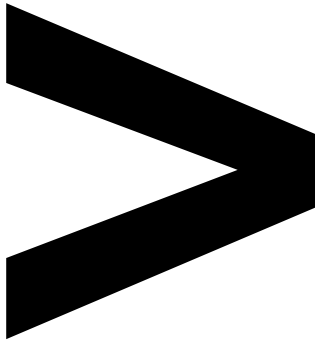




HUNTER VALLEY OPERATIONS

BLAST MANAGEMENT PLAN

DOCUMENT NUMBER
HVOOC-1797567310-408

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Approved

VERSION
5.0

EFFECTIVE
07/09/2026

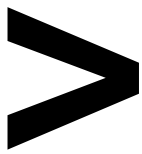
REVIEW
07/09/2029

OWNER
Superintendent – Environment and Community

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1 | PURPOSE

The purpose of this Hunter Valley Operations (HVO) Blast Management Plan (BMP) is to:

- Provide reasonable and feasible measures to address potential blasting impacts at HVO, as identified in the HVO North and HVO South Approvals (collectively known as the 'Approvals'); and
- Satisfy the relevant conditions of these Approvals.

This BMP describes procedures required to help achieve compliance with the Approval conditions relating to blasting impacts. It also provides a mechanism for assessing blast monitoring results against the relevant blast impact assessment criteria.

This BMP was prepared by a suitably qualified and experienced person on behalf of HVO in accordance with Schedule 3, Condition 19 of the HVO North Approval, and Schedule 3, Condition 18 of the HVO South Approval.

2 | SCOPE

This BMP applies to the area within HVO North and HVO South boundaries, including:

- Operating Pits;
- Coal Preparation Plants (CPPs); and
- Loading Points.

This BMP is to be applied from the time of approval of this plan, during construction and operation activities at HVO to comply with the relevant blasting conditions of the Approvals and Environment Protection Licence (EPL 640).

3 | OBJECTIVES

The objectives of this BMP are to:

- meet the requirements of the Approvals and EPL;
- set out the notification procedure;
- describe the process for assessing real-time weather conditions prior to blasting;
- set out the hours of blasting;
- outline what blast design and evacuation procedures are in place to allow for safety from fly rock;
- set out a Road Closure Management Plan (see Appendix C);
- describe the monitoring program and how it will be implemented and maintained;
- detail the controls to be implemented to minimise blasting impacts off site;
- manage community complaints in a timely and effective manner; and
- detail the procedure for reporting blast criteria exceedances to relevant stakeholders.

The key elements of the mitigation strategies will be;

- To utilise blast design which incorporates controls so that blasting-induced vibration is within acceptable limits (this will also be addressed through monitoring); and

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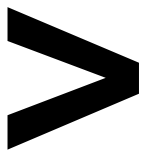
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- Managing key environmental issues associated with air blast overpressure and vibration impacts as a result of operational activities that may affect:
 - Communities (Warkworth, Maison Dieu, Jerrys Plains, Knodlers Lane);
 - Residences within zone of affectation;
 - Residences beyond zone of affectation;
 - Neighbouring mines; and
 - Sensitive infrastructure.

4 | BACKGROUND

Hunter Valley Operations (HVO) is an open cut mining complex located approximately 24 kilometres north-west of Singleton, New South Wales (NSW). HVO is geographically divided by the Hunter River into HVO North and HVO South. While HVO is managed as one operation, HVO North and HVO South each have separate planning approvals.

HVO is generally bounded by Lemington Road and Jerrys Plains Road alongside its western boundary. The New England Highway is located to the north and east, with the Golden Highway and Wallaby Scrub Road to the south.

HVO is described in detail in environmental assessment documents outlined in Section 11.2 of this BMP.

HVO is located in an area where mining is already a feature of the landscape. It is located in the Hunter Valley coalfields with surrounding mines and infrastructure including Mount Thorley Warkworth (MTW), United Wambo, Wambo and Ravensworth.

A blasting study was prepared as part of the Carrington West Wing (CWW) Environmental Assessment (EA) (EMGA Mitchell McLennan dated 1 October 2010) to assess potential blasting impacts.

Similarly, a blasting assessment was undertaken as part of the HVO South Modification 5 EA (EMM February 2017).

This BMP is the primary tool that will be utilised to reduce potential blasting impacts related to the Project.

4.1 | EXISTING CHARACTER

4.1.1 | HVO NORTH

The closest privately owned residences surrounding HVO North are west and south-west, and are located within the village of Jerrys Plains and along the Golden Highway.

There are no private residences located in close proximity to proposed blasting locations at HVO North which would ordinarily require precautionary consultation and arrangements prior to any blasts.

4.1.2 | HVO SOUTH

Privately owned residences in the vicinity of HVO South are located in the rural community of Maison Dieu to the east, and further to the southeast in the communities of Warkworth and Long Point.



5 | STATUTORY REQUIREMENTS AND GUIDELINES

This BMP was prepared to satisfy the requirements of:

- Development Consent DA 450-10-2003
- Project Approval PA 06_0261 and
- Environment Protection Licence EPL 640.

5.1 | PROJECT APPROVALS

HVO North was granted approval on 12 June 2004 (DA 450-10-2003) for HVO North by the Minister for Infrastructure and Planning and the Minister for Natural Resources (the HVO North Approval). The most recent modification was approved on 24 April 2025.

HVO South operates in accordance with the Project Approval granted on 24 March 2009 (PA 06_0261) by the Minister for Planning (the HVO South Approval). The most recent modification was approved on 6 February 2023.

Table 5-1 the consent conditions required to be covered by this BMP and the sections within this document in which they are addressed.

Table 5-2 shows where items in the Statement of Commitments (SOC) related to air quality impacts are addressed in this BMP.

Table 5-1 - Consent Conditions

Consent Number	Condition	Section within BMP which addresses this requirement						
HVO North Consent (DA 450-10-2003)								
Sch 3, Cond 12	Airblast Overpressure Limits The Applicant must ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 14 [sic] at any residence on privately-owned land. <i>Table 12: Airblast overpressure impact assessment criteria</i> <table><tr><th>Airblast overpressure level (dB(Lin Peak))</th><th>Allowable exceedance</th></tr><tr><td>115</td><td>5% of the total number of blasts in a 12 month period</td></tr><tr><td>120</td><td>0%</td></tr></table>	Airblast overpressure level (dB(Lin Peak))	Allowable exceedance	115	5% of the total number of blasts in a 12 month period	120	0%	7.1, 8
Airblast overpressure level (dB(Lin Peak))	Allowable exceedance							
115	5% of the total number of blasts in a 12 month period							
120	0%							
Sch 3, Cond 13	Ground Vibration Impact Assessment Criteria The Applicant must ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 15 [sic] at any residence on privately-owned land. <i>Table 13: Ground vibration impact assessment criteria</i> <table><tr><th>Peak particle velocity (mm/s)</th><th>Allowable exceedance</th></tr><tr><td>5</td><td>5% of the total number of blasts in a 12 month period</td></tr><tr><td>10</td><td>0%</td></tr></table>	Peak particle velocity (mm/s)	Allowable exceedance	5	5% of the total number of blasts in a 12 month period	10	0%	7.1, 8
Peak particle velocity (mm/s)	Allowable exceedance							
5	5% of the total number of blasts in a 12 month period							
10	0%							
Sch. 3,	Blasting Hours	7.1						

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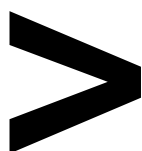
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Consent Number	Condition	Section within BMP which addresses this requirement
Cond. 14	The Applicant must only carry out blasting at the development between 7 am and 6 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, Public Holidays or any other time without the written approval of the EPA.	
Sch. 3, Cond. 14A	Blasting Frequency The Applicant may carry out a maximum of: (a) 3 blasts a day, unless an additional blast is required following a blast misfire; and (b) 12 blasts a week, for all open cut mining operations at the HVO North mine. This condition 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 blasts required to ensure the safety of the mine or its workers. <i>Note: For the purposes of this condition, a blast refers to single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.</i>	7.1
Sch. 3, Cond. 15	Interactions With Adjoining Mines Prior to carrying out any mining or associated development within 500 metres of active mining areas at Ravensworth Operations, the Applicant must enter into an agreement with Ravensworth Operations Pty Ltd (or its assigns or successors in title) to address the potential interactions between the two mines. If during the course of entering into this agreement, or subsequently implementing this agreement, there is a dispute between the parties about any aspect of the agreement, then either party may refer the matter to the Secretary for resolution.	6.2 7.1
Sch. 3, Cond. 16	Prior to carrying out any mining or associated development within 500 metres of active mining areas at Cumnock No. 1 Colliery, the Applicant must enter into an agreement with Cumnock No. 1 Colliery Pty Ltd (or its assigns or successors in title) to address the potential interactions between the two mines. If during the course of entering into this agreement, or subsequently implementing this agreement, there is a dispute between the parties about any aspect of the agreement, then either party may refer the matter to the Secretary for resolution.	6.2 7.1
Sch. 3, Cond. 16A	Property Inspections If the Applicant receives a written request from the owner of any privately-owned land within 2 kilometres of the approved open cut mining pit/s on site for a property inspection to establish the baseline condition of any buildings and/or structures on his/her land, or to have a previous property inspection updated, then within 2 months of receiving this request the Applicant must: (a) provide the Secretary with a report that: - establishes the baseline condition of any buildings and other structures on the land, or updates the previous property inspection report; and - identifies measures that should be implemented to minimise the potential blasting impacts of the development on these buildings and/or structures; and (b) provide the landowner a copy of the new or updated property inspection report. The report is to be prepared by a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties. 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 Secretary for resolution.	8.3

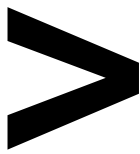


Consent Number	Condition	Section within BMP which addresses this requirement
	If the Applicant considers that an extension of time is required to complete the report, the Applicant may apply in writing to the Secretary for an extension. The Applicant must provide a copy of the request and of the Secretary's decisions to the landowner.	
Sch. 3, Cond. 16B	If the owner of any privately-owned land within 3 kilometres of any approved open cut mining pit on the site or any other privately owned land where the Secretary is satisfied that an investigation is warranted, claims that buildings and/or structures on his/her land have been damaged as a result of blasting on the site, then within 2 months of receiving this claim the Applicant must: (a) provide the Secretary with a report that: - investigates the claim; and - identifies measures or works that should be implemented to rectify any blasting impacts of the development on these buildings and/or structures; and (b) provide the landowner a copy of the claim inspection report and recommendations. 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 Secretary. The report must be prepared by a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties. 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 claim inspection report, either party may refer the matter to the Secretary for resolution. If the Applicant considers that an extension of time is required to complete the report, the Applicant may apply in writing to the Secretary for an extension. The Applicant must provide a copy of the request and of the Secretary's decision to the landowner.	8.4
Sch. 3, Cond. 17	Blasting Operating Conditions During mining operations on site, the Applicant must: (a) implement best management practice to: - protect the safety of people and livestock in the surrounding area; - protect public or private infrastructure/property in the surrounding area from any damage; and - minimise the dust and fume emissions of any blasting; (b) minimise the frequency and duration of any road closures, and avoid road closures during peak traffic periods; (c) co-ordinate the timing of blasting on site with the timing of blasting at nearby mines (including the Mt Thorley Warkworth, Wambo, Ravensworth and HVO South mines) to minimise the cumulative blasting impacts of these mines and HVO North mine; and (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site, to the satisfaction of the Secretary.	7.1, 7.2, 5.5.2, 7.6, 6.2, 9.1.2
Sch. 3, Cond. 18	The Applicant must not undertake blasting on site within 500 metres of:	7.1, 7.6

