

BULGA OPEN CUT

GLENCORE

Plan for

Historic Heritage Management Plan

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Appendix 1

Letter from Department of Planning Regarding Bulga Underground Coal Mine DA 376-8-2003 Conditions 40, 42(b) and 42(c).

Appendix 2

Letter from Department of Infrastructure, Planning and Natural Resources Regarding Bulga Underground Coal Mine DA 376-8-2003 Conditions 41 and 42(a).

Appendix 3

Letter from Department of Planning and Environment regarding Bulga Coal Complex DA 376-8-2003 Conditions 41 and 42.

Glossary of Terms

ACHMP	Aboriginal Cultural Heritage Management Plan
BCM	Bulga Coal Management
BCC	Bulga Coal Complex
CMP	Conservation Management Plan
CMS	Conservation Management Strategy
DP&E	Department of Planning and Environment
HHMP	Historic Heritage Management Plan
EP&A Act	Environmental Planning and Assessment Act 1979
EIS	Environmental Impact Statement
HMP	Heritage Management Plan
NSW	New South Wales
OEH	Office of Environment and Heritage (NSW)
RAP	Registered Aboriginal Party

1 Introduction

1.1 Background

Bulga Coal Complex comprises both open cut and underground coal mining operations located south of Singleton in the Upper Hunter Valley Region of NSW (refer to **Figure 1.1**). The BCC is operated by Bulga Coal Management Pty Ltd (BCM). On December 2 2014, Bulga Coal Management received Development Consent for the Bulga Optimisation Project (Project – refer to **Figure 1.2**) which is a continuation of open cut mining operations at the Bulga Coal Complex until 2035. The Bulga Underground operates under Development Consent DA 376-8-2003.

1.2 Purpose and Scope

This Historic Heritage Management Plan (HHMP) addresses the European (historical) heritage and archaeological management issues associated with the Bulga Coal Complex. It does not include a heritage management strategy with regards to Aboriginal cultural heritage. The management of Aboriginal cultural heritage is addressed in the Aboriginal Cultural Heritage Management Plan (ACHMP – BCC 2014). Both the ACHMP and HHMP will form the overall Heritage Management Plan (HMP) for the Bulga Coal Complex

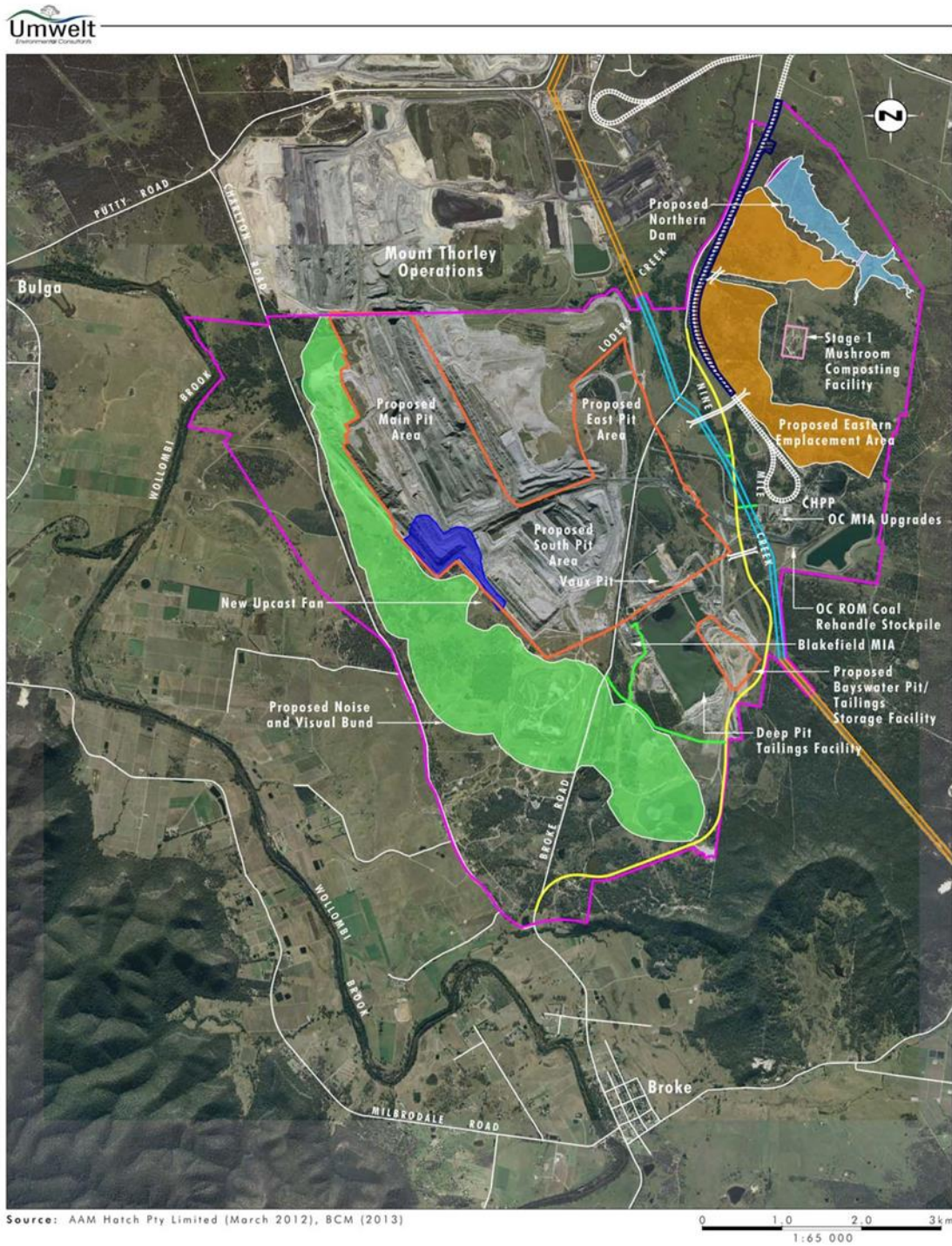
The purpose of this HHMP is to provide a description of the measures to be implemented by Glencore to manage and protect known heritage values within and in the vicinity of Bulga Coal Complex area.

This report has also been prepared with regards to the principles contained in *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999* (Australia ICOMOS 2000). It also draws on information provided by the Heritage Division, Office of Environment & Heritage (OEH) on the preparation of Conservation Management Plans (CMPs) and Conservation Management Strategies (CMSs) and *Conservation Plan a Guide to the Preparation of Conservation Plans for Places of European Cultural Significance* (Kerr 2006).



