



# MAXWELL PROJECT

## APPENDIX H

### Historic Heritage Assessment



# EXTENT

HERITAGE ADVISORS  
TO AUSTRALIA AND  
THE ASIA PACIFIC



## Maxwell Project, near Muswellbrook, New South Wales

Historic Heritage Assessment and  
Statement of Heritage Impact – FINAL

Prepared for Malabar Coal Limited

6 June 2019

Sydney  
Melbourne  
Brisbane  
Perth

[extent.com.au](http://extent.com.au)

**EXTENT HERITAGE PTY LTD**

ABN 24 608 666 306  
ACN 608 666 306  
info@extent.com.au  
extent.com.au

**SYDNEY**

3/73 Union Street  
Pymont NSW 2009  
P +61 (0)2 9555 4000  
F +61 (0)2 9555 7005

**MELBOURNE**

13/240 Sydney Road  
Coburg VIC 3058  
P +61 (0)3 9388 0622

**BRISBANE**

7/757 Ann Street  
Fortitude Valley QLD 4006  
P +61 (0)7 3667 8881

**PERTH**

1/191 St Georges Tce  
Perth WA 6000  
P +61 (0)8 9381 5206

## Title page

Client:	Malabar Coal Limited
Project:	Historic (Non-Aboriginal) Heritage Assessment and Statement of Heritage Impact
Site name:	Maxwell Project, near Muswellbrook, NSW – Various Sites
Author(s):	J Heidrich, J Pearce, A Sneddon
Date:	06/06/2019

## Document control

Version	Internal reviewer	Date	Review type
Final	A Sneddon	05/06/2019	QA/Technical
Final	K Hatch	06/06/2019	Proofread

### Copyright and moral rights

Historical sources and reference materials used in the preparation of this report are acknowledged and referenced in figure captions or in text citations. Reasonable effort has been made to identify, contact, acknowledge and obtain permission to use material from the relevant copyright owners.

Unless otherwise specified in the contract terms for this project Extent Heritage Pty Ltd

- vests copyright of all material produced by Extent Heritage Pty Ltd (but excluding pre-existing material and material in which copyright is held by a third party) in the client for this project (and the client's successors in title);
- retains the use of all material produced by Extent Heritage Pty Ltd for this project, for its ongoing business, and for professional presentations, academic papers or publications.

## Contents

1.	Introduction.....	1
1.1	Preamble.....	1
1.2	Site Location and Identification.....	2
1.3	Project Description.....	6
1.4	The Transport and Services Corridor.....	7
1.5	Resources Used for this Report.....	7
1.6	Statutory Context.....	8
1.7	Non-Statutory Listings.....	10
1.8	Heritage Status.....	11
1.9	Limitations.....	12
1.10	Author Identification.....	12
1.11	Terminology.....	13
2.	Methodology.....	14
2.1	Guideline Documents.....	14
2.2	Assessment Criteria and Considerations.....	15
2.3	Assessing the Potential Archaeological Resource.....	17
2.4	Cumulative Impacts and Cultural Landscapes.....	18
2.5	Historical Themes as Part of the Assessment Process.....	19
2.6	Heritage Impact Assessments.....	20
2.7	Fieldwork Methodology.....	21
3.	Historical Background.....	22
3.1	Introduction.....	22
3.2	Land Use.....	24
4.	Assessments of Cultural Heritage Significance.....	25
4.1	M01 Fence.....	25
4.2	M02 Edderton Homestead.....	29
4.3	M03 Bowfield Homestead.....	40
4.4	M04 Nissen Hut and Sheep Shower.....	47
4.5	M05 Arrowfield Cottage.....	54
4.6	M06 Randwick Homestead.....	57
4.7	M07 Woodlands Homestead.....	60
4.8	M08 Stockyard.....	63
4.9	M09 Plashett Homestead.....	67