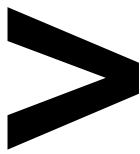


Consent Number	Condition	Section within BMP which addresses this requirement
	(a) any public road without the approval of the appropriate road authority; or (b) any land outside the site that is not owned by the Applicant; unless - the Applicant has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Applicant has advised the Department in writing of the terms of this agreement, or - the Applicant has: - demonstrated to the satisfaction of the Secretary that the blasting can be carried out closer to the land without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land.	
Sch. 3, Cond. 19(a)	Blast Management Plan The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Secretary. The plan must: be submitted to the Secretary for approval by the end of September 2013 unless otherwise agreed;	1, 7.1
Sch. 3, Cond. 19(b)	propose and justify any alternative ground vibration limits for any public infrastructure in the vicinity of the site;	5.6.2
Sch. 3, Cond. 19(c)	describe the measures that would be implemented to ensure: - best management practice is being employed; - compliance with the relevant conditions of this consent; - that blasting will not cause damage to the Carrington West Wing Groundwater Barrier (LPB) as described in Condition 23 of Schedule 4; and - that blasting in the Carrington West Wing does not cause damage or instability to the Carrington In Pit Fine Reject Emplacement embankment;	5.4, 7.5, 7.6
Sch. 3, Cond. 19(d)	include a road closure management plan for blasting within 500 metres of a public road, that has been prepared in consultation with the TfNSW and Council	7.6, 8, Appendix C
Sch. 3, Cond. 19(e)	include a specific blast fume management protocol to demonstrate how emissions will be minimised including risk management strategies if blast fumes are generated	7.1, Appendix B
Sch. 3, Cond. 19(f)	include a monitoring program for evaluating the performance of the development, including: compliance with the applicable criteria; minimising the fume emissions from the site	8
Sch. 3, Cond. 19(g)	include a protocol that has been prepared in consultation with the owners of nearby mines (including the Mt Thorley Warkworth, Wambo, Ravensworth and HVO South mines) to minimise the cumulative blasting impacts of these mines and the HVO North mine The Applicant must implement the approved management plan as approved from time to time by the Secretary.	6.2
Sch. 3, Cond. 40A	Aboriginal Heritage Site 37-2-1877 (CM-CD1)	5.6, 7.1, 7.3

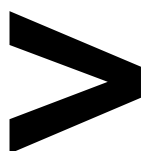
Consent Number	Condition	Section within BMP which addresses this requirement
	The Applicant must ensure that mining operations (including blasting) and associated activities do not cause any impact to Aboriginal heritage site 37-2-1877 (CM-CD1) and the Older Stratum.	
Sch. 5, Cond. 2(a)	Management Plan Requirements The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include: detailed baseline data	5.5
Sch. 5, Cond. 2(b)	a description of: - the relevant statutory requirements (including any relevant consent, licence or lease conditions); - any relevant limits or performance measures/criteria; 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	5
Sch. 5, Cond. 2(c)	a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	7.1, 8
Sch. 5, Cond. 42(d)	a program to monitor and report on the: impacts and environmental performance of the development; and effectiveness of any management measures (see (c) above)	8, 9
Sch. 5, Cond. 2(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;	7.7
Sch. 5, Cond. 2(f)	a program to investigate and implement ways to improve the environmental performance of the development over time;	7.8
Sch. 5, Cond. 2(g)	a protocol for managing and reporting any: - incidents; - complaints; - non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria	9
Sch. 5, Cond. 2(h)	include a protocol for periodic review of the plan;	9
Sch. 5, Cond 2(i)	A document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of the people who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary's approval.	12.3
Sch. 5, Cond. 4	Revision of Strategies, Plans and Programs Within 3 months of: (a) the submission of an incident report under Condition 7 below; (b) the submission of an annual review under Condition 9 below;	9.3



Consent Number	Condition	Section within BMP which addresses this requirement
	(c) the submission of an audit report under Condition 10 below; and (d) approval of a modification to this consent, the Applicant must review, and if necessary, revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary. Within 6 weeks of conducting any such review, the Applicant must advise the Secretary of the outcomes of the review and provide any documents that have been revised to the Secretary for review and approval. <i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.</i>	
Sch. 5, Cond. 7	Incident Reporting The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	9.1.2
Sch. 5, Cond. 8	Regular Reporting The applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	9.1.2
Sch. 5, Cond. 9	Annual Review By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must: (a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the: - the relevant statutory requirements, limits or performance measures/criteria; - requirements of any plan or program required under this consent; - the monitoring results of previous years; and - the relevant predictions in the documents listed in condition 2 of Schedule 3; (c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the development; (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.	9.1.2



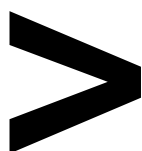
Consent Number	Condition	Section within BMP which addresses this requirement						
	The applicant must ensure that copies of the Annual Review are submitted to Council and are available to the Community Consultative Committee (see condition 6 of Schedule 6) and any intended person upon request.							
HVO South Consent (PA 06_0261)								
Sch. 2 Cond. 15	Evidence of Consultation Where conditions of this consent require a document to be prepared in consultation with an identified party, the Applicant must; a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and b) provide details of the consultation undertaken including: - a description of how matters raised by those consulted have been resolved to the satisfaction of both the Applicant and the party consulted; and - details of any disagreement remaining between the party consulted and the Applicant, and how the Applicant has addressed the matters not resolved.	6.1, Appendix E						
Sch. 3, Cond. 7	Airblast Overpressure Impact Assessment Criteria The Applicant must ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 6 at any residence on privately-owned land. <i>Table 6: Airblast overpressure impact assessment criteria</i> <table><tr><th>Airblast overpressure level (dB(Lin Peak))</th><th>Allowable exceedance</th></tr><tr><td>115</td><td>5% of the total number of blasts over a period of 12 months</td></tr><tr><td>120</td><td>0%</td></tr></table> However, if the Applicant has a written negotiated blast agreement with the owner of the relevant residence on privately-owned land, and a copy of this agreement has been forwarded to the Department and EPA, then the Applicant may exceed the airblast overpressure level in Table 6 in accordance with the negotiated agreement.	Airblast overpressure level (dB(Lin Peak))	Allowable exceedance	115	5% of the total number of blasts over a period of 12 months	120	0%	7.1, 8
Airblast overpressure level (dB(Lin Peak))	Allowable exceedance							
115	5% of the total number of blasts over a period of 12 months							
120	0%							
Sch. 3, Cond. 8	Ground Vibration Impact Assessment Criteria The Applicant must ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 7, at any residence on privately-owned land. <i>Table 7: Ground vibration impact assessment criteria</i> <table><tr><th>Peak particle velocity (mm/s)</th><th>Allowable exceedance</th></tr><tr><td>5</td><td>5% of the total number of blasts over a period of 12 months</td></tr><tr><td>10</td><td>0%</td></tr></table> <i>Note: Vibration must be measured in accordance with applicable guidelines, including EPA's Assessing Vibration: A Technical Guideline (2006).</i> However, if the Applicant has a written negotiated blast agreement with the owner of the relevant residence on privately-owned land, and a copy of this agreement has been forwarded to the	Peak particle velocity (mm/s)	Allowable exceedance	5	5% of the total number of blasts over a period of 12 months	10	0%	7.1, 8
Peak particle velocity (mm/s)	Allowable exceedance							
5	5% of the total number of blasts over a period of 12 months							
10	0%							



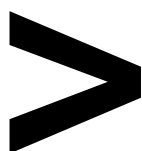
Consent Number	Condition	Section within BMP which addresses this requirement
	Department and EPA, then the Applicant may exceed the airblast overpressure level in Table 7 in accordance with the negotiated agreement.	
Sch. 3, Cond. 9	For St Philip's Church and the outbuildings at Archerfield, the Applicant must ensure that ground vibration peak particle velocity generated by the development does not exceed 5 mm/s, or as otherwise approved by the Planning Secretary.	5.6.2, 8.1
Sch. 3, Cond. 10	Blasting Hours The Applicant must only carry out blasting on site between 7 am and 6 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Planning Secretary.	7.1
Sch. 3, Cond. 11	Operating Conditions During mining operations on site, the Applicant must implement best blasting practice to: (a) protect the safety of people, property, public infrastructure, and livestock; (b) minimise the dust and fume emissions from blasting at the development; (c) minimise the frequency and duration of any road closures for blasting, and use all reasonable efforts to avoid closures during peak traffic periods; (d) use all reasonable efforts to co-ordinate the timing of blasting at the site with any nearby mines to minimise cumulative blasting impacts; and (e) carry out regular blast monitoring to determine whether the development is complying with the relevant conditions of this consent, to the satisfaction of the Planning Secretary.	7.1, 7.2, 8.1 Appendix C
Sch. 3, Cond. 12	The Applicant may carry out a maximum of: (a) 3 blasts a day; and (b) 15 blasts a week, on the site. This condition does not apply to blasts that generate ground vibration of 0.5mm/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. Notes: - For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine - 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.	7.1
Sch. 3, Cond. 13	The Applicant must not undertake blasting within 500 metres of any public road or any land outside the site not owned by the Applicant, unless the Applicant has: (a) a written agreement with the owner/s of the relevant public road or land to allow blasting to be carried out closer to the public road or land, and the Applicant has advised the Department in writing of the terms of this agreement; or	7.1, 7.6



Consent Number	Condition	Section within BMP which addresses this requirement
	(b) demonstrated, to the satisfaction of the Planning Secretary, that the blasting can be carried out closer to the public road or land without compromising the safety of people or livestock or damaging the road or other buildings and structures, and updated the Blast Management Plan to include specific mitigation measures to be implemented while blasting is being carried out within 500 metres of the road or land.	
Sch. 3, Cond. 15	Public Notice During mining operations on site, the Applicant must: (a) notify the landowner/occupier of any residence within 2 kilometres of the mining area who registers an interest in being notified about the blasting schedule at the mine, or any other landowner nominated by the Planning Secretary; (b) operate a blasting hotline, or alternate system agreed to by the Planning Secretary, to enable the public to get up-to-date information on the blasting schedule at the development; (c) advertise the blasting hotline number in a local newspaper at least 4 times each year; and (d) publish an up-to-date blasting schedule on its website to the satisfaction of the Planning Secretary.	7.1, 9.1
Sch. 3, Cond. 16	Property Inspections At least 3 months prior to blasting within 2 kilometres of any privately-owned land, or any other landowner nominated by the Planning Secretary, the Applicant must advise applicable landowners that they are entitled to a structural property inspection. If the Applicant receives a written request for a structural property inspection from the landowner, the Applicant must within 2 months of receiving this request and prior to blasting within 2 kilometres of the property: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to inspect the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and (b) give the landowner a copy of the property inspection report. <i>Note: This condition does not operate so as to prevent blasting within the first 3 months of this consent as consents applying to the site contain similar provisions for the inspection or residences potentially affected by blasting operations.</i>	8.3
Sch. 3, Cond. 17	Property Investigations If any landowner of privately-owned land within 2 kilometres of blasting operations, or any other landowner nominated by the Planning Secretary, claims that buildings and/or structures on his/her land have been damaged as a result of blasting at the development, the Applicant must within 3 months of receiving this claim: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to investigate the claim; and (b) give the landowner a copy of the property investigation report.	8.4



Consent Number	Condition	Section within BMP which addresses this requirement
	If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant must repair the damages to the satisfaction of the Planning Secretary. If the Applicant or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Planning Secretary for resolution. 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.	
Sch. 3, Cond. 18	Blast Management Plan The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) Be submitted to the Planning Secretary for approval within 3 months of the determination of Modification 5, unless otherwise agreed by the Planning Secretary; (b) be prepared in consultation with the EPA by a suitably qualified and experienced person/s; (c) describe the measures to be implemented to ensure compliance with the blasting criteria and conditions of this consent; (d) include a Road Closure Management Plan for any blasting within 500 metres of a public road, that has been prepared in consultation with relevant road authorities and includes provisions for: • minimising the duration of closures, both on a per event basis and a weekly basis; • avoiding peak traffic periods as far as reasonable; and • co-ordinating with nearby mines to minimise the cumulative of road closures; (e) propose and justify any agreed alternative ground vibration limits for public or private infrastructure in the vicinity of the site (if relevant); and (f) include a monitoring program for evaluating and reporting on compliance with the relevant conditions of this consent. The Applicant must implement the Blast Management Plan as approved by the Planning Secretary.	5.6.1 , 5.6.2 6.1 , 8 , 8.1 9.1 Appendix C Appendix F
Sch.4 Cond. 4	Independent Review If a landowner considers the development to be exceeding the impact assessment criteria in Schedule 3, then he/she may ask the Planning Secretary in writing for an independent review of impacts of the development on his/her land. If the Planning Secretary is satisfied that an independent review is warranted, the Applicant must within 3 months of the Planning Secretary's decision: a) consult with the landowner to determine his/her concerns;	8.5