FIGURE 1.1
Locality Plan

File Name (A4): R17/2869_931.dgn
20121121 11.43



- Legend**
- Project Area
 - Coal Extraction Area
 - Proposed Noise and Visual Bund
 - Proposed Eastern Emplacement Area
 - Proposed Northern Dam
 - Proposed Rail Siding
 - Proposed Broke Road Realignment
 - Proposed BCC Access Roads
 - Existing 330kV Transmission Line
 - Proposed 330kV Transmission Line Realignment
 - Proposed Underground Access via Open Cut
 - Existing Rail Line

File Name (A4): R17/2869_932.dgn
20130814 15.27

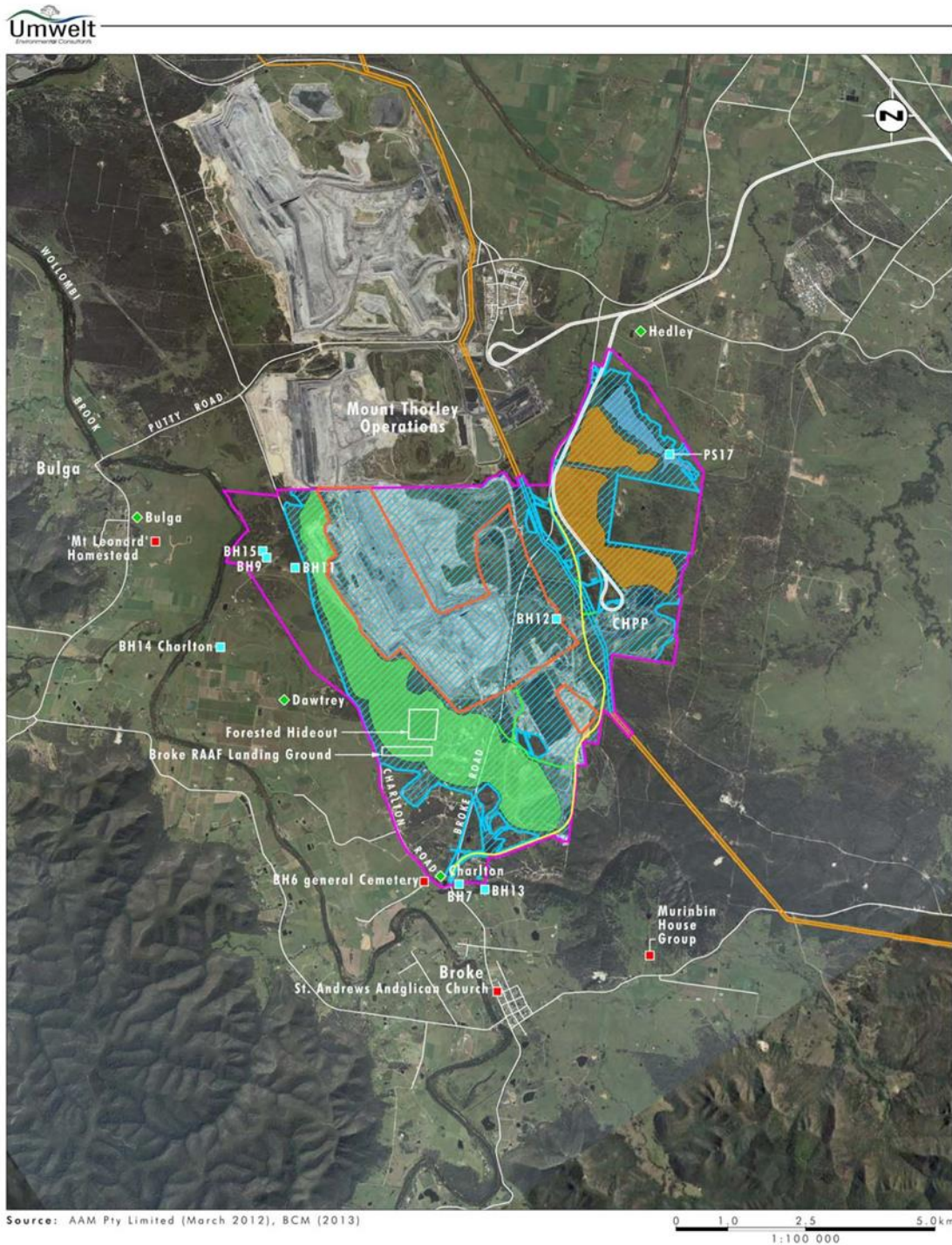
FIGURE 1.2
Bulga Optimisation Project - Key Features

1.3 Bulga Optimisation Project - European Heritage

A comprehensive assessment of the potential impacts of the Bulga Optimisation Project on historic heritage values was completed and included as Appendix 14 (*Historic Heritage Assessment - Bulga Optimisation Project* (Umwelt 2012)) of the EIS (2012 Historic Heritage Assessment Report). While the 2012 Historic Heritage Assessment Report assessed the potential impact of the Original Project (refer to **Section 1.2**) the Approved Project is wholly within the disturbance footprint of the Original Project and the assessment findings remain relevant to the Approved Project.

The 2012 Historic Heritage Assessment Report assessed the majority of the potential historic heritage sites/items present within, and in the immediate vicinity of, the Project area as having no heritage significance and no research potential (Umwelt 2012). No further management is required for any of the identified potential sites within the Project area recorded as having no heritage significance or research potential.

Those sites with a statutory listing or assessed in the 2012 Historic Heritage Assessment Report as being of local significance and/or recommended as requiring further management are identified on **Figure 1.3** and discussed as part of this HHMP. The mitigation and management controls for these sites identified in this HHMP will be implemented as part of the Approved Project.



- Legend**
- Project Area
 - Revised Project Disturbance Footprint
 - Existing 330kV Transmission Line
 - Proposed 330kV Transmission Line Realignment
 - Proposed Broke Road Realignment
 - Proposed Eastern Emplacement Area
 - Proposed Noise and Visual Bund
 - Main Mine Water Storages
 - Coal Extraction Area
 - Listed Heritage Item
 - Non-listed Heritage Sites
 - ◆ Blast Monitoring Location
 - Railway Line

FIGURE 1.3
Historic Heritage Items

File Name (A4): R17/2869_933.dgn
20141124 9.47

2 Regulatory Requirements

2.1 Development Consent

The Bulga Coal Complex operates under two Development Consents. The Development Consent for the Bulga Open Cut is DA SSD-4960 and the Development Consent for the Bulga Underground is DA 376-8-2003. The requirement for this HHMP arises from Conditions 41 and 42 of the Development Consent DA SSD-4960. This report has been prepared to address the Conditions in both the open cut and underground Development Consents.

A full list of the Development Consent conditions relating to this HHMP and where they are addressed within this document is provided in **Table 2.1**.

As discussed this HHMP only addresses the European heritage management measures and will form part of the overall HMP addressing both Aboriginal Cultural Heritage and European (historical) heritage. As such **Table 2.1** only lists those conditions relevant to this HHMP and does not include conditions referring to Aboriginal archaeology.

