

# Blast Management Plan

For the Brandy Hill Quarry Expansion



*Prepared by:*



**R.W. CORKERY & CO. PTY. LIMITED**

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# 1. Introduction

## 1.1 Scope

This Blast Management Plan (the Plan) has been prepared by R W Corkery & Co Pty Limited (RWC) on behalf of Hanson Pty Ltd (Hanson) for the Brandy Hill Quarry (the Quarry). The Quarry Site is located approximately 3.5km to the east of Seaham, 15km northeast of Maitland and 30km north of Newcastle in the Port Stephens Shire Council (Council) Local Government Area (LGA). The Quarry is an open cut hard rock extraction operation with associated crushing and screening, product stockpiling, associated infrastructure and other ancillary activities required for product preparation and despatch. Access to the Quarry is via the public road network at a dedicated intersection with Clarence Town Road and Brandy Hill Drive.

This document has been prepared in satisfaction of *Condition B18* of Development Consent SSD 5899 (SSD 5899) and describes the following:

- Blast management objectives, roles and responsibilities.
- Competence training and awareness.
- The consultation undertaken during preparation of this document.
- The blast management context including the existing conditions for the operation.
- The legal and other requirements associated with management of blast-related issues.
- Blast management measures that would be implemented during the life of the Quarry.
- Incident reporting and compliance management.
- Document review.

The Quarry, is fully described in the following documents and no further background information is provided as part of the Plan:

- *Environmental Impact Statement Report* Brandy Hill Expansion Project, prepared by Hanson Construction Materials Pty Ltd, dated February 2017 (Hanson, 2017);
- Brandy Hill Quarry – *Updated Blast Impact Assessment*, prepared by Vipac Engineers and Scientists Limited, dated September 2018 (Vipac, 2018); and
- *Amended Response to Submissions*, prepared by R.W Corkery and Co Pty Limited, dated September 2019 (RWC, 2019).

In addition, a range of management plans have been prepared to guide operations within the Quarry. These include the following:

- Biodiversity and Rehabilitation Management Plan;
- Air Quality Management Plan;
- Noise Management Plan;
- Traffic Management Plan
- Water Management Plan; and an
- Environmental Management Strategy.

A copy of this Plan and each of the above documents are available from the Hanson website.

This Plan has been prepared to be a practical tool for the management of blast-related risks for the ongoing operation of the Quarry. This plan will be implemented as approved by the Planning Secretary. No blasting activities will occur under SSD 5899 until this plan is approved and implemented.

## 1.2 Objectives and Outcomes

Table 1 presents the objectives and key performance outcomes for this Plan and the Quarry.

**Table 1**  
**Objectives and Key Performance Outcomes**

OBJECTIVES	KEY PERFORMANCE OUTCOMES
<b>Blast</b>	
(a) To ensure compliance with all relevant Project approval and Environment Protection Licence (EPL) criteria and reasonable community expectations.	(i) Compliance is achieved with all relevant criteria nominated in SSD 5899 and EPL 1879 and reasonable community expectations.
(b) To implement appropriate blast management and mitigation measures during all stages of the Project.	(ii) All identified blast management and mitigation measures are implemented to the extent required.
(c) To implement an appropriate monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project.	(iii) All identified monitoring is undertaken in accordance with the relevant procedures and at the relevant intervals.
(d) To implement an appropriate complaints handling and response protocol	(iv) Complaints (if any) are handled and responded to in an appropriate and timely manner.
(e) To implement continual improvement for investigating, implementing and reporting on reasonable and feasible measures to reduce blasting impacts.	(v) An appropriate continual improvement program has been implemented.
(f) To implement an appropriate incident reporting program, if required.	(vi) Incidents (if any) are reported in an appropriate and timely manner.

## 1.3 Roles and Responsibilities

Table 2 presents the roles and responsibilities for the implementation of this Plan.

**Table 2**  
**Roles and Responsibilities**

ROLES	RESPONSIBILITIES
Operations Manager	Must ensure adequate resources are available to enable implementation of the Plan.
Environment, Planning and Compliance Coordinator	Accountable for the overall environmental performance of the Brandy Hill Quarry Expansion operations, including the following outcomes of this Plan. <ul style="list-style-type: none"> <li>Evaluation of compliance as outlined in Section 4.2 and related follow-up actions.</li> <li>Incident reporting as outlined in Section 4.1.</li> <li>Publication of monitoring data and reports as outlined in Section 3.5.</li> <li>Review of this Plan as outlined in Section 4.4.</li> </ul>
Quarry Manager	Accountable for the overall environmental performance of the Brandy Hill Quarry Expansion operations, including the implementation of following components of this Plan. <ul style="list-style-type: none"> <li>Implementation of blast training and awareness as outlined in Section 1.4.</li> <li>Blast controls outlined in Section 3.2 are implemented.</li> <li>Blast monitoring as outlined in Section 3.4.</li> <li>Property inspections and investigations outlined in Section 3.2.4 and 3.2.5.</li> <li>Complaints handling and response as outlined in Section 3.3.2.</li> </ul>
All personnel	Ensure training and awareness induction has been undertaken. Compliance with this Plan.

## 1.4 Competence Training and Awareness

All relevant Company personnel and contractors and their employees will undergo Company and site-specific inductions incorporating blast management awareness training as part of the site induction program. The following areas will be covered in the induction.

- Awareness of safety for surrounding residents and livestock.
- Awareness of explosive storage, transport and use in accordance with *AS2187.2 Explosive Storage, Transport and Use*.
- The requirement to minimise fly rock and dust emissions from blasting.
- Awareness of restricted blast operating hours and frequency.
- Awareness of community complaints protocols.
- Monitoring of blast emissions at required residences.

The Quarry Manager will be responsible for ensuring the appropriate blast management training is included in the induction.

In addition, monthly toolbox meetings are held to discuss whole-of-site production, management, safety and environmental issues. Matters relating to air quality are raised during these meetings, when necessary.

## 1.5 Consultation

The following consultation was undertaken during preparation of the Plan:

A draft copy of the Plan was provided to the Environment Protection Authority (the EPA) and the Department of Planning Industry and Environment (the DPIE) on 5 March 2021. Feedback was received on 29 March 2021 from the EPA and on 16 June 2021 from DPIE.

All feedback received as part of the consultation process has been incorporated, where required, into the final Plan. A copy of all comments received during consultation are provided as **Appendix 1**.

## 1.6 Document Preparation

This document has been prepared by Nicholas Warren (B.Sc., M. Bus., M. Env.Sc.), Principal Consultant with RWC with the assistance of Ms Belinda Pignone (B.Env.Man & Sc.), Environmental, Planning & Compliance Coordinator with Hanson. Mr Warren has prepared numerous approved blast management plans for State significant development in NSW. Ms Pignone has also reviewed and implemented numerous blast management plans for State significant developments owned by Hanson in NSW. This collective experience has been applied in preparation of the Plan.



# 2. Blast Management Context

## 2.1 Introduction

Under SSD 5899, the Quarry is approved to extract, process and transport from the Quarry up to 1 500 000t per year of quarry products and 15 000m<sup>3</sup> per year of pre-mixed concrete (concrete batching) for use principally in the Hunter, Central Coast and Sydney regions. The Quarry may also receive up to 20 000t per year of concrete washout material per annum (principally from concrete batching plants) for recycling. Further information regarding approved activities is available in the EIS (Hanson, 2017) and the Amended Response to Submissions (RWC, 2019).

The progressive development of the Quarry will occur over five operational stages resulting in a total disturbance area of 97.7 hectares (ha). In summary, the development stages of the Quarry will be as follows:

- Stage 1 – deepening of the existing Extraction Area and lateral extension to the west and south. Extraction would progress to an elevation of approximately 22m AHD. Topsoil and overburden salvaged during this stage would be used to develop an amenity bund at the southern end of the final disturbance area.
- Stage 2 – progression towards the south west corner of the Extraction Area as its footprint is expanded and deepened to approximately -8m AHD. Topsoil salvaged during site preparation would be temporarily stockpiled or applied directly to rehabilitate the terminal benches above approximately 20m AHD.
- Stage 3 – progression of the Extraction Area towards the existing Processing and Stockpiling Area and to a depth of -38m AHD. Topsoil and overburden salvaged during this stage would be directly applied to terminal benches for progressive rehabilitation.
- Stage 4 – relocation of the Processing and Stockpiling Area to the south of its existing location. The extraction area footprint is expanded towards the eastern boundary and deepened to approximately -58m AHD. Topsoil and overburden salvaged during this stage would continue to be directly applied to terminal benches for progressive rehabilitation.
- Stage 5 – completion of the Extraction Area to the south east resulting in a final floor elevation of -72m AHD.
- Closure – closure and predicted recovery of groundwater levels in Extraction Area void.

The following subsections provide an overview of the blast management context for the Quarry, including the following.

- The existing setting and surrounding receivers.
- Potential blast-related impacts.
- The legal and other requirements of the operation.

## 2.2 Surrounding Residences and Buffer Land

Quarrying activities at Brandy Hill have been occurring since 1983 with the extraction, processing and associated transportation activities co-existing with the progressive development of rural residential living in the local area. Brandy Hill Drive was built to service the Quarry and land along this road was progressively subdivided and developed in the presence of an operating Quarry.

