: 143° WS: 1.2 m/s Rain: nil Stability Category: D[1]	Background motorway 34-40 Birds 40-53 Quarry inaudible	<27	35	n/a	n/a
22-01-24	7:06pm to 7:21pm (Evening)	49.0	43.6	40.5	WD: 233 WS: 0.6 m/s Rain: Nil	WD: 93° WS: 1.8 m/s Rain: nil Stability Category: D[1]	Background motorway 37-44 Birds 40-54 Train 49-53 Quarry inaudible	<31	37	n/a	n/a
23-01-24	6:00am to 6:15am (Night)	44.8	39.8	36.9	WD: n/a WS: 0 m/s Rain: Nil	WD: 150° WS: 0.5 m/s Rain: nil Stability Category: E[1]	Background motorway 33-41 Birds 39-55 Quarry inaudible	<27	36	<45	46

[1] Temperature data modelled using TAPM to determine Stability Category.

4.3 Location N3

Noise monitoring at location N3 was conducted on Monday 22 January, Tuesday 23 January and Wednesday 6 March 2024. Noise from the quarry was inaudible during the day and evening monitoring periods. Audible quarry noise was identified during the night period. Site vehicles on the quarry entrance road were observed and measured during the night monitoring period for up to twelve seconds on three occasions, however, noise emission is below the 15min LAeq criteria using sound level exposure calculations also included in **Appendix 1**. The ambient noise environment was dominated by motorway traffic and birds. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N3 are presented in **Table 4-3**.

Table 4-3: Noise survey results and observations for Location N3

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
23-01-24	9:16am to 9:31am (Day)	41.4	36.7	34.2	WD: n/a WS: 0 m/s Rain: Nil	WD: 165° WS: 1.3 m/s Rain: nil Stability Category: D[1]	Motorway hum 32-35 Birds 33-59 Quarry inaudible	<24	35	n/a	n/a
22-01-24	7:35pm to 7:50pm (Evening)	48.0	39.9	35.8	WD: n/a WS: 0 m/s Rain: Nil	WD: 108° WS: 2.1 m/s Rain: nil Stability Category: E[1]	Motorway hum 33-39 Birds 36-61 Quarry inaudible	<26	35	n/a	n/a
06-03-24	5:37am to 5:52am (Night)	48.4	40.4	36.7	WD: n/a WS: 0 m/s Rain: Nil	WD: 343° WS: 4.6 m/s Rain: nil Stability Category: E[1]	Motorway hum 33-38 Birds 40-54 Holcim vehicles on quarry entrance road 37-43 (occurred 3 times for 10-12 seconds each) Quarry audible	<29[2]	<36	<48[3]	47

[1] Temperature data modelled using TAPM to determine Stability Category.

[2] value estimated based on sound exposure level calculation in **Appendix 1**.

[3] Measured LA1 was dominated by background motorway traffic and birds.

4.4 Location N4

Noise monitoring at location N4 was conducted on Monday 22 January and Tuesday 23 January 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods, with the ambient noise environment dominated by motorway traffic, wind, trees, and birds. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at location N4 are presented in **Table 4-4**.

Table 4-4: Noise survey results and observations for Location N4

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
23-01-24	8:27am to 8:42am (Day)	45.3	38.2	33.9	WD: n/a WS: 0 m/s Rain: Nil	WD: 143° WS: 1.2 m/s Rain: nil Stability Category: E[1]	Motorway 31-36 Birds 40-57 Quarry inaudible	<24	37	n/a	n/a
22-01-24	6:40pm to 6:55pm (Evening)	46.3	40.9	37.8	WD: 233 WS: 0.7 m/s Rain: Nil	WD: 107° WS: 2.1 m/s Rain: nil Stability Category: D[1]	Wind/trees/motorway 34-40 Birds 41-44 Quarry inaudible	<28	37	n/a	n/a
23-01-24	6:35am to 6:50am (Night)	43.6	37.8	34.8	WD: n/a WS: 0 m/s Rain: Nil	WD: 163° WS: 0.9 m/s Rain: nil Stability Category: E[1]	Motorway 32-38 Birds 40-55 Quarry inaudible	<25	36	<47	47

[1] Temperature data modelled using TAPM to determine Stability Category.

5. Conclusion

This NMA was completed by Ramboll at the Holcim Lynwood Quarry, Marulan, NSW as a quarterly requirement of the NMP. Monitoring was carried out on Monday 22 January, Tuesday 23 January and Wednesday 6 March 2024 at four locations selected as representative to the sensitive receptors at the surroundings to Lynwood Quarry. No audible noise from quarry operations was recorded at any of the four locations during the day, evening, and night periods. The LA1 quarry contribution also exceeded the LA1(1min) (dBA) criteria for N3 but it was noted that LA1 was dominated by birds and road traffic at this location.

The results presented in this NMA show compliance with the relevant noise criteria at the Holcim Lynwood Quarry, Marulan, NSW, except for the night LA1 contribution at N3.

6. References

Holcim Australia (2019) *Lynwood Quarry, Noise Management Plan*.

Minister for Planning and Infrastructure (2005) 'Development Consent DA 128-5-2005, Lynwood Hard Rock Quarry, and associated infrastructure'.
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Standards Australia (2003) *AS 60942:2003 Electroacoustics - Sound calibrators.* Australian Standard.

Appendix 1
Sound Exposure Level Calculation

Project No: 318001799
Client Name: Holcim Australia Pty Ltd
Project Name: NSW Environmental Monitoring
Project Site: Lynwood Quarry
6/05/2024

Sound Exposure Level Calculation

RAMBOLL

N3 night monitoring period (5:37AM - 5:52AM)

Noise source	Holcim machinery
Meas. Dist from source (m)	-
Meas. Time (s)	12
Meas. LAeq dB	43
Calc Sel dB	**54**
No. Events in 15min	3
Total LAeq (15min)	**29**

Intended for
Holcim (Australia) Pty Ltd

Document type
Report

Date
July 2024

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 2 2024

RAMBOLL Bright ideas. Sustainable change.

Lynwood Quarry Quarterly Noise Monitoring Assessment
Quarter 2 2024

Project name	**NSW Environmental Monitoring 2023-2024**
Project no.	**318001799**
Recipient	**Wayne Beattie**
Document type	**Report**
Version	**1**
Date	**12/07/2024**
Prepared by	**Jake Bourke, Matilda Englert**
Checked by	**Arnold Cho**
Approved by	**Gavan Butterfield**
Description	**Data collected on 3, 4 and 19 June 2024 for the quarterly period ending June 2024 at Marulan, NSW, as part of the noise monitoring program**

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Contents

Appendices

Abbreviations and Definitions

Ambient Noise	The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.
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 LA90 descriptor (see below).
dB	Abbreviation for decibel, a measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.
dB(A)	A measure of A-weighted sound levels. A Weighting is an adjustment made to the sound level measurement to approximate the response of the human ear.
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.
LA1	The noise level, measured in dB(A), which is exceeded for 1 per cent of the measurement period.
LA1(1min)	The noise level, measured in dB(A), which is exceeded for 1 per cent of the time over a 1-minute measurement period, i.e., is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.
LA10	The noise level, measured in dB(A), which is exceeded for 10 per cent of the time.
LA90	The noise level, measured in dB(A), which is exceeded for 90 per cent of the time, referred to as the background noise level. This is considered to represent the background noise (see above).
LAeq	The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.
LAeq (period)	The average equivalent noise level, measured in dB(A), during a measurement period (e.g., 15-minute, day, evening, or night).
LAmax	The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.
NMA	Noise Monitoring Assessment
NMP	Noise Management Plan
SPL	The Sound Pressure Level. Sound pressure is the fluctuation in air pressure, from the steady atmospheric pressure, created by sound. The sound pressure level is the sound pressure expressed on a decibel scale.

Source: Noise Guide for Local Government (NSW EPA, 2023)

1. Overview

1.1 Project Driver

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Lynwood Quarry ("the quarry") at Marulan, NSW.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPfI) (NSW EPA, 2017).
- Lynwood Quarry Noise Management Plan (NMP) (Holcim Australia, 2019).
- Environment Protection Licence (EPL) number 12939 (NSW EPA, 2021).
- Development Consent DA 128-5-2005 (Minister for Planning, 2017).
- Australian Standard AS 1055:2018 Acoustics — Description and measurement of environmental noise (Standards Australia, 2018).
- Australian Standard AS/NZS IEC 61672.1:2019 Electroacoustics – Sound level meters, Part 1: Specifications (Standards Australia and Standards New Zealand, 2019)
- IEC 60942:2017 Electroacoustics - Electroacoustics – Sound calibrators (International Standard, 2017).

This NMA has been undertaken for the quarterly period April to June 2024, and forms part of the monitoring program to determine compliance with conditions of the Development Consent.

1.2 Site Location and Sensitive Receptors

The quarry is located at 278 Stoney Creek Road, approximately 4 km to the west of the Marulan railway station and town centre. Sensitive receptors surrounding the quarry are primarily rural and residential (to the west of the site). The Hume Highway is located to the east and south of the quarry. Highway traffic (Hume Highway) is a dominant noise source.

The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan in **Figure 1**.

RAMBOLL AUSTRALIA - GIS MAP file: 318000911_GIS_P006_NoiseMonitoring | F002_NoiseMonitoring_Lynwood_V04 | 29/01/2024

Legend

- Noise monitoring location
- Residence/noise assessment location

Figure 1 : Noise monitoring locations at Lynwood Quarry

2. Noise Criteria

Table 2-1 includes the applicable noise criteria outlined in the Development Consent and the EPL for the 16 residential receivers surrounding the quarry (L1–L16), and the four monitoring locations adopted from the NMP that are deemed representative and applicable for this NMA (N1–N4). It should be noted that the original location of N3 (on the northern boundary of 16038 Hume Highway, Marulan) continues to be inaccessible and as such N3 has been relocated to a nearby residential receiver approximately 900 m to the west on Munro Road, Marulan (**Figure 1**) where all future monitoring will take place. This revised location is deemed representative and applicable for this NMA.

Table 2-1: Monitoring locations and noise criteria

EPL ID	Receiver Description	Monitoring Locations		Day[1]	Evening[2]	Night[3]	Night[3]
		NMP ID	Address	LAeq (15min)	LAeq (15min)	LAeq (15min)	LA1 (1min)
				dBA			
L1	West of the Granite Pit.	N1	1114 Carrick Road, Marulan	35	35	35	45
L2	Northeast of the site	-	-	35	35	35	45
L3	Northeast of the site	-	-	35	35	35	45
L4	East of the site in Marulan	-	-	35	37	35	46
L5	East of the site in Marulan	-	-	35	35	35	46
L6	East of the site in Marulan	N2	End of Maclura Drive, Marulan	35	37	36	46
L7	East of the site in Marulan	-	-	38	38	35	55
L8	East of the site in Marulan	-	-	39	38	36	55
L9	East of the site in Marulan	-	-	39	39	37	56
L10	Southeast of the site in Old Marulan	-	-	42	42	40	53
L11	South of the site	N3	Off Marulan South Road, near DD8	35	35	36	47
L12	East of the site in Marulan	N4	Corner of Dorsett and Suffolk Road, Marulan	37	37	36	47
L13	East of the site in Marulan	-	-	40	38	37	47
L14	South of the site	-	-	35	35	35	47
L15	South of the site	-	-	35	35	35	47
L16	Northeast of the site	-	-	35	35	35	45

[1] 7 am–6 pm Monday to Saturday and 8 am–6 pm Sunday and public holidays

[2] 6 pm–10 pm Monday to Sunday

[3] 10 pm–7 am Monday to Saturday and 10 pm–8 am Sunday and public holidays

3. Methodology

The monitoring program was designed in accordance with the procedures described in Australian Standard AS 1055:2018 and the Approval Documents referenced in Section 1. The measurements were carried out using a RION Sound Level Meter NL-52 on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672-1:2019 class 1. Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which carried a current NATA calibration and complies with IEC 60942:2017. Drift in calibration did not exceed ±0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the day, evening, and night periods over three days at each monitoring location. Where possible, throughout each measurement the operator quantified the contribution of each significant noise source.

Where the quarry was not distinctly audible during the attended monitoring, the quarry contribution is estimated to be at least 10 dBA below the ambient noise level, as determined by the LA90.

3.1 Meteorological Conditions

Meterology has an important influence on noise monitoring assessment. Where an onsite meterological station with data recorded at 10m height has not been available, the nearest Bureau of Meteorology data has been adopted to inform this assessment and modelled using The Air Pollution Model (TAPM) to determine the atmospheric stability category as outline in **Table 3-1.**

Table 3-1: Classification of Atmospheric Stability (NSW EPA, 2014)

Stability Classification	Pasquill Stability Category	Ambient temperature change with height (°C/100m)
Extremely unstable	A	$\Delta T \leq -1.9$
Moderately unstable	B	$-1.9 < \Delta T \leq -1.7$
Slightly unstable	C	$-1.7 < \Delta T \leq -1.5$
Neutral	D	$-1.5 < \Delta T \leq -0.5$
Slightly stable	E	$-0.5 < \Delta T \leq 1.5$
Moderately stable	F	$1.5 < \Delta T \leq 4.0$
Extremely stable	G	$\Delta T > 4.0$

As stated in the Development Consent, the noise criteria in **Table 2-1** applies under all meteorological conditions except the following:

- Monitoring locations for the collection of representative noise data
- Wind speeds greater than 3 m/s at 10 metres above ground level
- Stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 metres above ground level
- Stability category G temperature inversion conditions.

Appendix 10 of the Development Consent also specifies that except for wind speed at microphone height, the data to be used for determing meterological conditons must be that recorded by a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.

4. Results and Discussion

4.1 Location N1

Noise monitoring at location N1 was conducted on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods. The ambient noise environment was dominated by birds, frogs, trees/wind, and motorway hum. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N1 are presented in **Table 4-1**.

Table 4-1: Noise survey results and observations for Location N1

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq(15min) Contribution (dBA)	LAeq(15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1(1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-06-24	12:07pm to 12:22pm (Day)	60.9	55.7	50.0	WD: 90° WS: 2.1 m/s Rain: Nil	WD: 101° WS: 5.5 m/s Rain: nil Stability Category: C[1]	Background wind/trees 45-65 Birds 54 Quarry inaudible	<40[2]	35	n/a	n/a
3-06-24	6:16pm to 6:31pm (Evening)	47.1	41.4	39.1	WD: n/a WS: 0 m/s Rain: Nil	WD: 102° WS: 2.2 m/s Rain: nil Stability Category: E[1]	Background trees/insects 36-53 Quarry inaudible	<29	35	n/a	n/a
19-06-24	6:16am to 6:31am (Night)	38.2	26.0	18.9	WD: n/a WS: 0 m/s Rain: Nil	WD: 274° WS: 3.5 m/s Rain: nil Stability Category: E[1]	Background motorway 17-22 Frogs 50 Quarry inaudible	<9	35	<38	45

[1] Modelled using TAPM to determine Stability Category.