Table 2.1 – Development Consent Conditions

Heritage	Bulga Open Cut Consent Condition	Section Addressed
Human Remains	36. This consent does not allow the Applicant to disturb any human remains found on the site.	Section 5.8.1
Heritage Management Measures	41. The Applicant shall implement the	
	(c) historic heritage management measures summarised in Table 3 of Appendix 10, to the satisfaction of the Secretary	Section 5.0
Heritage Management Plan	42. The Applicant shall prepare and implement a Heritage Management Plan for the development to the satisfaction of the Secretary. This plan must:	Entire plan
	(a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary	Section 5.1
	(b) be prepared in consultation with OEH and the relevant Aboriginal stakeholders;	Section 5.2
	(c) be submitted to the Secretary for approval prior to carrying out any development under this consent;	Section 5.3
	(e) include a detailed description of the proposed implementation of the heritage management measures required under condition 41 above;	Section 5.0
	(f) include a program to monitor and report on the effectiveness of the management measures carried out under the plan.	Section 6.0
Heritage	Bulga Underground Consent Condition	Section Addressed
Conservation	40. The Applicant shall conserve heritage site BH 15 to the satisfaction of the Director-General	Section 5.5
Archival Record	41. The Applicant shall investigate and prepare an archival record of heritage sites BH9 and BH11 in accordance with the requirements of the NSW Heritage Office, and to the Satisfaction of the Director-General.	Section 5.5
Other Measures	42. The Applicant shall:	Section 5.5
	(a) prepare a photographic record of the condition and integrity of heritage site BH13 before, during and after mining;	

Heritage	Bulga Open Cut Consent Condition	Section Addressed
	(b) mark BH12 to prevent accidental destruction; and (c) fence and signpost BH7 to the satisfaction of the Director-General.	Section 5.4 Section 5.5

2.1.2 Development Consent - Table 3 of Appendix 10 Heritage

The historic heritage management measures summarised in **Table 3** of Appendix 10 Heritage of Development Consent and detailed in the 2012 Historic Heritage Assessment Report/2013 EIS are discussed in Section 5.0 of this report and are extracted in **Table 2.2**.

Table 2.2 – Historic Heritage Management Measures

Item ID	Listing/s	Location	Impact	Mitigation Proposed
BH7 – McNamara’s Dairy Cottage	Unlisted	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting.	A photographic/archival recording in accordance with Heritage Division, OEH guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (2006) is recommended prior to any blasting impacts as a result of the Project.
BH13 – Stone Wall alongside Monkey Place Creek	Unlisted	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting.	An individual structural analysis of Site BH13 shall be undertaken by a suitably qualified structural engineer in order to identify if the recommended and predicted maximum vibration of up to 3 mm/s is appropriate for the site and any potential mitigation measures that may be required (in terms of its structural stability) based on the findings of the analysis. An archival recording report prepared as a baseline recording for future monitoring of site BH13 (Umwelt 2005) recommended the site is monitored by a qualified archaeologist during and after any mining activity that has the potential to impact the site.

Item ID	Listing/s	Location	Impact	Mitigation Proposed
General Cemetery (Site BH6)	Singleton LEP	Outside Project Area	Indirect – Potential direct impact as result of ground vibration associated with blasting.	A maximum vibration of 3mm/s will be adopted for this site. BCC currently contributes to the maintenance of Broke Cemetery and intends to continue this maintenance.
'Charlton' (Site BH14)	Singleton LEP	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting.	Blast sizes will be managed to 3 mm/s for this heritage item, unless a structural assessment is conducted which confirms tolerance for higher vibration levels.
Murinbin House Group (RNE Place ED 103881)	Register of the National Estate Commonwealth Heritage List Australian Heritage Inventory	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting	Blast sizes will be managed to 3 mm/s for this heritage item, unless a structural assessment is conducted which confirms tolerance for higher vibration levels. Blasting will be undertaken in accordance with any relevant recommendations of the Conservation Management Plan (CMP) for the Murinbin House Group.
St Andrews Anglican Church (RNE Place ID 1398)	Singleton LEP Register of the National Estate	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting	Blast sizes will be managed to 3 mm/s for this heritage item, unless a structural assessment is conducted which confirms tolerance for higher vibration levels.
'Mt Leonard' Homestead	Singleton LEP	Outside Project Area	Indirect – Potential indirect impact as a result of ground vibration associated with blasting	Blast sizes will be managed to 3 mm/s for this heritage item, unless a structural assessment is conducted which confirms tolerance for higher vibration levels.

Item ID	Listing/s	Location	Impact	Mitigation Proposed
PS17 – Former hut site	Unlisted	Within Project Area	Direct – Likely to be impacted as a result of the construction and use of a new water storage dam in the northeast portion of the Project Area.	<p>This site has been recorded as part of the 2012 Historic Heritage Assessment Report. This site has been assessed as having local significance and low research potential.</p> <p>It is recommended that this site be retained in the landscape for as long as possible prior to impact. However, it can be removed as part of the Project.</p> <p>The Historic Heritage Assessment for the Project is considered to be a sufficient record of the site.</p> <p>Any potential additional associated features that are identified during any works in the area will be managed in accordance with Section 146 of the <i>Heritage Act 1977</i> (NSW).</p>
Broke RAAF Landing Ground	Unlisted	Off Charlton Road - 320384E / 638013 N	Direct – will be directly impacted by the construction of the Noise and Visual Bund	A photographic/archival recording in accordance with Heritage Division, OEH guidelines Photographic Recording of Heritage Items Using Film or Digital Capture (2006) will be undertaken prior to disturbance associated with the development of the Noise and Visual Bund.

3 Historical Context

As part of NSW heritage assessment procedures it is essential to have a full understanding of a site or item based on its historical and physical context. This section of the HHMP summarises the historical context of the Project area prepared as part of the *Historic Heritage Assessment - Bulga Optimisation Project* (Umwelt 2012) to provide an understanding of the significance of any heritage sites within the Project area. The 2012 assessment should be referred to for the full historical context of the Project.

3.1 Land Use

With the exception of the Charlton Road section of the Great North Road and the Broke RAAF Landing Ground (discussed separately below), historical research shows that from the 1820s to the 1970s, the Project area has been predominantly used for grazing sheep and cattle. Pastoral grazing was the earliest established industry within the region of the Project area, which was first settled in the

1820s. Pastoralism has been the dominant historical land use and although no longer the dominant land use, the area's pastoral history is evidenced by the history of clearance of native vegetation and construction of infrastructure such as dams and fences along with homesteads and other rural structures. There was a shift from wool production in the nineteenth century as mixed farming, dairying and grazing became more important in the twentieth century. Dairying was one of the initial impetuses for the division of large estates in the Upper Hunter; like that of the Blaxland family's Fordwich estate. By the 1890s dairying had become an important industry in the Upper Hunter and remained so until the second half of the twentieth century when the industry went into a gradual decline (Umwelt 2012).