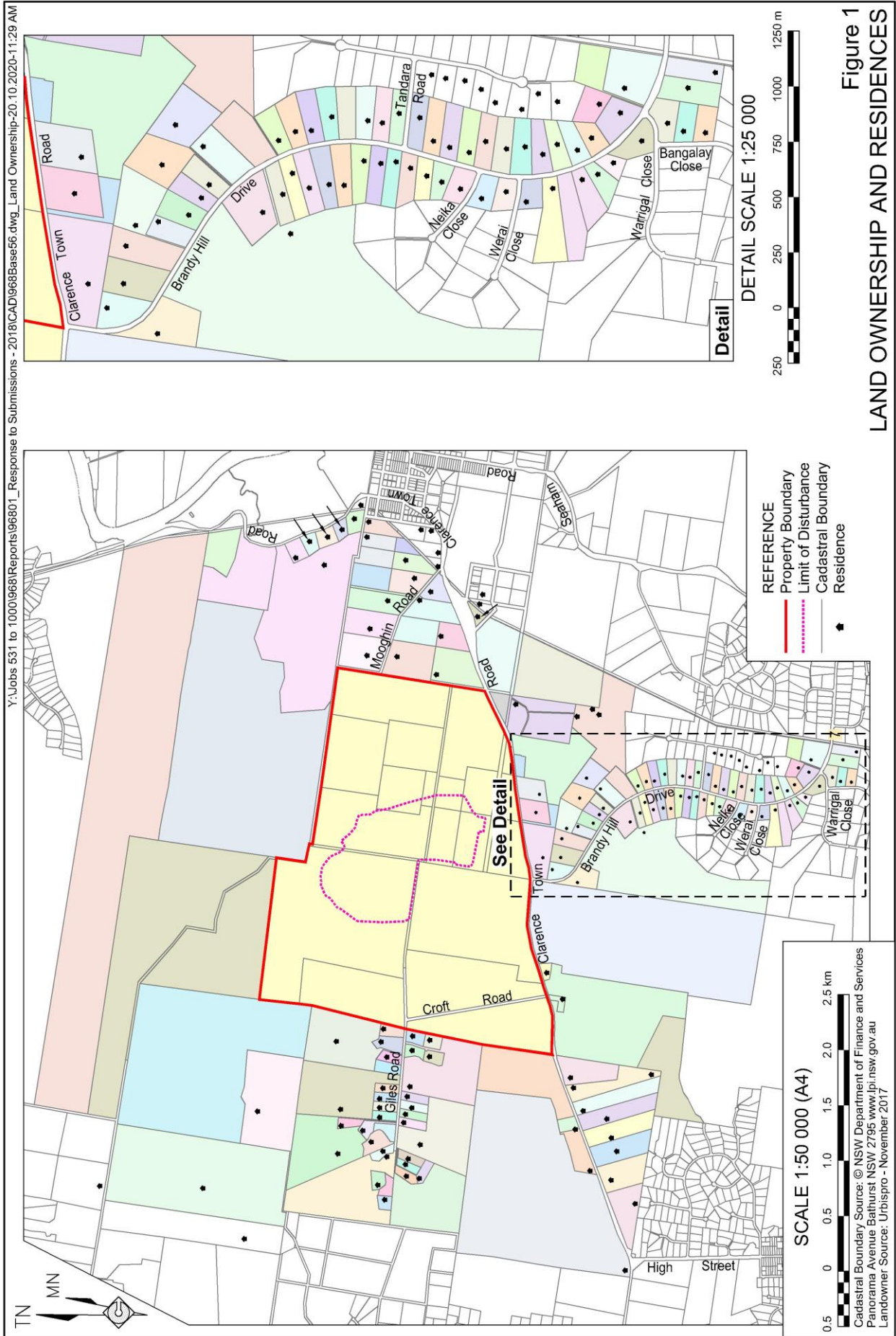
It is important that personnel recognise the proximity of the operation to residences and the potential for quarrying activities to adversely impact neighbours. **Figure 1** presents the locations of residences to the west, east and south of the Quarry. The closest residences to the operation are located on the following roads.

- Giles Road to the west.
- Mooghin Road to the east.
- Clarence Town Road and Brandy Hill Drive to the south.

Operational blast criteria apply at all residences unless an agreement with the landowner authorises otherwise.

In order to mitigate for any potential amenity impacts from the operations, land owned by Hanson that is not to be cleared must remain as buffer lands for the life of the development.





## 2.3 Potential Blast-Related Impacts

Potential blasting impacts were assessed for the Environmental Impact Statement (Hanson, 2017) and included the following:

- air blast overpressure affecting nearby residents or livestock;
- excessive ground vibration resulting in structural damage to nearby residences or infrastructure or that affects livestock;
- dust impact on nearby residents and livestock;
- fume impact on nearby residents and livestock; and
- fly rock received at nearby residences, public roads or affecting livestock.

A summary of the blast monitoring results for the period from 2014 to 2018 is provided in **Table 3**. There have been no blasts that have exceeded the 115dB airblast overpressure limit or the 5mm/second ground vibration peak particle velocity for the last five years, with 38% of blast events being small enough that the blast monitor has not been triggered (indicating that the air blast overpressure and ground vibration are too low to be recorded).

**Table 3**  
**Blast Monitoring Results 2014 - 2020**

Year	Time Range	Number of Blasts	Blast Monitor Not Triggered	Airblast Overpressure Range (dB)	Ground Vibration Range (mm/sec)
2014	10:15am - 10:37am	25	7 (28%)	85.0 - 113.4	0.1 - 1.2
2015	9:328am - 2:52pm	27	6 (22%)	94.6 - 108.5	0.2 - 3.0
2016	10:05am - 2:22pm	23	14 (61%)	98.6 - 112.4	0.2 - 1.6
2017	10:15am - 4:31pm	23	11 (48%)	84.1 - 111.7	0.3 - 1.3
2018	11:40am - 3:7pm	11	1 (9%)	74.7 – 110.3	0.24 – 1.12
2019	10:32am – 3:35pm	16	2 (12.5%)	85.3 – 114.4	0.25 – 1.4
2020	10:46am – 4:09pm	16	0	98.1 – 115	0.25 – 2.65
Source: Hanson					

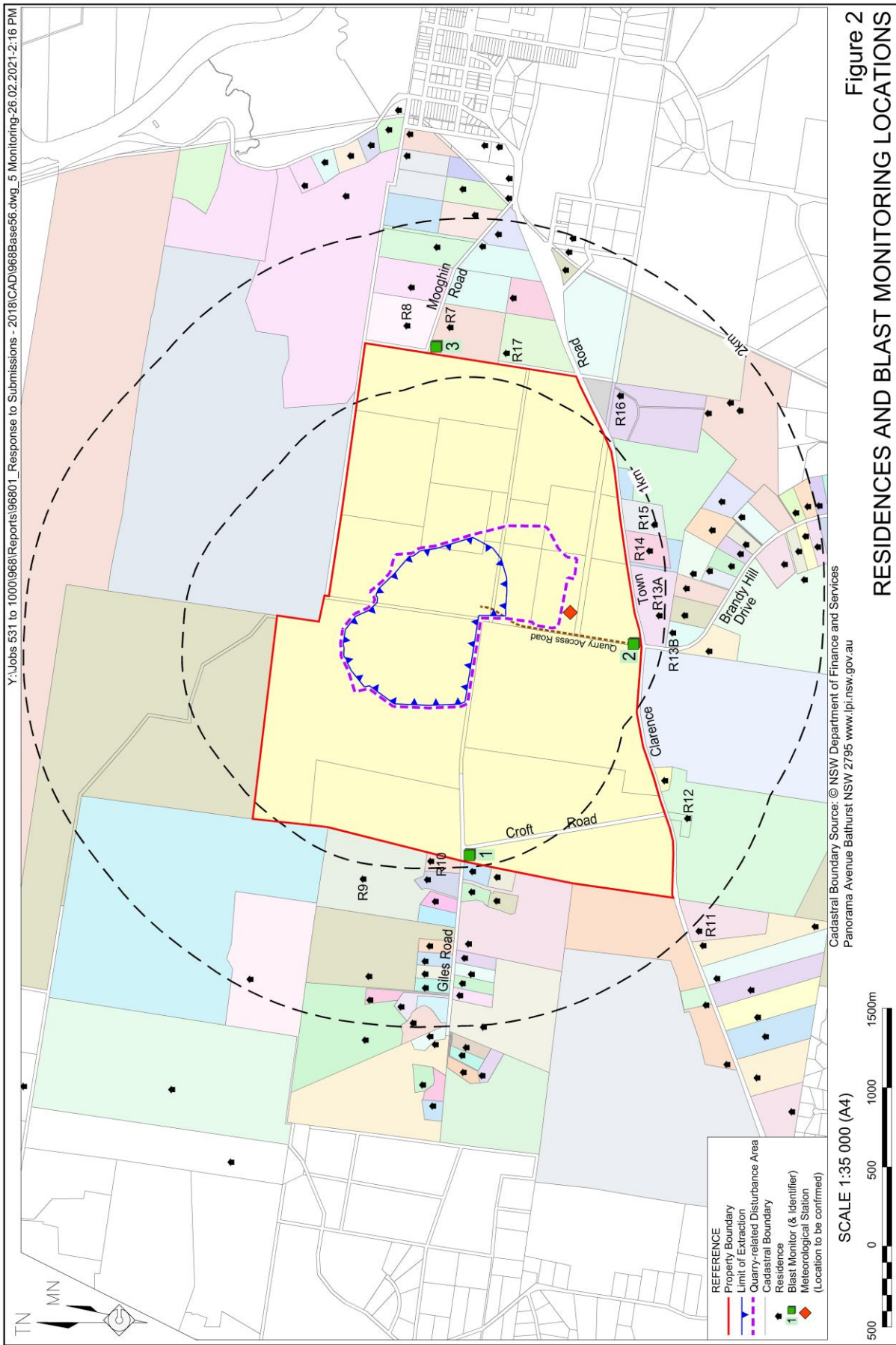
### 2.3.1 Airblast Overpressure and Ground Vibration Structural Impacts

As part of the assessment process for the Development Consent, Vipac (2018b) considered blast predictions at the closest privately-owned residences against criteria established in the Australian and New Zealand Environment and Conservation Council (ANZECC) publication “*Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration – September 1990*”. These criteria are summarised as follows.