[2] Measured LA90 value of 50 was dominated by rustling and fauna noise so unable to estimate contribution for quarry at assessment location.

4.2 Location N2

Noise monitoring at location N2 was conducted on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods. The ambient noise environment was dominated by motorway traffic, birds, frogs, and a passing train. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N2 are presented in **Table 4-2**.

Table 4-2 Noise survey results and observations for Location N2

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-06-24	1:30pm to 1:45pm (Day)	57.0	46.6	41.5	WD: 90° WS: 2.1 m/s Rain: Nil	WD: 101° WS: 4.6 m/s Rain: nil Stability Category: D[1]	Background wind/motorway/frog 38-44 Birds 45-46 Train 45-67 Quarry inaudible	<32	35	n/a	n/a
3-06-24	7:19pm to 7:34pm (Evening)	62.5	49.6	38.8	WD: n/a WS: 0 m/s Rain: Nil	WD: 105° WS: 3.1 m/s Rain: nil Stability Category: E[1]	Background wind/motorway 26-64 Train 58-63 Car passing 54-62 Quarry inaudible	<29	37	n/a	n/a
19-06-24	5:16am to 5:32am (Night)	43.2	38.2	34.9	WD: n/a WS: 0 m/s Rain: Nil	WD: 264° WS: 3.9 m/s Rain: nil Stability Category: E[1]	Background motorway 31-41 Frogs 37-38 Quarry inaudible	<25	36	<43	46

[1] Modelled using TAPM to determine Stability Category.

4.3 Location N3

Noise monitoring at location N3 was conducted on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024. Noise from the quarry was inaudible during the day and evening monitoring periods. Audible Holcim trucks were observed and measured during the night period for up to ten seconds on two occasions, however, noise emission was below the 15min LAeq criteria using sound level exposure calculations included in **Appendix 1**. The ambient noise environment was dominated by motorway traffic and frogs. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N3 are presented in **Table 4-3**.

Table 4-3: Noise survey results and observations for Location N3

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-06-24	2:59pm to 3:14pm (Day)	48.3	40.9	35.8	WD: 90° WS: 0.8 m/s Rain: Nil	WD: 95° WS: 3.9 m/s Rain: nil Stability Category: D[1]	Background trees/wind/motorway/ frogs 33-50 Quarry inaudible	<26	35	n/a	n/a
3-06-24	7:49pm to 8:04pm (Evening)	45.6	38.9	35.0	WD: n/a WS: 0 m/s Rain: Nil	WD: 105° WS: 3.9 m/s Rain: nil Stability Category: E[1]	Background trees/wind 32-51 Quarry inaudible	<25	35	n/a	n/a
19-06-24	4:46am to 5:01am (Night)	38.9	29.8	26.7	WD: n/a WS: 0 m/s Rain: Nil	WD: 253° WS: 4.0 m/s Rain: nil Stability Category: E[1]	Holcim trucks entering/exiting quarry 30-34 (occurred twice for approx. 7-10 secs) Frogs 27-30 Quarry audible	<17[2]	<36	<39	47

[1] Modelled using TAPM to determine Stability Category.

[2] Value estimated based on sound exposure level calculation in **Appendix 1**.

4.4 Location N4

Noise monitoring at location N4 was conducted on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods. The ambient noise environment was dominated by motorway traffic, wind, trees, and a passing car. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at location N4 are presented in **Table 4-4**.

Table 4-4: Noise survey results and observations for Location N4

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-06-24	12:59pm to 1:14pm (Day)	48.7	42.1	38.1	WD: 94° WS: 0.3 m/s Rain: Nil	WD: 95° WS: 5.0 m/s Rain: nil Stability Category: D[1]	Background birds/wind/trees 36-68 Quarry inaudible	<28	37	n/a	n/a
3-06-24	6:51pm to 7:06pm (Evening)	54.9	45.9	37.1	WD: n/a WS: 0 m/s Rain: Nil	WD: 104° WS: 2.8 m/s Rain: nil Stability Category: E[1]	Background trees/wind 34-58 Quarry inaudible	<27	37	n/a	n/a
19-06-24	5:38am to 5:53am (Night)	40.3	32.0	27.4	WD: n/a WS: 0 m/s Rain: Nil	WD: 268° WS: 4.0 m/s Rain: nil Stability Category: E[1]	Background motorway 24-30 Car passing 36-43 Quarry inaudible	<17	36	<40	47

[1] Modelled using TAPM to determine Stability Category.

5. Conclusion

This NMA was completed by Ramboll at the Holcim Lynwood Quarry, Marulan, NSW as a quarterly requirement of the NMP. Monitoring was carried out on Monday 3 June 2024, Tuesday 4 June 2024 and Wednesday 19 June 2024 at four locations selected as representative to the sensitive receptors at the surroundings to Lynwood Quarry.

No audible noise from quarry operations was observed at any of the four locations during the day, evening, and night periods, except for N3 during the evening.

The results presented in this NMA show compliance with the relevant noise criteria at the Holcim Lynwood Quarry, Marulan, NSW.

6. References

Holcim Australia (2019) *Lynwood Quarry, Noise Management Plan*.

International Electrotechnical Commission *IEC 60942:2017 Electroacoustics – Sound calibrators*

Minister for Planning and Infrastructure (2005) 'Development Consent DA 128-5-2005, Lynwood Hard Rock Quarry, and associated infrastructure'.
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Standards Australia (2018) *AS 1055:2018 Acoustics—Description and measurement of environmental noise*. Australian Standard. Available at: https://infostore.saiglobal.com/preview/825367946534.pdf?sku=1131503_SAIG_AS_AS_2626154 (Accessed: 19 January 2023).

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Appendix 1

Sound Exposure Level Calculation

Project No: 318001799
Client Name: Holcim Australia Pty Ltd
Project Name: NSW Environmental Monitoring
Project Site: Lynwood Quarry
12/07/2024

Sound Exposure Level Calculation

RAMBOLL

N3 night monitoring period (4:46AM - 5:01AM)

Noise source	Holcim trucks
Meas. Dist from source (m)	-
Meas. Time (s)	10
Meas. LAeq dB	43
Calc Sel dB	**34**
No. Events in 15min	2
Total LAeq (15min)	**7**

Intended for
Holcim (Australia) Pty Ltd

Document type
Report

Date
October 2024

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 3 2024

RAMBOLL Bright ideas. Sustainable change.

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 3 2024

Project name	**NSW Environmental Monitoring 2023-2024**
Project no.	**318001800**
Recipient	**Wayne Beattie**
Document type	**Report**
Version	**1**
Date	**25/10/2024**
Prepared by	**Jake Bourke, Matilda Englert**
Checked by	**Arnold Cho**
Approved by	**Gavan Butterfield**
Description	**Data collected on 4 and 5 September 2024 for the quarterly period ending September 2024 at Marulan, NSW, as part of the noise monitoring program**

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Abbreviations and Definitions

Ambient Noise	The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.
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 LA90 descriptor (see below).
dB	Abbreviation for decibel, a measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.
dB(A)	A measure of A-weighted sound levels. A Weighting is an adjustment made to the sound level measurement to approximate the response of the human ear.
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.
LA1	The noise level, measured in dB(A), which is exceeded for 1 per cent of the measurement period.
LA1(1min)	The noise level, measured in dB(A), which is exceeded for 1 per cent of the time over a 1-minute measurement period, i.e., is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.
LA10	The noise level, measured in dB(A), which is exceeded for 10 per cent of the time.
LA90	The noise level, measured in dB(A), which is exceeded for 90 per cent of the time, referred to as the background noise level. This is considered to represent the background noise (see above).
LAeq	The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.
LAeq (period)	The average equivalent noise level, measured in dB(A), during a measurement period (e.g., 15-minute, day, evening, or night).
LAmax	The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.
NMA	Noise Monitoring Assessment
NMP	Noise Management Plan
SPL	The Sound Pressure Level. Sound pressure is the fluctuation in air pressure, from the steady atmospheric pressure, created by sound. The sound pressure level is the sound pressure expressed on a decibel scale.

Source: Noise Guide for Local Government (NSW EPA, 2023)

1. Overview

1.1 Project Driver

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Lynwood Quarry ("the quarry") at Marulan, NSW.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPfI) (NSW EPA, 2017).
- Lynwood Quarry Noise Management Plan (NMP) (Holcim Australia, 2019).
- Environment Protection Licence (EPL) number 12939 (NSW EPA, 2021).
- Development Consent DA 128-5-2005 (Minister for Planning, 2017).
- Australian Standard AS 1055:2018 Acoustics — Description and measurement of environmental noise (Standards Australia, 2018).
- Australian Standard AS/NZS IEC 61672.1:2019 Electroacoustics – Sound level meters, Part 1: Specifications (Standards Australia and Standards New Zealand, 2019)
- IEC 60942:2017 Electroacoustics - Electroacoustics – Sound calibrators (International Standard, 2017).

This NMA has been undertaken for the quarterly period July to September 2024, and forms part of the monitoring program to determine compliance with conditions of the Development Consent.

1.2 Site Location and Sensitive Receptors

The quarry is located at 278 Stoney Creek Road, approximately 4 km to the west of the Marulan railway station and town centre. Sensitive receptors surrounding the quarry are primarily rural and residential (to the west of the site). The Hume Highway is located to the east and south of the quarry. Highway traffic (Hume Highway) is a dominant noise source.

The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan in **Figure 1**.

RAMBOLL AUSTRALIA - GIS MAP file: 318000911_GIS_P006_NoiseMonitoring | F002_NoiseMonitoring_Lynwood_V04 | 29/01/2024

Legend

- Noise monitoring location
- Residence/noise assessment location

Figure 1 : Noise monitoring locations at Lynwood Quarry

2. Noise Criteria

Table 2-1 includes the applicable noise criteria outlined in the Development Consent and the EPL for the 16 residential receivers surrounding the quarry (L1–L16), and the four monitoring locations adopted from the NMP that are deemed representative and applicable for this NMA (N1–N4). It should be noted that the original location of N3 (on the northern boundary of 16038 Hume Highway, Marulan) continues to be inaccessible and as such N3 has been relocated to a nearby residential receiver approximately 900 m to the west on Munro Road, Marulan (**Figure 1**) where all future monitoring will take place. This revised location is deemed representative and applicable for this NMA.

Table 2-1: Monitoring locations and noise criteria

EPL ID	Receiver Description	Monitoring Locations		Day[1]	Evening[2]	Night[3]	Night[3]
		NMP ID	Address	LAeq (15min)	LAeq (15min)	LAeq (15min)	LA1 (1min)
				dBA			
L1	West of the Granite Pit.	N1	1114 Carrick Road, Marulan	35	35	35	45
L2	Northeast of the site	-	-	35	35	35	45
L3	Northeast of the site	-	-	35	35	35	45
L4	East of the site in Marulan	-	-	35	37	35	46
L5	East of the site in Marulan	-	-	35	35	35	46
L6	East of the site in Marulan	N2	End of Maclura Drive, Marulan	35	37	36	46
L7	East of the site in Marulan	-	-	38	38	35	55
L8	East of the site in Marulan	-	-	39	38	36	55
L9	East of the site in Marulan	-	-	39	39	37	56
L10	Southeast of the site in Old Marulan	-	-	42	42	40	53
L11	South of the site	N3	Off Marulan South Road, near DD8	35	35	36	47
L12	East of the site in Marulan	N4	Corner of Dorsett and Suffolk Road, Marulan	37	37	36	47
L13	East of the site in Marulan	-	-	40	38	37	47
L14	South of the site	-	-	35	35	35	47
L15	South of the site	-	-	35	35	35	47
L16	Northeast of the site	-	-	35	35	35	45

[1] 7 am–6 pm Monday to Saturday and 8 am–6 pm Sunday and public holidays

[2] 6 pm–10 pm Monday to Sunday

[3] 10 pm–7 am Monday to Saturday and 10 pm–8 am Sunday and public holidays

3. Methodology

The monitoring program was designed in accordance with the procedures described in Australian Standard AS 1055:2018 and the Approval Documents referenced in Section 1. The measurements were carried out using a RION Sound Level Meter NL-52 on Wednesday 4 September 2024 and Thursday 5 September 2024. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672-1:2019 class 1. Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which carried a current NATA calibration and complies with IEC 60942:2017. Drift in calibration did not exceed ±0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the day, evening, and night periods over three days at each monitoring location. Where possible, throughout each measurement the operator quantified the contribution of each significant noise source.

Where the quarry was not distinctly audible during the attended monitoring, the quarry contribution is estimated to be at least 10 dBA below the ambient noise level, as determined by the LA90.

3.1 Meteorological Conditions

Meterology has an important influence on noise monitoring assessment. Where an onsite meterological station with data recorded at 10m height has not been available, the nearest Bureau of Meteorology data has been adopted to inform this assessment and modelled using The Air Pollution Model (TAPM) to determine the atmospheric stability category as outline in **Table 3-1.**

Table 3-1: Classification of Atmospheric Stability (NSW EPA, 2014)

Stability Classification	Pasquill Stability Category	Ambient temperature change with height (°C/100m)
Extremely unstable	A	$\Delta T \leq -1.9$
Moderately unstable	B	$-1.9 < \Delta T \leq -1.7$
Slightly unstable	C	$-1.7 < \Delta T \leq -1.5$
Neutral	D	$-1.5 < \Delta T \leq -0.5$
Slightly stable	E	$-0.5 < \Delta T \leq 1.5$
Moderately stable	F	$1.5 < \Delta T \leq 4.0$
Extremely stable	G	$\Delta T > 4.0$

As stated in the Development Consent, the noise criteria in **Table 2-1** applies under all meteorological conditions except the following:

- Monitoring locations for the collection of representative noise data
- Wind speeds greater than 3 m/s at 10 metres above ground level
- Stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 metres above ground level
- Stability category G temperature inversion conditions.

