



BENGALLA MINE

Development Consent Modification 4
Response to Submissions

for

Bengalla Mining Company Pty Ltd

May 2018

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

BENGALLA MINE

DEVELOPMENT CONSENT MODIFICATION 4

RESPONSE TO SUBMISSIONS

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BENGALLA MINE DEVELOPMENT CONSENT MODIFICATION 4

RESPONSE TO SUBMISSIONS

for

Bengalla Mining Company Pty Limited

1 INTRODUCTION

1.1 BACKGROUND

Bengalla Mining Company Pty Limited (BMC) operates the Bengalla Mine (Bengalla) in the Upper Hunter Valley of NSW. Bengalla is situated approximately 130 km north-west of Newcastle and 4 km west of the township of Muswellbrook.

On 3 March 2015, BMC was granted Development Consent: State Significant Development (SSD-5170) under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) by the Secretary of the Department of Planning and Environment (DPE). This consent authorised continued coal mining operations until 2039.

SSD-5170 has been modified under Section 96(2) of the EP&A Act on four occasions:

- MOD1 was granted on 16 December 2015 to alter various water management infrastructure and relocate an explosives storage facility;
- MOD 2 was granted on 1 July 2016 to alter the Main Overburden Emplacement Area and to facilitate access to the Dry Creek Project site; and
- MOD 3 was granted on 23 December 2016 which authorises minor changes to the positioning and operation of an explosives and reload facility, the installation of a Hunter River pipeline and the development and use of temporary topsoil stockpiles during the mining process.

On 13 December 2017, BMC made an application for a modification to SSD-5170 under Section 96(2) of the EP&A Act (MOD 4). This application was supported by the 'Bengalla Mine Development Consent Modification 4 Statement of Environmental Effects' (MOD 4 SEE) (Hansen Bailey, 2017).

MOD 4 generally seeks:

- Amendments to the approved water management system;
- To temporarily store earthen materials associated with dam construction and other identified suitable clay material required for the future Dry Creek reinstatement;
- Increase the capacity of (and additional locations for) Run of Mine (ROM) coal stockpiles; and
- Additional storage locations for temporary emplacement of coal processing reject material.

The MOD 4 SEE was placed on public exhibition from 18 January to 2 February 2018.

A total of eight submissions from regulatory agencies were received following the public exhibition. No other submissions were received.

1.2 DOCUMENT PURPOSE

This Response to Submissions (RTS) has been prepared by Hansen Bailey on behalf of BMC. This RTS responds to the submissions received by stakeholders during the public exhibition period.

1.3 DOCUMENT STRUCTURE

This RTS is structured as follows:

- **Section 2** summarises the submissions received from stakeholders;
- **Section 3** provides a comprehensive response to the issues raised;
- **Section 4** lists the abbreviations used within this RTS; and
- **Section 5** provides a list of reference documents for this RTS.

Each submission received in relation to MOD 4 is available through the DPE Major Projects website http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9001.

2 SUBMISSION SUMMARY

Eight submissions were received in response to the public exhibition of the MOD 4 SEE, all from regulatory agencies.

The following regulatory agencies provided a submission:

- DPE;
- Muswellbrook Shire Council (MSC);
- NSW Environment Protection Authority (EPA);
- Office of Environment and Heritage (OEH);
- DPE – Division of Resources and Geoscience (DRG)
- Dams Safety Committee (DSC);
- Department of Primary Industries (DPI) – Crown Lands and Water Division; and
- Hunter New England Local Health District.

No submissions from non-government organisations, industry or members of the public were received.

All aspects of the submissions received have been addressed within this RTS.

3 RESPONSE TO SUBMISSIONS

*This section responds to the submissions as identified in **Section 2**. A response to issues identified by each regulatory agency is provided below.*

3.1 DEPARTMENT OF PLANNING AND ENVIRONMENT

3.1.1 Water Resources

Issue

"1. Council raised concerns over the proposed clay liner. Provide additional information to demonstrate that the clay liner is adequate to prevent seepage to the alluvium.

2. Please address Crown Lands and Water's comments that, after Year 15, clean water dams would exceed the site's harvestable rights.

3. In comments on Mount Pleasant Mod 3, the EPA raised concerns that water could discharge from Mount Pleasant to the Bengalla Coal Mine. Please advise what measures are in place to prevent discharges from Mount Pleasant impacting the Bengalla Coal Mine Water Management System."

Response

1. See detailed response in **Section 3.2.1**.

2. See detailed response in **Section 3.7.2**.

BMC understands that should Mount Pleasant Mine need to discharge water, MACH Energy Australia Pty Ltd (MACH) (the owner of Mount Pleasant Mine) will seek to discharge waters from the Mount Pleasant Discharge Dam "DW1" and its associated infrastructure and from there to the Hunter River in accordance with the Hunter River Salinity Trading Scheme.

The Mount Pleasant Discharge Dam is an approved but not yet constructed mine water dam, with a safe storage capacity of approximately 300 million litres, to be connected to existing Mount Pleasant dam "RW1" by pipeline, together with associated channels, drains and spillways. BMC has approval to construct the Mount Pleasant Discharge Dam and associated pipeline under SSD-5170 for the Bengalla Continuation Project.

The Continuation of Bengalla Mine Environmental Impact Statement' (Hansen Bailey, 2013) (Section 4.9.4) states as follows:

> *"…In order to mitigate the [Bengalla] Project interrupting the Mount Pleasant Project's currently approved discharge route (via RW1 into Dry Creek) it is proposed that BMC, as part of the [Bengalla] Project, will construct a 300 ML Mount Pleasant Discharge Dam 1 and associated pipeline (located generally adjacent to CW1 (see Appendix X)) in accordance with relevant guidelines and standards. …. Mount Pleasant DW1 will not be utilised in the [Bengalla] Project water management system but rather, will be available to the Mount Pleasant Project, subject to appropriate approvals.*

> *Mount Pleasant DW1 will be constructed by BMC for the [Bengalla] Project however; Coal & Allied [read MACH] would seek any additional required approvals under the EP&A Act or other relevant legislation to facilitate its use."*

BMC understands that MACH will seek approval to use the Mount Pleasant Discharge Dam and associated infrastructure as part of the Mount Pleasant Mine water management system and approval to use the Mount Pleasant Discharge Dam as part of DA 92/97 as referenced in its letter to DPE dated 23 April 2018.