4.10	M10 Strowan Homestead .....	76
4.11	Muswellbrook-Jerrys Plains Landscape Conservation Area.....	80
5.	Assessment of Heritage Impacts .....	83
5.1	M01 Fence .....	83
5.2	M02 Edderton Homestead.....	83
5.3	M03 Bowfield Homestead.....	84
5.4	M04 Nissen Hut and Sheep Shower .....	85
5.5	M05 Arrowfield Cottage .....	85
5.6	M06 Randwick Homestead.....	85
5.7	M07 Woodlands Homestead .....	86
5.8	M08 Stockyard .....	86
5.9	M09 Plashett Homestead .....	87
5.10	M10 Strowan Homestead .....	87
5.11	Muswellbrook-Jerrys Plains Landscape Conservation Area.....	88
5.12	Cumulative Impacts .....	89
5.13	Summary of Impacts.....	89
6.	Conclusions and Recommendations.....	90
6.1	M01 Fence .....	90
6.2	M02 Edderton Homestead.....	90
6.3	M03 Bowfield Homestead.....	90
6.4	M04 Nissen Hut and Sheep Shower .....	90
6.5	M05 Arrowfield Cottage .....	90
6.6	M06 Randwick Homestead.....	90
6.7	M07 Woodlands Homestead .....	90
6.8	M08 Stockyard .....	91
6.9	M09 Plashett Homestead .....	91
6.10	M10 Strowan Homestead .....	91
6.11	Muswellbrook-Jerrys Plains Landscape Conservation Area.....	91
6.12	Cumulative Impacts .....	91
6.13	Archaeological 'Relics'.....	91
6.14	Summary .....	91
7.	References .....	93
	Appendix 1 – National Trust Citation – Muswellbrook-Jerrys Plains Landscape Conservation Area.....	96

# 1. Introduction

## 1.1 Preamble

Extent Heritage Pty Ltd ('Extent') has been engaged by Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Coal Limited ('Malabar'), to prepare a Historic Heritage Assessment ('HHA') and Statement of Heritage Impact ('SOHI'), for non-Aboriginal cultural heritage places that may be impacted by works associated with the development of the proposed underground mining operation referred to as the Maxwell Project (herein referred to as 'the Project'), in the vicinity of Muswellbrook, New South Wales (NSW) (see Figure 1).

A Development Application is proposed on the basis of the Project being 'State Significant Development'. This assessment forms part of an Environmental Impact Statement (EIS), which has been prepared to accompany a Development Application for the Project in accordance with Part 4 of the NSW *Environmental Planning and Assessment Act 1979* ('EP&A Act').

Specifically, Extent has been engaged to (a) review and augment previous historic heritage assessments prepared by AECOM Australia Pty Ltd ('AECOM') in 2012 and 2015 as part of the former Drayton South Coal Project, and (b) prepare a SOHI in relation to the heritage places that may be impacted by the proposed Project (see Figure 2).

This report has been informed by fieldwork carried out in September 2018 to ground truth the results of the previous AECOM reports. Where the 2018 fieldwork demonstrated a change in the condition or circumstances of heritage places identified by AECOM, this is reflected in the present report, including small modifications in some instances of the AECOM assessments and management recommendations.

This report focuses on ten heritage places within the Study Area (see Figure 3). These places comprise the same known and potential heritage places identified in the 2012 and 2015 AECOM reports. No additional heritage places were identified by Extent. Some of these places are located outside of the Project area (Sites 5–10), but they are considered in this report because it may be asserted that they form part of a broader 'cultural landscape' that the Project will be a part of, or will potentially impact.

Therefore, this report also addresses heritage issues that may relate to the Muswellbrook-Jerrys Plains Landscape Conservation Area ('MJP LCA'). The eastern edges of the MJP LCA overlap with the Project, but most of the MJP LCA lies to the Project's west and south (see Figure 2–Figure 3). The discrete elements of visible infrastructure proposed for the Project would all be located outside of the MJP LCA.