Today's Broke-Fordwich Wine Region has its beginnings with the early settlers experimenting with growing vines on their large estates; the Reverend Richard Hill is reported to have planted over two and a half thousand vines on his Milbro Dale Estate by 1834. However, it was not until the dairying industry declined in the second half of the twentieth century that wine growing really began to grow in importance in the region (Umwelt 2012).

The development of coal resources in the late twentieth century also comprises an important part of the area's history. Coal was not commercially exploited in the Upper Hunter until the 1890s. In the 1950s a rapid expansion of coal mining in the area took place with the establishment of large open-cut mines. Coal mining operations commenced in the Project area in 1982.

3.2 Great North Road/Charlton Road

In the Upper Hunter area, roads were the most important means of transport until 1869 when the Great Northern Railway reached Muswellbrook (Turner 1995:32).

The Great North Road was constructed between 1826 and 1836 using convict labour. The road was constructed to provide a route between Sydney and the rapidly growing settlements in the Hunter Valley to facilitate settlement in the Hunter Valley. The northern section of the Great North Road linking the Upper Hunter Valley was planned by Surveyor General Major Thomas Mitchell with three branches, separating first at Wollombi and then again at Broke. Mitchell believed that the '*best, scientific or true roads were based on...the straightest lines possible*' (Lavelle 1999). The third planned branch stretched from Broke to Warkworth (including present Charlton Road) and construction started between 1834 and 1836. The history of the construction of these northern branches is not as well documented as southern portion of the road and these northern branches are not likely to have been fully completed.

Charlton Road is identified as part of Section 8 (the final section and third planned north branch) of the Great North Road. Although sections of the Great North Road are subject to various statutory listings (including World, National and State listings), there is no listing that encompasses the Great North Road in its entirety and Charlton Road itself does not form part of any listing for the Great North Road (Umwelt 2012).

Charlton Road falls within the Project area and forms part of the Project area's western boundary (refer **Figure 1.2** and **1.3**). The heritage significance of the road will be unaffected by the Revised Project and as such Charlton Road is not considered further as part of this HHMP.

3.3 Broke Royal Australian Air Force (RAAF) Landing Ground

An area of approximately 1 square kilometre within the Project area contains the remains of the former RAAF landing ground at Broke (refer to **Figures 1.3** and **3.1**). The Broke landing ground was one of three satellite dispersal fields of the parent RAAF Base Bulga, the others being at Warkworth and Strowan (Jerry's Plains). These facilities were commissioned, designed and constructed between March 1942 and mid 1943 in a World War II defence effort. RAAF Base Bulga was classed as a General Reconnaissance airfield and was the only operational General Reconnaissance airfield proposed or constructed during World War II.

It appears that the RAAF Base Bulga, and its satellite sites at Broke, Warkworth and Strowan were never used for war related activities. By mid 1943 the need for and use of the bases at Bulga, Broke, Warkworth and Strowan was no longer envisaged. At the end of the war, it was decided that the Bulga airfield was to be retained by the RAAF, but not maintained, and the Broke, Strowan and Warkworth airfields could be subject to disposal to their original owners or by sale (Brew 2001:33). The satellite

airstrip sites at Warkworth and Strowan are both still utilised as airstrips. The airstrip at Warkworth is functioning as the David Parker Airfield and is utilised by the Hunter Valley Gliding Club. The airstrip at Strowan is functioning as a private airstrip.

The plans of the RAAF landing ground at Broke dated 31 October 1942 show the camouflaged landing strip with a horse-shoe shaped taxiway at its western end having eight aircraft hideouts among the trees (refer to **Figure 3.2**). The 1952 aerial photo of the site shows the airstrip with a horseshoe shaped ring around a thick cluster of trees that are interrupted by six or seven spokes representing the likely planned hideout locations (refer to **Figure 3.3**).

The Broke RAAF Landing ground is not listed on any heritage database.

The Broke RAAF Landing ground will be directly impacted by the construction of the Noise and Visual Bund. Refer to **Section 5.4.1** for a discussion of the measures to be implemented by Glencore to manage these impacts.



