



BENGALLA MINE

DEVELOPMENT CONSENT MODIFICATION ENVIRONMENTAL ASSESSMENT

for
Bengalla Mining Company Pty Ltd
June 2014

BENGALLA MINE

DEVELOPMENT CONSENT MODIFICATION ENVIRONMENTAL ASSESSMENT

Prepared by:

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June 2014

For:

BENGALLA MINING COMPANY PTY LIMITED
LMB 5
MUSWELLBROOK NSW 2333

EXECUTIVE SUMMARY

OVERVIEW

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

On 7 August 1995, BMC was granted Development Consent (Development Application (DA) 211/93) by the then Minister for Urban Affairs and Planning. This consent authorised the construction and operation of a surface coal mine, coal preparation plant, rail loop, loading facilities and other associated infrastructure. The application for development consent was supported by the '*Environmental Impact Statement for Bengalla Coal Mine*' (Envirosciences, 1993) under which mining operations commenced in 1998.

There have since been four approved modifications to DA 211/93. Bengalla is currently approved to produce up to 10.7 Million tonnes per annum of Run of Mine coal until 2017.

MODIFICATION DESCRIPTION

Bengalla Mining Company Pty Limited is seeking a Modification to its existing Development Consent (DA 211/93) under Section 75W of the *Environmental Planning and Assessment Act 1979* to facilitate the necessary geotechnical investigations to complete the detailed design of future water management infrastructure identified and described in the *Continuation of Bengalla Mine Environmental Impact Statement* (Hansen Bailey, 2013).

The Modification is generally comprised of the following geotechnical activities:

- Test pits at three proposed dam locations associated with the relocation of the BMC Discharge Dam, Hunter River Raw Water Dam and Washery Dam;
- Test pits and two boreholes at the site of the proposed Clean Water Diversion Dam; and
- Test Pits along the pipeline alignment from Clean Water Diversion Dam to the clean water discharge point adjacent to the relocated BMC Discharge Dam.

REGULATORY FRAMEWORK

Bengalla Mining Company Pty Limited was granted Development Consent DA 211/93 by the (then) Minister for Urban Affairs and Planning under section 101 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Pursuant to clause 8J(8) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), this application is made under section 75W of the EP&A Act.

IMPACTS, MANAGEMENT AND MITIGATION

To determine the potential environmental impacts of the activities proposed by the Modification, a review of key impact assessments completed for the *Continuation of Bengalla Mine Environmental Impact Statement* (Hansen Bailey, 2013) was conducted including ecology, Aboriginal archaeology and historic heritage. Additional consideration was given to other potential environmental impacts associated with the proposed activities including air quality, water resources, soils, visual and noise.

The Modification will result in the disturbance of a maximum of 0.1 hectares required to complete all of the test pits along with the two boreholes. All disturbance will be rehabilitated immediately following completion of the geotechnical investigations. Due to the minor nature of the Modification no other significant impacts are anticipated.

The impact assessment undertaken has identified that the environmental impacts of the activities proposed by the Modification will generally not be materially greater than or different to the impacts of the activities approved by Development Consent DA 211/93. In addition to the existing conditions of Development Consent DA 211/93 and the existing management and mitigation measures currently in place, Bengalla Mining Company Pty Limited commits to a number of additional key measures in this Environmental Assessment to ensure that the Modification's environmental impacts are minimised.

If approved, the key additional management and mitigation measures to be put in place for the Modification will include:

- Test pits and boreholes will be restricted to a maximum surface disturbance footprint of 4 m x 4 m;
- No trees with a Diameter at Base Height of greater than 100 mm will be removed for the Modification;
- In order to ensure no impacts will occur to previously identified or unidentified Aboriginal archaeology a due diligence assessment will be completed by a suitably qualified person prior to disturbance and test pits and boreholes relocated as required;
- Geotechnical activities will be confined to the hours of operation between 7:00 am to 5:30 pm on Monday to Friday;
- Appropriate sediment bunding will be placed around each site to prevent any dirty water runoff as required;
- Works will not be conducted during periods of intense rainfall to maintain riparian habitat and to limit surface disturbance;
- The geotechnical activities will not be located within a creek or riparian zone where any it would impede any natural surface flow following rainfall events; and
- All land disturbed by the proposed geotechnical investigations will be rehabilitated to pre-disturbance conditions following the completion of each test pit/bore hole.

ENVIRONMENTAL ASSESSMENT STATEMENT

Submission of Environmental Assessment (EA)

Under section 75W of the *Environmental Planning and Assessment Act 1979*

Modification EA Prepared by

Name: James Bailey
Qualifications: B. Natural Resources, MBA
Address: Hansen Bailey Pty Limited
PO Box 473
SINGLETON NSW 2330

In Respect Of: Bengalla Mine DA 211/93 Modification EA

Applicant Name: Bengalla Mining Company Pty Limited
Applicant Address: LMB 5

MUSWELLBROOK NSW 2333

Proposed modification sought: Modification to DA 211/93 for geotechnical investigations described in **Section 3** of this EA.

Environmental Assessment: An EA for these Modifications is attached.

Certification: I certify that I have prepared the contents of this EA, and to the best of my knowledge:

- It is in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979*;
- Meets the form and content of Clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*;
- It contains all available information that is relevant to the environmental assessment of the activity to which this Modification EA relates; and
- The information contained in this Modification EA is neither false nor misleading.

Signature:



Name: James Bailey
Director

Date: 2 June 2014

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1 OVERVIEW

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 kilometres (km) north-west of Newcastle and 4 km west of the township of Muswellbrook. It is generally bounded by Wybong Road to the north, Roxburgh Road to the west, Overton Road to the east and the Bengalla Link Road and Muswellbrook-Ulan Rail Line to the south.

On 7 August 1995, BMC was granted Development Consent (Development Application (DA) 211/93) by the then Minister for Urban Affairs and Planning. This consent authorised the construction and operation of a surface coal mine, coal preparation plant, rail loop, loading facilities and other associated infrastructure. The application for development consent was supported by the '*Environmental Impact Statement for Bengalla Coal Mine*' (Bengalla 1993 EIS) (Envirosciences, 1993).

There have since been four approved modifications to DA 211/93. Bengalla is currently approved to produce up to 10.7 Million tonnes per annum (Mtpa) of Run of Mine (ROM) coal until 2017 (see **Figure 1**). A summary of Bengalla's approvals history is provided in **Section 2**.

1.2 DOCUMENT PURPOSE

This Environmental Assessment (Modification EA) has been prepared to support an application for the Modification of DA 211/93 under section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (the Modification).

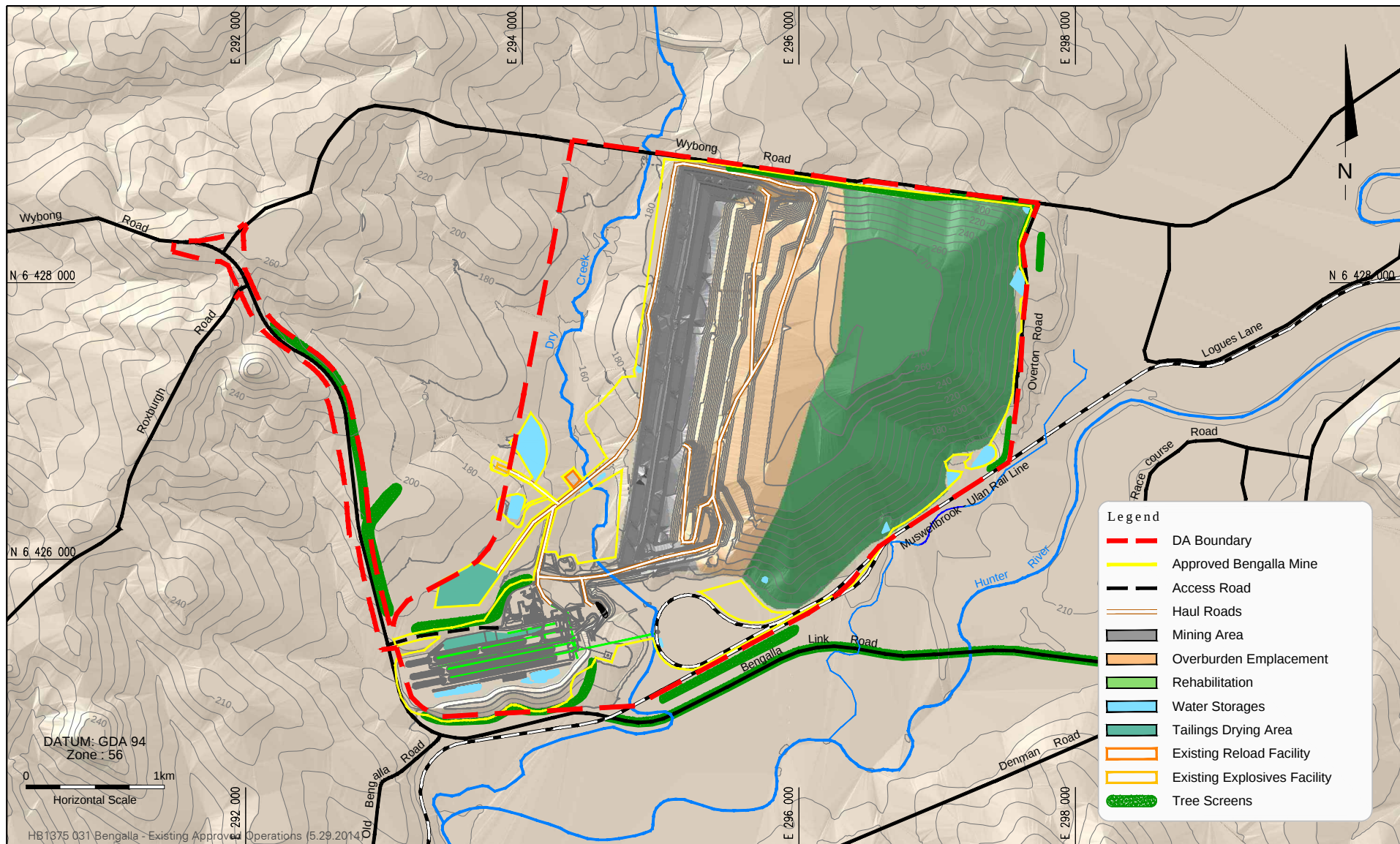
The Modification is being sought to facilitate geotechnical investigations required to complete the detailed design of future proposed water management infrastructure identified and described in the *Continuation of Bengalla Mine Environmental Impact Statement* (Bengalla EIS) (Hansen Bailey, 2013).