Consent Number	Condition	Section within BMP which addresses this requirement
	b) commission a suitably qualified, experience and independent person, whose appointment has been approved by the Planning Secretary, to conduct monitoring on the land, to: - determine whether the development is complying with the relevant impact assessment criteria in Schedule 3; and - identify the source(s) and scale of any impact on the land, and the development's contribution to this impact; and give the Planning Secretary and landowner a copy of the independent review.	
Sch.5 Cond. 1A (a)	Management Plan Requirements The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include: a summary of relevant background or baseline data;	5.5
Sch.5 Cond. 1A (b)	a) a description of: - the relevant statutory requirements (including any relevant approval, licence or lease conditions); - any relevant limits or performance measures/criteria; and - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Table 5-1, 8
Sch.5 Cond. 1A (c)	a description of the measures that would be implemented to comply with the relevant statutory requirement, limits, or performance measures/criteria;	7
Sch.5 Cond. 1A (d)	b) a program to monitor and report on the: - impacts and environmental performance of the development; and - effectiveness of any management measures (see paragraph (c) above);	8, 9
Sch.5 Cond. 1A (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;	7.7
Sch.5 Cond. 1A (f)	a program to investigate and implement ways to improve the environmental performance of the development over time	7.8
Sch.5 Cond. 1A (g)	g) a protocol for managing and reporting any: - Incidents; - Complaints; - Non-compliances with statutory requirements; and - Exceedances of the impact assessment criteria and/or performance criteria;	9
Sch.5 Cond. 1A (h)	a protocol for periodic review of the plan; and	9.3
Sch.5 Cond. 1A (i)	a document control table that includes version number, dates when the management plan was prepared and reviewed, names and positions of the person/s who prepared and reviewed the management plan, a description of any revisions made and the date of the Planning Secretary's approval.	12.3



Consent Number	Condition	Section within BMP which addresses this requirement
	<i>Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</i>	
Sch. 5, Cond 2	Incident Notification The Applicant must immediately notify the Department and any other relevant agencies after it becomes aware of an incident. The notification must be in writing via 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.	9.1.2
Sch. 5, Cond 3	Non-Compliance Notification Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing via the 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. <i>Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.</i>	9.1.2
Sch. 5, Cond 4	Annual Review By the end of March each year, the Applicant must review the environmental performance of the development to the satisfaction of the Planning Secretary. This review must: (a) describe the development that was carried out in the previous calendar year, and the development that is proposed to be carried out over the next year; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against: • the relevant statutory requirements, limits or performance measures/criteria; • the requirements of any plan or program required under this consent; • the monitoring results of previous years; and • the relevant predictions in the documents listed in condition 2 of Schedule 2; (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the development; (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; (f) describe what measures will be implemented over the next year to improve the environmental performance of the development; and g) evaluate and report on the effectiveness of environmental management of the development.	9.1.2
Sch. 5, Cond 9	Access to Information The Applicant must, for the life of the development: (a) make the following information publicly available on its website: • the documents listed in condition 2 of Schedule 2; • current statutory approvals for the development; • approved strategies, plans or programs required under the conditions of this consent;	9.1.2

Consent Number	Condition	Section within BMP which addresses this requirement
	- a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent; - a summary of the current stage and progress of the development; - contact details to enquire about the development or to make a complaint; - a complaints register, which is to be updated on a monthly basis; - minutes of CCC meetings; - the last five annual reviews; - any independent environmental audit, and the Applicant's response to the recommendations in any audit; - any other matter required by the Planning Secretary; and (b) keep this information up to date, to the satisfaction of the Planning Secretary.	

Table 5-2 - Statement of Commitments

Consent Number	Condition	Section within BMP which addresses this requirement
HVO North Carrington West Wing Statement of Commitments, 04 March 2013		
Air quality	Blasting will be restricted during unfavourable weather conditions, where practicable	7.1
Traffic & transport	Blasting-related road closures will be managed in accordance with the relevant Coal & Allied procedures and a Road Closure Management Plan and Traffic Control Plan to be developed for Lemington Road	7.3, Appendices A, C and D.
Noise and vibration	Consultation and arrangements will be made with Receptor No. 10 in advance of any blasts within 900m of the residence.	NA – property now owned by HVO.
Noise and vibration	To achieve 10mm/s peak particle velocity at the Lemington road bridge (due to blasting), the charge mass must be approximately 5,400kg MIC or less, given a minimum separation distance of approximately 2,500m for the closest mining area in Year 1 of the proposal.	5.6.2

5.2 | ENVIRONMENT PROTECTION LICENCE (EPL) 640

The Protection of the Environment Operations Act 1997 (NSW) (PoEO Act) is the principal piece of legislation regulating pollution emissions in NSW. EPL 640 for HVO was issued on 29 September 2000 by the Environmental Protection Authority (EPA), under the PoEO Act.

Table 5-3 highlights the EPL conditions required to be covered by this BMP and the sections within this document in which they are addressed.

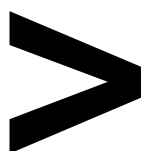


Table 5-3 - EPL640 Commitments

Consent Number	Condition	Section within BMP which addresses this requirement															
EPL640																	
P1.4	The following points referred to in the table below are identified in the licence for the purposes of weather and/or noise monitoring and/or setting limits for the emissions of noise from the premises. <table> <tr> <th>EPA identification no.</th><th>Type of monitoring point</th><th>Location description</th></tr> <tr> <td>9</td><td>Air blast overpressure & ground vibration peak particle velocity monitoring</td><td>Blast monitor at Jerrys Plains, marked and shown as "9" on Figure 1.</td></tr> <tr> <td>11</td><td>Air blast overpressure & ground vibration peak particle velocity monitoring</td><td>Blast monitor at Warkworth, marked and shown as "11" on Figure 1.</td></tr> <tr> <td>18</td><td>Air blast overpressure & ground vibration peak particle velocity monitoring</td><td>Blast monitor at Moses Crossing, marked and shown as "18" on Figure 1.</td></tr> <tr> <td>21</td><td>Air blast overpressure & ground vibration peak particle velocity monitoring</td><td>Blast monitor at Maison Dieu, marked and shown as "21" on Figure 1.</td></tr> </table>	EPA identification no.	Type of monitoring point	Location description	9	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Jerrys Plains, marked and shown as "9" on Figure 1.	11	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Warkworth, marked and shown as "11" on Figure 1.	18	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Moses Crossing, marked and shown as "18" on Figure 1.	21	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Maison Dieu, marked and shown as "21" on Figure 1.	8
EPA identification no.	Type of monitoring point	Location description															
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11	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Warkworth, marked and shown as "11" on Figure 1.															
18	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Moses Crossing, marked and shown as "18" on Figure 1.															
21	Air blast overpressure & ground vibration peak particle velocity monitoring	Blast monitor at Maison Dieu, marked and shown as "21" on Figure 1.															
L6.1	Blasting in or on the premises must only be carried out between 07:00 hours and 18:00 hours, Monday to Saturday. Blasting in or on the premises must not take place on Sundays or Public Holidays without lawful approval.	7.1															
L6.2	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 9,11,18 or 21.	5.6.1, 7.1, 8															
L6.3	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 9,11,18 or 21.	5.6.1, 7.1, 8															
L6.4	The ground vibration peak particle velocity from the blasting operations carried out in or on the premises must not exceed: 5mm/sec for more than 5% of the total number of blasts during each reporting period; at either monitoring point 9,11,18 or 21.	5.6.1, 7.1, 8															
L6.5	The ground vibration peak particle velocity from the blasting operations carried out in or on the premises must not exceed: 10mm/sec at any time; at either monitoring point 9,11,18 or 21.	5.6.1, 7.1, 8															
L6.6	Offensive blast fume must not be emitted from the premises. <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> - are harmful to (or likely to be harmful to) a person that is outside the premises from which it is emitted, or - 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.	Appendix B															
M1.2	All records required to be kept by this licence must be: a) in a legible form, or in a form that can readily be reduced to a legible form; b) kept for at least 4 years after the monitoring or event to which they relate took place; and c) produced in a legible form to any authorised officer of the EPA who asks to see them.	8.6															
M1.3	The following records must be kept in respect of any samples required to be collected for the purposes of this licence: a) the date(s) on which the sample was taken; b) the time(s) at which the sample was collected; c) the point at which the sample was taken; and	8.6															



Consent Number	Condition	Section within BMP which addresses this requirement												
	d) the name of the person who collected the sample.													
M8.1	To determine compliance with condition(s) L6.2, L6.3, L6.4 and L6.5: (a) Airblast overpressure and ground vibration levels must be measured and electronically recorded for monitoring points 9,11,18 and 21 for the parameters specified in Column 1 of the table below; and (b) The Licensee must use the units of measure, sampling method and sample at the frequency specified opposite in the other columns. <table><tr><th>Parameter</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>	Parameter	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	8
Parameter	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											

5.3 | DANGEROUS GOODS

Dangerous goods are regulated under the Work Health and Safety Act 2011 (NSW) and Explosives Act 2003 (NSW). HVO will endeavour to meet all regulatory requirements in relation to dangerous goods management. The storage of explosives or explosive precursors are to be managed in accordance with HVO's work instructions and site procedures such as *Shotfiring & Explosives Handling Hazard Management Plan*.

5.4 | GUIDELINES AND BEST MANAGEMENT PRACTICE

The Australian and New Zealand Environment and Conservation Council ANZECC 1990 *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* is followed as a guide to blasting practices at HVO.

Best management practice in this BMP is defined as practices used to manage blasting impacts that are consistent with the following:

- The measure should firstly aim to prevent blast and vibration impacts, and where that is not practicable, to generally reduce impacts to the environment as a whole;
- The measure is reasonably accessible and is developed on a scale which allows implementation in the Project, under economically and technically viable conditions, taking into consideration the costs and advantages; and
- deemed most effective of the options available in achieving a generally high level of protection of the environment as a whole.

HVO aims to meet best management practice by implementing the control measures described in Section 7 of this BMP.

5.5 | BASELINE DATA

As detailed in the Hunter Valley Operations South Coal Project Environmental Assessment (EA) 2003 and Carrington West Wing Environmental Assessment (2010), blast design is actively managed by HVO, and hence corresponding air blast overpressure and ground vibration is minimised. HVO's existing blast management procedures ensure appropriate charge masses are used for blasting. Such MIC masses are



presented in Table 5-4 (a and b). These were derived from 95% formulae in Blastronics Pty Limited publication 1994 for monitoring data collected at similar mines in the area.

Table 5-4 (a): Recommended Blast Charge Mass (HVO South)

Blast to Location Distance, m	MIC _{8ms} to Satisfy ANZECC 95% Overpressure Limit of 115 dB(Lin), kg	MIC _{8ms} to Satisfy ANZECC 95% Ground Vibration Limit of 5 mm/s (ppv), kg
1,500	163	745
2,000	386	1,324
2,500	753	2,069
3,000	1,302	2,980
4,000	3,088	5,299
5,000	6,031	8,279
6,000	10,422	11,922

- These results are derived from equations contained in the Drill and Blast Study, Mount Pleasant prepared by Blastronics Pty Limited for CNA in September 1994.
- In general, blast overpressure considerations limit MIC.

Table 5-5 (b): Recommended Blast Charge Mass (HVO South)

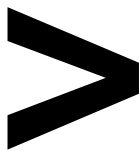
Receptor No.	Closest blast distance to proposed extension area, m	MIC to achieve limit, kg	Blastronics 95% noise overpressure, dBL	Blastronics 95% ground vibration, PPV, mm/s
1	3300	1734	115.0	2.9
2	2900	1177	115.0	2.7
3	2800	1059	115.0	2.6
4	3200	1581	115.0	2.9
5	9700	31160	113.8	5.0
6	9500	29888	113.9	5.0
7 ¹	6800	15176	115.0	5.0
8 ³	4600	4697	115.0	3.7
10 ²	900	35	115.0	1.1
11 ³	3600	2251	115.0	3.1
13 ⁴	4200	3575	115.0	3.5
14 ⁴	5000	6030	115.0	4.0
39	9700	31160	113.8	5.0

- These private residences are currently inside a zone of affectation or subject to a private land holders agreement with mines other than HVO.
- These private residences are currently inside a HVO zone of affectation or subject to a private land holders agreement.
- Mine owned.
- Additional Jerrys Plains locations were added to provide a better representation of the area.