- The recommended maximum overpressure level for blasting is 115dB.
- The level of 115dB may be exceeded for up to 5% of the total number of blasts over a 12-month period but should not exceed 120dB at any time.
- The recommended maximum vibration velocity for blasting is 5mm/s Peak Particle Velocity (PPV).
- The PPV level of 5mm/s may be exceeded for up to 5% of the total number of blasts over a 12-month period but should not exceed 10mm/s at any time.

Blast-related overpressure and ground vibration at the Quarry would likely remain within the criteria levels at a Maximum Instantaneous Charge (MIC) no greater than 175kg. However, it is noted that during normal operations, blast MIC would not regularly be to this size. This MIC level is estimated based on standard equations and would be refined through blasting experience at the Quarry and the results of blast monitoring.

**Table 4** presents the 95<sup>th</sup> percentile predictions of blast-related impacts at the closest privately-owned residences. The location of residences is displayed in **Figure 2**.





**Table 4**  
**Predicted Blast Vibration and Overpressure**

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
<b>Criteria</b>		<b>5.0</b>	<b>115</b>	<b>5.0</b>	<b>115</b>

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

## 2.3.2 Predicted Levels of Blast Emissions

Blast emissions were modelled to determine their potential impact on sensitive receivers. The modelling predicted that incremental blast fume impacts are mostly contained within the Quarry Site boundary and that the potential for adverse impacts is unlikely.

## 2.4 Legal and other Requirements

### 2.4.1 Development Consent SSD 5899

Hanson has been the owner and operator of the Quarry since 2001, initially under Development Application No 1920 (DA1920) which was originally granted in 1983 to the Hunter Valley Mining Corporation Pty Ltd by Port Stephens Shire Council. In July 2020 the NSW Independent Planning Commission granted SSD 5899 which allows for an expansion and subsequent continuation of operations at the Quarry. Development Consent SSD which allows for an expansion and subsequent continuation of operations at the Quarry. SSD 5899 was granted on 16 July 2020 by the Independent Planning Commission and is subject to a number of conditional requirements. *Condition B18* requires that a Blast Management Plan be prepared to guide the management of blasting within the Quarry Site. **Table 5** identifies the conditional requirements of SSD 5899.

**Table 5**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section
<b>Evidence of Consultation</b>		
A22	Where conditions of this consent require consultation with an identified party, the Applicant must: (a) consult with the relevant party prior to submitting the subject document; and (b) provide details of the consultation undertaken including: i. the outcome of that consultation, matters resolved and unresolved; and ii. details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.	1.5

**Table 5 (Cont'd)**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section											
Buffer Lands													
A34	The Applicant must not use or permit the use of the Buffer Lands for any purpose associated with the development that would generate significant noise or compromise the visual screening or biodiversity value provided by the vegetation on the Buffer Lands, except to manage bushfire risk and for weed and pest control.	2.2											
Blasting Criteria													
B8	<p>The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 3.</p> <p><b>Table 3:</b> Blasting criteria</p> <table><tr><th>Location</th><th>Airblast overpREssure (dB(Lin Peak))</th><th>Ground vibration (mm/s)</th><th>Allowable exceedance</th></tr><tr><td rowspan="2">Residence on privately-owned land <sup>a</sup></td><td>120</td><td>10</td><td>0%</td></tr><tr><td>115</td><td>5</td><td>5% of the total number of blasts over a calendar year</td></tr></table>	Location	Airblast overpREssure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance	Residence on privately-owned land <sup>a</sup>	120	10	0%	115	5	5% of the total number of blasts over a calendar year	3.1
Location	Airblast overpREssure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance										
Residence on privately-owned land <sup>a</sup>	120	10	0%										
	115	5	5% of the total number of blasts over a calendar year										
B9	The blasting criteria in Table 3 do not apply to a residence if the Applicant has an agreement with the owner/s of that residence or infrastructure to exceed the blasting criteria, and the Applicant has advised the Department in writing of the terms of this agreement.	No agreements in place											
Blasting Frequency													
B10	The Applicant may carry out a maximum of 1 blast per week.	3.2.1											
B11	<p>Condition B10 does not apply to blasts that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, or to blast misfires or blasts required to ensure the safety of the mine, its workers or the general public.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>▪ The purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the quarry.</li><li>▪ For the avoidance of doubt, should an additional blast be required after a blast misfire, this additional blast and the blast misfire are counted as a single blast.</li></ul>	Noted											
Property Inspections													
B12	<p>If the Applicant receives a written request from the owner of any privately-owned land within 1 kilometre of any approved extraction area on the site for a property inspection to establish the baseline condition of any buildings and structures on their land, or to have a previous property inspection updated, then within 2 months of receiving this request the Applicant must:</p> <p>(a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to:</p> <p>(i) establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and</p> <p>(ii) identify measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and structures; and</p> <p>(b) give the landowner a copy of the new or updated property inspection report.</p>	3.2.4											
B13	If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the property inspection report, either party may refer the matter to the Planning Secretary for resolution. The decision of the Planning Secretary will be final.	3.2.4											

**Table 5 (Cont'd)**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section
<b>Property Investigations</b>		
B14	If the owner of any privately-owned land within 2 kilometres of any approved extraction area on the site or any other landowner where the Planning Secretary is satisfied an investigation is warranted, claims in writing that buildings or structures on their land have been damaged as a result of blasting on the site, then within 2 months of receiving this written claim the Applicant must: (a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and (b) give the landowner a copy of the property investigation report.	3.2.5
B15	If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant must repair the damage to the satisfaction of the Planning Secretary.	3.2.5
B16	If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Planning Secretary for resolution. The decision of the Planning Secretary will be final.	3.2.5
<b>Blast Operating Conditions</b>		
B17	During blasting operations, the Applicant must:	
	(a) take all reasonable steps to:	3.2.3.2
	(i) ensure the safety of people and livestock from blasting impacts of the development;	3.2.3.3
	(ii) protect public or private infrastructure and property in the vicinity of the site from blasting damage associated with the development; and	3.2.3.2 3.2.3.3
	(iii) minimise blast-related dust and fume emissions;	3.2.3.2
	(b) operate a suitable system to enable members of the public to get up-to-date information on the proposed blasting schedule on the site; and	3.2.2
	(c) carry out regular blast monitoring to determine whether the development is complying with the relevant conditions of this consent.	3.4 3.4.2
<b>Blast Management Plan</b>		
B18	The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:	
	(a) be prepared by a suitably qualified and experienced person/s;	1.6
	(b) be prepared in consultation with the EPA;	1.5
	(c) describe the measures that will be implemented to:	
	(i) ensure compliance with the blasting criteria and operating conditions of this consent;	3
	(ii) avoid blasting during unfavourable climatic conditions;	3.3.2.1
	(d) include a monitoring program for evaluating and reporting on compliance with the relevant conditions of this consent;	3.4 3.4.2
	(e) include a protocol for identifying any blast-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events;	3.3.2
	(f) include public notification procedures to enable members of the public, particularly surrounding residents, to get up-to-date information on the proposed blasting schedule; and	3.2.2
	(g) include a protocol for investigating and responding to blast-related complaints.	3.3.2.4

**Table 5 (Cont'd)**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section
B19	The Applicant must not undertake any blasting until the Blast Management Plan is approved by the Planning Secretary.	3.2.3.1
B20	The Applicant must implement the approved Blast Management Plan.	3.2.3.1
<b>Notification of Exceedances</b>		
C1	As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must: (a) provide to any affected landowners and tenants; and (b) publish on its website the full details of the exceedance.	3.3.2.2
<b>Independent Review</b>		
C3	If a landowner considers the development to be exceeding any noise, blasting or air quality criterion in PART B of this consent, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their land.	3.3.2.5
C4	If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.	3.3.2.5
C5	If the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, the Applicant must: (a) (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to: (i) consult with the landowner to determine their concerns; (ii) conduct monitoring to determine whether the development is complying with the relevant criteria in PART B of this consent; and (iii) if the development is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria; (b) give the Planning Secretary and landowner a copy of the independent review; and (c) comply with any written requests made by the Planning Secretary to implement any findings of the review	3.3.2.5
<b>Management Plan Requirements</b>		
D4	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
	(a) a summary of relevant background or baseline data;	2.3
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures and criteria; and (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	2.4 3.1 3.4
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	3



**Table 5 (Cont'd)**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section
D4 (Cont'd)	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development; and (ii) effectiveness of the management measures set out pursuant to condition D4;	3.4
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	3.3
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	4.3
	(g) a protocol for managing and reporting any: (i) incident, non-compliance or exceedance of the impact assessment criteria or performance criteria; (ii) complaint; or (iii) failure to comply with statutory requirements; and	4.1 3.3.2.4 3.3.2.2
	(h) a protocol for periodic review of the plan. <i>Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</i>	4.6
	<b>Revision of Strategies, Plans and Programs</b>	
D5	Within three months of: (a) the submission of an incident report under condition D7; (b) the submission of an Annual Review under condition D9; (c) the submission of an Independent Environmental Audit under condition D11; (d) the approval of any modification of the conditions of this consent; (e) notification of a change in development stage under condition A15; or (f) the issue of a direction of the Planning Secretary under condition A2(b) which requires a review, the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.	4.6
D6	If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary and submitted to the Planning Secretary for approval within six weeks of the review. <i>Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.</i>	4.6
<b>Reporting and Auditing</b>		
<b>Incident Notification</b>		
D7	The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing through the Department's Major Projects website and identify the development (including the development application number and name) and set out the location and nature of the incident.	4.1.4

**Table 5 (Cont'd)**  
**Development Consent Conditions (SSD 5899)**

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Condition No.	Condition	Section
<b>Non-Compliance Notification</b>		
D8	<p>Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to through the Department's Major Projects website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.</p> <p><i>Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.</i></p>	4.1.4
<b>Annual Review</b>		
D9	By the end of March in each year after the 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.	4.4
D10	Copies of the Annual Review must be submitted to Council and made available to the CCC and any interested person upon request.	4.4
<b>Independent Environmental Audit</b>		
D11	Within one year of the commencement any development under this consent, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development.	4.5
D12	Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.	4.5
<b>Monitoring and Environmental Audits</b>		
D13	<p>Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&amp;A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.</p> <p>For the purposes of this condition, as set out in the EP&amp;A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.</p>	3.4.2
D14	Noise, blast and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Part B, providing that these representative monitoring locations are set out in the respective management plan/s.	3.4.2
D15	<p>Before the commencement of construction until the completion of all rehabilitation required under this consent, the Applicant must: ...</p> <p>(iii) all approved strategies, plans and programs required under the conditions of this consent; a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;</p>	3.5

## 2.4.2 Environment Protection Licence 1879

Environment Protection Licence (EPL) 1879 contains a number of conditional requirements relating to the management of blasting activities at the Quarry. **Table 6** identifies each of these conditional requirements and identifies the section of this Plan where each is addressed.