A detailed Modification Description is provided in **Section 3**.

1.3 DOCUMENT STRUCTURE

This EA is structured as follows:

- **Section 2** provides a description of the existing and approved operations at Bengalla Mine;
- **Section 3** provides a description of the Modification for which approval is sought;
- **Section 4** describes the regulatory framework relevant to the Modification;
- **Section 5** assesses environmental considerations and outlines management and mitigation measures proposed in respect of the Modification;
- **Section 6** presents BMC's Statement of Commitments related to the Modification; and
- **Sections 7 and Section 8** lists the abbreviations and references used in this EA.



BENGALLA MINE

Existing Approved Operations

FIGURE 1



1.4 MODIFICATION NEED

The Bengalla EIS (Hansen Bailey 2013) assessed the following principal components of the Bengalla Continuation of Mining Project (the BCMP):

- Open cut mining at a rate of up to 15 Mtpa of ROM coal for 24 years;
- Processing, handling and transportation of coal via an upgraded coal handling and preparation plant (CHPP) through the existing rail loop for export and domestic sale;
- Various infrastructure upgrades and relocations;
- Relocation of a section of Bengalla Link Road;
- The temporary diversion of Dry Creek via dams and pipe work with its later permanent re-alignment; and
- A workforce of up to 900 full time equivalent personnel at peak production.

The BCMP EIS describes in detail the proposed upgrades and modifications required to facilitate the water management measures necessary for the BCMP primarily as part of the *Dry Creek Interim Management System and Conceptual Re-Establishment Study* (Parsons Brinkerhoff, 2013) (EIS Appendix X). It was identified that the BCMP would require the relocation of several existing dams including BMC DW1 (300 ML), BMC Hunter River Raw Water Dam (5 ML) and Washery Dam (25 ML).

A fundamental component of the *Dry Creek Interim Management System and Conceptual Re-Establishment Study* (Parsons Brinkerhoff, 2013) includes the construction of CW1 north of Wybong Road to prevent water from inundating the mining area of the BCMP. CW1 has been designed to capture the runoff generated upstream of its location from a 1 in 200 year Average Recurrence Interval (ARI), 72 hour storm prior to passing under Wybong Road and onto BMC land via a pipeline to the Hunter River.

Due to the recent advancement of mining under DA 211/93, the relocation of three existing dams (BMC DW1, Hunter River Raw Water Dam and Washery Dam) and the construction of CW1 will be required to commence immediately following the determination of the BCMP EIS. It is necessary that BMC gather the required engineering fieldwork data and finalise the detailed design of the Dry Creek Diversion and Interim Management System in advance of the determination of the BCMP.

Further details on the Modification are provided in **Section 3**.

2 APPROVED OPERATIONS

This section includes a description of the approved operations at Bengalla Mine.

2.1 PLANNING APPROVALS

2.1.1 Original Approval

On 7 August 1995, BMC was granted development consent DA 211/93, which allowed for the “Construction and operation of a surface coal mine, coal preparation plant, rail loop, loading facilities and associated facilities”. DA 211/93 authorised the following:

- Extraction of coal within the 21 year coal extraction limit until 2017;
- Maximum ROM coal production of 8.7 Mtpa;
- Maximum reserve of 147 Mt of ROM coal;
- Coal mining using dragline, excavator / shovel mining methods and a truck fleet;
- Open cut strip mining progressing from east to west;
- OEA to a maximum height of Reduced Level (RL) 240 m AHD;
- Construction workforce of approximately 510 employees;
- Permanent workforce of approximately 300 employees; and
- Construction and operation of the CHPP and associated facilities, rail loop and loading facilities, bathhouse and administration buildings and other coal mining related facilities.

The original DA 211/93 was supported by the Bengalla 1993 EIS.

Since original approval there have been four modifications to DA 211/93 as described below.

2.1.2 Modification 1

DA 211/93 (Modification 1) was granted on 9 November 2006 providing approval for the following:

- Increase in the maximum height of the final landform height from RL 240 m to RL 270 m;
- Increase in the maximum allowable annual production 10.7 Mtpa of ROM coal and
- Various Infrastructure upgrades and relocations to facilitate increased production.

2.1.3 Modification 2

DA 211/93 (Modification 2) was granted on 6 December 2007 providing approval for the following:

- Extending open cut coal mining operations into the ‘Wantana Extension’
- Minor infrastructure extensions and relocations.

2.1.4 Modification 3

DA 211/93 (Modification 3) was granted on 22 July 2008 providing approval for the following:

- Construction of the Bengalla Link Road Stage 2 on an alternative alignment to that originally approved; and
- Deferral of the relocation of the ROM hopper and associated facilities from their existing location to a site adjacent to the CHPP.

2.1.5 Modification 4

DA 211/93 (Modification 4) was granted on 7 October 2011 providing approval for the following:

- Acceleration of mining operations in the Wantana Extension; and
- Implementation of the southern overburden emplacement area.

Mining operations approved under DA 211/93 (as modified) occur within a number of mining authorities held by BMC, the status of which is shown in **Table 1**. BMC holds the other key ancillary environmental licences and approvals to conduct its mining and associated activities at Bengalla Mine which are also summarised in **Table 1**.

Table 1
Licences and Approvals

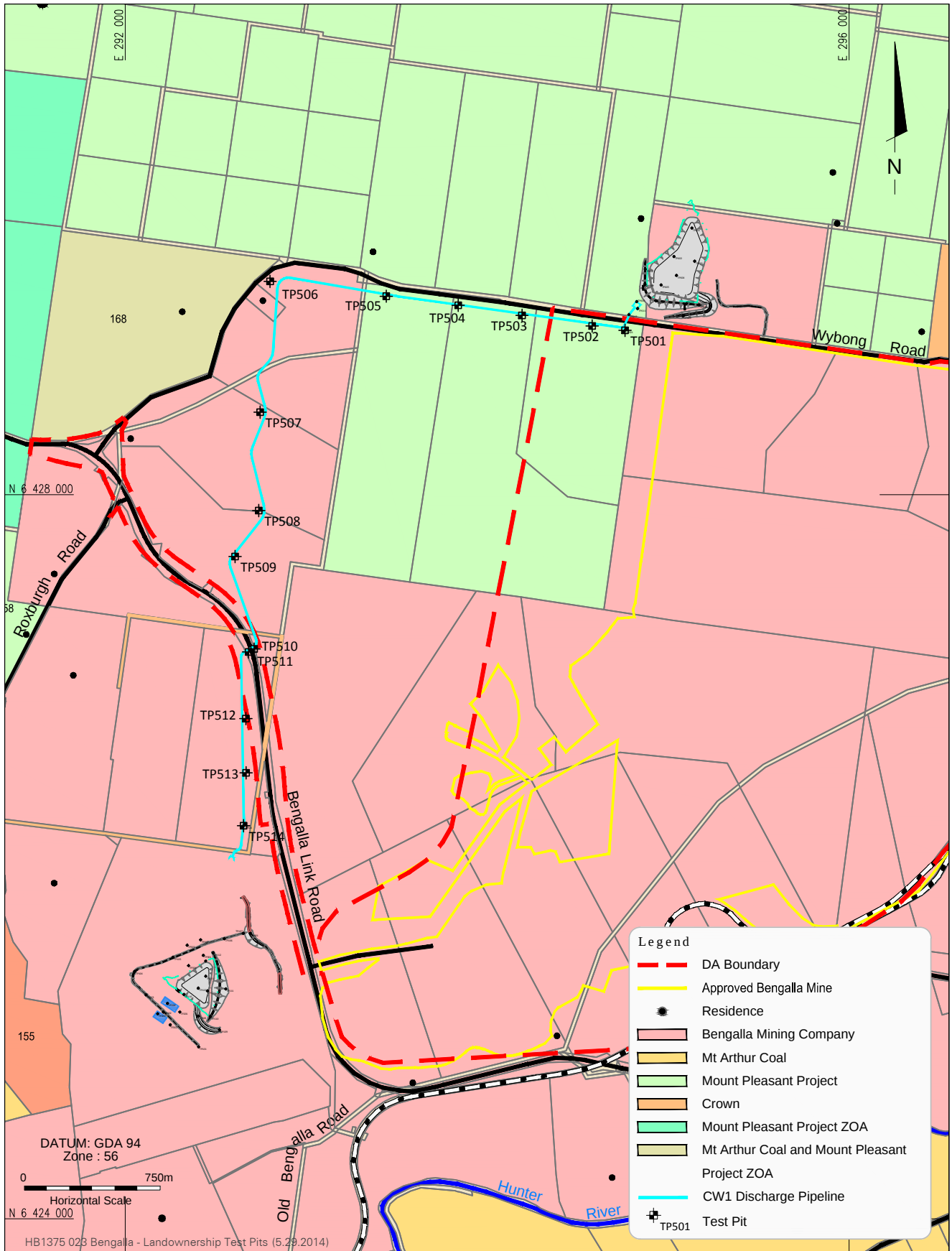
Approval	Description	Duration	Authority
DA 211/93	Development Consent	07/08/95 – 07/08/17	DP&E
DA 211/93 (Modification 1)	Development Consent	09/11/06 – 07/08/17	DP&E
DA 211/93 (Modification 2)	Development Consent	06/12/07 – 07/08/17	DP&E
DA 211/93 (Modification 3)	Development Consent	22/07/08 – 07/08/17	DP&E
DA 211/93 (Modification 4)	Development Consent	07/11/11 – 07/08/17	DP&E
DA 273/2006	Development Consent Explosives facility	06/09/06 – Perpetuity	MSC
Mining Lease 1397	Mining Lease	27/06/96 – 27/06/17	DTIRIS – DRE
Mining Lease 1450	Mining Lease	11/06/99 – 11/06/20	DTIRIS – DRE
Mining Lease 1469	Mining Lease	05/06/00 – 05/06/21	DTIRIS – DRE
Mining Lease 1592	Mining Lease	19/04/07 – 19/04/28	DTIRIS – DRE
AL 13	Assessment Lease	20/12/06 – 19/12/11*	DTIRIS – DRE
A 438	Exploration Licence	18/08/09 – 07/05/14*	DTIRIS – DRE
EPL 6538	Environmental Protection Licence	11 September (anniversary)	NSW Office of Environment and Heritage (OEH)
C 98/2152	Bengalla Mine Operations Plan	01/01/13 – 26/06/15	DTIRIS – DRE

** Renewal Application lodged and pending.*

2.1.6 Land Ownership

The ownership of land within and surrounding the DA Boundary with respect to the Modification is shown in **Figure 2**.