Appendix 10 of the Development Consent also specifies that except for wind speed at microphone height, the data to be used for determing meterological conditons must be that recorded by a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.

4. Results and Discussion

4.1 Location N1

Noise monitoring at location N1 was conducted on Wednesday 4 September 2024 and Thursday 5 September 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods. The ambient noise environment was dominated by trees/wind, wildlife, and barking dogs. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N1 are presented in **Table 4-1**.

Table 4-1: Noise survey results and observations for Location N1

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq(15min) Contribution (dBA)	LAeq(15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1(1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-09-24	3:00pm to 3:15pm (Day)	56.4	47	38	WD: 65° WS: 2.0 m/s Rain: Nil	WD: 290° WS: 5.2 m/s Rain: nil Stability Category: E[1]	Background trees/wind/birds 34-42 Dogs barking 38-49 Quarry inaudible	<28	35	n/a	n/a
4-09-24	8:22pm to 8:37pm (Evening)	60	47	29.6	WD: n/a WS: 0 m/s Rain: Nil	WD: 288° WS: 0.1 m/s Rain: nil Stability Category: F[1]	Background frogs/insects 25-32 Dog barking 32-66 Quarry inaudible	<20	35	n/a	n/a
5-09-24	6:10am to 6:25am (Night)	46.2	34.8	20.6	WD: n/a WS: 0 m/s Rain: Nil	WD: 295° WS: 2.8 m/s Rain: nil Stability Category: E[1]	Background insects/birds 17-52 Quarry inaudible	<11	35	<46[2,3]	45

[1] Modelled using TAPM to determine Stability Category.

[2] Measured LA1 value was dominated by insects and birds so unable to estimate contribution for quarry at assessment location.

[3] Negligible exceedance (NPfI 2017 – Table 4.1 and Table 4.2)

4.2 Location N2

Noise monitoring at location N2 was conducted on Wednesday 4 September 2024 and Thursday 5 September 2024. Noise from the quarry was inaudible during the day, evening, and night monitoring periods. The ambient noise environment was dominated by motorway traffic, birds, frogs, and insects. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N2 are presented in **Table 4-2**.

Table 4-2 Noise survey results and observations for Location N2

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-09-24	4:57pm to 5:12pm (Day)	49.8	41.1	34	WD: 65° WS: 2.0 m/s Rain: Nil	WD: 280° WS: 2.7 m/s Rain: nil Stability Category: E[1]	Background frogs/insects 31-37 Car passing 32-64 Quarry inaudible	<24	35	n/a	n/a
4-09-24	8:20pm to 8:35pm (Evening)	40.7	33.8	30.1	WD: n/a WS: 0 m/s Rain: Nil	WD: 288° WS: 0.1 m/s Rain: nil Stability Category: F[1]	Background frogs/insects 26-34 Horse exhaling 50 Quarry inaudible	<20	37	n/a	n/a
5-09-24	5:13am to 5:28am (Night)	44.3	34.4	27.6	WD: n/a WS: 0 m/s Rain: Nil	WD: 285° WS: 4.8 m/s Rain: nil Stability Category: E[1]	Background motorway/frogs 25-31 Birds 30-60 Quarry inaudible	<18	36	<44	46

[1] Modelled using TAPM to determine Stability Category.

4.3 Location N3

Noise monitoring at location N3 was conducted on Wednesday 4 September 2024. Noise from the quarry was inaudible during the day monitoring period. Audible Holcim alarms were observed and measured during the evening and night periods for up to 10 seconds on numerous occasions however, noise emission was below the 15min LAeq criteria using sound level exposure calculations included in **Appendix 1**. The ambient noise environment was dominated by birds, insects, and frogs. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at Location N3 are presented in **Table 4-3**.

Table 4-3: Noise survey results and observations for Location N3

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-09-24	4:25pm to 4:40pm (Day)	44.2	37.2	33	WD: 65° WS: 2.0 m/s Rain: Nil	WD: 280° WS: 3.2 m/s Rain: nil Stability Category: E[1]	Background wind/trees Birds 32-55 Quarry inaudible	<23	35	n/a	n/a
4-09-24	9:45pm to 10:00pm (Evening)	41.4	34	30.5	WD: n/a WS: 0 m/s Rain: Nil	WD: 308° WS: 0 m/s Rain: nil Stability Category: F[1]	Background insects/frogs 27-32 Holcim alarms 32-35 (occurred every 10-13 secs for 5-10 secs) Quarry audible	<32[2]	35	n/a	n/a
4-09-24	10:05pm to 10:20pm (Night)	41.1	35.9	32.4	WD: n/a WS: 0 m/s Rain: Nil	WD: 315° WS: 0.1 m/s Rain: nil Stability Category: F[1]	Background frogs/insects 29-35, Holcim alarms 32-35 (occurred every 10-20 seconds) Quarry audible	<23[2]	<36	<41	47

[1] Modelled using TAPM to determine Stability Category.

[2] Values estimated based on sound exposure level calculations in **Appendix 1**.

4.4 Location N4

Noise monitoring at location N4 was conducted on Wednesday 4 September 2024 and Thursday 5 September 2024. Noise from the quarry was inaudible during the day and night monitoring periods. Audible noise from a dump truck on site was observed and measured during the evening for a period of 5 minutes however, noise emission was below the 15min LAeq criteria using sound level exposure calculations included in **Appendix 1**. The ambient noise environment was dominated by motorway hum, wind, trees, and a passing car. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring. The results and observations taken during the monitoring events at location N4 are presented in **Table 4-4**.

Table 4-4: Noise survey results and observations for Location N4

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
4-09-24	3:35pm to 3:50pm (Day)	50.2	43	34.5	WD: 65° WS: 2.0 m/s Rain: Nil	WD: 296° WS: 4.9 m/s Rain: nil Stability Category: E[1]	Background wind/trees 32-42 Car passing 59-64 Quarry inaudible	<25	37	n/a	n/a
4-09-24	8:58pm to 9:13pm (Evening)	39.8	31.4	27.8	WD: n/a WS: 0 m/s Rain: Nil	WD: 307° WS: 0.1 m/s Rain: nil Stability Category: F[1]	Holcim dump truck 31-34 (occurred for 5 mins) Quarry audible	<29[2]	37	n/a	n/a
5-09-24	5:35am to 5:50am (Night)	42.9	33.2	22.4	WD: n/a WS: 0 m/s Rain: Nil	WD: 283° WS: 3.2 m/s Rain: nil Stability Category: E[1]	Background motorway hum 19-32 Car passing 35-39 Quarry inaudible	<12	36	<43	47

[1] Modelled using TAPM to determine Stability Category.

[2] Value estimated based on sound exposure level calculation in **Appendix 1**.

5. Conclusion

This NMA was completed by Ramboll at the Holcim Lynwood Quarry, Marulan, NSW as a quarterly requirement of the NMP. Monitoring was carried out on Wednesday 4 September 2024 and Thursday 5 September 2024 at four locations selected as representative to the sensitive receptors at the surroundings to Lynwood Quarry.

No audible noise from quarry operations was observed at any of the four locations during the day, evening, and night periods, except for N3 during the evening and night, and N4 during the evening.

The results presented in this NMA show compliance with the relevant noise criteria at the Holcim Lynwood Quarry, Marulan, NSW.

6. References

Holcim Australia (2019) *Lynwood Quarry, Noise Management Plan*.

International Electrotechnical Commission *IEC 60942:2017 Electroacoustics – Sound calibrators*

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Appendix 1
Sound Exposure Level Calculations

Project No: 318001800
Client Name: Holcim Australia Pty Ltd
Project Name: NSW Environmental Monitoring
Project Site: Lynwood Quarry
25/10/2024

Sound Exposure Level Calculations

RAMBOLL

N3 evening monitoring period (9:45PM to 10:00PM)

Noise source	Holcim alarms
Meas. Dist from source (m)	-
Meas. Time (s)	10
Meas. LAeq dB	35
Calc Sel dB	45
No. Events in 15min	45
Total LAeq (15min)	**32.0**

N3 night monitoring period (10:05PM to 10:20PM)

Noise source	Holcim alarms
Meas. Dist from source (m)	-
Meas. Time (s)	1
Meas. LAeq dB	35
Calc Sel dB	35
No. Events in 15min	60
Total LAeq (15min)	**23.2**

N4 evening monitoring period (8:58PM to 9:13PM)

Noise source	Holcim dump truck
Meas. Dist from source (m)	-
Meas. Time (s)	300
Meas. LAeq dB	34
Calc Sel dB	59
No. Events in 15min	1
Total LAeq (15min)	**29.2**

Intended for
Holcim (Australia) Pty Ltd

Document type
Report

Date
January 2025

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 4 2024

RAMBOLL

Bright ideas.
Sustainable change.

Lynwood Quarry Quarterly Noise Monitoring Assessment

Quarter 4 2024

Project name	**NSW Environmental Monitoring 2024-2025**
Project no.	**318001800**
Recipient	**Wayne Beattie**
Document type	**Report**
Version	**1**
Date	**31/01/2025**
Prepared by	**Jake Bourke, Brodie Wood**
Checked by	**Arnold Cho**
Approved by	**Gavan Butterfield**
Description	**Data collected on 4 and 6 November 2024 for the quarterly period ending December 2024 at Marulan, NSW, as part of the noise monitoring program**

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Abbreviations and Definitions

	Description
ΔT	Vertical Temperature Difference, i.e. the measured difference in ambient temperature between two elevations on the same tower. It is defined as the upper-level temperature measurement minus the lower-level temperature measurement.
°	Degree
Ambient Noise	The all-encompassing noise within a given environment. It is the composite of sounds from many sources, both near and far.
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 LA90 descriptor (see below).
C	Celcius
CCAM	Conformal Cubic Atmospheric Model
CSIRO	Commonwealth Scientific and Industrial Research Organisation
dB	Abbreviation for decibel, a measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm of a given sound power to a reference power.
dB(A)	A measure of A-weighted sound levels. A Weighting is an adjustment made to the sound level measurement to approximate the response of the human ear.
EPA	Environment Protection Authority
EPL	Environment Protection Licence
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities may include construction, and traffic generated by holiday periods. Normal daily traffic is not extraneous noise.
m	Metre
LA1	The noise level, measured in dB(A), which is exceeded for 1 per cent of the measurement period.
LA1(1min)	The noise level, measured in dB(A), which is exceeded for 1 per cent of the time over a 1-minute measurement period, i.e., is exceeded for 0.6 seconds. This measure can approximate to the maximum noise level but may be less if there is more than 1 noise event during this 0.6 second period.
LA10	The noise level, measured in dB(A), which is exceeded for 10 per cent of the time.
LA90	The noise level, measured in dB(A), which is exceeded for 90 per cent of the time, referred to as the background noise level. This is considered to represent the background noise (see above).
LAeq	The level of noise equivalent to the energy average of noise levels occurring over a defined measurement period.
LAeq (period)	The average equivalent noise level, measured in dB(A), during a measurement period (e.g., 15-minute, day, evening, or night).
LAmax	The A-weighted sound pressure level that represents the maximum noise level measured over the time that a given sound is measured.
NATA	National Association of Testing Authorities
NMA	Noise Monitoring Assessment
NMP	Noise Management Plan
NPfI	Noise Policy for Industry 2017

	Description
NSW	New South Wales
s	Second
SPL	The Sound Pressure Level. Sound pressure is the fluctuation in air pressure, from the steady atmospheric pressure, created by sound. The sound pressure level is the sound pressure expressed on a decibel scale.
TAPM	The Air Pollution Model

Source: Noise Guide for Local Government (NSW EPA, 2023).

1. Overview

1.1 Project Driver

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Lynwood Quarry ("the quarry") at Marulan, NSW.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPfI) (NSW EPA, 2017)
- Lynwood Quarry Noise Management Plan (NMP) (Holcim Australia, 2019)
- Environment Protection Licence (EPL) number 12939 (NSW EPA, 2021)
- Development Consent DA 128-5-2005 (Minister for Planning, 2017)
- Australian Standard AS 1055:2018 Acoustics — Description and measurement of environmental noise (Standards Australia, 2018)
- Australian Standard AS/NZS IEC 61672.1:2019 Electroacoustics – Sound level meters, Part 1: Specifications (Standards Australia and Standards New Zealand, 2019)
- IEC 60942:2017 Electroacoustics - Electroacoustics – Sound calibrators (International Standard, 2017).

This NMA has been undertaken for the quarterly period October to December 2024, and forms part of the monitoring program to determine compliance with conditions of the Development Consent.

1.2 Site Location and Sensitive Receptors

The quarry is located at 278 Stoney Creek Road, approximately 4 km to the west of the Marulan railway station and town centre. Sensitive receptors surrounding the quarry are primarily rural and residential (to the west of the site). The Hume Highway is located to the east and south of the quarry. Highway traffic (Hume Highway) is a dominant noise source.

The monitoring locations with respect to the quarry and assessed receivers are presented in the locality plan in **Figure 1**.

RAMBOLL AUSTRALIA - GIS MAP file: 318000911_GIS_P006_NoiseMonitoring | F002_NoiseMonitoring_Lynwood_V04 | 29/01/2024

Legend

- Noise monitoring location
- Residence/noise assessment location

Figure 1 : Noise monitoring locations at Lynwood Quarry

2. Noise Criteria

Table 2-1 includes the applicable noise criteria outlined in the Development Consent and the EPL for the 16 residential receivers surrounding the quarry (L1–L16), and the four monitoring locations adopted from the NMP that are deemed representative and applicable for this NMA (N1–N4). It should be noted that the original location of N3 (on the northern boundary of 16038 Hume Highway, Marulan) continues to be inaccessible and as such N3 has been relocated to a nearby residential receiver approximately 900 m to the west on Munro Road, Marulan (**Figure 1**) where all future monitoring will take place. This revised location is deemed representative and applicable for this NMA.