The MJP LCA is based on a heritage assessment dating to 1985 that was prepared by the National Trust of Australia. It is not referenced in the *Muswellbrook Local Environmental Plan 2009* ('Muswellbrook LEP') or the *Singleton Local Environmental Plan 2013* ('Singleton LEP'). A National Trust heritage assessment and listing has no legislative effect and gives rise to no statutory obligations. However, it provides a useful baseline (although now somewhat dated) against which to assess potential adverse impacts on the wider landscape. The ten places considered in this report are:

- M01 – Fence line.
- M02 – Edderton Homestead.
- M03 – Bowfield Homestead.
- M04 – Nissen Hut and sheep shower.
- M05 – Arrowfield Cottage.
- M06 – Randwick Homestead.
- M07 – Woodlands Homestead.
- M08 – Stockyard.
- M09 – Plashett Homestead.
- M10 – Strowan Homestead.

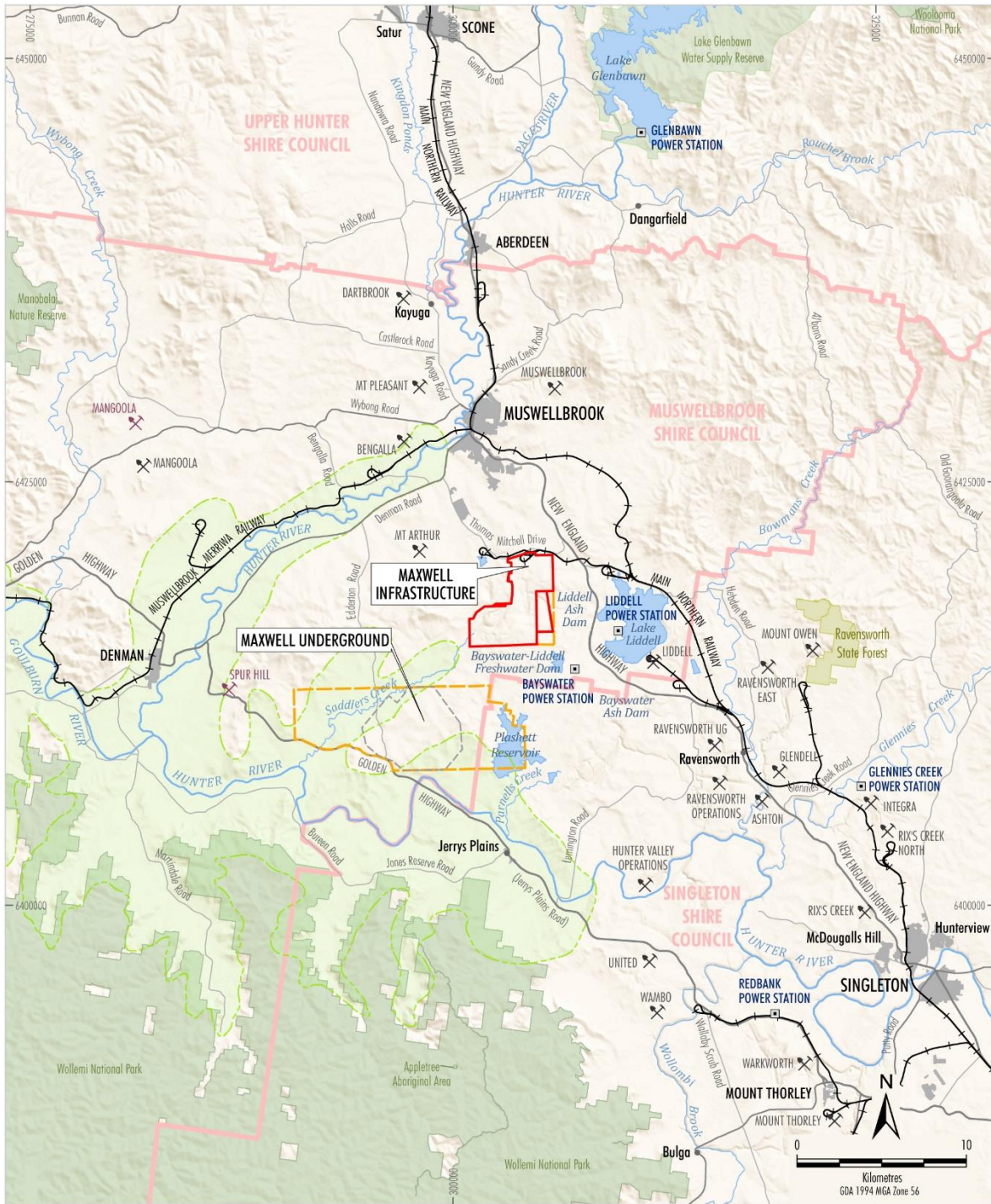
This report includes an assessment of the heritage values of all of the above places, in addition to an assessment of potential heritage impacts arising out of the proposed works. Four of the above sites that are located outside of the Project area (Arrowfield Cottage, Randwick Homestead, Woodlands Homestead and Strowan Homestead) were not accessed during the preparation of this report, as they are privately owned properties and would not be directly impacted by the Project. Therefore, the assessments for those four places are based upon the previous AECOM reports and desktop research.