The land to which this Modification applies is located on land owned wholly by BMC and the Bengalla Joint Venture partners, and Coal & Allied (held for the Mount Pleasant Project). The land to the south of Bengalla is held by Hunter Valley Energy Coal for the Mt Arthur Coal Mine.



BENGALLA MINE

Land Ownership & Test Pits

FIGURE 2

2.1.7 Mining Operations

Bengalla is an open cut coal mining operation where mining advances in a westerly direction based on dragline strips approximately 60 m in width. Overburden is removed by two methods; a truck and excavator operation and through the use of a dragline.

Mining operations at Bengalla commenced in October 1998 with the first coal exported in April 1999. A total of 31 strips will be mined within the currently approved DA Boundary.

2.1.8 Coal Handling and Transport

ROM coal is transported via haul trucks to the ROM hopper, where it is fed into the CHPP for processing. The CHPP is designed to maximise resource recovery and yields of in excess of 75% product coal from the ROM coal processed is regularly achieved. Bengalla's CHPP utilises a ROM coal stockpile and two product coal stockpiles as part of its handling and preparation process with a total approved capacity of 1,035,000 t.

After processing is completed, product coal is conveyed to the rail load out facility. Bengalla produces a thermal coal for both the export market (low ash export grade between 12% to 13% ash content) and domestic market (higher ash domestic coal product usually below 27% ash). Most of the product coal is transported to the Port Waratah Coal Loader at Newcastle for export.

2.1.9 Environmental Management System

Operations at Bengalla are conducted in accordance with the Bengalla Environmental Management System (EMS), which is certified to ISO 14001 standards. The Bengalla EMS was certified in 1997, making Bengalla the first coal mining operation in the world to achieve this level of accreditation.

The EMS is designed so that BMC can effectively manage its environmental issues, ensure compliance with regulatory requirements, continually improve its environmental performance and satisfy the expectations of stakeholders.

A key component of the EMS is the Bengalla Environmental Monitoring Program (EMP). The EMP includes a comprehensive air quality, meteorological, noise, blast and water quality monitoring program, which is outlined in **Table 2** and details procedures for BMC to effectively monitor the environmental performance of its operations. The EMP has been developed in accordance with Bengalla's Environmental Protection Licence (EPL) 6538 and conditions associated with DA 211/93.

Table 2
Environmental Monitoring Network

Category	Parameter	Program
Air Quality	TSP	5 HVAS
	PM ₁₀	4 HVAS
	Dust Deposition	29 Depositional Dust Gauges
	Real Time Air Quality Monitors	4 Locations
Meteorological Monitoring	Meteorological Station	1 Location
	Temperature Inversion Tower	1 Location
Noise Monitoring	Attended Noise Monitoring	4 Locations
Blast Monitoring	Fixed Blast Monitor	11 Locations
Water Quality	Surface Water	9 Locations
	Groundwater	35 Locations

3 MODIFICATION DESCRIPTION

This section provides a description of the Modification including the location for the test pits and boreholes required to complete the detailed design of future required water management infrastructure.

3.1 MODIFICATION OVERVIEW

BMC is seeking a Modification to its existing Development Consent (DA 211/93) under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to facilitate the necessary geotechnical investigations to complete the detailed design for the proposed relocation and creation of future water reticulation facilities (the Modification) as shown on **Figure 3** to **Figure 5**.

The Modification is generally comprised of the following geotechnical activities:

- Test pits at three proposed dam locations associated with the relocation the BMC Discharge Dam (BMC DW1), Hunter River Raw Water Dam and Washery Dam;
- Test pits and two boreholes at the site of the proposed Clean Water Diversion Dam (CW1); and
- Test Pits along the pipeline alignment from CW1 to the clean water discharge point adjacent to BMC DW1.

The modification is of a minor nature and will result in the disturbance of a maximum of 0.1 ha for all test pits and the two boreholes. All disturbance will be rehabilitated immediately following completion of the geotechnical investigations.

An indicative layout depicting the location for the test pits and boreholes is provided in **Figure 3**. As shown on **Figure 2** all proposed activities are located on land owned by BMC or Coal & Allied.

3.2 GEOTECHINICAL INVESTIGATIONS

3.2.1 Data Collation

In order to assess the nature of the soil and substrate present along the pipeline corridor and at the location of each of the proposed dam sites, a geotechnical investigation is proposed. The geotechnical investigations will include the sampling of soil profiles in an area no greater than 4 m x 4 m. This will comprise a series of test pits (approximately 51) and two boreholes which will determine the character of the soil and rock materials below the embankment footprints and within the storage areas to finalise the embankment design, cut-off trench depth, quantities, blasting limitations and provide detailed information for contractors on borrow material and suitability for construction. Test pits along the pipeline alignment are require to ensure that the final alignment meets appropriate blasting specifications to account for the location of the future mining operation.

The location of test sites will be selected to supplement and further enhance BMC's understanding of the materials present and any potential design limitations that may arise. The geotechnical works will be conducted by Parsons Brinkerhoff and are estimated to take approximately two weeks to complete. The geotechnical activities associated with the Modification are presented in **Table 3**.

Table 3
Indicative Geotechnical Investigations

Location	Test Pits	Boreholes
BMC DW1	17	N/A
Hunter River Raw Water Dam	8	N/A
Washery Dam		
CW1	12	2
Pipeline Corridor	14	N/A
Total	51	2

3.2.2 Test Pits

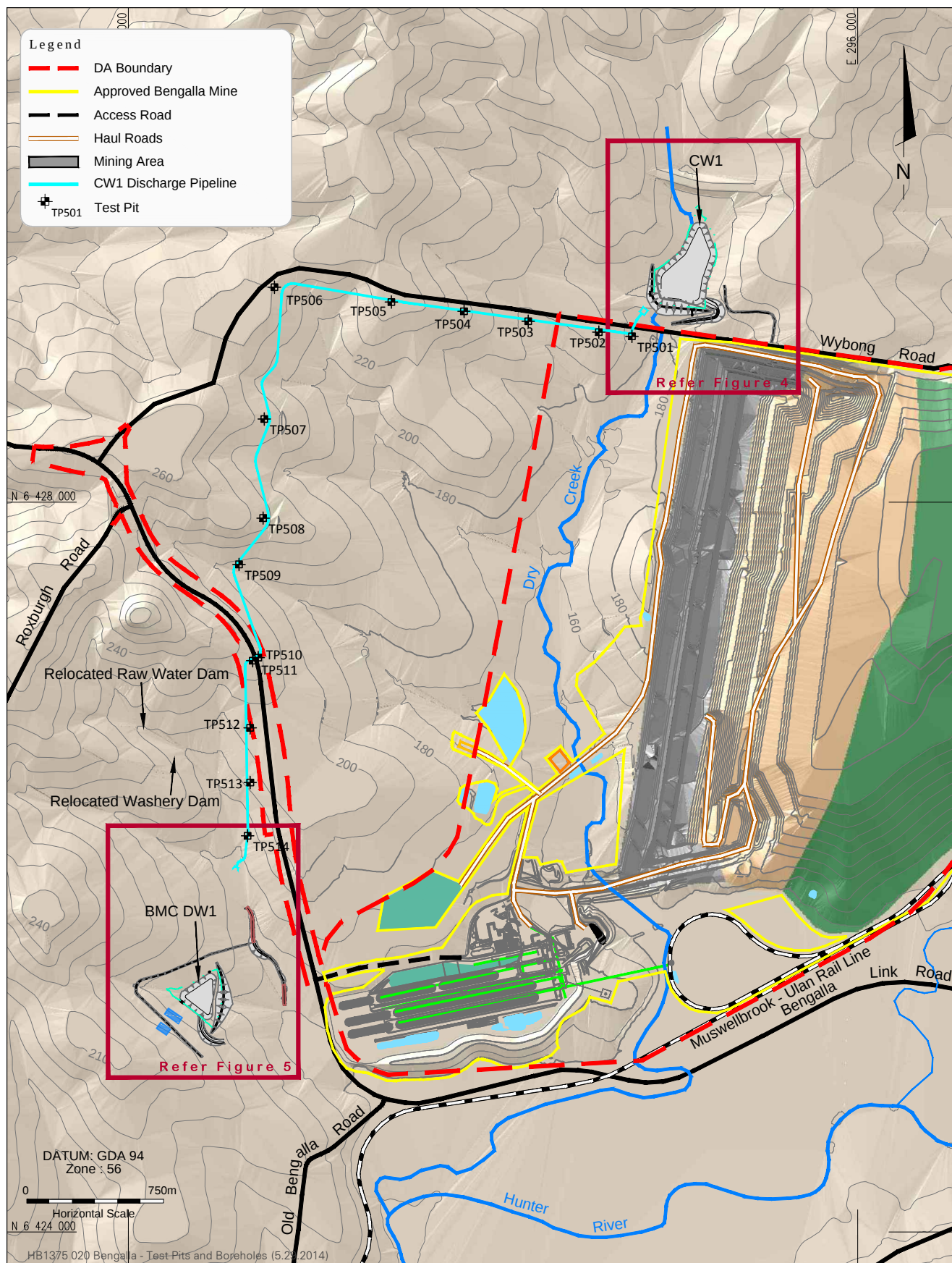
The work proposed for each test pit involves the following:

- Each test pit is anticipated to be contained within approximately 4 m x 4 m surface disturbance area;
- Test pits will be excavated to a depth between 3 and 5 metres depending on the structure, or prior refusal on rock using a backhoe or excavator;
- Test pits will be positioned in the proposed storage areas of the dams, in the spillways and along the embankment alignments as shown on **Figure 4** and **Figure 5**;
- The pipeline and Wybong Road crossing test pits are indicative only as a final route for the pipeline will be confirmed on completion of the power options for CW1 however will be generally as depicted on **Figure 3**; and
- Rehabilitation of disturbance following the completion of activities through backfilling the test pit with removed spoil will be nominally compacted using the bucket, track rolled and then topsoiled using soil stripped at commencement of each excavation.