Source: AAM Pty Limited (March 2012), Xstrata Coal (NSW) Pty Ltd

0 0.5 1.0 2.0km
1:20 000

Legend
Project Area

FIGURE 3.1
Detail Showing Location of
Former RAAF Landing Ground, Broke

File Name (A4): R17/2069_936.dgn
20140718 16.36

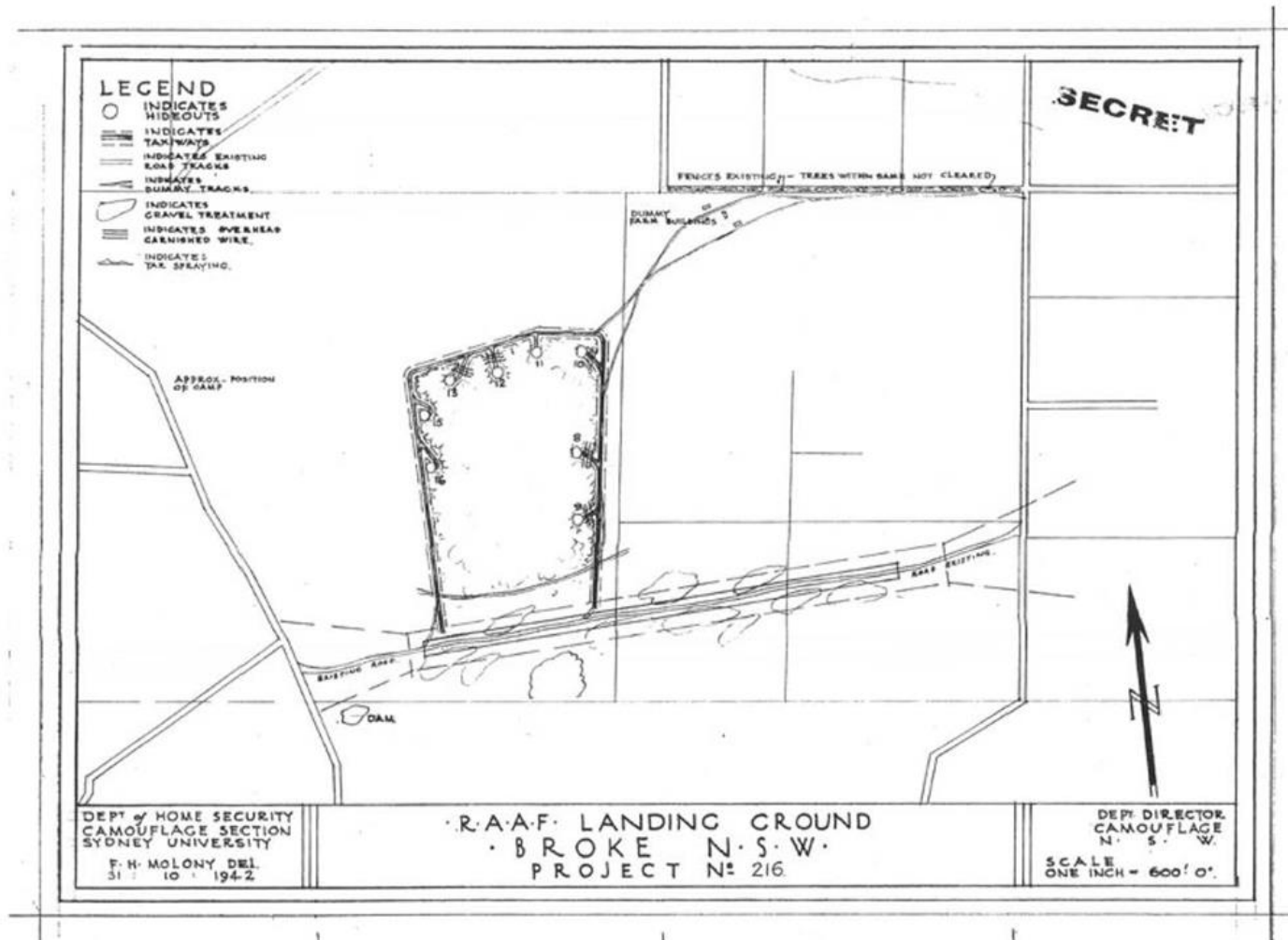


FIGURE 3.2

1942 Plan of Former RAAF
Landing Ground, Broke

Source: National Archives of Australia
File Name [A4]: R17/2869_934.dgn
20100101 9.00



FIGURE 3.3
1952 Aerial Photograph showing
Former RAAF Landing Ground, Broke

File Name (A4): R17/2869_935.dgn
20120104 14.12

4 Evaluation of Heritage Sites

As discussed, the 2012 Historic Heritage Assessment Report examined the historic (European/non-Aboriginal) heritage issues associated with the Project with the aim of assessing and evaluating the potential heritage impacts of the Project. The 2012 report identified the heritage items with some form of statutory listing in addition to the potential heritage sites/items both within, and in the vicinity of, the Project area. The report included a heritage impact statement for these sites/items and recommended mitigation and management measures for the sites/items that were assessed as being significant (refer to **Table 2.2**). The mitigation and management controls that will be implemented for these sites are discussed in **Section 5.0**

The 2012 Historic Heritage Assessment Report assessed the majority of the potential historic heritage sites/items present within, and in the immediate vicinity of, the Project area as having no heritage significance and no research potential (Umwelt 2012). No further management is required for any of the identified potential sites within the Project area recorded as having no heritage significance or research potential.

5 Historic Heritage Management Strategy

This section of this HHMP plan details the historic (European) heritage management strategy for the Project and addresses the relevant aspects of Conditions 40, 41 and 42 of the Development Consent for the Bulga Underground and Conditions 36, 41 and 42 of the Development Consent for Bulga Open Cut (refer to Table 2.1) and BCM's commitments in terms of the environmental management of the Project.

5.1 Director-General Consultant Endorsement

This HHMP has been prepared by Tim Adams of Umwelt (Australia) Pty Limited (Umwelt). The DP&E endorsed the appointment of Tim Adams to prepare this management plan and undertake any further historical heritage works.

5.2 Consultation

The 2013 EIS (including the 2012 Historic Heritage Assessment Report) has previously been discussed and reviewed by the Heritage Division, OEH. Following their review, the submission from the Heritage Division, OEH stated that the management measures for historic heritage as detailed in the EIS were adequate to manage the impacts of the Project on historic heritage sites.

As per Condition 42(b) of the Development Consent, this HHMP has been prepared in consultation with the Heritage Division, OEH.

This HHMP was discussed with the Heritage Division, OEH on 30 July and 13 August 2014. The Project and relevant Development Consent conditions and proposed management of heritage sites/items were discussed with the Heritage Division, OEH. The Revised Project, particularly regarding the realignment of a four kilometre section of Charlton Road no longer being proposed, was also discussed.

5.3 Approval of Changes to the HHMP

Any modifications of this HHMP must be submitted to the Secretary of DP&E for approval prior to implementing the changes.

5.4 Management of Direct Impacts

5.4.1 Broke RAAF Landing Ground

The construction of the proposed Noise and Visual Bund will have a direct impact on the Broke RAAF Landing Ground (refer to **Figure 1.3**). The following mitigation measures will be undertaken in relation to this site:

- a) prior to disturbance associated with the development of the Noise and Visual Bund, a site specific detailed survey and photographic/archival recording was undertaken in accordance with the Program/Procedures for Photographic/Archival Recording discussed in **Section 5.6** of this HHMP. During the archival recording the full extent of the surviving airstrip and associated forested area was further investigated and any features identified and recorded as part of the archival record; and
- b) further research was undertaken, including accessing the appropriate records in the National Archives of Australia, and all documentary evidence available regarding the site will be compiled as part of the archival recording report.

5.4.2 Site BH12 – Former Farmstead Site Including Dairy and Yards

In accordance with Bulga Underground Consent Condition 42 (b) this site was signposted as a Bulga Coal Heritage site (refer to **Appendix 1**).

This site was reassessed, as part of the 2012 Historic Heritage Assessment Report/2013 EIS, as having no significance and no research potential and will now be impacted as part of the works associated with the proposed Eastern Pit Area.

No further heritage management is required for this site.

5.4.3 Site PS17

Site PS17 is located within the Project area and will be impacted by the construction and flooding of the proposed Northern Dam in the northeast portion of the Project area (refer to **Figure 1.3**).

This site was recorded (including a photographic record) as part of the preparation of the 2012 Historical Heritage Assessment report (Umwelt 2012). The recording included as part of the 2012 Assessment is considered to be a sufficient record of the site.

The following mitigation measures will be undertaken in relation to this site:

- a) although the site will be removed as part of the Project it will be retained in the landscape for as long as possible prior to impact; and
- b) any potential additional associated features that are identified during any works in the area will be managed in accordance with the Management of Discovery of New Heritage Sites/Items discussed in Section 5.7 of this HHMP.

5.5 Management of Indirect Impacts

5.5.1 BH7 – McNamara’s Dairy Cottage

BH7 (McNamara's Dairy Cottage) is located outside the southern boundary of the Project area and is predicted to experience ground vibration levels between 1 and 3 mm/s (Wilkinson Murray 2012). The following mitigation measures will be undertaken in relation to this site:

- a) a photographic/archival recording of this site will be undertaken in accordance with the Program/Procedures for Photographic/Archival Recording discussed in Section 5.6 of this HHMP;
- b) a maximum vibration of 5mm/s will be adopted for this site. Vibration will be minimised and managed below this criterion
- c) blasts will be monitored using the 'Charlton' blast monitor (refer to **Figure 1.3**) which will provide a representative result due to its close proximity, any exceedance of the maximum vibration limit will be addressed using the procedures detailed in the Blast Management Plan; and
- d) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring.