Table 2-1: Monitoring locations and noise criteria

EPL ID	Receiver Description	Monitoring Locations		Day[1]	Evening[2]	Night[3]	Night[3]
		NMP ID	Address	LAeq (15min)	LAeq (15min)	LAeq (15min)	LA1 (1min)
				dBA			
L1	West of the Granite Pit.	N1	1114 Carrick Road, Marulan	35	35	35	45
L2	Northeast of the site	-	-	35	35	35	45
L3	Northeast of the site	-	-	35	35	35	45
L4	East of the site in Marulan	-	-	35	37	35	46
L5	East of the site in Marulan	-	-	35	35	35	46
L6	East of the site in Marulan	N2	End of Maclura Drive, Marulan	35	37	36	46
L7	East of the site in Marulan	-	-	38	38	35	55
L8	East of the site in Marulan	-	-	39	38	36	55
L9	East of the site in Marulan	-	-	39	39	37	56
L10	Southeast of the site in Old Marulan	-	-	42	42	40	53
L11	South of the site	N3	Off Marulan South Road, near DD8	35	35	36	47
L12	East of the site in Marulan	N4	Corner of Dorsett and Suffolk Road, Marulan	37	37	36	47
L13	East of the site in Marulan	-	-	40	38	37	47
L14	South of the site	-	-	35	35	35	47
L15	South of the site	-	-	35	35	35	47
L16	Northeast of the site	-	-	35	35	35	45

[1] 7 am–6 pm Monday to Saturday and 8 am–6 pm Sunday and public holidays

[2] 6 pm–10 pm Monday to Sunday

[3] 10 pm–7 am Monday to Saturday and 10 pm–8 am Sunday and public holidays

3. Methodology

The monitoring program was designed in accordance with the procedures described in Australian Standard AS 1055:2018 and the Approval Documents referenced in Section 0. The measurements were carried out using a RION Sound Level Meter NL-52 on Monday 4 November 2024 and Wednesday 6 November 2024. The acoustic instrumentation used carries current National Association of Testing Authorities (NATA) calibration and complies with AS/NZS IEC 61672-1:2019 class 1. Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which carried a current NATA calibration and complies with IEC 60942:2017. Drift in calibration did not exceed ±0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the day, evening, and night periods over three days at each monitoring location. Where possible, throughout each measurement the operator quantified the contribution of each significant noise source. Where the quarry was not distinctly audible during the attended monitoring, the quarry contribution is estimated to be at least 10 dBA below the ambient noise level, as determined by the LA90.

3.1 Meteorological Conditions

Meterology has an important influence on noise monitoring assessment. An onsite meterological station with data recorded at 10m height has been used to adopt wind direction, wind speed and rain data to inform this assessment. Temperature data has been adopted from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Conformal Cubic Atmospheric Model (CCAM) and modelled using The Air Pollution Model (TAPM) to determine the atmospheric category as outline in **Table 3-1.**

Table 3-1: Classification of Atmospheric Stability (NSW EPA, 2014)

Stability Classification	Pasquill Stability Category	Ambient temperature change with height (°C/100m)
Extremely unstable	A	$\Delta T \leq -1.9$
Moderately unstable	B	$-1.9 < \Delta T \leq -1.7$
Slightly unstable	C	$-1.7 < \Delta T \leq -1.5$
Neutral	D	$-1.5 < \Delta T \leq -0.5$
Slightly stable	E	$-0.5 < \Delta T \leq 1.5$
Moderately stable	F	$1.5 < \Delta T \leq 4.0$
Extremely stable	G	$\Delta T > 4.0$

As stated in the Development Consent, the noise criteria in **Table 2-1** applies under all meteorological conditions except the following:

- Monitoring locations for the collection of representative noise data
- Wind speeds greater than 3 m/s at 10 metres above ground level
- Stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 metres above ground level
- Stability category G temperature inversion conditions.

Appendix 10 of the Development Consent also specifies that except for wind speed at microphone height, the data to be used for determing meterological conditons must be that recorded by a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.

4. Results and Discussion

4.1 Location N1

Noise monitoring at location N1 was conducted on Monday 4 November 2024 and Friday 6 November 2024 with results presented in **Table 4-1**. Noise from the quarry was inaudible at N1 during the day, evening, and night monitoring periods. The ambient noise environment was dominated by trees/wind, and birds. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-1: Noise survey results and observations for Location N1

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq(15min) Contribution (dBA)	LAeq(15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1(1min) Criteria (dBA)
		LA1	LAeq	LA90							
6-11-24	7:02am to 7:17am (Day)	54.5	41.9	29.7	WD: n/a WS: 0 m/s Rain: Nil	WD:340° WS: 0.6 m/s Rain: nil Stability Category: E[1]	Background birds 26-61 Quarry inaudible	<20	35	n/a	n/a
4-11-24	6:15pm to 6:30pm (Evening)	53.8	47.1	42.9	WD: n/a WS: 0 m/s Rain: Nil	WD: n/a WS: 0 m/s Rain: Nil Stability Category: E[1]	Background wind/trees/birds 40-56 Quarry inaudible	<33	35	n/a	n/a
6-11-24	6:35am to 6:50am (Night)	50.6	39.5	29.2	WD: n/a WS: 0 m/s Rain: Nil	WD: 331° WS: 0.7 m/s Rain: nil Stability Category: E[1]	Background birds 25-59 Quarry inaudible	<19	35	n/a[2]	45

[1] Temperature data sourced from CSIRO CCAM and modelled using TAPM to determine Stability Category.

[2] Measured LA1 value of 50.6 was dominated by birds so unable to estimate contribution for quarry at assessment location.

4.2 Location N2

Noise monitoring at location N2 was conducted on Monday 4 November 2024 and Wednesday 6 November 2024 with results presented in **Table 4-2**. Noise from the quarry was inaudible at N2 during the day, evening, and night monitoring periods. The ambient noise environment was dominated by motorway traffic, wind, birds, frogs, and insects. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-2 Noise survey results and observations for Location N2

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
6-11-24	9:19am to 9:34am (Day)	42.5	34.4	31	WD: n/a WS: 0 m/s Rain: Nil	WD: 302° WS: 0.5 m/s Rain: nil Stability Category: E[1]	Background motorway hum/birds 28-35 Quarry inaudible	<21	35	n/a	n/a
4-11-24	9:15pm to 9:30pm (Evening)	48.8	44	39.8	WD: n/a WS: 0 m/s Rain: Nil	WD: 109° WS: 2.3 m/s Rain: nil Stability Category: E[1]	Background motorway traffic/wind/frogs 36-53 Quarry inaudible	<30	37	n/a	n/a
6-11-24	5:34am to 5:49am (Night)	57.4	43.8	31.4	WD: n/a WS: 0 m/s Rain: Nil	WD: 339° WS: 0.6 m/s Rain: nil Stability Category: F[1]	Background motorway 25-31 Birds 34-40 Train 44-61 Quarry inaudible	<21	36	n/a[2]	46

[1] Temperature data sourced from CSIRO CCAM and modelled using TAPM to determine Stability Category.

[2] Measured LA1 value of 57.4 was dominated by a train so unable to estimate contribution for quarry at assessment location.

4.3 Location N3

Noise monitoring at location N3 was conducted on Monday 4 November 2024 and Wednesday 6 November 2024 with results presented in **Table 4-3**. Noise from the quarry was inaudible at N3 during the evening and night monitoring period. The site was audible at N3 during the day monitoring period, with an industrial hum, however, was below the LAeq(15min) criteria using sound level exposure calculations included in **Appendix 1**. The ambient noise environment was dominated by birds, motorway traffic and frogs. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-3: Noise survey results and observations for Location N3

Date	Time	Descriptor (dBA)			Meteorology (handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
6-11-24	10:17am to 10:31am (Day)	46.6	37	30.9	WD: n/a WS: 0 m/s Rain: Nil	WD: 267° WS: 1.5 m/s Rain: nil Stability Category: E[1]	Background birds/industrial hum (Holcim) 27-35 Birds 54 Quarry audible	<35[2]	35	n/a	n/a
4-11-24	9:45pm to 10:00pm (Evening)	43.1	39.7	37.5	WD: n/a WS: 0 m/s Rain: Nil	WD: 105° WS: 1.7 m/s Rain: nil Stability Category: E[1]	Background motorway/frogs 3-45 Quarry inaudible	<28	35	n/a	n/a
4-11-24	10:00pm to 10:15pm (Night)	43.2	39.8	37.5	WD: n/a WS: 0 m/s Rain: Nil	WD: 102° WS: 1.9 m/s Rain: nil Stability Category: E[1]	Background motorway/frogs 34-48 Quarry inaudible	<28	<36	<43	47

[1] Temperature data sourced from CSIRO CCAM and modelled using TAPM to determine Stability Category.

[2] Values estimated based on sound exposure level calculations in **Appendix 1**. Noise sources that contributed to LAeq value included industrial hum from Holcim as well as birds.

4.4 Location N4

Noise monitoring at location N3 was conducted on Monday 4 November 2024 and Wednesday 6 November 2024 with results presented in **Table 4-4**. Noise from the quarry was inaudible during the day, evening night monitoring periods. The ambient noise environment was dominated by insects, birds, trees, motorway traffic and a passing car. The results meet the established noise criteria and indicate that noise emissions from Lynwood Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-4: Noise survey results and observations for Location N4

Date	Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and SPL (dBA)	Lynwood Quarry LAeq (15min) Contribution (dBA)	LAeq (15min) Criteria (dBA)	Lynwood Quarry LA1(1min) Contribution (dBA)	LA1 (1min) Criteria (dBA)
		LA1	LAeq	LA90							
6-11-24	8:43am to 8:58am (Day)	48.5	42.1	37.6	WD: n/a WS: 0 m/s Rain: Nil	WD: 329° WS: 0.9 m/s Rain: nil Stability Category: E[1]	Background insects/birds 35-44 Passing car 40-60 Quarry inaudible	<28	37	n/a	n/a
4-11-24	8:53pm to 9:08pm (Evening)	44.1	37.9	34.5	WD: n/a WS: 0 m/s Rain: Nil	WD: 105° WS: 3.0 m/s Rain: nil Stability Category: F[1]	Background wind/trees 32-49 Quarry inaudible	<25	37	n/a	n/a
6-11-24	5:56am to 6:11am (Night)	52.0	40.3	33.2	WD: n/a WS: 0 m/s Rain: Nil	WD: 333° WS: 0.7 m/s Rain: nil Stability Category: E[1]	Background motorway/birds 42 Passing car 40-59 Quarry inaudible	<23	36	n/a[2]	47

[1] Temperature data sourced from CSIRO CCAM and modelled using TAPM to determine Stability Category.

[2] Measured LA1 value of 52.0 was dominated by a train so unable to estimate contribution for quarry at assessment location.

5. Conclusion

This NMA was completed by Ramboll at the Holcim Lynwood Quarry, Marulan, NSW as a quarterly requirement of the NMP. Monitoring was carried out on Monday 4 November 2024 and Wednesday 6 November 2024 at four locations selected as representative to the sensitive receptors at the surroundings to Lynwood Quarry.

No audible noise from quarry operations was observed at any of the four locations during the day, evening, and night periods, except at N3 during the day, where the quarry was audible with an industrial hum. The results presented in this NMA show compliance with the relevant noise criteria at the Holcim Lynwood Quarry, Marulan, NSW.

6. References

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Appendix 1
Sound Exposure Level Calculations

Project No: 318001800
Client Name: Holcim Australia Pty Ltd
Project Name: NSW Environmental Monitoring
Project Site: Lynwood Quarry
31/01/2025

Sound Exposure Level Calculations

RAMBOLL

N3 Day monitoring period (10:17AM to 10:31AM)

Noise source	Holcim exhaust fans
Measured distance from source (m)	-
Measured time (s)	900
Measured SPL (dBA)	35
Calculated Sel (dB)	65
Number of events in 15min	1
Total LAeq (15min)	**35.0**

APPENDIX B –
Environmental Monitoring Results

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	N/A	6.5 to 7.5	50	10	N/A	N/A	N/A
SW5							
1/07/2004	740	6.9	NS	NS	0.01	3	NS
3/08/2004	793	6.8	NS	NS	0.01	3.4	NS
3/09/2004	NS	NS	NS	NS			NS
8/10/2004	281	6.2	NS	NS	0.02	1.4	NS
2/11/2004	270	6.9	NS	NS	0.02	1.4	NS
30/11/2004	NS	NS	NS	NS	0.01	1.3	NS
6/01/2005	272	7	NS	NS	0.02	2	NS
2/02/2005	266	6.3	NS	NS	0.08	2	NS
2/03/2005	235	6.7	NS	NS	0.02	1.2	NS
8/04/2005	363	6.5	NS	NS	0.01	0.87	NS
5/05/2005	395	6.7	NS	NS	0.02	0.88	NS
2/06/2005	405	6.8	NS	NS	0.02	1.1	NS
6/07/2005	333	6.7	NS	NS	0.01	1	NS
3/08/2005	498	6.6	NS	NS	0.01	0.81	NS
8/09/2005	547	6.8	NS	NS	0.01	0.81	NS
13/10/2005	301	6.7	NS	NS	0.01	1	NS
2/11/2005	379	6.6	NS	NS	0.01	0.99	NS
1/12/2005	279	6.4	NS	NS	0.01	1.1	NS
5/01/2006	919	6.4	NS	NS	0.02	1.6	NS
2/02/2006	574	6.7	NS	NS	0.04	1.6	NS
2/03/2006	708	7	NS	NS	0.07	2	NS
7/04/2006	828	7.3	NS	NS	0.01	1.6	NS
3/05/2006	910	7.1	NS	NS	0.01	2.1	NS
8/06/2006	287	6	NS	NS	0.03	1.8	NS
6/07/2006	399	6.4	NS	NS	0.01	0.75	NS
3/08/2006	566	6.6	NS	NS	0.01	0.95	NS
7/09/2006	635	6.8	NS	NS	0.01	1.3	NS
5/10/2006	732	6.5	NS	NS	0.01	1.3	NS
2/11/2006	946	6.8	NS	NS	0.03	2	NS
4/12/2006	1362	6.8	NS	NS	0.05	2.6	NS
11/01/2007	310	6.4	NS	NS	0.02	2.2	NS
9/02/2007	416	6.8	NS	NS	0.02	2.8	NS
2/03/2007	468	6.3	NS	NS	0.01	1.6	NS
13/04/2007	469	6.3	NS	NS	0.02	1.4	NS
2/05/2007	491	6.6	NS	NS	0.01	1.4	NS
6/06/2007	506	6.6	NS	NS	0.02	1.9	NS
9/07/2007	326	7.3	NS	NS	0.01	1.4	NS
15/08/2007	748	6.5	NS	NS	0.02	0.88	NS
6/09/2007	845	6.9	NS	NS	0.01	0.88	NS
12/10/2007	1049	6.6	NS	NS	0.02	1.1	NS
8/11/2007	272	6.2	NS	NS	0.03	1.3	NS
6/12/2007	530	6.2	NS	NS	0.03	1.1	NS
10/01/2008	398	6.4	NS	NS	0.02	1.4	NS
7/02/2008	386	6.3	NS	NS	0.01	1.2	NS
6/03/2008	445	6.6	NS	NS	0.03	1.3	NS
11/04/2008	414	6.5	NS	NS	0.01	1.3	NS
8/05/2008	441	6.7	NS	NS	0.12	1.1	NS
4/06/2008	442	6.7	NS	NS	0.01	1.2	NS
3/07/2008	454	7.3	NS	NS	0.03	1.2	NS
20/02/2009	404	6.5	NS	NS	0.01	1.8	NS
30/07/2009	319	6.5	NS	NS	0.02	0.99	NS
8/01/2010	378	5.8	NS	NS	0.02	2.3	NS
1/07/2010	333	6.2	NA	NA	0.05	0.96	
19/07/2010	333	6.2	NS	NS	0.01	0.96	NS
1/12/2010	464	6.3	9	1	0.07	1.6	Moderate
15/12/2010	464	6.3	NS	NS	0	1.6	Moderate
1/01/2011	778	6.2	4	1	0.05	1.2	Moderate
12/01/2011	778	6.2	NS	NS	0	1.2	Moderate
1/02/2011	618	6.1	14	1	0.13	1.4	Low
10/02/2011	618	6.1	NS	NS	0	1.4	Low
1/03/2011	569	6.2	7	1	0.05	1.2	Low
10/03/2011	569	6.2	NS	NS	0	1.2	Low
1/04/2011	944	6	5	1	0.03	0.8	Low
6/04/2011	944	6	NS	NS	0	0.8	NS