The freehold title to, and mining lease over, the land on which the Mount Pleasant Discharge Dam is to be constructed are held by BMC and the Bengalla Joint Venture parties, who have agreed to transfer the mining lease in the relevant area to MACH to provide tenure for the Mount Pleasant Discharge Dam and grant easements for the pipelines to that dam.

3.1.2 Rehabilitation and Mine Closure

Issue

"1. Please confirm whether the proposed Dry Creek East Dam is to be retained post-mining and clarify its post-closure function.

2. Please clarify how the proposed changes impact on the current rehabilitation schedule and objectives."

Response

See detailed responses in **Section 3.5.1**.

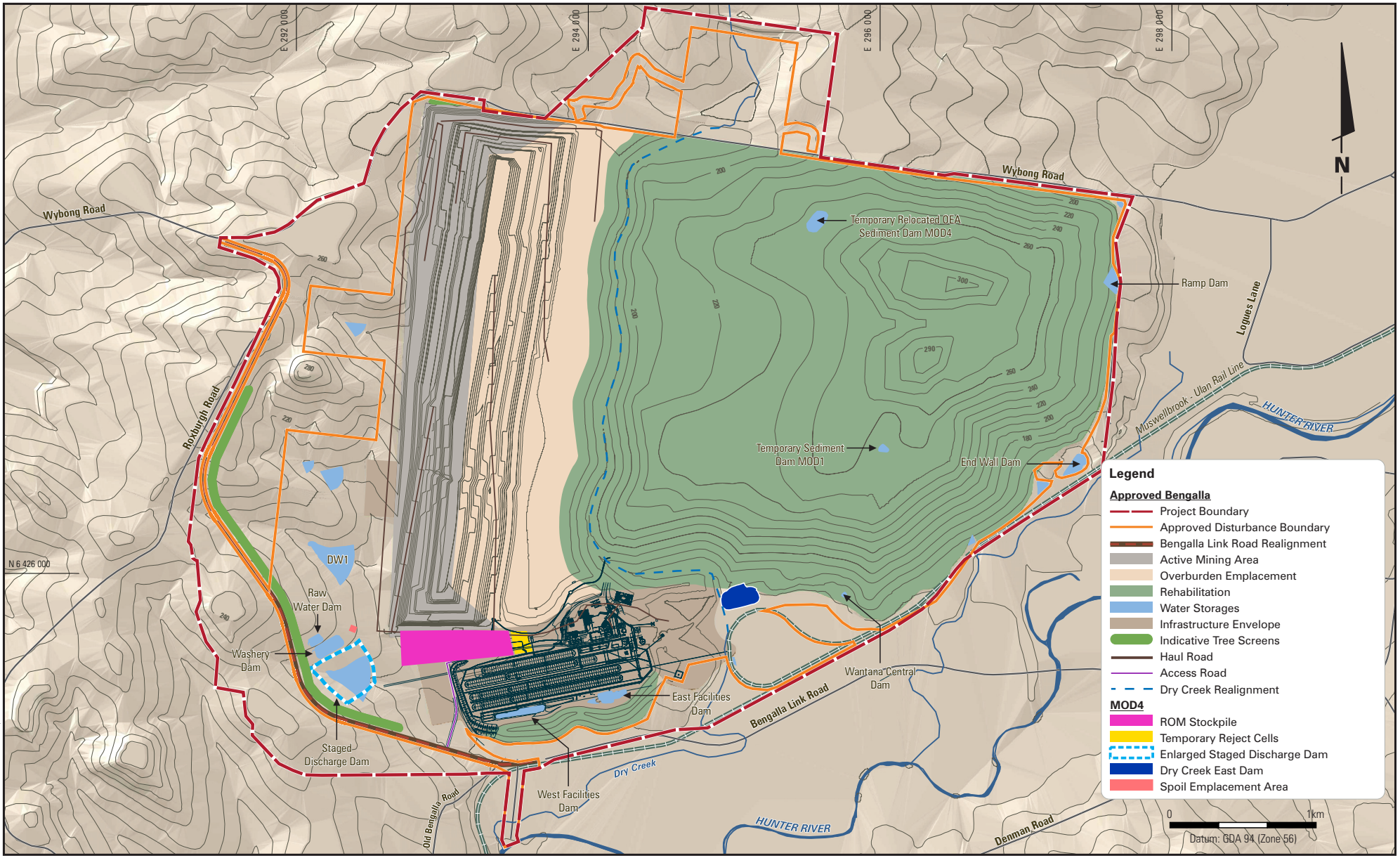
3.1.3 Temporary OEA dam

Issue

DPE requested by email: "*a figure including the currently approved location of the Temporary OEA Sed Dam and its proposed location in Year 24*."

Response

See **Figure 1.**



HB BENGALLA MOD4 F1 Conceptual Year 24 Mine Plan from MOD2 20 02 2018 Rev H

BENGALLA MINE

MOD4 Conceptual Year 24 Mine Plan

FIGURE 1

3.2 MUSWELLBROOK SHIRE COUNCIL

3.2.1 Dry Creek East Dam

Issue

"The modification proposes to build a new dam, called the Dry Creek East dam immediately north of the rail loop. The purpose of this dam is to initially hold mine water, and in time capture runoff from the rehabilitated areas. It is to remain post closure. Some of this dam is located on the Hunter River alluvium. Due to the location of the dam on the alluvium and the minimal studies provide [sic] *in the Application, Council is concerned it may leak and pollute the alluvium with saline mine water.*

Council requests that the following be required of the Proponent, or additional requirements be included within the revised Consent:

i. The Dry Creek East dam should not be located on any part of the alluvium;
ii. Further studies are to be undertaken to determine the likelihood of the dam leaking saline water and provide recommendations on how this risk can be avoided and the alluvium not polluted with mine water;
iii. Should the building of the dam be approved in its current location, Council be provided with monitoring results with the purpose of satisfying Council that the water quality within the alluvium is not being compromised by the dam.

It is noted that a temporary overburden emplacement area dam is to be constructed. Council has assumed that this dam would be decommissioned prior to closure. Should it remain post closure, it will need to be sealed to prevent this dam contributing to saline ground water within the overburden emplacement area."

Response

The Dry Creek East Dam has been positioned to enable the Dry Creek East Dam to function robustly. BMC advises that the Dry Creek East Dam will carry different types of water through its life being mine water and sediment water during Bengalla's operation, and then clean water from the relinquished rehabilitation catchment area that reports to it post-mining which will be detailed within the Mine Closure Plan. The Dry Creek East Dam has been located and sized according to Bengalla's operational requirements and site constraints.

