Jandra Quarry

2024 Annual Review

Site Details

Name of operation	Jandra Quarry
Name of operator	Holcim (Australia) Pty Ltd
Development consent / project approval #	DA 213-10-99 (Modification 5)
Name of holder of development consent / project approval	Holcim (Australia) Pty Ltd
Document Title	Annual Review 2024
Document Revision	A
Annual Review start date	January 1, 2024
Annual Review end date	December 31, 2024
I, David Saville, certify that this audit report is a true and accurate record of the compliance status of Jandra Quarry for the period of January 1, 2024 - December 31, 2024 and that I am authorised to make this statement on behalf of Holcim (Australia) Pty Ltd. *Note.* *a) _ The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.* *b) _ The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).*	
Name of authorised reporting officer	David Saville
Title of authorised reporting officer	Quarry Manager
Signature of authorised reporting officer	
Date	27/03/2025

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1 Statement of Compliance

See **Table 1** for statement of commitments for the 2024 reporting period for Jandra Quarry. **Table 2** displays the DPHI compliance status key. **Table 3** details the non-compliances identified within the reporting period.

Table 1: Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
DA 213-10-99 (Mod 5)	No
EPL No. 2796	Yes

Table 2: Compliance Status Key

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

Table 3: Non-Compliances for 2024

Relevant Approval	Condition	Condition description	Compliance status	Comment	Section addressed in Annual Review
DA 213-10-99 (Mod 5)	Schedule 3 Condition 14	**Air Quality Management Plan** The Applicant shall prepare and implement an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must: (a) be submitted to the Secretary for approval by 31 August 2015; (b) describe the measures that would be implemented to ensure: • compliance with the relevant conditions of this consent; • best practice management is employed; and • the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; (c) describe the proposed air quality management system; and (d) include an air quality monitoring program that: • is capable of evaluating the performance of the development; • includes a protocol for determining any exceedances of the relevant conditions of consent; • effectively supports the air quality management system; and • evaluates and reports on the adequacy of the air quality management system.	Non-Compliance	No PM10 or TSP monitoring was conducted for 11 weeks due to equipment failure. When data transmission stopped, an investigation revealed a faulty sensor. Replacement parts had an expected lead time of two weeks with an actual lead time of 2 months, resulting in a disruption in monitoring data. This was reported to the DPHI on 19 September 2024 following a review of Jandra Quarry's monitoring data sheet.	**Section 6.3**

2 Introduction

Holcim (Australia) Pty Ltd (Holcim) operates Jandra Quarry, a hard rock quarry located on the Pacific Highway, Possum Brush, approximately 300 kilometres (km) north of Sydney in the Mid Coast Council Local Government Area. The quarry supplies construction materials used to make concrete, roads, bridges, and asphalt across the Mid North Coast.

Development Consent for Jandra Quarry was granted on 30 March 2000 (DA 231-10-99). Jandra Quarry have sought five modifications to the Development Consent since that time under Section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act). The Jandra Quarry Intensification in Production Development Consent was the most recent modification, granted on 13 March 2015 by the NSW Minister for Planning (DA 231-10-99 MOD 5).

The site also operates in accordance with Environment Protection License (EPL) No. 2796 issued by the Environmental Protection Authority (EPA).

The regional locality and project approval area are outlined in **Figure 1** and **Figure 2** below.

Figure 1: Jandra Quarry Site Location

Figure 2: Jandra Quarry Project Approval Area

In accordance with Schedule 5, Condition 4 of the modified Development Consent, Holcim is required to undertake an Annual Review of the site. This Annual Review has been prepared in accordance with Schedule 5 Condition 4 (Annual Performance Monitoring) of the Development Consent and in accordance with the *Annual Review Guideline: Post Approvals Requirements for State Significance Mining Developments* (October 2015). The Annual Review requirements and the section where they have been addressed in this document have been provided in **Table *4*:** .

Table 4: Annual Review Requirement

Condition	Section addressed in Annual Review
4. Annual Review Annual Review by the end of March each year, the Applicant shall 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 calendar year, and the development that is proposed to be carried out over the current calendar year;	**Sections 4. 6 and 8**
(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against: - the relevant statutory requirements, limits or performance measures/criteria; - the monitoring results of previous years, and - the relevant predictions in the documents listed in condition 2 of Schedule 2;	**Sections 6 and 7**
(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	**Sections 1 and 12**
(d) identify any trends in the monitoring data over the life of the development;	**Sections 6 and 7**
(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	**Sections 6 and 9**
(f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development	**Section 13**

2.1 Contact Details

Table 5 details the names and contact details of key Holcim staff.

Table 5: Contact Details for Jandra Quarry

Staff Member and Position	Contact Details
Quarry Manager David Saville	Work:(02) 6554 3169 Mob: 0429 760 983 Email: david.saville@holcim.com
Production Supervisor Peter Wilson	Work:(02) 6554 3169 Mob: 0429 790 926 Email: peter.wilson@holcim.com
Environment Manager - NSW Dozie Egeonu	Mob: 0429 557 493 Email: dozie.egeonu@holcim.com

3 Approvals

The site operates under the approvals listed in **Table 6**.

Table 6: Approvals for Jandra Quarry Operations

Approval	Regulatory Authority
DA 213-10-99 (Modification No. 5)	NSW Department of Planning, Housing, and Infrastructure (DPHI)
EPL No. 2796	NSW Environmental Protection Authority (EPA)

Holcim holds EPL 2796 which covers its activities at Jandra Quarry. **Table 7** outlines the EPL licensing limits.

Table 7: EPL Fee-Based Activity at Jandra Quarry

Scheduled Activity	Fee Based Activity	Scale
Crushing, grinding or separating	Crushing, grinding or separating	> 100,000 – 500,000 T processed
Extractive activities	Land-based extractive activity	>100,000 – 500,000 T extracted, processed or stored
Resource recovery	Recovery of general waste	Any waste recovered
Waste storage	Waste storage – other types of waste	Any other types of waste stored

Schedule 2 Condition 8 of DA 213-10-99 outlines the approved extraction limit is 490,000 tonnes of quarry products from the site in any calendar year. An outline of 2024 production is outlined in **Section 4.4.**

4 Operations Summary

4.1 Exploration

No exploration activities were completed during the Annual Review period.

4.2 Land Preparation

No land clearing occurred during the Annual Review period.

4.3 Construction Activities

There was no construction undertaken during the Annual Review period.

4.4 Quarry Operations

Development activities undertaken at Jandra Quarry in 2024 included:

- Stripping of topsoil and overburden within the existing extraction limit boundary;
- Drill, blast, load and haul activities; and
- Crushing, screening and stockpiling of product.

Extraction and processing operations in 2024 were undertaken between 6am and 10pm, Monday to Friday and between 6am and 6pm on Saturdays.

Table 8 includes a summary of the operations undertaken during the reporting period against the development consent conditions regarding product transported from Jandra Quarry.

Table 8: Total Product Distributed

Material	Approved Limit	Product Distributed (T)					
		2020	2021	2022	2023	2024	2025 (forecast)
Product Extracted Total Schedule 2, Condition 8	490 000 T	323,930	328,114	465,466	461,521	417,269	453,061
Product Sales Total Schedule 2, Condition 9	475 000 T	403,317	310,759	325,414	412,909	380,550	446,042

Schedule 2 Condition 18 states that Holcim must provide production data to DPHI and include this data in the Annual Review. Note that Holcim submit this data on a financial year (July-June), therefore production data will not align completely with this report**. Table 9** details the extractive data for the 2023-2024 period.

Table 9: Extractive Data (2023-2024 reporting period)

Material	Material Type	Tonnes[1]
Construction Sand (Filling/Packing Sand)	Construction sand	0
Fill & Crusher Fines (under 5mm)	Construction sand	131,447
Other Unprocessed Materials	Virgin materials - Crushed coarse aggregates	10,479.5
Over 30mm-70mm (Railway Ballast)	Virgin materials - Crushed coarse aggregates	9495.5
Over 5mm-30mm Concrete Aggregates	Virgin materials - Crushed coarse aggregates	190,865
Over 75mm (Rock broken)	Virgin materials - Crushed coarse aggregates	5,782
Prepared Road Base & Sub-base & Drainage Filter	Virgin materials - Crushed coarse aggregates	95,416
Deduct from return		0
	Total	443,485

Note: [1] Values rounded.

Schedule 2 Condition 7 outlines the applicant shall not extract more than 16.5 million tonnes of quarry product under the Development Consent. From the start of 2015 to the end of 2024, the site has extracted approximately 2,574,082 tonnes which is well within the limits of the Development Consent. The cumulative production is shown in **Table 10**.

Table 10: Cumulative Production for Development Consent

Year	Extraction Tonnage
2015	232,028
2016	315,205
2017	335,705
2018	252,165
2019	323,930
2020	328,114
2021	325,414
2022	415, 433
2023	461,521
2024	443, 485
TOTAL	2,574,082

4.5 Next Reporting Period

Operational activities proposed to be carried out at Jandra Quarry in 2025, include:

- Stripping of topsoil and overburden within the existing extraction limit boundary;
- Drill, blast, load and haul activities;
- Crushing, screening and stockpiling of product;
- Establishment of mobile conveyors in the stockpile area; and
- Progressive maintenance of rehabilitation.

5 Actions Required from the Previous Annual Review

5.1 Actions from 2023 Annual Review

Jandra Quarry's 2023 Annual Review was submitted on 28 March 2024. On 11 April, DPHI confirmed that the Annual Review generally met the reporting requirements of the consent and the NSW Planning *Annual Review Guideline* (October 2015).

5.2 Actions from the 2023 Annual Review – Holcim Proposed Actions

Table 11 outlines an update on the proposed actions from the previous Annual Review.

Table 11: Proposed Actions from Holcim

Improvement Measure	Activities	Works Undertaken in 2024
Progressive Rehabilitation	The site will continue to progressively rehabilitate available areas.	Rehabilitation preparation and maintenance was undertaken in 2024 in accordance with the Biodiversity and Rehabilitation Management Plan. Refer to **Section 8** for more details.
Desilting of the sites main process pond/sediment Basin	The site will continue to manage sediment control structures through inspections and desilting ponds. Tailings dams will be cleaned on an appropriate schedule.	Ad hoc reviews of the adequacy of the water management structures and sediment control measures were completed in 2024.
Biodiversity	Weed spraying will continue at the site during the next reporting period. A Weed Action Plan will continue to be developed in 2024.	Weed spraying was conducted in 2024 in accordance with Section 3.3 of the Weed Management Plan.
Noise Monitoring	Jandra Quarry will liaise with EPA about removing or amending Noise Monitoring location R2 due to access issues.	Holcim liaised with the EPA about removing or amending noise monitoring point R2 in 2024. Holcim submitted an updated Noise and Blast Management Plan to the DPHI on 16 December 2024 for approval. Refer to **Section 6.2** for more details.

6 Environmental Performance

6.1 Meteorological Monitoring

Weather conditions for 2024 are summarised in **Table 12**.

Table 12: Meteorological Monitoring Results from 2024

Month	Total Rainfall (mm)	Minimum Temperature (°C)	Maximum Temperature (°C)
January	86	15	41
February	218	16	37
March	73	11	35
April	215	11	31
May	90	5	24
June	79	2	22
July	83	2	23
August	66	3	32
September	81	4	30
October	82	7	30
November	97	13	36
December	30	13	37
Annual TOTAL	1200		

Total annual rainfall during the 2024 reporting period was 1,200 millimetres (mm), an increase from 938.8 mm in 2023 but lower than the rainfall totals recorded in previous years. The elevated rainfall from 2020 to 2022 coincided with an active La Niña event along the east coast of NSW, contributing to above-average rainfall during that period.

6.2 Noise

6.2.1 Environmental Assessment Predications

The noise and blasting impact assessment in the Environmental Assessment (2014)[1] considered the potential impacts of the proposed modification on nearby sensitive residential receivers.

Noise levels (without asphalt production) below the early morning shoulder project criteria, are predicted at all private residential receiver locations and for all stages of the quarry life, provided that operations are restricted during this time including:

- No works in the approved overburden emplacement area;
- No works above RL50; and
- No operation of the mobile processing plant.

Noise levels (without asphalt production) above the day / evening criteria are predicted at three private residential receivers and range from a marginal 2 decibels A-weighted (dBA) to 5 dBA above the criteria. Holcim is confident that these noise levels will not be perceived as a nuisance and has negotiated agreements with the potentially affected property owners.

Predicted noise levels from the Environmental Assessment (2014) from asphalt production were up to 7 dBA above the criteria at one private residential receiver R1 during all periods and all stages of the quarry development, as this receiver has a line of sight to the asphalt plant. Holcim has a negotiated agreement with the property holder of R1. It is noted, asphalt campaigns at Jandra Quarry are sporadic, however when the asphalt plant does operate it can operate for 24 hours a day.

Table 13 details the noise modelling for stage 1 of the development plan as described in the Noise and Blasting Impact Assessment detailed within the Environmental Assessment (2014). All results have been below that modelled within the Environmental Assessment (2014).

Table 13: Stage 1 Assessment Without Asphalt Plant Operating

Receptor	Day / Evening (dBA L_{eq}) 7am to 10pm		Early morning shoulder (dBA L_{eq}) 6am to 7 am		
	Project Criteria	Predicted Level	Project Criteria	Predicted level	
		Neutral		Neutral	Worst Case
R1	41	41	40	41	46
R2	38	30	38	30	35
R3	51	<30	50	<30	30
R4	41	34	40	33	38
R5	41	40	40	38	43
R6	38	32	38	32	37

[1] Jandra Quarry, Intensification in Production Environmental Assessment, 22 July 2014, prepared by Element Environment for Holcim (Australia) Pty Ltd. Source: https://www.holcim.com.au/sites/australia/files/docs/au-abt-comm-jandra-environmentalassessment-mainreport.pdf[1]

Receptor	Day / Evening (dBA L_{eq}) 7am to 10pm		Early morning shoulder (dBA L_{eq}) 6am to 7 am		
	Project Criteria	Predicted Level	Project Criteria	Predicted level	
		Neutral		Neutral	Worst Case
R7	38	<30	38	<30	<30
R8 (Holcim)	41	33	40	32	36
R9 (Holcim)	41	38	40	36	40
R10 (Holcim)	38	44	38	43	47

6.2.2 Approved Criteria

Criteria for each of the receivers as outlined in Schedule 3 Condition 1 of the Development Consent for quarry operation only as well as combined quarry and asphalt production operations are provided in **Table 14** and **Table 15**.

Table 14: Noise Criteria - Quarrying Operations Only dB(A)

Location	6am-10pm ($LA_{eq(15min)}$)
R1[1]	46
R5	40
R2, R4, R6	36
R7	35

Table 15: Noise Criteria - Quarrying Activities & Asphalt Plant Production Combined dB(A)

Location	6am-10pm ($LA_{eq(15min)}$)	Night (10pm – 6am Monday to Saturday)	
		($LA_{eq(15min)}$)	($LA_{eq(1min)}$)
R1[1]	48	46	51
R5	41	39	51
R4	40	39	51
R2, R6	40	35	48
R7	36	35	48

Note: [1]Holcim have a negotiated agreement with the property owner of R1 which excludes this receptor from the approved noise criteria.

As per EPL 2796 and the approved Noise and Blast Management Plan, Jandra Quarry is required to conduct noise monitoring annually within the EPL reporting period (1 May to 30 April).