**Table 6**  
**Environment Protection Licence 1879 – Blasting**

Condition No.	Condition	Section												
L5 – Blasting														
L5.1	Blasting in or on the premises must only be carried out between 0900 hours and 1700 hours, Monday to Saturday. Blasting in or on the premises must not take place on Sundays or Public Holidays without the prior approval of the EPA.	3.2.1												
L5.2	The airblast overpressure level from blasting operations in or on the premises must not exceed: 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; at either monitoring point 7 or 8 in Condition P1.4.	3.1												
L5.3	The airblast overpressure level from blasting operations in or on the premises must not exceed: 120 dB (Lin Peak) at any time; at either monitoring point 7 or 8 in Condition P1.4.	3.1												
L5.4	The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed: 5 mm/second for more than 5% of the total number of blasts during each reporting period; at either monitoring point 7 or 8 in Condition P1.4.	3.1												
L5.5	The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed: 10 mm/second at any time; at either monitoring point 7 or 8 in Condition P1.4.	3.1												
L5.6	Offensive blast fume must not be emitted from the premises.	3.2.3.2												
	<p><i>Definition:</i> <i>Offensive blast fume means post-blast gases from the detonation of explosives at the premises that by reason of their nature, duration, character or quality, or the time at which they are emitted, or any other circumstances:</i></p> <ol style="list-style-type: none"><li><i>are harmful to (or likely to be harmful to) a person that is outside the premises from which it is emitted, or</i></li><li><i>interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted.</i></li></ol>													
M6 – Blasting														
M6.1	<p>To determine compliance with conditions L5.2, L5.3, L5.4 and L5.5:</p> <p>a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring points 7 and 8 for the parameters specified in Column 1 of the table below; and</p> <p>b) The licensee must use the units of measure, sampling method, and sample at the frequency specified opposite in the other columns.</p> <table><tr><th>Parameters</th><th>Units of Measure</th><th>Frequency</th><th>Sampling Method</th></tr><tr><td>Airblast Overpressure</td><td>Decibels (Linear Peak)</td><td>All Blasts</td><td>Australian Standard AS 2187.2-2006</td></tr><tr><td>Ground Vibration Peak Particle Velocity</td><td>millimetres/second</td><td>All Blasts</td><td>Australian Standard AS 2187.2-2006</td></tr></table>	Parameters	Units of Measure	Frequency	Sampling Method	Airblast Overpressure	Decibels (Linear Peak)	All Blasts	Australian Standard AS 2187.2-2006	Ground Vibration Peak Particle Velocity	millimetres/second	All Blasts	Australian Standard AS 2187.2-2006	3.4
Parameters	Units of Measure	Frequency	Sampling Method											
Airblast Overpressure	Decibels (Linear Peak)	All Blasts	Australian Standard AS 2187.2-2006											
Ground Vibration Peak Particle Velocity	millimetres/second	All Blasts	Australian Standard AS 2187.2-2006											

### 2.4.3 Statement of Commitments

The Statement of Commitments for the Quarry are presented in the Amended RTS (RWC, 2019) and include the following commitments relevant to blast management.

#### **Blast Management**

- Design all blasts within the extraction area to meet airblast overpressure and ground vibration criteria at all monitoring locations.
- Blasts would occur no more than once per week, except in the event of a misfire.
- Provide notification of blasts via the website, email and/or SMS (subject to individual arrangements).
- Prepare and implement a site Blast Management Plan and monitoring program for the life of the Project. Regularly review and update the plan in accordance with the requirements of the Project Approval.

# 3. Blast Management System

## 3.1 Blast Criteria

In accordance with Condition B8 of SSD 5899, the blast criteria at any residence on privately-owned land are presented in **Table 7**.

**Table 7**  
**Blasting 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

Consistent with Condition B9 of SSD 5899, the blasting criteria in **Table 7** do not apply to a residence if Hanson has an agreement with the owner/s of that residence or infrastructure to exceed the blasting criteria, and Hanson has advised the DPIE in writing of the terms of the agreement.

## 3.2 Pre-Emptive Management Measures

### 3.2.1 Operating Hours and Frequency of Blasting

Consistent with the Development Consent and the EPL, all blasting activities at the Site are limited to between 9:00am and 5:00pm, Monday to Friday. No blasting is to occur on Saturdays, Sundays or Public Holidays.

Blast frequency is limited to one (1) blast per calendar week, however, blasting may be carried out more frequently than once per week under certain circumstances, including:

- in the event of a blast misfire. For safety reasons, the blast may need to be repeated, however, blast misfires are rare events and, as a result, are not considered further as part of this Plan; or
- where the planned blast will generate ground vibrations of 0.5mm/s or less at any residence on privately-owned land; or
- blasts required to ensure the safety of the mine, its workers or the general public.

### 3.2.2 Blast Notification Protocol

The following blast notification protocols will be established prior to blasting taking place for Stage 1 of the Quarry:

- Within the Site:
  - A site blast notification board will be located within the Quarry to inform all personnel of the next planned blast;
  - the planned blast will be discussed as part of the toolbox meeting on the day of the blast; and
  - prior to initiating the blast a notification will be made via the Site's radio network and an audible warning will occur at the blast site.
- Local residents may:
  - view upcoming blast times and dates on the Quarry's website; and
  - sign up to receive an email, text notification or a phone call notification.

Unless required for safety management reasons, blast notifications will be issued a minimum of 24 hours prior to any blast and will be the responsibility of the blast supervisor and/or the shot firer. The information provided as part of a blast notification will include, as a minimum:

- Time;
- Date;
- Location; and
- Contact details for further information.

### 3.2.3 Operating Conditions

#### 3.2.3.1 Blasting Operations

All blasting operations at the Quarry will be completed by a suitably qualified blast engineer/shotfirer to ensure that all blast are designed, placed and initiated in a competent manner. Further, blast Maximum Instantaneous Charge (MIC) would be limited to 175kg in accordance with the outcomes of the Blast Impact Assessment (Vipac, 2019b).

Vipac (2019b) assumed the following blast design parameters as a guide to predicting future blast impacts.

- bench height of 10 to 15 m, sub-drill 0.5 m;
- blasthole diameter of 89 to 102 mm;
- explosive type Rioflex or similar (1.2 -1.3 density g/cc in hole);
- stemming length of 3 to 3.5 metres.

However, it is noted that blasting would be adapted over time to suit geological and location requirements and would in each case be proactively designed for compliance with the blasting criteria described in Section 3.1. The blast design would be reviewed following each blast, in conjunction with any blast monitoring data, meteorological information and/or anecdotal information that becomes available. Continuous review of the blast design will assist in minimising the potential impact of blast activities.

The Australian Standard AS2187.2 (2006) *Explosives – Storage and Use* describes control measures that may be effective in reducing the impact of air blast or vibration from blasting. These control measures may include one or more of the measures presented in **Table 8**. Over time, blasting contractors will use information such as blast monitoring data, geological mapping and predictions of climate conditions to develop an approach to each blast that is intended to satisfy blasting criteria. The controls presented in **Table 8** provide a summary of appropriate measures to assist in their management blasting and where measures may mitigate potential ground vibration or air blast overpressure impacts.

**Table 8**  
**Air Blast Overpressure and Ground Vibration Controls**

Page 1 of 2

Variables	Ground Vibration			Air Blast		
	Influence on ground vibration			Influence on overpressure		
	Significant	Moderately Significant	Insignificant	Significant	Moderately Significant	Insignificant
1. Within the Control of blasting operators						
MIC: Maximum instantaneous charge (Effective charge mass per delay)	✓			✓		
Delay interval	✓			✓		
Burden and spacing		✓		✓		
Stemming amount or type			✓	✓		
Charge length and diameter			✓		✓	
Angle of blast hole			✓			✓
Direction of initiation		✓		✓		
Charge mass per blast			✓			✓
Charge depth			✓	✓		

**Table 8 (Cont'd)**  
**Air Blast Overpressure and Ground Vibration Controls**

Page 2 of 2

Variables	Ground Vibration			Air Blast		
	Influence on ground vibration			Influence on overpressure		
	Significant	Moderately Significant	Insignificant	Significant	Moderately Significant	Insignificant
Covering of detonating cord			✓	✓		
Charge confinement	✓			✓		
Blasthole deviation	✓					
2. Not within the control of blasting operators						
General surface			✓		✓	
Geological conditions	✓			✓		
Wind and weather conditions			✓	✓		
Water saturated ground	✓					✓
Source: AS2187.2 -2006 Table J6.1						

Hanson will not undertake blasting operations until the Blast Management Plan is approved by the Planning Secretary. Once approved by the Planning Secretary, Hanson will implement the approved Blast Management Plan to Brandy Hill Quarry blasting operations.