## 1.2 Site Location and Identification

The Project is in the Upper Hunter Valley of NSW, east-southeast of Denman and south-southwest of Muswellbrook. The Project is located wholly within the Muswellbrook Local Government Area (see Figure 1).

This study considers the potential for historical heritage within the Project surface development area and the area above the proposed underground mining operations (the 'Maxwell Underground') (see Figure 3). It also considers sites that form part of a broader 'cultural landscape' that the Project will be a part of, or will potentially impact.

The eastern boundary of the MJP LCA (see Figure 2–Figure 3) abuts and slightly overlaps the Project area. The MJP LCA was described in 1985 by the National Trust. The citation notes the prominence of the '*flat alluvial floodplain contained on each side by low rolling hills*' and '*extensive views of the river flats, the enclosing hills and distant ranges*'. The citation emphasises that its '*high scenic and cultural qualities*' should be recognised in future open cut mining operations and rehabilitation programmes (Appendix 1).



- LEGEND**
- Mining Operation
  - Proposed Mining Operation
  - Railway
  - Local Government Boundary
  - State Forest
  - National Parks and Wildlife Service Estate
  - Muswellbrook-Jerrys Plains Landscape Conservation Area
  - Exploration Licence Boundary
  - Mining and Coal Lease Boundary
  - Indicative Extent of Underground Development