6.2.3 Key Environmental Performance

For the EPL reporting period of 1 May 2024 to 30 April 2025, attended noise monitoring was conducted by Ramboll Australia Pty Ltd (Ramboll) on 13 and 14 February 2025. Noise monitoring was undertaken at R4, R5, R6, and R7. Noise monitoring at location R2 could not be completed as approval to access could not be obtained from the resident. Holcim would like to note that the DPHI was previously made aware of

this issue and advised Jandra Quarry to revise the *Noise & Blast Management Plan* (NBMP) with an alternative monitoring location and submit for approval. Holcim submitted the revised NBMP to the DPHI in 2024.

The results of monitoring are contained below in **Table 16** and demonstrate compliance with relevant noise criteria. No audible noise from quarry operations was observed at any of the four locations during the morning shoulder and day periods. See **Appendix A** for the full Annual Noise Monitoring Report.

Table 16: Attended noise monitoring results for annual reporting period

Assessment Period	Receiver No.	EPA ID	Quarrying Noise Criteria LAeq(15min)	Jandra Quarry LAeq(15min) Contribution
Morning Shoulder	R2	EPA13	36	NA
	R4	EPA14	36	<33
	R5	EPA15	40	<31
	R6	EPA16	36	<31
	R7	EPA17	35	<28
Day	R2	EPA13	36	NA
	R4	EPA14	36	<34
	R5	EPA15	40	<32
	R6	EPA16	36	<31
	R7	EPA17	35	<26

Long-term Trends

The noise monitoring results for the EPL reporting period of 1 May 2024 to 30 April 2025 were consistent with previous noise monitoring results. All available noise results were compliant.

There were no noise complaints received in 2024.

Comparison to EA Predictions

Noise monitoring results generally remained consistent with EA predictions. The well-established vegetative buffer and distance between the operations and the sensitive receivers assists the Quarry in meeting these predictions.

6.2.4 Management Measures

Management measures relating to noise are outlined within the Jandra Quarry Noise and Blast Management Plan. These include:

- Defined operating hours as per Schedule 2 Condition 10 of the Development Consent;
- Work restrictions during the early morning shoulder period;
- Monitoring for noise and meteorological conditions;
- Broadband reversing beepers;
- Staff and contractors inductions; and

- Controlled blasting activities.

6.2.5 Proposed Improvements

Holcim is liaising with approval authorities regarding noise monitoring point R2 due to ongoing access issues.

Jandra Quarry will continue to implement and document corrective actions when exceedances or incidents are detected.

6.3 Air Quality

6.3.1 Environmental Assessment Predictions

Table 17 displays the modelled dust contributions expected from Jandra Quarry from the Air Quality Impact Assessment detailed within the Environmental Assessment (2014). The air quality impact assessment concluded that with the implementation of existing and additional feasible management measures, all relevant air quality criteria could be met at all identified sensitive residential receivers for all stages of the quarry development.

Table 17: Predicted Incremental & Cumulative Annual Average TSP Concentrations (µg/m3)

Receptor ID	Increment			Cumulative		
	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Privately Owned Receptors						
R1	2.5	2.6	2.8	48.5	48.6	48.8
R2	0.3	0.3	0.4	46.3	46.3	46.4
R3	0.8	0.7	0.6	46.8	46.7	46.6
R4	0.9	0.8	0.7	46.9	46.8	46.7
R5	0.6	0.5	0.5	46.6	46.5	46.5
R6	0.4	0.4	0.5	46.4	46.4	46.5
R7	0.1	0.1	0.2	46.1	46.1	46.2
R11	0.4	0.4	0.3	46.4	46.4	46.3
R12	0.3	0.3	0.3	46.3	46.3	46.3
R13	0.3	0.3	0.3	46.3	46.3	46.3
R14	0.3	0.3	0.3	46.3	46.3	46.3
R15	0.2	0.2	0.2	46.2	46.2	46.2
R16	0.3	0.2	0.2	46.3	46.2	46.2
R17	<0.1	<0.1	0.1	<46.1	<46.1	46.1
R18	<0.1	<0.1	<0.1	<46.1	<46.1	<46.1
R19	0.4	0.4	0.5	46.4	46.4	46.5

Receptor ID	Increment			Cumulative		
	Stage 1	Stage 2	Stage 3	Stage 1	Stage 2	Stage 3
Quarry Owned Receptors						
R8	1.3	1.1	1	47.3	47.1	47
R9	1.7	1.7	1.7	47.7	47.7	47.7
R10	1.5	1.5	4.6	47.5	47.5	50.6
Criteria					**90**	

6.3.2 Approved Criteria

Air quality monitoring is required to be undertaken in accordance with Schedule 3 Condition 10 of the Development Consent. These criteria are presented in **Table 18** and **Table 19**.

Table 18: Long-term impact assessment criteria for particulate matter

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

Notes: [a] Total impact (ie incremental increase in concentrations due to the development plus background concentrations due to all other sources);
[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.

Table 19: Short-term impact assessment criteria for particulate matter

Pollutant	Averaging Period	[d] Criterion
Particulate matter <10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Notes: [a] Total impact (ie incremental increase in concentrations due to the development plus background concentrations due to all other sources);
[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.

6.3.3 Key Environmental Performance

PM10 Monitoring

Monitoring for PM_{10} first commenced in May 2017 and has continued into the 2024 reporting period. Results are provided in **Table 20Error! Reference source not found.**. Throughout the 2024 reporting period, all samples were compliant against performance criteria this report period. There were no exceedances in the PM10 short-term criteria value of 50 micrograms per cubic meter (µg/m^3). The annual average for TSP was 17.91 µg/m^3 which is less than the criteria value of 90 µg/m^3.

Table 20: PM_{10} and TSP Monitoring – 2024

Sampling Date	PM_{10} (µg/m^3)	TSP (µg/m^3)	Compliance Status
6/1/2024	12.07	20.04	Within Criteria
12/1/2024	7.70	12.78	Within Criteria
18/1/2024	8.67	14.39	Within Criteria
24/1/2024	7.08	11.75	Within Criteria
30/1/2024	10.81	17.94	Within Criteria
5/2/2024	11.93	19.80	Within Criteria
11/2/2024	12.06	20.02	Within Criteria
17/2/2024	10.61	17.61	Within Criteria
23/2/2024	6.66	11.06	Within Criteria
29/2/2024	8.05	13.36	Within Criteria
6/3/2024	7.05	11.70	Within Criteria
12/3/2024	7.49	12.43	Within Criteria
18/3/2024	5.55	9.21	Within Criteria
24/3/2024	6.01	9.98	Within Criteria
30/3/2024	5.76	9.56	Within Criteria
5/4/2024	6.81	11.30	Within Criteria
11/4/2024	3.64	6.04	Within Criteria
17/4/2024	5.62	9.33	Within Criteria
23/4/2024	4.72	7.84	Within Criteria
29/4/2024	4.28	7.10	Within Criteria
5/5/2024	1.69	2.81	Within Criteria
11/5/2024	1.91	3.17	Within Criteria
17/5/2024	2.55	4.23	Within Criteria
23/5/2024	1.50	2.49	Within Criteria
29/5/2024	1.15	1.91	Within Criteria
4/6/2024	1.08	1.79	Within Criteria
10/6/2024	0.87	1.44	Within Criteria
16/6/2024	1.06	1.76	Within Criteria
22/6/2024	1.10	1.83	Within Criteria
28/6/2024	No data	No data	HiVol machine stopped transmitting data. Sensor found to be broken. Spare parts ordered with 2-month lead time.
4/7/2024	No data	No data	
10/7/2024	No data	No data	
16/7/2024	No data	No data	
22/7/2024	No data	No data	
28/7/2024	No data	No data	
3/8/2024	No data	No data	
9/8/2024	No data	No data	
15/8/2024	No data	No data	

Sampling Date	PM_{10} (µg/m^3)	TSP (µg/m^3)	Compliance Status
21/8/2024	No data	No data	
27/8/2024	No data	No data	
2/9/2024	No data	No data	
8/9/2024	No data	No data	
14/9/2024	13.42	22.28	Within Criteria
20/9/2024	10.17	16.88	Within Criteria
26/9/2024	13.64	22.64	Within Criteria
2/10/2024	21.98	36.49	Within Criteria
8/10/2024	19.16	31.81	Within Criteria
14/10/2024	15.93	26.44	Within Criteria
20/10/2024	20.13	33.42	Within Criteria
26/10/2024	17.88	29.68	Within Criteria
1/11/2024	15.27	25.35	Within Criteria
7/11/2024	25.75	42.75	Within Criteria
13/11/2024	23.97	39.79	Within Criteria
19/11/2024	39.77	66.02	Within Criteria
25/11/2024	15.67	26.01	Within Criteria
1/12/2024	20.63	34.25	Within Criteria
7/12/2024	16.54	27.46	Within Criteria
13/12/2024	17.65	29.30	Within Criteria
19/12/2024	17.78	29.51	Within Criteria
25/12/2024	13.30	22.08	Within Criteria
31/12/2024	13.63	22.63	Within Criteria
Annual Average	**10.79**	**17.91**	**Within Annual Average Criteria**

Due to equipment failure, there is a gap in monitoring data between 28 June 2024 and 13 September 2024. Once Holcim became aware that the data was offline (i.e.: was no longer transmitting to the cloud) immediate actions were taken to resolve it with the supplier. It was understood by Ramboll that the fault was a transmitting sensor and that once repaired the data would be restored. On 13 September 2024 the supplier recommissioned the monitoring equipment and at that time informed Holcim that the data from the breakdown period was irretrievable. On 19 September 2024 (within 7 days of becoming aware of the data loss) this event was reported to the DPHI as an incident and following a brief investigation the issue was closed on 28 September 2024 with DPHI with no further action.

Long-term Trends

Table 21 compares PM_{10} results for the last 5 years, which were all within the impact assessment criteria. 2024 marked the first year since 2019 that average PM_{10} levels showed an increase. The 2024 TSP average was slightly higher compared to 2023 but average results continue to reflect a longer-term downward trend since 2019.

Table 21: PM_{10} Monitoring Trends

Monitoring Summary for Annual Review Period	2019	2020	2021	2022	2023	2024
PM_{10} Average (µg/m^3)	20	17.3	14.4	12.04	8.41	10.79
Max. PM_{10} (µg/m^3)	94	102.0	39.3	26.4	26.50	39.77
Min. PM_{10} (µg/m^3)	0.1	5.9	2.9	3.27	0.07	0.87

Comparison to EA Predictions:

The results for PM_{10} and TSP were within the predicted limits of the EA predictions.

6.3.4 Management Measures

Dust minimisation and control measures implemented on site include:

- The use of a watercart that follows specified procedures to achieve the most optimal dust control measures;
- The use of installed sprinkler systems along primary haul road;
- Sprays throughout the plant;
- Speed limits across the site;
- Dust covers in place across the screening building;
- Daily inspections;
- Monitoring for air quality and meteorological conditions; and
- Training of staff and contractors.

6.3.5 Proposed Improvements

Holcim will continue to implement and document corrective actions when exceedances or incidents are detected.

6.4 Blasting

6.4.1 Environmental Assessment Predictions

The Noise and Blasting Impact Assessment (SLR, 2014) identified the Maximum Instantaneous Charge (MIC) for the ANZECC Guidelines for human comfort to be met, at the closest private (non-Holcim owned) residences, during all stages of the quarry development.

The design of blasts will then be optimized to limit the possibility of EPA criteria exceedances, when blast locations are closer to residences and preferred blast designs can be used for blast locations with adequate distances to residences.

6.4.2 Approved Criteria

Blasting criteria shown in **Table 22** is taken from Schedule 3 Condition 5 of the Development Consent. Due to restricted access to monitoring location R2, Holcim has submitted an updated version of the Jandra Quarry Noise and Blast Management Plan to DPHI. The revised plan includes a new monitoring location, determined through a review by Ramboll.

Table 22: Blasting Criteria for Jandra Quarry

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

6.4.3 Key Environmental Performance

Results of blast monitoring undertaken in 2024 are shown in **Table 23**. Due to access being prevented to location R2, blast monitoring was undertaken on the boundary of this location.

Table 23: Blast Monitoring Results for Jandra Quarry

Blast Number	Date	Boundary of Location R2		Location R4	
		Vibration (mm/s)	Overpressure (dBL)	Vibration (mm/s)	Overpressure (dBL)
1	26/03/2024	1.3	84.0	0.2	107.4
2	19/04/2024	1.4	100.1	0.2	105.2
3	08/05/2024	0.8	102.2	0.2	112.8

Blast Number	Date	Boundary of Location R2		Location R4	
		Vibration (mm/s)	Overpressure (dBL)	Vibration (mm/s)	Overpressure (dBL)
4	05/07/2024	1.1	104.2	0.1	109.5
5	30/08/2024	DNT	DNT	1.8	100.8
6	19/09/2024	1.3	100.9	DNT	DNT
7	16/10/2024	1.9	99.7	1.05	87.9

Notes: DNT – Did Not Trigger.

There was a total of 7 blasts recorded in 2024. No exceedances were identified.

Sensitive receivers near the quarry are notified prior to blasting as per the Jandra Quarry Noise and Blast Management Plan. This process is managed by the weighbridge staff who send a text message to the tenants the day before a blast is planned.

Long-term Trends

Blast data from 2015 till 2024 is displayed in **Table 24**.

Table 24 Long Term Blasting Trends

Year	Number of Blasts	Max. Overpressure (dBL)	Average Overpressure (dBL)	Max Vibration (mm/s)	Average Vibration (mm/s)
2015	10	114.9	109.8	2.48	1.58
2016	9	116	107.8	1.3	0.84
2017	16	113.2	105.7	3.1	1.02
2018	11	111.0	99.8	1.52	0.85
2019	10	109.9	86.2	4.3	1.3
2020	11	111.9	104.5	2.4	1.5
2021	13	109.1	105.7	1.4	0.7
2022	14	119.1	102.21	2.4	0.91
2023	16	115.4	103.3	1.65*	1.15
2024	7	112.8	101.2	1.9	0.95

Note – Blast on 28 April 2023 has been excluded from long term trends.

Comparison to EA Predictions

The results for vibration and overpressure were within the predicted limits of the EA predictions.

6.4.4 Management Measures

Management measures relating to blasting are outlined within the Jandra Quarry Noise and Blast Management Plan, which includes a Drill and Blast Procedure. This procedure outlines the key steps of the blasting process including design, drilling, loading, and firing.

6.4.5 Proposed Improvement

The Jandra Quarry Noise and Blast Management Plan was amended in 2024 to relocate blast monitoring location R2. The Noise and Blast Management Plan is currently under assessment with the DPHI.

6.5 Traffic Management

6.5.1 Environmental Assessment Predictions

Section 3.5.6 of the Environmental Assessment (2014) stated that at peak demand, the maximum number of heavy vehicles leaving the site to deliver product to customers would reach approximately 12 (24 truck movements) per hour. This has been calculated based on a minimum loading time of approximately 5 minutes per truck. It is unlikely that, on a typical day, these peaks in demand will occur for more than a few hours at a time. A detailed assessment of traffic and transport is outlined within Section 6.2 of the Environmental Assessment (2014).

6.5.2 Approved Criteria

The site is required to operate traffic and manage transport through compliance with the requirements of the conditions listed below:

Pacific Highway Intersection

31. The Applicant shall maintain the intersection of the Pacific Highway and the Jandra Quarry Access Road, for the duration of product transport from the site, to the satisfaction of the RMS.

32. The Applicant shall install and subsequently maintain street lighting at the intersection of the Pacific Highway and the Jandra Quarry Access Road, to the satisfaction of the RMS, prior to transporting quarry products from the site outside of the hours 7 am to 6 pm. Any works affecting the Pacific Highway must not take place without the prior approval of the RMS.