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
1/05/2011	1000	6.7	10	1	0.03	0.74	Low
1/06/2011	932	6.8	13	1	0.03	0.73	Low
13/07/2011	865	6.6	7	1	0.03	0.75	Low
12/08/2011	820	6.6	17	1	0.04	0.79	Moderate
8/09/2011	603	6.6	40	1	0.07	1.1	Moderate
6/10/2011	674	6.2	33	1	0.07	1.1	Low
7/11/2011	725	6.7	9	1	0.05	0.98	Low
9/12/2011	736	7.2	29	1	0.06	1	Moderate
10/01/2012	766	6.6	25	1	0.07	1.1	Moderate
13/02/2012	448	6.8	810	1	0.24	2.7	Moderate
16/03/2012	208	7.5	140	1	0.1	1.3	Flood
16/04/2012	146	6	530	1	0.13	1.5	Moderate
14/05/2012	335	7.1	97	1	0.08	1.2	Moderate
13/06/2012	380	6.2	34	1	0.06	1.3	Moderate
12/07/2012	1137	6.5	52	1	0.04	1.1	Moderate
24/08/2012	760	6.8	22	1	0.04	1	Low
18/09/2012	795	6.3	18	1	0.04	1.1	Low
30/10/2012	141.5	6.6	36	5	0.05	0.9	Very Low
27/11/2012	1461	6.1	10	5	0.05	5.6	Very Low
17/12/2012	968	5.3	15	5	0.05	2.6	No Flow
29/01/2013	202.8	5.6	140	5	0.07	2.5	Fast Flow
28/02/2013	202.3	6.4	76	5	0.09	2	Med to Fast
21/03/2013	480	6.1	17	5	0.09	2.1	No Flow
18/04/2013	402.1	6.7	17	5	0.09	2.5	No Flow
22/05/2013	518	7.3	7	5	0.07	2.5	No Flow
19/06/2013	1137	6.5	52	1	0.04	1.1	Moderate
19/07/2013	447	7.34	100	5	0.05	1.4	NS
19/08/2013	504	7.43	15	5	0.05	0.4	NS
24/09/2013	442	6.62	25	5	0.05	1.2	NS
26/11/2013	283	6.59	71	5	0.08	2.7	NS
21/01/2014	235	6	28	1	0.12	2.2	NS
18/02/2014	265	6	48	1	0.11	1.7	NS
20/03/2014	361	6	56	1	0.11	1.4	NS
29/04/2014	600	6	20	1	0.08	1.8	NS
21/05/2014	622	6	23	1	0.1	1.6	NS
16/06/2014	875	6	43	1	0.04	0.86	NS
18/07/2014	75	7	11	1	0.04	0.83	NS
22/08/2014	355	6	39	1	0.07	1.4	NS
19/09/2014	356	6.7	25	1	0.06	1.4	NS
24/10/2014	199	6	21	1	0.08	1.4	NS
20/11/2014	330	6.4	39	1	0.11	1.9	NS
17/12/2014	273	6.2	62	1	0.09	1.7	NS
20/01/2015	340	6.4	14	1	0.08	1.8	NS
20/02/2015	308	6.7	29	1	0.1	1.4	NS
20/03/2015	383	6.9	7	1	0.09	1.3	NS
20/04/2015	319	6.3	130	1	0.1	2.1	NS
18/05/2015	533	6.9	13	1	0.05	1.1	NS
21/07/2015	326	6	11	1	0.04	1.29	NS
27/08/2015	172	6.2	44	1	0.08	2.02	NS
16/09/2015	224	5.9	34	1	0.1	1.15	NS
19/10/2015	261	6.5	15	1	0.08	1.46	NS
20/11/2015	986	6.4	4	1	0.02	0.75	NS
17/12/2015	NS	NS	NS	NS	NS	NS	NS
20/01/2016	1360	6.2	7	1	0.06	1.17	NS
23/02/2016	556	7.1	12	1	0.08	1.65	NS
20/04/2016	NS	NS	NS	NS	NS	NS	NS
24/05/2016	NS	NS	NS	NS	NS	NS	NS
23/06/2016	354	6.4	18	1	0.04	1.98	NS
21/07/2016	501	6.8	23	1	0.07	2.78	Flood
22/08/2016	603	7.1	6	1	0.03	1.14	Low
27/09/2016	477	7.4	8	1	0.09	2.27	Moderate
24/10/2016	905	7	7	1	0.02	1	Low
21/11/2016	NS	NS	NS	NS	NS	NS	ponding no flow no sample
15/12/2016	NS	NS	NS	NS	NS	NS	pooling no flow
20/03/2017	908	7.5	23	1	0.05	2.59	Moderate

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
20/04/2017	1200	7.7	4	1	0.02	1.22	Low
25/05/2017	1040	7.62	20	1	0.03	1.34	Low
19/06/2017	1080	7.6	13	1	0.03	2.66	Low
25/07/2017	1280	7.89	4	1	0.02	0.74	Low
24/08/2017	1240	7.69	5	1	0.02	1.18	Low
22/09/2017	1340	7.66	6	1	0.02	0.92	No flow. Pooling
19/01/2018	ND	ND	ND	ND	ND	ND	No flow
14/02/2018	ND	ND	ND	ND	ND	ND	No flow
15/03/2018	707	7.54	5	1	0.05	1.33	Low
20/04/2018	818	6.98	95	1	0.51	4.34	Low
18/05/2018	871	7.63	3	1	0.03	1.4	Low
14/06/2018	846	7.66	3	1	0.03	1.36	Low
16/07/2018	NS	NS	NS	NS	NS	NS	Low
13/08/2018	1110	7.73	13	1	0.07	1.74	Low
17/09/2018	ND	ND	ND	ND	ND	ND	Dry
23/10/2018	ND	ND	ND	ND	ND	ND	Dry
15/11/2018	ND	ND	ND	ND	ND	ND	Dry
17/12/2018	892	7.05	13	NS	0.03	3.18	Low
21/01/2019	NS	NS	NS	NS	NS	NS	NF
20/02/2019	NS	NS	NS	NS	NS	NS	NF
18/03/2019	NS	NS	NS	NS	NS	NS	NF
29/04/2019	NS	NS	NS	NS	NS	NS	NF
30/05/2019	NS	NS	NS	NS	NS	NS	NF
14/06/2019	536	7	9	1	0.04	0.86	F
11/07/2019	1000	7.44	5	1	0.02	0.71	F
20/08/2019	NS	NS	NS	NS	NS	NS	NF
18/09/2019	684	6.81	17	1	0.63	1.32	F
15/10/2019	902	7.48	5	1	0.04	NF	
13/11/2019	ND	ND	ND	ND	ND	ND	NF
12/12/2019	ND	ND	ND	ND	ND	ND	NF
3/04/2020	*597	*7.12	*5	*10	*0.05	*1.6	NT
20/05/2020	512	7.12	4	5	0.13	3.4	F
11/06/2020	748	7.64	34	7	0.15	3.6	F
30/07/2020	554	7.01	11	5	0.02	0.86	F
25/08/2020	489.3	7.58	5.8	5	0.02	1.11	F
3/09/2020	557	7.49	45	5	0.02	1.1	F
30/10/2020	561	7.26	13	5	0.06	1.1	F
19/11/2020	542	6.82	17	5	0.05	1	F
14/12/2020	645	7.41	12	5	0.03	0.2	F
20/01/2021	901	7.06	8.8	5	0.07	1.5	F
23/02/2021	1020	7.5	6.6	5	0.03	0.5	F
10/03/2021	1050	7.6	9.2	5	0.03	0.96	F
9/04/2021	771	7.4	7.9	5	0.5	0.2	F
7/05/2021	111	7.4	27	5	0.03	0.5	F
2/06/2021	912	7.3	3.4	5	0.01	0.8	NF
1/07/2021	896	7.6	4.4	5	0.02	0.84	NF
2/08/2021	1410	7.3	12	5	0.02	0.2	F
1/09/2021	379	7.5	11	5	0.03	2.37	NF
6/10/2021	475	8	2.7	13	0.01	0.2	F
3/11/2021	609	7.9	13	5	0.03	0.9	F
9/12/2021	506	7	10	5	0.02	2.2	NF
6/01/2022	758	7.2	14	12	0.03	2.9	NF
1/02/2022	326	7.1	7	5	0.11	0.3	NF
9/03/2022	NA	7	10	5	0.04	1	F
5/04/2022	441	7.3	6	6.4	0.03	3.7	NF
3/05/2022	418	7.7	11	5	0.03	0.88	NF
2/06/2022	384	8	8	5	0.02	0.85	F
6/07/2022	181	8.2	8	5	0.17	1	F
3/08/2022	311	8.6	7	6	0.03	1.18	F
7/09/2022	421	8.4	5	5	0.04	0.2	NF
5/10/2022	390	7.4	5	5	0.02	0.2	NF
9/11/2022	310	8.2	12	25	0.05	49	NF
6/12/2022	434	8.1	8	5	0.05	1.3	F
4/01/2023	707	8.2	8	5.6	0.01	1.9	NF
8/02/2023	326	8.3	18	17	0.02	0.4	NF

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
1/03/2023	NA	8.3	5	25	0.01	4.2	NF
4/04/2023	441	8.5	5	9.4	0.02	0.2	NF
2/05/2023	418	8	10	17	0.02	0.2	NF
1/06/2023	384	7	5	15	0.01	0.2	NF
4/07/2023	181	9	8	5	0.01	2.1	NF
1/08/2023	311	8.2	6	5	0.01	1.1	NF
9/06/2023	421	7	5	9.4	0.01	0.4	NF
10/05/2023	390	8.2	26	15	0.03	0.9	NF
8/11/2023	310	8.2	9	7.9	0.01	0.2	NF
8/12/2023	434	7.3	10	5	0.02	0.7	NF
3/01/2024	1010	7.5	5.1	23	0.01	0.4	NF
19/02/2024	299	8	8.6	5	0.04	1.9	NF
6/03/2024	589	9	5	5	0.01	1.3	NF
3/04/2024	872	7.6	5	28	0.02	1.4	NF
2/05/2024	691	8.1	5	5		0.5	NF
4/06/2024	639	8.3	5	5.8	0.01	0.9	NF
6/07/2024	4870	8.18	14	5	0.04	0.4	NF
6/08/2024	387	7.5	8	13	0.07	1.1	NF
9/04/2024	682	7.4	5	8.1	0.03	1	NF
1/10/2024	723	6.7	11	5	0.03	0.5	NF
5/11/2024	839	6.9	7.6	11	0.01	0.9	NF
3/12/2024	940	8.5	11	5	0.05	0.4	NF
Average	**604.99**	**6.94**	**29.99**	**4.28**	**0.05**	**1.64**	-
Minimum	**75.00**	**5.30**	**2.70**	**1.00**	**0.00**	**0.20**	-
Maximum	**4870.00**	**9.00**	**810.00**	**25.00**	**0.63**	**49.00**	-
SW6							
1/07/2004	2316	7.1	NS	NS	0.01	0.95	NS
3/08/2004	2268	7.1	NS	NS	0.01	0.41	NS
3/09/2004	3255	9.7	NS	NS	0.01	0.47	NS
8/10/2004	488	6.9	NS	NS	0.01	1.1	More water than previous samples
2/11/2004	277	7	NS	NS	0.01	1.2	NS
30/11/2004	NS	NS	NS	NS	0.01	0.89	NS
6/01/2005	575	7	NS	NS	0.01	1	NS
2/02/2005	248	6.4	NS	NS	0.05	1.9	NS
2/03/2005	588	6.5	NS	NS	0.01	0.88	NS
8/04/2005	682	7.2	NS	NS	0.01	0.79	NS
5/05/2005	887	6.9	NS	NS	0.02	0.59	NS
2/06/2005	1290	7.1	NS	NS	0.01	0.95	NS
6/07/2005	352	6.8	NS	NS	0.01	1	NS
3/08/2005	632	6.9	NS	NS	0.01	0.68	NS
8/09/2005	860	7.5	NS	NS	0.01	0.54	NS
13/10/2005	529	7	NS	NS	0.01	0.73	NS
2/11/2005	821	7.2	NS	NS	0.01	0.66	NS
1/12/2005	323	6.7	NS	NS	0.01	1.1	NS
5/01/2006	1052	6.6	NS	NS	0.02	0.84	NS
2/02/2006	667	7	NS	NS	0.02	1.2	NS
2/03/2006	1176	6.9	NS	NS	0.04	0.97	Brown oil film on surface
7/04/2006	1730	7.3	NS	NS	0.01	0.67	NS
3/05/2006	1910	7	NS	NS	0.01	0.61	NS
8/06/2006	2091	6.9	NS	NS	0.01	0.44	NS
6/07/2006	425	6.2	NS	NS	0.02	0.43	NS
3/08/2006	576	6.7	NS	NS	0.01	0.86	NS
7/09/2006	818	6.9	NS	NS	0.01	0.86	NS
5/10/2006	934	6.9	NS	NS	0.01	0.88	NS
2/11/2006	1055	7.2	NS	NS	0.02	1	NS
4/12/2006	1303	7.2	NS	NS	0.03	1	NS
11/01/2007	412	6.6	NS	NS	0.01	1.4	NS
9/02/2007	890	6.9	NS	NS	0.02	1	NS
2/03/2007	309	6.7	NS	NS	0.01	1.3	NS
13/04/2007	612	6.7	NS	NS	0.02	1	NS
2/05/2007	697	6.9	NS	NS	0.01	0.99	NS
6/06/2007	984	6.7	NS	NS	0.02	0.75	NS
9/07/2007	485	7.3	NS	NS	0.01	1.2	NS
15/08/2007	644	7	NS	NS	0.02	0.77	NS