3.2.3 Boreholes

As discussed in **Section 3.2.1** two boreholes are required for the Modification which are associated with the final engineering design of CW1. The work proposed for the boreholes involves:

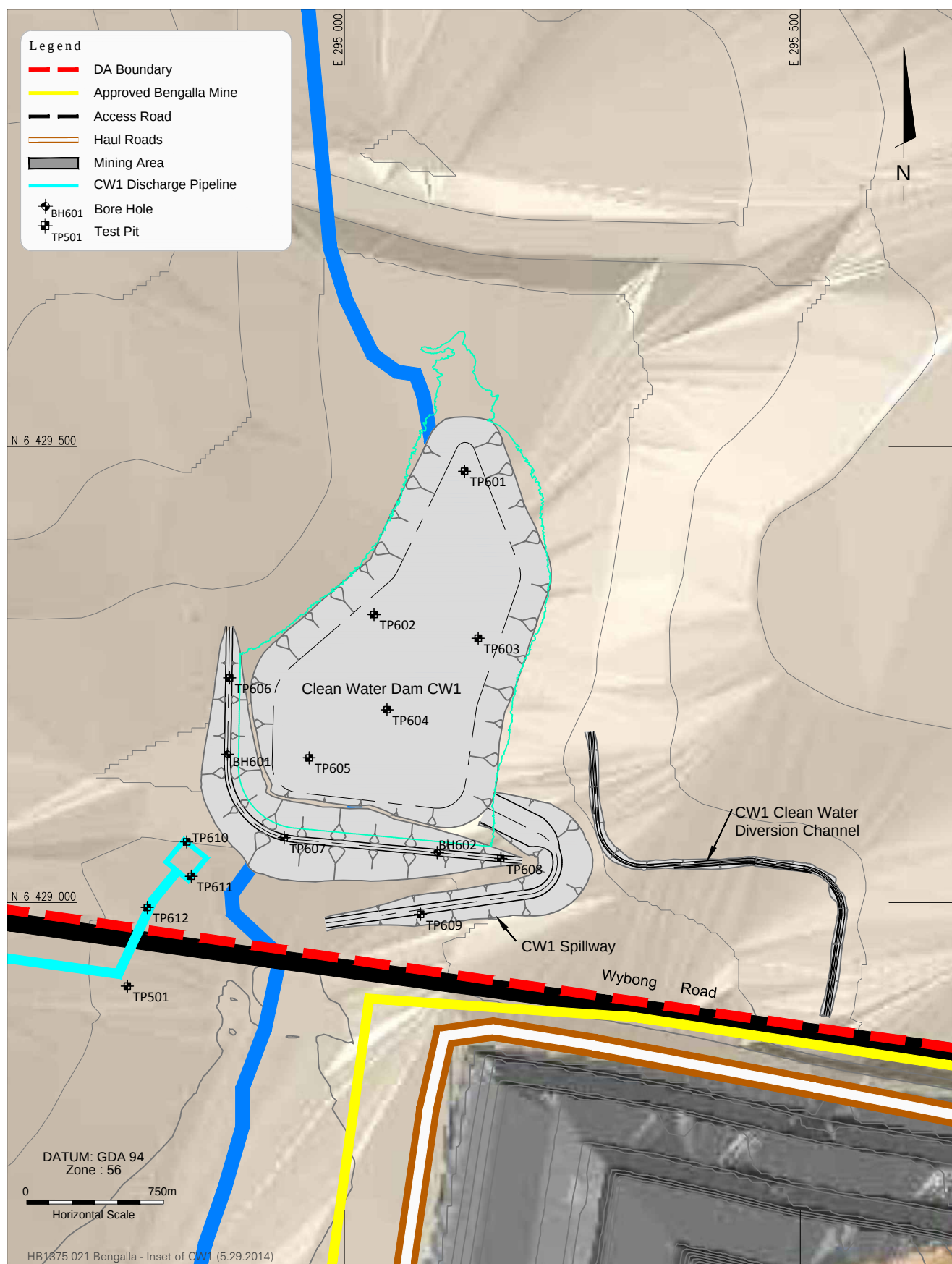
- Drilling of two boreholes with a truck mounted drill rig at the CW1 dam abutments to confirm the depth of residual soils and rock at these locations;
- Each borehole (100 mm diameter) is anticipated to be contained within a 10 m x 10 m area which allows for the drill rig and support vehicle;
- Boreholes will be 100 mm in diameter and augured to refusal and then cored into rock using NMLC coring techniques;
- Boreholes will be drilled to 12 m depth or prior intersection with medium to high strength rock;
- Drill cores will be boxed, photographed point load tested;
- Packer testing will be undertaken at one location in each of the boreholes; and
- Rehabilitation of all disturbance following the completion of activities by backfilling the borehole with removed spoil and then covering the borehole (100 mm diameter) with topsoil.



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Indicative Test Pit and Borehole Locations

FIGURE 3



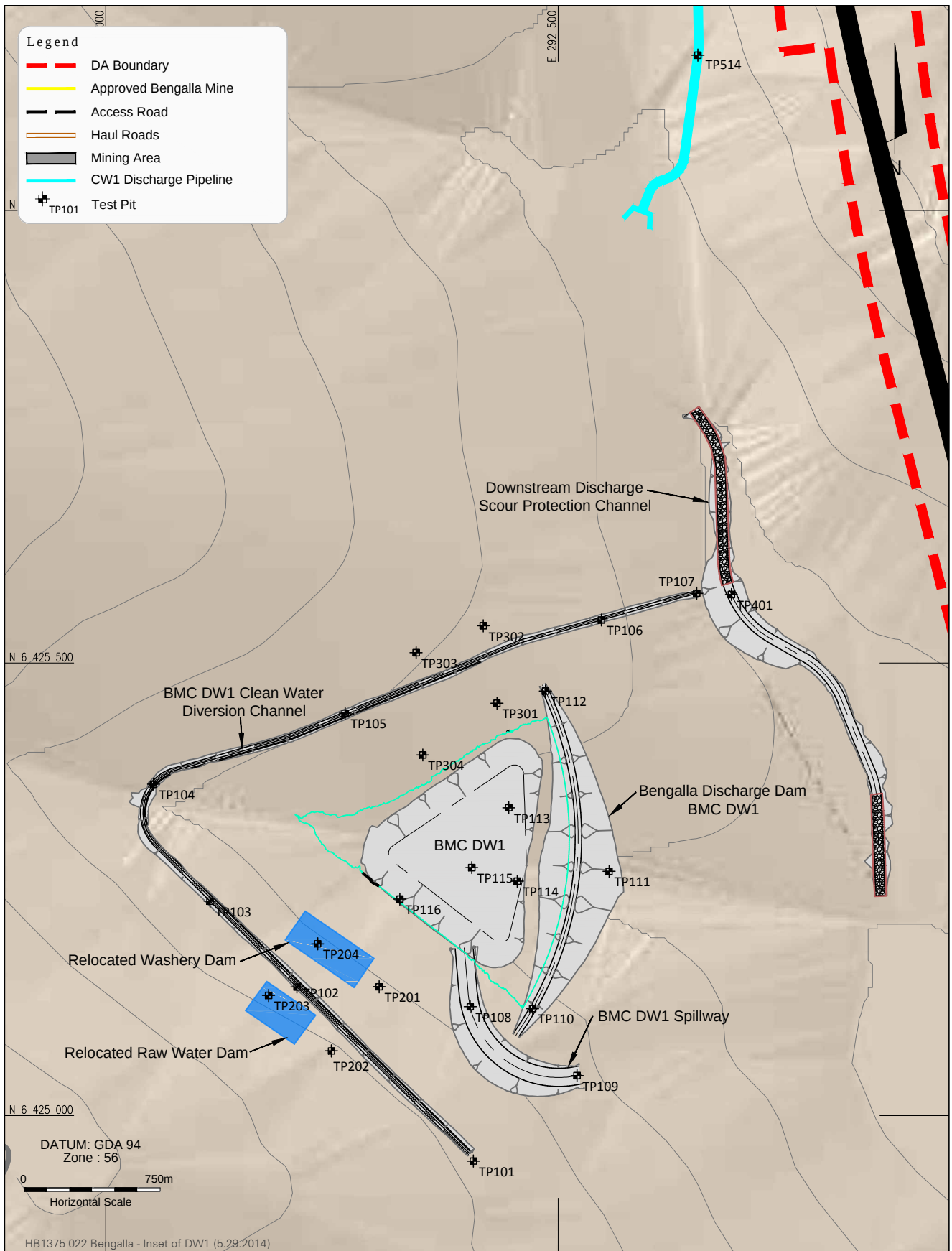
BENGALLA MINE



Hansen Bailey
ENVIRONMENTAL CONSULTANTS

CW1 Test Pit and Borehole Locations

FIGURE 4



BENGALLA MINE

DW1 Test Pit Locations

FIGURE 5



4 REGULATORY FRAMEWORK

This section briefly describes the regulatory framework under which Bengalla Mine is approved to operate as relevant to the Modification. It discusses the ability of the Minister for Planning and Infrastructure to modify DA 211/93 under section 75W of the EP&A Act and the approvals process.