In accordance with Bulga Underground Consent Condition 42 (c) this site has been signposted as a Bulga Coal Heritage site and a fence has been erected around the building (refer to **Appendix 1**).

5.5.2 BH9 – Dump Site

Site BH9 comprises a number of fence posts and an area of assorted demolition rubble lining the edge of a small creek.

In accordance with Bulga Underground Consent Condition 41 an archival record of site BH9 has been prepared (Umwelt 2005) (refer to Appendix 2).

No further heritage management is required for this site.

It is recommended that the demolition rubble (which includes asbestos sheeting) is removed as it is considered to comprise a WHS risk if left in its current location.

5.5.3 BH11 – Former Farmstead Site Including Dairy and Yards

In accordance with Bulga Underground Consent Condition 41 an archival record of site BH11 has been prepared (Umwelt 2005) (refer to **Appendix 2**).

No further heritage management is required for this site.

5.5.4 BH13 – Stone Wall alongside Monkey Place Creek

An archival recording report has previously been prepared for site BH13 (Umwelt 2005), in accordance with Underground Consent Condition 42(a), as a baseline recording for future monitoring (refer to **Appendix 1**). The 2005 report recommends the site is monitored by a qualified archaeologist during and after any mining activity that has the potential to impact the site.

The site is predicted to experience vibration impacts from blasting of between 1 and 3 mm/s (Wilkinson Murray 2012). The following mitigation measures will be undertaken in relation to this site:

- a) a photographic/archival recording of this site will be undertaken in accordance with the Program/Procedures for Photographic/Archival Recording discussed in Section 5.6 of this HHMP. As part of the archival report, the results of the recording will be compared to the 2005 baseline recording;
- b) an individual structural analysis of Site BH13 will be undertaken by a suitably qualified structural engineer every year, or earlier as required, to assess potential blasting impacts and identify any potential mitigation measures (in terms of its structural stability) required.
- c) a maximum vibration of 5mm/s will be adopted for this site. This criterion has been established based on a structural heritage assessment previously undertaken by a

suitably qualified structural engineer. Vibration will be minimised and managed below this criterion;

- d) blasts will be monitored using the 'Charlton' blast monitor (refer to **Figure 1.3**) which will provide a representative result due to its close proximity, any potential exceedance of the maximum vibration limit will be addressed using the procedures detailed in the Blast Management Plan; and
- e) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring and the results of the structural analysis of Site BH13.

5.5.5 Broke General Cemetery (Site BH6)

The following mitigation measures will be undertaken in relation to this site:

- a) a maximum vibration of 5mm/s will be adopted for this site. This criterion has been established based on a structural heritage assessment previously undertaken by a suitably qualified structural engineer. Vibration will be minimised and managed below this criterion;
- b) blasts will be monitored using the 'Charlton' blast monitor (refer to **Figure 1.3**) which will provide a representative result due to its close proximity, any potential exceedance of the maximum vibration limit will be addressed using the procedures detailed in the Blast Management Plan;
- c) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring; and
- d) BCC will continue to contribute to the maintenance of Broke Cemetery.

5.5.6 'Charlton' (Site BH14)

The following mitigation measures will be undertaken in relation to this site:

- a) a maximum vibration of 5mm/s will be adopted for this site. This criterion has been established based on a structural heritage assessment previously undertaken by a suitably qualified structural engineer. Vibration will be minimised and managed below this criterion;
- b) An assessment of the site will be undertaken annually to determine any blasting impacts and where necessary, identify mitigation or preventative actions
- c) blasts will be monitored using the 'Dawtreys' blast monitor (refer to **Figure 1.3**) as discussed in Section 0; and
- d) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring.

5.5.7 BH15 Fence Posts and Yards

In accordance with Bulga Underground Consent Condition 40 Site BH15 has been incorporated into the proposed Conservation Agreement (CA) area (currently being discussed between BCM and OEH) and signposted as a 'Heritage Site' (refer to **Appendix 1**).

No further heritage management is required for this site.

5.5.8 Murinbin House Group

The following mitigation measures will be undertaken in relation to this site:

- a) a maximum vibration of 5mm/s will be adopted for this site;
- b) blasts will be monitored using the 'Charlton' blast monitor (refer to **Figure 1.3**) as discussed in Section 0;

- c) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring; and
- d) blasting will also be undertaken in accordance with any relevant recommendations of the Conservation Management Plan (CMP) for the Murinbin House Group.

Note: no structural assessments to be undertaken on this site. Murinbin House Group is managed by Commonwealth Department of Finance and subject to SMTA activities.

5.5.9 St Andrews Anglican Church

The following mitigation measures will be undertaken in relation to this site:

- a) a maximum vibration of 5mm/s will be adopted for this site. This criterion has been established based on a structural heritage assessment previously undertaken by a suitably qualified structural engineer. Vibration will be minimised and managed below this criterion;
- b) An assessment of the site will be undertaken annually to determine any blasting impacts and where necessary, identify mitigation or preventative actions.
- c) blasts will be monitored using the 'Charlton' blast monitor (refer to **Figure 1.3**) as discussed in Section 0; and
- d) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring.

5.5.10 'Mt Leonard' Homestead

The following mitigation measures will be undertaken in relation to this site:

- a) a maximum vibration of 5mm/s will be adopted for this site. This criterion has been established based on a structural heritage assessment previously undertaken by a suitably qualified structural engineer. Vibration will be minimised and managed below this criterion;
- b) An assessment of the site will be undertaken annually to determine any blasting impacts and where necessary, identify mitigation or preventative actions.
- c) blasts will be monitored using the 'Bulga' blast monitor (refer to **Figure 1.3**) which will provide a representative result due to its close proximity, any potential exceedance of the maximum vibration limit will be addressed using the procedures detailed in the Blast Management Plan and
- d) blasts will be designed in accordance with the BCM Blast Management Plan and in response to the results of ongoing blast monitoring.

5.6 Management of Vibration Impacts

Controls that will be implemented to manage the vibration impacts on the heritage items discussed in **Section 5.5**, are detailed in the BCM Blast Management Plan and include, but are not limited to:

- a) Designing of each blast to reduce vibration at the heritage items;
- b) Use of adequate stemming to maximise confinement of explosive charged;
- c) Utilising blast design software to limit the Maximum Instantaneous Charge;
- d) Provide for charge distributions suited to observed face burden; and
- e) Evaluating new technology and alternative blasting methodologies via a continual improvement process.