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
6/09/2007	1260	6.9	NS	NS	0.01	0.66	NS
12/10/2007	1557	7	NS	NS	0.03	0.75	NS
8/11/2007	414	6.4	NS	NS	0.02	1	NS
6/12/2007	351	6.7	NS	NS	0.02	0.97	NS
10/01/2008	307	6.6	NS	NS	0.02	0.91	NS
7/02/2008	378	6.9	NS	NS	0.01	1	NS
6/03/2008	644	6.5	NS	NS	0.02	0.73	NS
11/04/2008	886	7	NS	NS	0.01	0.72	NS
8/05/2008	1017	6.9	NS	NS	0.03	0.63	NS
4/06/2008	970	7.2	NS	NS	0.01	0.66	NS
3/07/2008	971	7.4	NS	NS	0.02	0.71	NS
20/02/2009	1197	6.9	NS	NS	0.01	0.85	NS
30/07/2009	1174	7.1	NS	NS	0.02	0.57	NS
8/01/2010	1149	6.5	NS	NS	0.01	1	NS
1/07/2010	1000	7	NA	NA	0.01	0.62	NS
19/07/2010	1000	7	NS	NS	0.01	0.62	NS
1/12/2010	459	6.5	11	1	0.06	1.6	NS
15/12/2010	459	6.5	NS	NS	0	1.6	Moderate
1/01/2011	943	6.9	3	1	0.02	0.98	Moderate
1/02/2011	1182	6.7	4	1	0.07	0.97	Low
1/03/2011	1143	6.7	3	1	0.02	0.89	Low
1/04/2011	973	6.7	3	1	0.02	0.82	Low
1/05/2011	929	7.1	3	1	0.02	0.69	Low
1/06/2011	999	7	2	1	0.01	0.6	Low
13/07/2011	952	7	2	1	0.01	0.55	Low
12/08/2011	1053	7	4	1	0.02	0.58	Moderate
8/09/2011	634	7.3	21	1	0.05	0.91	Moderate
6/10/2011	1003	6.4	4	1	0.01	0.58	Low
7/11/2011	1001	7.3	3	1	0.02	0.76	Low
9/12/2011	1102	7.7	6	1	0.02	0.7	Moderate
10/01/2012	1146	7.1	3	1	0.02	0.72	Low
13/02/2012	916	7.1	9	1	0.06	1	Moderate
16/03/2012	435	7.2	27	1	0.07	1.4	Flood
16/04/2012	2110	6.6	320	1	0.11	1.3	Moderate
14/05/2012	574	7	28	1	0.05	1.1	Moderate
13/06/2012	349	6.5	34	1	0.07	1.2	Moderate
12/07/2012	647	6.5	20	1	0.04	0.91	Moderate
24/08/2012	940	6.6	6	1	0.02	0.78	Low
18/09/2012	1215	6.9	6	1	0.02	0.8	Low
30/10/2012	943	6.3	5	5	0.05	0.8	Med - Low
27/11/2012	1631	6.4	5	5	0.05	1.1	Med-Low
17/12/2012	1096	6.9	7	5	0.05	0.6	Low Flow
29/01/2013	259	5.8	51	5	0.07	1.9	Low Flow
28/02/2013	180	6.4	69	5	0.09	1.4	Low to No Flow
21/03/2013	752	6.5	6	5	0.05	1.5	No to Low Flow
18/04/2013	832	5.5	5	5	0.05	1.9	No to Low Flow
22/05/2013	1048	7.1	5	5	0.05	1.2	No to Low Flow
19/06/2013	1129	7.3	5	5	0.05	0.9	Low to Medium
19/07/2013	634	7.13	46	5	0.05	1.2	NS
19/08/2013	849	7.37	5	5	0.05	0.4	NS
24/09/2013	573	6.89	16	5	0.05	1	NS
15/10/2013	766	7.19	5	5	0.05	0.8	NS
26/11/2013	551	6.74	26	5	0.05	1.8	NS
21/01/2014	666	6	4	1	0.04	1.2	NS
18/02/2014	1007	7	4	1	0.02	0.99	NS
20/03/2014	655	6.7	18	1	0.05	1	NS
29/04/2014	702	6.9	9	1	0.04	1.2	NS
21/05/2014	905	6.5	3	1	0.06	0.82	NS
16/06/2014	1029	6.4	4	1	0.01	0.68	NS
18/07/2014	951	6.8	2	1	0.02	0.69	NS
22/08/2014	372	7.3	40	1	0.07	1.4	NS
19/09/2014	244	6.9	10	1	0.03	1	NS
20/11/2014	981	6.6	3	1	0.02	0.92	NS
17/12/2014	404	6.4	80	1	0.08	1.5	NS
20/01/2015	383	6.5	20	1	0.08	1.6	NS

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
20/02/2015	419	6.8	14	1	0.06	1.1	NS
20/03/2015	816	6.7	3	1	0.03	0.79	NS
20/04/2015	523	6.3	71	1	0.08	1.1	NS
18/05/2015	687	7.2	8	1	0.03	0.92	NS
21/07/2015	332	6.3	16	1	0.06	1.37	Low
27/08/2015	180	6.2	31	1	0.1	1.89	Moderate
16/09/2015	660	6.5	12	1	0.04	1.13	Moderate
19/10/2015	907	6.3	8	1	0.04	0.97	Moderate
20/11/2015	1050	6.7	3	1	0.02	0.78	Low
17/12/2015	1740	6.7	4	1	0.02	0.8	Moderate
20/01/2016	2300	6.6	4	1	0.01	0.61	Low
23/02/2016	678	6.8	6	1	0.04	1.09	Low
20/04/2016	1140	6.9	3	1	0.01	0.82	Low
24/05/2016	935	6.9	2	1	0.01	0.76	Moderate
23/06/2016	361	6.6	16	1	0.05	1.68	Low
21/07/2016	427	6.2	59	1	0.06	2.12	Moderate
22/08/2016	686	6.8	9	1	0.03	0.93	Low
27/09/2016	541	7.2	7	1	0.05	1.95	Moderate
24/10/2016	710	6.8	5	1	0.02	0.83	Low
21/11/2016	710	7	2	1	0.02	0.87	Low
15/12/2016	768	7.1	3	1	0.02	0.9	Low
19/01/2017	859	7.31	3	1	0.02	1.01	Low
17/02/2017	723	7.47	4	1	0.03	1.11	Low
20/03/2017	838	7.27	7	1	0.04	0.98	Low
20/04/2017	1240	7.59	3	1	0.02	0.92	No flow detectable
25/05/2017	1240	7.28	5	1	0.02	0.75	Pooling with no flow
19/06/2017	1120	7.41	2	1	0.02	0.67	Low
25/07/2017	1190	7.67	154	1	0.05	0.9	Low
24/08/2017	1150	7.69	2	1	0.02	0.72	Low
22/09/2017	1270	7.79	3	1	0.02	0.71	Low
25/10/2017	1390	7.8	3	1	0.02	0.76	Low
24/11/2017	821	7.59	4	1	0.03	0.92	No Flow Detectable
19/01/2018	1060	7.38	4	1	0.02	0.94	Low
14/02/2018	1200	7.6	5	1	0.02	0.88	Low
15/03/2018	637	7.35	5	1	0.04	0.94	Low
20/04/2018	1030	7.34	4	1	0.02	0.71	Low
18/05/2018	1060	7.78	2	1	0.01	0.72	Low
14/06/2018	1020	7.86	4	1	0.01	0.7	Low
16/07/2018	1020	8	2	1	0.01	0.68	Low
13/08/2018	987	7.9	2	1	0.02	0.55	Low
17/09/2018	1040	7.83	2	1	0.01	0.7	Low
23/10/2018	1100	6.82	6	1	0.03	0.79	Low
15/11/2018	1230	7.66	7	1	0.03	0.8	Low
17/12/2018	NS	NS	NS	NS	NS	NS	Low
21/01/2019	897	7.6	6	1	0.12	1.47	F
20/02/2019	1450	7.5	36	0.9	0.03	0.96	F
18/03/2019	1810	7.6	7	1	0.03	0.88	F
29/04/2019	1510	6.7	5	<1	0.02	0.82	F
30/05/2019	1120	7.4	5	<1	0.89	0.04	F
14/06/2019	533	7	43	<1	0.1	1.21	F
11/07/2019	688	7.18	9	<1	0.04	0.84	F
20/08/2019	746	7.67	5	<1	0.02	0.66	F
18/09/2019	532	7.01	21	<1	0.16	1.52	F
15/10/2019	707	7.26	2	1	0.03	0.74	F
13/11/2019	954	7.79	4	1	0.02	0.67	F
12/12/2019	163	7.58	11	1	0.02	0.69	F
3/04/2020	*906	*6.88	*7.3	*10	*0.13	*2	NT
20/05/2020	498.5	7.19	5.8	5	0.07	1.2	F
11/06/2020	666.9	7.55	25	5	0.04	1.7	F
30/07/2020	325.9	7.4	17	6.8	0.06	12.14	F
25/08/2020	465.9	7.6	2.3	5.6	0.03	0.9	F
3/09/2020	713	7.54	7.7	5	0.03	0.9	F
30/10/2020	657	7.45	5.3	5	0.03	1.2	F
19/11/2020	561	6.97	19	5	0.05	0.4	F
14/12/2020	698	7.93	9.9	5	0.03	0.7	F

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
20/01/2021	594	7.1	6.5	5	0.08	0.4	F
23/02/2021	652	7.3	11	5	0.05	0.6	F
10/03/2021	753	7.4	6.6	5	0.03	0.8	F
9/04/2021	746	7.1	14	5	0.5	0.2	F
7/05/2021	169	6.9	18	7.9	0.18	1.02	F
2/06/2021	681	7.6	5.7	5	0.03	6.9	NF
1/07/2021	980	7.1	6.8	7.6	0.03	1.22	NF
2/08/2021	1050	6.8	5.5	8.7	0.02	0.2	F
1/09/2021	368	8.06	5.9	12	0.04	1.4	F
6/10/2021	503	7.2	2.2	6.7	0.01	0.2	NF
3/11/2021	599	8.7	21	5	0.03	1.7	NF
9/12/2021	596	7.1	5.6	5	0.08	2.7	NF
1/09/2021	379	7.5	11	5	0.03	2.37	NF
6/10/2021	475	8	2.7	13	0.01	0.2	F
3/11/2021	609	7.9	13	5	0.03	0.9	F
9/12/2021	506	7	10	5	0.02	2.2	NF
6/01/2022	758	7.2	14	12	0.03	2.9	NF
1/02/2022	326	7.1	7	5	0.11	0.3	NF
9/03/2022	NS	7	10	5	0.04	1.0	F
5/04/2022	441	7.3	6	6.4	0.03	3.7	NF
3/05/2022	418	7.7	11	5	0.03	0.9	NF
2/06/2022	384	8	8	5	0.02	0.9	F
6/07/2022	181	8.2	8	5	0.17	1.0	F
3/08/2022	311	8.6	7	6	0.03	1.2	F
7/09/2022	421	8.4	5	5	0.04	0.2	NF
5/10/2022	390	7.4	5	5	0.02	0.2	NF
9/11/2022	310	8.2	12	25	0.05	49.0	NF
6/12/2022	434	8.1	8	5	0.05	1.3	F
4/01/2023	789	8.15	5	6.5	0.01	1.1	NF
8/02/2023	286	7.6	24	6.8	0.03	2.3	NF
1/03/2023	553	8.1	250	8.8	0.01	0.9	NF
4/04/2023	5131	8.4	6.8	9	0.06	0.2	NF
2/05/2023	555	7.7	20	5.5	0.06	1.1	NF
1/06/2023	512	8.9	14	15	0.02	0.7	NF
4/07/2023	625	8.1	5	5	0.01	0.5	NF
1/08/2023	939	9.1	7.5	5	0.02	1.74	NF
9/06/2023	1598	6.9	5	5	0.01	5	NF
10/05/2023	1040	8.2	18	18	0.02	0.8	NF
8/11/2023	751	7.4	130	5	0.01	0.2	NF
8/12/2023	1000	8.2	6.8	15	0.03	0.6	NF
3/01/2024	676	8	5	5	0.04	2	NF
19/02/2024	269	8.5	51	5	0.1	1.1	NF
6/03/2024	722	8.7	35	5	0.05	1.1	NF
3/04/2024	696	8.5	7.5	17	0.03	0.9	NF
2/05/2024	659	8.4	5	5		0.6	NF
4/06/2024	577	8.2	18	8.6	0.05	0.7	NF
6/07/2024	507	8.5	14	5	0.04	1.2	NF
6/08/2024	387	8.1	31	6.7	0.12	0.9	NF
9/04/2024	795	8.4	6.1	5	0.06	0.7	NF
1/10/2024	711	7.8	6.7	5	0.03	1	NF
5/11/2024	705	8.1	61	10	0.05	0.5	NF
3/12/2024	502	8.8	7	5	0.05	0.2	NF
Average	**836.35**	**7.21**	**16.72**	**3.68**	**0.04**	**1.28**	-
Minimum	**163.00**	**5.50**	**2.00**	**0.90**	**0.00**	**0.04**	-
Maximum	**5131.00**	**9.70**	**320.00**	**25.00**	**0.89**	**49.00**	-
SW8							
19/01/2018	NS	NS	NS	NS	NS	NS	Dry
14/02/2018	NS	NS	NS	NS	NS	NS	NF
15/03/2018	NS	NS	NS	NS	NS	NS	Dry
20/04/2018	NS	NS	NS	NS	NS	NS	Dry
18/05/2018	NS	NS	NS	NS	NS	NS	Dry
14/06/2018	NS	NS	NS	NS	NS	NS	Dry
16/07/2018	NS	NS	NS	NS	NS	NS	Dry
13/08/2018	NS	NS	NS	NS	NS	NS	Dry
17/09/2018	NS	NS	NS	NS	NS	NS	Dry