5.6 | IMPACT ASSESSMENT CRITERIA

5.6.1 | RESIDENCE ON PRIVATELY OWNED LAND

The Approvals and EPL 640 specify airblast overpressure and ground vibration impact assessment criteria for residences on privately-owned land as detailed in Table 5-1 and Table 5-3.



5.6.2 | PUBLIC INFRASTRUCTURE

Lemington Road Bridge (also known as Moses Crossing) is the only public infrastructure identified under the environmental noise and vibration study, prepared by EMGA Mitchell McLennan in 2010, as having the potential to be impacted upon by blasting at HVO North.

Since the assessment carried out in 2010, the crossing has been upgraded from a timber crossing to a concrete crossing which has increased its structural integrity.

The peak particle velocity at the crossing will be lower than 10mm/s as a natural consequence of measures that will be taken to protect other existing structures which are located in closer proximity to the mining area than the bridge.

Due to the distance between current active mining/blasting zones and St Philip's Church and the outbuildings at Archerfield there is currently no foreseeable risk of blast impacts at those sites. For that reason HVO does not currently make specific blast design considerations in respect of those sites. However, if HVO recommences operations in South Lemington Pit or Glider Pit, specific design rules considerate of impacts on St Phillips Church will be implemented to see that ground vibration peak particle velocity generated by the project does not exceed 5 mm/s unless varied with approval by the Planning Secretary.

A review of HVO vibration measurements collected between July 2013 and October 2017 in the vicinity of the Archerfield Outbuildings (Maison Dieu monitoring location) demonstrates no impact to the outbuildings. A total of 1267 vibration measurements have been collected, with zero instances of ground vibration above 1.75mm/sec. Furthermore, 94.7% of measurements recorded ground vibration <0.5mm/sec (or 10% of the impact assessment criterion).

Similarly, a review of vibration measurements from the Warkworth monitoring location demonstrates no impact at St. Phillips Church. A total of 1209 measurements have been collected, with zero instances of ground vibration above 2.5mm/sec (or half the impact assessment criterion). Further – 86.2% of measurements (1043 measurements) recorded ground vibration <0.5mm/sec (or 10% of the impact assessment criterion).

5.7 | HERITAGE SITE CM-CD1

Condition 40A of Schedule 3 of the HVO North Approval requires that HVO will endeavour to undertake mining operations (including blasting) and associated activities responsibly so as to not cause any impact to Aboriginal heritage site 37-2-1877 and the Older Stratum ('CM-CD1'). The location of this site is identified in Figure 8-2.

In the event blasting occurs within 500 meters of CM-CD1 HVO will, if necessary, explore management measures to protect CM-CD1. This site will be monitored, as outlined within the *HVO North Heritage Management Plan*.

5.8 | REVISION OF IMPACT ASSESSMENT CRITERIA AND DAMAGE CRITERIA

Criteria as listed in Section 5 has been developed in consideration of existing requirements of the Approval and also through the completion of research in relation to the impacts of air blast overpressure and vibration on particular structures. On that basis, HVO may (in the future) alter the air blast overpressure and vibration criteria based on results of further detailed assessments and/or through further consultation with relevant government agencies and relevant infrastructure providers, which will then be provided to NSW Department of Planning, Housing and Infrastructure (DPHI) in writing.

6 | CONSULTATION

6.1 | GOVERNMENT AGENCIES

Condition 19(d), Schedule 3, of the HVO North Approval and Condition 18(d), Schedule 3, of the HVO South Approval requires a Road Closure Management Plan (which forms part of this BMP).

The Road Closure Management Plan is required to be prepared in consultation with relevant road authorities including, Singleton Council and the NSW Roads and Maritime Services (RMS).

RMS and Council road closure approvals (where applicable) are included in The HVO Road Closure Management Plans (Appendix C).

Correspondence undertaken in relation to the revision of the Blast Management Plan is presented in Table 6-1. A copy of the most recent consultation records are shown in Appendix E.

Table 6-1: External Stakeholder Consultation

Date	Consultation Undertaken
26/03/2018	correspondence was forwarded to the EPA inviting consultation on this BMP
18/06/2018	EPA advised HVO in writing that the EPA does not require HVO to consult with it regarding the development of plans required under planning consents including this Blast Management Plan (see Appendix F).
28/03/2019	HVO submit via email V3.3 revision of Blast Management Plan for review and approval by DP&E.
03/04/2019	HVO receive written approval from DP&E approving V3.3 of Blast Management Plan
07/04/2020	Confirmation received from DP&E portal following submission of BMP V 3.5 for review and approval
02/02/2021	HVO provided DP&E via email, V3.5 of the BMP detailing a minor revision
11/03/2021	HVO received written correspondence from DP&E requesting additional information for BMP V3.5
06/07/2022	DPE requested HVO to provide additional information before accepting V3.7 BMP.
26/08/2025	Approval granted of V4.0 of BMP by Jack Turner (DPHI).

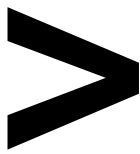
6.2 | NEARBY MINES

Liaison with United Wambo mine to discuss cooperation options has been undertaken, HVO and United Wambo mine communicate daily blasting plans where relevant.

A cooperation agreement with Ravensworth and Cumnock No. 1 mines has been prepared in conjunction with those sites (both managed by Glencore as a single complex).

A blasting deed exists between HVO and United Wambo relating to blast co-operation. During times when blasting activities are within the prescribed 'Relevant Area', United Wambo will:

- Co-ordinate its blasting activities to minimise any interference with or impact on the Mining Operations, assets or activities of HVO South;



- In accordance with best practice mining procedures, undertake all usual safety precautions and procedures to ensure that risk or danger injury to the officers, employees, agents or damage to the property of HVO South is minimised and;
- Ensure that all Blasting within the 'Relevant Area' is undertaken in accordance with the HVO UWJV Blast Coordination Procedure.
- In the event that dust or fume impacts from Blasting at United can be reasonably foreseen to impact the operations of HVO South, then the operator of United must, as soon as is reasonably practicable, notify HVO South in accordance with the HVO UWJV Blast Coordination Procedure.

Potential safety risks related to ground vibration posed to United Wambo personnel are also managed by provision of daily notifications to United Wambo personnel for all blasts occurring in the Riverview Pit. Blast fume migration risks are managed through the HVO Blasting Permissions process.

A protocol between neighbouring mining companies has also been developed where personnel from each mine meet on a regular basis to discuss noise, blasting and air quality management at each site and methods to address cumulative impacts. The protocol was developed by Mt Owen Glendell Operations (MGO), Ravensworth, Ashton, Rixs' Creek and Integra Underground. The meeting is held quarterly, with representatives from the following mines invited to each meeting:

- HVO
- Ravensworth
- Ashton
- United Wambo
- Wambo
- MGO
- Rix's' Creek
- Integra Underground.

7 | IMPLEMENTATION

In order to mitigate any potential impacts from blasting activities, a number of management controls will be implemented throughout the life of HVO operations. These controls are detailed in Section 7.1 below.

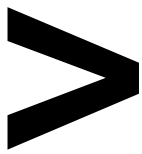
7.1 | OPERATIONAL CONTROLS

HVO will implement the following blast management practices over the life of the project:

- Blasting at HVO will occur within the hours of 7am and 6pm, Monday to Saturday;
- If blasting is deemed necessary outside of the hours of 7am and 6pm, Monday to Saturday, due to extraordinary circumstances such as safety or unfavourable meteorological conditions, HVO will secure written approval from the EPA and DPHI, as required by the relevant consents;
- Any requests for variation to the Department must be submitted in writing via the NSW Major Projects Portal Website and identify the development (including the development application number and name), set out the condition of the consent and the reasons for the variation in blasting.



- Blasting will be undertaken at a maximum of three blasts per day (unless an additional blast is required following a blast misfire) and no more than 12 blasts per week at HVO North and 15 blasts per week at HVO South, averaged out over a calendar year.
- However, this total number of blasts does not apply to:
 - blasts that generate ground vibration 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.
- Detailed design is undertaken for each blast in order to maximise the blast efficiency, minimise dust, fumes, ground vibration, airblast overpressure and the potential for flyrock and to meet compliance with site specific blasting conditions;
- Blasts will be undertaken in accordance with various work instructions on blasting, which are internal documents that are updated regularly. The assessment process for blasting includes:
 - Undertaking meteorological assessments prior to blasting to assess if weather conditions are acceptable. In the event that unfavourable meteorological conditions are observed prior to the blast, the shot-firer will liaise with the appropriate senior official to determine whether to delay or postpone the blast;
 - review of the blasting permissions page (see example of typical permission page in Appendix A) which considers time of blast, wind speed and direction;
 - daily notifications are issued to confirm the blast monitors are operating;
 - notification to neighbouring mines, where the mine falls within an exclusion zone, for example; United will be notified of blasts in Riverview Pit and of the associated Golden Hwy road closure and Ravensworth will be notified where blasts are scheduled for within 500m of its operations or Lemington Road closures; and
 - documentation of the date, location of the blast and quantity of explosive used each day.
- Detailed monitoring of blasts over the life of HVO at relevant blast sensitive locations (refer to Section 8).
- In the event blasting occurs within 500 meters of the site CM-CD1, HVO North will consider what, if any, management measures to protect CM-CD1 may be necessary (CM-CD1 is shown on Figure 8-2).
- Training will be provided to all relevant personnel on environmental obligations in relation to blasting controls.
- Periodic internal reviews of blast management procedures to evaluate performance and identify corrective action if required.
- HVO will monitor blasts as mining progresses, in accordance with the existing blast monitoring system, so that blast prediction site laws can be further refined and future blast designs can be optimised based on more detailed site information. By adopting this approach, in conjunction with the adoption of improved blasting products and methods, as they are introduced, it is anticipated that blast emissions criteria can be met without imposing any significant constraints on the blast design throughout the operation of HVO.
- Land not owned by HVO and situated within 500 meters of planned blasting areas is shown in Appendix D.
 - Lands owned by Ravensworth and Cumnock are dealt with under Section 6.2 of this BMP and is subject to a written agreement;



- Crown owned land dedicated as a travelling stock route (TSR 52974) has a Long Term Grazing Permit (LTP) held by a private permit holder through the Local Land Services. A written agreement is in place, as such if the blast exclusion zone or blasting emissions are expected to impact the TSR then HVO will make notification to the permit holder, Crown Lands and Local Land Services in advance of blasting;
- Crown owned land adjacent the Hunter River is subject to the establishment of blast clearance zones that encapsulate the area. The area is bound by HVO owned land of which access is restricted; and
- Land owned by Wambo Coal (Wambo/United) is subject to the establishment of blast clearance zones and communication with the landowner in relation to blasting times and exclusion zones.
- Blast design allowing for adequate burden on all faces. Where necessary face surveying techniques may be employed to measure overburden between the blast face and blast holes to ensure sufficient burden is present to prevent blowouts and blast anomalies.
- There may be circumstances where blasts may need to be fired in less than ideal weather conditions to protect the health and safety of employees and the public. Such decisions will be elevated up the organisational hierarchy, demonstrating the seriousness of such decisions.
- Fume is managed in accordance with the HVO Post Blast Fume Generation Mitigation and Management Plan to reduce fume on site (see Appendix B).
- Controls for blasting within 500 metres of any public road are addressed in Section 7.6.
- Notification procedures for nearby residents involving provision of the blast schedule and hotline number to enable the public to get up-to-date information on the blasting will be made available on HVO website (<https://www.hvo.com.au/>).
- Landowner(s)/occupier(s) of any residence within 2 kilometres of the HVO South mining area who registers an interest in being notified about the blasting schedule at the mine will be advised individually of upcoming blasts.
- The blasting hotline number (1800 888 733) will be advertised in a local newspaper at least 4 times each year.

7.2 | MANAGEMENT OF FLYROCK

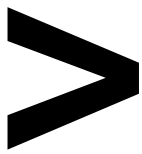
The generation of fly rock is managed by incorporating appropriate controls in blast designs.