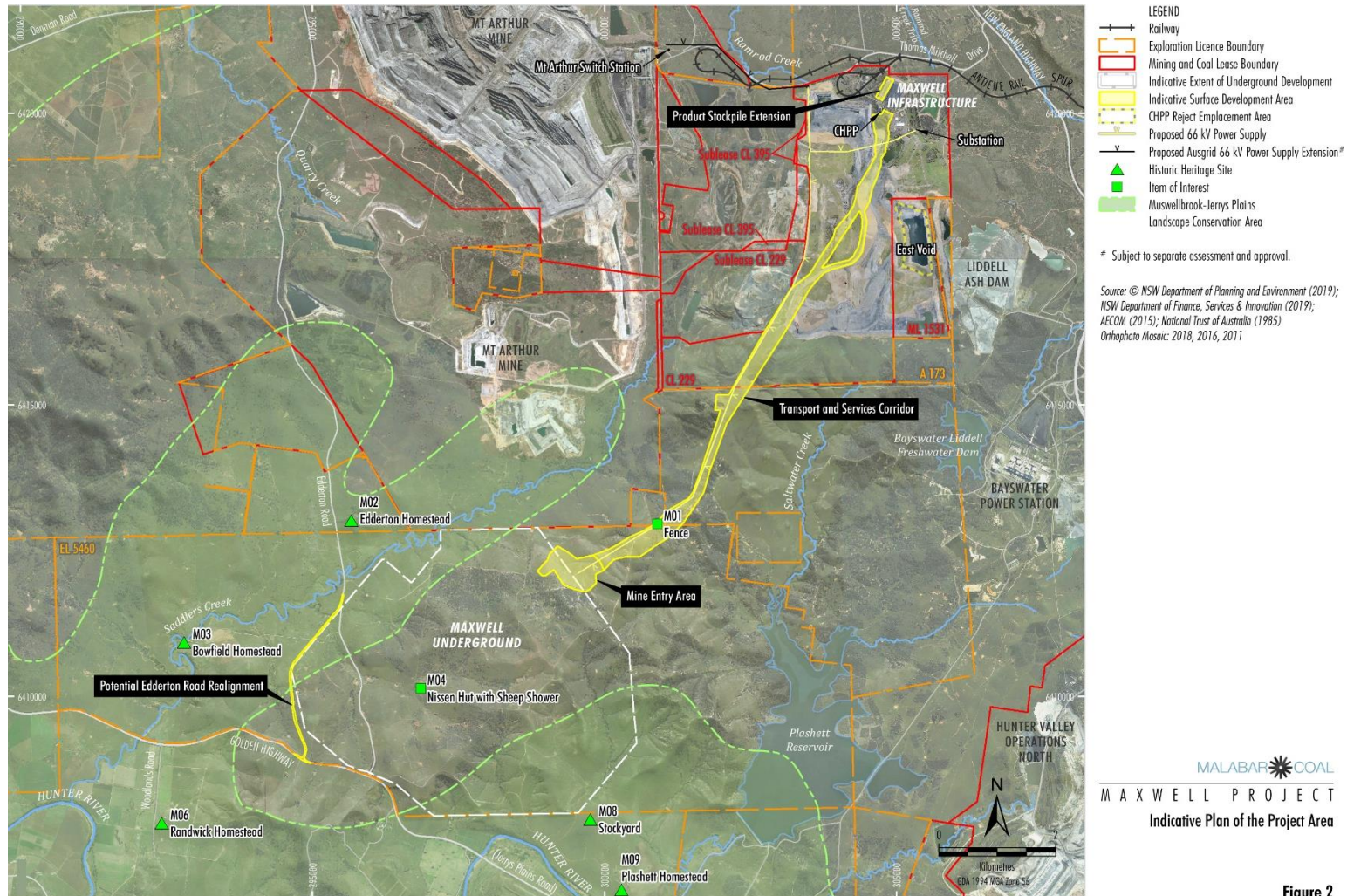
Source: © NSW Department of Planning and Environment (2019); NSW Department of Finance, Services & Innovation (2019); Office of Environment and Heritage NSW (2019); National Trust of Australia (1985)

MALABAR COAL  
**MAXWELL PROJECT**  
Location of the Project  
Within the Wider Region

