

Brandy Hill Quarry Annual Review – SSD 5899

9 July 2024 to 31 December 2024



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1. STATEMENT OF COMPLIANCE

Table 1: Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
SSD 5899	NO
EPL 1879	YES

Table 2: Non-Compliances

Relevant Approval	Condition #	Condition description (summary)	Compliance status	Comment	Where addressed in the Annual Review
SSD5899	B22	Air Quality exceedance of PM2.5	Not compliant	Currently under investigation -	6.5.2.4, 11.2

Table 3: Compliance status for Table 2

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 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)

2. INTRODUCTION

2.1. SCOPE AND FORMAT

This *Annual Review* has been prepared for the Brandy Hill Quarry (the Quarry) in accordance with the requirements of *Condition D9 of Project Approval SSD 5899 (SS D5899)*. The Quarry is owned and operated by Heidelberg Materials Pty Ltd (HMA) (formally Hanson Construction Materials Pty Ltd) and is located approximately 3.5km to the east of Seaham, 15km northeast of Maitland and 30km north of Newcastle in the Port Stephens Local Government Area (LGA) (**Figure 1**). This report documents the works undertaken and environmental performance from 9 July 2024 (commencement) to 31 December 2024 (the reporting period).

SSD 5899 was granted by the Independent Planning Commission of NSW on 16 July 2020. A copy of *SSD 5899* is reproduced as **Appendix 1**. *D9 of SSD 5899* is reproduced below.

“By the end of March in each year after commencement of development, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. This review must:

(a) describe the development (including any rehabilitation) that was carried out in the previous calendar, and the development that is proposed to be carried out over current calendar year.

(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including comparison of these results against the:

- the relevant statutory requirements, limits, or performance measures/criteria;*
- requirements of any plan or program required under this consent;*
- monitoring results of previous years; and*
- relevant predictions in the documents listed condition A2(c).*

(c) identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;

(d) evaluate and report on:

- the effectiveness of the noise and air quality management systems; and*
- compliance with the performance measures, criteria and operating conditions in this consent;*

(e) identify any trends in the monitoring data over the life of the development

(f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and

(g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.”

The information presented within this *Annual Review* has been prepared based on information compiled by HMA. The report generally follows the format and content requirements identified in the *Annual Review Guideline* dated October 2015.

2.2. THE COMPANY

Heidelberg Materials Australia Pty Ltd (HMA) operates over 50 quarries in Australia and supplies aggregates, sand, and premixed concrete materials for the construction industry. HMA also produces precast concrete. HMA is a subsidiary company of Heidelberg Materials, which internationally employs approximately 60,000 people at more than 3,000 locations in around 60 countries.

2.3. OVERVIEW OF OPERATIONS

2.3.1. Approved Activities

The approved activities at the Quarry comprise the following.

- Development and use of an extraction area to extract basalt using standard drill, blast, load, and haul techniques.
- Use of a processing plant to process the extracted basalt to produce a range of quarry products, including aggregates and road base, and stockpiling of the resulting products within an identified Infrastructure Area.
- Construction of a new processing plant to begin in Stage 3 of the quarry development.
- Transportation of up to 700 000t per year of quarry products using truck and dog and B-Double trucks.
- Receival and processing of up to 20 000t per year of concrete waste material at the site.
- Construction of a range of bunds and mounds and establishment of native vegetation to provide visual screening for the quarry operations.

2.3.2. Hours of Operation

All activities during the reporting period were undertaken within the approved hours of operation.

The approved hours of operation are as follows.

- Product loading and dispatch
 - Monday to Saturday – 6:00 am to 6:00 pm
 - 20 days per calendar year – Monday to Friday – 6:00 pm to 10:00 pm
 - Sundays and public holidays – nil
- Quarry operations (ex. secondary and tertiary processing)
 - Monday to Saturday – 6:00 am to 6:00 pm
 - Sundays and public holidays – nil
- Secondary and tertiary processing
 - Monday to Friday – 6:00 am to 8:00 pm
 - Saturday – 6:00 am to 6:00 pm
 - Sundays and public holidays – nil
- Blasting
 - Monday to Friday – 9:00 am to 5:00 pm
 - Saturdays, Sundays and public holiday – nil
- Construction work
 - Monday to Friday – 7:00 am to 6:00 pm
 - Saturday – 7:00 am to 5:00 pm
 - Sundays and public holidays – nil

2.3.3. Employment

During the reporting period, the Quarry employed 23 full-time operational staff, including 6 staff involved in extraction and processing activities and 17 staff involved in transportation activities. Employment will remain consistent with this level during the next reporting period.

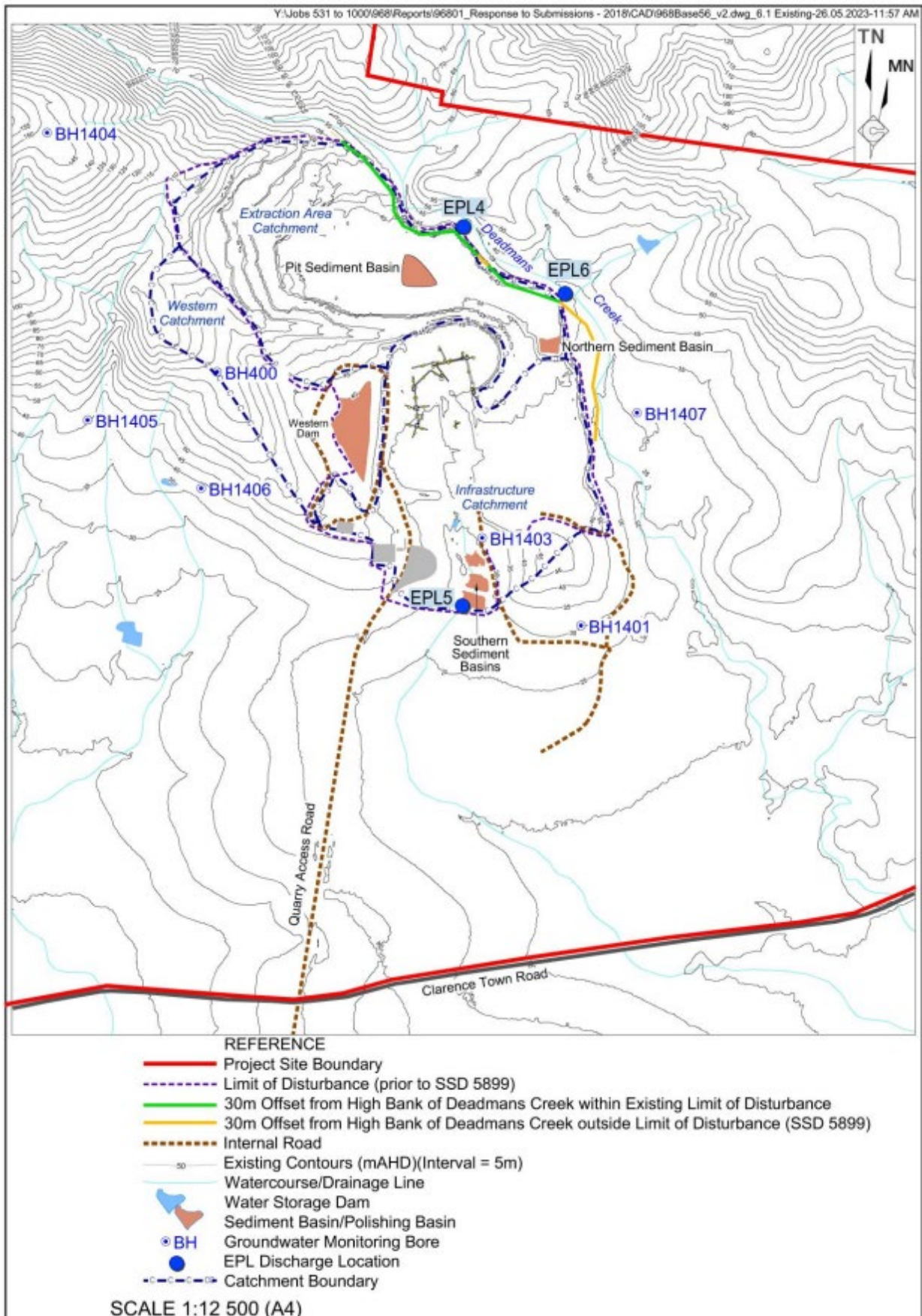


Figure 1: Site Layout

2.4. KEY PERSONNEL CONTACT DETAILS

The key personnel contact names, position and phone numbers are as follows.

<i>Name</i>	<i>Position</i>	<i>24 Hour Contact</i>
Shaun Boland	Quarry Manager	shaun.boland@heidelbergmaterials.com
Belinda Pignone	Senior Environmental Coordinator	belinda.pignone@heidelbergmaterials.com
Chantel Sullivan	Environmental/Sustainability Officer	chantel.sullivan@heidelbergmaterials.com

2.5. MANAGEMENT OF DOCUMENT PREPARATION

This document has been prepared by Belinda Pignone (BEnvMgtSc), Chantel Sullivan (BEnvScMgt) and Max Kamatsos (BDevSt(EnvSust)) with assistance from Mr Shaun Boland, Quarry Manager. HMA provided technical input and information on Quarry operations and environmental performance during the reporting period.

3. APPROVALS

Table 4 presents the approvals and licences held in relation to the Quarry.

Table 4: Approvals and Licences

Consent/Lease/Licence	Issue Date	Expiry Date	Details/Comments
<i>Project Approval SSD 5899</i>	16/07/2020 which came into effect on 9 July 2024	16 July 2050	Approved by the Independent Planning Commission of NSW Issued by the Department of Planning, Housing and Infrastructure
<i>EPBC Act Approval EPBC 2015/7453</i>	27/10/2020 which came into effect 9 July 2024	31 December 2055	Approved by Minister for the Environment Issued by Department of Agriculture, Water and the Environment
<i>Environment Protection Licence EPL 1879</i>	02/05/2001 Variation 08/01/2025	-	Approved and issued by the Environment Protection Authority
<i>Groundwater Access Licence WAL 43564</i>	15/12/2020	-	Approved and issued by the Department of Primary Industries – Office of Water Share component 172ML
<i>Miscellaneous Work Number 20MW065048</i>	14/08/2023	-	Approved and issued by Department of Planning and Environment – Water (Now DCCEEW-Water Group)

On 9 July 2024, Brandy Hill Quarry commenced operations under *SSD 5899*, which granted extension of the quarry's operational life for an additional 30 years. The Department of Planning, Housing and Infrastructure was formally notified of the commencement of this consent on 23 May 2024.

Table 5 presents the documentation used by Quarry management to guide day-to-day operations at the Quarry.

Table 5: Quarry Documentation

Document Title	Date Finalised / Approved
<i>SSD Consent Environmental Management Plans</i>	
Air Quality & Greenhouse Gas Management Plan	26/10/2021
Biodiversity and Rehabilitation Management Plan	23/08/2022
Blast Management Plan	08/10/2021
Noise Management Plan	11/10/2021
Traffic Management Plan	26/10/2021
Water Management Plan	26/06/2024
Koala Habitat Plan	03/02/2023
Environmental Management Strategy	23/08/2022
<i>EPBC Consent Environmental Management Plans</i>	
Koala Habitat Plan	03/02/2023
Koala Protection Plan	12/08/2022
<i>EPL 1879 Management Plans</i>	
Pollution Incident Response Management Plan	10/11/2024
Nitrogen Management Plan	TBA

It should be noted that all management plans are regularly reviewed in accordance with *Condition D5* of *Schedule 2* of *SSD 5899*. Management plans will be reviewed in the second quarter of the 2025 reporting period.