### 3.2.3.2 Flyrock, Dust and Fume Management Measures

Hanson will implement the following flyrock, dust and fume management measures to ensure the safety of people, livestock, public and private infrastructure, equipment and vehicles in the surrounding areas:

- Long-term (annual) scheduling of activities to ensure blasting is planned for the most appropriate time of day
- Short-term modification of blasting activities in response to forecasting of adverse conditions in the short-term.
- Blast contractors, in conjunction with the Quarry Manager, will review blast monitoring records to enable continuous improvement and quality control, resulting in continual development of optimum blast parameters.
- Quality control practices are to be implemented on the ground to ensure blasts are kept within design tolerances.
- Adequate burden is to be maintained on all faces to prevent blowouts and blast anomalies.
- Blast energies are to be minimised as far as possible.
- Adequate exclusion / clearance zones are to be maintained to ensure that the safety of people, equipment, vehicles or livestock on nearby land will not be affected by blasting.
- Best practice methodology is used to ensure fly-rock and fumes as low as reasonably practicable levels.
- Blasts are only planned to be fired in optimal weather conditions, avoiding unfavourable climatic conditions. In the event that unfavourable meteorological conditions are identified during a planned blast event, the shot-firer will liaise with the Quarry Manager to determine whether to postpone a blast.
- Training will be provided to all relevant personnel on environmental obligations in relation to blasting controls.
- Monitoring and calibration of the explosive manufacturing unit to ensure explosive mixing is in the correct proportions. This will ensure that noxious fuming is kept to a minimum.
- All blast related activities, as described within this management plan, will adhere to AS2187.2 Explosive Storage, Transport and Use.
- Key control measures to eliminate the ejection of fly rock or other material as a result of the detonation of an explosive is assessed at all stages of the blast cycle. This includes the initial design, quality control (i.e. bore raking and face profiling), loading practices and finally exclusion zones and firing. The following Shot-firer's Standard Operating Procedures (SSOPs) summarize the control measures to ensure a safe and efficient blast outcome:
  - SSOP-OC-4 Blast Load Design
  - SSOP-OC-5 Initiation and Design



- SSOP-OC-21 Check Blast Loading Design
- SSOP-OC-30 Problems when Loading
- SSOP-OC-35 Shotfirers Pre-firing Planning Meeting
- SSOP-OC-36 Blast Guard Duties

The management and minimisation of blast-related dust and fume emissions are detailed and described within the Brandy Hill Quarry Air Quality and Greenhouse Gas Management Plan.

### 3.2.3.3 Safety Measures

A Blast Management Safety Plan for the Quarry has been prepared by MAXAM Australia. The Blast Management Safety Plan provides the MAXAM Australia protocols for blasting risk identification, risk mitigation, blast planning including blast design, monitoring and specific operational procedures to reduce risks to Quarry personnel, blast contractors and nearby residences. **Table 9** provides the fundamental best practice when managing concerns through blasting, as applied by the blast contractor.

**Table 9**  
**Blast contractor blasting risk evaluation guide (ISEE, The Journal of Explosives Engineering, July/August 2020)**

Concern	Primary Impacts	Controls
Flyrock	Damage and Injury	Pre-qualification requirements, blasting controls (blast mats-burden requirements) stemming requirement blast plan reviews, and inspection work.
Structural damage to buildings	Damage claims, work delays or suspension	Pre-qualification requirements, blasting controls, blast plan submittals and reviews, careful inspection of work; public education, effects monitoring and pre-blast condition surveys.
Damage to rock slopes and final excavation walls	Rock fall, remedial slope repairs, work disruption	Evaluate in situ condition of slopes and install additional support is needed. Develop blasting controls and carefully monitor the work
Damage to buried pipes and utilities	Unrealistic restrictions or total ban on blasting	Pre-qualification requirements, blasting (controls, blast plan submittals and reviews, careful inspection of work, effects monitoring and blasting effects evaluation study by expert.
Startled people	Complaints	Inform neighbours before each blast.
Damaged water wells or aquifers	Blasting prohibition or project delays	Blasting controls, pre-blast / post blast inspections, effects monitoring and blasting effects evaluation study by expert
Environmental Impacts or other Animal Effects	Blasting prohibition or delays	Blasting controls, pre-blast and/or post blast inspections, and blasting impacts and mitigation study by expert.
Work or business disruption	Financial damage claims and/or organised opposition to the work	Public education, blasting controls, monitoring and schedule blasting during non-working hours.
Contractual Claims and Legal Actions	Financial damages	Owners and Engineers: Have appropriate experts review contract documents and specifications. Prepare pre-qualification requirements to ensure personnel can perform the work, and carefully inspect and document all non-conforming work. Contractors: Carefully evaluate all available documents-including all geotechnical information, attend pre-construction meetings, document all efforts to conform and barriers to conformance

These protocols are applied as necessary for each blasting event with consideration of the potential proximity of people and livestock from blasting locations.

The Blast Management Safety Plan is updated from time to time dependent on the specific requirements of blasting and the contractor being used for blasting activities at the Quarry.

### 3.2.4 Property Inspections

*Condition B12* of the Development Consent identifies the requirements for property inspections within one (1) kilometre of any approved extraction site (**Figure 1**).

Hanson will, within 2 months of receiving a written request from the owner of any privately-owned land for a property inspection to establish the baseline condition of any buildings and structures on their land, or to have a previous property inspection updated:

- commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to:
  - establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and
  - identify measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and structures; and
- give the landowner a copy of the new or updated property inspection report.

Should the landowner and Hanson be in dispute regarding the selection of the suitably qualified, experienced and independent person, or Hanson or the landowner disagrees with the findings of the report, either Hanson or the landowner may refer the matter to the Planning Secretary. It is noted that, the decision of the Planning Secretary will be final.

### 3.2.5 Property Investigations

*Condition B14* of the Development Consent identifies the requirements for property investigations within two (2) kilometres of any approved extraction area (**Figure 1**).

Consistent with *Condition B14*, Hanson will, within two (2) months following receipt of a claim, in writing, that buildings or structures on the land of a private landowner have been damaged as a result of blasting on the Site:

- commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and
- give the landowner a copy of the property investigation report.

In the event that blasting-related property damage is identified, and that damage is conclusively determined to be related to activities at the Quarry, Hanson will implement the following:

- A suitably qualified, experienced and independent person, whose appointment is acceptable to both Hanson and the landowner, will be engaged to determine what remedial action is required to initially stabilise the identified damage and appropriately remediate it. A copy of the report will be provided to the landowner for consideration.
- If both the landowner and Hanson agree with the recommendations of the report, Hanson will, in consultation with the landowner, engage a suitably qualified builder to complete the recommended work within a reasonable timeframe and to the satisfaction of the landowner and the Planning Secretary.
- Should either or both the landowner and Hanson not agree with the recommendation, Hanson would seek to negotiate with the landowner to reach a mutually agreeable solution.

Should the landowner and Hanson be in dispute regarding the selection of the suitably qualified, experienced and independent person, or Hanson or the landowner disagrees with the findings of the report, either Hanson or the landowner may refer the matter to the Planning Secretary. It is noted that, the decision of the Planning Secretary will be final.

## 3.3 Reactive Management Measures

### 3.3.1 Triggers

Reactive management will be applied The following triggers are in place to provide for:

1. **Predicted Adverse Weather Conditions** – such as high winds would be considered as triggers for reactive management as described in Section 3.3.2.1.
2. **Exceedance of blasting criteria established through monitoring** – Any record of blasting exceeding the criteria nominated in Section 3.1 will trigger the response and corrective action measures described in Section 3.3.2.1.

3. **Blast Fume Generation** – Where blast fumes are generated during a blasting event, the cause of the fumes would be investigated in accordance with the protocols described in Section 3.3.2.2
4. **Blast Complaint** – Any complaint received, either directly or indirectly via Council, EPA or other regulatory agency, will trigger the implementation of the response and corrective action measures described in Section 3.3.2.3. Complaints may also trigger a request for independent review of the impacts of the development as described in Section 3.3.2.4.

### 3.3.2 Responsive and Corrective Actions

#### 3.3.2.1 Predicted Adverse / Unfavourable Weather Conditions

It is noted that blast criteria still apply during adverse / unfavourable weather conditions such as high winds. Should local weather predictions include the potential for adverse / unfavourable weather conditions, Hanson will delay blasting activities, where it is reasonable and safe to do so, to minimise the potential of blast impacts and ensure compliance during these periods.

#### 3.3.2.2 Blast Monitoring Exceedance

Following exceedance of the air blast overpressure or ground vibration criteria (**Table 7**), as a result of blasting, the following actions will be completed:

- a) The Quarry Manager will be notified of the potential non-compliance.
- b) DPIE and the EPA would be notified immediately of the potential non-compliance.
- c) An investigation into the potential non-compliance would be instigated, with the objective of identifying the following, where appropriate:
  - the date and time of the non-compliance;
  - the duration of the non-compliance;
  - whether the non-compliance was directly related to operations within the Quarry or if any other factors contributed to the non-compliance;
  - the primary cause of the non-compliance;
  - any contributing factors which led to the non-compliance;
  - whether appropriate controls were implemented to prevent the non-compliance; and
  - corrective and preventative measures that may be implemented to prevent a recurrence of the non-compliance.
- d) Within 7 days of the date of identifying the non-compliance Hanson will provide a detailed report to DPIE and the EPA. The report shall (at a minimum):
  - a. be made in writing through the Major Projects Portal;
  - b. identify the development (including the development application number and name);
  - c. set out the condition of consent that the development is non-compliant with
  - d. why it does not comply and the reasons for the non-compliance (if known); and
  - e. what actions have been, or will be, undertaken to address the non-compliance.
- e) Within 7 days of obtaining any data showing an exceedance of blast criteria, Hanson will notify in writing any affected residents in accordance with Condition C1 of SSD 5899.

Following completion of the investigation, Hanson will:

1. Provide a copy of the completed investigation report to DPIE, the EPA and affected residents.
2. Implement the corrective and preventative actions identified in the investigation report.
3. Publish the investigation report on its website and present the findings to the CCC.

Any exceedance of the approved blast criteria will be reported to EPA in the Annual Return and to DPIE in the Annual Review.