These controls include design of stemming lengths and stemming materials to minimise the potential for generating flyrock. Adequate burden, which is the distance from a charge to a free face, is maintained to minimise the risk of generating flyrock due to face bursting. These measures are used to control the risk to property, equipment or powerlines from flyrock.

Appropriate stemming will be used to improve stemming confinement and hence reduce the chance of flyrock and elevated airblast overpressure.

An appropriate exclusion zone will be established around each blast site in accordance with relevant mine safety regulations prior to firing a blast. Generally, the blast exclusion zone will be a minimum of 300 metres for equipment and 500 metres for personnel. The exclusion zone will be established beyond the expected range of any flyrock with an additional safety margin. The establishment of this zone will minimise the risk of any injuries to people or livestock due to flyrock.

Any unusual level of flyrock generated by blasting with the potential to cause a safety risk will be noted for each blast. This information will be used to continually re-assess the adequacy of blast design controls in



reducing the generation of flyrock. The information will also be used to re-assess the size of the safety exclusion zone established for people and livestock in the vicinity of a blast.

7.3 | MANAGEMENT OF ABORIGINAL FEATURES

In accordance with Schedule 3 of Condition 40 of the HVO North Approval, regular visual monitoring to confirm that impacts have not been caused by blasting vibration will be implemented for the management of the CM-CD1 in accordance with the HVO North Heritage Management Plan

Although flyrock damage is considered a low risk, if necessary, management measures to protect CM-CD1 will be explored.

7.4 | CWW GROUNDWATER LOW PERMEABILITY BARRIER (LPB)

The LPB will be designed to the satisfaction of Water Group and the Secretary. A detailed design will be prepared and submitted for approval prior to construction in accordance with Schedule 3, Condition 23. An LPB Monitoring and Management Plan will also be prepared.

When HVO begins the required design and plan preparation processes this BMP will be reviewed, and if necessary, updated to allow for appropriate measures to be put in place so that the prescribed performance objectives and performance measures are not at risk as a result of blasting activities on site.

7.5 | CWW BLASTING IMPACTS TO CARRINGTON IN PIT FINE REJECT PLACEMENT

An assessment of blasting impacts from the CWW on the Carrington In Pit Fine Rejects Emplacement embankment will be undertaken prior to HVO commencing any activity in the CWW.

7.6 | ROAD CLOSURES

Blasting within 500 metres of a public road requires road closure during the blasting event.

Approval will be sought from Singleton Council to temporarily close roads for the purpose of blasting every 12 months on Lemington Road & Comleroi Road. This will be in the form of application for 'works within a road reserve' under the Roads Act.

Approval from RMS to temporarily close roads for the purpose of blasting will also be sought every six months. This will be in the form of an application for a 'Road Occupancy Licence'.

The relevant Road Closure Plan will be updated following receipt of each new approval from either Council or RMS. The BMP will also be reviewed to ensure any updated commitments from revised Road Closure Plans are included. The latest relevant road closure plan will be added to the BMP and as these approvals are granted by Singleton Council and Transport for NSW, will not be submitted to the Department for review prior to uploading to the website.

The frequency and duration of road closures will be minimised by closing the road only when necessary, and combining blasts that require closure of the same section of road where the mine plan allows. Road closures will be avoided during peak traffic periods where possible.

7.7 | MANAGEMENT OF UNPREDICTED IMPACTS

The HVO Post Blast Fume Generation Mitigation and Management Plan sets out a protocol for the mitigation and management of post blast NOx fumes from blasting operations at HVO. This Plan is used as a contingency plan to manage any unpredicted impacts and their consequence.

In the event that a blast event registers airblast overpressure or ground vibration results greater than the allowable limits, or significantly different from the predicted results (airblast overpressure), HVO will

undertake a detailed investigation into the event. Where corrective actions are identified to prevent a recurrence, these will be tracked to completion

7.8 | CONTINUOUS IMPROVEMENT

HVO will look for ways to improve blasting performance by way of:

- yearly review of the BMP and associated monitoring program;
- Annual Review; periodic internal reviews of blast management procedures (Section 7.1); and
- investigation results from any blasting incident with the potential to cause a safety risk (assessment of the adequacy of blast design controls) (Section 7.2),

These will be used as a means of investigating and implementing ways to improve the environmental performance of the Project over time.

8 | MEASUREMENT AND EVALUATION

8.1 | BLAST MONITORING PROGRAM

Blast monitoring is conducted at five locations around HVO as shown in Table 8-1 and represented in Figure 8-1. Monitoring is undertaken in accordance with Australian Standard AS 2187.2- 2006.

Real-time meteorological data will also be collected in relation to blast monitoring data. This information shall include wind speed, direction and temperature inversions (where applicable at the site).

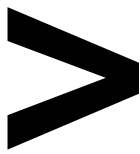
Monitoring locations are selected to be representative of private residences surrounding the monitor, the representation of these monitors in relation to the surrounding private receptors is shown in Figure 8-2.

The monitoring locations are subject to change and will be updated periodically to align with management needs and to accommodate progression of mining.

A protocol for evaluating compliance with the blast impact assessment criteria is included in Section 8.2 |.

Table 8-1 - Blast Monitoring Program

Parameter	Frequency	Monitor Location	Limit / Guideline	Sampling Method
Airblast Overpressure dB (Lin Peak)	All blasts	Jerrys Plains (EPL Point 9)	>115 dB (Lin Peak) (allowable exceedance of 5% over 12 months) ¹	Blast monitor. AS2187.2-2006
		Knodlers Lane		
		Maison Dieu (EPL Point 21)		
		Moses Crossing (EPL Point 18)		
		Warkworth (EPL Point 11)	>120 dB (Lin Peak) (no allowable exceedance at any time)	



Parameter	Frequency	Monitor Location	Limit / Guideline	Sampling Method
Ground Vibration (mm/s)	All blasts	Jerrys Plains (EPL Point 9) Knodlers Lane Maison Dieu (EPL Point 21) Moses Crossing (EPL Point 18) Warkworth (EPL Point 11)	>5 mm/s (ppv) (allowable exceedance of 5% over 12 months) ¹ >10 mm/s (ppv) (no allowable exceedance at any time)	Blast monitor. AS2187.2-2006

¹ The 5% allowable exceedance criteria is assessed on a “per monitoring location” basis and is calculated against the performance criteria listed in each of the Approvals (calendar year basis) and EPL 640 (year on year, commencing at the anniversary date of the licence).

An additional ground vibration impact assessment criterion applies to the HVO South Approval, “For St Phillip’s Church and the outbuildings at Archerfield, the Applicant must ensure that ground vibration peak particle velocity generated by the development does not exceed 5mm/s, or as otherwise approved by the Planning Secretary”.

Blasting impacts on St Phillip’s Church will be assessed through routine monitoring in the Warkworth Village area (Warkworth monitoring location), while blasting impacts on the outbuildings at Archerfield will be assessed through routine monitoring in the Maison Dieu area (Maison Dieu monitoring location).

8.2 | BLAST PARAMETERS AND PROTOCOL FOR EVALUATING COMPLIANCE

Blast parameters and compliance assessment is detailed below in Section 8.2.1 |, Section 8.2.2 |, Section 8.2.3 and Section 8.2.4.

8.2.1 | GROUND VIBRATION

When an explosive detonates, it creates a compression wave that spherically radiates out into the rock mass. When used in a mining context, the compression wave, in conjunction with several other factors, fragments the rock mass while the high pressure gases fluidize and heave the rock mass to its final resting place ready for excavation by mining equipment.

The ground vibration resulting from the blast has components in 3 planes – longitudinal (L), transverse (T) and vertical (V). The vibration waves in these planes are termed the Compression wave, Horizontal Shear wave and Vertical Shear wave respectively.

The velocities in each plane are combined mathematically to produce a single term that represents the total ground velocity. This term is known as the ‘Peak Particle Velocity’ ‘PPV’ or ‘Resultant’. PPV is measured in millimetres per second.

The PPV measure of blast induced ground vibration is universally used in the context of measurement, reporting, and compliance. The Resultant measure is expressed in millimetres per second (mm/s).

Each blast monitor at the monitoring locations shown in Table 8-1, will capture a peak ground vibration in (mm/s) for all blast events initiated. The HVO Drill & Blast Engineer will assess the validity of the captured results by confirming that blast time and duration align with the results recorded by the blast monitoring

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system. The peak ground vibration level (mm/s) will then be directly compared to the ground vibration impact assessment criteria as specified in approvals and as detailed in Table 8-1. Monitoring results will be maintained for a period of 4 years as required by Environment Protection Licence 640.

Any blast exceeding the impact assessment criteria shall be referred for additional analysis and interpretation by an external specialist in blast consulting where the reason for the levels cannot be established by the Drill & Blast Engineer. This investigation will review blast monitoring results, blast parameters, location and prevailing weather conditions. The investigation analysis is specific to each individual exceedance but may include wavetrace inspection, wavefront pattern analysis, regression analysis, meteorological effect analysis etc.

The results of any blast exceeding the impact assessment criteria (0% Criteria) will be reported to the Planning Secretary as soon as practicable following confirmation of exceedance.

An assessment blast results against the 5% allowable Criteria will be undertaken at the end of the calendar year and reported in the Annual Review. Any exceedance of this criteria will be reported to the Planning Secretary as soon as practicable following confirmation of exceedance.

Any confirmed non-compliance will trigger an investigation of the cause/s of the non-compliance, adequacy of current controls and subsequent review of this Management Plan.

Where an investigation determines a measured result to be incorrect (wind affected, or not related to the blast event), an estimated result will be reported in place of the incorrect measurement.

8.2.2 | AIRBLAST

Airblast is an airborne shock wave resulting from the detonation of explosives. It may be caused by burden movement or the release of expanding gas into the air. Airblast may or may not be audible. Airblast can contain frequencies from below 2Hz to beyond 20KHz. Frequencies above approximately 20Hz are audible whilst those below 20 Hz are sub-audible. Generally, it is the sub-audible component of the airblast that causes effects such as rattling of windows and shaking of ornaments on shelves.

8.2.3 | AIR OVERPRESSURE

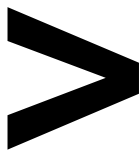
Air overpressure is the pressure in excess (either above or below) of ambient atmospheric pressure that occurs when an air blast wave passes a given position. The maximum excess pressure is known as the peak overpressure.

Noise and air overpressure results are both measured in decibels (dB). However, there is no frequency weighting applied to air overpressure measurements, which allows for assessment of the response of structures to air overpressure. Air overpressure is therefore measured in the linear weighting expressed as dB(L).

When air overpressure is presented graphically as a function of time, it is usual to present it in terms of absolute pressure or Pascals (Pa) rather than dB(L) because the physical dynamics of the air overpressure is more readily apparent when presented on a linear (Pa) rather than a logarithmic (dB) scale.

Each blast monitor at the monitoring locations shown in Table 8-1, will capture a peak overpressure result (dB(L)) for all blast events initiated. The HVO Drill & Blast Engineer will assess the validity of the captured results by confirming that blast time and duration align with the results recorded by the blast monitoring system. The peak overpressure result (dB(L)) will then be directly compared to the airblast overpressure impact assessment criteria as specified in approvals and as detailed in Table 8-1. Monitoring results will be maintained for a period of 4 years as required by Environment Protection Licence 640.

Any blast exceeding the impact assessment criteria shall be referred for additional analysis and interpretation by an external specialist in blast consulting where the reason for the levels cannot be established by the Drill & Blast Engineer. An external report shall be issued as soon as practicable. This



investigation will review blast monitoring results, blast parameters, location and prevailing weather conditions. The investigation analysis is specific to each individual exceedance but may include wavetrace inspection, wavefront pattern analysis, regression analysis, meteorological effect analysis etc.

The results of any blast exceeding the impact assessment criteria (0% Criteria) will be reported to the Planning Secretary as soon as practicable following confirmation of exceedance.

An assessment of blast results against the 5% allowable Criteria will be undertaken at the end of the calendar year and reported in the Annual Review. Any exceedance of this criteria will be reported to the Planning Secretary as soon as practicable following confirmation of exceedance.

Any confirmed non-compliance will trigger an investigation of the cause/s of the non-compliance, adequacy of current controls and subsequent review of this Management Plan.