During test pitting investigations of the proposed Dry Creek East Dam area, one test pit out of 14 identified clay alluvial type material, to a depth of 200mm, and this test pit was at the outside edge of the dam wall (see **Figure 2.1** in **Appendix A**).

During operation of the Dry Creek East Dam, the water levels will be generally below the level where the alluvium material was encountered. On the occasions where the Dry Creek East Dam is full, the maximum water depth over this inferred area would be 6m. This low head and the likely short length of time that the water would be at this depth means it is unlikely there will be any movement of mine water into the clay alluvial layer.

A further measure to protect the alluvium has been designed, being a gypsum lined clay liner. The clay liner will further reduce the likelihood of any movement of water. The clay liner is designed to industry standards and has been effectively used at other mines in the Hunter Valley. The full response from the surface water consultant, WSP, is presented in **Appendix A**. The Temporary Overburden Sediment Dam which may move from time to time relevant to mining will be used to manage water from the rehabilitated surface of the OEA. Once rehabilitation is established and relinquished, the Temporary Overburden Sediment Dam if retained will hold clean water from the rehabilitation area.

Monitoring of the alluvium near the dam is discussed in **Section 3.7.1**.

3.2.2 ROM Pad Dust Management

Issue

The Run of Mine (ROM) pad is to be significantly enlarged from 350,000t to 1,250,000t, an increase of 900,000t. This has the potential to generate additional coal dust in windy conditions and when being loaded into or out of the stockpile. The dust management methodology is not described in the application. The application only offers to apply techniques consistent with the Bengalla Air Quality Management Plan. As the ROM pad currently does not exist, its management will not be currently covered in this plan.

Council request that the following additional requirements be included within the revised Consent:

i. The Consent to contain methodology and the minimum requirements to manage the potential for dust generation from the ROM coal pad and its use. This should include permanent irrigation systems and controllers that respond to differing weather conditions."

Response

Management of dust from the existing ROM coal pad is outlined in Table 9 of the Air Quality Management Plan (2017b), which specifies:

- "*Initiation of coal stockpile sprays when the wind exceeds 5.6 m/s*
- *Coal stockpile spray systems are informed by on-line real time meteorological data"*

This management will be applied to all new ROM coal stockpile areas.

3.2.3 Western Link Road

Issue

"The replacement of the Western Link Road is not considered as a part of this application. Bengalla currently has the requirement (Condition 34 Schedule 3) to replace the northern portion of the Bengalla Link Road, with a road further to the west, prior to mining with 200m of the Bengalla Link Road. The current design of this road, as shown in the existing consent, does not satisfy some road standard requirements, including for curve radii.

Council's current position is to not build the Western Link road and instead build a road to the east of the Bengalla Mine, primarily on Bengalla owned land. This may make the requirements of Condition 34 redundant to a large extent.

Council requests that the Proponent be invited to discuss this issue, together with the operators of the Mt Pleasant Mine, well before the requirements of Condition 34 are triggered."

Response

Noted.

3.2.4 Land Shape and Micro Relief

Issue

"The current Bengalla approval came into force in October 2015. Condition 44 Schedule 3, and in particular the first point in Table 15 requires:

> *Final landforms designed to incorporate natural micro relief and natural drainage lines, which, where reasonable and feasible, further avoid straight run drop structures, to integrate with surrounding landforms.*

To date, no micro relief type of landforms have been observed in the recent land shaping and rehabilitation at Bengalla Mine. Council is concerned that this requirement of the Consent is not being complied with in full and so the matter should be resolved prior to granting any further modifications to the existing Bengalla Consent."

Response

Noted. Rehabilitation at Bengalla will continue in accordance with the approved Rehabilitation Management Plan (2017c) and the approved Mine Operations Plan (2017 – 2021) as modified from time to time.

3.3 NSW ENVIRONMENT PROTECTION AUTHORITY

3.3.1 Environmental Protection Licence Variation

Issue

"…Should the development be modified either by the applicant prior to the granting of the consent or as a result of a condition proposed to be attached to the consent, it will be necessary to consult with the EPA about the changes before consent is granted. This will enable the EPA to determine whether a recommended condition of approval needs to be modified in light of the changes.

Environmental Protection Licence Variation

The proponent currently holds Environment Protection Licence 12977 under the Protection of the Environment Operations Act 1997 (POEO Act). Should DPE approve the proposal, the proponent will need to apply for and obtain a Licence Variation from the EPA."

Response

Noted. A variation to BMC's existing Environmental Protection Licence 6538 (EPL) will be sought to clarify minor changes to noise predictions presented in MOD4 consistent with SSD-5170.

3.3.2 Noise

Issue

"…In summary:

a) EPA considers that the AIA is adequate and has provided revised recommended noise conditions in Attachment 2.

Minor comments are included below:

b) The proponent should consider including additional information in the AIA Sections 3.6 and 3.7 which shows the predicted overall dBC noise levels, predicted maximum noise levels and predicted low frequency spectra for all assessed receivers.

The AIA discusses low frequency noise impacts in Section 3.6, outlining the assessment methodology and overall results. While providing a clear summary of the impacts, the AIA should also ideally provide the predicted overall dBC levels and 20Hz – 250Hz spectra for all assessed receivers to support this summary, possibly in an Appendix to the main report.

Similarly, the AIA discusses and summarises sleep disturbance impacts in Section 3.6. Ideally, the predicted maximum noise levels for each assessed receiver, including appropriate adjustments to reflect the MOD4 changes, should be provided to support this summary, possibly in an Appendix to the main report."

Response

a) Noted. See detailed response in **Section 3.3.4**.

b) Noted. The detailed results have been presented previously in the Bengalla EIS and the *Development Consent Modification Statement of Environmental Effects* (MOD 2) (Hansen Bailey, 2016).

3.3.3 Air

Issue

"…EPA advises that emissions to the air from the proposed modification are not expected to appreciably change impacts from the project."

Response

Noted.

3.3.4 Proposed Changes to the EPL – Attachment 2

Issue 1 - L6.1

Noise generated at the premises must not exceed the noise limits in the Table below.