Monitoring of Product Transport

33. The Applicant shall keep accurate records of:
    (a) the amount of quarry products, including asphalt, transported from the site (calendar month and year);
    (b) the number of laden vehicle movements to and from the site (day, calendar month and year); and
    (c) publish these records on its website at the end of each calendar quarter.

6.5.3 Key Environmental Performance

The site has maintained the intersection at the Pacific Highway and Quarry Access Road in accordance with the conditions in the Development Consent. No impacts to the intersection have been identified during the reporting period.

All truck movements and quarry product volumes are published on the Holcim (Jandra Quarry) webpage in accordance with Schedule 3, Condition 33 of the Development Consent. A summary of transport data for 2024 is appended to this Annual Review as **Appendix B**.

In summary:

- There were 13,105 truck movements; and
- There were 380,550 tonnes of material taken offsite as a product.

Truck movements and materials taken offsite have decreased again in 2024 compared to 2023 and 2022.

6.5.4 Management Measures

Management measures relating to traffic include:

- Defined haulage times.
- Covered loads leaving site.
- Defined haulage limits; and
- Trained transport operators.

6.5.5 Proposed Improvements

Truck movements will continue to be monitored and recorded in the oncoming reporting period to ensure that they remain within the approved criteria.

There are no proposed improvements relating to traffic management for 2025.

6.6 Biodiversity

6.6.1 Environmental Assessment Predictions

The Environmental Assessment (2014) assessed the biodiversity impacts associated with clearing an additional 1.284 hectares of native vegetation. The Flora and Fauna Assessment accompanying the EA stated: “With the implementation of flora and fauna management measures included in the Flora and Fauna Management Plan and this Environmental Assessment (2014), (depending on the outcome of the targeted surveys for the Eastern Underground Orchid) the proposed modification would not result in any significant impacts on biodiversity on site and in surrounding bushland”.

6.6.2 Approved Criteria

There are no specific criteria relating to biodiversity within the Development Consent. Schedule 3 Condition 25 outlines the requirement to complete a Biodiversity and Rehabilitation Management Plan (BRMP). Jandra Quarry completes weed management as per the Weed Management Plan.

6.6.3 Key Environmental Performance

Weed control was completed routinely in 2024, and spraying targeted Lantana (*Lantana sp*.) and Tobacco weed (*Solanum mauritianum*).

No feral animals were noted during this reporting period, with minimal issues reported in the past. However, fox scat was identified in quarter one and two monitoring near the Settlement Dam. Feral animal control programs are implemented on an as-needs basis due to the infrequent sightings and issues.

Biodiversity monitoring was conducted quarterly in 2024 to meet requirements of the approved BRMP (2018). The inspections assessed parameters including but not limited to stability and condition of soil, success of nest boxes, and presence of weeds. The quarterly monitoring was undertaken on the following dates:

- 26 March 2024
- 25 June 2024
- 1 October 2024
- 5 December 2024.

The quarterly biodiversity monitoring reports by Kleinfelder are attached to this Annual Review in **Appendix C**. The main findings of monitoring include:

- The upper benches have been previously revegetated with tubestock and *Eucalyptus spp*. which are now several metres in height. These upper benches have been more successful compared to natural regeneration areas in terms of exotic species cover (mainly Lantana).
- While much of the rehabilitated areas are dominated by exotic species, there appears to be soil stability with minimal areas of erosion.

- No areas of poor water quality, or dieback of vegetation from surface water runoff, were observed. The Settlement Dam had no algal cover and was vegetated with native aquatic vegetation along its margins.
- Bushfires in late 2019 and early 2020 significantly affected the quarry and surrounding areas. Post-fire regeneration of native shrubs and groundcover species was mostly evident along the top of the active pit area.
- Topsoil stockpiles have seen exotic vegetation growth. Long lead-in times for rehabilitation of benches in hard-rock quarries requires consistent maintenance of topsoil stockpiles.

Monitoring of the Biodiversity Offset Area (BOA) was conducted by Kleinfelder on 5–7 November 2024. The BOA and adjoining bushland within the Jandra Quarry buffer zone provide important habitat for fauna, supporting foraging, roosting, and nesting activities. The BOA monitoring findings in 2024 included:

- Microbats, particularly the Vulnerable *Miniopterus australis* (Little Bent-wing Bat), were observed in abundance, suggesting nearby roosting habitat. *Pteropus poliocephalus* (Grey-headed Flying Fox) was recorded foraging each night on flowering *Eucalyptus siderophloia* (Grey Ironbark).
- Amphibians were also well represented, utilising the BOA and nearby small dams.
- When assessing the success of nest boxes, new nest boxes showed signs of use by birds and gliders, while older nest boxes were in disrepair, with some displaced but still salvageable for potential reattachment.
- Repairs are needed along the north-eastern boundary fence, where fallen trees from the 2019 fire have caused damage.

Comparison to EA Predictions

There were limited impacts to biodiversity within the Annual Review period. This is consistent with the EA predictions.

6.6.4 Management Measures

Management measures relating to biodiversity are outlined within the Jandra Quarry BRMP. These include:

- Weed and feral animal management;
- Pre-clearance surveys and tree felling procedures;
- Salvaging habitat resources;
- Nest box installation;
- Erosion and sedimentation control;
- Bushfire management; and
- Rehabilitation and biodiversity offset area monitoring.

6.6.5 Proposed Improvements

Holcim will continue to execute management measures and monitoring as per the approved plans.

6.7 Heritage

6.7.1 Environmental Assessment Predictions

An extensive AHIMS search was conducted on 5 February 2014 for the purposes of an Aboriginal Heritage Due Diligence Assessment for the Environmental Assessment (2014). The search covered an area of approximately 10 square kilometers, which encompassed the disturbance area of the new heavy vehicle access road and expansion of the existing finished product stockpile area. Seven recorded sites are within the Jandra Quarry Development Consent boundary. All seven of these sites were determined to be of low or medium significance. No Aboriginal archaeological sites registered on AHIMS are located within the disturbance area of the new heavy vehicle access road and expansion of the existing finished product stockpile area. There are no predicted detrimental impacts to Aboriginal and cultural heritage.

6.7.2 Approved Criteria

There are no specific criteria relating to Aboriginal and Cultural Heritage within the Development Consent. Jandra Quarry has an Aboriginal Cultural Heritage Management Plan in accordance with Schedule 3 Condition 29.

6.7.3 Key Environmental Performance

There were no issues relating to Aboriginal and Cultural Heritage in 2024. No clearing activities were completed in 2024.

6.7.4 Management Measures

Management measures relating to heritage are outlined within the Jandra Quarry Aboriginal Cultural Heritage Management Plan. These include:

- Consultation with Aboriginal stakeholders during the preparation of the Jandra Quarry Aboriginal Cultural Heritage Management Plan*;*
- Records of known sites of Aboriginal heritage significance;
- The Quarry Manager or delegate will undertake monthly inspections of the known Aboriginal and cultural heritage sites;
- Training of staff and contractors; and
- Procedure for impacts of unexpected finds.

6.7.5 Proposed Improvements

No further improvements are proposed for 2025.

6.8 Waste Minimisation

6.8.1 Key Environmental Performance

Waste management at Jandra Quarry continued in 2024 with this including recycling and general waste. A summary of the waste generated by Jandra Quarry is shown in **Table 25**. These volumes are an approximate value based on the number of times the contractor collects waste from the site and the volume of the waste containers. Waste is routinely collected and is managed as part of Jandra Quarry's Environmental Management Strategy, as discussed in the following section.

Table 25: Waste Summary

Waste Source	2022	2023	2024
Scrap Steel (kg)	11,402	26,680	12, 420
General Waste – Rubbish (kg)	12,471	12,471	12, 471
General Waste – Cardboard (kg)	9,977	9,977	9, 977
Industrial Waste (kg)	3,200	3,200	3, 200
Waste Oil (L)	8,000	8,000	5 ,650
Septic (L)	-	7,000	2, 500
Oily Water (L)	-	8,900	0

The results show that waste generated by the site in 2024 is generally consistent with the previous 2023 and 2022 reporting period.

6.8.2 Management Measures

Wherever possible, Jandra Quarry implements initiatives to minimise the waste generated from operations. General waste is minimised, and all oil, cardboard, paper and steel are sorted on site and sent to recycling facilities in the region. This significantly reduces the amount of waste going to landfill.

Tyres from machinery are used for traffic management, garden edging and signage stabilisers. This reduces the use of raw materials as well as diverting rubber from landfill.

General waste and recycling are separated into different streams and stored in separate 3 cubic metres (m^3) bins. These bins are collected fortnightly.

6.8.3 Proposed Improvements

There are no proposed improvements to waste management for 2025, however Jandra Quarry will continue to look for opportunities to reduce waste where possible.

7 Water Management

7.1 Environmental Assessment Predictions

The predictive modelling within the Environmental Assessment (July 2014) pertains to the water balance for Jandra Quarry (refer to **Table 26**). The Environmental Assessment (2014) stated "with the implementation of surface water management measures included in the Soil and Water Management Plan, the EPL and this EA, the proposed modification would not result in any significant impacts on the downstream environments."

Table 26: Water Balance Results for Varying Stages of Quarry Development

	Current			Stage 1		
Summary Results	**Dry Year**	**Mean Year**	**Wet Year**	**Dry Year**	**Mean Year**	**Wet Year**
Total Runoff (ML/yr)	35	98	165	34	97	164
Total Demands (ML/yr)[1]	25.60	24.88	24.11	36.60	35.64	34.63
Stormwater Supplied (ML/yr)[2]	25.46	24.88	24.11	32.13	35.45	34.63
Total Storage Top Up (ML/yr)	0.13	0.00	0.00	4.46	0.19	0.00
% Demand Met	99%	100%	100%	88%	99%	100%
Spill Volume (ML/yr)	4	68	131	3	57	112

	Stage 2			Stage 3		
Summary Results	**Dry Year**	**Mean Year**	**Wet Year**	**Dry Year**	**Mean Year**	**Wet Year**
Total Runoff (ML/yr)	39	110	186	45	129	219
Total Demands (ML/yr)	36.42	35.47	34.46	34.60	33.74	32.82
Stormwater Supplied (ML/yr)	32.32	35.34	34.46	31.85	33.74	32.82
Total Storage Top Up (ML/yr)	4.09	0.13	0.00	2.75	0.00	0.00
% Demand Met	89%	100%	100%	92%	100%	100%
Spill Volume (ML/yr)	4	70	139	9	90	174

7.2 Approved Criteria

The site is required to monitor and record discharge events from the Main Dam off site in accordance with the requirements listed in **Table 27** from the EPL.

Table 27: EPL Discharge Monitoring Requirements

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge quality monitoring	Discharge quality monitoring	Discharge from final sediment dam as shown in the CSR Readymix Site Photo - Jandra Quarry Water Monitoring Location Figure 1 provided to the EPA 13 May 2002

7.3 Surface Water Results

Two discharges from Point 1 occurred in 2024, in September and October. Monitoring data from daily sampling is provided in **Table 28**. There were no exceedances in pH or TSS during these discharges.

Table 28: Surface Water Discharge monitoring

Sample Date	pH	Total Suspended Solids (mg/L)
23-Sep-24	8.15	0.1
23-Sep-24	7.8	0.1
24-Sep-24	7.9	5.6
24-Sep-24	8.11	1
25-Sep-24	8.27	0
25-Sep-24	8.14	0
26-Sep-24	8.1	0.9
26-Sep-24	8.03	0
27-Sep-24	8.42	1.3
27-Sep-24	8.33	3.3
30-Sep-24	8.12	6.5
30-Sep-24	8.45	9.4
1-Oct-24	8.32	7.3
2-Oct-24	8.41	5.9
2-Oct-24	8.46	7.3
3-Oct-24	8.37	2.8

Sample Date	pH	Total Suspended Solids (mg/L)
3-Oct-24	8.45	5.9
4-Oct-24	8.43	3.7
4-Oct-24	8.43	4.1
8-Oct-24	8.34	5.1
9-Oct-24	8.43	3.1
9-Oct-24	8.45	4.5
10-Oct-24	8.5	14
10-Oct-24	8.32	13
11-Oct-24	8.34	33
11-Oct-24	8.27	33
14-Oct-24	8.44	41
Minimum	**7.8**	**0**
Maximum	**8.5**	**41**
Average	**8.29**	**7.85**

The two discharges that occurred in 2024 were within the concentration limits specified in the EPL. Jandra Quarry has implemented a system at the site where samples are collected before a discharge event. This system aims to contain water onsite if the water quality parameters do not meet the EPL requirements.

Comparison to EA Predictions

The Environmental Assessment (2014) stated the increase in scale of the operations would not result in any significant impacts on the downstream environments. Jandra Quarry is operating in accordance with the SWMP, and the two discharge events that occurred during the Annual Review period were within the monitoring criteria. Therefore, Holcim considers EA predictions have been met.

7.4 Groundwater Results

Jandra Quarry is unlikely to experience groundwater inflow and highly unlikely to impact groundwater (Soil and Water Management Plan, 2015). No groundwater monitoring program was implemented at Jandra during the Annual Review period.

7.4.1 Water Take

There are no groundwater extraction licenses for Jandra Quarry. There was no water take in 2024.

7.5 Water Use and Storage

Effective control of erosion and sediment movement at the site is currently achieved via the following measures:

- Sedimentation basins;
- Wash off water collection and primary treatment systems;

- Minimisation of disturbed areas;
- Diversion of clean water from undisturbed areas around working areas;
- Temporary erosion and sediment controls prior to commencement of topsoil and overburden removal;
- Sequential clearing and rehabilitation of the quarry as extraction of material proceeds; and
- Twice yearly maintenance of erosion and sediment control structures to ensure their efficiency.

8 Rehabilitation

8.1 Rehabilitation Performance

Holcim performed management measures outlined in the Biodiversity and Rehabilitation Management Plan in this report period in order to fully comply with Schedule 3 Condition 27 of the Development Consent.

The Rehabilitation and Conservation Bond value was established in consultation with external advisors and DPHI as per the requirements of Schedule 3 Condition 27. Instruments regarding the security of the Biodiversity Offset Area were closed out in discussion with authorities and established in 2020.

A summary of rehabilitation at Jandra Quarry is outlined in **Table 29**.

Table 29: Rehabilitation Performance

Guideline Requirement	Site Comment
Extent of the operations and rehabilitation at completion of the reporting period	The upper benches have been previously revegetated with tubestock and *Eucalyptus spp.* which are now several metres in height. The lower benches have been left to revegetate naturally due to safety issues.
Agreed post-rehabilitation land use	The Biodiversity and Rehabilitation Management Plan outlines the proposed rehabilitation at the site. The proposed final land use is native woodland.
Key rehabilitation performance indicators	Key performance indicators are outlined within the Biodiversity and Rehabilitation Management Plan. Rehabilitation inspections are completed by Holcim. Results of biodiversity monitoring and inspections by contractors enhance data collection on performance indicators.
Renovation or removal of buildings	There was no renovation or removal of buildings in 2024.
Any other Rehabilitation including: • Exploration activities; • Infrastructure; • Dams; and • The installation or maintenance of fences, bunds and any other works.	No additional new rehabilitation of exploration, infrastructure or dams was undertaken during the Annual Review period.
Any rehabilitation areas which have received formal sign off from the Resources Regulator	None.