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
23/10/2018	NS	NS	NS	NS	NS	NS	Dry
15/11/2018	NS	NS	NS	NS	NS	NS	Dry
17/12/2018	NS	NS	NS	NS	NS	NS	Dry
21/01/2019	NS	NS	NS	NS	NS	NS	NF
20/02/2019	NS	NS	NS	NS	NS	NS	NF
18/03/2019	NS	NS	NS	NS	NS	NS	NF
29/04/2019	NS	NS	NS	NS	NS	NS	NF
30/05/2019	NS	NS	NS	NS	NS	NS	NF
14/06/2019	NS	NS	NS	NS	NS	NS	NF
11/07/2019	380	7.84	16	1	0.08	1.89	F
20/08/2019	NS	NS	NS	NS	NS	NS	NF
18/09/2019	NS	NS	NS	NS	NS	NS	NF
15/10/2019	NS	NS	NS	NS	NS	NS	NF
13/11/2019	NS	NS	NS	NS	NS	NS	NF
12/12/2019	NS	NS	NS	NS	NS	NS	NF
3/04/2020	293	7.86	630	14	0.05	2.9	NF
20/05/2020	208.9	7.47	540	5	0.51	3.3	NF
11/06/2020	296.6	8.7	270	5.4	0.55	4.6	NF
30/07/2020	202.5	7.84	330	5	0.38	2.7	NF
25/08/2020	215.4	8.34	830	7.3	0.39	4.6	NF
3/09/2020	308.2	8.11	170	5	0.08	5.6	NF
30/10/2020	384.1	7.7	79	5	0.08	5	NF
19/11/2020	477.1	8.3	22	5	0.05	5.2	NF
14/12/2020	477.6	7.85	32	5	0.03	5.6	NF
2/08/2021	NS	NS	NS	NS	NS	NS	Dry
1/09/2021	NS	NS	NS	NS	NS	NS	Dry
6/10/2021	NS	NS	NS	NS	NS	NS	Dry
3/11/2021	NS	NS	NS	NS	NS	NS	Dry
9/12/2021	NS	NS	NS	NS	NS	NS	Dry
6/01/2022	NS	NS	NS	NS	NS	NS	Dry
1/02/2022	NS	NS	NS	NS	NS	NS	Dry
9/03/2022	NS	NS	NS	NS	NS	NS	Dry
5/04/2022	NS	NS	NS	NS	NS	NS	Dry
3/05/2022	NS	NS	NS	NS	NS	NS	Dry
2/06/2022	NS	NS	NS	NS	NS	NS	Dry
6/07/2022	NS	NS	NS	NS	NS	NS	Dry
3/08/2022	NS	NS	NS	NS	NS	NS	Dry
7/09/2022	NS	NS	NS	NS	NS	NS	Dry
5/10/2022	NS	NS	NS	NS	NS	NS	Dry
9/11/2022	NS	NS	NS	NS	NS	NS	Dry
6/12/2022	NS	NS	NS	NS	NS	NS	Dry
4/01/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
8/02/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
1/03/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
4/04/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
2/05/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
1/06/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
4/07/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
1/08/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
9/06/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10/05/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
8/11/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
8/12/2023	DRY	DRY	DRY	DRY	DRY	DRY	DRY
3/01/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
19/02/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6/03/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
3/04/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
2/05/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
4/06/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6/07/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6/08/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
9/04/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
1/10/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
5/11/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY
3/12/2024	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
Average	**324.34**	**8.00**	**291.90**	**5.77**	**0.22**	**4.14**	**-**
Minimum	**202.50**	**7.47**	**16.00**	**1.00**	**0.03**	**1.89**	**-**
Maximum	**477.60**	**8.70**	**830.00**	**14.00**	**0.55**	**5.60**	**-**
SW10							
19/01/2018	NS	NS	NS	NS	NS	NS	Dry
14/02/2018	NS	NS	NS	NS	NS	NS	NF
15/03/2018	NS	NS	NS	NS	NS	NS	Dry
20/04/2018	NS	NS	NS	NS	NS	NS	Dry
18/05/2018	NS	NS	NS	NS	NS	NS	Dry
14/06/2018	NS	NS	NS	NS	NS	NS	Dry
16/07/2018	NS	NS	NS	NS	NS	NS	Dry
13/08/2018	NS	NS	NS	NS	NS	NS	Dry
17/09/2018	NS	NS	NS	NS	NS	NS	Dry
23/10/2018	NS	NS	NS	NS	NS	NS	Dry
15/11/2018	NS	NS	NS	NS	NS	NS	Dry
17/12/2018	NS	NS	NS	NS	NS	NS	Dry
21/01/2019	NS	NS	NS	NS	NS	NS	NF
20/02/2019	NS	NS	NS	NS	NS	NS	NF
18/03/2019	NS	NS	NS	NS	NS	NS	NF
29/04/2019	NS	NS	NS	NS	NS	NS	NF
30/05/2019	NS	NS	NS	NS	NS	NS	NF
14/06/2019	NS	NS	NS	NS	NS	NS	NF
11/07/2019	NS	NS	NS	NS	NS	NS	NF
20/08/2019	NS	NS	NS	NS	NS	NS	NF
18/09/2019	NS	NS	NS	NS	NS	NS	NF
15/10/2019	NS	NS	NS	NS	NS	NS	NF
13/11/2019	NS	NS	NS	NS	NS	NS	NF
12/12/2019	NS	NS	NS	NS	NS	NS	NF
3/04/2020	2840	6.77	5.3	10	0.05	1.6	NF
20/05/2020	2670	6.87	140	5	0.76	0.7	NF
11/06/2020	4087	7.8	100	5	0.8	0.6	NF
30/07/2020	2367	6.72	87	8.3	0.38	0.9	NF
25/08/2020	2749	7.24	17	5	0.11	0.7	F
3/09/2020	2871	6.63	42	5.2	0.07	0.7	NF
30/10/2020	2678	6.87	62	5	0.12	0.3	NF
19/11/2020	2936	6.82	750	5.6	0.07	4.56	NF
14/12/2020	3526	7.48	8.1	5	0.13	0.4	NF
20/01/2021	3924	6.83	97	5	0.24	0.6	NF
23/02/2021	4580	7.2	180	5	0.78	0.3	NF
10/03/2021	4830	7.2	93	5	0.54	0.2	NF
9/04/2021	3720	7	33	5	0.5	0.2	NF
7/05/2021	119	7	150	7.3	0.2	1.8	F
2/06/2021	2770	6.8	130	5	0.35	2.79	NF
1/07/2021	3260	7.01	75	6.1	0.33	2.7	F
2/08/2021	3130	6.8	39	5	0.16	0.4	NF
1/09/2021	1940	6.7	44	12	0.1	0.2	NF
6/10/2021	1940	7.1	19	8.4	0.07	0.2	NF
3/11/2021	2310	7	21	5	0.07	6.7	NF
9/12/2021	481	7.1	540	13	0.28	3.7	NF
6/01/2022	759	7	96	13	0.55	5.2	NF
1/02/2022	300	7	1800	5	0.01	1.4	NF
9/03/2022		7	120	13	0.01	1.9	F
5/04/2022	685	7	15	12	0.01	0.9	F
3/05/2022	459	7	50	11	0.17	0.4	NF
2/06/2022	398	8	14	26	0.08	1.0	F
6/07/2022	142	8	35	5	0.52	2.0	F
3/08/2022	308	7	14	6.8	0.08	1.6	F
7/09/2022	434	8	9	5	0.12	0.2	NF
5/10/2022	476	7	76	5	0.21	1.7	NF
9/11/2022	378	7	38	18	0.19	0.8	NF
6/12/2022	592	7	18	5	0.05	0.4	NF
4/01/2023	344	7.3	98	13	0.07	2.49	NF
8/02/2023	512	7.34	19	5	0.01	1.6	NF
1/03/2023	957	7.9	24	5	0.01	1.4	NF
4/04/2023	6040	8.8	19	16	0.01	0.2	NF

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
2/05/2023	288	7.5	60	7.9	0.1	0.9	NV
1/06/2023	565	8.9	11	5	0.17	1	NF
4/07/2023	522	8.9	18	5	0.01	0.9	NF
1/08/2023	982	8.1	31	5	0.04	1.2	NF
9/06/2023	922	7.4	21	5.9	0.01	1.1	NF
10/05/2023	372	8.6	210	5	0.38	0.7	NF
8/11/2023	DRY	DRY	DRY	DRY	0.1	0.5	DRY
8/12/2023	DRY	DRY	DRY	DRY	0.09	0.1	DRY
3/01/2024	353	6.6	5	20	0.01	15	NF
19/02/2024	256	7.8	300	5	0.2	0.2	NF
6/03/2024	1140	8.5	1100	5	0.02	3	NF
3/04/2024	1660	7.8	320	11	0.05	0.8	NF
2/05/2024	690	8.2	150	6.3		1.3	NF
4/06/2024	506	7.4	400	6.4	1.1	1.9	NF
6/07/2024	2720	8.55	35	5	0.01	1	NF
6/08/2024	1260	8.2	190	15	0.65	1.5	NF
9/04/2024	580	7.5	120	10	0.56	1.7	NF
1/10/2024	583	6.5	110	5	0.16	1.4	NF
5/11/2024	620	7.8	1900	11	0.67	8.5	NF
3/12/2024	386	7.69	100	5	0.31	1.3	NF
Average	**1609.6**	**7.4**	**184.7**	**8.0**	**0.2**	**1.7**	-
Minimum	**119.0**	**6.5**	**5.0**	**5.0**	**0.0**	**0.1**	-
Maximum	**6040.0**	**8.9**	**1900.0**	**26.0**	**1.1**	**15.0**	-
SW11							
20/04/2017	3130	7.72	8	1	0.04	0.68	No Flow Pooling
25/05/2017	2750	7.64	3	1	0.02	0.5	Low
24/08/2017	3260	7.78	6	1	0.04	0.45	Minimal inflow, no outflow
19/01/2018	NS	NS	NS	NS	NS	NS	Dry
14/02/2018	NS	NS	NS	NS	NS	NS	NF
15/03/2018	NS	NS	NS	NS	NS	NS	Dry
20/04/2018	NS	NS	NS	NS	NS	NS	Dry
18/05/2018	NS	NS	NS	NS	NS	NS	Dry
14/06/2018	NS	NS	NS	NS	NS	NS	Dry
16/07/2018	NS	NS	NS	NS	NS	NS	Dry
13/08/2018	NS	NS	NS	NS	NS	NS	Dry
17/09/2018	NS	NS	NS	NS	NS	NS	Dry
23/10/2018	NS	NS	NS	NS	NS	NS	Dry
15/11/2018	NS	NS	NS	NS	NS	NS	Dry
17/12/2018	NS	NS	NS	NS	NS	NS	Dry
21/01/2019	NS	NS	NS	NS	NS	NS	NF
20/02/2019	NS	NS	NS	NS	NS	NS	NF
18/03/2019	NS	NS	NS	NS	NS	NS	NF
29/04/2019	NS	NS	NS	NS	NS	NS	NF
30/05/2019	NS	NS	NS	NS	NS	NS	NF
14/06/2019	NS	NS	NS	NS	NS	NS	NF
11/07/2019	NS	NS	NS	NS	NS	NS	NF
20/08/2019	NS	NS	NS	NS	NS	NS	NF
18/09/2019	NS	NS	NS	NS	NS	NS	NF
15/10/2019	NS	NS	NS	NS	NS	NS	NF
13/11/2019	NS	NS	NS	NS	NS	NS	NF
12/12/2019	NS	NS	NS	NS	NS	NS	NF
28/02/2020	1720	7.21	82	1	0.21	2.7	F
3/04/2020	2530	7.04	160	10	0.24	0.7	NF
20/05/2020	2206	6.62	900	5	2.5	2.4	NF
11/06/2020	3553	7.12	170	5	0.15	0.7	F
30/07/2020	1873	7.58	4.5	6.8	0.03	1.2	F
25/08/2020	1090	7.53	1.2	5	0.02	0.7	F
3/09/2020	2101	7.4	39	5	0.04	0.7	F
30/10/2020	2292	7.48	6.9	5	0.02	1.3	F
19/11/2020	1673	6.94	160	5	0.05	0.5	NF
14/12/2020	1914	7.32	1900	8.4	14	70	NF
20/01/2021	NS	NS`	NS	NS	NS	NS	NF
23/02/2021	3390	7.4	37	5	0.06	1.8	F
10/03/2021	6510	7	190	5	0.37	0.2	NF
9/04/2021	1880	7.5	41	5	0.5	0.2	F