**Figure 1**

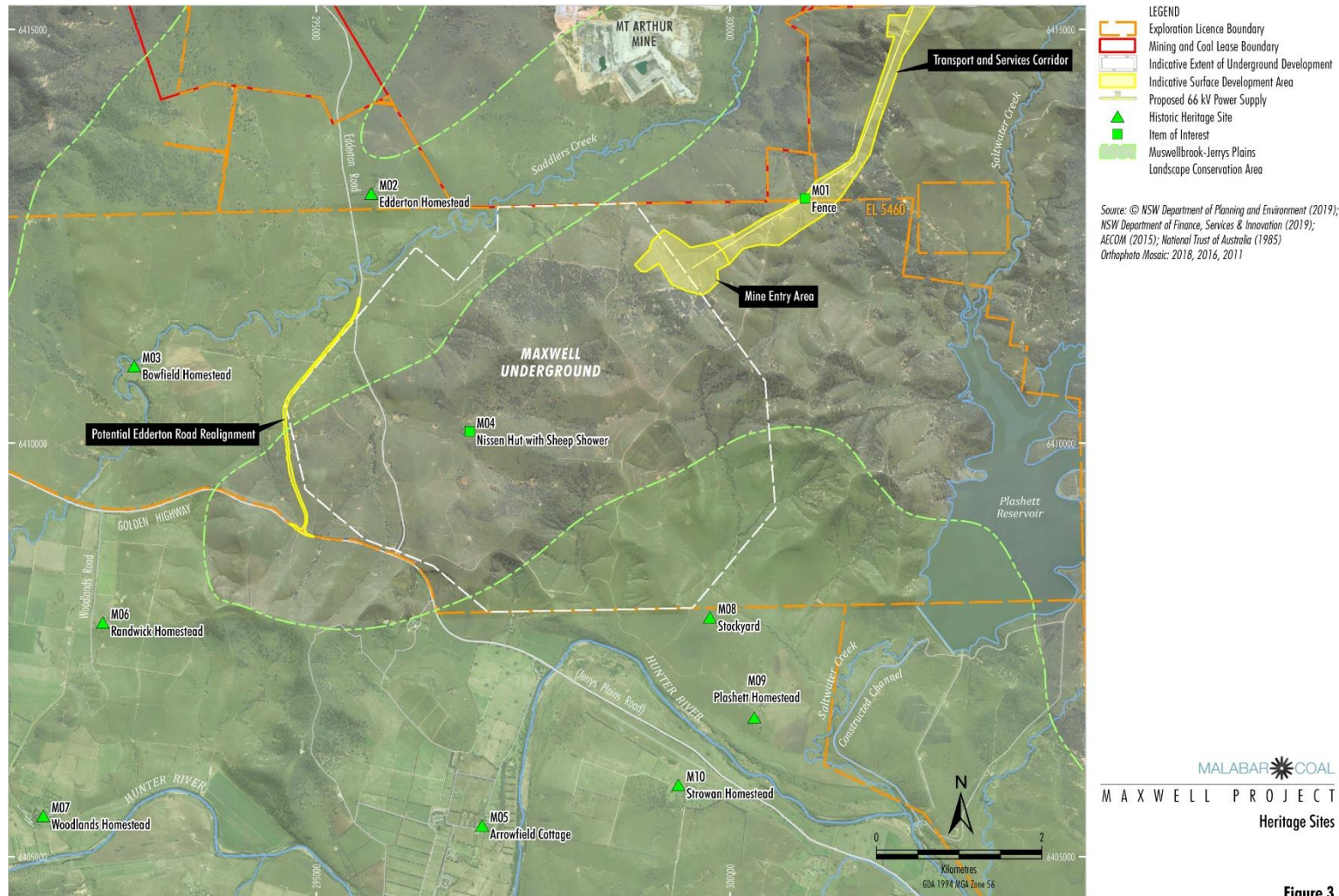
Figure 1 – Location of the Project within the wider region.





**Figure 2**

Figure 2 – Indicative plan of the Project area and surrounding surface context. Note its relationship with the Muswellbrook-Jerrys Plains Landscape Conservation Area (shaded green area with dashed green line). The yellow shading shows the extent of proposed surface development, including the transport and services corridor between the Maxwell Underground and the existing Maxwell Infrastructure.



**Figure 3**

Figure 3 – Aerial map capturing the Study Area and illustrating the location of the historic heritage sites addressed in this report, the boundary of the Exploration Licence Area and the Muswellbrook-Jerrys Plains Landscape Conservation Area (shaded green area with dashed green line). The part of the transport and services corridor that has not been the subject of previous assessments is also shown.

Most of the Project area is not within the MJP LCA and its character can be contrasted with the description of the MJP LCA above. Today, the Project area and its immediate surrounds are characterised by a mix of land uses and a range of activities, each one represented by a variety of infrastructure and built forms. The land has been cleared for some 100–150 years and the remnants of past pastoral and agricultural activities are visible in the landscape. However, they share the area with mining operations and mine infrastructure that have been part of the wider landscape for decades. This has been a relevant consideration in this assessment.