Where an investigation determines a measured result to be incorrect (wind affected, or not related to the blast event), an estimated result will be reported in place of the incorrect measurement.

8.2.4 | BLAST FUME MONITORING

HVO has developed the Post Blast Fume Generation Mitigation and Management Plan (Appendix B) that outlines how blast fume will be rated as well as outlining measures to reduce fume emissions from the site.

Following assessment of post blast fume, any blast fume event that is classified as:

- a Category 3 in accordance with the Australasian Industry Safety Group (AEISG 2011) Fume intensity rating scale, and leaves site as a Category 3 fume event; or
- a Category 4 or Category 5 in accordance with the AEISG 2011 Fume intensity rating

will be reported to the Planning Secretary as per Section 9.1.2 External Reporting and a summary provided in the Annual Review.

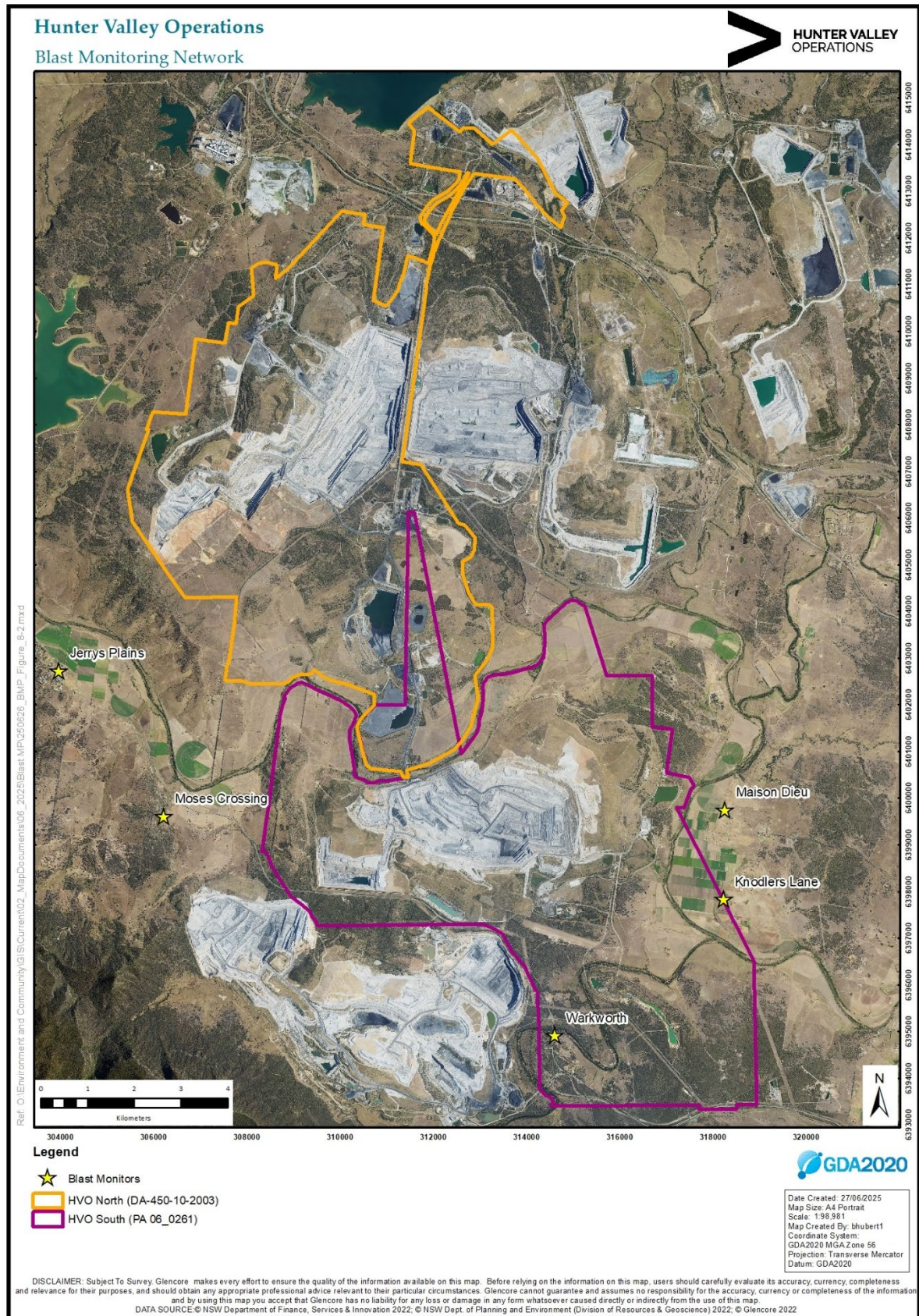


Figure 8-1: Blast Monitor Locations

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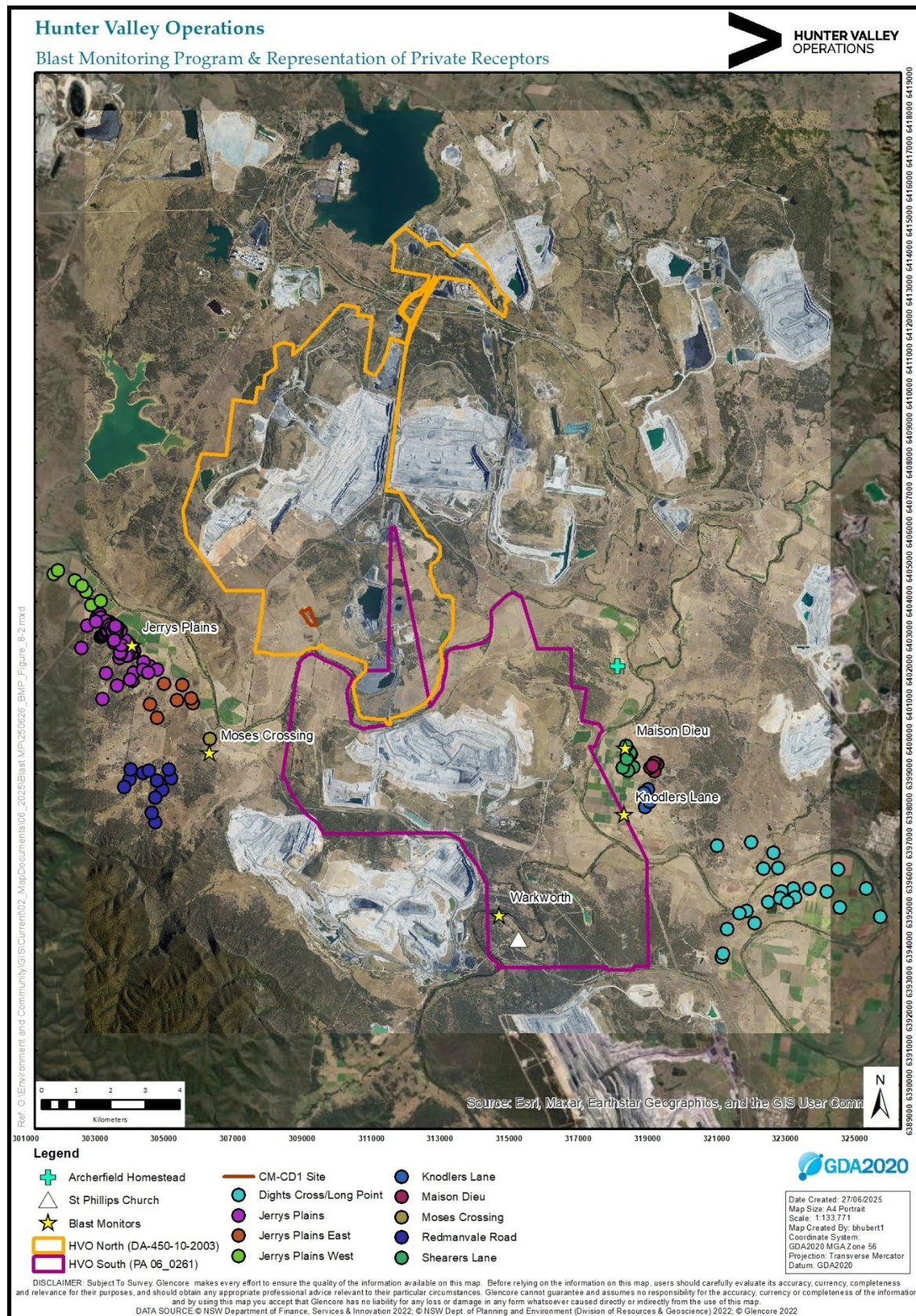
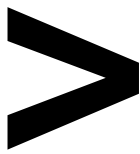
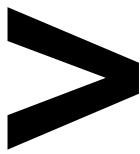


Figure 8-2: Blast Receptors



8.3 | PROPERTY INSPECTIONS

In accordance with Condition 1(a) of Schedule 4 of the HVO North Approval, HVO has notified all owners of privately-owned land within 2 kilometres of approved blasting operations that they are entitled to a structural property inspection to establish the baseline condition of any building or other structures on their property(ies). If a written request is received, HVO will undertake the works in accordance with Condition 16A of Schedule 3.

Similarly, in accordance with Condition 16 of Schedule 3 of the HVO South Approval, HVO has notified all landowners of privately-owned land within 2 kilometres of planned blasting, at least three (3) months in advance of the blasting taking place that they are entitled to a structural property inspection. If a written request is received HVO will undertake actions described in Condition 16 of Schedule 3 of the HVO South Approval.

8.4 | PROPERTY INVESTIGATIONS

If HVO receives a written claim that buildings and/or structures on a landowners' land have been damaged as a result of blasting on site then HVO will investigate the claim and, where the property investigation confirms the landowner's claim, repair the damage in accordance with Condition 16B, Schedule 3 of the HVO North Approval or Condition 17, Schedule 3 of the HVO South Approval, whichever is relevant.

8.5 | INDEPENDENT REVIEW AND LAND ACQUISITION PROCESS

Where the owner of privately-owned land has reasonable grounds to believe that HVO is exceeding blast criteria, they may request an independent review from the Planning Secretary, as per Conditions 4, 5 and 6 of Schedule 4 of the HVO North Approval or Conditions 4, 5 and 6 of Schedule 4 of the HVO South Approval.

If the independent review determines that HVO is not complying with the relevant project acquisition criteria, then upon receiving written request from the landowner, HVO will act in accordance with Conditions 7 and 8 of Schedule 4 of the HVO North Approval or Conditions 7, 8 and 9 of Schedule 4 of the HVO South Approval, whichever is relevant.

8.6 | MONITORING RECORDS

All blast monitoring records are maintained in accordance with EPL 640 and maintained on the premises for a period of 4 years using EMD. The following is recorded for each sample:

- a. The date(s) on which the sample was taken;
- b. The time(s) at which the sample was collected;
- c. The point at which the sample was taken; and
- d. The name of the person who collected the sample.

9 | REPORTING AND REVIEW

9.1 | REPORTING

9.1.1 | INTERNAL REPORTING

Determining exceedances of blasting criteria will be undertaken in accordance with the Section 8.2.

The Environment and Community Superintendent (or Delegate) will report any potential or confirmed exceedance/non-compliance of blasting criteria to the Environment and Community Manager.

Non-compliance events will be investigated. Where additional controls are identified for implementation to reduce the risk of repeated non-compliance, these will be assigned to the relevant accountable person. Actions are tracked to completion.

9.1.2 | EXTERNAL REPORTING

DA 450-10-2003

The Environment & Community Superintendent (or Delegate) will immediately notify the Secretary and any other relevant agencies of any incident relating to blast as soon as practicable. Within 7 days of becoming aware of the incident, HVO will provide the Secretary and any other relevant agencies with an incident report via the NSW Major Projects Portal Website, and such further reports as may be requested.

PA 06_0261

The Environment & Community Superintendent (or Delegate) will immediately notify the Department and any other relevant agencies as soon as practicable after it becomes aware of an incident relating to blast. The notification will be in writing via the NSW Major Projects Portal Website and identify the development (including the development application number and name) and set out the location and nature of the incident. Within 7 days of becoming aware of a non-compliance, HVO will notify DPHI of the non-compliance. The notification will be in writing via the NSW Major Projects Portal 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.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

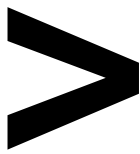
Notifications will also be made to the EPA following any measured non-compliance with blasting criteria. Any non-compliance with EPL 640 blasting conditions will be reported in accordance with condition R4.3 of EPL 640.