The BCM Blast Management Plan will also contain details of the monitoring that will be undertaken to assess compliance with the vibration criteria identified in the Development Consent. Monitoring will occur in locations which are considered to be representative of sites that are subject to specific vibration limits. In the event that a potential exceedance of the vibration limits for the heritage items is recorded at a representative location, an investigation will be undertaken.

5.7 Program/Procedures for Photographic/Archival Recording

All photographic/archival recording will be undertaken prior to the commencement of any activities that would potentially disturb/impact the heritage item nominated for photographic/archival recording.

5.7.1 Onsite Digital Archival Photographic Recording

The archival recording will be undertaken in accordance with Heritage Council guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006).

The photographic recording will include:

- a) contextual photographs showing site/item and remains, and relevant relationships to other sites/items and surroundings;
- b) detailed photographs of site/item;
- c) preparation of plans of the sites/item (unless nature of site/item does not warrant a site plan, in these instances the photographs will be accompanied by an appropriate plan indicating the location of the site only); and
- d) photographic plans of all sites/items (as appropriate).

The photographic recording will then be collated into a photographic archival record for submission to DP&E.

5.7.2 Photographic Archival Record

The photographic archival record will comprise three copies of a brief report detailing background information and methodology in addition to the actual archival record. The photographic prints forming the archival record will be processed with archivally stable inks on archivally acceptable photographic paper and stored in archival polypropylene sleeves. The photographic report and photographic materials will be stored in an archival folder.

The archival record will include:

- a) one full set of archival 6" x 4" colour prints processed with archivally stable inks on archivally acceptable photographic paper, in copy of reports for DP&E and BCM;

- b) one set of photocopies of full set of colour prints in copy of report for Local Council Library (for public access);
- c) photographic catalogue sheets (photographic record sheets);
- d) measured plans of each site/item unless nature of site did not warrant a site plan. In these instances the photographs will be accompanied by a plan indicating the location of the site only;
- e) photographic plans (referenced to the photographic catalogue sheets) particular to each site showing the locations of all of the photographic images unless nature of item does not warrant a photographic plan; and
- f) one CD/DVD with copies of all of the above.

5.8 Management of Discovery of New Heritage Sites/Items

If during the course of works any previously unknown historical archaeological material or heritage sites/items are uncovered or identified, all work in the area of the item(s) shall cease immediately and a qualified heritage consultant/archaeologist consulted. If the archaeologist considers the material uncovered constitutes an archaeological 'relic' or a heritage item, the Heritage Division, OEH will be consulted, in accordance with Section 146 of the *Heritage Act 1977* (NSW), to determine an appropriate course of action prior to the recommencement of work in the area of the item.

A 'relic' under the Heritage Act is defined as any deposit, object or material evidence that:

- a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and
- b) is of State or local heritage significance.

5.9 General Management Strategies

5.9.1 Potential Human Skeletal Remains

In the event that a potential burial site or potential human skeletal remains are exposed in any area subject to surface disturbance or remediation works, the procedure below is to be implemented in accordance with the *Policy Directive – Exhumation of Human Remains* (NSW Department of Health 2008), *Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977* (NSW Heritage Office 1998) and the *Aboriginal Cultural Heritage Standards and Guidelines Kit* (NPWS 1997):

- a) as soon as remains are exposed, work is to halt immediately to allow assessment and management;
- b) contact local police, OEH and the Heritage Division;
- c) a physical or forensic anthropologist will inspect the remains in situ, and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic);
- d) if the remains are identified as forensic the area is deemed as crime scene; or
- e) if the remains are identified as Aboriginal and not forensic, the site is to be secured and the OEH and all registered Aboriginal parties are to be notified in writing; or
- f) if the remains are non-Aboriginal (historical) remains and not forensic, the site is to be secured and the Heritage Division is to be contacted.

The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the remains is to be determined through liaison with the appropriate stakeholders (New South Wales Police Force, forensic anthropologist, OEH,

Heritage Division, and registered Aboriginal parties etc.) and in accordance with the *Public Health Act 1991*.

Approval from NSW Health, under the *Public Health Act 1991*, will be required prior to removing/exhuming any skeletal remains. If removal/exhumation is required and approved, controlled excavation and removal by the site archaeologists and other appropriate specialists (forensic anthropologist, Aboriginal stakeholders, New South Wales Police Force, as appropriate) will be undertaken in accordance with Heritage Council Skeletal Remains Guidelines and any requirements of the OEH and NSW Health.

If removal/exhumation is required, a site specific management policy for the removal of any potential human skeletal remains uncovered within the proposed Project area will be developed, in consultation with a physical anthropologist, the Heritage Division, OEH and relevant stakeholder groups. The management policy will consider the issues detailed in the Heritage Council Skeletal Remains Guidelines. These issues include but are not limited to:

- a) excavation issues – including personnel who may need to be required, Occupational Health and Safety and recording;
- b) access issues – including limited access, security and public and professional participation;
- c) management issues – including management during excavation and analysis, publicity, interpretation, location of interim resting place (in consultation with relevant stakeholders), ongoing curation of recovered materials and professional access to data; and
- d) re-interment and commemoration.

6 Reporting and Review

6.1 Internal Reporting

Blast monitoring results will be stored in the Environmental Monitoring Database and reviewed to assess whether there have been or are likely to have been any exceedances of the blast vibration criterion for each of the heritage items discussed in **Section 5.5**. If recorded exceedances are identified, the relevant heritage item must be inspected and potential impacts to the heritage item and any remediation works or further assessment that may be required recorded.

6.2 External Reporting

6.2.1 Annual Report

Compliance with the requirements of the development consent (including implementation of this Plan) will be reported in the Annual Review submitted to the Director-General of DP&E as per the requirements set out in the Development Consent.

6.2.2 Incident Report

Any breach of performance measures or recorded exceedance of vibration criteria at a heritage item identified in **Sections 5.4** or **5.5** will be reported to the Director-General in accordance with the requirements of the Development Consent.

6.3 Review

The HHMP is to be reviewed and updated if necessary within 3 months of:

- a) the submission of an annual review (refer to **Section 6.2.1**);
- b) the submission of an incident report in relation to a heritage item (refer to **Section 6.2.2**); and
- c) the submission of an audit report required under the Development Consent, unless otherwise directed by the Director-General of DP&E. The review process is to reflect changes in environmental legislation and guidelines, and changes in technology or operational procedures.

6.4 Roles and Responsibilities

Table 6.1 lists the key roles and responsibilities of specific BCM personnel, concerning the implementation of this HHMP.