4. OPERATIONS SUMMARY

4.1. INTRODUCTION

Figure 2 presents an overview of the Quarry layout at the end of the current reporting period.

4.2. EXTRACTION OPERATIONS

Table 6 presents the material movements during the previous and current reporting periods and the anticipated movements during the next reporting period.

Table 6: Production Summary – Tonnes

Material	Approved limit (specify source)	Previous reporting period (actual)	This reporting period (actual) ¹	Next reporting period (forecast)
<i>Product transported off- site</i>	700,000 t (SSD 5899)	N/A	283,868 t	550,000 t
Source: Heidelberg Materials Pty Ltd				
Note ¹ : From commencement date				

Overburden stripped in preparation for blasting and extraction activities was stockpiled to construct the amenity bunds within the property boundary, including those to the south and north of the extraction area.

A total of 11 blasts were initiated during the reporting period. **Table 7** presents relevant information in relation to each blast. All blasts were production blasts and occurred within the approved extraction area (see **Figure 1**).

HMA has continued to refine blasting and blast monitoring procedures throughout the reporting period through the following measures.

- HMA and the blast contractor technical staff reviewed each of the three blast monitors and results following each blast event.
- Applying any proposed modifications to blast design in single steps to evaluate the impact of each modification independently.
- Modification of the blasting pattern following review of previous blast results to reduce powder factors.

Table 7: Blasting Operations during the Reporting Period

Date Initiated	Blast Number	Blast Time
15 July 2024	<i>Blast 2418</i>	10:01 AM
26 July 2024	<i>Blast 2420</i>	11:10 AM
7 August 2024	<i>Blast 2421</i>	12:41 PM
22 August 2024	<i>Blast 2422</i>	12:36 PM
5 September 2024	<i>Blast 2423</i>	01:50 PM
3 October 2024	<i>Blast 2424</i>	10:36 AM
18 October 2024	<i>Blast 2425</i>	01:09 PM
31 October 2024	<i>Blast 2417</i>	11:55 AM
19 November 2024	<i>Blast 2426</i>	11:31 AM
5 December 2024	<i>Blast 2427</i>	11:07 AM
19 December 2024	<i>Blast 2428</i>	10:57 AM

4.3. OTHER OPERATIONS

4.3.1. Construction Operations

Throughout the reporting period, the construction of the amenity bund progressed, primarily to the south of the extraction area. Infrastructure activities included the ongoing development of the southern amenity bund, along with the initiation of planting within the Koala Corridor replanting area. Additionally, Stage 1 of the development was stripped.

Processing operations required the fixed processing plant and pre-coat plant during the reporting period (see **Figure 2**).



Figure 2 : Construction Operations Locations

4.3.2. Product Transportation

Products transported off-site during the reporting period were approximately 283 868t of material, below the approved annual transportation volume of 700 000t.

4.4. NEXT REPORTING PERIOD

Blasting for extraction operations is expected to continue during the next reporting period, with blasts undertaken up to once a week, subject to market and internal demand from HMA's other operations. HMA anticipates that production will increase on what was achieved in 2024 due to the expansion of the pit into Stage 1 of *SSD 5899* (see **Table 6**).

Processing activities using the current fixed processing plant and pre-coat plant are proposed to continue during the next reporting period, with the amount of material to be processed dependent on the demand for the Quarry's products from internal and external customers.

Product transport during the next reporting period will depend on client demand over the year but will be held to the approved transport movement limits noted in *SSD 5899*.

Rehabilitation activities during the next reporting period will extend to the progressive shaping and revegetation of the southern visual amenity screen. A focus on rehabilitation activity on the southern boundary will occur in 2025. Additionally, active rehabilitation will continue to occur in the Koala Corridor replanting area, as required under the approved management plans, *SSD 5899* and *EPBC 2015/7453*.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

As this is the first Annual Review for Brandy Hill Quarry under *SSD 5899* there is no actions required from the previous Annual Review.

6. ENVIRONMENTAL PERFORMANCE

6.1. INTRODUCTION

Environmental monitoring is undertaken to determine the degree of impact the construction and production operations have on the environment. Assessing these results can establish whether environmental management systems are being successfully applied in the short term and whether they need to be amended.

Appropriate environmental monitoring, in addition to satisfying necessary statutory requirements, demonstrates to the local community and relevant authorities HMA's commitment to the protection of the environment.

The following sub-sections present the results of the various monitoring programs undertaken throughout the reporting period. Where appropriate, monitoring results from previous years are also presented for comparative purposes.

Figures 3 and 4 provide monitoring locations and residences referred to in this section.

6.2. METEOROLOGICAL MONITORING

Table 8 presents the meteorological monitoring results recorded by HMA's on-site automated meteorological monitoring station. In addition, long term-average climate data from the Bureau of Meteorology-operated Maitland Airport AWS (Station No 061428) is provided for comparison.

The Quarry's site weather station occasionally developed issues where readings were not consistently available for small periods of time throughout the reporting period. Quarry staff contacted maintenance contractors as soon as the issue was observed and were advised to manually reset the weather station. The weather station was manually reset each time monitoring data was observed to be irregular throughout 2024.

Temperature readings at 2m above ground level have been recorded for periods where complete monthly data is available. The maximum temperature readings at the Quarry were generally lower when compared to the long-term averages, whilst minimum temperatures were consistently below average. This suggests significant variability in the average daily temperatures throughout the year.