Affected residence will be notified in writing in the event of a confirmed non-compliance of blasting criteria. Regular monitoring results will be provided to affected residences until the project is complying with the relevant criteria again.

The BMP and blast monitoring data collected in accordance with this BMP will be made publicly available on the HVO website (<https://www.hvo.com.au/>).

The Annual Review prepared each year for HVO will include detail of blast monitoring results, a summary of any reported incidents and blasting complaints for the corresponding year.

A summary of blast monitoring results will be provided to the HVO Community Consultative Committee (CCC), which holds meetings four times per year.



HVO will also provide up-to-date information regarding the proposed blasting schedule via the process outlined below:

- notify neighbouring mining operations;
- advertisement in the Singleton Argus when a public road is to be closed, as well as identifying proposed blasting times on road signage;
- Providing up-to-date information to the Complaints and Blasting Hotline 1800 888 733.
- Landowner(s)/occupier(s) of any residence within 2 kilometres of the HVO South mining area who registers an interest in being notified about the blasting schedule at the mine will be advised individually of upcoming blasts; and
- The blasting hotline number will be advertised in a local newspaper at least 4 times each year.

9.2 | COMPLAINTS MANAGEMENT

Community Complaints are lodged via the Complaints and Blasting Hotline (1800 888 733). The hotline number will be prominently displayed on the HVO website, and regularly advertised in the local newspaper. The Community Complaints and Blasting Hotline will be in operation 24 hours per day, seven days a week.

Complaints will be recorded and investigated by HVO staff. All other complaints lodged via letter, in person or by fax, will also be recorded and investigated by Environment & Community department.

All complaints will be investigated, and, where the investigation identifies potential non-compliance with a consent or licence condition, mitigating action will be taken. Investigation into air quality complaints will generally involve a visual inspection of operating areas and a check of real time monitoring data to confirm dust levels at nearby sensitive receptors.

The details of all air quality complaints, and any mitigating actions taken, will be circulated to senior management. Where requested, follow-up correspondence with the complainant will be provided.

HVO will maintain a register of complaints in accordance with the conditions of EPL 640 relating to handling of pollution complaints. The register will be available on the HVO website and will be updated monthly.

9.3 | REVIEW OF THE BMP

The BMP will be reviewed within three months of the submission of the Annual Review and updated to the satisfaction of the Secretary of DPHI where necessary.

The BMP will also be reviewed within three months of the completion of an independent environmental audit, any exceedance of the Approvals' criteria or any modification to the conditions of the Approvals.

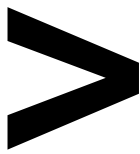
Within 6 weeks of conducting any such review, HVO will advise the Secretary of the outcomes and provide revised documents (where required) for review and approval.

Any major amendments to the BMP that affect its application will be undertaken in consultation with the appropriate regulatory authorities and stakeholders. Minor changes that don't affect performance criteria such as formatting, administrative edits, revision to road closure management plans and changes to supporting documents may be made with version control on the Applicant's website.

10 | ACCOUNTABILITIES

Table 10-1 - Accountabilities

Roles	Accountabilities
General Manager	Provide adequate resources for the implementation of the BMP Authorize the implementation of specific management measures to minimise blast impacts in accordance with this BMP
Environment and Community Manager	Oversee the implementation of the BMP Coordinate blast monitoring in accordance with this BMP Evaluate results of monitoring and report to relevant personnel Notify regulatory authorities and affected landholders of any blasting related exceedance and undertake associated reporting Manage all internal and external reporting requirements Publish copies of the BMP on the HVO website Develop and maintain a protocol to minimise the potential for simultaneous blasting with other nearby mines Coordinate periodic reviews of the BMP
Environment and Community Officer	Coordinate investigations of blasting exceedances, incidents or complaints with the Drill and Blast Engineer Coordinate and manage records and reporting of blast monitoring results Manage blasting related complaints in accordance with complaints management procedure receive daily notifications to confirm the blast monitors are operating
Environment and Community Superintendent/Delegate	Implement and maintain the blast monitoring and real time environmental monitoring network Coordinate periodic review of monitoring data and subsequent reporting Coordinate weekly upload of HVO's blasting schedule to the HVO website Implement and maintain blasting permissions pages and predictive forecast tools
Drill and Blast Specialist Engineer	Assist the Environmental Officer with investigations into blasting exceedances, incidents or complaints
Drill and Blast Engineer	Regularly review blast design parameters on the basis of blast monitoring records Design and undertake blasts to comply with the requirements of this BMP Advise the relevant personnel of weekly blasting schedule Maintain records for blasts initiated Update of the blasting hotline
Drill and Blast Superintendent	Liaise with the shot-firers to confirm blasting is being conducted under favourable metrological conditions.



Roles	Accountabilities
Shot Firers	Notify the Drill and Blast Engineer and Blasting Supervisor of any factors that may lead to non-compliance with this BMP Load and fire blasts in accordance with design supplied by the Drill and Blast Engineer Assess meteorological conditions prior to blasting to determine whether conditions are appropriate for blasting
Drill and Blast Supervisor	Advise relevant personnel of daily blasting schedule Confirm that the blast is loaded with the correct quantity and quality of explosive and stemmed in accordance with the blast design Assess meteorological conditions prior to blasting to determine whether conditions are appropriate for blasting Confirm drill pattern is drilled in accordance with the blast design
Drillers	Record drill status, including hole depths, pattern and relevant information

11 | DEFINITIONS

NAME/TITLE	DESCRIPTION

12 | DOCUMENT INFORMATION

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

12.1 | RELATED DOCUMENTS

Related documents, listed in Table below, are documents directly related to or referenced from within this document.

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12.2 | REFERENCE INFORMATION

Reference information, listed in Table below, is information that is directly referred to for the development of this document

REFERENCE	TITLE
	HVO North Development Consent DA 450-10-2003
	HVO South Coal Project Approval PA 06_0261
	Environnent Protection Licence - EPL 640
	EIS titled 'Hunter Valley Operations – West Pit Extension and Minor Modifications', dated October 2003, and prepared by Environmental Resources Management Australia
	Section 96(1A) modification application for the 'Hunter Valley Loading Point', dated 30 June 2005, and prepared by Matrix Consulting
	Carrington Pit Extended Statement of Environmental Effects', dated October 2005. prepared by Environmental Resources Management Australia
	Carrington West Wing Environmental Assessment', dated 1 October 2010, and prepared by EMGA Mitchell McLennan (CWW EA)
	Environmental assessment titled 'Hunter Valley Operations South Coal Project Environmental Assessment Report', Volumes 1, 2 and 3, dated January 2008, including the response to submissions
	Environmental Assessment titled 'Raising of Lake James Dam', dated October 2009, and the response to submissions (including its Statement of Commitments) dated November 2009
	Environmental Assessment titled 'Proposed Modification to HVO South Project', dated May 2010, and the response to submissions dated August 2010
	Environmental Assessment titled 'Hunter Valley Operations South Project Approval – Modification 4 – Administrative Omissions and Clarifications' [sic], dated 26 September 2012
	Environmental Assessment titled 'Hunter Valley Operations North Project Approval – Modification 4' – Dedication of Lands for Offsets [sic], dated 26 September 2012

Number: HVOOC-1797567310-408

Status: Approved

Effective: 07/09/2026

Owner: Superintendent – Environment and Community

Version: 5.0

Review: 07/09/2029

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REFERENCE	TITLE
	Environmental Assessment titled 'Hunter Valley Operations North Modification 5' – HVLP Sediment Basin and HVO North Communication Towers, dated November 2016
	The Environmental Assessment titled 'Hunter Valley Operations South - Modification 5 February 2017
	Environmental Planning and Assessment Act 1979 (NSW)
	Work Health and Safety Act 2011 (NSW)
	Explosives Act 2003 (NSW)
	Protection of Environmental Operations Act 1997 (NSW).
	Australian and New Zealand Environment and Conservation Council ANZECC. 1990. Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration
	HVO Shotfiring & Explosives Handling Hazard Management Plan.
	Pre Blast Environmental Checklist
	HVO Road Closure Management Plan Golden Highway
	HVO Road Closure Management Plan Lemington Road
	HVO Post Blast Fume Generation Mitigation and Management Plan
	Blastronics (1994) Drill & Blast Study, Mount Pleasant

12.3 | CHANGE INFORMATION

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in table below. Example detail shown below.



REGULATOR VERSION	HVO SHAREPOINT VERSION	DATE	CHANGE DETAILS	REVIEW TEAM	REGULATOR APPROVAL
1.0	-	27/09/2013	Original	Kelly O-Mullane (Approvals Specialist), Gerard Gleeson (Environment Specialist)	-
1.1	-	26/03/2014	Revised following feedback from DP&I on original submission	Kelly Adamthwaite (Approvals Specialist), Gerard Gleeson (Environment Specialist)	-
1.2	-	04/04/2014	Document finalised for publish	Gerard Gleeson (Environment Specialist), Andrew Speechly (Environment Manager)	04/04/2014
1.3	-	30/05/2017	Revised following modification to HVO North Consent and to update Blast Fume Protocol. Monitoring Program revised to include minor changes to blast monitoring locations on included map.	Doug Fenton (Environment Advisor), Andrew Speechly (Environment Manager)	-
2.0	-	30/11/2017	Revision to align with new ownership management practices. Review following HVO North Mod. 7	Dominic Brown (Environment Specialist), Andrew Speechly (Environment Manager)	-
3.0	-	25/05/2018	Revision following Modification 5 of HVO South Consent and Submission of 2017 Annual Review.	Dominic Brown (Environment Specialist), Andrew Speechly (Environment Manager)	-

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and Community

Version: 5.0

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REGULATOR VERSION	HVO SHAREPOINT VERSION	DATE	CHANGE DETAILS	REVIEW TEAM	REGULATOR APPROVAL
3.1	-	08/02/2019	Revision following feedback from DP&E on Version 3.0.	Dominic Brown (Environment & Community Coordinator), Andrew Speechly (Environment & Community Manager)	-
3.2	-	27/02/2019	Revision following feedback from DP&E on Version 3.1	Dominic Brown (Environment & Community Coordinator), Andrew Speechly (Environment & Community Manager)	-
3.3	-	28/03/2019	Revision following feedback from DP&E on Version 3.1	Dominic Brown (Environment & Community Coordinator), Andrew Speechly (Environment & Community Manager)	03/04/2019
3.4	-	13/09/2019	Update to HVO template, restructure and include GCAA protocols.	Dominic Brown (Environment & Community Coordinator), Andrew Speechly (Environment & Community Manager)	-
3.5	-	2/04/2020	Update following submission of 2019 IEA Report and 2019 Annual Review.	Dominic Brown (Environment & Community Coordinator), Andrew Speechly (Environment & Community Manager)	-



REGULATOR VERSION	HVO SHAREPOINT VERSION	DATE	CHANGE DETAILS	REVIEW TEAM	REGULATOR APPROVAL
3.6	-	30/04/2021	Update following feedback from DPIE on Version 3.5	Keith Simkin (E&C Coordinator), Andrew Speechly (E&C Manager)	-
3.7	-	22/03/2022	Update following approval of PA 06_0261 Mod 6	Keith Simkin (E&C Coordinator), Andrew Speechly (E&C Manager)	-
-	-	04/08/2023	Update following approval of PA 06_0261 Mod 8, Annual Review and IEA	Brenton Hubert (E&C Superintendent), Andrew Speechly (E&C Manager)	-
-	-	24/06/2024	Review following submission of 2023 Annual Review	Brenton Hubert (E&C Superintendent), Andrew Speechly (E&C Manager)	-
4.0	4.0	25/06/2025	Review following submission of 2024 AEMR and DA 450-10-2003 Mod 8 approval.	Brenton Hubert (E&C Superintendent), Ben de Somer (E&C Manager)	26/08/2025
5.0	5.0	10/08/2026	Revision following submission of 2025 AR and 2025 IEA.	Brenton Hubert (E&C Superintendent), Ben de Somer (E&C Manager)	27/08/2026