### 3.3.2.3 Blast Fume Generation

All blast fume monitoring will be undertaken in conjunction with the blast contractors. Where blast fumes are visible (i.e. greater than Level 1 in accordance with the colour charts provided in **Appendix 2**) an investigation of blast fume causes will be undertaken to inform future blast design.

Where blast fumes are not localised and are observed to leave the Quarry Site, neighbours in the vicinity of the blast would be notified of the event immediately.

### 3.3.2.4 Blast Complaint

The *Environmental Management Strategy* includes a detailed complaints management procedure. This sub-section records the procedures that would be implemented following receipt of a blast-related complaint, which may be received through one of the following methods.

- Directly via Hanson's 24-hour, 7 day per week general Emergency Line (1800 882 478). This number will be advertised on signage at the Quarry entrance and on Hanson's website.
- Directly via the customer feedback / complaint / incident portal on the Hanson website.
- Indirectly via a government agency.

In addition, consultation will be held with the community as part of Hanson's standard consultation procedures, namely informal meetings with surrounding landholders as required and meetings of the Community Consultative Committee. These meetings will provide a further forum at which complaints may be received.

Following receipt of any noise-related complaint, the following procedure will be implemented.

1. The complaint will be reviewed by the Quarry Manager or their delegate to determine the nature, date and time of the complaint. This will include contacting and meeting with the complainant as required.
2. Relevant monitoring data will be reviewed.
3. Should the monitoring results indicate that no exceedance of the assessment criteria identified in Section 3.1, the Quarry Manager will continue to consult with the complainant in relation to managing impacts associated with the Quarry.
4. Should the monitoring indicate an exceedance of the relevant criteria, the Quarry Manager will notify the DPIE and EPA and will implement the procedures identified in Section 3.3.2.1. In addition, the Quarry Manager will continue to consult with the complainant, as required, in relation to the complaint, until the issue is resolved.
5. In the event that multiple complaints are received from the same individual(s) and the Quarry can demonstrate:
  - at least three complaints from the complainant, with demonstrated compliance with the relevant criteria in each case; and
  - there is documented evidence of a genuine attempt by the Quarry to discuss the issue and seek a resolution with the complainant without success.

The Quarry may, in consultation with the relevant government agencies, limit responses to further complaints to Steps 1 and 2 above.

All complaints would be recorded using a proforma complaints record sheet, with a description of the nature and the outcome of the complaint and subsequent investigation provided in summary form to the Community Consultative Committee and in the Annual Review/Annual Return. The complaints register will be published on the Hanson website on a quarterly basis.

### 3.3.2.5 Blast Complaints and Independent Review of Operations

Condition C3 permits landowners who believe that blasting criteria exceedances are or have occurred from the Quarry to request from Government (DPIE) an independent review of the impacts of the operation on their land. Should DPIE consider that a review is not warranted it will notify the landowner of this decision and the reasons for it within 21 days of the request.

However, if DPIE determine that the review is warranted and notifies Hanson of the decision, within 3 months of notification Hanson must:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been endorsed by DPIE, to:
  - (i) consult with the landowner to determine their concerns;
  - (ii) conduct monitoring to determine whether the development is complying with the relevant criteria; and
  - (iii) if the development is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria;
- (b) Provide DPIE and landowner a copy of the independent review; and
- (c) comply with any written requests made by DPIE to implement any findings of the review.

The outcomes of any independent review will be published in the Annual Review and on the Hanson website.

## 3.4 Monitoring

### 3.4.1 Meteorological Monitoring

An Automated Weather Station (AWS) is located at adjacent to the quarry access road (see **Figure 2**) to provide meteorological information for use as part of the environmental monitoring program, including blast monitoring, and for management of operations at the Quarry. The AWS records the following data at the Site:

- rainfall;
- temperature at 10m;
- temperature at 2m;
- relative humidity;
- net solar radiation;
- sigma theta;
- wind direction; and
- wind speed.

The AWS installed at the Quarry:

- complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and
- is capable of measuring meteorological conditions in accordance with the *NSW Industrial Noise Policy* (EPA, 2000).

### 3.4.2 Blast Monitoring

Blast monitoring is undertaken at three locations surrounding the Quarry and are shown in **Figure 2**. These locations have been selected to ensure that impacts on residences located in the vicinity of the Quarry are monitored and any trends in blast outcomes are identified prior to impacts occurring at privately-owned residences. These locations are considered to be representative monitoring locations for any potential impacts at privately-owned residences (in accordance with Condition D14 of SSD 5899).

All monitoring instrumentation and procedures will be undertaken in accordance with AS 2187.2-2006 *Explosives – Storage and use Part 2: Use of Explosives*. Microphones used for airblast overpressure monitoring have a lower cut-off frequency of 2Hz or less.

Monitoring will be used to capture and record all blast events. The following information will be recorded as part of the monitoring procedure.

- Blast noise overpressure (dBL<sub>peak</sub>) and peak particle velocity (ppv) (mm/s) in a radial, vertical and transverse direction.
- The time and duration of monitoring for each location.

- License limits, where appropriate.
- Wind speed and direction.
- The type of monitoring being undertaken.
- The monitoring location.

The results of all blasts will be documented by the blasting contractor and records maintained by the Quarry Manager. Air blast overpressure and ground vibration results will be reviewed after every blast to determine compliance of blasting criteria described in section 3.1. Any exceedance will be managed as described in section 3.3.2.2.

Hanson is aware of the penalties described in Section 9.4 of the EP&A Act relating to the provision of false or misleading information when reporting monitoring data relating to blasting activities, withholding information required to be reported or for failing to maintain records for at least five years.

### 3.4.3 Blast Fume Monitoring

Blast fume monitoring will be undertaken for each blast utilising the following procedure.

- Video recording and analysis of each blast to determine visible fume generation.
- Any visible fume generated will be evaluated in accordance with colour chart analysis presented in the Code of Practice Prevention and Management of Blast Generated NO<sub>x</sub> Gases in Surface Blasting - Australian Explosives Industry and Safety Group Inc. 2011 (see **Appendix 2**).
- Records of blast fume monitoring will be kept for a minimum of two years.
- Meteorological conditions will also be recorded during the period when any visible fume occurs.

All blast fume monitoring will be undertaken in conjunction with the blast contractors. Where blast fumes are visible (i.e. greater than Level 1 in accordance with the colour charts provided in **Appendix 2**) an investigation of blast fume causes will be undertaken to inform future blast design.

Where blast fumes are not localised and are observed to leave the Quarry Site, neighbours in the vicinity of the blast would be notified of the event immediately.

Where necessary, the blast controls (Section 3.2) would be revisited and updated to reflect modified control measures that are implemented as a result of the above review.

## 3.5 Publication of Monitoring Information

Hanson will publish blast-related information on Hanson's website. Specific publication requirements include the following:

- A copy of this Plan and any assessment document relating to blasting.
- A summary of all blast monitoring within 30 days of the date of monitoring.
- The Annual Review for the period 1 January to 31 December of each year, will be published within fourteen (14) days of acceptance by DPIE.
- All blasting criteria exceedance investigation reports will be made publicly available on the Quarry website within fourteen days of being finalised and accepted by DPIE.
- Incident investigation reports will be made publicly available within fourteen (14) days of being provided to the relevant regulator.

The Environment, Planning and Compliance Coordinator will be responsible for the publication of monitoring data. All information published to the website will be kept up to date. Finally, Hanson will also provide the Community Consultative Committee with a copy of the above documentation.

# 4. Management of Compliance

## 4.1 Incident Management

### 4.1.1 Incident Identification

Condition D7 of SSD 5899 requires Hanson to notify DPIE and any other relevant agencies immediately after becoming aware of an incident. The notification must be in writing through the Department's Major Projects website and identify the development (including the development application number and name) and set out the location and nature of the incident. In this case an incident is defined as an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.

Similarly, Condition R2 of EPL 1879 requires that the Quarry must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident.

For the purpose of blast management at the Quarry, material harm is harm that:

- involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or
- results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

An incident which causes or threatens to cause material harm to the environment (and may or may not result in an exceedance of criteria) is referred to as a **Pollution Incident**.

An incident which is only as a result of an exceedance of criterion, is referred to as a **Non-compliance Incident**.

Substantiated complaints received by the Quarry will not be considered incidents but will trigger an investigation and subsequent feedback to the complainant.

### 4.1.2 Non-compliance Incident

On identification of a non-compliance against the blast-related conditions of SSD 5899, which may follow receipt of a complaint, the Quarry Manager will be notified and an investigation into the source of the non-compliance or complaint will be commenced in accordance with the response and corrective actions described in Section 3.3.2.

### 4.1.3 Pollution Incident

In the event of an incident which is deemed a Pollution Incident, the Quarry Manager will be notified, who will immediately (first practical opportunity) notify DPIE and the EPA (using the Environmental Line 131 555). Following notification, the Quarry Manager will initiate an investigation into the cause and once identified the Quarry Manager or delegate will implement the corrective measures (to be identified as part of the investigation) described in Section 3.3.2.

### 4.1.4 Incident Notification and Reporting

In the event that an initial investigation concludes that an exceedance of an environmental criterion was directly attributed to activities associated with the Quarry, as described in Section 3.3.2, the event will be reported to DPIE, EPA immediately upon confirmation of the exceedance (at the first practical opportunity).

Within 7 days of identifying the exceedance, Hanson will submit a written report with regular updates on the status of the additional mitigation actions to DPIE, the EPA and the affected resident or complainant, in accordance with the procedures identified in Section 3.3.2. In addition, a copy of all reports will be provided to the Community Consultative Committee, made publicly available on the Quarry website and will be included in the *Annual Review*.

The Environment, Planning and Compliance Coordinator will be responsible for incident reporting.