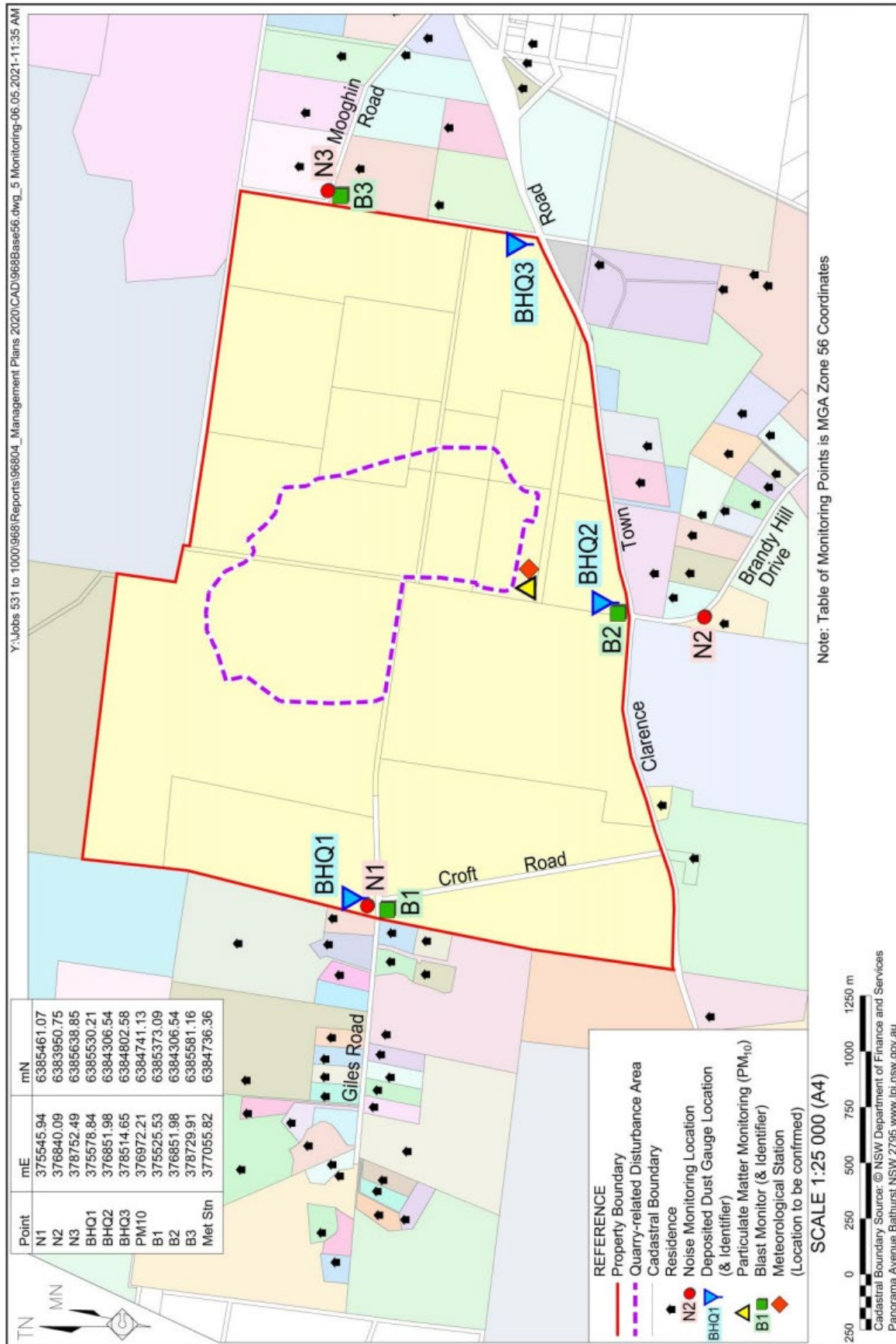


Figure 3: Environmental Monitoring Locations

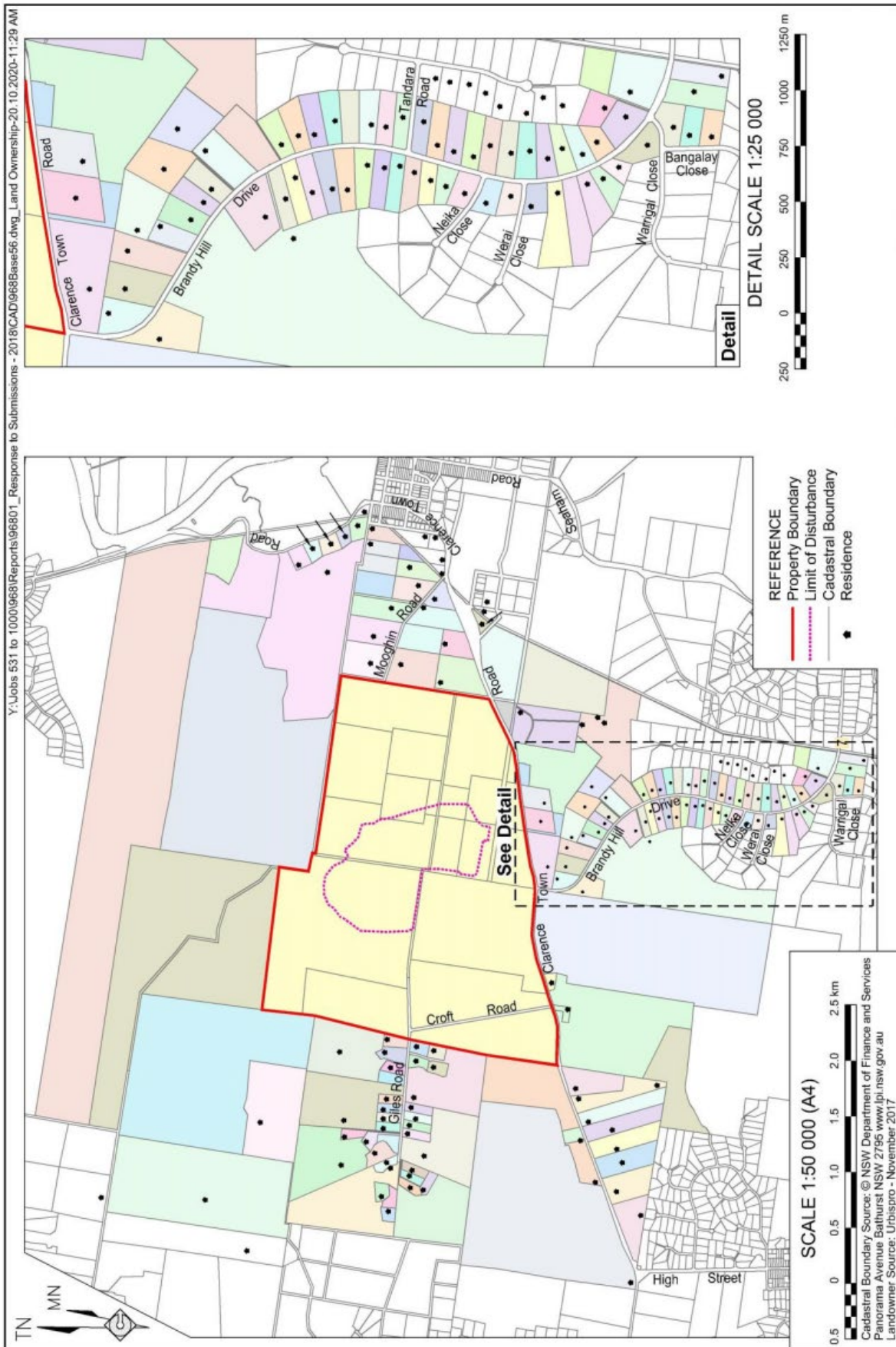


Figure 4: Surrounding Residences

Table 8: Meteorological Monitoring Results

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Anu
Temperature														
2024	Max	-	-	-	-	-	-	23.2	30	29.7	31.3	39.4	39.7	N/A
	Min	-	-	-	-	-	-	1.7	1.5	2.1	6.3	11.2	11.1	N/A
Long Term Average ¹	Max	-	-	-	-	-	-	25.9	28.9	35.3	36.2	41.3	44.2	N/A
	Min	-	-	-	-	-	-	12.1	11.3	15.8	14.3	18.6	20.1	N/A
Rainfall														
2024	Total	-	-	-	-	-	-	23.6	51.2	85.8	51.8	65.6	15.6	N/A
	No. of Rain Days	-	-	-	-	-	-	5	14	9	18	14	7	N/A
	Max Daily Rainfall	-	-	-	-	-	-	7.6	17.6	34.8	10.2	10.4	5.6	N/A
Long Term Average ¹	High. rainfall	-	-	-	-	-	-	77.3	56.3	62	66.3	90.5	76.5	N/A
	No. of Rain Days	-	-	-	-	-	-	7.7	5.5	5.9	6.9	8.5	8.2	N/A
	Max Daily Rainfall	-	-	-	-	-	-	162.4	43.8	38.2	33.4	52.8	43.4	N/A
Note ¹ : Long-term average data source – Maitland Airport AWS (Station No 061428) – Updated 28 February 2025														
Note ² : N/A – Data not available or incomplete														
Source: Heidelberg Materials Pty Ltd														

Rainfall variability can be considered through a comparison of annual and individual month records at the Quarry with those recorded during 2024. In summary, total rainfall during 2024 was similar to 2021 and significantly lower than in 2022 and 2023. However, individual months varied. Compared with the long-term average recorded at the Maitland Airport AWS, there is significant variance across the year.

6.3. NOISE

6.3.1. Predicted Impacts and Performance Criteria

Table 9 identifies the predicted operating noise levels at five representative/most impacted residences surrounding the Quarry (**Figure 4**). **Table 10** identifies the predicted road traffic noise levels generated by traffic on Brandy Hill Drive. **Table 11** identifies the relevant noise-related performance criteria for residences surrounding the Quarry Site identified by *Condition B1* of *SSD 5899*.

The Noise Management Plan identifies that noise monitoring would be undertaken at three intermediate locations, namely Locations N1, N2 and N3 (**Figure 3**), on the boundary of the property, between the Quarry Site and the closest neighbours. **Table 11** also presents the assessment results as the noise level criteria to be applied at these locations.

Table 9: Predicted Operating Noise Levels – All Stages

Residence	Period	Stage 1 Predicted Noise Level (dB(A))	Stage 2 Predicted Noise Level (dB(A))	Stage 3 Predicted Noise Level (dB(A))	Stage 4 Predicted Noise Level (dB(A))	Stage 5 Predicted Noise Level (dB(A))
R13A	Day/Evening	36	36	36	35	36
	Night	35	35	35	36	36
R13B	Day/Evening	36	36	36	32	34
	Night	35	35	34	34	34
R14	Day/Evening	37	37	37	35	36
	Night	36	36	35	34	34
R16	Day/Evening	37	37	37	36	37
	Night	36	36	36	36	36
R17	Day/Evening	35	35	35	37	37
	Night	33	33	33	37	37
All other residences	Day/Evening	<35	<35	<35	<35	<35
	Night	<35	<35	<35	<35	<35

Table 10: Pre and Post SSD Approval Traffic Noise Levels dB(A)

Period	Original Noise Levels (dB(A))	Traffic Generated		Applicable Noise Criteria	Difference (dB(A))
		Proposed Truck Movements	Future Noise Levels dB(A) ¹		
Day period (7am to 10pm)	62.2	603	63.3	64.2 ²	+1.1
Night period (10pm to 7am)	52.1	117	54.1	55 ³	+2

Note 1: Assessment representative of noise levels at a location 30m from Brandy Hill Drive

Source: Vipac (2018a) – Table 48

Table 11: Operational Noise Criteria dB(A)

Noise Assessment Location	Day LA _{eq} (15 min)	Evening LA _{eq} (15 min)	5 am to 6 am		6 am to 7 am	
			LA _{eq} (15 min)	LA ₁ (1 min)	LA _{eq} (15 min)	LA ₁ (1 min)
R13.1	36	36	35	45	36	46
R13.2	36	36	35	45	35	45
R14	38	38	35	45	36	46
R16	37	37	35	45	36	46
R17	37	37	35	45	37	47
Other privately-owned residences	35	35	35	45	35	45

HMA undertakes monitoring quarterly at Locations N1, N2 and N3. In the event that the noise levels identified in **Table 11** are exceeded, there is a substantiated noise-related complaint, or a landholder exercises their rights under *Condition C3* of *SSD 5899* to request an independent review of noise-related impacts, attended noise monitoring would be undertaken at surrounding residences.

6.3.2. Measured Performance

Quarterly attended noise monitoring programs were undertaken during the reporting period by Muller Acoustic Consulting Pty Limited (MAC). The resulting reports are presented as **Appendix 3**.

All noise monitoring was undertaken under the following operational conditions.

- extraction of basalt using standard drill, blast, load, and haul techniques.
- processing of extracted basalt and stockpiling; and
- transportation of quarry products.

Noise monitoring was undertaken at intermediate locations N1, N2 and N3 (see **Figure 3**) during each monitoring campaign. The noise monitoring results are summarised in **Tables 12 to 13**.

6.3.3. Discussion and Analysis

Noise levels at locations N1, N2 and N3 complied in all instances during the reporting period. Since quarterly monitoring commenced in August 2024, no instances of noise monitoring have exceeded the noise criteria limits. Additionally, the noise monitoring results reflect the 2018 EIS noise impact assessment, which indicated that project noise levels for the quarry will be at acceptable levels.

6.3.4. Comparison with Previous Years

Historic noise monitoring conducted between 2018 and 2024 has indicated that the Quarry's contribution to noise levels at locations N1, N2 and N3 range between inaudible and 38 dB(A). There have also been several occasions when the site was inaudible from the monitoring locations. There are no identifiable trends in noise levels, except the continued compliance of the operation. As quarrying operations continue to the northwest of the existing active disturbance, it is expected that noise levels experienced at properties to the west of the quarry will increase, though it is predicted that noise levels will remain within the approved limits.

6.3.5. Comparison with EIS

Monitored noise levels generally remain within the approved criteria and predictions made in the EIS. The noise criteria provided in *SSD 5899* is generally 36-38dB(A), suggesting that noise levels were predicted around that of the the rating background noise level. However, HMA notes that noise predictions made in the EIS are based on worst-case scenario events and are, therefore, conservative.

The attended monitoring program undertaken throughout the reporting period confirmed that the Quarry satisfied requirements with regard to the assessment criteria. This is consistent with the predictions included in the documents listing in *Condition A2(c)* of *SSD 5899* as well as the *Noise Management Plan* (RWC, 2021) and the results of previous noise monitoring at the Quarry.

Table 12: Noise Monitoring Results – 7 August 2024

Location and Period	Noise limits in dB(A)		Estimated site contribution dB(A)		Met Conditions ¹		Comments
	<i>L_{aeq}, 15 min</i>	<i>L_{A1}, 1min</i>	<i>L_{aeq}, 15 min</i>	<i>L_{A1}, 1min</i>	<i>Wind Speed (m/s)</i>	<i>Wind Direction</i>	
<i>R1/R10 (Giles Road) – Morning Shoulder</i>	36	N/A	Inaudible	N/A	0.1	N	Site was inaudible. Other sources included birds, distant traffic and local traffic.
<i>R1/R10 (Giles Road) – Day</i>	36	N/A	<35	N/A	0.1	E	The site was audible for 5 seconds, with a reverse alarm. Other sources included birds, traffic and aircraft
<i>R1/R10 (Giles Road) – Evening</i>	36	45	<35	N/A	0.1	N	The site was audible from mobile plant. Other sources included insects, traffic and aircraft.
<i>R2/R13.2 (Brandy Hill Drive) – Morning Shoulder</i>	36	N/A	Inaudible	N/A	0.1	N	Site was inaudible. Other sources included birds, traffic and aircraft
<i>R2/R13.2 (Brandy Hill Drive) – Day</i>	36	N/A	Inaudible	N/A	0.1	E	Site was inaudible. Other sources included birds and traffic
<i>R2/R13.2 (Brandy Hill Drive) – Evening</i>	36	45	Inaudible	N/A	0.1	N	Site was inaudible. Other sources included traffic, livestock and insects
<i>R3/R8 – Morning Shoulder</i>	36	N/A	<35	<35	0.3	SW	Site was audible from mobile plant. Other sources included traffic, birds and other industrial.
<i>R3/R8 – Day</i>	36	N/A	<35	N/A	0.1	SW	Site was inaudible. Other sources included traffic, birds, other industrial, aircraft and dogs barking.
<i>R3/R8 – Evening</i>	36	45	Inaudible	N/A	0.1	N	Site was inaudible. Other sources included insects and traffic.

Note 1: Meteorological data was recorded at site weather station (at a height of 10m above ground)

N/A: Not Applicable.

Source: MAC (2024a)

Table 13: Noise Monitoring Results – 13 November 2024

Location and Period	Noise limits in dB(A)		Estimated site contribution dB(A)		Met Conditions		Comments
	<i>L_{aeq}, 15 min</i>	<i>L_{A1}, 1min</i>	<i>L_{aeq}, 15 min</i>	<i>L_{A1}, 1min</i>	<i>Wind Speed (m/s)</i>	<i>Wind Direction</i>	
<i>R1/R10 (Giles Road) – Morning Shoulder</i>	36	N/A	<30	<30	0.1	N	Site was inaudible. Other sources includes birds, insects and traffic.
<i>R1/R10 (Giles Road) – Day</i>	36	N/A	<30	N/A	0.1	N	Site was inaudible. Other sources included birds, insects and traffic.
<i>R1/R10 (Giles Road) – Evening</i>	36	45	<32	N/A	0.1	E	Site was inaudible. Other sources included insects, birds and traffic.
<i>R2/R13.2 (Brandy Hill Drive) - Morning Shoulder</i>	36	N/A	<31	<31	0.1	NW	Site was inaudible. Other sources included birds and traffic.
<i>R2/R13.2 (Brandy Hill Drive) - Day</i>	36	N/A	<32	N/A	0.2	N	Site was inaudible. Other sources included traffic, insects, birds and aircraft.
<i>R2/R13.2 (Brandy Hill Drive) - Evening</i>	36	45	<32	N/A	0.1	E	Site was inaudible. Other sources included birds, insects and traffic.
<i>R3/R8 - Morning Shoulder</i>	36	N/A	<30	<30	0.1	N	Site was inaudible. Other sources included birds, traffic, livestock and agriculture noise.
<i>R3/R8 - Day</i>	36	N/A	<30	N/A	0.1	N	Site was inaudible. Other sources included birds, agriculture noise, traffic, livestock and dog barking.
<i>R3/R8- Evening</i>	36	45	<35	N/A	0.1	E	Site was inaudible. Other sources included insects, local residential noise and birds

Note 1: Meteorological data was recorded at site weather station (at a height of 10m above ground).