4.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

4.1.1 Existing Development Consents

On 7 August 1995, the (then) Minister for Urban Affairs and Planning granted DA 211/93 for the Bengalla Mine under section 101 of the EP&A Act. DA 211/93 authorises the undertaking of mining operations on site until 27 June 2017.

4.1.2 Power to Modify

Clause 12 of Schedule 6A of the EP&A Act provides that section 75W (as in force immediately prior to the repeal of Part 3A of the EP&A Act) applies to facilitate modifications of approvals referred to in clause 8J(8) of the EP&A Regulation.

Clause 8J(8) of the EP&A Regulation provides that a development consent granted by the Minister under section 101 of EP&A Act is “... *taken to be [an] approval under Part 3A of the Act and section 75W of the Act applies to any modification of such a consent* ...”. Since DA 211/93 was granted under section 101 of the EP&A Act, the development consent may be modified under section 75W of the Act.

4.1.3 Landowner Consent and Notification

Under Clause 8F of the EP&A Regulation, the consent of the landowner is not required for a modification application under section 75W of the EP&A Act for ‘mining or petroleum production’ which is defined under clause 8F(4) as ‘*any activity that is related to mining*’.

Notice of the development application must be given through an advertisement published in a newspaper circulating in the area of the project within 14 days after the making of the application. BMC will give notice to the public in accordance with clause 8F of the EP&A Regulation.

All land which is the subject of the Modification application is owned by either BMC or Coal & Allied.

4.1.4 Section 75W of the EP&A Act

The application for Modification is made under section 75W of the EP&A Act which provides:

- (2) *The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
- (3) *The request for the Minister's approval is to be lodged with the Director-General.*
The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.
- (4) *The Minister may modify the approval (with or without conditions) or disapprove of the modification.*

In the context of approved operations under the existing development consent, the activities that are the subject of this Modification are minor and of no material additional impact.

4.2 ENVIRONMENTAL PLANNING INSTRUMENTS

4.2.1 SEPP (Mining, Petroleum Production and Extractive Industries) 2007

Under clause 7 of *State Environmental Planning Policy Mining, Petroleum Production and Extractive Industries* 2007 (SEPP Mining) the proposed development is permissible with consent under the EP&A Act.

4.2.2 Gateway Process

The requirement for a Gateway Certificate in respect of relevant modification applications for mining and petroleum development comes from clause 20 of Schedule 6A of the EP&A Act.

The requirements apply (under subclause (1) of clause 20) “... *to a request to modify ... mining or petroleum development...*”

Clause 20(2) of Schedule 6A of the EP&A Act defines “mining or petroleum, development” for the purposes of the gateway requirements. That definition excludes areas where a mining lease is not required to be issued to enable the development to be carried out because there is a current mining lease. There is a current mining lease over the areas proposed for the activities in the application which are north of Wybong Road.

Clause 20(3) of Schedule 6A of the EP&A Act provides that “... *mining or petroleum development does not include development carried out on land that is outside (a) the mining area of a proposed mining lease, or (b) the area of a proposed production lease.*”

There is no definition of “mining” in either the EP&A Regulation or SEPP Mining. “Mine” however is defined (as a verb) in the Mining Act 1992 as “... *to extract material from land for the purpose of recovering minerals from the material so extracted or to rehabilitate land*”.

The proposed activities the subject of the application are outside of any area of a proposed mining lease (for BCMP) in which any mining is proposed (i.e. they are within areas proposed to be used purely for water management infrastructure).

Accordingly, there is no requirement for a gateway certificate in order to make this application.

4.3 APPROVALS UNDER OTHER NSW LEGISLATION

4.3.1 Protection of the Environment Operations Act 1997

Section 48 of the *Protection of the Environment Operations Act 1997* (POEO Act) provides that an Environment Protection Licence (EPL) is required in respect of premises at which any “... *scheduled activity is carried on ...*”. BMC holds EPL 6538 in respect to its currently approved mining operations.

Under clause 28 of Schedule 1 of the POEO Act, “*mining for coal*” is deemed to be a scheduled activity. The term “*mining for coal*” is defined to mean “... *mining, processing or handling of coal ...*”. The activities proposed under the modification application do not involve mining, processing or handling of coal.

There is no other activity stipulated in Schedule 1 of the POEO Act which is undertaken as part of the proposed activities under the Modification. Accordingly, an EPL is not required for the proposed activities in the modification.

4.3.2 Mining Act 1992

The proposed activities are small excavations for geotechnical assessments for which no authority is required under the Mining Act.

4.3.3 Native Vegetation Act 2003

Under the *Native Vegetation Act 2003* (NV Act) it is an offence to clear native vegetation without development consent for the clearing. Section 12 of the NV Act prohibits the clearing of native vegetation except in accordance with a Development Consent granted under the EP&A Act or a property vegetation plan. It is not proposed that there will be any prohibited clearing of native vegetation as part of the proposed activities.

4.3.4 National Parks and Wildlife Act 1974

Under section 86 of the *National Parks and Wildlife Act 1974* (NPW Act), it is an offence to harm an Aboriginal object unless authorised by an Aboriginal Heritage Impact Permit (AHIP).

Previous Aboriginal archaeological surveys have determined that there are no Aboriginal objects located within the footprints proposed for the Modification (see **Section 5.2.1**). Therefore, an AHIP is not required for the Modification.

4.3.5 Water Management Act 2000 and Water Act 1912

No water sources regulated under the Water Act 1912 will be affected by the proposed activities.

No water will be taken from water sources regulated under the Water Management Act 2000 and therefore no water access licences will be required.

Wherever works occur within 40 m of the high bank of a watercourse a controlled activity approval will be sought under the Water Management Act unless a relevant exemption applies.

4.4 COMMONWEALTH LEGISLATION

4.4.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

If a proposed action is likely to have a significant effect on one or more Matters of National Environmental Significance, the action is deemed to be a “*controlled action*”. The approval of the Commonwealth Minister for the Environment must be obtained before a controlled action can be carried out.

BMC has reviewed the proposal and is satisfied that with appropriate due diligence the proposal will not constitute a “*controlled action*”. There is therefore no need to refer the proposal under Section 68 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and no need for an approval under Part 9 of the EPBC Act.

5 IMPACTS, MANAGEMENT AND MITIGATION

The potential environmental impacts of the Modification has been assessed as part of this EA. The findings of this assessment as well as a description of the measures that will be implemented to manage and mitigate potential impacts are presented below.

5.1 ECOLOGY

5.1.1 Impact Assessment

An analysis of the vegetation communities and species previously identified in the Ecological Impact Assessment (Cumberland Ecology, 2013) (BCMP Appendix O) was completed for the Modification. The geotechnical activities with respect to the vegetation mapping of the local area is provided on **Figure 6**.

The Modification is largely situated in areas impacted by past agricultural uses which has led to degradation of woodland communities and a predomination of grassland, both exotic and native dominated occurrences, often with scattered or clustered mature trees.

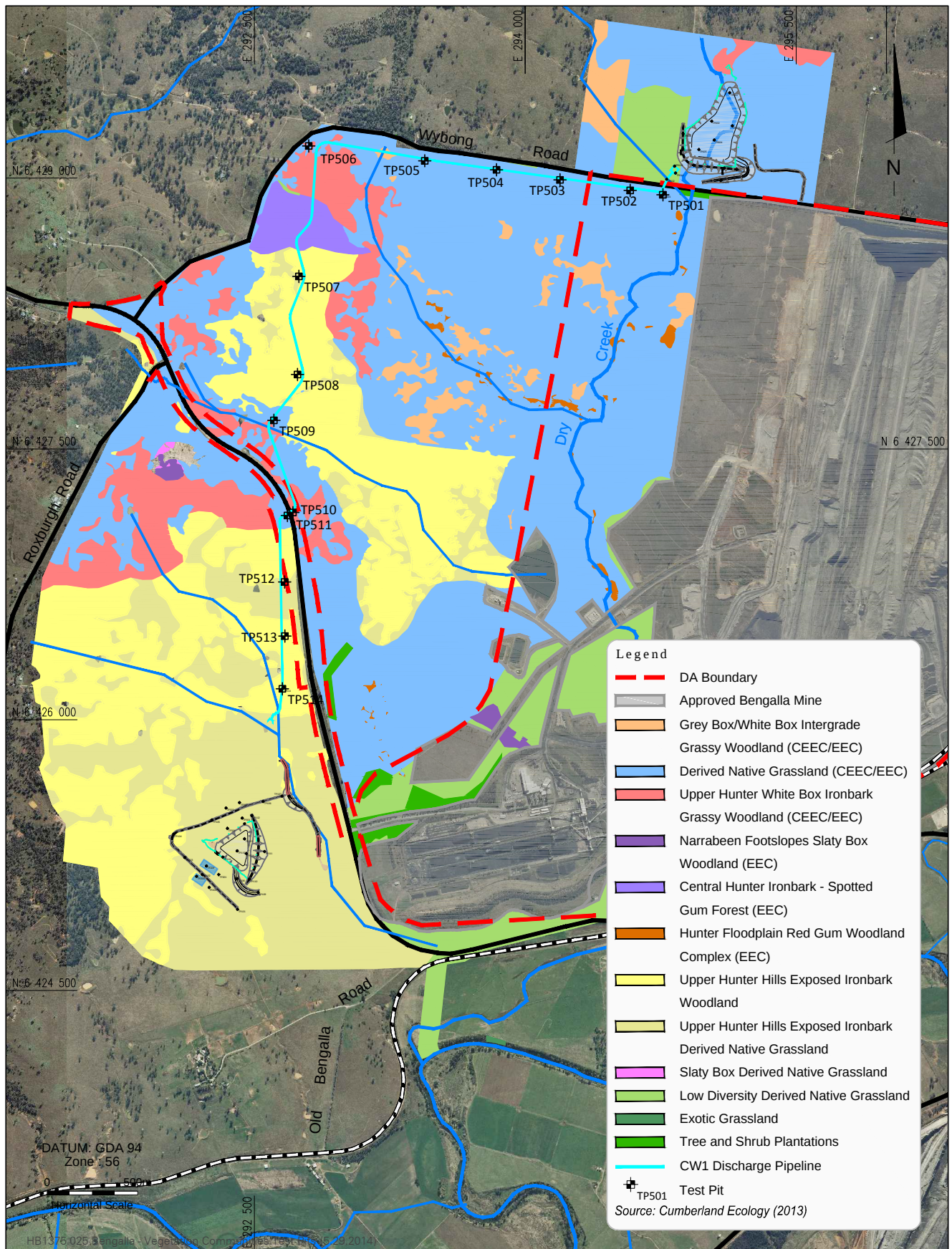
The vegetation mapping has identified that up to 18 of the test pits and the two boreholes will be situated within native grassland with sparse canopy trees including a co-dominance of Grey Box x White Box intergrades (*Eucalyptus moluccana* x *E. albens*) with Narrow-leaved Ironbark (*E. crebra*). This vegetation conforms to the White Box Yellow Box Blakelys Red Gum Grassy Woodland and Derived Native Grassland (referred as Box Gum Woodland). Box Gum Woodland is listed as a Critically Endangered Ecological Community (CEEC) under the EPBC Act and as an Endangered Ecological Community (EEC) under the *Threatened Species Conservation Act 1997* (TSC Act).