Location		NOISE LIMITS dB(A)		
	Day $L_{Aeq\ (15\ minute)}$	Evening $L_{Aeq\ (15\ minute)}$	Night $L_{Aeq\ (15\ minute)}$	Night $L_{A1\ (1\ minute)}$
108, 109, 110	40	40	40	45
106	39	39	39	45
105, 126N	38	38	38	45
167, 180 184	38	38	35	45
102, 126C, 146	37	37	37	45
186N	37	37	35	45
43, 44, 130, 145, 126S	36	36	36	45
186S, 189	36	36	35	45
Any other residential receiver not subject to a negotiated agreement	35	35	35	45

Note: The locations referred to in the table above are identified in the plan titled 'Bengalla Mine – Bengalla Compliance Acoustic Monitoring Network - Figure 1' version 09/09/2016, EPA reference DOC16/456893.

Response

Noted. Minor amendments are also required to Table 4 of SSD-5170.

Issue 2 - L6.2

"For the purpose of condition L6.1;

- *Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.*
- *Evening is defined as the period from 6pm to 10pm.*

- *Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays"*

Response

Noted.

Issue 3 - L6.3

The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level.

b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or

c) Stability category G temperature inversion conditions.

Response

The proposed condition does not match Appendix 5 Point 1 of SSD-5170 or the existing EPL condition L4.4. For consistency it should continue to read:

"*The noise emission limits identified in this licence apply under all meteorological conditions except for the following:*

a) wind speeds greater than 3 m/s measured at 10 m above ground level; or

b) temperature inversion conditions between 1.5 degrees Celsius and 3 degrees Celsius/100 m and wind speeds greater than 2 m/s at 10 m above ground level; or

c) temperature inversion conditions greater than 3 degrees Celsius/100 m."

Issue 4 - L6.4

For the purposes of condition L6.3:

[LOCATION OF METEOROLOGICAL STATION TO BE NEGOTIATED WITH PROPONENT BY EPA][1]

a) Data recorded by a meteorological station installed on site[1] must be used to determine meteorological conditions; and

b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy, or as otherwise agreed by NSW EPA

[1] *highlights from original document*

Response

Bengalla has a meteorological station and an inversion tower installed on site. This condition should remain as it is in the existing EPL as reproduced below:

> *"For the purpose of condition L4.4:*
>
> *a) Data recorded from the meteorological station and inversion tower identified as EPA Licence Point 6 and 21 must be used to determine the meteorological conditions; and*
>
> *b) Temperature inversion conditions (vertical temperature gradient in degrees Celsius are to be determined by direct measurement over a minimum 50m height interval as referred to in Part E2 of Appendix E to the NSW Industrial Noise Policy."*

Issue 5 - L6.5

To determine compliance:

> *a) with the $L_{eq(15\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located:*
>
> > *• approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or*
> >
> > *• within 30 metres of a dwelling facade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable*
> >
> > *• within approximately 50 metres of the boundary of a National Park or a Nature Reserve.*
>
> *b) with the $L_{A1\ (1\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling facade.*
>
> *c) with the noise limits in condition L6.1, the noise measurement equipment must be located:*
>
> > *• at the most affected point at a location where there is no dwelling at the location;*
> >
> > *or*
> >
> > *• at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).*

Response

As DPE would be aware, it is not always possible to measure within 30 metres or 1 metre of a dwelling as the property owners/residents may not give permission for this to occur. Therefore, this condition if applied to EPL 6538 should be revised as indicated with yellow highlights:

To determine compliance:

a) with the $L_{eq(15\ minute)}$ noise limits in condition L6.1 [numbered as appropriate], *the noise measurement equipment must be located:*

- *approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises, or where reasonable and feasible as agreed with the EPA; or*
- *within 30 metres of a dwelling facade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises, or where reasonable and feasible as agreed with the EPA; or, where applicable*
- *within approximately 50 metres of the boundary of a National Park or a Nature Reserve.*

b) with the $L_{A1\ (1\ minute)}$ noise limits in condition L6.1 [numbered as appropriate], *the noise measurement equipment must be located within 1 metre of a dwelling façade, or where reasonable and feasible as agreed with the EPA.*

c) with the noise limits in condition L6.1 [numbered as appropriate], *the noise measurement equipment must be located:*

- *at the most affected point at a location where there is no dwelling at the location;*

or

- *at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b)* [both numbered as appropriate].

Issue 6 - L6.6

A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- *at a location other than an area prescribed by conditions L6.5(a) and L6.5(b)* [both numbered as appropriate]*;*

and/or

- *at a point other than the most affected point at a location.*

Response

Noted.

Issue 7 - L6.7

For the purposes of determining the noise generated at the premises the modification factors in Fact Sheet C of the NSW Noise Policy for Industry must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Response

Noted.

Issue 8 - Monitoring Conditions

M10 Noise monitoring

M10.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator attended noise monitoring at each specified noise monitoring point in accordance with the table below.

POINT 7,8,9

Assessment period	Minimum frequency in a reporting period	Minimum duration within assessment period	Minimum number of assessment period
Night	Monthly	15 minutes	1 operation day

Response

Noted.

Issue 9 - Reporting Conditions

R4.3 a) A report containing the monitoring results of noise compliance monitoring specified in this licence must be submitted annually with the Annual Return as set out in Condition R1.

b) The report must include an explanation of any exceedences of noise limits and what management and mitigation measures were put in place to prevent further exceedences.

Response

Noted.

Issue 10 - Additions to Definition of Terms of the licence

- *NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy" published by the Environment Protection Authority in January 2000.*
- *NSW Noise Policy for Industry - the document entitled "Noise Policy for Industry" published by the Environment Protection Authority in October 2017.*

- *Noise- 'sound pressure levels' for the purposes of conditions L6.1 to L6.7.*

Response

Noted.

3.4 NSW OFFICE OF ENVIRONMENT & HERITAGE

3.4.1 Biodiversity

"…OEH is satisfied with the biodiversity assessment and no further assessment or offsetting is required."

Response

Noted.

3.4.2 Aboriginal Cultural Heritage & Biodiversity

"…OEH is satisfied with the Aboriginal cultural heritage assessment and no further assessment is required."

Response

Noted.

3.4.3 Flooding and Flood Risk

"…3. The impact of floods greater than 1% AEP have not been considered.

Section 6.8 of the Surface Water Impact Assessment refers to flooding. This section states modification 4 will not result in changes to the Hunter River floodplain as two of the proposed dams are outside the 1% Annual exceedance Probability (AEP) floodplain of the Hunter River and Dry Creek. No further flooding information has been provided.

The surface water assessment does not include consideration of flooding greater than the 1% AEP. Whilst it is acknowledged that the proposed development is outside the extent of the Hunter River 1% AEP floodplain, the impact of the development on, or the impact of flooding on the development, of floods greater than the 1% AEP have not been considered and cannot be assessed.