N/A: Not Applicable.

Source: MAC (2024b)

6.4. BLASTING

6.4.1. Property Inspections and Property Investigations

Condition B12, B13, B14, B15 and B16 of SSD 5899 requires HMA to:

- publish an up-to-date blasting schedule on its website, and
- notify the landowner/occupier of any residence within 2 kilometres of the site, who have requested to be added to the blast notification list, prior to blasting event.

Blasting schedules for the upcoming months are published on the quarry website. Additionally, HMA sends email notifications of planned blasts to residents who have requested to be included on the blast notification list and reside within 2km of the site, prior each blast.

6.4.2. Predicted Impacts and Performance Criteria

Table 14 identifies predicted blasting-related impacts at surrounding residences (**Figure 4**).

Table 15 presents the airblast overpressure and ground vibration performance criteria identified in *Conditions B8* of SSD 5899.

Table 14: Predicted Levels of Blast Emissions

Residence	Distance approx. (m)	PPV (mm/s)	Overpressure (dB)	PPV (mm/s)	Overpressure (dB)
		Expected maximum MIC of 145kg		MIC limit of 175 kg	
R9 - 13 Giles Road, Seaham	1,110	2.9	110	3.3	111
R10 - 13B Giles Road, Seaham	950	3.7	112	4.3	113
R13A - 994 Clarence Town Road, Seaham	960	3.6	112	4.2	113
R14 - 1034 Clarence Town Road, Seaham	860	4.3	113	5.0	114
R16 - 1094 Clarence Town Road, Seaham	980	3.5	112	4.1	112
R17 - 1189 Clarence Town Road, Seaham	1,160	2.7	110	3.1	110
R7 - 13 Mooghin Road, Seaham	1,310	2.2	109	2.6	109
Nearest livestock	1,100	2.9	110	3.3	111
Criteria		5.0	115	5.0	115

Source: Vipac (2018b) – Modified after Table 2

Table 15: Blasting-related Performance Criteria

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately owned land	120	10	0%
	115	5	5% of the total number of blasts over a calendar year

In order to minimise inconvenience for surrounding residents, the Blast Management Plan identifies three blast monitoring locations within land owned by HMA (**Figure 3**). In addition to the above criteria, *Conditions B10* and *B11* of SSD 5899 permit blasting between 9:00 am and 5:00 pm, Monday to Friday. No blasting is permitted on Saturdays, Sundays, or Public Holidays. HMA may initiate up to:

- One blast per calendar week
- Blasting may be carried out more frequently than once per week under certain circumstances.

6.4.3. Measured Performance

Table 16 presents the results of blast monitoring during the reporting period.

Table 16: Blast Monitoring Results

Date		Quarry Driveway		Mooghin Road Gate		Giles Road Gate	
		Ground Vibration (mm/s)	Air Blast (dB)	Ground Vibration (mm/s)	Air Blast (dB)	Ground Vibration (mm/s)	Air Blast (dB)
<i>Criteria</i>	<i>95%/yr</i>	<i>5</i>	<i>115</i>	<i>5</i>	<i>115</i>	<i>5</i>	<i>115</i>
	<i>100%</i>	<i>10</i>	<i>120</i>	<i>10</i>	<i>120</i>	<i>10</i>	<i>120</i>
15.07.2024		0.5	105.9	NT	NT	NT	NT
26.07.2024		0.93	105.7	0.63	82.9	NT	NT
07.08.2024		0.49	99.7	1.24	82.9	NT	NT
22.08.2024		1.17	79.7	1.02	82.9	NT	NT
05.09.2024		0.44	109.1	0.67	94.9	NT	NT
03.10.2024		NT	NT	NT	NT	0.33	99.6
18.10.2024		1.42	102.9	0.54	86.4	0.77	102.1
31.10.2024		0.51	102.9	0.44	90.8	NT	NT
19.11.2024		0.54	102.6	0.86	82.9	0.81	107.7
05.12.2024		NT	NT	0.66	82.9	NT	NT
19.12.2024		NT	NT	0.79	82.9	NT	NT
Note: NT = Blast Monitor Not Triggered.							
Source: Heidelberg Materials Pty Ltd							

6.4.4. Discussion and Analysis

The criterion of 5mm/s for ground vibration and 115dB for air blast overpressure was not exceeded in the 2024 monitoring period. A total of 11 blasts occurred in 2024 monitoring period, with 0% exceeding the 115dBL criteria for air blast overpressure. Blasting results satisfy the criteria presented in **Table 16**.

It is to be noted that no residences have requested that blast monitoring take place at their properties within the reporting period.

Comparison with EIS

2024 monitored blast levels remain within the predictions made in the EIS (**Table 15**). The EIS predicted levels of peak airblast fell under ANZECC's maximum human comfort criterion of 120 dB Linear with predicted levels of ground vibration at all nearby residences complying with the ANZECC general human comfort criterion. HMA notes that airblast overpressure and vibration predictions made in the EIS are based on worst-case scenario events and are, therefore, conservative.

The attended monitoring program undertaken throughout the reporting period confirmed that the Quarry satisfied requirements with regard to the assessment criteria. This is consistent with the predictions included in the *Blast Management Plan* (RWC, 2021) and the results of previous blast monitoring at the Quarry.

6.5. AIR QUALITY

6.5.1. Predicted Impacts and Performance Criteria

Table 17 and **18** presents the predicted summary of air quality modelling predictions for each pollutant recorded at the quarry and during different stages of the development and Predicted Monthly Average Incremental Dust Deposition Concentrations at surrounding properties. **Tables 19** and **20** present the air quality performance criteria presented in *Conditions B22* and *B23* of *SSD 5899*

Table 17: Summary of Air Quality Modelling Predictions – Stage 1, 2 and 4

Pollutant	Averaging Period	Criteria	Assumed Background	Maximum Predicted Concentrations at Any Receptor ¹			
				Existing	Stage 1	Stage 2	Stage 4
TSP (ug/m ³)	Annual	90	67.7	71.4	72.6	72.1	75.4
PM10 (UG/M3)	Annual	25	18.8	20.8	21.1	20.7	22.0
PM2.5 (UG/M3)	Annual	8	7.3	7.8	7.8	7.8	7.9
Dust Deposition (g/m ² /month)	Monthly Total ²	4	2.2	2.3	2.3	2.3	2.4
	Monthly Increase ²	2		0.1	0.1	0.1	0.2

Note 1: See Figure 3 for location
 Note 2: Monthly average over a rolling 12-month period.

Source: Heidelberg Materials Pty Ltd

Table 18: Predicted Monthly Average Incremental Dust Deposition Concentrations – Stages 1, 2 and 4

Receptor	Predicted Annual Average Incremental Dust Deposition (g/m ² /month)			
	Current	Stage 1	Stage 2	Stage 4
122B Duns Creek Road	0.01	0.03	0.03	0.01
16 Uffington Road	0.01	0.02	0.02	0.01
60 Green Wattle Creek Road	0.01	0.03	0.03	0.02
34 Timber Top Road	0.02	0.05	0.05	0.02
35 Timber Top Road	0.02	0.04	0.04	0.02
36 Timber Top Road	0.02	0.04	0.05	0.02
13 Mooghin Rd	0.34	0.78	0.76	0.23
14 Mooghin Rd	0.27	0.61	0.61	0.16
13 Giles Road	0.07	0.17	0.18	0.06
13B Giles Road	0.03	0.06	0.07	0.02
866 Clarence Town Road	0.03	0.07	0.07	0.05
888 Clarence Town Road	0.04	0.08	0.09	0.05
994 Clarence Town Road	0.03	0.07	0.08	0.09
1034 Clarence Town Road	0.03	0.07	0.08	0.07
1060 Clarence Town Road	0.03	0.06	0.07	0.05
1094 Clarence Town Road	0.02	0.04	0.06	0.07
1189 Clarence Town Road	0.33	0.73	0.75	0.25
1203 Clarence Town Road	0.14	0.33	0.34	0.16

Table 19: Air Quality-related Performance Criteria – Suspended Particulates

Pollutant	Averaging period	Criterion	Basis
Total suspended particulate (TSP) matter	Annual	90ug / m ³	Total
Particulate Matter < 10um (PM10)	Annual	25ug / m ³	Total
Particulate matter <10um (PM10)	24 hour	50ug / m ³	Total
Particulate Matter < 2.5um (PM2.5)	Annual	8ug / m ³	Total
Particulate Matter < 2.5um (PM2.5)	24 hour	25ug / m ³	Total

Table 20: Air Quality-related Performance Criteria – Deposited Dust

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

6.5.2. Measured Performance

6.5.2.1. Total Suspended Particulate Matter

Section 3 of the approved *Air Quality and Greenhouse Gas Management Plan* (AQGGMP, 2021) outlines the procedures to be implemented at the Quarry to satisfy *Condition B22, B23 & B24* of *SSD 5899* regarding air quality monitoring.

A TSI DustTrak DRX Desktop Monitor was installed on-site in February 2024, to enable continuous monitoring of both particulate matter <10um (PM10) and <2.5um (PM2.5). Monitoring of PM10 has been conducted historically at the Quarry and has continued on commencement of *SSD 5899*. However, PM2.5 monitoring did not occur previous to the monitor install in February 2024. The AQGGMP states:

“Hanson will implement a program of continuous PM2.5 monitoring for a period of 12 months following commencement of operations under SSD 5899. This monitoring will permit Hanson to establish the relationship between PM10 and PM2.5 in the local area and also to measure any seasonal changes to this relationship.”

The AQGGMP was prepared in March 2021 and submitted to DPHI in June 2021. In accordance with this program, continuous monitoring of both PM10 and PM2.5 commenced with the commencement of *SSD 5899* to demonstrate ongoing compliance with the consent conditions.

6.5.2.2. Deposited Dust

Deposited dust monitoring has occurred at the Quarry for an extended period previous to the commencement of *SSD 5899*. The locations of the deposited dust monitoring locations, as approved within the AQGGMP are shown in **Figure 3**. **Table 21** presents the results of the deposited dust monitoring program for 2024 monitoring period.

All samples recorded in 2024 varied between 0.3 g/m²/month and 4.5 g/4m²/month. The highest deposited dust level recorded during the reporting period was at DDG2 (Quarry front gate) and the only monthly result above 4g/m²/month occurring in the 2024 monitoring period. This October result was not reflected in DDG1 and DDG3 during this period.

The 2024 annual average monitoring results for Dust Gauges 1, 2 and 3 indicate that the average annual dust deposition rates in the vicinity of the Quarry are below the prescribed criterion levels at each monitoring location.