Based on a disturbance area of 4 m x 4 m for each test pit proposed to be positioned within C/EEC (noting that the two boreholes require significantly less disturbance) it is estimated that the total impact will be 0.03 ha and hence does not constitute a significant impact to EPBC Act or TSC Act listed communities.

The remaining test pits and boreholes (31) are located within areas of mapped Narrow-leaved Ironbark, do not conform to the C/EEC and is comprised of Upper Hunter Exposed Ironbark Woodland and Derived Native Grassland. Of the remaining test pits and boreholes, three are located within areas of mapped Low Diversity Derived Native Grassland.

Three individual of *Cymbidium canaliculatum* listed as an Endangered Population on the TSC Act have previously been identified in proximity to Bengalla Road. *Cymbidium canaliculatum* is an epiphytic orchid which grows in the hollows and forks of eucalypts and wattles, usually occurring singly or as a single clump, typically between two and six metres above the ground. The sites for the geotechnical activities will be positioned within areas of previously cleared land and will not impact on large remnant trees and as a result will not impact on this species.

One other previously recorded plant species (*Bothriochloa biloba*) which was has recently been delisted from the EPBC Act and TSC Act has been recorded on the edge of Wybong Road. The test pitting and borehole sites have also been positioned to avoid this area as such no TSC or EPBC listed species will be impacted by the Modification.



BENGALLA MINE



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Vegetation Communities & Test Pits

FIGURE 6

5.1.2 Mitigation and Management

Due to the small areas of disturbance proposed by the geotechnical activities, no significant impact to listed C/EEC vegetation communities or species will occur.

In addition, to further ensure impacts are minimised the following general mitigation measures will be implemented for the Modification to avoid significant disturbance to native vegetation and fauna habitat, as follows:

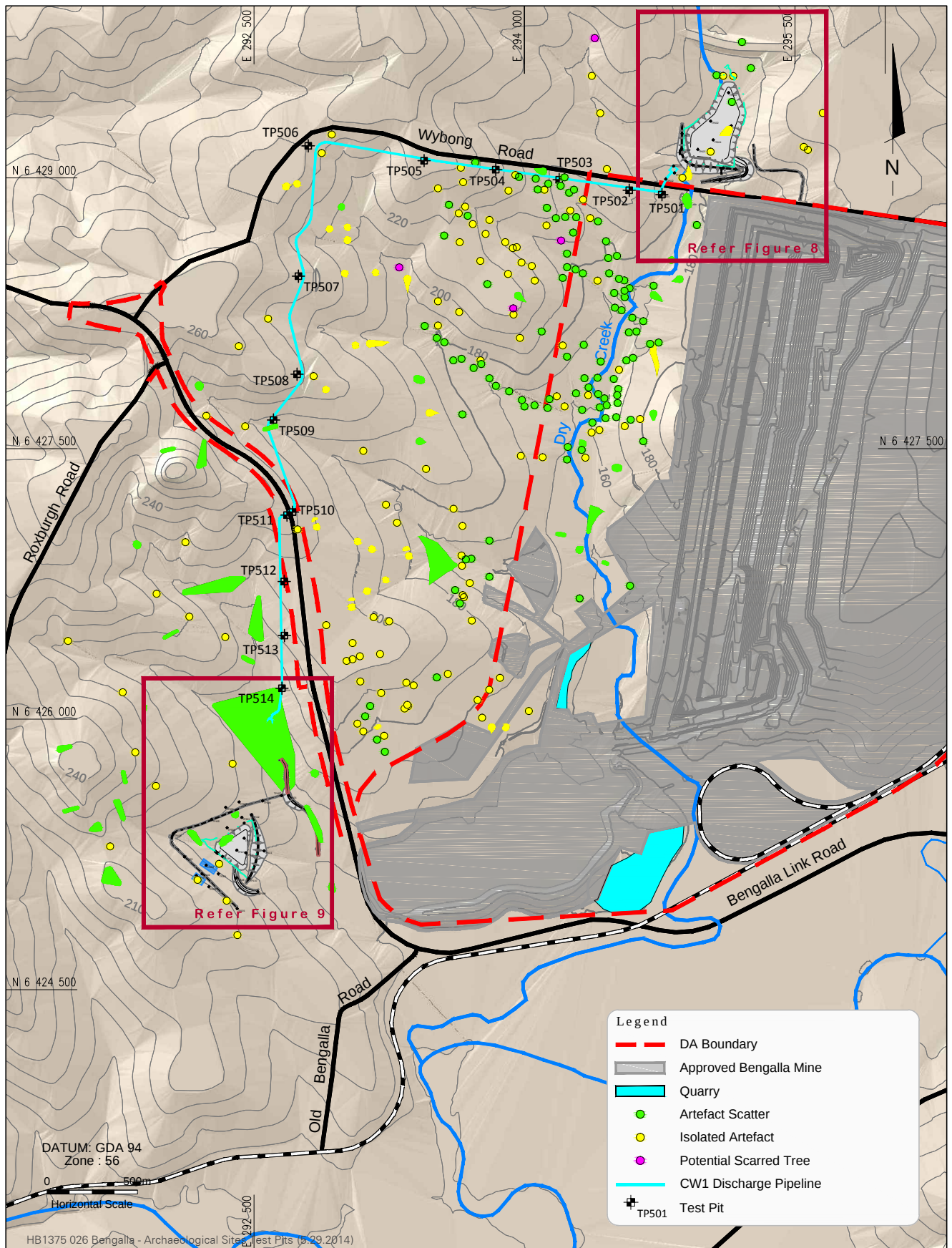
- To the extent practical, access will only take place along existing tracks. Careful navigation across grassland and avoidance of trees and shrubs will be planned and executed where deviation from tracks is required;
- Existing tracks will be identified prior to clearing of any new access tracks. The use of existing cleared tracks will always take preference over clearing new tracks, despite an additional distance;
- Trees with a Diameter at Base Height (DBH) of greater than 100 mm will not be impacted;
- Clearly demarcate the access and the site for the test pit/borehole using appropriate measures (e.g. flagging tape, etc.) to ensure that all disturbance is tightly contained within the designated footprint;
- Ensure that there is appropriate supervision by an appropriate person at all times during the geotechnical investigations;
- All geotechnical sites to be rehabilitated in accordance with the BMC Rehabilitation Management Plan and Ground Disturbance Permit requirements; and
- Communicate the above measures to all contractors and ensure that they are observed.

5.2 ABORIGINAL ARCHAEOLOGY

5.2.1 Impact Assessment

An analysis of the Aboriginal archaeology identified in the Aboriginal Archaeological and Cultural Heritage Impact Assessment (AECOM, 2013a) (BCMP Appendix M) was completed for the Modification. The geotechnical activities with respect to the previously identified Aboriginal archaeology is provided on **Figure 7 to Figure 9**.

The geotechnical activities have been specifically designed to avoid all previously identified Aboriginal artefacts to ensure no impacts occur to any items/place of Aboriginal cultural significance as a result of the Modification.