Appendix A - Typical Blasting Permission Page

HVO West Pit North Blasting Permissions

Latest Conditions (1 Minute Avg) Wind Direction: 297° Wind Speed: 2.8m/s

OK to Blast

Belt road closure and notify Rav Nth of blast

10 Min Wind Rolling Avg

Date	Wind Speed	Wind Direction
04/08/2023 11:31	3.5m/s	284°
04/08/2023 11:30	3.6m/s	283°
04/08/2023 11:29	3.6m/s	282°
04/08/2023 11:28	3.5m/s	285°
04/08/2023 11:27	3.5m/s	289°
04/08/2023 11:26	3.6m/s	287°
04/08/2023 11:25	3.5m/s	287°
04/08/2023 11:24	3.4m/s	287°
04/08/2023 11:23	3.3m/s	289°
04/08/2023 11:22	3.2m/s	289°
04/08/2023 11:21	3.1m/s	289°
04/08/2023 11:20	3.2m/s	289°
04/08/2023 11:19	3.2m/s	287°
04/08/2023 11:18	3.3m/s	283°
04/08/2023 11:17	3.3m/s	282°
04/08/2023 11:16	3.2m/s	281°

1 Min Wind Rolling Avg

Date	Wind Speed	Wind Direction
04/08/2023 11:31	2.8m/s	297°
04/08/2023 11:30	3.2m/s	290°
04/08/2023 11:29	3.3m/s	279°
04/08/2023 11:28	3.1m/s	278°
04/08/2023 11:27	3.1m/s	278°
04/08/2023 11:26	3.7m/s	291°
04/08/2023 11:25	4.4m/s	272°
04/08/2023 11:24	4.3m/s	278°
04/08/2023 11:23	3.9m/s	282°
04/08/2023 11:22	3.6m/s	293°
04/08/2023 11:21	3.2m/s	282°
04/08/2023 11:20	2.3m/s	309°
04/08/2023 11:19	3.4m/s	293°
04/08/2023 11:18	3.7m/s	280°
04/08/2023 11:17	2.5m/s	278°
04/08/2023 11:16	3.1m/s	290°

Toggle Charts

Rules



Layers

Read Closure

Notifications

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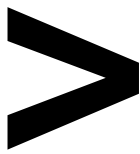
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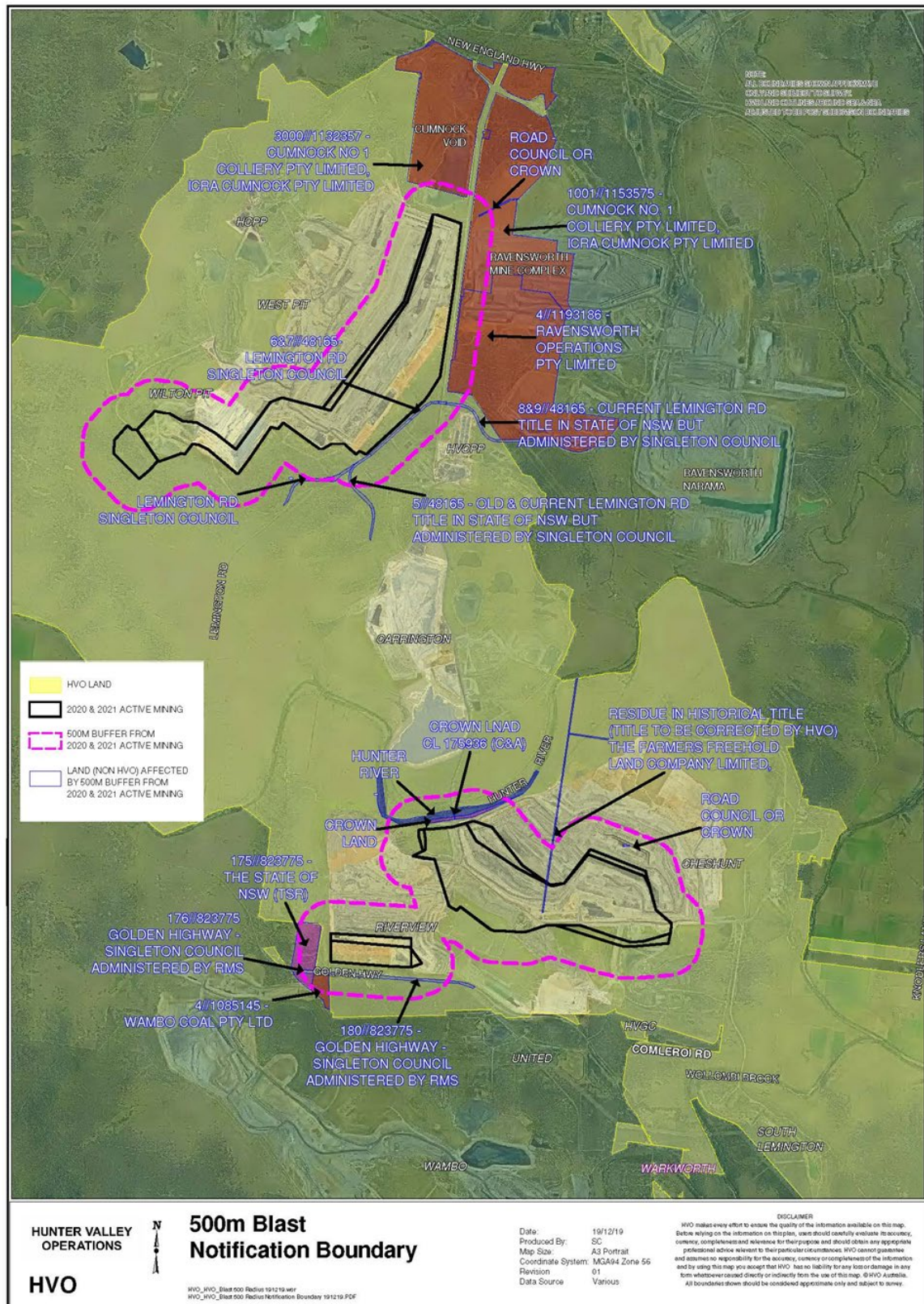
Appendix B - Post Blast Fume Generation Mitigation and Management Plan



Appendix C - Road Closure Management Plans



Appendix D - 500m Blast Zone – Land Ownership





Appendix E - Consultation with the EPA



YANCOAL AUSTRALIA LTD
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ABN 82 111 859 119

26 March 2018

Environmental Protection Authority NSW
PO Box 448G
NEWCASTLE NSW 2300

ATTN: Mark Hartwell

Dear Mark

RE: Hunter Valley Operations – EPA Consultation on Noise, Air Quality, Blasting and Water Management Plans

We refer to relevant conditions in contemporary Approvals granted under the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act), requiring Hunter Valley Operations to consult with the EPA during development of Environmental Management Plans for Noise, Air Quality and Greenhouse Gas, Blasting, and Water.

We note that the EPA has previously advised (including letter from the EPA to Hunter Valley Operations, reference DOC14/115042, EF13/2793), that *"the...EPA encourages the development of such plans... [the] EPA does not review these documents as our role is...not to be directly involved in the development of strategies to achieve those objectives"*.

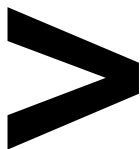
We therefore write seeking confirmation on whether EPA still maintains this position and no longer requires to be consulted on the drafting of such plans for Hunter Valley Operations.

We would be grateful if you could please advise of the EPA's position in this regard by 5 April 2018.

We look forward to hearing from you.

Yours sincerely

Andrew Speechly
Manager Environment & Community
Yancoal – Hunter Valley Operations



DOC18/180487-02, EF16/2461

Hunter Valley Operations
PO Box 267
SINGLETON NSW 2330

18 June 2018

Attention: Dominic Brown

Dear Mr Brown

HUNTER VALLEY (HVO) MANAGEMENT PLAN CONSULATION

Reference is made to your email dated 26 March 2018 to the Environment Protection Authority ("EPA") in relation to *Hunter Valley Operations Management Plan Consultation*.

The EPA encourages the development of such plans to ensure that proponents have met their statutory obligations and designated environmental objectives. However, the EPA does not review these documents, nor provide input to these documents as our role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.

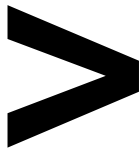
The EPA does not require HVO to consult with it regarding the development of plans required under planning consents. The EPA provides its recommended conditions of approval to the Department of Planning and Environment during the development assessment and approvals process.

If you wish to discuss the matter further please contact Natasha Ryan on 02 4908 6833.

Yours sincerely



MARK HARTWELL
Head Regional Operations Unit - Hunter
Environment Protection Authority



Appendix F - Approval of the Management Plan



Planning &
Environment

Resource Assessments
Planning Services
Contact: Melissa Anderson
Phone: 8275 1392
Email: Melissa.anderson@planning.nsw.gov.au

Mr Dominic Brown
Environment and Community Coordinator
Hunter Valley Operations
PO Box 315
SINGLETON NSW 2330
Dominic.Brown@hvo.com.au

Dear Mr Brown

**Hunter Valley Operations (DA 450-10-2003 and MP 06_0261)
Approval of Blast Management Plan**

I refer to your email of 28 March 2019 submitting version 3.3 of the Hunter Valley Operations (HVO) Blast Management Plan (Plan) for approval, as required under condition 19 of Schedule 3 of HVO North (DA 450-10-2003) and condition 18 of Schedule 3 of HVO South (MP 06_0261).

The Department has reviewed the Plan and finds that it meets the requirements of both development approvals.

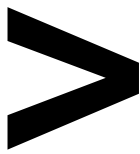
Consequently, the Secretary approves the Plan. Please place the final (untracked) version of the Plan on the HVO project's website at your earliest convenience.

Should you have any enquiries in relation to this matter, please contact Melissa Anderson at the details above.

Yours sincerely

J Evans 3/4/2019

Jessie Evans
A/Director
Resource Assessments
as nominee of the Secretary



Department of Planning, Housing and Infrastructure



Our ref: MP06_0261-PA-175

Environment and Community Team
HV Operations Pty Ltd
1011 Lemington Road
Lemington, NSW, 2330

26/08/2025

Subject: Revised Blast Management Plan – HVO South (MP06_0261)

I refer to your submission dated 11 August 2025 requesting approval of the revised Blast Management Plan (Version 4.0, dated 18 August 2025) submitted to meet the requirements of Schedule 3, condition 18 of MP06_0261 and Schedule 3, condition 19 of DA450-10-2003.

The Department has carefully reviewed the document and is satisfied that it has been updated to reflect the 2024 Annual Review dated 31 March 2025 and the approval of HVO North Mod 8 granted 24 April 2025.

The Department also notes that given the nature of the updates that consultation with public authorities listed in Schedule 3, condition 18 of MP06_0261 is not required, per Schedule 5, condition 1C of MP06_0261.

Accordingly, as nominee of the Planning Secretary, I approve the revised Blast Management Plan (Version 4.0, dated 18 August 2025) under Schedule 3, condition 18 of MP06_0261.

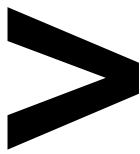
You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail. Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Kiera Plumridge at kiera.plumridge@dpie.nsw.gov.au.

Yours sincerely,

Jack Turner
Team Leader
Resource Assessments

As nominee of the Planning Secretary



Department of Planning, Housing and Infrastructure



Our ref: DA450-10-2003-PA120

Ben de Somer
Manager Environment and Community
1011 LEMINGTON ROAD
Lemington, New South Wales, 2230

27/08/2026

Subject: Blast Management Plan

Dear Mr de Somer

I refer to the Blast Management Plan (the Plan) which has been revised following the submission of an Annual Review in accordance with Condition 4A, Schedule 5 of the consent for the HVO North – West Pit Consent 2003 (DA450-10).

I note the revisions to the Plan are administrative and the Plan contains the information required by the conditions of consent.

In accordance with Condition 3A of Schedule 5 of the consent, the Department agrees that consultation is not required for the revision of the plan given the administrative nature of the updates.

Accordingly, as nominee of the Planning Secretary, I approve the Blast Management Plan (Submitted 11 August 2026).

You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Patrick Worthington at patrick.worthington@dphi.nsw.gov.au

Yours sincerely

Jack Turner
Team Leader
Resource Assessments

As nominee of the Planning Secretary