Guideline Requirement	Site Comment
Variations to activities undertaken to those proposed (including why there were variations and whether Resource Regulator was notified).	No rehabilitation was completed in 2024.
Outcomes of trials, research projects and other initiatives	No trials.
Key issues that may affect successful rehabilitation	Several issues have the potential to affect rehabilitation. Some of these are availability of material, seed stock, climatic events and rehabilitation methodology. A major bushfire event occurred in 2019 which resulted in all rehabilitation areas being burnt. Assessment of the recovery of these areas has been undertaken through quarterly biodiversity inspections. A Weed Management Plan is in place at Jandra Quarry to manage exotic species at the site.

8.2 Summary of Current Rehabilitation and Disturbance

A summary of the rehabilitation and disturbance status is outlined in **Table 30**.

Table 30: Rehabilitation and Disturbance Status

Quarry Area Type	2019 (ha)	2020 (ha)*	2021 (ha)*	2022 (ha)*	2023 (ha)*	2024 (ha)	2025 (Predicted)
A. Total Quarry Footprint[1]	25.7	25.1	25.1	25.1	25.1	25.1	25.1
B. Total Active Disturbance[2]	22.9	19.2	17.7	19.5	19.7	19.7	19.7
C. Land Being Prepared for Rehabilitation[3]	0	0	0	0	0	0	0
D. Land Under Active Rehabilitation[4]	2.8	5.9	7.4	7.55	7.55	7.55	7.55
E. Completed Rehabilitation[5]	0	0	0	0	0	0	0

Note: *areas updated based on a review of GIS.

[1] *Total disturbance and rehabilitation.*

[2] *Total disturbance within the Development Consent boundary*

[3] *Rehabilitation being shaped in a phase of decommissioning, landform establishment and growth medium development.*

[4] *Rehabilitation under a phase of ecosystem and land use establishment or ecosystem and land use sustainability*

[5] *This refers to rehabilitation that has been signed off from the Resources Regulator.*

Actions for the Next Reporting Period

The DPHI 2015 Annual Review Guidelines require the Annual Review to outline the rehabilitation actions proposed during the next reporting period. These actions are detailed in **Table 31**.

Table 31: Rehabilitation and Closure Actions for the Next Reporting Period

Requirement	Site Comment
Describe the steps to be undertaken to progress agreement during next reporting period, where final rehabilitation outcomes have not yet been agreed between stakeholders	Rehabilitation to continue as per the Biodiversity and Rehabilitation Management Plan.
Outline proposed rehabilitation trials, research projects and other initiatives to be undertaken during next reporting period	No proposed rehabilitation trials. It should be noted Holcim is investigating the use of drones on short benches which are difficult to access.
Summary of rehabilitation activities proposed for next report period	Maintenance of rehabilitation on bench RL50 will continue. Rehabilitation preparation will continue on the eastern side of this area in 2024 (see **Figure 3**). Jandra Quarry is considering laying topsoil down on some benches, however the scoping of this project has not yet been completed.

The current rehabilitation and disturbance areas at Jandra Quarry are outlined in **Figure 3**.

Figure 3: Jandra Quarry Rehabilitation and Disturbance

9 Summary of Environmental Performance

A summary of the performance of environmental management measures and sampling results are detailed in **Table 32**.

Table 32: Summary of Environmental Performance

Aspect	Approval Criteria/EA Prediction	Performance During the Reporting Period	Trend/Key Management Implications	Implemented / Proposed Management Actions
Noise	Majority of EA predictions are below development consent criteria.	Noise monitoring results for the most recent period were within criteria.	Noise monitoring results continue to be within criteria and consistent with EIS predictions.	Holcim updated and submitted the Noise and Blast Management Plan to DPHI in 2024 with new proposed monitoring locations
Air Quality	EA predictions are all below development consent criteria.	Throughout the 2024 reporting period, all samples were compliant against performance criteria this report period. There were no exceedances in the short-term criteria value of 50 µg/m^3. Due to equipment failure, there is a gap in monitoring data between 28 June 2024 and 13 September 2024	PM10 and TSP results were consistent with previous Annual Review findings. In 2024, continuous monitoring demonstrated compliance with approval criteria, except during periods of equipment failure.	Holcim will continue to monitor Air Quality as per the AQMP.
Blasting	EA predictions are all below development consent criteria.	Blasts in 2024 were within the Development Consent criteria.	Blast results continue to remain within approved criteria and EIS predictions.	Noise and Blast Management Plan updated in 2024 to reflect new monitoring location for R2. Holcim will continue to implement management measures outlined in the Noise and Blast Management Plan.

Aspect	Approval Criteria/EA Prediction	Performance During the Reporting Period	Trend/Key Management Implications	Implemented / Proposed Management Actions
Water Management	EA predictions are all below development consent criteria.	Discharges in 2024 were monitored and were within approval criteria.	2024 was the first year where discharges occurred since 2019.	Continue to monitor as per the SWMP.
Biodiversity	2014 EA Mod – The proposed modification would not result in any significant impacts on biodiversity on site and in surrounding bushland.	Biodiversity and rehabilitation monitoring was undertaken in 2014. No clearing was undertaken in 2024.	Biodiversity and rehabilitation monitoring continued as per the BRMP.	Continue to monitor as per the BRMP and manage weeds in accordance with the Weed Management Plan.
Heritage	No predictions.	No impacts.	Continued to be no impacts.	None required.

10 Community

10.1 Community Engagement Activities

Holcim has maintained community engagement measures during the reporting period by undertaking the following activities in accordance with Schedule 5, Condition 7 and 10 of the Development Consent:

- Maintenance of a website (containing publicly available documents);
- A telephone number, email and postal address (on the website) for community complaints and feedback;
- A copy of the Complaints Register is maintained on the company website; and
- All documents and items displayed on the website are regularly updated by Holcim staff.

10.2 Community Contributions

There were no community contributions during the 2024 reporting period.

10.3 Complaints

A review of the Holcim Safety, Health & Environment reporting database did not identify any complaints from external stakeholders during the 2024 reporting period. This was also the case in 2020, 2022, and 2023. The quarterly reports for the complaints register are available to the public on the Jandra Quarry webpage. Information about contacting the site or to make a complaint is also available on this webpage. The link to this webpage is: http://www.holcim.com.au/about-us/community-link/jandra-quarry-possum-brush-taree-nsw.html

11 Independent Environmental Audit

In July 2022, Jandra Quarry engaged NGH Pty Ltd to complete an Independent Environmental Audit (IEA) in accordance with the requirements of the Development Consent.

Therefore, the next IEA is due in the next reporting period, 2025.

12 Incidents and Non-Compliances

Table 33 summarises the incidents and non-compliances at Jandra Quarry in 2024.

Table 33: Summary of Incidents and Non-Compliances

Date	Incident/Non-Compliance	Action/Comment
28 June 2024 – 13 September 2024	Non-Compliance	**Schedule 3 Condition 14 of the Development Consent - Air Quality Management Pan** No PM_{10} or TSP monitoring was conducted for 11 weeks due to equipment failure. When data transmission stopped, an investigation revealed a faulty sensor. Replacement parts had a lead time of two months, resulting in a disruption in monitoring data.

13 Activities to be Completed in the Next Reporting Period

Holcim staff will undertake the following works and improvement measures and projects in 2024 to ensure that effective environmental management controls are operating in accordance with the requirements of the consent. Proposed improvements for 2025 are summarized in **Table 34**.

Table 34: Proposed Improvement Measures 2025

Improvement Measure	Activities
Management Plan Review	All environmental management plans will be reviewed in 2025 to determine the need for updates in accordance with the DA conditions.
Progressive Rehabilitation	The site will continue to progressively rehabilitate available areas.
Noise and Blasting	Pending approval of the updated Noise and Blast Management Plan, Jandra Quarry will relocate location R2 due to access issues. Noise and blast monitoring will continue in 2025.

Appendix A – 2025 Annual Noise Monitoring Report

Intended for
Holcim (Australia) Pty Ltd

Document type
Report

Date
March 2025

Jandra Quarry Annual Noise Monitoring Assessment

2025

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Jandra Quarry Annual Noise Monitoring Assessment
2025

Project name	**NSW Environmental Monitoring 2024-2025**
Project no.	**318001800**
Recipient	**David Saville, Peter Wilson**
Document type	**Report**
Version	**1**
Date	**20/03/2025**
Prepared by	**Jake Bourke**
Checked by	**Arnold Cho**
Approved by	**Gavan Butterfield**
Description	**Data collected on 13 and 14 February 2025 for the annual noise monitoring program at Jandra Quarry, Possum Brush, NSW**

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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.
IEC	International Electrotechnical Commission
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

	Description
NPfI	Noise Policy for Industry 2017
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

Ramboll Australia Pty Ltd (Ramboll) has been commissioned by Holcim (Australia) Pty Ltd (Holcim) to complete a Noise Monitoring Assessment (NMA) for Jandra Quarry ("the quarry") at Possum Brush, NSW. This NMA is part of the annual monitoring requirement set out in the Development Consent and the NBMP for the monitoring period 1 May 2024 to 30 April 2025.

This NMA was done in accordance with the following documents:

- Noise Policy for Industry (NPfI) (NSW EPA, 2017);
- Environment Protection Licence (EPL) 2796 (NSW EPA, 2021);
- Jandra Quarry Noise and Blast Management Plan (NBMP) (Holcim Australia, 2018);
- Development Consent DA 213-10-99, Notice of Modification 2015 (Delegate of the Minister for Planning and Environment, 2015); and
- Australian Standard AS 1055:2018 Acoustics—Description and measurement of environmental noise (Standards Australia, 2018).

1.1 Site Location and Sensitive Receptors

The quarry is located on the Pacific Highway at Possum Brush, approximately 17 km south of Taree, on the mid north coast of NSW. Receivers in the locality surrounding the quarry are primarily rural/residential. The Pacific Highway is situated to the west of the site, with highway traffic a dominant noise source at receivers within its proximity. To the east, the quarry is bounded by rural properties with road noise from The Lakes Way dominating the acoustic environment. The monitoring locations with respect to the quarry and assessed receivers are presented in **Figure 1**.

Imagery@ESRI World Imagery

RAMBOLL AUSTRALIA - GIS MAP file - 318000911_GIS_P006_NoiseMonitoring | F004 NoiseMonitoring_Jandra_V02 | 14/02/2025

Legend

- Noise monitoring location
- Residence (privately owned)
- Residence (Holcim owned)

Figure 1 : Noise monitoring locations at Jandra Quarry

2. Noise Criteria

The applicable noise criteria for this NMA according to the EPL, the NBMP and the Development Consent are shown in **Table 2-1** for both quarry operations only, and **Table** 2-2 for quarry operations and asphalt production combined. It is noted that asphalt campaigns at Jandra Quarry are sporadic, however when the asphalt plant does operate it can operate for 24 hours a day.

M8.1 of EPL 2796 requires:

"*to assess compliance with the noise limits of this licence, attend noise monitoring must be undertaken:*

a) during a period of normal quarry operations.
b) at each one of the noise monitoring locations listed in the noise limits table of this licence.
c) occur once annually in the reporting period.
d) *occur during the night period as defined in the NSW Industrial Noise Policy, and in conjunction with an asphalt campaign if any such campaign occurs within the quarterly monitoring period."*

Table 2-1: Quarry operations noise criteria

Location	EPA ID	Quarry Operations
		Shoulder[1], Day[2] and Evening[3]
		LAeq (15min)
		dB(A)
R4	14	36
R5	15	40
R6	16	36
R7	17	35

[1] 6 am–7 am Monday to Saturday
[2] 7 am–6 pm Monday to Saturday
[3] 6 pm–10 pm Monday to Saturday

Table 2-2: Quarry operations and asphalt plant production noise criteria

Location	EPA ID	Quarry Operations and Asphalt Plant Production		
		Shoulder[1], Day[2] and Evening[3]	Night[4]	
		LAeq (15min)	LAeq (15min)	LA1 (1min)
		dB(A)		
R4	14	40	39	51
R5	15	41	39	51
R6	16	40	35	48
R7	17	36	35	48

[1] 6 am–7 am Monday to Saturday
[2] 7 am–6 pm Monday to Saturday
[3] 6 pm–10 pm Monday to Saturday
[4] 10 pm–6 am Monday to Saturday

3. Methodology

The monitoring program was developed in accordance with the procedures described in *Australian Standard AS 1055:2018* (Standards Australia, 2018) and the Approval Documents referenced in **Section 1**. The measurements were completed using a RION Sound Level Meter NL-52 on Thursday 13 and Friday 14 February 2025. The acoustic instrumentation used carries current National Association of Testing Authorities (NATA) calibration and complies with *AS/NZS IEC 61672-1:2019 Class 1* (Standards Australia and Standards New Zealand, 2019). Calibration of all instrumentation was checked prior to and following measurements using a Pulsar Acoustic Calibrator 105 which also carried a current NATA calibration and complies with IEC 60942:2017 (IEC, 2017). Drift in calibration did not exceed ±0.3 dBA.

Attended noise monitoring was conducted for 15-minutes in duration during the morning shoulder and day periods over two days. The operator also observed and recorded the audible contributing noise sources for the duration of the 15-minute monitoring periods. Attended noise monitoring was not conducted during the evening period as the quarry was not operational. Attended noise monitoring was also not conducted during the night period as no asphalt campaigns were conducted by the quarry during this period. Where Jandra 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

Certain meteorological/weather conditions may increase noise levels by focusing sound-wave propagation paths at a single point. Such refraction of sound waves can occur during temperature inversions, where temperatures increase with height above ground level, as well as in the presence of a wind wind gradient (wind velocities increasing with height) with wind direction from the source to the receiver.

Condition L4.6 b) of the EPL states that Stability category shall be determined using the methods from Fact Sheet D of the NPfI (NSW EPA, 2017). To determine site relevant stability category, 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. Wind direction, wind speed and 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, 2017)

Pasquill–Gifford stability category	Standard deviation of the horizontal wind direction fluctuations (σ_A in degrees [º])
A	$\sigma_A \geq 22.5°$
B	$17.5° \leq \sigma_A < 22.5°$
C	$12.5° \leq \sigma_A < 17.5°$
D	$7.5° \leq \sigma_A < 12.5°$
E	$3.8° \leq \sigma_A < 7.5°$
F	$2.1° \leq \sigma_A < 3.8°$
G	$\sigma_A \leq 2.1°$

The noise limits set out in **Table 2-1** and **Table 2-2** apply under the meteorological conditions specified in **Table 3-2**. For noise enhancing meteorological conditions not referred to in **Table 3-2**, the noise adjusted limits that apply are the noise limits in **Table 2-1** and **Table 2-2** plus 5 dB.

Table 3-2: Meteorological Conditions

Assessment Period	Meteorological Conditions
Day	Stability Categories A, B, C and D with wind speeds up to and including 3m/s at 10m above ground level.
Evening	Stability Categories A, B, C and D with wind speeds up to and including 3m/s at 10m above ground level.
Night	Stability Categories A, B, C and D with wind speeds up to and including 3m/s at 10m above ground level; or Stability category E and F with wind speeds up to and including 2m/s at 10m above ground level.

3.2 Modifying Factor Corrections

Condition L4.9 of the EPL states that, if appropriate, the modifying factor corrections in Table C1 on Fact Sheet C of the NPfI (NSW EPA, 2017) may be applied to the noise measurements by the noise monitoring equipment for the purpose of determing the noise generated from the premises.

4. Results and Discussion

4.1 Location EPA13

Noise monitoring at location EPA13 was not completed as access approval was not able to be obtained from the resident.