> *Recommendation 3*
>
> *The surface water assessment should include assessment of the potential impact of floods greater that* [sic] *the 1% AEP level up to and including the Probable Maximum Flood (PMF)."*

4. The potential flooding impacts of the re-routing of Dry Creek have not been assessed.

The development will result in re-routing of Dry Creek and modification to mine infrastructure associated with water storage. No information has been provided regarding the potential flooding impacts of these works.

Recommendation 4

The surface water assessment should include assessment of the potential flooding impacts from the re-routing of Dry Creek and the modification of mine infrastructure associated with water storage."

Response

As discussed in **Appendix A**, the possible impacts of flooding were assessed in the surface water impact assessment for the Bengalla EIS and Section 5.1.13 of the EIS Response to Submissions (Hansen Bailey, 2014). These considered the approved Dry Creek relocation and concluded that there would be no impacts based on the highest known flood to date (in 1955) and that the regulation of the Hunter River through Glenbawn Dam further reduces the risk.

This modification contains no activities that will impact on that assessment.

The Bengalla EIS also discusses the diversion of Dry Creek and the construction of Clean Water Dam 1 (CW1) to capture and divert water from the Dry Creek catchment. CW1 has been constructed, and the Dry Creek diversion completed. This modification will not impact on the Dry Creek Diversion.

3.5 NSW DIVISION OF RESOURCES AND GEOSCIENCE

3.5.1 Additional information

"…The Division's environmental assessment requirements for rehabilitation have not been adequately addressed in the SEE for the Project. Additional information is required to demonstrate that sustainable rehabilitation outcomes can be achieved as a result of the Project.

The required additional information is as follows:

i. Clarification as to whether the Dry Creek East Dam is to be removed or retained upon mine closure.

ii. If the Dry Creek East Dam is to be retained in perpetuity, then the following is required:

a) Purpose of the dam post mine closure.

b) Assurance that the location, design and construction of the dam is suitable for permanent retention.

c) Discussion or assessment of the potential environmental impacts of the dam post closure.

iii. Assurance is required that the enlargement of the Staged Discharge Dam will not impact on its ability to be successfully removed and rehabilitated.

iv. The proponent is required to provide commentary on the impacts (if any) to the rehabilitation scheduling (both progressive and final rehabilitation) at Bengalla Mine, if the modification is granted.

The Division notes that the proposed modification is contained spatially within the original project approval boundary for the Bengalla Mine. The proposed changes and activities (and their indicated locations) are unlikely to sterilise significant resources or encroach on other external activities.

The Division is not in a position to issue general terms of approval at this stage and requires that the proponent provide information responding to the comments above."

Response

i. and ii.

Dry Creek East Dam is proposed to be retained until Year 24 of the mine plan, and as shown in Table 4.2 of the Surface Water Impact Assessment then will convert to a clean water dam. However, its detailed final function will be determined during mine closure planning required as part of the Rehabilitation Management Plan under Schedule 3 Condition 46 of SSD-5170, and committed to in the approved Water Management Plan (2017) (WMP):

"Within 7 years of mine closure BMC will develop a Closure Plan (Mine Operations Plan).

Final rehabilitation completion criteria for mine closure will be developed and agreed in consultation with the relevant government agencies (including DPI - Water) and community and incorporated into the final Mine Closure Plan (developed as part of the Rehabilitation Management Plan, which may be combined with the Bengalla MOP)."

iii. The enlargement of the Staged Discharge Dam will not impact on its ability to be successfully removed and rehabilitated. The methodology for decommissioning and rehabilitation of the existing approved dam will be applied to the enlarged dam, and included in a future Mine Closure Plan as discussed above.

iv. None of the proposed changes will impact on the current rehabilitation schedule.

As part of the progression of Bengalla, BMC will remove all necessary improvements and infrastructure within the mining area of the site (the land the subject of SSD-5170) where required to facilitate the forward path of mining and will carry out rehabilitation of the areas from which infrastructure has been removed after mining has been completed in those areas (subject to the conditions of SSD-5170 and Rehabilitation Management Plan as approved from time to time).

3.6 NSW DAMS SAFETY COMMITTEE

3.6.1 Stage Discharge Dam (ED1)

Issue

"*Of particular interest to the DSC are the amendments to the approved water management system:*

> *"increase in capacity of Staged Discharge Dam to 700ML and construction of the Dry Creek East Dam for additional mine water storage"*

The design of the Staged Discharged Dam (ED1) has not been provided to the DSC for consideration of prescription. The appropriate DSC forms for this dam need to be submitted to the DSC. Dry Creek East Dam has been considered by the DSC and was not prescribed.

Response

BMC has provided the design of upgraded SSD to DSC for consideration.

BMC refers DSC to its letter dated 14 December 2017 from Chris Salkovic which states:

> *"The Committee wishes to thank WSP Australia Pty Limited for providing the Design Report for the proposed Discharge Dam at Bengalla Coal Mine site … The Design Report received on 10th November 2017, has been reviewed by the Committee at its December 2017 meeting. The overall design conforms to the Committee requirements…"*

3.6.2 Dams Safety Act 2015

"Correcting a misunderstanding in Section 3.3.3 Dams Safety Act 2015:

> *While it has been 3 years since the 2015 Act was passed by Parliament it is still "Business as usual" for the Dams Safety Committee. The 1978 Act has not been rescinded."*

Noted.

3.7 NSW DEPARTMENT OF INDUSTRY CROWN LANDS AND WATER DIVISION

3.7.1 Summary

Issue

"The department has reviewed the Statement of Environmental Effects and has no objections to the proposal. The following recommended conditions are provided for consideration in assessment of the proposal:

1 *That the proponent be required to install a shallow alluvial monitoring bore down gradient of the new Dry Creek East Dam and include in the Water Management Plan.*

2 *That the proponent be required to update the Water Management Plan in consultation with DoI Water."*

Response

Figure 2 shows the approved alluvial monitoring bores that are currently in the vicinity of the proposed Dry Creek East Dam. These bores are monitored monthly for water level and quality as outlined in the approved WMP, and will continue to be monitored post the construction of Dry Creek East Dam. The existing monitoring program is sufficient to identify any potential groundwater impacts from the construction and operation of the Dry Creek East Dam. The WMP modified from time to time will be updated in consultation with required government departments should MOD4 be approved.