## 4.2 Evaluation of Compliance

An evaluation of compliance with the conditions of approval will be undertaken as follows:

- A summary of any complaints would be published quarterly and measures undertaken to investigate and resolve those complaints.
- A summary of blast monitoring results will be published every month. The summary will include a review of compliance with all blast criteria.
- A review of all blast monitoring results captured over the preceding year and any trends identified in the data as well as comparison with the predicted dust levels will be presented in the *Annual Review*.

## 4.3 Continual Improvement

Opportunities for improvement of blast-related impacts will be discussed internally at toolbox meetings, in conjunction with all Quarry personnel. These opportunities would be presented to the Quarry Manager for consideration and any changes to operations as a result reported on as part of the *Annual Review* or, where relevant, reflected in an updated Plan.

In addition, general compliance, blast monitoring outcomes and the number of complaints would be used as an indication of the effectiveness of management. This includes issues identified through the Annual Review preparation (Section 4.4) and the outcomes of any Independent Environmental Audit of the operation (Section 4.5). Incidents (as defined in Section 4.1) would be triggers for review of the blast management system and update to management, where necessary.

## 4.4 Annual Review

In accordance with Condition D9 and D10 of SSD 5899, by the end of March in each year after the commencement of development, or other timeframe agreed with the Planning Secretary, an Annual Review will be submitted to DPIE reviewing the environmental performance of the development.

The approach to preparing and the contents of the Annual Review are described in Section 5.9 of the Environmental Management Strategy and are not repeated here.

Blast-related matters that will be reported in the Annual Review include the following as relevant for the calendar year of reporting.

- A summary of the outcomes of blast management for the period and that proposed for the following year.
- Any changes to blast management that occurred as part of operations during the year or that are proposed for the following year.
- The outcomes of all monitoring described in Section 3.4.
- A review of any incidents or complaints that relate to blast management.

A statement regarding compliance with blast-related conditions of consent for the period. Copies of all Annual Reviews will be available from the Hanson website. Each year a copy of the Annual Review will be submitted via the Major Projects Portal and electronically submitted to Council. Copies will be made available to the CCC and any interested person upon request.

## 4.5 Independent Environmental Audit

Within one year of the commencement of Stage 1 of operations, and every three years thereafter, unless the Planning Secretary directs otherwise, Hanson will commission an Independent Environmental Audit of the development.

The audit process is described in detail in Section 5.10 of the Environmental Management Strategy and is not repeated here. However, the audit will provide an independent evaluation of the performance of measures implemented under the Plan and provide recommendations for improvement or update.

Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Planning Secretary, Hanson will submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations.

Any recommendations agreed through the audit process will be implemented by Hanson consistent with the timetable approved by the Planning Secretary.

## 4.6 Review

In accordance with *Condition D5*, this Plan will be reviewed within three months of:

- (a) the submission of an incident report under condition D7;
- (b) the submission of an Annual Review under condition D9;
- (c) the submission of an Independent Environmental Audit under condition D11;
- (d) the approval of any modification of the conditions of this consent;
- (e) notification of a change in development stage under condition A15; or
- (f) the issue of a direction of the Planning Secretary under condition A2(b) which requires a review,

The Reviewed plan will be submitted to the Planning Secretary for approval within six weeks of finalisation of the review.

In addition, this Plan will be reviewed and updated, should it be required, at the commencement of a new operational stage of development.

The Environment, Planning and Compliance Coordinator will be responsible for review of the Plan.

## 5. References

**Hanson Construction Materials Pty Ltd (2017).** *Environmental Impact Statement Report* Brandy Hill Expansion Project, dated February 2017

**R.W. Corkery & Co. Pty Limited (RWC) (2019).** *Amended Response to Submissions*, prepared for Hanson Construction Materials Pty Ltd, dated September 2019

**Vipac Engineers and Scientists Limited (VIPAC) (2015).** Brandy Hill Quarry Expansion – Blast Impact Assessment, dated December 2015

**Vipac Engineers and Scientists Limited (VIPAC) (2018).** Brandy Hill Quarry – Updated Blast Impact Assessment, dated September 2018

# Appendices

(Total No. of pages including blank pages = 24)

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|------------|---|
| Appendix 1 | Government Agency Consultation<br>Correspondence (18 pages) |
| Appendix 2 | Blast Fume Visual Rating Guide (4 pages)                    |

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# Appendix 1

## Government Agency Consultation Correspondence

(Total No. of pages including blank pages = 18)



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DOC21/170493-2

Department of Planning, Industry and Environment

Returned via the Major Projects Portal

29 March 2021

Attention: Genevieve Lucas

**Brandy Hill Quarry Expansion Project (SSD-5899-PA-5) - Blast Management Plan**

Dear Ms Lucas

I refer to the email from the Department of Planning, Industry and Environment (DPIE) of 8 March 2021, asking the Environment Protection Authority (EPA) to review and comment on the Brandy Hill Quarry Expansion Blast Management Plan (SSD-5899-PA-5) dated 5 March 2021.

The EPA encourages the development and use of such plans to ensure that proponents have met their statutory obligations and designated environmental objectives.

Being a regulatory authority, the EPA's role is to set environmental management objectives rather than being directly involved in the development of strategies to achieve those objectives. Accordingly, the EPA has not reviewed this report and offers no comments in relation to it.

If you require any further information regarding this matter, please contact Genevieve Lorang on (02) 4908 6869.

Yours sincerely



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Belinda Pignone  
Environmental Planning and Compliance Coordinator  
Hanson Construction Materials PTY LTD  
Level 18  
2-12 Macquarie Street  
Parramatta, New South Wales 2150

16/06/2021

Dear Ms Pignone

**Brandy Hill Expansion Project – (SSD-5899)  
Blast Management Plan - request for additional information**

We require additional information relating to the Blast Management Plan (SSD-5899-PA-5) submitted under the conditions of consent for the Brandy Hill Expansion Project (SSD-5899).

Please submit a revised document that addresses the attached comment Management Plan Review Table.

Please provide the information or notify us that you will not provide the information by Thursday 17 June 2021. If this timeframe is not achievable, please provide and commit to an alternative timeframe for providing this information.

If you have any questions, please contact Charissa Pillay on 02 99955944 / at [Charissa.Pillay@planning.nsw.gov.au](mailto:Charissa.Pillay@planning.nsw.gov.au).

Yours sincerely



Matthew Sprott  
Director  
Resource Assessments (Coal & Quarries)

<i><b>Blast, Condition B18, Schedule 2</b></i>	<b>Sufficient (Yes/No/Partial)</b>	<b>Document reference and comment</b>	<b>Action Required</b>	<b>Company Response</b>
A34. The Applicant must not use or permit the use of the Buffer Lands for any purpose associated with the development that would generate significant noise or compromise the visual screening or biodiversity value provided by the vegetation on the Buffer Lands, except to manage bushfire risk and for weed and pest control.		Section 2.2		Noted
Blasting Criteria				
B8. The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 3.		Section 3.1		Noted
Table 3: Blasting Criteria				
Location	<b>Airblast overpressure (dB(L in Peak))</b>	<b>Ground vibration (mm/s)</b>	<b>Allowable exceedance</b>	
Residence on privately-owned land <sup>a</sup>	120	10	0%	
	115	5	5% of the total number of blasts over a calendar year B9.	

B9. The blasting criteria in Table 3 do not apply to a residence if the Applicant has an agreement with the owner/s of that residence or infrastructure to exceed the blasting criteria, and the Applicant has advised the Department in writing of the terms of this agreement.		No agreements in place		Noted
Blasting Frequency				
B10. The Applicant may carry out a maximum of 1 blast per week.		Section 3.2.1		Noted
B11. Condition B10 does not apply to blasts that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, or to blast misfires or blasts required to ensure the safety of the mine, its workers or the general public.		Noted		Noted
Property Inspections				
B12. If the Applicant receives a written request from the owner of any privately-owned land within 1 kilometre of any approved extraction area on the site for a property inspection to establish the baseline condition of any buildings and structures on their land, or to have a previous property inspection updated, then within 2 months of receiving this request the Applicant must:				
<ul style="list-style-type: none"> <li>a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to: <ul style="list-style-type: none"> <li>(i) establish the baseline condition of any buildings and other structures on the land, or update the previous property inspection report; and</li> <li>(ii) identify measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and structures; and</li> </ul> </li> </ul>		Section 3.2.4		Noted

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b) give the landowner a copy of the new or updated property inspection report.		Section 3.2.4		Noted
B13. If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the property inspection report, either party may refer the matter to the Planning Secretary for resolution. The decision of the Planning Secretary will be final.		Section 3.2.4		Noted
Property Investigations				
B14. If the owner of any privately-owned land within 2 kilometres of any approved extraction area on the site or any other landowner where the Planning Secretary is satisfied an investigation is warranted, claims in writing that buildings or structures on their land have been damaged as a result of blasting on the site, then within 2 months of receiving this written claim the Applicant must:		Section 3.2.5		Noted
commission a suitably qualified, experienced and independent person, whose appointment is acceptable to				
a) both parties to investigate the claim; and				
b) give the landowner a copy of the property investigation report.				
B15. If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant must repair the damage to the satisfaction of the Planning Secretary.		Section 3.2.5		Noted
B16. If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Planning Secretary for resolution. The decision of the Planning Secretary will be final.		Section 3.2.5		Noted



Blast Operating Conditions				
<p>B17. During blasting operations, the Applicant must:</p> <p>a) take all reasonable steps to:</p> <ul style="list-style-type: none"> <li>(i) ensure the safety of people and livestock from blasting impacts of the development;</li> <li>(ii) protect public or private infrastructure and property in the vicinity of the site from blasting damage associated with the development; and</li> <li>(iii) minimise blast-related dust and fume emissions;</li> </ul>		Section 3.2.3.3. Section 3.2.3.2		Noted
<p>b) operate a suitable system to enable members of the public to get up-to-date information on the proposed blasting schedule on the site; and</p>		Section 3.2.2		Noted
<p>c) carry out regular blast monitoring to determine whether the development is complying with the relevant conditions of this consent.</p>		Section 3.4		Noted
Blast Management Plan				
<p>B18. The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</p>				
<p>a) be prepared by a suitably qualified and experienced person/s;</p>		Noted		Noted
<p>b) be prepared in consultation with the EPA;</p>		Section 1.5	-	Noted
<p>c) describe the measures that will be implemented to:</p> <ul style="list-style-type: none"> <li>(i) ensure compliance with the blasting criteria and operating conditions of this consent;</li> </ul>		Section 3		Noted

(ii) avoid blasting during unfavourable climatic conditions;		Section 3.3.2.1		Noted
d) include a monitoring program for evaluating and reporting on compliance with the relevant conditions of		Section 3.4		Noted
e) include a protocol for identifying any blast-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events;		Section 3.3.2		Noted
f) include public notification procedures to enable members of the public, particularly surrounding residents, to get up-to-date information on the proposed blasting schedule; and		Section 3.2.2		Noted
g) include a protocol for investigating and responding to blast-related complaints.		Section 3.3.2.4		Noted
B19. The Applicant must not undertake any blasting until the Blast Management Plan is approved by the Planning Secretary.		Noted		Noted
B20. The Applicant must implement the approved Blast Management Plan.		Noted		Noted
Notification of Exceedances				
C1. As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must:		Section 3.3.2.5		Noted
a) provide to any affected landowners and tenants; and				
b) publish on its website the full details of the exceedance.				