4.2 Location EPA14

Noise monitoring at location EPA14 was completed on Thursday 13 February 2025 with results presented in **Table 4-1**. Noise from the quarry was inaudible at EPA14 during the morning shoulder and day monitoring periods. The ambient noise environment was dominated by the Pacific Highway, insects and birds. The results meet the established noise criteria and indicate that noise emissions from Jandra Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-1: Noise survey results and observations for Location EPA14

Date	Start Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and LAeq (dBA)	Jandra Quarry LAeq(15min) Contribution	LAeq(15min) Criteria (dBA)
		LAmax	LAeq	LA90					
13-02-25	6:28am to 6:43am (Morning Shoulder)	52.3	46.5	43.4	WD: n/a WS: 0 m/s Rain: Nil	WD: N WS: 2 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/birds 40-52 Quarry inaudible[2]	<33	36
13-02-25	7:00am to 7:15am (Day)	53.4	46.5	43.8	WD: n/a WS: 0 m/s Rain: Nil	WD: NW WS: 3 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/birds 41-53 Quarry inaudible[2]	<34	36

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

[2] An assessment to determine Modifying Factor Corrections was therefore not required.

4.3 Location EPA15

Noise monitoring at location EPA15 was completed on Thursday 13 February 2025 with results presented in **Table 4-2**. Noise from the quarry was inaudible at EPA15 during the morning shoulder and day monitoring periods. The ambient noise environment was dominated by the Pacific Highway, insects and birds. The results meet the established noise criteria and indicate that noise emissions from Jandra Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-2: Noise survey results and observations for Location EPA15

Date	Start Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and LAeq (dBA)	Jandra Quarry LAeq(15min) Contribution	LAeq(15min) Criteria (dBA)
		LAmax	LAeq	LA90					
13-02-25	6:01am to 6:16am (Morning Shoulder)	69.4	47.7	41.4	WD: n/a WS: 0 m/s Rain: Nil	WD:340° WS: 0.6 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/birds 37-60 Birds 60-69 Quarry inaudible[2]	<31	40
13-02-25	7:18am to 7:33am (Day)	59.5	44.8	42.1	WD: n/a WS: 0 m/s Rain: Nil	WD: NW WS: 3.5 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/birds 39-59 Quarry inaudible[2]	<32	40

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

[2] An assessment to determine Modifying Factor Corrections was therefore not required.

4.4 Location EPA16

Noise monitoring at location EPA16 was completed on Thursday 13 and Friday 14 February 2025 with results presented in **Table 4-3**. Noise from the quarry was inaudible at EPA16 during the morning shoulder and day monitoring periods. The ambient noise environment was dominated by the Pacific Highway, insects and birds. The results meet the established noise criteria and indicate that noise emissions from Jandra Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-3: Noise survey results and observations for Location EPA16

Date	Start Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and LAeq (dBA)	Jandra Quarry LAeq(15min) Contribution	LAeq(15min) Criteria (dBA)
		LAmax	LAeq	LA90					
14-02-25	6:27am to 6:42am (Morning Shoulder)	69	44.8	41.3	WD: n/a WS: 0 m/s Rain: Nil	WD: SSW° WS: 2.5 m/s Rain: nil Stability Category: B[1]	Background motorway/insects/birds 40-61 Magpie 60-69 Quarry inaudible[2]	<31	36
13-02-25	7:54am to 8:09am (Day)	64.8	43.5	40.6	WD: n/a WS: 0 m/s Rain: Nil	WD: NW WS: 5 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/birds 39-44 Birds 45-64 Quarry inaudible[2]	<31	36

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

[2] An assessment to determine Modifying Factor Corrections was therefore not required.

4.5 Location EPA17

Noise monitoring at location EPA17 was completed on Thursday 13 and Friday 14 February 2025 with results presented in **Table 4-4**. Noise from the quarry was inaudible at EPA17 during the morning shoulder and day monitoring periods. The ambient noise environment was dominated by the Pacific Highway, insects and birds. The results meet the established noise criteria and indicate that noise emissions from Jandra Quarry did not contribute to noise nuisance at the time of the monitoring.

Table 4-4: Noise survey results and observations for Location EPA17

Date	Start Time	Descriptor (dBA)			Meteorology (Handheld at microphone height)	Onsite Met Station (10m height)	Apparent Noise Source, Description and LAeq (dBA)	Jandra Quarry LAeq(15min) Contribution	LAeq(15min) Criteria (dBA)
		LAmax	LAeq	LA90					
14-02-25	6:00m to 6:15am (Morning Shoulder)	66.8	57.4	37.6	WD: n/a WS: 0 m/s Rain: Nil	WD: SE° WS: 2 m/s Rain: nil Stability Category: B[1]	Background motorway/insects/cicadas 37-60 Birds 60-67 Rooster 45-50 Quarry inaudible[2]	<28	35
13-02-25	8:38am to 8:53am (Day)	65	40.2	36	WD: n/a WS: 0 m/s Rain: Nil	WD: NW WS: 4 m/s Rain: nil Stability Category: A[1]	Background motorway/insects/cicadas 34-50 Birds 47-65 Quarry inaudible[2]	<26	35

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

[2] An assessment to determine Modifying Factor Corrections was therefore not required.

5. Conclusion

This NMA was completed by Ramboll at the Holcim Jandra Quarry, Possum Brush, NSW as an annual requirement of the NBMP. Monitoring was carried out on Thursday 13 and Friday 14 February 2025 at four locations selected as representative to the sensitive receptors at the surroundings to Jandra Quarry.

No audible noise from quarry operations was observed at any of the four locations during the morning shoulder and day periods. The results presented in this NMA show compliance with the relevant noise criteria at the Holcim Jandra Quarry, NSW.

6. References

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Appendix B –
Truck Transport Summary for 2024

JANDRA QUARRY TRANSPORT 2024

2024	January		February		March		April		May		June		July		August		September		October		November		December	
	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)	Truck Movements	Volume (T)
Day 1		0	48	1570.45	105	2002.82		0	23	813.32		0	42	1318.84	75	1593.68		0	37	1207.95	50	1427.32		0
Day 2		0	29	900.9		0	63	1725.59	17	488.78		0	21	632.46	69	1591.62	49	1460.88	51	1500.27		0	67	2128.99
Day 3		0		0		0	65	2132.47	15	508.1	35	1097.73	20	652.76		0	48	1310.17	44	1238.04		0	83	2617.5
Day 4		0		0	58	1979.47	26	902.36		0	54	1258.38	29	943.44		0	61	1747.72	53	1421.57	56	1582.88	70	2261.08
Day 5		0	48	1562.9	61	1807.22	12	401.85		0	56	1501.4	42	1094.38	50	1327.36	41	1101.09		0	46	1191.42	66	1942.69
Day 6		0	44	1169.18	65	1986.38		0	14	459.74	37	1201.16		0	37	1223.52	49	1402.54		0	49	1458.84	55	1948.47
Day 7		0	36	906.18	77	2440.39		0	22	706.43	50	1625.72		0	74	2077.04		0		0	43	1260.6	22	642.24
Day 8	12	451.08	27	757.5	58	1942.54	79	2536.9	35	1104.38		0	50	1140.76	148	2872.16		0	60	1823.54	46	1150.32		0
Day 9	18	452.32	24	737.53		0	63	2105.39	40	1293.85		0	41	939.88	63	2078.84	81	2349.25	29	970.38		0	63	1870.88
Day 10	14	434.6		0		0	30	860.8	31	1002.86		0	74	1715.62		0	55	1516.05	43	1101.06		0	70	2250.65
Day 11	16	558.26		0	64	2189.29	32	975.82		0	59	1905.7	53	1233.41		0	66	2043.19	36	933.85	58	1748.58	58	1717.98
Day 12	28	830.74	35	1137.62	65	2016.32	47	1332.68		0	66	1971.56	34	1035.07	69	1895.79	50	1257.42	2	46.58	45	1306.09	57	1684.86
Day 13		0	45	1444.7	80	2580.37		0	42	1240.2	60	1619.7		0	40	1289.23	58	1493.89		0	36	1117.36	52	1377.34
Day 14		0	34	991.94	67	2114.68		0	60	1481.66	48	1467.36		0	14	386.48		0	40	1224.16	44	1249.43	5	135.38
Day 15	26	816.81	49	1548.88	59	2005.92	46	1505.66	73	1848.38		0	95	3038.24	28	710.32		0	47	1173.5	61	1745.96		0
Day 16	23	734.26	24	804.7		0	69	2218.35	54	1659.36		0	93	2721.78	60	1775.58	40	1305.01	44	1162.45		0	65	1880.54
Day 17	19	645.08		0		0	59	1754.04	80	2339.89	63	2034.89	124	3263.42		0	88	2162.97	56	1633.02		0	67	2153.3
Day 18	23	752.2		0	41	1360.02	69	2419.09		0	68	2116.81	104	2477.16		0	79	2036.42	41	1368.92	57	1625.98	77	2236.24
Day 19	18	614.68	29	681.18	67	2135.91	46	1384.59		0	89	2604.44	72	1655.23	62	2082.96	57	1656.79		0	57	1316.93	53	1639.86
Day 20	2	64.08	35	973.81	40	1218.8		0	78	2132.92	53	1727.04		0	71	2377.78	85	2535.2		0	76	1964.22	35	756.76
Day 21		0	13	480.26	41	1215.11		0	50	1670.18	71	2109.92		0	57	1841.1		0	68	2076.61	61	1667.48		0
Day 22	45	1358.77	34	1087.55	48	1471.83	67	1878.1	79	2356.48		0	59	1538.24	63	2149.16		0	76	1854.4	38	1077.69		0
Day 23	44	1299.8	30	1016.26		0	56	1496.21	48	1477.86		0	57	1729.66	64	2013.66	72	1927.08	80	2408.67		0		0
Day 24	40	1226.98		0		0	55	1466.65	51	1379.3	63	2071.67	88	2475.96		0	76	1952.56	75	2184.15		0		0
Day 25	29	875.37		0	63	2133.92		0		0	50	1346.72	46	1627.76		0	69	1894.1	37	1101.14	74	2297.12		0
Day 26		0	47	1371.42	67	2194.28		0		0	46	1337.54	65	1474.18	86	2683.32	40	1083.72		0	95	2894.95		0
Day 27		0	84	1903.66	73	2302.48		0	58	1505.3	62	1790.64		0	68	2162.96	17	610.87		0	73	2358.08		0
Day 28		0	114	2339.66	60	2003.33		0	56	1586.28	91	2038.74		0	82	2253.41		0	49	1624.57	59	1738.38		0
Day 29	49	1560.94	95	2229.79		0	57	1978.9	90	2242.62	27	366.18	54	1365.5	45	1390.2		0	67	1949.16	42	1208.74		0
Day 30	38	1104.08				0	47	1462.89	69	1745.88		0	29	946.76	60	1436	22	933.84	53	1698.14		0		0
Day 31	34	990.95				0			37	1205.78			29	814.32		0			58	1917.27				0
TOTAL	478	14771.00	924	25616.07	1259	39101.08	988	30538.34	1122	32249.55	1148	33193.30	1321	35834.83	1385	39212.17	1203	33780.76	1146	33619.40	1166	33388.37	965	29244.76
TOTAL VOLUME	380,550	(Q1 = 79,488 T Q2 = 95,981 T Q3 = 108,828 T Q4 = 96,253 T)																						
TOTAL TRUCK MOVEMENTS	13,105																							

Appendix C –
Quarterly Biodiversity Monitoring Reports (Kleinfelder, 2024)

Jandra Quarry Quarterly Monitoring, March 2024

15284 Pacific Highway, Possum Brush NSW 2430

NCA24R166101

08/04/2024

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08/04/2024
NCA24R166101

Holcim Pty Ltd
Jandra Quarry
15284 Pacific Highway
Possum Brush NSW 2430

Attention: Holcim Environmental Coordinator

Subject: Jandra Quarry Quarterly Monitoring, March 2024
15284 Pacific Highway, Possum Brush NSW 2430

1 INTRODUCTION

Holcim (Australia) operates the Jandra Quarry, a hard quarry located approximately 18 kilometres south of Taree, New South Wales. The original development proposal for the quarry was granted on March 30, 2000 (DA231-1-99). A modification to the consent (MOD) was granted on March 13, 2015 (DA231-101-99 Mod 5) allowing for an increase in production and transportation of quarry products to maximum limit of 475,000 tonnes per annum.

Kleinfelder have been engaged to conduct biodiversity monitoring of the Jandra Quarry rehabilitation areas on a quarterly basis, as stipulated in Section 6.1.1 of the Biodiversity Rehabilitation and Management Plan (BRMP) (Umwelt, 2018). Monitoring has previously been undertaken by Umwelt, until 2021. The outcomes of the quarterly monitoring will be included as part of the annual biodiversity monitoring report (Kleinfelder) for Jandra Quarry.

2 SCOPE

On 26th March 2024, a Kleinfelder ecologist, attended Jandra Quarry to conduct a site-based inspection. Survey methodology was conducted in accordance with the BRMP and included an inspection of the rehabilitated areas to assess the following parameters:

- Stability and condition of the soil,
- Drainage and sediment control structures,
- Runoff water quality,
- Germination rates,
- Plant health,
- Natural regeneration, and
- Weed infestations.

Each rehabilitated area, where accessible, was inspected on foot and observational data collected by a hand-held GPS and photographed. Two (2) photo monitoring points, one at the corner of Blackbutts Road and the Pacific Highway and one along Winmurra Drive, were established in 2021. Photos are taken at each location during each monitoring round as a means of visually comparing the aesthetics of the quarry over time.

Due to operational restrictions of the open pit, the eastern, southern, and western benches could not be inspected on foot. Monitoring of these areas was recommended to be conducted via a remote flyover using a drone and camera, due to the safety issues that erosion and unstable ground on the benches. Footage can then be analysed to best determine their condition based on the abovementioned parameters. Also, this quarter's inspection was conducted on a day where explosives were to occur within the active pit toward the overburden stockpile area, therefore, inspection was promptly conducted.

3 RESULTS

Rehabilitated areas adjacent to the Overburden Stockpiling Area (OSA), the Active Pit (AP) and the Settlement Dam near the site office were inspected.

3.1 OVERBURDEN STOCKPILE AREA

Stockpiled material also appears to have been consolidated in terms of area used as Jandra is an active quarry, depositing overburden material have occurred since the last inspection. Native species such as *Acacia longifolia* (Coastal Wattle), *Acacia maidenii* (Maiden's Wattle), and some *Eucalyptus* spp. are evident in low abundances but appear to be in a healthy condition. From previous inspection notes, *Hardenbergia violacea* (Purple Coral Pea; not flowering; **Plate 1**) was also observed in this quarter (Q1). Exotic species such as *Setaria sphacelata* (Pigeon Grass), *Melinis repens* (Red Natal Grass), *Tagetes minuta* (Stinking Roger), *Lantana camara* (Lantana), *Bidens pilosa* (Cobbler's Pegs), *Solanum mauritianum* (Tobacco Bush), and *Ageratina adenophora* (Crofton Weed) are evident in the OSA (**Plate 2**). The track running from the OSA to western end of the dam near the office had overgrowth removed (from previous disuse) by heavy machinery. A second track had also had overgrowth removed to a second dam (northeast of the dam near the office). There was a rain event prior to the inspection which water was pooling on the track between stockpiles and bund on the western side.

3.2 ACTIVE PIT AREA

An inspection of the benches via drone was not conducted during this round of monitoring. Bench condition was interpreted as best as possible from a visual inspection at a safe distance, and via photos (**Plate 3** and **Plate 4**). Areas of minor rill erosion identified in the previous monitoring round are still evident. A small amount of erosion was apparent along the north-eastern AP area (ROM) smoothing the bench into the settlement dam.