Table 6.1 Roles and Responsibilities

Title	Roles and Responsibilities
Operations Manager	<ul style="list-style-type: none"> • provide adequate resources for the implementation of this HHMP.
Environment & Community Manager	<ul style="list-style-type: none"> • co-ordinate the day to day implementation of the HHMP, including the implementation of all management activities; • analyse and collate documentation for inclusion in the Annual Review; <ul style="list-style-type: none"> • undertake internal and external reporting requirements; <ul style="list-style-type: none"> • maintain relevant records on site; • periodically review progress against targets and performance indicators; • contact qualified archaeologist/heritage consultant and Heritage Division, OEH as appropriate, should previously unknown historical archaeological material/heritage sites/items be uncovered or identified; and • contact all appropriate stakeholders in the event that human skeletal material is exposed during works.
Other BCM Staff and Contractors	<ul style="list-style-type: none"> • comply with the management requirements and commitments contained within this management plan; and • report all non compliances with this plan in accordance with BCM reporting procedures.

7 References

Brew, A. 2001. Thematic Study: World War II Aerodromes and Associated Structures in New South Wales.

Heritage Office, 2006. Heritage Information Series: Photographic Recording of Heritage Items Using Film or Digital Capture.

Lavelle S., Karskens, G. And RTA Technology 1999. Stage 1 Conservation Plan for the Great North Road.

NSW Department of Health 2008. Policy Directive –Exhumation of Human Remains.

NSW Heritage Office 1998. Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977.

Turner, J 1995. Historical Themes of the Shire of Muswellbrook, unpublished.

Umwelt (Australia) Pty Ltd, 2005. Historic Heritage Archival Recording Study: Bulga Coal Continued Operations – Sites BH9, BH11 and BH13.

Umwelt (Australia) Pty Limited, 2012. Historic Heritage Assessment for Bulga Optimisation Project.

Umwelt (Australia) Pty Limited, 2013a. Environmental Impact Statement Bulga Optimisation Project.

Umwelt (Australia) Pty Limited, 2013b. Response to Submissions and Revised and Amended Project Application Assessment Report Bulga Optimisation Project.

Weir Phillips Architects Pty Limited, 2012. Heritage Assessment Charlton Road Singleton Shire New South Wales.

Wilkinson Murray Pty Limited, 2012. Bulga Optimisation Project Blasting Noise and Vibration Impacts Assessment.

A.1 Appendix 1



NSW GOVERNMENT
Department of Planning

Mining & Extractive Industries
Major Development Assessment
Phone: (02) 9228 6487
Fax: (02) 9228 6466
Email: david.kitto@dpnr.nsw.gov.au
Level 4 Western Gallery
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

Mr David O'Brien
Environmental Co-ordinator
Bulga Coal Underground Mines
Beltana Highwall Mining Pty Limited
PMB 15
SINGLETON NSW 2330

Dear Mr O'Brien

**Bulga Underground Coal Mine (DA 376-8-2003)
Outstanding Issues**

I refer to your letter dated the 23 August 2005 regarding conditions 40, 42(b), 42(c), 46 and 55 of Schedule 4 of the Bulga underground coal mine development consent (DA 376-8-2003).

The Department has reviewed the information contained in your letter and is satisfied that it meets the requirements of the relevant conditions of the development consent to DA 376-8-2003. However, the Department wishes to remind you that in order to fulfil the requirements of condition 42 of Schedule 4, the company is required to prepare a photographic record of the condition and integrity of Heritage site BH13 before, during and after mining.

If you have any further enquiries on this matter please contact Mike Young on 9228 6481.

Yours sincerely


David Kitto
Manager
Mining & Extractive Industries
As delegate for the Director-General
29/9/05

Entered
17/10/05
BC

A.2 Appendix 2

23. MAY. 2005 14:23

UMWELT

NO. 824 P. 2



Department of
Infrastructure, Planning and Natural Resources

Mining & Extractive Industries
Major Development Assessment
Phone: (02) 9228 6487
Fax: (02) 9228 6466
Email: david.kitto@dlpr.nsw.gov.au
Level 4 Western Gallery
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

RECEIVED
12 MAY 2005

Our Reference: S02/02148

Mr Ben Ferris
Senior Environmental Engineer
Umwelt (Australia) Pty Limited
PO Box 838
TORONTO NSW 2283

Dear Ben

Bulga Underground Coal Mine (DA 376-8-2003)
~~Historic Heritage Archival Recording Study~~

Thank you for forwarding the Historic Heritage Archival Recording Study, required under the development consent to DA 376-8-2003, for the Department's consideration.

The Department has reviewed the final study and is satisfied that it addresses the requirements set out in the development consent (i.e. condition 41 and 42(a) of Schedule 4).

Should you have any enquiries on this matter please contact Mike Young on 9228 6481.

Yours sincerely

David Kitto
Manager
Mining & Extractive Industries
As delegate for the Director-General

A.3 Appendix 3



Contact: Chris Knight
Phone: 02 6575 3405
Email: christopher.knight@planning.nsw.gov.au
Our ref: SSD-4960

Ralph Northey
Bulga Coal Complex
PMB 8
SINGLETON NSW 2330

Dear Ralph,

Bulga Coal Complex –Approval of Historic Heritage Management Plan and Broke RAAF Landing Grounds and McNamara’s Dairy Cottage Archival Recording Draft dated September 2015.

Thank you for forwarding the Historic Heritage Management Plan and associated Broke RAAF Landing Grounds and McNamara’s Dairy Cottage Archival Recording Draft to this Department for review as required under Schedule 3, Condition 41 and 42 of SSD-4960.

The Department has reviewed the Historic Heritage Management Plan and associated Broke RAAF Landing Grounds and McNamara’s Dairy Cottage Archival Recording Draft dated September 2015 and found that it generally satisfies the requirements of the Approval. I would like to advise you that the Secretary has approved the Historic Heritage Management Plan and the Broke RAAF Landing Grounds and McNamara’s Dairy Cottage Archival Recording Draft dated September 2015.

The Department requests that you provide a final pdf version of the Historic Heritage Management Plan, which includes a copy of this letter of approval, to the Department by Friday the 29th July 2016. Please note that this plan must be implemented by Friday 29th July 2016.

Please place a copy of the approved Historic Heritage Management Plan on your website in accordance with, Schedule 6, Condition 9 of DA 376-8-2003 by Friday 29th July 2016.

Also, the Secretary requests that the Broke RAAF Landing Grounds and McNamara’s Dairy Cottage Archival Recording Draft be finalised. Provision of this report and the archival record should be provided to this Department, OEH, Singleton Shire Council and other relevant Government Agencies upon finalisation.

If you require further information or clarification on this matter please contact Chris Knight on 6575 3404 or by email to christopher.knight@planning.nsw.gov.au.

Yours sincerely,

A handwritten signature in blue ink that reads 'W Jones' followed by the date '8/7/16'.

Wayne Jones
A/Investigations (lead) Compliance Northern Region
as the Secretary’s Nominee

Singleton Office: P.O. Box 3145, Suite 14, Level 1, 1 Civic Avenue Singleton NSW 2330
Website: www.planning.nsw.gov.au