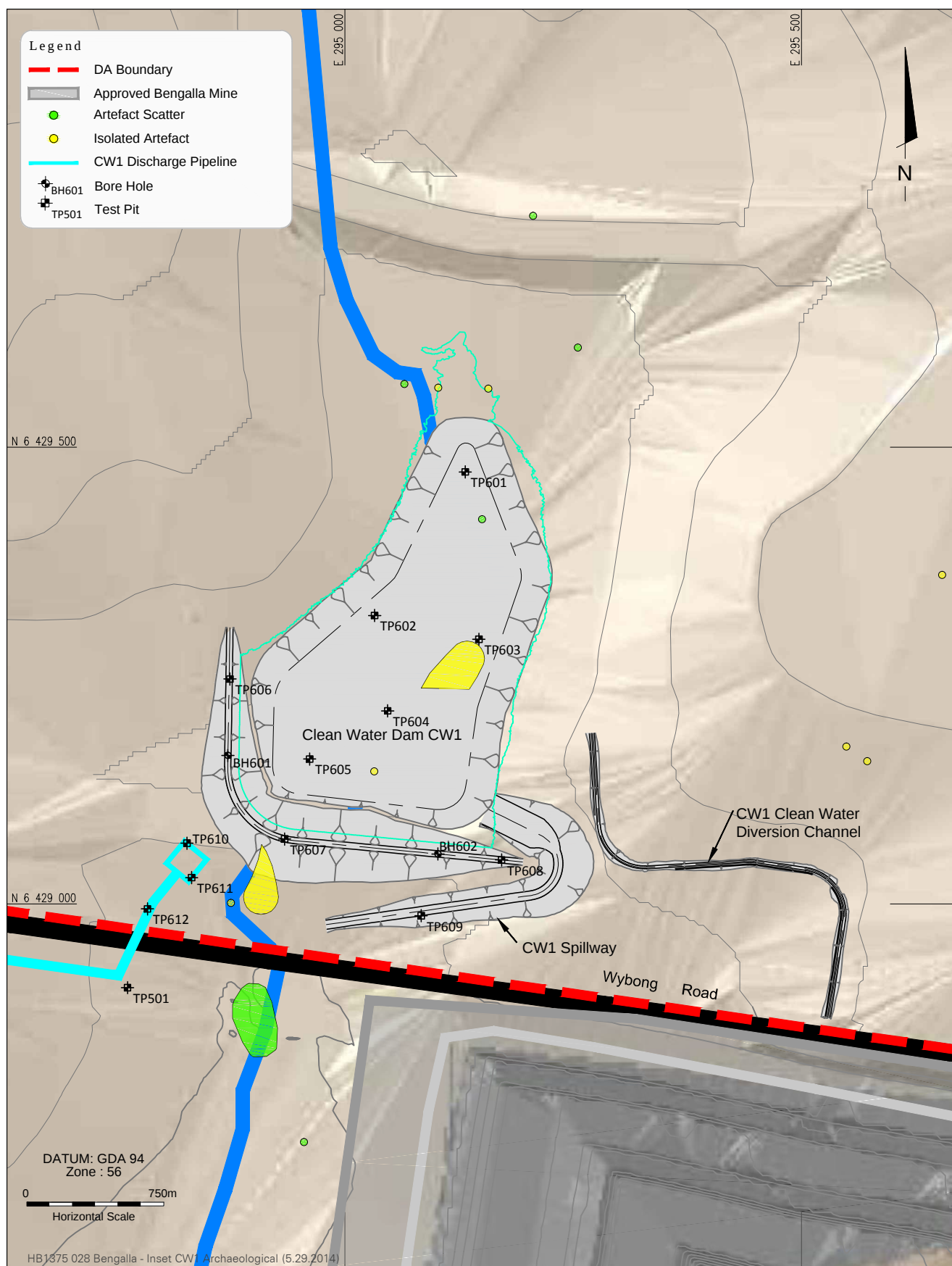
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Aboriginal Archaeological Sites and Test Pits

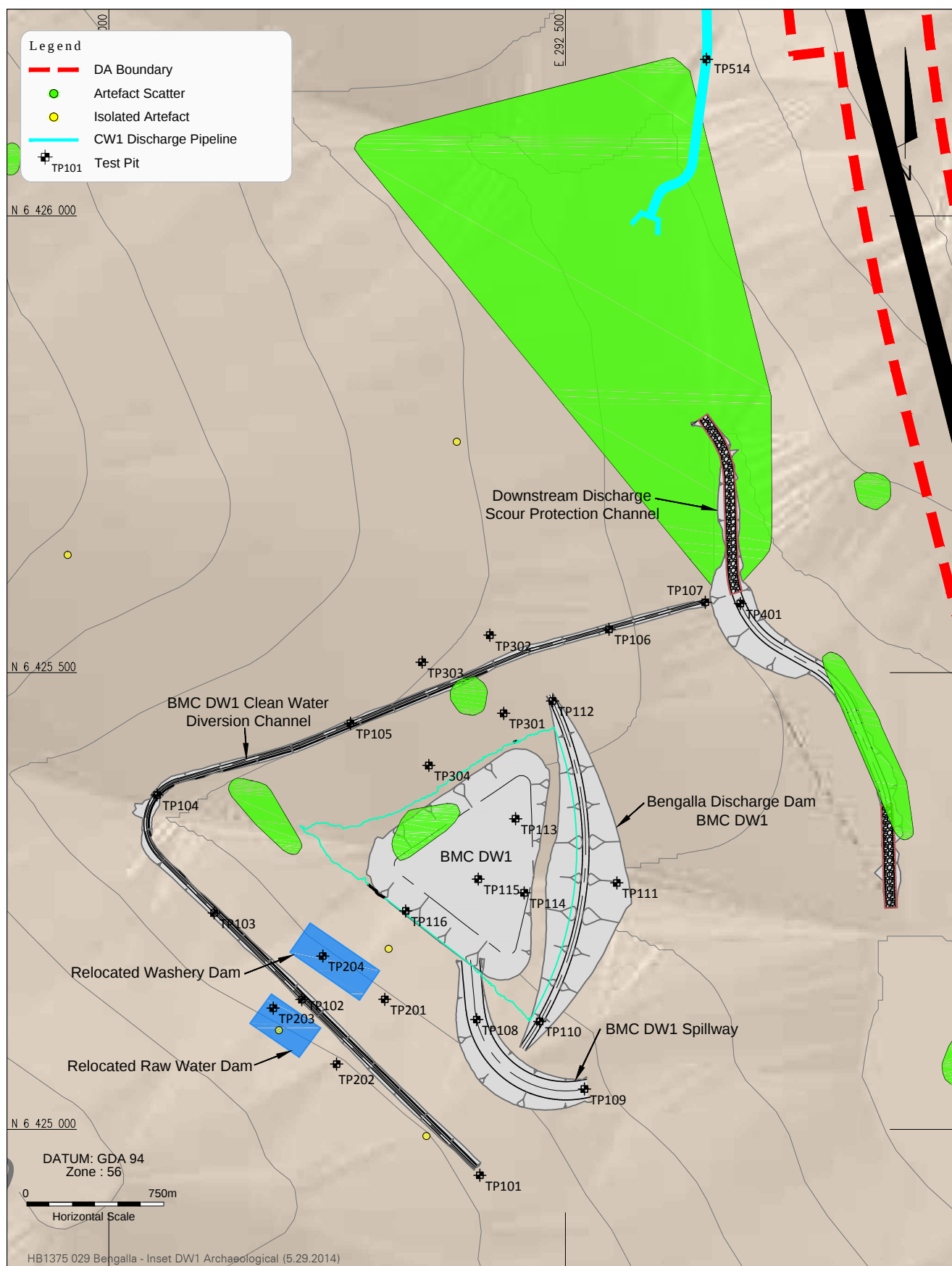
FIGURE 7



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BENGALLA MINE
CW1 Aboriginal Archaeological
Test Pit and Borehole Locations

FIGURE 8



5.2.2 Mitigation and Management

In order to ensure no impacts to Aboriginal archaeology the following mitigation measures for the Modification will be implemented:

- In order to ensure no impacts will occur to previously identified or unidentified Aboriginal archaeology a due diligence assessment will be completed by a suitably qualified person prior to disturbance and test pits and boreholes relocated as required;
- Access to each site will be via existing tracks where possible and should deviation be required then the suitably qualified person will ensure access to the site does not impact on any previously recorded Aboriginal artefacts;
- Access to the test pit/borehole sites will be clearly demarcated using appropriate measures (e.g. flagging tape, etc.) to ensure that all disturbance is tightly contained within the designated footprint;
- Should an item / place of Aboriginal heritage be identified within a test pit / borehole site, activities will cease, appropriate measures will be taken to ensure no harm to the object or place has occurred. Any Aboriginal heritage material found would be managed in accordance with the existing BMC Aboriginal Cultural Heritage Management Plan;
- Ensure that there is appropriate supervision by an appropriate person at all times during the geotechnical investigations; and
- Communicate the above measures to all contractors and ensure that they are observed.

5.3 AIR QUALITY

5.3.1 Impact Assessment

The existing air quality within the area is generally typical of a semi-rural environment dominated by mining operations, grazing lands and agriculture.

The Modification is unlikely to impact existing air quality within the locality as there are few traffic flows over unsealed access roads and small areas of surface disturbance at geotechnical sites. Due to the short term nature and limited disturbance proposed by the Modification, it is not expected to significantly decrease the air quality of the local area.

5.3.2 Mitigation and Management

Best-practice dust management techniques will be applied to the geotechnical activities, including:

- As part of job-site induction prior to arrival on-site, awareness briefings of air related issues will be provided to relevant staff;
- Completion of relevant internal BMC documentation including; Environmental Checklists, Risk Assessments and Ground Disturbance Permit prior to commencement of the geotechnical activities;
- All equipment will be examined by the Maintenance Department and daily pre-start inspections undertaken;
- Limiting traffic to the existing access tracks to access sites, where practicable;

- Speed limits on access tracks and roads will be adhered to at all times to minimise dust generation;
- In the event of unacceptable visible dust being generated in trafficked areas, a water cart (or similar) will wet down the access track;
- Limiting the test pit footprint to a small area (4 m x 4 m) at each location, which will be managed to minimise soil disturbance;
- Site access points and access tracks will be situated as far as possible away from residential receivers; and
- Timely rehabilitation of each drill site upon completion.

5.4 NOISE AND VIBRATION

5.4.1 Impact Assessment

The Modification will not result in any significant change to the current noise emissions generated by the operation. The location of receivers in relation to the proposed drilling sites is shown on **Figure 2**. The location of the nearest private resident is located approximately 1.3 km west of TP 104.

5.4.2 Mitigation and Management

BMC will ensure management practices currently implemented to Bengalla are applied to the geotechnical activities and that noise generated by the Modification does not exceed criteria currently stipulated in DA 211/93.