Along the eastern rehabilitated benches, the upper benches show the highest cover of native species (namely *Eucalyptus spp.*) which are evidence of previous tubestock planting and regeneration. The lower benches have been allowed to regenerate, naturally. However, these areas predominantly contain a prolific cover of exotic species, such as *Lantana camara* (Lantana) (**Plate 4**).

3.3 SETTLEMENT DAM

A walkover of the edge of the Settlement Dam revealed good vegetation coverage along the dam walls and no areas of erosion or unintended water leakage were apparent. Some exotic species, such as *Lantana camara* (Lantana), *Solanum mauritianum* (Tobacco Bush) and *Paspalum sp.* have established themselves along the dam walls. At the time of inspection, Lantana was starting to fruit, which will likely propagate more plants in the future. Despite this, there is still good native species coverage, with species such as *Acacia longifolia, Acacia maidenii* and *Eucalyptus spp.* being the most common (**Plate 8**).

Water quality within the dam did not appear to be poor, with little signs of eutrophication (algal blooms). Furthermore, native emergent vegetation such as *Typha sp.* and *Bolboschoenus sp.* are evident along the margins of the dam and appear to be in good health.

There was evidence of fox scat in the Settlement Dam area.

3.4 PHOTO MONITORING

There are no visible changes compared to previous monitoring quarters' photos.

4 CONCLUSION

Native species coverage (tubestock plantings) appears to be limited in most areas where active rehabilitation has taken place. Although, on the older benches, established individuals of *Eucalyptus spp.* and *Acacia spp.* are present. Much of the ground and shrub stratum, however, is occupied by well-established exotic species like Lantana, with the remaining areas usually densely occupied by short-lived perennial exotics and grasses. While much of the rehabilitated areas are dominated by exotic species, there appears to be soil stability with minimal areas of erosion. This is likely attributed to the high cover of vegetation on most areas.

Areas of previous plantings (older benches) around the AP appear to be more successful than areas of the benches allowed to regenerate, naturally. This is apparent through the higher cover of exotic species (mainly

Lantana) along areas of 'natural regeneration'. Lantana was starting to fruit, which will likely propagate more plants in the future, recommendations are provided in **Section 5.**

Bushfires in late 2019 and early 2020 heavily effected the quarry and surrounding areas. Post-fire regeneration of native shrubs and groundcover species was mostly evident along the top of the AP area.

No areas of poor water quality, or dieback of vegetation from surface water runoff, were observed. The Settlement Dam had no algal cover and was vegetated with native aquatic vegetation along its margins. However, there was some fox scat present on site near the Settlement Dam.

5 RECOMMENDATIONS

Recommendations have been developed based on the outcome of the site-based quarterly inspection of the OSA, AP and Settlement Pond areas. The following items are recommended.

- Intensive weed control along areas of high woody weed cover, i.e., north-eastern AP area (the 'ROM') where there is high cover of Lantana, Lower rehab benches along the eastern side of the AP area and upper benches of the OSA.
- Weed control should be structured so that methods are appropriate:
    - backpack spraying and hand removal of weeds should be prioritised in areas accessible on foot and which contain a mix of native and exotic species.
    - Quick spray areas of dense woody weed infestations with little native species mix, i.e., the 'ROM'
    - Drone / aerial weed control prioritised for areas not accessible via foot, i.e., lower benches of the AP area. A fly-over of the intended areas of control should be conducted first to gain a more accurate idea of species composition so as to reduce the risk of non-target damaged.
- Weed control should be conducted systematically to avoid large-scale initial removal of weeds, resulting in open areas of bare soil, leading to erosion.
- High-threat woody weeds should be prioritised for control before non-woody and annual weeds. Weeds such as Lantana and Tobacco Bush are a high priority.
- Intensive weed control targeting exotic grasses is not recommended, as exotic grasses are currently helping stabilise the benches. This approach should be staged over time and should be supported by additional native species plantings.
- Mature tree and shrub planting along the benches of the OSA. The outer benches of the OSA would benefit from additional planting as the current shrub and tree cover is limited. Furthermore, planting mature trees and shrubs would contribute to shading out some of the exotic grasses.
- Monitoring and managing pest species such as foxes, rabbits, cats, and wild dogs in the area. These species affect native wildlife populations through predation and resource competition.

If you require additional information or clarification, please contact the undersigned below.

Sincerely,

Kleinfelder Australia Pty Ltd

Cassandra Bugir

Ecologist
cbugir@kleinfelder.com
Mobile: 0450559221

ATTACHMENT 1 SITE PHOTOS

Plate 1 ***Hardenbergia violacea*** **(Purple Coral Pea) growing on bund in OSA.**

Plate 2 **Sparse exotic ground cover.**

Plate 3 **Rehabilitated benches along the eastern side of the AP area. Note the overgrowth of *Lantana camera* in the lower bench.**

Plate 4 **Rehabilitated benches along the eastern side of the AP area.**

Plate 5 **The western AP area.**

Plate 6 **Excavated material falling into a settlement dam in the AP area near the ROM.**

Plate 7 **Dense covering of vegetation along track near settlement dam, with minor erosion.**

Plate 8 **Native species growth (*Acacia longifolia* and *Eucalyptus spp.*) along the Settlement Dam wall.**

Jandra Quarry Quarterly Monitoring, June 2024

15284 Pacific Highway, Possum Brush NSW 2430

NCA24R166101

09/07/2024

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09/07/2024
NCA24R166101

Holcim Pty Ltd
Jandra Quarry
15284 Pacific Highway
Possum Brush NSW 2430

Attention: Holcim Environmental Coordinator

Subject: Jandra Quarry Quarterly Monitoring, June 2024
15284 Pacific Highway, Possum Brush NSW 2430

1 INTRODUCTION

Holcim (Australia) operates the Jandra Quarry, a hard quarry located approximately 18 kilometres south of Taree, New South Wales. The original development proposal for the quarry was granted on March 30, 2000 (DA231-1-99). A modification to the consent (MOD) was granted on March 13, 2015 (DA231-101-99 Mod 5) allowing for an increase in production and transportation of quarry products to maximum limit of 475,000 tonnes per annum.

Kleinfelder have been engaged to conduct biodiversity monitoring of the Jandra Quarry rehabilitation areas on a quarterly basis, as stipulated in Section 6.1.1 of the Biodiversity Rehabilitation and Management Plan (BRMP) (Umwelt, 2018). Monitoring has previously been undertaken by Umwelt, until 2021. The outcomes of the quarterly monitoring will be included as part of the annual biodiversity monitoring report (Kleinfelder) for Jandra Quarry.

2 SCOPE

On 25th June 2024, a Kleinfelder ecologist, attended Jandra Quarry to conduct a site-based inspection. Survey methodology was conducted in accordance with the BRMP and included an inspection of the rehabilitated areas to assess the following parameters:

- Stability and condition of the soil,
- Drainage and sediment control structures,
- Runoff water quality,
- Germination rates,
- Plant health,
- Natural regeneration, and
- Weed infestations.

Each rehabilitated area, where accessible, was inspected on foot and observational data collected by a hand-held GPS and photographed. Two (2) photo monitoring points, one at the corner of Blackbutts Road (Plate 1) and the Pacific Highway and one along Winmurra Drive (Plate 2), were established in 2021. Photos are taken at each location during each monitoring round as a means of visually comparing the aesthetics of the quarry over time.

Due to operational restrictions of the open pit, the eastern, southern, and western benches could not be inspected on foot. Also, this quarter's inspection was conducted on a day where explosives were to occur within the active pit toward the overburden stockpile area, therefore, inspection was promptly conducted. Access along the ROM was not accessible on this quarterly inspection.

3 RESULTS

Rehabilitated areas adjacent to the Overburden Stockpiling Area (OSA), the Active Pit (AP) and the Settlement Dam near the site office were inspected.

3.1 OVERBURDEN STOCKPILE AREA

Stockpiled material also appears to have been consolidated in terms of area used as Jandra is an active quarry, depositing overburden material have occurred since the last inspection. Native species such as *Acacia longifolia* (Coastal Wattle), *Acacia maidenii* (Maiden's Wattle), and some *Eucalyptus* spp. are evident in low abundances but appear to be in a healthy condition. From previous inspection notes, *Hardenbergia violacea* (Purple Coral Pea; was also observed in this quarter (Q1). Exotic species such as *Setaria sphacelata* (Pigeon Grass), *Melinis repens* (Red Natal Grass), *Tagetes minuta* (Stinking Roger), *Lantana camara* (Lantana), *Bidens pilosa* (Cobbler's Pegs), *Solanum mauritianum* (Wild Tobacco Bush), and *Ageratina adenophora* (Crofton Weed) are evident in the OSA (**Plate 3**). The track running from the OSA to western end of the dam near the office had overgrowth removed (from previous disuse) by heavy machinery. A second track had also had overgrowth removed to a second dam (northeast of the dam near the office). There was a rain event prior to the inspection which water was pooling on the track between stockpiles and bund on the western side (**Plate 4**)

3.2 ACTIVE PIT AREA

Bench condition was interpreted as best as possible from a visual inspection at a safe distance, and via photos (**Plate 4** and **Plate 5**). Areas of minor rill erosion identified in the previous monitoring round are still evident. A small amount of erosion was apparent along the north-eastern AP area (ROM) smoothing the bench into the settlement dam.

Along the eastern rehabilitated benches, the upper benches show the highest cover of native species (namely *Eucalyptus spp.*) which are evidence of previous tubestock planting and regeneration. The lower benches have been allowed to regenerate, naturally. However, these areas predominantly contain a prolific cover of exotic species, such as *Lantana camara* (Lantana) (**Plate 6**).

3.3 SETTLEMENT DAM

A walkover of the edge of the Settlement Dam revealed good vegetation coverage along the dam walls and no areas of erosion or unintended water leakage were apparent. Some exotic species, such as *Lantana camara* (Lantana), *Solanum mauritianum* (Wild Tobacco Bush) and *Paspalum sp.* have established themselves along the dam walls. At the time of inspection, Lantana was starting to fruit, which will likely propagate more plants in the future. Despite this, there is still good native species coverage, with species such as *Acacia longifolia, Acacia maidenii* and *Eucalyptus spp.* being the most common (**Plate 6**).

Water quality within the dam did not appear to be poor, with little signs of eutrophication (algal blooms). Furthermore, native emergent vegetation such as *Typha sp.* and *Bolboschoenus sp.* are evident along the margins of the dam and appear to be in good health.

A small settlement dam at the quarry entrance was also inspected and found to be n good ecological condition (**Plate 7**)

3.4 PHOTO MONITORING

There are no visible changes compared to previous monitoring quarters' photos.

4 CONCLUSION

Native species coverage (tubestock plantings) appears to be limited in most areas where active rehabilitation has taken place. Although, on the older benches, established individuals of *Eucalyptus spp.* and *Acacia spp.* are present. Much of the ground and shrub stratum, however, is occupied by well-established exotic species like Lantana, with the remaining areas usually densely occupied by short-lived perennial exotics and grasses. While much of the rehabilitated areas are dominated by exotic species, there appears to be soil stability with minimal areas of erosion. This is likely attributed to the high cover of vegetation on most areas.

Areas of previous plantings (older benches) around the AP appear to be more successful than areas of the benches allowed to regenerate, naturally. This is apparent through the higher cover of exotic species (mainly Lantana) along areas of 'natural regeneration'. Lantana was starting to fruit, which will likely propagate more plants in the future, recommendations are provided in **Section 5.**

Bushfires in late 2019 and early 2020 heavily effected the quarry and surrounding areas. Post-fire regeneration of native shrubs and groundcover species was mostly evident along the top of the AP area.

No areas of poor water quality, or dieback of vegetation from surface water runoff, were observed. The Settlement Dam had no algal cover and was vegetated with native aquatic vegetation along its margins. However, there was some fox scat present on site near the Settlement Dam.

5 RECOMMENDATIONS

Recommendations have been developed based on the outcome of the site-based quarterly inspection of the OSA, AP and Settlement Pond areas. The following items are recommended.

- Intensive weed control along areas of high woody weed cover, i.e., north-eastern AP area (the 'ROM') where there is high cover of Lantana, Lower rehab benches along the eastern side of the AP area and upper benches of the OSA.
- Weed control should be structured so that methods are appropriate:
    - backpack spraying and hand removal of weeds should be prioritised in areas accessible on foot and which contain a mix of native and exotic species.
    - Quick spray areas of dense woody weed infestations with little native species mix, i.e., the 'ROM'
    - Drone / aerial weed control prioritised for areas not accessible via foot, i.e., lower benches of the AP area. A fly-over of the intended areas of control should be conducted first to gain a more accurate idea of species composition so as to reduce the risk of non-target damaged.
- Weed control should be conducted systematically to avoid large-scale initial removal of weeds, resulting in open areas of bare soil, leading to erosion.
- High-threat woody weeds should be prioritised for control before non-woody and annual weeds. Weeds such as Lantana and Wild Tobacco Bush are a high priority.
- Intensive weed control targeting exotic grasses is not recommended, as exotic grasses are currently helping stabilise the benches. This approach should be staged over time and should be supported by additional native species plantings.
- Mature tree and shrub planting along the benches of the OSA. The outer benches of the OSA would benefit from additional planting as the current shrub and tree cover is limited. Furthermore, planting mature trees and shrubs would contribute to shading out some of the exotic grasses.
- Monitoring and managing pest species such as foxes, rabbits, cats, and wild dogs in the area. These species affect native wildlife populations through predation and resource competition.

If you require additional information or clarification, please contact the undersigned below.

Sincerely,

Kleinfelder Australia Pty Ltd

Kaleb Bush

Environmental Technician (Ecology)
kbush@kleinfelder.com
Mobile: 0429852205

APPENDIX 1 - SITE PHOTOS

Plate: 1 Photo monitoring point at corner of Blackbutts Road and Pacific

Plate 2 - Photo monitoring point from Winmurra Drive.

Plate 3 – Slurry overburden stockpile area.

Plate 4 - Access Track to lower dam location.

Plate 5: Rehabilitated benches along the eastern side of the AP area.

Plate 6: Rehabilitated benches along the eastern side of the AP area

Plate 6: Dam near office with vegetation regrowth

Plate 7: Front entry settlement pond

Jandra Quarry Quarterly Monitoring, October 2024

15284 Pacific Highway, Possum Brush NSW 2430

NCA24R175217

09/1/2025

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09/1/2025
NCA24R175217

Holcim Pty Ltd
Jandra Quarry
15284 Pacific Highway
Possum Brush NSW 2430

Attention: Holcim Environmental Coordinator

Subject: Jandra Quarry Quarterly Monitoring, October 2024
15284 Pacific Highway, Possum Brush NSW 2430

1 INTRODUCTION

Holcim (Australia) operates the Jandra Quarry, a hard quarry located approximately 18 kilometres south of Taree, New South Wales. The original development proposal for the quarry was granted on March 30, 2000 (DA231-1-99). A modification to the consent (MOD) was granted on March 13, 2015 (DA231-101-99 Mod 5) allowing for an increase in production and transportation of quarry products to maximum limit of 475,000 tonnes per annum.

Kleinfelder have been engaged to conduct biodiversity monitoring of the Jandra Quarry rehabilitation areas on a quarterly basis, as stipulated in Section 6.1.1 of the Biodiversity Rehabilitation and Management Plan (BRMP) (Umwelt, 2018). Monitoring has previously been undertaken by Umwelt, until 2021. The outcomes of the quarterly monitoring will be included as part of the annual biodiversity monitoring report (Kleinfelder) for Jandra Quarry.