Table 21: Measured Performance – Deposited Dust¹

Start Date	End Date	DG1 – Giles Rd	DG2- Front Gate	DG3- Cattle yard	Criterion
24-Jun-24	22-Jul-24	1.1	1.1	0.6	
22-Jul-24	19-Aug-24	0.3	1.6	0.5	
19-Aug-24	16-Sep-24	1.9	3.3	0.4	
16-Sep-24	14-Oct-24	0.9	1.4	1.7	
14-Oct-24	11-Nov-24	0.9	4.5	2.7	
11-Nov-24	9-Dec-24	0.9	2.6	1.2	
9-Dec-24	6-Jan-25	0.6	2.5	3.5	
2024 Annual Average		0.94	2.43	1.51	4.0
Note ¹ : Results included are from commencement (July) to December.					

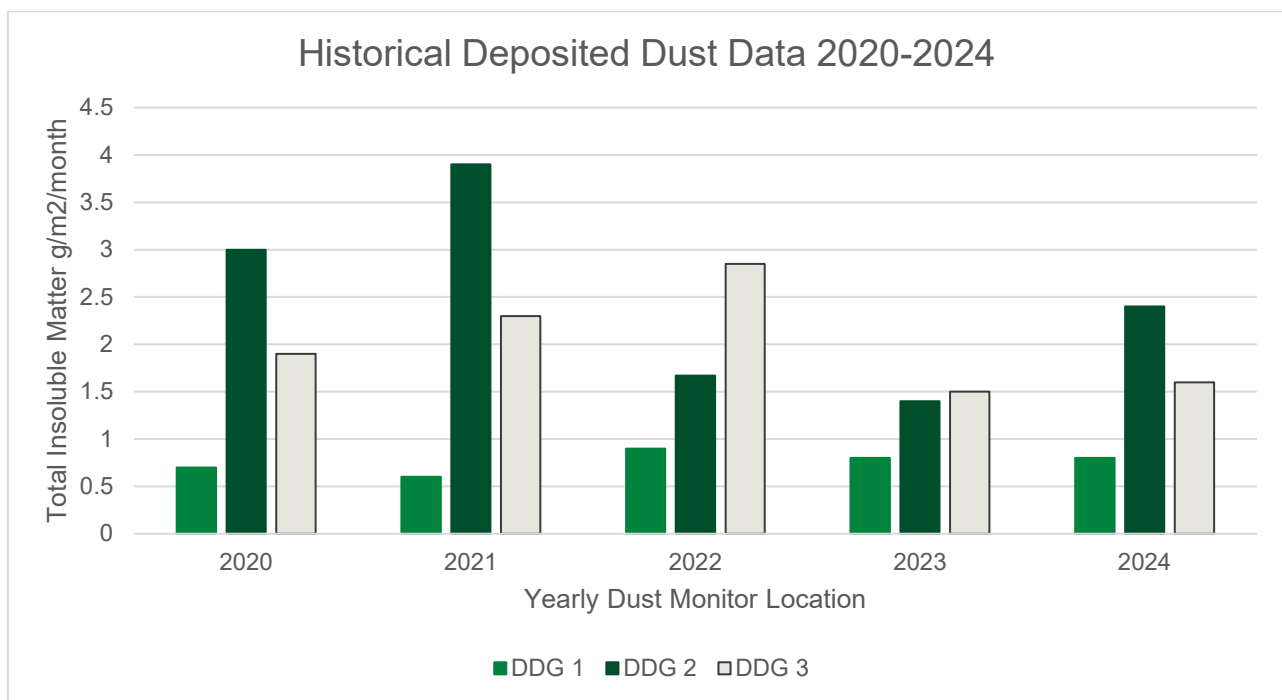

Figure 2: Historical Deposited Dust Data 2020 to 2024

Figure 4 presents the deposited dust monitoring data from January 2020 to December 2024. This chart shows that deposited dust levels have remained consistently below the annual average criterion, as measured by the rolling annual average.

In 2020, the average at DDG2 was 3 g/m²/month, primarily due to three high readings in the months of April, August and October which elevated the yearly rolling average. The yearly average still remained below the criterion. In 2021, the average at DDG2 increased to 3.9 g/m²/month, this was driven by two high readings in the months of January and July, which also raised the annual rolling average. However, these exceedances are not part of any discernible long-term dust-level trends. They generally appear to occur in isolation before returning to levels below the criterion in the following month.

The monitored deposited dust levels during 2020 and 2021 were also influenced by localised roadworks unrelated to quarrying activities, as well as processes near DDG2 at various points during these years.

6.5.2.3. PM₁₀ Concentration

The concentration of PM₁₀, namely that component of suspended particulates with an aerodynamic diameter of 10µm or less, has historically been monitored at the quarry using a TSI Dusttrack II Desktop. However, prior to commencement of SSD 5899 there was no formal monitoring system or programs in place. As a result, the data is not considered a reliable indication of background conditions and is not presented here.

Following the commencing of *SSD 5899*, a TSI DustTrak DRX Desktop installed on site in February 2024. Continuous monitoring commenced at monitoring location Particulate Matter Monitoring (PM₁₀) (**Figure 3**). **Figure 5** presents the results of the PM₁₀ dust monitoring during the reporting period.

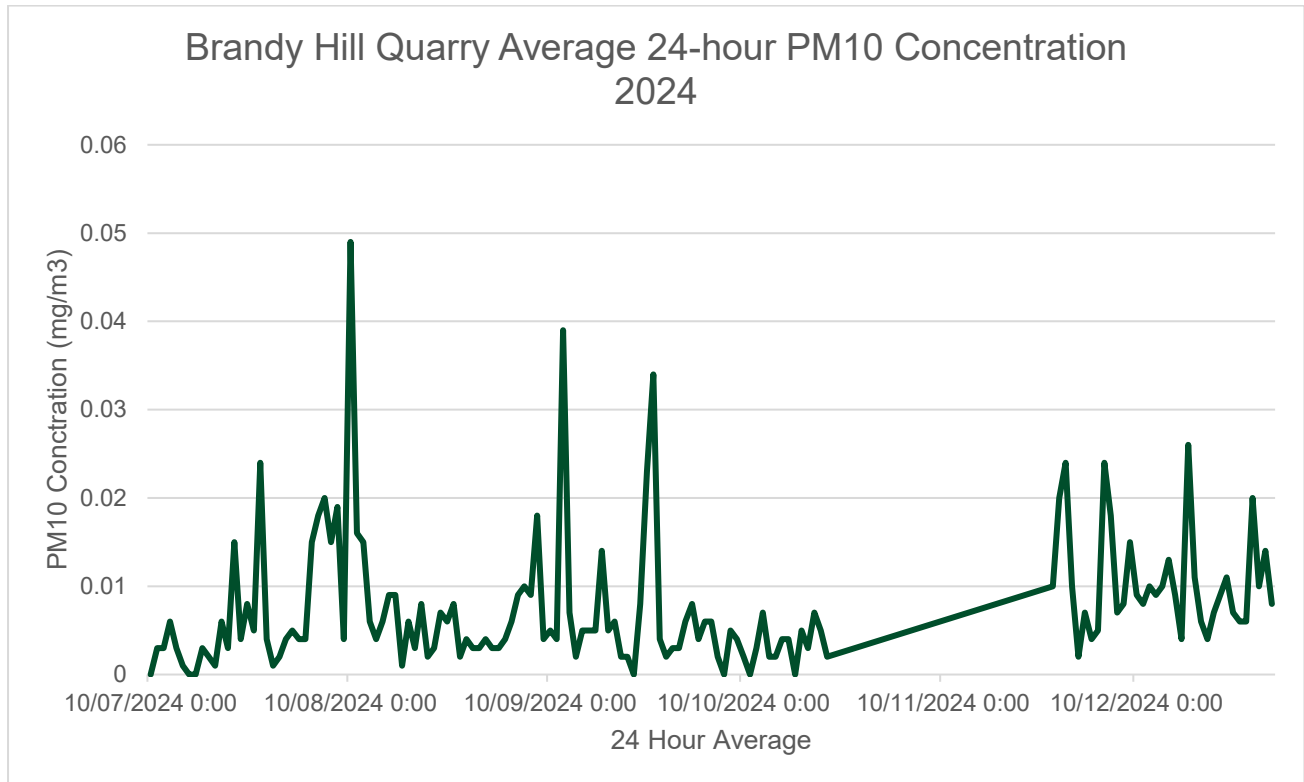


Figure 3: Brandy Hill Quarry average 24-hour PM₁₀ Dust Concentration 2024

The DustTrak continuous particulate monitor recorded PM₁₀ concentrations for periods during the 2024 reporting period (see **Figure 5**). However, as shown in Figure 5, the monitor encountered a technical issue and stopped recording data from 24 October 2024. Although the monitor was calibrated and restarted on site, this did not resolve the issue. Consequently, the monitor was returned to the manufacture for recalibration and was returned and reinstalled on 26 November 2024.

Throughout the reporting period, the criterion for average 24-hour PM₁₀ concentrations of 50µg/m³ PM₁₀ was not exceeded during the reporting period. The monitored average annual PM₁₀ concentration was 8 µg/m³, which is well below the annual average criteria level of 25µg/m³.

6.5.2.4 PM_{2.5} Concentration

Following the commencement of SSD 5899, a TSI DustTrak DRX Desktop was installed on site in February 2024 to undertake both PM₁₀ and PM_{2.5} particulate concentration monitoring. Continuous monitoring commenced at monitoring location Particulate Matter Monitoring (PM_{2.5}) (**Figure 3**). **Figure 6** presents the results of the PM_{2.5} dust monitoring during the reporting period.

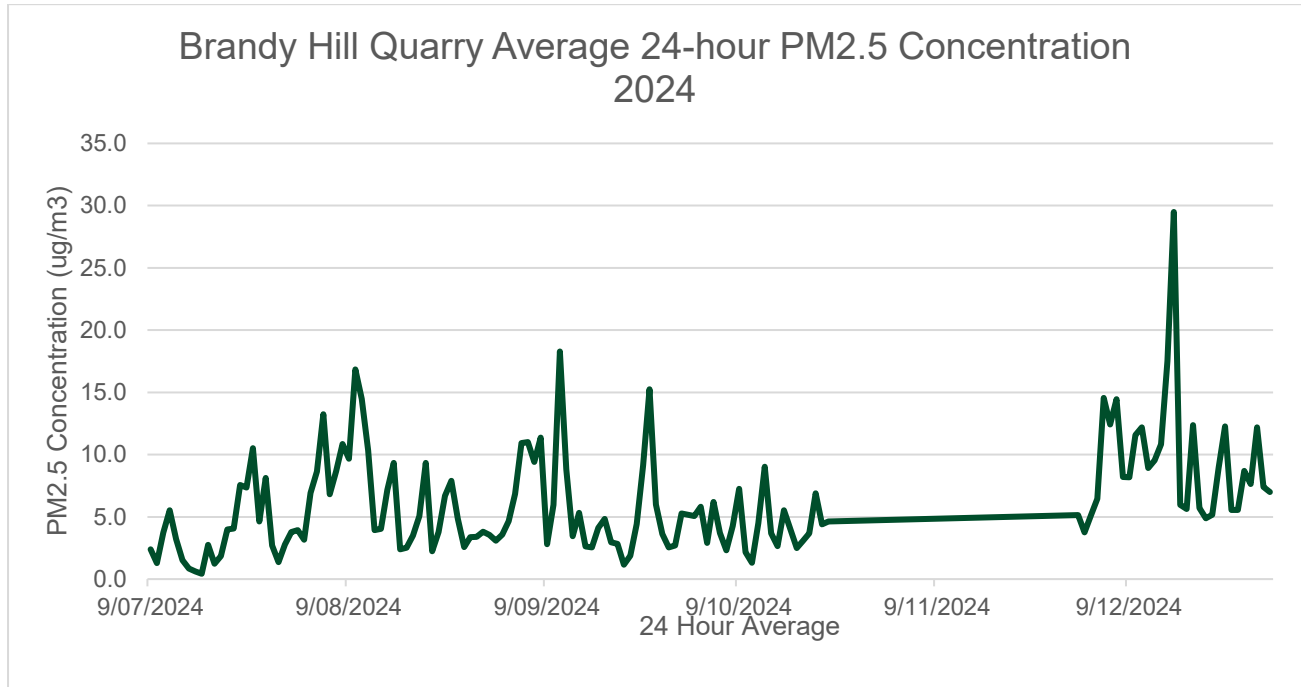


Figure 6: Brandy Hill Quarry average 24-hour PM_{2.5} Dust Concentration 2024

The DustTrak continuous particulate monitor recorded PM_{2.5} concentrations for periods during the 2024 reporting period. However, as shown in **Figure 6**, the monitor encountered a technical issue and stopped recording data from 24 October 2024. Although the monitor was calibrated and restarted on site, this did not resolve the issue. Consequently, the monitor was returned to the manufacture for recalibration and was returned and reinstalled on 26 November 2024.