Best-practice management and mitigation techniques will be employed to minimise noise and vibration impacts, including:

- As part of job-site induction prior to arrival on-site, awareness briefings of noise related issues will be provided for relevant personnel;
- Geotechnical investigations will only occur between the hours of 7:00 am to 5:30 pm on Monday to Friday;
- All equipment used on site will be maintained in good working order;
- Pre-start inspections will be made on all equipment and noise control devices;
- The quietest work methods, plant and equipment will be selected from that available;
- Vehicles will be kept properly serviced and fitted with appropriate mufflers;
- The use of exhaust brakes would be eliminated, where practical; and
- Where practical, machines will be switched off when not being used, rather than left idling for prolonged periods.

5.5 WATER RESOURCES

5.5.1 Impact Assessment

The 3rd order ephemeral stream, Dry Creek is located in proximity to the test pit and bore hole sites. Dry Creek flows generally southwards through the central portion of the Project Boundary before joining into the Hunter River to the south-west of Bengalla Mine. Due to its relatively small catchment area of approximately 18 km², Dry Creek often maintains zero flow which is interrupted sporadically by short periods of discharge during prolonged or heavy rainfall.

The geotechnical works are not anticipated to impact on the hydrologic, hydraulic and geomorphic functions of Dry Creek or any of its smaller tributaries.

5.5.2 Mitigation and Management

Best-practice water management along with erosion and sediment control techniques will be applied to the geotechnical activities, including:

- Appropriate sediment controls will be placed around each site to prevent any dirty water runoff;
- The geotechnical activities will not be located within a creek or riparian zone where it would impede any natural surface flow following rainfall events;
- Works will not be conducted during periods of intense rainfall to maintain riparian habitat and to limit surface disturbance;
- Soil excavation will be limited to the extent required to complete the geotechnical investigations at each site. The excavated area at each site will be appropriately bunded and will be designed to divert overland flows away from the site;
- Each test pit will be excavated and the relevant assessments conducted and the topsoil replaced within one working day. This rapid assessment of each test pit will reduce the potential for sediment transfer;
- All completed boreholes will be filled from bottom of hole to surface to avoid any migration of groundwater; and
- No refuelling of equipment will be undertaken at the site.

5.6 SOILS

5.6.1 Impact Assessment

No significant impact to soils as a result of the geotechnical investigation will occur as a result of the Modification.

5.6.2 Mitigation and Management

Topsoil disturbance required for the geotechnical investigations will be managed with the installation of appropriate sediment and erosion controls prior to any disturbance as required. Existing roads and access tracks will be utilised where possible and all machinery will be cleared of any loose material prior to relocation to the next site.

All land disturbed by the proposed geotechnical investigations will be rehabilitated to pre disturbance conditions immediately following the completion of the works. For each test pit topsoil will be replaced and reseeded with vegetation consistent with the local ecological values. Each borehole will be filled and capped, and the site top dressed and reseeded. The appropriate level of weed maintenance will also be applied to each site following rehabilitation activities, as required.

5.7 VISUAL ASSESSMENT

5.7.1 Impact Assessment

The existing visual environment of the locality is consistent with that of a rural setting with existing mining operations visible.

5.7.2 Mitigation and Management

Visual impacts resulting from the geotechnical activities will be minimal and temporary. Equipment will potentially be visible to the individual property owners located along Wybong Road and Roxburgh Road, and to a lesser extent, passers-by. These visual alterations to the existing environment will be abated on removal of the equipment and, rehabilitation of disturbance areas.

5.8 NON-ABORIGINAL HERITAGE

5.8.1 Impact Assessment

An analysis of the Non-Aboriginal Heritage items previously identified in the Historic Heritage Impact Assessment (AECOM, 2013b) (BCMP Appendix N) was completed for the Modification. A total of four previously recorded Historic Heritage Sites was identified within 1 km of the geotechnical Activities proposed for the Modification.

5.8.2 Mitigation and Management

None of the previously recorded sites will be impacted by the geotechnical activities and as a result no additional mitigation measures are proposed.

6 STATEMENT OF COMMITMENTS

This section provides a summary of the environmental mitigation measures arising from the Modification.

6.1 SUMMARY OF MITIGATION MEASURES

Recognised best-practice mitigation measures to minimise any impacts of the Modification have been described above and include those listed in **Table 4**.

Table 4
Statement of Commitments

Ref	Description	Section(s)
1.	Test pits and boreholes footprint will be restricted to approximately 4m x 4m.	5
2.	To the extent practical, access will only take place along existing tracks. Careful navigation across grassland and avoidance of trees and shrubs will occur where deviation from tracks is required.	5.1.2, 5.2.2 and 5.3.2
3.	The site access and each test pit/borehole will be clearly demarcated using appropriate measures (e.g. flagging tape, etc.) to ensure that all disturbance is tightly contained within the designated footprint.	5.1.2 and 5.2.2
4.	No trees with a DBH of greater than 100 mm will be removed for the Modification.	5.1.2
5.	In order to ensure no impacts will occur to previously identified or unidentified Aboriginal archaeology a due diligence assessment will be completed by a suitably qualified person prior to disturbance and test pits and boreholes relocated as required.	5.2.2
6.	Should an item / place of Aboriginal heritage be identified within a test pit / borehole site, activities will cease, appropriate measures will be taken to ensure no harm to the object or place has occurred. Any Aboriginal heritage material would be managed in accordance with the existing BMC Aboriginal Cultural Heritage Management Plan.	5.2.2
7.	All equipment will be examined by the Maintenance Department and daily pre-start inspections undertaken.	5.3.2
8.	In the event of unacceptable visible dust being generated in trafficked areas, a water cart (or similar) will be contracted to wet down the access track.	5.3.2
9.	Geotechnical activities will be confined to the hours of operation between 7:00 am to 5:30 pm on Monday to Friday.	5.4.2
10.	Appropriate sediment bunding will be placed around each site to prevent any dirty water runoff as required.	5.5.2
11.	Works will not be conducted during periods of intense rainfall to maintain riparian habitat and to limit surface disturbance.	5.5.2
12.	The geotechnical activities will not be located within a creek or riparian zone where any it would impede any natural surface flow following rainfall events.	5.5.2
13.	All land disturbed by the proposed geotechnical investigations will be rehabilitated to pre disturbance conditions following the completion of each test pit/bore hole.	5.6.2

7 ABBREVIATIONS

Abbreviation	Description
ARI	Average Recurrence Interval
AHIP	Aboriginal Heritage Impact Permit
BMC	Bengalla Mining Company Pty Limited
Bengalla 2008 EA	Bengalla Mine Development Consent Modification Environmental Assessment (Hansen Bailey, 2008)
Bengalla 2010 EA	Bengalla Mine Development Consent Modification Environmental Assessment (Hansen Bailey, 2010)
Bengalla 2006 SEE	Bengalla Mining Company Modifications to Mining Operations Statement of Environmental Effects (Hansen Bailey, 2006)
Bengalla 1993 EIS	Environmental Impact Statement for the Bengalla Coal Mine (Envirosciences, 1993)
Bengalla 2013 EIS	Continuation of Bengalla Mine Environmental Impact Statement (Hansen Bailey, 2013)
BCMP	Bengalla Continuation of mining Project as described in the Bengalla 2013 EIS
CEEC	Critically Endangered Ecological Community
CHPP	Coal Handling and Preparation Plant
DA	Development Application
DBH	Diameter at Base Height
DP&E	NSW Department of Planning and Environment
DoE	Department of Environment
DRE	Department of Trade and Investment, Regional Infrastructure and Services – Division of Resources and Energy
EA	Environmental Assessment
EEC	Endangered Ecological Community
EMP	Environmental Monitoring Program
EMS	Environmental Management Strategy
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPI	Environmental Planning Instrument
EPL	Environmental Protection Licence
ESD	Ecologically Sustainable Development
ha	Hectare
Hansen Bailey	Hansen Bailey Environmental Consultants
LGA	Local Government Area

Abbreviation	Description
Mining Act	<i>Mining Act 1992</i>
ML	Mining Lease
WM Act	<i>Water Management Act 2000</i>
MNES	Matters of National Environmental Significance
MOP	Mining Operations Plan
Mtpa	Million tonnes per annum
Muswellbrook LEP	Muswellbrook Local Environment Plan 2009
NOW	NSW Office of Water
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NV Act	<i>Native Vegetation Act 2003</i>
OEA	Overburden Emplacement Area
OEH	Office of Environment and Heritage
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
ROM	Run of Mine
RL	Reduced Level
TSC Act	<i>Threatened Species Conservation Act 1995</i>
WAL	Water Access Licence
Water Act	<i>Water Act 1912</i>
WSP	Water Sharing Plan

8 REFERENCES

- AECOM (2013a), *Aboriginal Archaeological and Cultural Heritage Impact Assessment*. Prepared for the Continuation of Bengalla Mine Environmental Impact Statement 2013.
- AECOM (2013b), *Historic Heritage Impact Assessment*. Prepared for the Continuation of Bengalla Mine Environmental Impact Statement 2013.
- Bengalla Mining Company Pty Ltd (2012), *Bengalla Mining Company Mining Operations Plan 2013 – 2015*.
- Cumberland Ecology (2013), *Ecological Impact Assessment*. Prepared for the Continuation of Bengalla Mine Environmental Impact Statement 2013.
- Hansen Bailey (2006a), *Bengalla Mining Company Modifications to Mining Operations Statement of Environmental Effects*.
- Hansen Consulting (2006b), *Bengalla Explosives Storage Facility Statement of Environmental Effects*.
- Hansen Consulting (2007a), *Wantana Extension Statement of Environmental Effects*.
- Hansen Bailey (2008), *Bengalla Mine Development Consent Modification Environmental Assessment*.
- Hansen Bailey (2010), *Bengalla Mine Development Consent Modification Environmental Assessment*.
- Hansen Bailey (2013), *Continuation of Bengalla Mine Environmental Impact Statement*.
- Parsons Brinkerhoff (2013), *Dry Creek Interim Management System and Conceptual Re-Establishment Study*. Prepared for the Continuation of Bengalla Mine Environmental Impact Statement 2013.