2 SCOPE

On 1st of October 2024, a Kleinfelder ecologist, Nigel Fisher attended Jandra Quarry to conduct a site-based inspection. Survey methodology was conducted in accordance with the BRMP and included an inspection of the rehabilitated areas to assess the following parameters:

- Stability and condition of the soil,
- Drainage and sediment control structures,
- Runoff water quality,
- Germination rates,
- Plant health,
- Natural regeneration, and
- Weed infestations.

Each rehabilitated area, where accessible, was inspected on foot and observational data collected by a hand-held GPS and photographed. Two (2) photo monitoring points, one at the corner of Blackbutts Road and the Pacific Highway and one along Winmurra Drive, were established in 2021. Photos are taken at each location during each monitoring round as a means of visually comparing the aesthetics of the quarry over time.

Due to operational restrictions of the open pit, the eastern, southern, and western benches could not be inspected on foot. Monitoring of these areas has in the past been recommended to be conducted via a remote flyover using a drone and camera, due to the safety issues that erosion and unstable ground on the benches. Footage can then be analysed to best determine their condition based on the abovementioned parameters.

3 RESULTS

Rehabilitated areas adjacent to the Overburden Stockpiling Area (OSA), the Active Pit (AP) and the Settlement Dam near the site office were inspected. All observations refer to **Figure 1**. Observations are labelled "W" for weeds, "E" for erosion and "O" for observations or photos for discussion.

3.1 PHOTO MONITORING

There are no visible changes compared to previous quarters' monitoring photos (**Plate 1** and **Plate 2**).

3.2 OVERBURDEN STOCKPILE AREA (OSA)

The OSA itself is relatively weed free as it is an active work area, however, the northern and western slopes of the OSA have serious and ongoing weed infestation issues. Dense thickets of *Lantana camara* (lantana) were observed at W1 (**Plate 3**), W2, W3 (with co-occurring *Solanum mauritianum* (wild tobacco) and *Ageratina adenophora* (Crofton weed) (**Plate 4**), and W4. A considerable amount of sediment has washed over the edge of the OSA at E1 and has washed downslope into the vegetation (**Plate 5**). A bund has been erected at the point of overtopping on the OSA (**Plate 6**).

The "central island" or eastern side of the OSA consists of wooded native vegetation, but also has infestations of lantana and wild tobacco as observed at W5 and W6 (**Plate 7**).

Minor rilling was observed at E2 and E3 on the access track that runs north-east from the OSA downhill to the settlement dam (**Plate 8**).

3.3 SETTLEMENT DAM

The settlement dam has a combination of native and exotic vegetation colonising he banks/edges with crofton weed, lantana and grass species (O1) (**Plate 8**). The access rack to the lower dam has minor rilling and lantana (O2) (**Plate 9**).

3.4 TOP OF ACTIVE PIT AREA

During the walkover of the top of the pit area a substantial area of erosion of was observed at E4 where bare soil, presumably cleared for future expansion is eroding downslope (**Plate 10**). The topsoil stockpile at W7 and W8 has a substantial infestation of lantana and wild tobacco (**Plate 11**). The gate located at the south-eastern extent of the quarry is open and appears to have been so for a considerable period of time (O4).

3.5 ACTIVE PIT AREA

Inspection of the revegetation of the benches was made by visual inspection from a safe distance, and via photos.

The southern benches viewed from the east (O3) shows a mix of native vegetation with canopy species and some *Acacias*, but also a considerable coverage of lantana and presumably exotic grasses (**Plate 12**). The same benches viewed from north (O7) shows the patchy nature of the native vegetation and the decreasing size of the vegetation from top to bottom of the quarry due to decreasing age (**Plate 13**). Observation of these benches from the west (O8) shows lantana and wild tobacco amongst the native species (**Plate 14**).

The northern benches were observed from O6 and O7 and also show a mix of native vegetation *Eucalyptus spp., Acacia spp.,* and lantana and wild tobacco as the main woody weeds (**Plate 15** O6 and **Plate 16** O7).

3.6 WHITESIDE

This area runs along the north-west side of the active pit and includes the powerline easement. This area is heavily infested with wild tobacco and lantana and requires a concerted weed control effort (W9 and W10 – **Plate 17**), with a large number of mature wild tobacco trees were observed along the track and the embankment. The walkover continued northwest from the end of the Whiteside track. The gate at O9 was shut but not locked, the native vegetation in this area was excellent with only scattered lantana. Further down the access track on the western side of the quarry, a larger pile of roofing tiles now acts as potential reptile and fauna habitat. Care should be taken if these are to be removed at some stage in the future.

3.7 TRUCK PARK UP AREA AND TOPSOIL STOCKPILE

This area of the Jandra quarry recorded several weed species with the potential to spread into the adjacent native vegetation. These include an *Aloe* species (W11), lantana and wild tobacco (W12 - W16) with banana plants at W17 and W18. The topsoil stockpile in this area has a substantial growth of wild tobacco. These plants appear to have seeded into the stockpile.

4 DISCUSSION

The rehabilitation of the benches in the AP area is progressing as well as can be expected given that additional seeding and weed control efforts cannot be undertaken due to safety concerns, i.e., narrowness of the benches and the possible falling rocks. The 2019 fire burned these benches extensively which allowed weedy species to colonise the bare soil. Growth of the remaining native trees and shrubs appears to be healthy, although the woody weed species such as wild tobacco and lantana also appear to be healthy.

Areas of previous plantings (older benches) around the AP appear to be more successful than areas of the benches allowed to regenerate, naturally. This is apparent through the higher cover of exotic species (mainly lantana) along areas of 'natural regeneration'. Lantana was starting to fruit, which will likely propagate more plants in the future.

The OSA is heavily infested with lantana and wild tobacco around the steep slope as it drops off into the surrounding vegetation. This was noted on all sides of the OSA including the "central island". Ongoing weed control will help to reduce the weed load within the boundary of the quarry which should improve the biodiversity values of the buffer area while also helping with eventual release and/or surrender in the future.

No areas of poor water quality, or dieback of vegetation from surface water runoff, were observed. The Settlement Dam had no algal cover and was vegetated with native aquatic vegetation along its margins. Some areas of lantana were observed on the banks.

Obvious minor rilling and some gullying was observed on the access track, points on the OSA and at the pit top. The OSA erosion points had bunding constructed to prevent future erosion and material movement into the surrounding vegetation.

The topsoil stockpiles have become overgrown with exotic vegetation. It is recognised that there are long lead-in times for rehabilitation of benches with hard rock quarries, but the prevalence of these weeds limits the effectiveness of the topsoil for rehabilitation.

No evidence of feral animals was observed during the walkover, but it can be assumed they are present within the buffer zone and wider surrounding areas. Attempts to control feral pests as an isolated property owner are of limited value. But if undertaken as part of wider, coordinated campaign can prove beneficial n reducing overall numbers for a time.

5 RECOMMENDATIONS

Recommendations have been developed based on the outcome of the site-based quarterly inspection of the OSA, AP and Settlement Pond areas. The following items are recommended.

- Weed control along areas of high woody weed cover, i.e., powerline easement and slopes of the OSA where there is high cover of lantana and wild tobacco.
- Weed control should be structured so that methods are appropriate:
    - backpack spraying and hand removal of weeds should be prioritised in areas accessible on foot and which contain a mix of native and exotic species.
    - Quick spray and/or splatter gun of areas of dense woody weed infestations with little native species mix.
- Weed control should be conducted systematically to avoid large-scale initial removal of weeds, resulting in open areas of bare soil, leading to erosion.
- High-threat woody weeds should be prioritised for control before non-woody and annual weeds. Weeds such as lantana and wild tobacco are a high priority.

- Intensive weed control targeting exotic grasses is not recommended, as exotic grasses are currently helping stabilise the benches. This approach should be staged over time and should be supported by additional native species plantings.
- Erosion control structures such as sed fences, coir logs and bunding

If you require additional information or clarification, please contact the undersigned.

Sincerely,

Kleinfelder Australia Pty Ltd

Nigel Fisher BSc (Hons) PhD

Senior Ecologist
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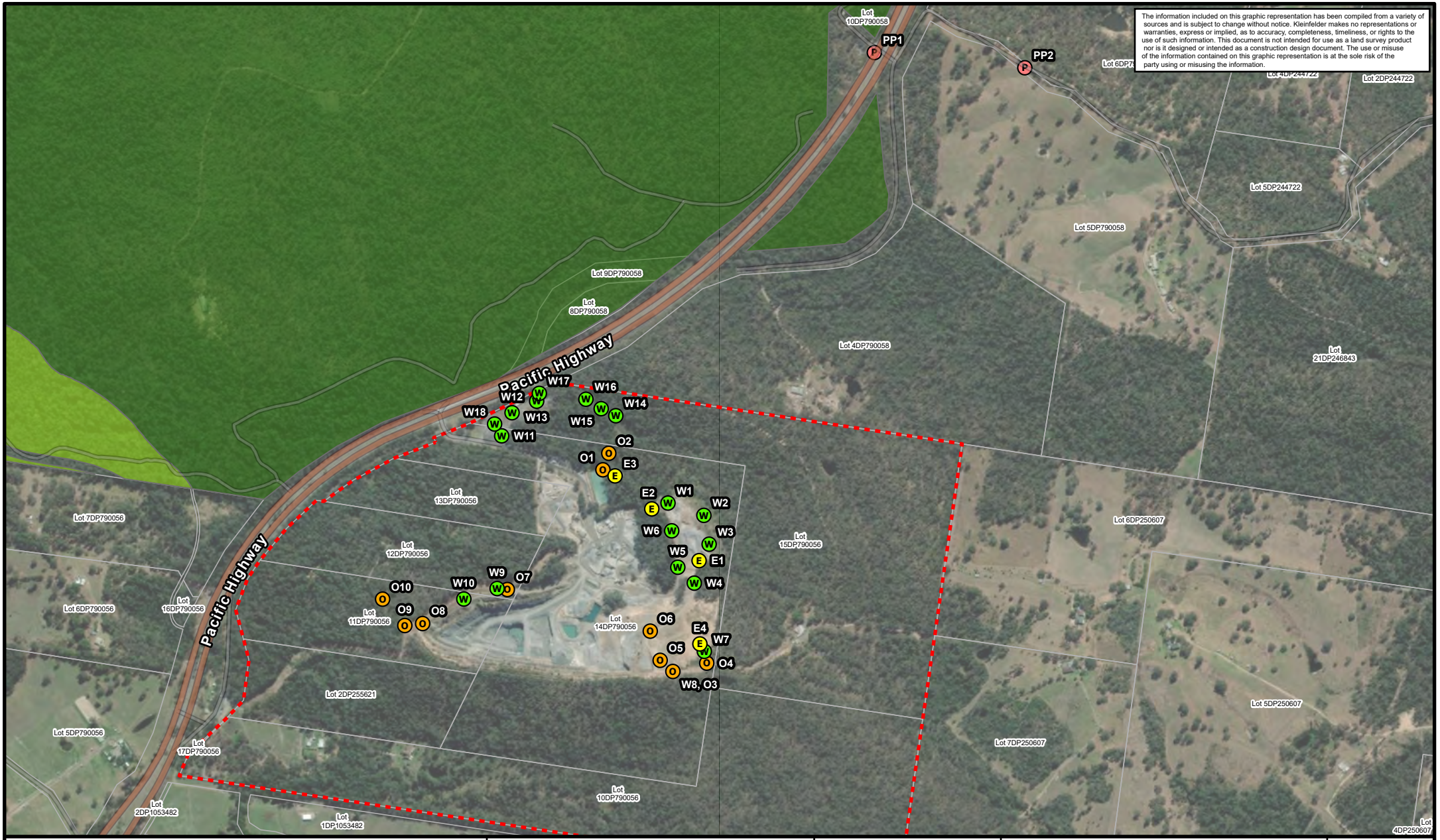
Mobile: 0407 657 583



Legend

- Jandra Quarry Boundary
- Lot Boundary
- National Park
- Forestry Corporation of NSW
- Photo Point
- Erosion Observation
- Weed Observation
- Other Observation

Scale @ A4 1:12,000

0 50 100 200 300 400 500 Metres

GDA 1994 MGA Zone 56

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PROJECT REFERENCE:	24005428	
DATE DRAWN:	1/9/2025	Version 1
DRAWN BY:	BDeane	

DATA SOURCE:
Esri - 2024
NSW Spatial Services - 2024

Q3 BIODIVERSITY MONITORING

HOLCIM AUSTRALIA PTY LTD
JANDRA QUARTERLY MONITORING AND BOA
JANDRA QUARRY, 15284 PACIFIC HIGHWAY,
POSSUM BRUSH, NSW 2430

FIGURE:

1

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ATTACHMENT 1 SITE PHOTOS

Plate 1: View of Jandra Quarry from photo point 1 – cnr of Blackbutts Rd and Pacific Hwy.

Plate 2: View of Jandra Quarry from photo point 2, Winmurra Dr.

Plate 3: Lantana thicket on the OSA at W1.

Plate 4: Multiple weed species at W3 on the OSA.

Plate 5: Sediment washed downslope from the OSA at E1.

Plate 6: Temporary bund constructed at the point of overtopping on the OSA.

Plate 7 Lantana at W6 on the eastern side of the OSA encroaching into native vegetation.

Plate 8: Looking down the rack towards the settlement dam, rilling at the bottom of the track from the OSA to the settlement dam.

Plate 9: View of the access track down to the second dam showing weeds and minor rilling.

Plate 10: View of erosion at E4 showing gullying.

Plate 11: Topsoil stockpile at W7 showing heavy infestation of wild tobacco.

Plate 12: View of the southern benches from O3 in the active pit area showing extent of revegetation.

Plate 13: View of southern benches from O7 showing the development of the revegetation with age – oldest revegetation at the upper benches, youngest at the lower benches.

Plate 14: View of southern benches from O8. Native vegetation and woody weeds are visible.

Plate 15: View of northern benches from O6 showing extent of revegetation.

Plate 16: View of the northern benches looking down from the Whiteside track at O7 showing native species and woody weed species.

Plate 17: W9 - lantana and wild tobacco along the powerline easement next to the Whiteside track. This infestation extends to the west along the track.

Jandra Quarry Quarterly Monitoring, December 2024

15284 Pacific Highway, Possum Brush NSW 2430

NCA25R176616

13/1/2025

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13/1/2025
NCA25R176616

Holcim Pty Ltd
Jandra Quarry
15284 Pacific Highway
Possum Brush NSW 2430

Attention: Holcim Environmental Coordinator

Subject: Jandra Quarry Quarterly Monitoring, December 2024
15284 Pacific Highway, Possum Brush NSW 2430

1 INTRODUCTION

Holcim (Australia) operates the Jandra Quarry, a hard quarry located approximately 18 kilometres south of Taree, New South Wales. The original development proposal for the quarry was granted on March 30, 2000 (DA231-1-99). A modification to the consent (MOD) was granted on March 13, 2015 (DA231-101-99 Mod 5) allowing for an increase in production and transportation of quarry products to maximum limit of 475,000 tonnes per annum.

Kleinfelder have been engaged to conduct biodiversity monitoring of the Jandra Quarry rehabilitation areas on a quarterly basis, as stipulated in Section 6.1.1 of the Biodiversity Rehabilitation and Management Plan (BRMP) (Umwelt, 2018). Monitoring has previously been undertaken by Umwelt, until 2021. The outcomes of the quarterly monitoring will be included as part of the annual biodiversity monitoring report (Kleinfelder) for Jandra Quarry.