3.7.2 Additional Comment

Issue

"Further information will be required in the amended Water Management Plan on how the following dams will be operated (years 15 onwards) and how these dams will be appropriately licensed or accounted for: future raw water dam, Endwall Dam, Bengalla East Sediment Dam (Homestead Dam), Bengalla West Sediment Dam (Farm Dam), Ramp Dam, Dry Creek Clean Water Dam 1 (CW1), North Dump Sediment Dam.

Table 4.2 of the Surface Water Assessment indicates that the surface water management system will include a number of clean water dams at years 15 and 24 (previously sediment dams in subsequently rehabilitated areas). Because these are indicated to be clean water dams, the volume of water held would need to be accounted for. It appears that these clean water dams would exceed harvestable rights.

Whilst the operation of these dams does not appear to have been changed under the proposed modification, it is recommended that the proponent provide further information within the amended Water Management Plan on operation of these dams at years 15 and 24 and how these dams will be appropriately licensed or accounted for."

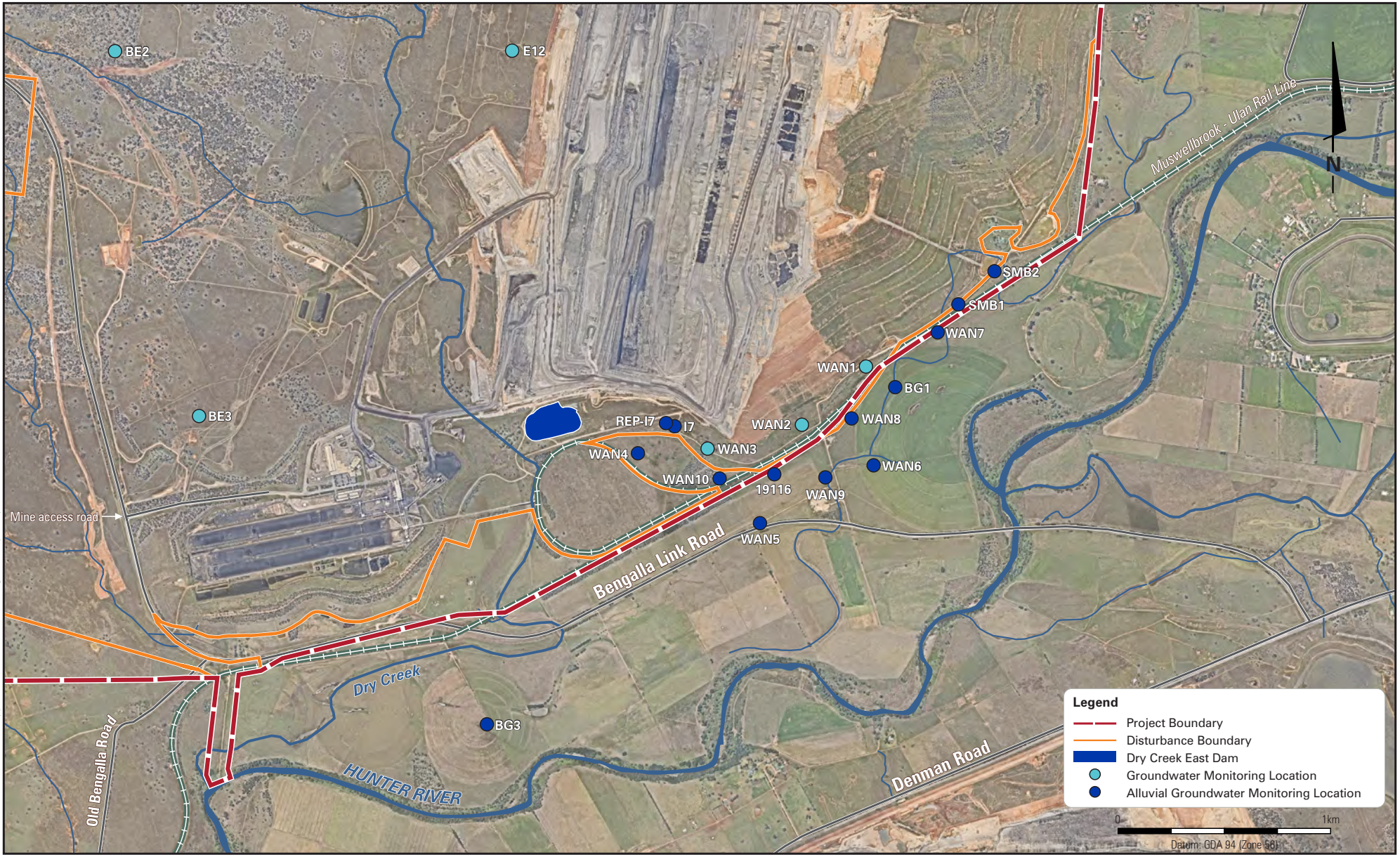
Response

The operation of dams and assessment of harvestable rights are stated in the approved WMP.

Section 5.5 states: "*BMC's harvestable right has been determined to be 109 ML per water year, which is substantially greater than the predicted maximum annual take from the Muswellbrook Water Source (39 ML)"*.

Table 5 in the WMP identifies Spare Dam with a capacity of 100 ML as BMC's nominated harvestable rights dam. Spare Dam will be constructed before Year 24. Nothing in MOD4 amends BMC's harvestable use rights.

The operation of Dry Creek East Dam will be included in the updated WMP discussed in **Section 3.7.1**.



HB BENGALLA MOD 4 1655 F2 Approved Groundwater Monitoring in Vicinity of Dry Creek Dam 24 05 2018 Rev B

BENGALLA MINE

BENGALLA

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

Approved Groundwater Monitoring in Vicinity of Dry Creek Dam

FIGURE 2

3.8 HUNTER NEW ENGLAND LOCAL HEALTH DISTRICT

3.8.1 Summary

"…The SEE for modification 4 has been reviewed by Hunter New England Population Health (HNEPH) with particular attention being paid to the management of air quality, noise, water and other issues that may impact on public health. The SEE indicates that all of the proposed modifications are within the approved project and disturbance boundary and there are no changes to the extent and method of mining. HNEPH considers the modifications would have minimal health impact and we are satisfied with the approval conditions."

Response

Noted.

3.9 TREE PLANTING ALONG PUBLIC ROADS

BMC advises that SSD-5170 Schedule 3 Conditions 40 and 41 have limitations regarding timing of works that are not practical given the circumstances the works are to occur. The commencement of the works has been delayed due to the commencement of the Mt Pleasant Mine, the ownership of the land adjacent to the public road reserves and the existing services locations within the public road reserves. To enable flexibility regarding the timing of the works a minor amendment to Conditions 40 and 41 is proposed as described below.