Date	EC	pH	Suspended Solids	Total Oil and Grease	Total Phosphorous	Total Nitrogen	Flow Observations
	µs/cm		mg/L	mg/L	mg/L	mg/L	
ANZECC Criteria	**N/A**	**6.5 to 7.5**	**50**	**10**	**N/A**	**N/A**	**N/A**
7/05/2021	369	7.5	15	8.7	0.32	0.49	F
2/06/2021	2270	7.6	4.6	5	0.02	0.5	NF
1/07/2021	3930	7.7	2.8	5	0.02	0.6	NF
2/08/2021	4110	7.1	6.2	5	0.01	0.2	F
1/09/2021	1180	7.5	74	10	0.04	1.5	F
6/10/2021	2160	7.8	1.2	7.3	0.01	0.2	NF
3/11/2021	2530	7.5	21	5	0.16	0.9	NF
9/12/2021	1560	7.5	7.8	6.7	0.14	4.8	NF
6/01/2022	2150	7.3	30.0	5.0	0.07	3.2	NF
1/02/2022	806	7.1	5.0	5.0	0.34	2.2	NF
9/03/2022	NA	7.2	7.8	10.0	0.29	2.1	F
5/04/2022	1260	7.5	5.0	23.0	0.02	1.6	NF
3/05/2022	1240	7.6	5.0	5.0	0.02	0.9	NF
2/06/2022	1270	7.6	5.0	5.0	0.02	0.6	NF
6/07/2022	325	7.6	9.4	5.0	0.07	1.2	F
3/08/2022	951	7.9	5.0	15.0	0.03	1.1	NF
7/09/2022	991	8.3	5.0	5.0	0.03	0.2	NF
5/10/2022	1290	7.1	5.0	12.0	0.22	2.9	NF
9/11/2022	726	7.5	5.3	11.0	0.04	0.2	NF
6/12/2022	1160	7.5	5.0	9.2	0.02	0.6	NF
4/01/2023	344	7.3	98	13	0.02	1.2	NV
8/02/2023	512	7.34	19	5	0.01	2.3	V
1/03/2023	957	7.9	24	5	0.01	1	NV
4/04/2023	6040	8.8	19	16	0.01	0.2	NV
2/05/2023	288	7.5	60	7.9	0.02	0.9	NF
1/06/2023	565	8.9	11	5	0.35	0.7	NV
4/07/2023	522	8.9	18	5	0.11	0.8	NV
1/08/2023	982	8.1	31	5	0.01	2.1	NV
9/06/2023	922	7.4	21	5.9	0.01	1.4	NV
10/05/2023	372	8.6	210	5	0.03	0.2	NV
8/11/2023	DRY	DRY	DRY	DRY	0.01	0.6	DRY
8/12/2023	DRY	DRY	DRY	DRY	0.04	0.5	DRY
3/01/2024	1660	7.9	5	5	0.03	1.8	NF
19/02/2024	1340	7.8	34	6.1	0.11	1.4	NF
6/03/2024	1870	7.8	23	0.02	0.06	1.5	NF
3/04/2024	2110	7.9	15	15	0.12	2	NF
2/05/2024	1440	8.1	5.3	5		0.3	NF
4/06/2024	1290	7.8	5	8.8	0.05	0.8	NF
6/07/2024	1020	8.2	5	5	0.05	0.8	NF
6/08/2024	1520	8	32	11	0.18	0.9	NF
9/04/2024	1850	7.3	14	7.4	0.05	0.3	NF
1/10/2024	1930	7.7	16	5	0.01	0.5	NF
5/11/2024	1960	7.7	64	8.4	0.1	0.6	NF
3/12/2024	2360	8.2	5	5	0.02	1	NF
Average	**1824.63**	**7.63**	**80.48**	**6.75**	**0.37**	**2.24**	-
Minimum	**288.00**	**6.62**	**1.20**	**0.02**	**0.01**	**0.20**	-
Maximum	**6510.00**	**8.90**	**1900.00**	**23.00**	**14.00**	**70.00**	-

Location	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Depth to Water Level					
MP1	m		1.5	1.5	1.5
MP2			15.0	14.6	14.6
MP4			18.0	17.2	17.2
MP5			18.0	17.7	17.7
MP7			17.9	17.2	17.2
MP10			5.0	4.6	4.6
MP11			10.2	9.2	9.2
GPZ1			11.1	10.7	10.4
GPZ5			9.1	9.1	9.1
GPZ6			5.5	4.9	5.4
GPZ8			6.7	6.3	6.4
pH					
MP1	pH Units	8.2	7.7	7.2	7.5
MP2		8.1	8.4	7.5	8.4
MP4		7.4	7.5	6.7	6.4
MP5		8.0	8.0	7.7	6.8
MP7		7.5	8.5	7.2	7.2
MP10		7.0	7.3	6.1	6.5
MP11		8.0	7.5	7.4	7.4
GPZ1		7.6	8.3	7.4	7.5
GPZ5		7.8	8.2	7.4	7.9
GPZ6		7.6	7.7	8.0	8.7
GPZ8		7.1	7.7	7.6	7.9
EC					
MP1	µS/cm	982	954	955	823
MP2		259	327	307	262
MP4		306	219	327	272
MP5		679	680	705	549
MP7		4600	4880	4700	5390
MP10		6670	6770	6340	7050
MP11		737	566	796	625
GPZ1		743	819	876	687
GPZ5		3490	3570	3370	3730
GPZ6		666	519	527	494
GPZ8		2350	2090	1960	2200
Sulphate					
MP1		14.0	23.0	22	19
MP2		2.0	2.0	2	4

Location	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
MP4	mg/L	2.0	2.0	2	2
MP5		2.0	2.0	2	2
MP7		46.0	39.0	35	30
MP10		47.0	24.0	27	22
MP11		43.0	2.0	2	3
GPZ1		14.0	10.0	10	10
GPZ5		6.3	3.0	6	19
GPZ6		21.0	30.0	20	4
GPZ8		9.9	4.7	29	2
Kjeldahl Nitrogen					
MP1	mg/L	-	-	-	0.20
MP2		-	-	-	0.30
MP4		-	-	-	0.90
MP5		-	-	-	0.60
MP7		-	-	-	0.20
MP10		-	-	-	0.20
MP11		-	-	-	0.20
GPZ1		-	-	-	0.60
GPZ5		-	-	-	0.20
GPZ6		-	-	-	0.30
GPZ8		-	-	-	0.90
Total Phosphate					
MP1	mg/L	-	-	-	0.05
MP2		-	-	-	0.05
MP4		-	-	-	0.39
MP5		-	-	-	0.05
MP7		-	-	-	0.05
MP10		-	-	-	0.05
MP11		-	-	-	0.05
GPZ1		-	-	-	0.26
GPZ5		-	-	-	0.12
GPZ6		-	-	-	0.38
GPZ8		-	-	-	0.05
Nitrate as N					
MP1		-	-	-	0.0
MP2		-	-	-	0.2
MP4		-	-	-	0.0
MP5		-	-	-	3.3
MP7		-	-	-	0.2

Location	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4
MP10	mg/L	-	-	-	0.1
MP11		-	-	-	0.0
GPZ1		-	-	-	0.0
GPZ5		-	-	-	0.0
GPZ6		-	-	-	1.7
GPZ8		-		-	0.1

	Granite Pit					
	B4		B5		B6 Rail	B6 Pipeline
Date	Over pressure	Ground vibration	Over pressure	Ground vibration	Ground vibration	Ground vibration
16-Jan-24	DNT <100db	DNT <0.5mm/s	92.7 dbl	0.71mm/s	0.68mm/s	0.68mm/s
18-Jan-24	112.9dbl	0.19mm/s	100.1dbl	1.02mm/s	0.71mm/s	0.71mm/s
23-Jan-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.30 mm/s	1.30 mm/s
25-Jan-24	DNT <100db	DNT <0.5mm/s	83.2 dbl	0.63 mm/s	0.69 mm/s	0.69 mm/s
2-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.81 mm/s	0.81 mm/s
7-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
9-Feb-24	DNT <100db	DNT <0.5mm/s	86.7dbl	0.59 mm/s	0.55 mm/s	0.55 mm/s
13-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.70 mm/s	0.70 mm/s
16-Feb-24	DNT <100db	DNT <0.5mm/s	83.2 db	0.54mm/s	1.11 mm/s	1.11 mm/s
20-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.73 mm/s	0.73 mm/s
22-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
23-Feb-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
1-Mar-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.98 mm/s	0.98 mm/s
7-Mar-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.57 mm/s	0.57 mm/s
15-Mar-24	DNT <100db	DNT <0.5mm/s	102.3 db	0.61 mm/s	1.33 mm/s	1.33 mm/s
22-Mar-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.46 mm/s	0.46 mm/s
5-Apr-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.87mm/s	0.87mm/s
16-Apr-24	DNT <100db	DNT <0.5mm/s	83.2db	0.51mm/s	1.65 mm/s	1.65 mm/s
26-Apr-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.83 mm/s	0.83 mm/s
7-May-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	2.59 mm/s	2.59 mm/s
10-May-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.07mm/s	0.07mm/s
17-May-24	DNT <100db	DNT <0.5mm/s	89.2 db	0.72 mm/s	1.59 mm/s	1.59 mm/s
24 My 2024	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.32 mm/s	1.32 mm/s
31-May-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.81 mm/s	1.81 mm/s
7-Jun-24	DNT <100db	DNT <0.5mm/s	83.2 db	0.58 mm/s	0.89 mm/s	0.89 mm/s
18-Jun-24	DNT <100db	DNT <0.5mm/s	91.2 db	0.61mm/s	1.64 mm/s	1.64 mm/s
21-Jun-24	DNT <100db	DNT <0.5mm/s	83.2 db	0.64mm/s	1.55 mm/s	1.55 mm/s
25-Jun-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.50 mm/s	1.50 mm/s
28-Jun-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.85 mm/s	0.85 mm/s
3-Jul-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.47 mm/s	1.47 mm/s
5-Jul-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.88 mm/s	0.88 mm/s
9-Jul-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.51 mm/s	1.51 mm/s
12-Jul-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.51 mm/s	1.51 mm/s
19-Jul-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.42 mm/s	1.42 mm/s
26-Jul-24	DNT <100db	DNT <0.5mm/s	91.2 db	0.52 mm/s	1.47 mm/s	1.47 mm/s
2-Aug-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.42mm/s	1.42mm/s
9-Aug-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.16 mm/s	1.16 mm/s
20-Aug-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	1.13 mm/s	1.13 mm/s
6-Sep-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.58 mm/s	0.58 mm/s
13-Sep-24	DNT <100db	DNT <0.5mm/s	83.2 db	0.55 mm/s	1.07 mm/s	1.07 mm/s
18-Sep-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
20-Sep-24	DNT <100db	DNT <0.5mm/s	98.0 db	0.62 mm/s	0.92 mm/s	0.92 mm/s
25-Sep-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
27-Sep-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.52 mm/s	0.52 mm/s
4-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.89 mm/s	0.89 mm/s
11-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
15-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
18-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.54 mm/s	0.54 mm/s
25-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.72 mm/s	0.72 mm/s
30-Oct-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
1-Nov-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.64 mm/s	0.64 mm/s
8-Nov-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.08 mm/s	0.08 mm/s
12-Nov-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.08 mm/s	0.08 mm/s
22-Nov-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
26-Nov-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.10 mm/s	0.10 mm/s

29-Nov-24	DNT <100db	DNT <0.5mm/s	83.2 DBL	0.53 mms	0.69 mm/s	0.69 mm/s
6-Dec-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s
13-Dec-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	0.10 mm/s	0.10 mm/s
18-Dec-24	DNT <100db	DNT <0.5mm/s	DNT <100db	DNT <0.5mm/s	DNT <0.5mm/s	DNT <0.5mm/s

APPENDIX C –
Approved CIF-Funded Projects since CIF Inception

Project Name	Total Approved
Bungonia: Sustaining the present through the past	$8,000
Marulan Community Hall Upgrade	$2,500
Marulan School Projects Room	$15,000
Restoration of historical culvert	$12,010
Computer hardware for archiving and cataloguing	$2,500
Meridian mosaic installation	$2,000
Tallong Memorial Hall Refurbishment	$13,318
Marulan Road Safety	$1,770
Towrang Hall Floor Refurbishment	$14,230
Extension to GMC Road Safety Day	$2,000
Insectivorous Bat Flight Centre	$15,912
Increase in funds for GMC project - Road Safety	$2,000
Thermal Imaging Camera	$1,890
Tallong Community Memorial Walk	$8,323
Tallong Hall project	$5,133
Toilet Block for RFS	$15,790
Community Sign at Towrang	$11,923
Local Schools Co creating a sustainable future	$4,000
Bungonia Community Engagement Program	$4,500
Marulan Highway Signage	$8,190
Promotions for Australia Day Committee	$2,613
Muulii Murra (beautiful place)	$2,800
MHS Archive & Research Facility	$15,862
Marulan Public School Playground Upgrade	$ 15,000 (funded in 2019, in progress as of October 2020)
Tallong Public School Playground Upgrade	$ 15,000 (funded in 2019)
Marulan RFS - Training Room Extension	$ 10,000 (funded in 2019)
Big Hill RFS - Thermal Imaging Camera	$ 2,403 (funded in 2019)

Project Name	Total Approved
Tallong Community Focus Group – Defibrillator	$ 2,572 (funded in 2019)
Marulan Kite Festival	$3,000 (funded in 2020, however the event was cancelled)
Marulan Pony Club	$1,500 (funded in 2020)
Goulburn & District Show Jumping Club	$500 (funded in 2020)
Tallong Apple Festival	$2,000 (funded in 2020)
Marulan Christmas Carols	$3,500 (funded in 2020)
Goulburn Hockey Club	$3,000 (funded in 2020)
Goulburn Cricket	$3,000 (funded in 2020)
Marulan Soccer Club	$5,000 (funded in 2020)
Goulburn Rugby	$3,000 (funded in 2020)
Mayoral Charity Golf Day	$5,000 (funded in 2020)
Goulburn Australia Day BBQ	$1,000 (funded in 2020)
Tallong Public School Father's Day	$600 (funded in 2020)
Lion's Club BBQ	$500 (funded in 2020)
Marulan Australia Day BBQ	$1,500 (funded in 2020)
Goulburn Mulwaree Council Australia Day BBQ	$500 (funded in 2021)
Gunning Campdraft	$500 (funded in 2021)
Towrang Valley Progress Assoc Australia Day BBQ	$500 (funded in 2021)
Goulburn Agriculture, Pastoral and Horticultural Society	$2,000 (funded in 2021)
Marulan Football Club	$3,500 (funded in 2021)
Goulburn & District Showjumping Competition	$1,000 (funded in 2021)
Tallong Apple Day Festival	S900 (funded in 2022)
Marulan Football Club	$500 (funded in 2022)
Tallong Public School P&C	$900 (funded in 2022)
Cystic Fibrosis Goulburn	$2000 (funded in 2022)
Goulburn and District Show jumping Competition	$1000 (funded in 2022)
Convoy for Kids	$500 (funded in 2022)
Goulburn Mayoral Charity Golf Day	$5000 (funded in 2022)

Project Name	Total Approved
Tallong Apple Day Festival	$900 (funded in 2023)
Marulan Football Club	$500 (funded in 2023)
Tallong Public School P&C	$1,800 (funded in 2023)
Cystic Fibrosis Goulburn	$2000 (funded in 2023)
Goulburn Rotary Charity Golf Day	$5000 (funded in 2023)
TREK4KIDS Starlight foundation	$3000 (funded in 2023)
Tallong Apple Day Festival	$5040 (funded in 2024)
Tallong Public School P & C	$900 (funded in 2024)
Cystic Fibrosis Goulburn	$2000 (funded in 2024)
Goulburn and District Showjumping Competition	$1000 (funded in 2024)
Aboriginal Rugby League Knockout Competition	$1000 (funded in 2024)
Goulburn Rotary Charity Golf Day	$5000 (funded in 2024)