2 SCOPE

On 5th of December 2024, a Kleinfelder ecologist, Nigel Fisher attended Jandra Quarry to conduct a site-based inspection. Survey methodology was conducted in accordance with the BRMP and included an inspection of the rehabilitated areas to assess the following parameters:

- Stability and condition of the soil,
- Drainage and sediment control structures,
- Runoff water quality,
- Germination rates,
- Plant health,
- Natural regeneration, and
- Weed infestations.

Each rehabilitated area, where accessible, was inspected on foot and observational data collected by a hand-held GPS and photographed. Two (2) photo monitoring points, one at the corner of Blackbutts Road and the Pacific Highway and one along Winmurra Drive, were established in 2021. Photos are taken at each location during each monitoring round as a means of visually comparing the aesthetics of the quarry over time.

Due to operational restrictions of the open pit, the eastern, southern, and western benches could not be inspected on foot. Consequently, monitoring of these areas is conducted from vantage points using binoculars and photography.

3 RESULTS

Rehabilitated areas adjacent to the Overburden Stockpiling Area (OSA), the Active Pit (AP) and the Settlement Dam near the site office were inspected. All observations refer to **Figure 1**. Observations are labelled "W" for weeds and "O" for erosion and other observations or photos for discussion.

3.1 Visual Amenity Photo Monitoring

There are no visible changes compared to previous quarters' monitoring photos (**Plate 1** and **Plate 2**).

3.2 Overburden Stockpile Area (OSA)

The OSA itself is relatively weed free as it is an active work area, however, the northern and western slopes of the OSA have serious and ongoing weed infestation issues. Dense thickets of *Lantana camara* (lantana) were observed at W1, W2 (**Plate 3**), W3 (with co-occurring *Solanum mauritianum* (wild tobacco) and *Ageratina adenophora* (Crofton weed) (**Plate 4**). Previous monitoring had observed the sediment eroded off the OSA and the temporary bund that was erected (O6). This bund has been considerably improved and strengthened (Error! Reference source not found.).

The "central island" or eastern side of the OSA consists of wooded native vegetation, but also has infestations of lantana and wild tobacco as observed at W4. This side of the OSA stockpile also had an erosion flume bunded (O5) (**Plate 6**).

Minor rilling was observed at O2 and O4 on the access track that runs north-east from the OSA downhill to the settlement dam (**Plate 7**). Being an opening in otherwise dense vegetation, the track facilitates the spread of fast-growing weeds such as crofton weed and exotic grasses.

3.3 Secondary and Main Settlement Dam

The access track to the lower dam has minor rilling and lantana, but again also has good regeneration of native species (O1) (**Plate 8**). The main settlement dam (O3) has a combination of native and exotic vegetation colonising he banks/edges with crofton weed, lantana and grass species, but also good native regeneration (**Plate 9**).

3.4 Top of Active Pit Area

During the walkover of the top of the pit area a substantial area of erosion of was observed at O7 where bare soil, presumably cleared for future expansion is eroding downslope (**Plate 10**). The topsoil stockpile at O8 has a substantial infestation of lantana and wild tobacco (**Plate 11**). The access track from the top of the pit down to the old houses has a number of piles or metal or discarded implements (O9 and O10). This material will be required to be removed at some time in the future as the pit expands. The pile of tin roofing at O9 will need to be moved with care as it is ideal reptile habitat (**Plate 12**).

3.5 Active Pit Area

Inspection of the revegetation of the benches was made by visual inspection from a safe distance, and via photos.

The southern benches viewed from the east (O11) shows a mix of native vegetation with canopy species and some *Acacias*, but also a considerable coverage of lantana and presumably exotic grasses (**Plate 13**). The same benches viewed from north (O13) shows the nature of the native vegetation and the decreasing size of the vegetation from top to bottom of the quarry due to decreasing age (**Plate 14** and **Plate 15**).

The northern benches were observed from O11 and O12 and also show a mix of native vegetation *Eucalyptus spp., Acacia spp.,* and lantana and wild tobacco as the main woody weeds (**Plate 16** O11). Looking down on these benches from O12 shows successful establishment of the native species, die back of some of the older *Acacias* as well as the establishment of wild tobacco (**Plate 17** O12).

3.6 Whiteside

This area runs along the north-west side of the active pit and includes the powerline easement. This area surveyed in detail in the Q3 Monitoring report and the results reported there. Jandra have contracted an experienced land management team to conduct control efforts in this and other areas in the first quarter of 2025. Results will be reported in the 2025 Q1 monitoring.

3.7 TRUCK PARK UP AREA AND TOPSOIL STOCKPILE

This area of the Jandra quarry was briefly observed this monitoring event and remains unchanged from the Q3 monitoring.

4 DISCUSSION

The rehabilitation of the benches in the AP area is progressing as well as can be expected given that additional seeding and weed control efforts cannot be undertaken due to safety concerns, i.e., narrowness of the benches and the possible falling rocks. The 2019 fire burned these benches extensively which allowed weedy species to colonise the bare soil. Growth of the remaining native trees and shrubs appears to be healthy, although the woody weed species such as wild tobacco and lantana also appear to be healthy.

Areas of previous plantings (older benches) around the AP appear to be more successful than areas of the benches allowed to regenerate, naturally. This is apparent through the higher cover of exotic species (mainly lantana) along areas of 'natural regeneration'. Lantana was starting to fruit, which will likely propagate more plants in the future. The upper benches have numerous native trees that are, as expected, continuing to increase in height. With time these trees will help shade out the exotic species, cover the bare rock of the quarry wall and provide some natural regeneration through "seed rain" to the benches below.

The OSA is heavily infested with lantana and wild tobacco around the steep slope as it drops off into the surrounding vegetation. This was noted on all sides of the OSA including the "central island". Ongoing weed control will help to reduce the weed load within the boundary of the quarry which should improve the biodiversity values of the buffer area while also helping with eventual release and/or surrender in the future.

The Whiteside track is still heavily infested with wild tobacco and lantana, but conversations with Jandra Quarry management state that a weed control campaign has been contracted for the first quarter of 2025. The results should be able to be reported on in the 2025 Q1 monitoring.

No areas of poor water quality, or dieback of vegetation from surface water runoff, were observed. The Settlement Dam had no algal cover and was vegetated with native aquatic vegetation along its margins. Some minor areas of lantana were observed on the banks.

Obvious minor rilling and some gullying was observed on the access track, points on the OSA and at the pit top. The OSA erosion points had bunding constructed to prevent future erosion and material movement into the surrounding vegetation.

The topsoil stockpiles have become overgrown with exotic vegetation. It is recognised that there are long lead-in times for rehabilitation of benches with hard rock quarries, but the prevalence of these weeds limits the effectiveness of the topsoil for rehabilitation.

No evidence of feral animals was observed during the walkover, but it can be assumed they are present within the buffer zone and wider surrounding areas. Attempts to control feral pests as an isolated property owner are of limited value. But if undertaken as part of wider, coordinated campaign can prove beneficial n reducing overall numbers for a time.

5 RECOMMENDATIONS

Recommendations have been developed based on the outcome of the site-based quarterly inspection of the OSA, AP and Settlement Pond areas. The following items are recommended.

- Weed control along areas of high woody weed cover, i.e., powerline easement and slopes of the OSA where there is high cover of lantana and wild tobacco.
- Weed control should be structured so that methods are appropriate:
    - backpack spraying and hand removal of weeds should be prioritised in areas accessible on foot and which contain a mix of native and exotic species.
    - Quick spray and/or splatter gun of areas of dense woody weed infestations with little native species mix.
- Weed control should be conducted systematically to avoid large-scale initial removal of weeds, resulting in open areas of bare soil, leading to erosion.

- High-threat woody weeds should be prioritised for control before non-woody and annual weeds. Weeds such as lantana and wild tobacco are a high priority.
- Intensive weed control targeting exotic grasses is not recommended, as exotic grasses are currently helping stabilise the benches. This approach should be staged over time and should be supported by additional native species plantings.
- Erosion control structures such as sed fences, coir logs and bunding

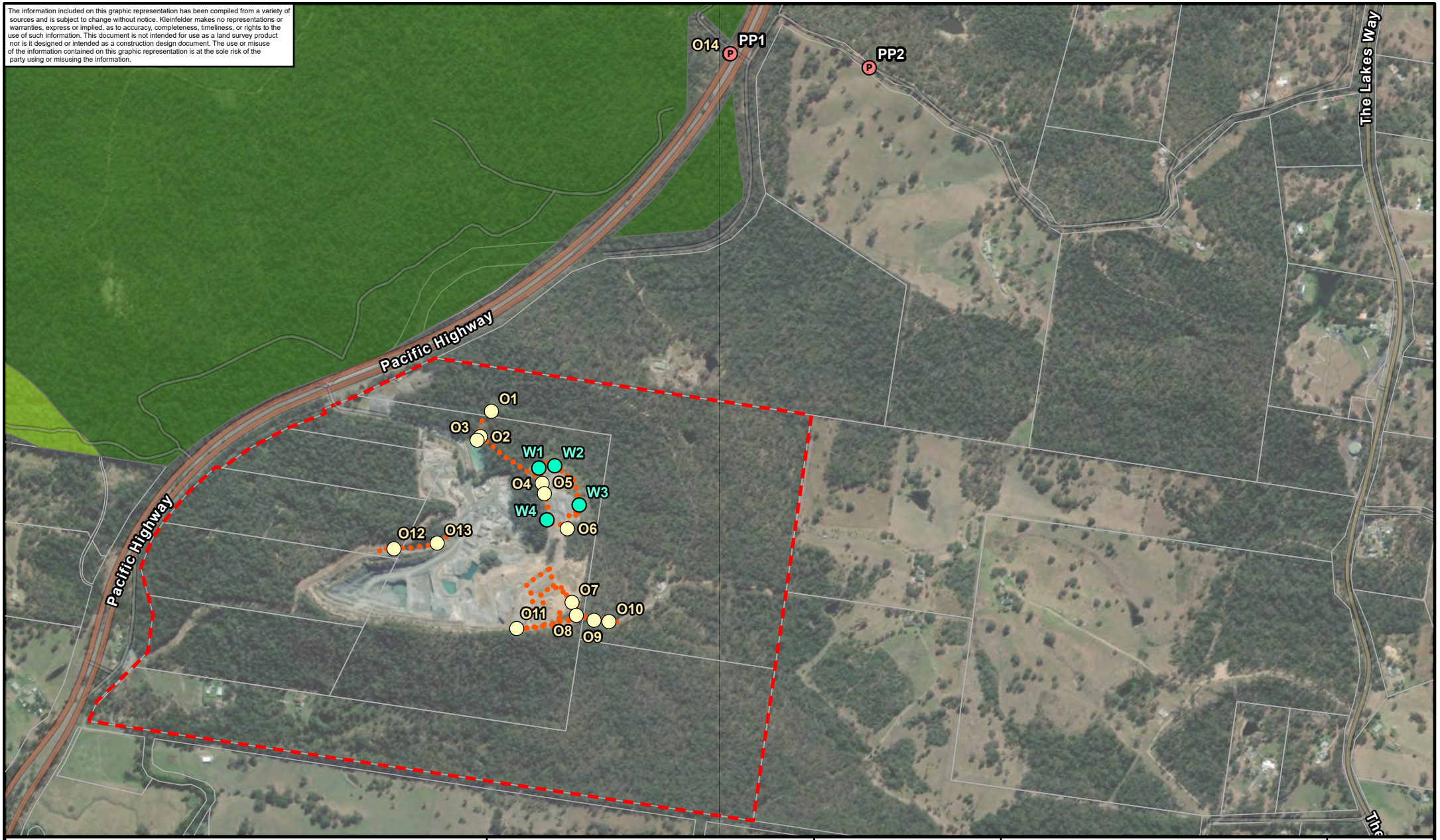
If you require additional information or clarification, please contact the undersigned.

Sincerely,

Kleinfelder Australia Pty Ltd

Nigel Fisher BSc (Hons) PhD

Senior Ecologist
nfisher@kleinfelder.com
Mobile: 0407 657 583



Legend

- Jandra Quarry Boundary
- Forestry Corporation of NSW
- National Park
- Lot Boundary
- Photo Points
- Weed Observations
- Other Observations
- Survey Tracks

Metres
0 50 100 200 300 400 500

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Q4 Quarterly Monitoring

Holcim Australia Pty Ltd
Jandra Quarterly Monitoring and BOA
Jandra Quarry, 15284 Pacific Highway,
Possum Brush, NSW 2430

FIGURE:
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APPENDIX 1: SITE PHOTOS

Plate 1: View of Jandra Quarry from photo point 1 – cnr of Blackbutts Rd and Pacific Hwy.

Plate 2: View of Jandra Quarry from photo point 2, Winmurra Dr.

Plate 3: Lantana thicket on the OSA at W2.

Plate 4: Multiple weed species at W3 on the OSA.

Plate 5: Improved bunding at O6.

Plate 6 Erosion flume bunding at O5.

Plate 7: Looking down the rack towards the settlement dam, rilling at the bottom of the track from the OSA to the settlement dam.

Plate 8: O1 View of the access track up from the second dam showing weeds and minor rilling.

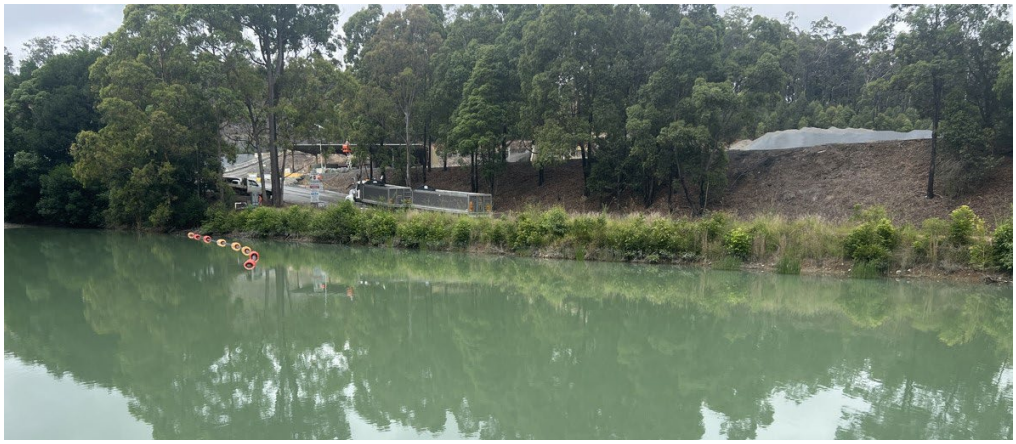

Plate 9: View of main settlement dam from O3 showing the combination of native and exotic vegetation along the dam edge.

Plate 10: O7 showing gullying and rilling at top of active pit.

Plate 11: Topsoil stockpile at O7 showing heavy infestation of lantana and wild tobacco.

Plate 12: O9 Metal roofing that may be acting as fauna habitat that will require removal

Plate 13: View of the southern benches from O11 in the active pit area showing extent of revegetation with a combination of exotic woody and grassy weeds and native vegetation.

Plate 14: View of southern benches from O13 showing the development of the revegetation with age – oldest revegetation at the upper benches, youngest at the lower benches.

Plate 15: View of southern benches from O13. Native vegetation and woody weeds are visible, lower benches are generally more weedy than older, upper benches.

Plate 16: View of northern benches from O11 showing extent of revegetation.

Plate 17: View of the northern benches looking down from the Whiteside track at O12 showing native species, die back of *Acacia* species., and woody weed species.