C2. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet entitled "Mine Dust and You" (NSW Minerals Council, 2011).				
<b>Independent Review</b>				
C3. If a landowner considers the development to be exceeding any noise, blasting or air quality criterion in PART B of this consent, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their land.		Section 3.3.2.5		Noted
C4. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.		Section 3.3.2.5		Noted
C5. If the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or as otherwise agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, the Applicant must: <ul style="list-style-type: none"> <li>a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to: <ul style="list-style-type: none"> <li>(i) consult with the landowner to determine their concerns;</li> <li>(ii) conduct monitoring to determine whether the development is complying with the relevant criteria in PART B of this consent; and</li> </ul> </li> </ul>		Section 3.3.2.5		Noted

<p>(iii) if the development is not complying with that criteria, identify measures that could be implemented to ensure compliance with the relevant criteria;</p> <p>b) give the Planning Secretary and landowner a copy of the independent review; and</p> <p>c) comply with any written requests made by the Planning Secretary to implement any findings of the review.</p>				
Revision of Strategies, Plans and Programs, Condition D5, Schedule 2	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
<p>Within three months of:</p> <p>a) the submission of an incident report under condition D7;</p> <p>b) the submission of an Annual review under condition D9;</p> <p>c) the submission of an Independent Environmental Review D11;</p> <p>d) the approval of any modification of the conditions of this consent;</p> <p>e) notification of a change in development stage under condition A15; or</p> <p>f) the issue of a direction of the Planning Secretary under condition A2(b) which requires a review, the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.</p> <p>D6. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary and submitted to the Planning Secretary for approval within six weeks of the review.</p>		Section 4.4.		Noted

<b>Incident Notification, Condition D7, Schedule 2</b>	<b>Sufficient (Yes/No/Partial)</b>	<b>Document reference and comment</b>	<b>Action Required</b>	<b>Company Response</b>
The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing through the Department's Major Projects website and identify the development (including the development application number and name) and set out the location and nature of the incident.		Section 4.1.4		Noted
<b>Non-Compliance Notification, Condition D8, Schedule 2</b>	<b>Sufficient Yes/No/Partial)</b>	<b>Document reference and comment</b>	<b>Action Required</b>	<b>Company Response</b>
Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to the Department's Major Projects website and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.		Section 4.1.4		Noted
<b>Annual Review, Condition D9, Schedule 2</b>	<b>Sufficient (Yes/No/Partial)</b>	<b>Document reference and comment</b>	<b>Action Required</b>	<b>Company Response</b>
By the end of March in each year after the 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 the current calendar year;				No comments against this condition, but text updated to reflect other plans. See new Section 4.4

<p>b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the:</p> <ul style="list-style-type: none"> <li>(i) relevant statutory requirements, limits or performance measures/criteria;</li> <li>(ii) requirements of any plan or program required under this consent;</li> <li>(iii) monitoring results of previous years; and</li> <li>(iv) relevant predictions in the documents listed condition A2(c).</li> </ul> <p>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;</p> <p>d) evaluate and report on:</p> <ul style="list-style-type: none"> <li>(i) the effectiveness of the noise and air quality management systems; and</li> <li>(ii) compliance with the performance measures, criteria and operating conditions in this consent;</li> </ul> <p>e) identify any trends in the monitoring data over the life of the development;</p> <p>f) identify any discrepancies between the predicted and actual impacts of the development; and analyse the potential cause of any significant discrepancies; and</p> <p>g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.</p> <p>D10. Copies of the Annual Review must be submitted to Council and made available to the CCC and any interested person upon request.</p>			<p>Condition included in Section 2.4 and Table 5</p>
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INDEPENDENT ENVIRONMENTAL AUDIT, Condition D11, Schedule 2	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
<p>Within one year of the commencement any development under this consent, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must: NSW Government 24 Brandy Hill Expansion Project Department of Planning, Industry and Environment (SSD 5899)</p> <ul style="list-style-type: none"> <li>a) be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary;</li> <li>b) be carried out in consultation with the relevant agencies and the CCC;</li> <li>c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);</li> <li>d) review the adequacy of any approved strategy, plan or program required under the above mentioned approvals and this consent;</li> <li>e) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the above mentioned approvals and this consent; and</li> <li>f) be conducted and reported to the satisfaction of the Planning Secretary.</li> </ul>	Partial	Section 3.5 contains some periodic audits via safety advisor but no reference to independent audit	Include requirement for independent audit. Frequency and summary	<p>Condition included in Section 2.4 and Table 5</p> <p>See new Section 4.5</p>

D12. Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.				
<b>Monitoring and Environmental Audits D13, D14</b>				
D13. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit. For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.	Section 3.4.2			Noted
D14. Noise, blast and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Part B, providing that these representative monitoring locations are set out in the respective management plan/s.				



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Post Approval Review

ACCESS TO INFORMATION, Condition D15, Schedule 2	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	Company Response
<p>Before the commencement of construction until the completion of all rehabilitation required under this consent, the Applicant must:</p> <p>a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:</p> <ul style="list-style-type: none"> <li>(i) the document/s listed in condition A2(c); (ii) all current statutory approvals for the development;</li> <li>(iii) all approved strategies, plans and programs required under the conditions of this consent;</li> <li>(iv) minutes of CCC meetings;</li> <li>(v) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;</li> <li>(vi) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;</li> <li>(vii) a summary of the current stage and progress of the development;</li> <li>(viii) contact details to enquire about the development or to make a complaint;</li> <li>(ix) a complaints register, updated monthly;</li> <li>(x) the Annual Reviews of the development;</li> </ul>		Section 3.5		Noted

Document: "Blast Management Plan"

Revision: Revision A Dated "

Reviewed: "" on ""

<p>(xi) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report;</p> <p>(xii) any other matter required by the Planning Secretary; and</p> <p>b) keep such information up to date, to the satisfaction of the Planning Secretary.</p>				
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"Brandy Hill Quarry Expansion project"  
Post Approval Review

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# Appendix 2






## **Blast Fume Visual Rating Guide (Appendix 2 and Appendix 3 from the Code of Practice Prevention and Management of Blast Generated NOx Gases in Surface Blasting Australian Explosives Industry and Safety Group Inc. 2011)**

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## APPENDIX 2 - VISUAL NO<sub>x</sub> GASES RATING SCALE

The following table, together with the Field Colour Chart in Appendix 3, details how NO<sub>x</sub> gases from a surface blast can be assessed.

Level	Typical Appearance
<b>Level 0</b> No NO <sub>x</sub> gas	
<b>Level 1</b> Slight NO <sub>x</sub> gas	
1A Localised	
1B Medium	
1C Extensive	
<b>Level 2</b> Minor yellow/orange gas	
2A Localised	
2B Medium	
2C Extensive	
<b>Level 3</b> Orange gas	
3A Localised	
3B Medium	
3C Extensive	
<b>Level 4</b> Orange/red gas	
4A Localised	
4B Medium	
4C Extensive	
<b>Level 5</b> Red/purple gas	
5A Localised	
5B Medium	
5C Extensive	







Assessing the amount of NO<sub>x</sub> gases produced from a blast will depend on the distance the observer is from the blast and the prevailing weather conditions. The intensity of the NO<sub>x</sub> gases produced in a blast should be measured on a simple scale from 0 to 5 based on the table above. The extent of the NO<sub>x</sub> gases also needs to be assessed and this should be done on a simple scale from A to C where:-

- A = Localised (ie NO<sub>x</sub> Gases localised across only a few blast holes)
- B = Medium (ie NO<sub>x</sub> Gases from up to 50% of blast holes in the shot)
- C = Extensive (ie Extensive generation of NO<sub>x</sub> Gases across the whole blast)



### APPENDIX 3 - FIELD COLOUR CHART

Pantone colour numbers have been included in the following Field Colour Chart to ensure colours will be produced correctly thereby ensuring a reasonable level of standardisation in reporting NOx gas events across the blasting industry.

Level	Colour	Pantone Number
Level 0 No NOx gas		Warm Grey 1C (RGB 244, 222, 217)
Level 1 Slight NOx gas		Pantone 155C (RGB 244, 219, 170)
Level 2 Minor yellow/orange gas		Pantone 157C (RGB 237, 160, 79)
Level 3 Orange gas		Pantone 158C (RGB 232, 117, 17)
Level 4 Orange/red gas		Pantone 1525C (RGB 181, 84, 0)
Level 5 Red/purple gases		Pantone 161C (RGB 99, 58, 17)