During the reporting period, the criterion for average 24-hour PM_{2.5} concentration of 25 µg/m³ PM_{2.5} was exceeded on one occasion on 16 December 2024 at 29.5 µg/m³. The monitored average annual PM_{2.5} concentration was 6.2 µg/m³, which is below the annual average criteria level of 8µg/m³.

6.5.3. Discussion and Analysis

Dust and particulate monitoring results throughout the reporting period remained generally below the annual criteria. PM_{2.5} levels exceeded the annual average criterion once, likely resulting from roadworks occurring directly in front of the Quarry. Apart from this localised impact, the measures implemented by HMA appear to have effectively reduced overall dust concentrations. HMA will continue to closely monitor air quality during 2025 and will take further dust mitigations actions as necessary.

6.6. HERITAGE

The Aboriginal heritage assessment for the Quarry identified no objects of Aboriginal or non-Aboriginal heritage significance within the Quarry. However, under *Conditions B45, B46 and B47 of SSD 5899*, should any unanticipated relics or remains be discovered during any project works, works must cease in the vicinity of the find, and the area should be secured. The Police, BCD and DPHI must be notified, and work will not resume until confirmation is received from all relevant departments. Additionally, requirements in relation to identified Aboriginal or non-Aboriginal heritage finds are detailed within the on-site induction to ensure all personnel, HMA employees, contractors and visitors, are aware of the requirements if such a find occurs.

During the reporting period, these management measures were followed, and no items of suspected Aboriginal or non-Aboriginal heritage significance were identified.

6.7. TRAFFIC AND TRANSPORT

6.7.1. Overview

Truck movements are monitored through an SAP Transportation Management system that registers the orders that leave the Quarry. This system ensures that the existing limits on hourly product truck despatch are not exceeded. However, in some cases, customers request that a single truck order be despatched on two orders, resulting in a single truck despatch being counted twice. This process has resulted in some non-compliance records; however, it does not represent an exceedance of truck limits. Additionally, the pre-loading of trucks at Brandy Hill Quarry has caused internal orders to be counted when the order is placed rather than when the truck leaves the site.

6.7.2. Transport Criteria and Results

Condition B40 of SSD 5899 requires HMA to keep accurate records of transported product material. Under Condition A13 of SSD 5899, the Quarry must comply with the operating hours associated with the transportation of quarry products, reproduced in **Table 22** below.

Table 22: Transportation Operating Hours for SSD 5899

Activity	Day	Time
Product loading and dispatch	Monday-Friday (except Public Holidays)	6 am to 6 pm 6 pm to 10 pm (20 days per calendar year)
	Saturday	6 am to 6 pm
	Sunday	Nil

Transportation activities during the reporting period occurred during the approved hours of operation, as required under condition A13 of SSD 5899 (Appendix X). Additionally, laden truck movements during the reportable period were within the hourly limits specified in Conditions A12 and B41 of SSD 5899 (Appendix X). No traffic incidents occurred during the reporting period.

6.7.3. Traffic Management Plan

Condition B42 of SSD 5899 requires the implementation of a Transport Management Plan and Driver Code of Conduct. The objectives of the Transport Management Plan are to:

- Ensure compliance with the conditions included under *SSD 5899* with respect to traffic and transport matters;
- Encourage compliance and acceptance of the Truck Driver Code of Conduct by all heavy vehicle drivers using the Quarry;
- Minimise traffic and transport impacts of the Quarry on the community;
- Foster an understanding and awareness within the company of community expectations and legislative requirements;

- Protect and enhance public safety through compliance with relevant road rules; and
- Increase occupational health and safety (OH&S) understanding in relation to fatigue, vehicle operation in public areas and obligation to the general public.
- The objectives outlined in the Transport Management Plan have been used in the 2020 reporting period to appropriately manage project traffic and minimise its effect on the surrounding amenity and community.

Heavy vehicle drivers hauling from Brandy Hill Quarry must;

- Have undertaken a site induction carried out by an approved member of the quarry staff or suitably qualified person under the direction of the quarry management;
- Hold a valid driver's licence for the class of vehicle that they operate;
- Operate the vehicle in a safe manner within and external to the quarry site;
- Comply with the direction of authorised site personnel when within the site; and
- Comply with the Australian Road Rules external to the site.

6.7.4. Measured Performance

The list of movements of the 2024 monitoring period is found in Appendix X.

6.7.4.1. In Comparison with Previous Years' Results

Truck dispatch numbers for 2024 are similar to those of previous years. As this is the first Annual Review for SSD 5899, there are no specific previous years' results to allow detailed comparison.

6.7.4.1. In Comparison with the EIS

Relevant predictions in the EIS for transport relating to Brandy Hill Quarry include:

- Intersection Capacity:
- Traffic Generation:
- Traffic Efficiency:
- Road Safety:

The 2024 results reflect the predictions made within the EIS.

6.7.5. Non-Compliance and Corrective Actions

The number of events during the reporting period where the physical number of trucks possibly exceeded the applicable criterion is zero. There were no traffic incidents in the 2024 reporting period.

6.7.1. Actions for the Next Report Period

Management of transport to and from the quarry will continue as it has been managed over previous years. SAP will be updated to include ability to manage the importation of concrete washout material to ensure compliance with the allowable volume of materials as well as the requirements that will be set out in the EPL within the 2025 variation.

6.8. VISUAL

Operations with the potential to adversely impact visual amenity during the reporting period included earthmoving activities during soil stripping campaigns, and drill and blasting operations within the extraction area. The Quarry is not visible from the road and the construction of southern amenity bund is ongoing.

HMA implemented the following management measures during the reporting period to minimise visual amenity impacts associated with its operations (**Figure 1**).

- Ongoing construction and planting of the southern amenity bund
- Ongoing maintenance of the rehabilitation area at the southern boundary of the property.

HMA notes that once the southern visual amenity bund is revegetated, it will screen the Stage 4 infrastructure area from views to the south. Vegetation will also be planted on the amenity bund to soften the visual impact of that section of the Quarry.

Rehabilitation activities during the next reporting period will extend to the progressive shaping and revegetation of the southern visual amenity screen.

6.9. WASTE MANAGEMENT

During the reporting period, waste generation was negligible, with general waste placed within skip bins serviced monthly by a licenced waste contractor. Liquid wastes, principally waste hydrocarbons generated during equipment servicing, were removed from the Quarry on the day they were generated. Ablutions facilities and a septic system are in the office and weighbridge area.

6.10. EMERGENCY AND HAZARDS

Diesel was delivered in bulk by a diesel supplier and stored in a self-bunded diesel tank. Refuelling was undertaken within the approved infrastructure area. Spill kits were available in the site offices, and no significant hydrocarbon spills were reported during the reporting period.

Explosives used during the reporting period were transported to the Quarry by the blasting contractor on the day of the blast and never stored overnight within the Quarry. No significant safety hazards occurred during the reporting period.

6.11. BUSHFIRE

Management of bushfire hazards is provided through the Bushfire Management Plan, which was prepared as a sub-section of the Biodiversity and Rehabilitation Management Plan. That plan outlines procedures to be implemented during a bushfire within or surrounding the Quarry. The Bushfire Management Plan and Emergency Response Control Plan will be reviewed and updated as necessary.

During the reporting period, HMA maintained fire extinguishers within all offices and on all mobile plant. In addition, HMA and construction contractors each maintain separate water carts with fire-fighting capability within the Quarry. No fires occurred within the Quarry or its surrounds during the reporting period.

7. WATER MANAGEMENT

7.1. SURFACE WATER

Surface water is currently recycled and reused on site where possible, mainly for dust suppression and plant operations within the Quarry. All water used on site was sourced from the water storages dams, replenished via plant operations (recycled back into the dam) and from rainfall. Water was discharged from the dams on eleven occasions during the reporting period. No water was imported to the site for operational use.

7.1.1. Predicted Impacts and Performance Criteria

The Infrastructure Area and Site Access Road are located in a section of the Quarry Site that drains to the south and east. Surface water from disturbed areas of the Site is directed to the existing site Southern Sediment Basins, South Dams 1, 2 and 3 (see **Figure 1**), before flowing off or being pumped off Site via the licenced discharge point EPL5 (**Figure 1**). In the event of water pooling in the Extraction Area due to a rain event, it is pumped to Northern Sediment Basin and subsequently pumped off site via licenced discharge point EPL6 (**Figure 1**)

Condition L2.4 of the Quarry's Environment Protection Licence 1879 requires that water discharged from licenced discharge points EPL5 and EPL6 complies with the following water quality performance criteria.

- Total Suspended Solids – 50mg/L.
- Oil and Grease – 10mg/L.
- pH – between 6.5 and 8.5.

The *Water Management Plan* indicates that monitoring would be undertaken daily during discharge.

7.1.2. Measured Performances

Water was discharged from approved EPL discharge points 11 times from during the reporting period.

Water was discharged off site from both EPL 5 & EPL6. Each time discharge occurred, the water was sampled and laboratory tested, with discharge only proceeding once the water met the specified criteria.

Table 23: 2024 Discharge Surface Water Quality Results

Date of Discharge	Monitoring Point	Test Type	pH	TSS (mg/L)	Oil and Grease (mg/L)	Compliant
			Criteria			
			6.5 - 8.5	50 mg/L	10 mg/L	
09/07/2024	EPL 6	Lab	8.2	14	<5	Yes
10/07/2024	EPL 6	Lab	8.3	11	<5	Yes
26/08/2024	EPL 5	Lab	7.9	22	<5	Yes
01/10/2024	EPL 5	Lab	7.8	49	<5	Yes
02/10/2024	EPL 5	Lab	7.8	35	<5	Yes
03/10/2024	EPL 5	Lab	7.7	19	<5	Yes
04/10/2024	EPL 5	Lab	7.5	17	<5	Yes
08/10/2024	EPL 5	Lab	7.6	<5	<5	Yes
09/10/2024	EPL 5	Lab	7.6	<5	<5	Yes
10/10/2024	EPL 5	Lab	7.7	<5	<5	Yes
19/11/2024	EPL 5	Lab	7.9	<5	<5	Yes

7.1.3. Discussion and Analysis

Water was discharged off-site from both EPL 5 & EPL6. Each time discharge occurred, the water was sampled and laboratory tested, with discharge only proceeding once the water met the specified criteria.