The Condition 40 states:

> *"40. Within 2 years of the commencement of development under this consent, unless the Secretary agrees otherwise, the Applicant must plant tree screening along those sections of Denman Road, Roxburgh Road and Wybong Road that will have direct views of mining operations on site. This screening must be planted, in consultation with Council (and where relevant the RMS), and maintained to the satisfaction of the Secretary."*

BMC proposes to amend the Condition 40 to:

> "*40. The Applicant must plant tree screening where reasonable and feasible along those sections of Denman Road, Roxburgh Road and Wybong Road that will have direct views of mining operations on site as soon as practicable unless the Secretary agrees otherwise. This screening must be planted, in consultation with Council (and where relevant the RMS), and maintained to the satisfaction of the Secretary."*

The Condition 41 states:

> "*41. At least five years prior to construction of Bengalla Link Road realignment, or otherwise agreed by the Secretary, the Applicant must plant tree screening along the proposed Bengalla Link road realignment. This screening must be planted in consultation with Council and maintained to the Satisfaction of the Secretary.*

Note: The planting of tree screening in areas of constructed fill embankments associated with the road realignment shall be undertaken as soon as practicable after completion of the constructed landform."

BMC proposes to amend the Condition 41 to:

"*41. As soon as practicable prior to construction of Bengalla Link Road realignment, or otherwise agreed by the Secretary, the Applicant must plant tree screening where reasonable and feasible along the proposed Bengalla Link road realignment. This screening must be planted in consultation with Council and maintained to the Satisfaction of the Secretary.*

Note: The planting of tree screening in areas of constructed fill embankments associated with the road realignment shall be undertaken as soon as practicable after completion of the constructed landform."

* * *

for
HANSEN BAILEY

Dianne Munro
Principal

James Bailey
Director

4 ABBREVIATIONS

Abbreviation	Description
Bengalla	Bengalla Mine
BMC	Bengalla Mining Company Pty Limited
CW1	Clean Water Dam 1
DPE	NSW Department of Planning & Environment
DPI	Department of Primary Industries
DRG	Department of Industry – Division of Resources and Geosciences
DSC	Dams Safety Committee
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning & Assessment Act 1979
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ha	Hectares
Hansen Bailey	Hansen Bailey Environmental Consultants
km	Kilometre
LGA	Local Government Area
MACH Energy	MACH Energy Australia Pty Ltd (MACH)
ML	Mining Lease
Mtpa	Million tonnes per annum
MOP	Mining Operations Plan
MSC	Muswellbrook Shire Council
Mtpa	Million tonnes per annum
OEH	Office of Environment & Heritage
RMS	Roads and Maritime Services
ROM	Run-of-mine
RTS	Response to Submissions
SEE	Statement of Environmental Effects
SSD	State Significant Development

5 REFERENCES

- Bengalla Mining Company Pty Ltd (2017a), *Water Management Plan*.
- Bengalla Mining Company Pty Ltd (2017b), *Air Quality Management Plan.*
- Bengalla Mining Company Pty Ltd (2017c), *Rehabilitation Management Plan*
- Bengalla Mining Company Pty Ltd (2017d), *Mine Operations Plan 2017 - 2021*
- Hansen Bailey (2013), *Continuation of Bengalla Mine Environmental Impact Statement* prepared for Bengalla Mining Company Pty Limited, September 2013.
- Hansen Bailey (2014), *Continuation of Bengalla Mine Response to Submissions.*
- Hansen Bailey (2016), *Bengalla Mine Development Consent Modification Statement of Environmental Effects*.
- Hansen Bailey (2017), *Bengalla Development Consent Modification 4 Statement of Environmental Effects*.
- NSW EPA (2016), *Environment Protection Licence 6538*.

APPENDIX A

Surface Water Impact Assessment

Supplementary Information

Our ref: 2173090A-WAT-LTR-001 RevB.docx

By email
craig.white@bengalla.com.au

15 February 2018

Craig White
Environment and Approval Superintendent
Bengalla Mining Company Pty Ltd
Bengalla Road
MUSWELLBROOK NSW 233

Dear Craig

Bengalla Mine Modification 4
Surface Water Impact Assessment
Supplementary information for response to submissions

1. INTRODUCTION

WSP Australia Pty Ltd (WSP) prepared a Surface Water Impact Assessment (SWIA) (WSP reference 2173090A-WAT-REP-001 Rev F dated 7 December 2017) for Bengalla Mining Company Pty Ltd (BMC) as part of BMC's Modification 4. The public exhibition period for that Modification concluded on Friday 2 February 2018 and submissions were made by several government agencies. As part of preparing responses to those submissions BMC requested WSP provide supplementary information to that provided in the SWIA. This letter contains that supplementary information.

2. DRY CREEK EAST DAM

This section contains supplementary information about the proposed design for the Dry Creek East Dam, in particular the clay liner.

Section 7.3 of the Modification 4 SWIA included the following:

"Figure 6.1 of the Bengalla Continuation of Mining Project Groundwater Impact Assessment (AGE, 2013) includes the estimated extent of quaternary alluvium on the Hunter River floodplain. Part of the footprint of the Dry Creek East Dam extends onto the area estimated to include quaternary alluvium. One test pit that was part of geotechnical engineering investigations at the proposed dam site indicated 200 mm of alluvial material present below the topsoil. Neighbouring testpits that were part of the same investigation did not encounter alluvial material.

The impoundment area of the proposed Dry Creek East Dam comprises excavated storage below the existing surface level and volume above ground contained by an earthfill embankment. To prevent potential interaction between mine water and the alluvium, the excavated storage area will be lined with approximately 600 mm of compacted clay liner, formed either of approximately 300 mm of

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material treated in situ and overlain by another approximately 300 mm of clay or approximately 600 mm of material placed in two layers."

The following three sections include further information to the above.

2.1 DESCRIPTION OF ALLUVIAL MATERIAL AND LOCATION IN DAM

The 200mm thickness of alluvial material below the topsoil was described by our field engineer as brown-dark brown medium plasticity silty clay with additional description as 'alluvial soil', as opposed to 'residual soil' that is was overlying. The testpit where this was encountered was TP12 in the field investigation. TP12 is shown in Figure 2.1 as are the other testpits and boreholes where no alluvial material was encountered. The dam arrangement is also shown in Figure 2.1.

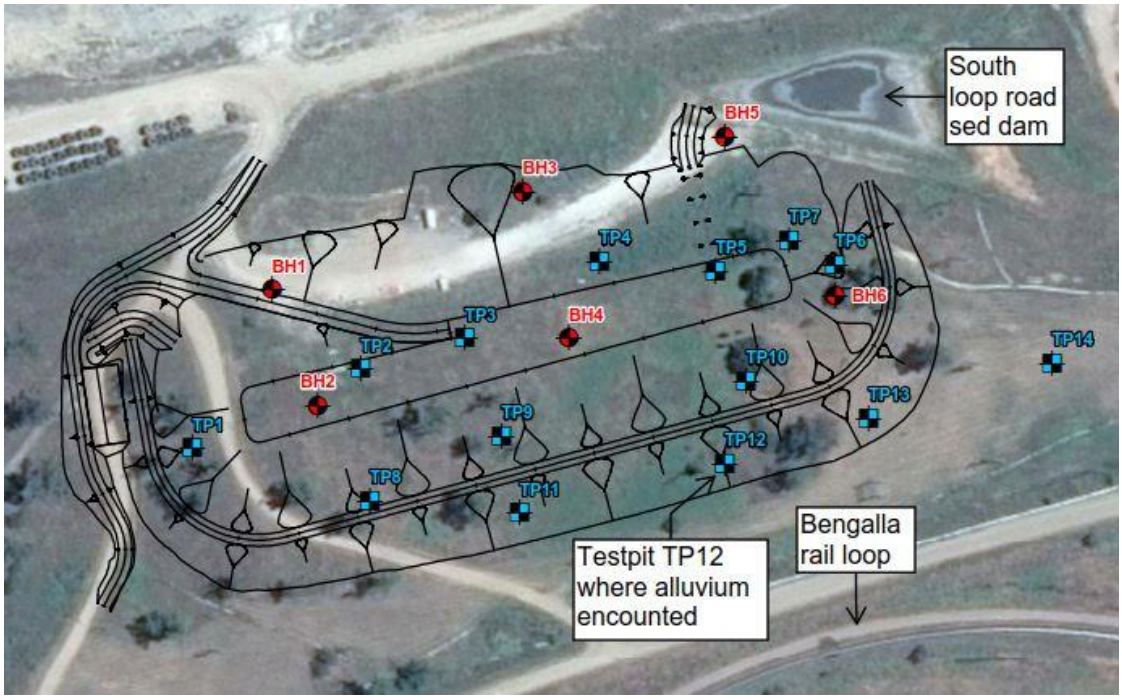

Figure 2.1 Location of test pit TP12

As included in the Operating Rules for the SWIA (Table 5.12) Dry Creek East Dam would be operated at a low level and therefore the water level would generally be below the level where the 200mm thickness of alluvium material was encountered. The maximum depth of water that would temporarily be above the clay alluvium would be approximately 6 m. If there was no liner present, with the short periods of time that the clay alluvium would have water against it and the low head of water, it is unlikely that steady state conditions would develop. That is, the movement of water through the alluvium from the storage would be minimal. The gypsum stabilised clay liner will increase the time for water to contact the clay alluvium and therefore reduce the likelihood that the alluvium will saturate.

A cross section of the dam showing the location of the alluvial material and the storage is shown in Figure 2.2 below. This figure includes the clay liner.

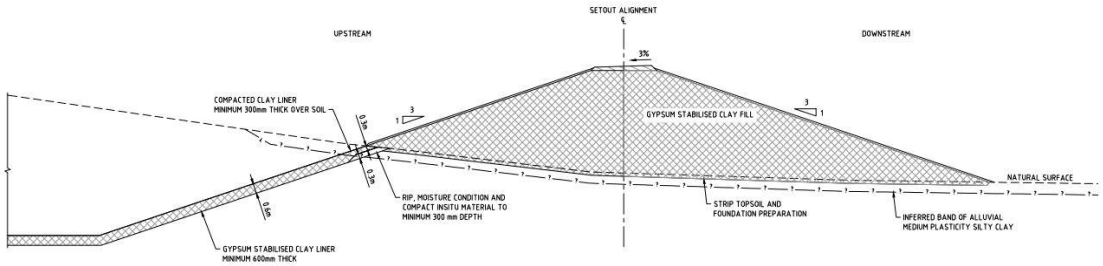

Figure 2.2 Dam cross section and alluvium

2.2 CLAY LINER MATERIAL

The material specified by WSP, based on dam engineering industry practice, shall meet the following minimum requirements to be used in the compacted clay liner and embankment for Dry Creek East Dam:

- minimum plasticity index of 20%
- particle size grading of at least 30% passing 0.075 mm sieve
- gypsum added and mixed at a minimum of 3% by dry weight using gypsum that is at least 80% pure and a finely ground product with at least 90% passing 1 mm sieve

2.3 PREVIOUS ENGINEERED CLAY LINERS

There are several existing examples of dams in the Hunter Valley where WSP adopted a similar design approach to the above for a clay liner where the foundation material was similar or more permeable. These dams are a similar scale to Dry Creek East Dam and we have not been made aware of any issues with regard to the clay liners for these dams. One example is Dam 14N at Hunter Valley Operations that was constructed on overburden emplacement in 2006 and is still operating to store and transfer water.

3. FLOODING

The Office of Environment and Heritage's submission included two queries with regard to flooding. The Surface Water Impact Assessment, prepared by WRM Water and Environment Pty Ltd in July 2013, for the Bengalla Continuation of Mining Project application assessed impacts related to flooding for the Hunter River and Dry Creek catchment. That report included an assessment that there is not expected to be impact on the behaviour of flood flows in the Hunter River for the 1 in 100 year event based on the 1955 flood event. Since then the river has been regulated by the construction of Glenbawn Dam and hence the expected extent of the Hunter River would be further reduced. This Modification does not include activities that would vary that assessment.

The re-routing of Dry Creek was included and assessed as part of the Bengalla Continuation of Mining Project. The enlarged ED1 has approximately the same local catchment as previously and therefore does not modify the previous assessment for the re-routed Dry Creek.

4. GENERAL

WSP has followed standard engineering practice to design a dam to meet Bengalla's operational requirements including mitigating seepage losses from the dam. We trust the information in this letter addresses the issues raised.

Should you have any queries please contact the undersigned.

Yours sincerely

Andrew Russell
Team Manager, NSW Engineering