Surface water is currently recycled and reused on-site where possible, primarily for applications such as dust suppression. The recycled water is used for road dust control via the watercart, to supply the truck spray for wetting loads and to provide water for the machine cleaning area.

All water quality measurements were within set criteria, as detailed within the EPL and Water Management Plan. In 2025, HMA aims to install water meters on site to accurately measure the volume of water being discharged off site and transferred between locations. HMA is actively researching water meter solutions that will provide reliable and efficient monitoring of these processes.

7.2. GROUNDWATER

7.2.1. Predicted Impacts and Performance Criteria

Potential groundwater-related impacts associated with the approved Quarry include a drawdown of the regional aquifer of up to 8 m as the extraction area is extended to its final depth. No significant impacts are anticipated on groundwater quality and flow, surrounding groundwater users, or Groundwater-Dependent Ecosystems.

Section 11.2.5 of the *Water Management Plan* identifies groundwater level performance criteria for surrounding non-quarry-related bores.

- A drawdown of more than 2m is predicted at bore GW078135. HMA has engaged with the landowner on multiple occasions and have been informed that the bore is no longer in use and is not in a serviceable condition.
- HMA has continued to reach out to the landowner to either restore the bore to a serviceable condition or decommission the bore. Despite several attempts to contact the owner, there has been no indication of interest in either option.

Section 10.3.2 of the *Water Management Plan* identifies the locations and frequency of groundwater quality monitoring to occur following the commencement of extraction operations. Preliminary groundwater quality performance criteria are presented in **Table 24**.

Table 24: Groundwater Quality Performance Criteria

Parameter	Unit	Long-term Assessment Criteria	Initial Assessment Criteria ¹
pH value	pH	6.5-8.5	6.5-8.5
Electrical Conductivity	µS/cm		Greater than 90 th percentile groundwater quality as determined by ongoing groundwater quality monitoring.
Total Alkalinity as CO ₃	mg/L		
Chloride	mg/L		
Sulphate	mg/L		
Calcium	mg/L		
Magnesium	mg/L		
Sodium	mg/L		
Potassium	mg/L		
Nitrate as N	mg/L		
Nitrite as N	mg/L		
Total Oxidized Nit. As N	mg/L		
Total Phosphorus as P	mg/L		
Arsenic	mg/L		
Manganese	mg/L		
Iron	mg/L		
Note 1: Applies until revised assessment criteria have been determined in consultation with relevant government agencies following receipt of initial 12 months of groundwater quality data.			

7.2.2. Measured Performance

Groundwater standing levels were monitored using automated data loggers, which record standing water levels every hour. **Figure 7** presents the results of monitoring standing water levels between 9 July 2024 and 31 December 2024 within our 7 groundwater boreholes BH400, BH1401, BH1403, BH1404, BH1405, BH1406 and BH1407 (bore locations are provided in **Figure 1**). Long-term monitoring results between 1 January 2013 and 31 October 2023 are presented in **Figure 8**.

The groundwater level measurements for each borehole remained consistent throughout the 2024 reporting period. Unfortunately, the loggers for BH400 and BH404 were replaced due to inconsistencies caused by the age of the monitoring equipment. BH1407 was inaccessible during October, November, and December due to track washouts from rain events, preventing data collection during that period.

Annual groundwater quality monitoring for 2024 was completed with field analysis undertaken each month. Laboratory analysis of the groundwater samples, to assess a range of analytes was completed in December 2024. The results of this analysis are provided in **Table 25**.

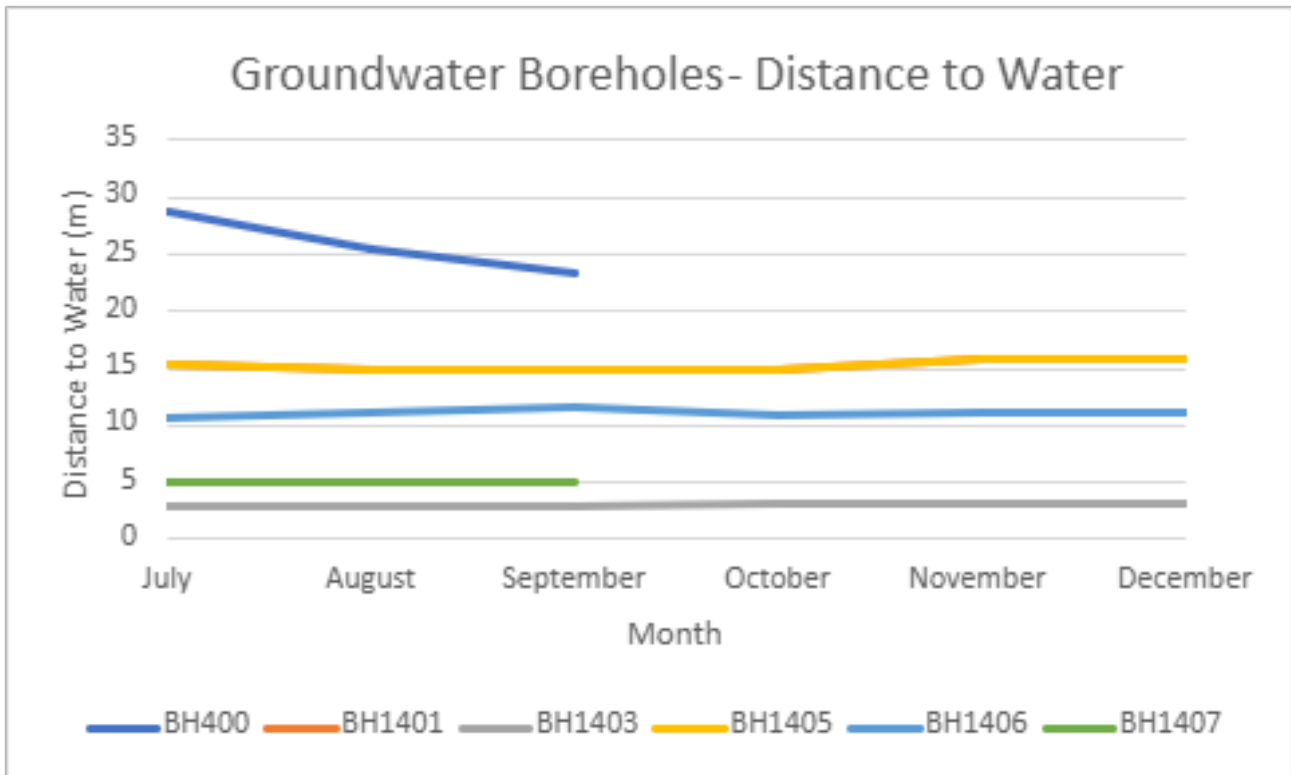


Figure 7: Groundwater Boreholes – Distance to Water (July 2024 to December 2024)

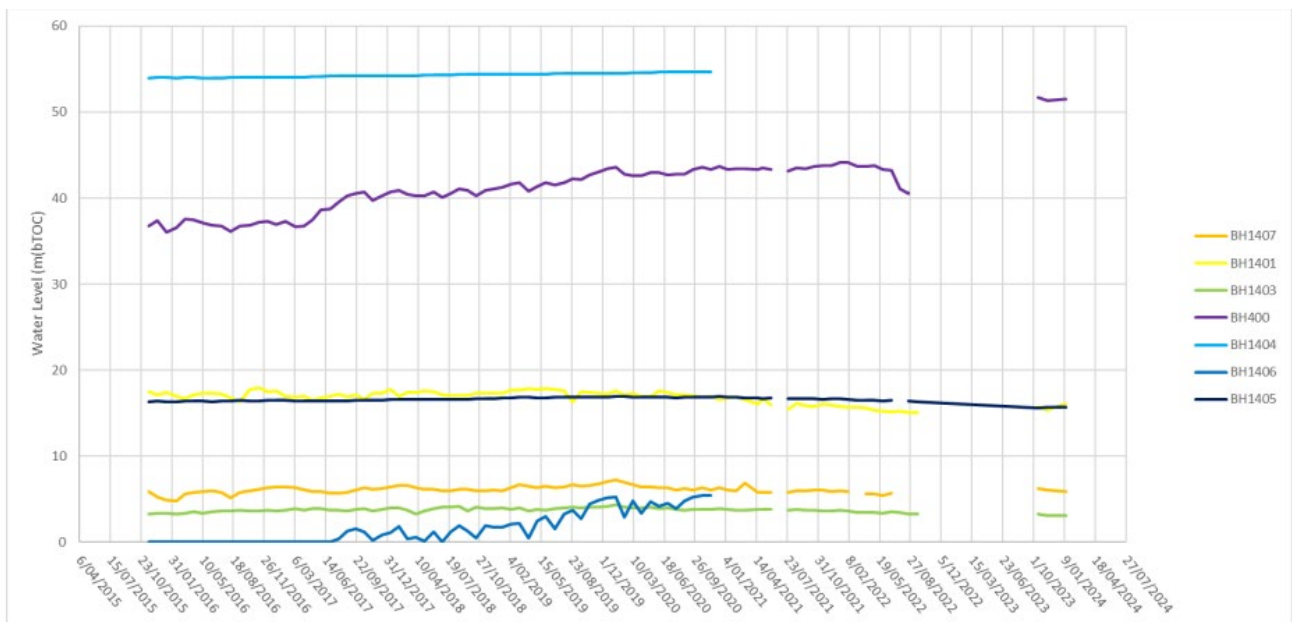


Figure 8: Groundwater Standing Water Levels (January 2016 to October 2023)

Table 25: Groundwater Quality Laboratory Assessed Results – December 2024

Analyte	Units	Monitoring Bore						
		BH400	BH1401	BH1403	BH1404	BH1405	BH1406	BH1407
<i>pH</i>	pH	-	6.6	6.6	-	6.6	6.2	6.8
<i>Electrical Conductivity</i>	µS/cm 25°C	-	1200	10600	-	2620	624	4270
<i>Total Alkalinity</i>	mgCaCO ₃ /L	-	490	830	-	520	94	640
<i>Sulphate</i>	mg/L	-	140	400	-	110	52	150
<i>Chloride</i>	mg/L	-	83	3500	-	640	120	1100
<i>Calcium-Dissolved</i>	mg/L	-	71	310	-	160	60	140
<i>Magnesium-Dissolved</i>	mg/L	-	55	280	-	97	23	120
<i>Sodium-Dissolved</i>	mg/L	-	140	1700	-	300	78	610
<i>Potassium-Dissolved</i>	mg/L	-	5.0	16	-	2.0	2.0	5.0
<i>Arsenic</i>	mg/L	-	<0.001	<0.001	-	0.002	<0.001	<0.001
<i>Manganese</i>	mg/L	-	<0.005	0.63	-	0.37	0.28	0.095
<i>Iron</i>	mg/L	-	<0.01	<0.01	-	2.6	1.8	0.21
<i>Ammonia (as N)</i>	mgN/L	-	<0.02	0.12	-	0.04	0.09	<0.02
<i>Nitrite (as N)</i>	mgN/L	-	0.007	0.018	-	0.009	0.012	0.015
<i>Nitrate (as N)</i>	mgN/L	-	3.4	0.009	-	0.007	<0.005	<0.005
<i>Total Kjeldahl Nitrogen (as N)</i>	mgN/L	-	<0.1	0.3	-	0.1	0.7	0.1
<i>Total Nitrogen (as N)</i>	mgN/L	-	3.4	0.3	-	0.2	0.7	0.1
<i>Total Phosphorus (as P)</i>	mgP/L	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
Source: VGT (2024)								

7.2.3. Groundwater Extraction

The groundwater extraction undertaken at the Quarry under Water Licence 43564 is presented in **Table 26**.

Table 26: Groundwater Extraction

Water Licence #	Water Sharing plan, source, and management zone (as applicable)	Entitlement	Passive take/inflows	Active pumping	TOTAL
WAL 43564	Water Source: New England Fold Belt Coast Groundwater source Water Sharing Plan: North Coast Fractured and Porous Rock Groundwater Source 2016 Management Zone: New England Fold Belt Management Zone	172 ML/yr	0 ML	0 ML	0 ML
Source: Heidelberg Materials Pty Ltd					

In 2024, the depth of the quarry pit has not yet reached the groundwater table, therefore there has been no groundwater inflow into the quarry pit. HMA will continue to monitor this situation throughout 2025 to ensure accurate measurement of any groundwater extraction, should we reach groundwater levels.

An update to the groundwater model will occur once 12 months of data has been recorded for the new monitoring bores on the southern boundary of the Quarry are installed, which will occur in the 2025 monitoring period.

7.2.4. Discussion and Analysis

7.2.4.1. Standing Water Levels

The monitoring data presented in **Figure 7** indicate that standing water levels within all bores stayed steady throughout the reporting period. Upon review of the long-term records, it can be concluded that the groundwater table in the vicinity of these bores tends to experience infiltration during heavy rainfall, which occurred in 2022. This is returning to equilibrium as La Nina has passed, similar to what was experienced after the 2016 high rainfall event.

HMA notes that all ground-disturbing activities were well above the regional water table during the reporting period. As a result, HMA contends that the minimal fluctuations in groundwater levels are wholly attributable to natural causes.

HMA are currently in the process of installing four new nested bores along the southern boundary of the Quarry. The new bores are intended to provide representative data on groundwater levels in the surrounding properties, which is why they are located as close to our boundary as possible. Construction of these bores has been delayed due to inaccessibility caused by the excessive rainfall last year, which prevented drill rigs from reaching the bore locations. DPHI was notified of this delay on 19 August 2024 via the Major Projects Portal. We have now engaged a new contractor to complete the bore construction and anticipate completion by April 2025.

7.2.4.2. Groundwater Quality

VGT Environmental undertook field groundwater quality monitoring rounds each month (see **Appendix 4**). Groundwater quality monitoring commenced in January 2015, with field samples for pH and electrical conductivity remaining consistently within expected ranges.

8. REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

Limited areas of the Quarry were available for rehabilitation during the reporting period. As a result, landscape management activities were limited to the continued preparation and revegetation of the Koala Corridor replanting area on the southern boundary of the property as required in the Biodiversity and Rehabilitation Management Plan and Koala Habitat Plan.

HMA has continued implementing weed management practices within the Quarry boundary, with weed spraying occurring in and around the site throughout 2024.

Pre-clearance surveys were undertaken in 2024 due to the vegetation clearing and overburden stripping of Stage 1 of the quarry expansion as per the Biodiversity and Rehabilitation Management Plan. These surveys were undertaken by a qualified and experienced team of ecologists, additionally all pre-clearance and clearance environmental protocols were adhered to, with a result of zero reported fauna fatalities during the stripping campaign.

On-going monthly and quarterly landscape monitoring was completed during 2024, focusing on areas under rehabilitation.

The Quarry's rehabilitation status is summarised in **Table 27**.

Table 27: Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual) 2023 (ha)	This Reporting Period (Actual) 2024 (ha)	Next Reporting Period (Forecast) 2025 (ha)
A. Total mine footprint	104.7	104.7	104.7
B. Total active disturbance			
C. Land being prepared for rehabilitation	27ha	11.1ha	11.1ha
D. Land under active rehabilitation	27ha	27ha	38ha
E. Completed rehabilitation	0	0	0
Source: Heidelberg Materials Pty Ltd			

8.1. WEED MANAGEMENT

Results from the weed management reports indicate several Priority weeds noted within the Hunter Regional Strategic Weed Management Plan (2023-2027), in accordance with the Local Land Services Act 2013 (LLS Act), were established within the site, most notably Lantana.

The density of weeds varied according to seasonal growth patterns, with broad-leaf weeds observed to be widespread across the site and actively colonising new areas. Notably, weed encroachment was particularly high in areas directly around the pit and throughout recently disturbed areas such as haul roads and bunds.

To prevent the further spread of existing weeds or the establishment of new weeds across the site, immediate and effective weed control is required, with particular emphasis on pasture paddocks, the pit and recently disturbed areas.

8.2. ACTIONS FOR THE NEXT REPORTING PERIOD

During the next reporting period, rehabilitation activities will focus on an updated program to ensure vegetation conditions at the site meet the required specifications for vegetation at the Quarry. Planned rehabilitation will be undertaken in the Koala corridor on the southern boundary of the property, which will include weed management and direct seeding of native flora. Additional weed management will be undertaken throughout the property, with a focus on operational and recently disturbed areas. All weed management will have a focus on identified priority weeds as per the Biodiversity and Rehabilitation Management Plan.

9. COMMUNITY

9.1. CONSULTATION AND COMMUNITY ENGAGEMENT

While two Brandy Hill Quarry Community Consultative Committee (CCC) meetings were required to be undertaken in the 2024 monitoring period (July-December), four were held in the 2024 calendar year on the following dates:

- 21 February 2024
- 18 June 2024
- 30 August 2024
- 16 October 2024

Appendix 5 presents the minutes of the meeting. Updates on Quarry operations were provided during the 2024 reporting period.

9.2. COMPLAINTS

Two complaints were received during the reporting period, detailed in **Table 28**.

Table 28: 2024 Brandy Hill Quarry Complaints

Month /Year	Incident Date & Time	Mode of Complaint	Comments	Action Taken	Follow-up Contact with Complainant
August 2024	10.08.24	Via complaints hotline	Complainant asked if blasting had occurred over the past two days – as vibrations were felt in Butterwick	We advised that blasting had not occurred over those days and that the last blast occurred on 25 July 2024.	N/A
August 2024	22.08.24	Complaint to the EPA	Excessive noise/vibration from the blast on 22 August 2024	Results from the blast monitors were provided to the EPA to be passed along to the complainant.	N/A

Generally, HMA considers that it has a positive relationship with neighbours and hopes that the local community continues to trusts HMA to investigate concerns raised directly or through the HMA website.

10. INDEPENDENT AUDIT

In accordance with the requirements of *Condition D11 of SSD 5899*, an Independent Environmental Audit (IEA) of the Quarry is to be completed within one year of the commencement of any development under this consent, and every three years after, unless the Planning Secretary directs otherwise.

An Independent Environmental Audit has not been undertaken in the reporting period and has been scheduled to be completed in May 2025. Once the report has been received a copy will be submitted to DPHI for review.

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1. INCIDENTS & NON-COMPLIANCE

No incidents were recorded at the Quarry during the reporting period.

11.2. NON-COMPLIANCE

One non-compliance occurred at the Quarry during the reporting period. This non-compliance was discovered during the data review for this Annual Review report. Upon discovering of the non-compliance, it was reported to DPHI and EPA. Outcomes of the investigation of the non-compliance will be provided in the 2025 Annual Review.

11.2.1. Exceedance – 24-hour PM2.5 Average Concentration Limit

PM2.5 24-hour average concentration limit was exceeded on 16 December 2024 with a result of 29.5 µg/m³. This is in exceedance of the 24-hour PM2.5 concentration limit of 25µg/m³, as detailed within *SSD 5899*. Investigation is currently underway to determine the cause of the exceedance, though preliminary investigations have concluded that isolated roadworks occurring in close proximity to the PM2.5 monitor is the cause of the result.

12. COMMUNICATION WITH GOVERNMENT AGENCIES

Communication with government agencies in 2024 is as follows:

Table 29: 2024 Government Agency Correspondence

Date	Agency	Detail
07/06/2024	EPA	Submission of application for variation of <i>EPL 1879</i> to adhere to <i>SSD 5899</i> consent conditions.
09/07/2024	DPHI	Notification of commencement date, as agreed in previous correspondence (commencement of <i>SSD 5899</i> once Water Management Plan approval is received)
09/08/2024	EPA	Received Section 60 notification for information regarding submitted licence variation for <i>EPL 1879</i> .
19/08/2024	DPHI	Sent notification to advise there was a delay in nested groundwater bore installation.
27/08/2024	DPHI/EPA	Submitted Quarterly Attended Noise Monitoring & Bi-Annual Traffic Noise Monitoring Assessment.
16/12/2024	DPHI	Submitted Quarterly Attended Noise Monitoring & Annual Survey of Noise levels of Mobile Equipment Noise Monitoring Assessment.

An inspection of Brandy Hill Quarry was conducted by the NSW Department of Planning, Housing and Infrastructure (DPHI) on 4 February 2025. During the inspection, DPHI identified several matters that required attention. In response, an Action Plan was developed and submitted to DPHI, outlining the steps we will take to address each issue, along with a timeline for their resolution. These actions have now been completed. The issues raised are as follows:

- Water Management Plan, Condition B39 of *SSD 5899*
The installation of clean water diversion bunds and drains were required in the stage 1 expansion area. Bunding has now been installed along the northern perimeter of the extraction area to efficiently redirect clean water away from Stage 1. Additionally, a drainage system has been established within Stage 1 to direct water towards the lowest point, allowing for subsequent removal from the area. Please refer to **Appendix 2** for photographic evidence of the completed clean water diversion bunds.
- Liquid Storage, Condition B62 of *SSD 5899*

The waste oil storage was found to be inadequate, with uncovered storage bunds, a removed bund plug and insufficient capacity in the bunded shed. All bunded sheds have now been appropriately covered to prevent rain exposure, and regular inspections are in place to ensure proper storage of liquid. Furthermore, the size of the bunded shed is being increased to accommodate the full volume of waste oil. HMA is currently waiting on parts to complete the new shed. As soon as this has been completed I will provide evidence to the DPHI through the Major Projects Portal.

- Incident and Non-compliance Notifications, Conditions D7 and D8 of *SSD 5899*
It was noted that DPHI was not notified of an uncontrolled discharge of water from the site following heavy rainfall. A report addressing this incident was completed on 12 February 2025 and submitted to DPHI via the Major Projects Portal to rectify this issue.

While not within the reporting period, actions received from this inspection will be included in the Brandy Hill Quarry 2025 Annual Review.

13. ENVIRONMENTAL MANAGEMENT DURING THE NEXT REPORT PERIOD

In addition to adhering to the environmental management measures identified in the various environmental management plans, HMA proposes implementing the following measures during the next reporting period.

- Continue to refine blasting and blast monitoring procedures.
- Monitor and maintain the surface water controls within the Site.
- Establish long-term assessment criteria for groundwater quality in consultation with the Department of Planning, Housing and Infrastructure and the National Resource Access Regulator when sufficient groundwater monitoring results are available.
- Installation of water meters on site to track what being transferred or discharged offsite.
- Where a final landform is established for the amenity bunds, they will be stabilised through seeding with a groundcover and, where feasible, hydro mulching.
- Continue with our current vegetation planting program within the koala corridor plan.
- Continue to utilise temporary amenity bunds within the Extraction Area.

APPENDIX 1

Project Approval SSD 5899

APPENDIX 2

Actions to satisfying DPHI Site Inspection on 4 February 2025



Clean Water Division Bund – Southern Side of Stage 1.



Clean Water Division Bund – Southern Side of Stage 1.



Clean Water Division Bund – Southern Side of Stage 1.

APPENDIX 3

Noise Monitoring Reports

APPENDIX 4

Groundwater Quality Monitoring Report

APPENDIX 5

Minutes of Brandy Hill Quarry Community Consultative Committee

APPENDIX 6

Rehabilitation Reports