### 1.3 Project Description

The Project would involve an underground mining operation that would produce high-quality coals over a period of approximately 26 years.

At least 75% of coal produced by the Project would be capable of being used in the making of steel (coking coals). The balance would be export thermal coals, suitable for the new generation High Efficiency, Low Emissions power generators.

The Project would involve extraction of run-of-mine ('ROM') coal, from four seams within the Wittingham Coal Measures using the following underground mining methods:

- underground bord and pillar mining with partial pillar extraction in the Whynot Seam; and
- underground longwall extraction in the Woodlands Hill Seam, Arrowfield Seam and Bowfield Seam.

The substantial existing Maxwell Infrastructure would be used for handling, processing and transporting coal for the life of the Project (see Figure 2). A mine entry area would be developed for the Project in a natural valley in the north of Exploration Licence ('EL') 5460 to support underground mining and coal handling activities and provide for personnel and materials access (see Figure 2). ROM coal brought to the surface at the mine entry area would be transported to the Maxwell Infrastructure area. Early ROM coal would be transported via internal roads during the construction and commissioning of a covered overland conveyor system with a transport and services corridor. Subsequently, ROM coal would be transported to the Maxwell Infrastructure area via the covered overland conveyor system.

A detailed description of the Project is provided in the main document of the EIS.

Malabar also manages the existing infrastructure within Coal Lease ('CL') 229, Mining Lease ('ML') 1531 and CL 395 (now known as the 'Maxwell Infrastructure'), which includes a coal handling and preparation plant ('CHPP'), train load-out facilities and other infrastructure and services (including water management infrastructure, administration buildings, workshops and services) (see Figure 2). This infrastructure is currently in care and maintenance but the Project would make use of the Maxwell Infrastructure.

The underground mining approach described above produces no visible features, with the exception of the following in discrete locations:

- the mine entry and its associated infrastructure;
- potential Edderton Road realignment;
- water management infrastructure;
- powerlines to the underground mine entry;
- the site access road from Thomas Mitchell Drive to the entry;
- the infrastructure associated with mine ventilation and gas management; and
- the transport and services corridor, which would include a covered overland conveyor system to transport ROM coal from the mine entry area to the Maxwell Infrastructure.

These items of infrastructure would all be located outside of the MJP LCA. The mine entry area would be located in a natural valley in the north of EL 5460, again outside of the MJP LCA.

The Project would support continued rehabilitation of previously mined areas and overburden emplacements areas within CL 229, ML 1531 and CL 395. Coarse rejects, tailings and brine resulting from Project mining activities would be emplaced within existing voids. Voids utilised for this purpose would be capped and rehabilitated at the completion of mining.

## 1.4 The Transport and Services Corridor

An above-ground transport and services corridor forms part of the Project (shaded yellow in Figure 2 and Figure 3). The northern half of that corridor has been the subject of previous heritage assessments and project approvals arising out of the Drayton Mine Extension Project (Veritas Archaeology & History Service [‘VAHS’] 2005). The northern half of the transport and services corridor would traverse previous mining areas that have been significantly disturbed in past decades. There are no heritage items within that part of the corridor.

The southern half of the transport and services corridor (that part extending from the proposed mine entry area to the southern boundary of CL 229; shaded yellow in Figure 3) has been considered in this report.

## 1.5 Resources Used for this Report

This report relies on the historical research contained in the following documents, sometimes supplemented with additional research:

- *Non-Aboriginal Heritage Impact Assessment: Drayton South Coal Project* (AECOM 2012).
- *Drayton South Coal Project: Non-Aboriginal Heritage Impact Assessment* (AECOM 2015).
- *Drayton South Coal Project Heritage Report – Report prepared for Hunter Thoroughbred Breeders’ Association* (Godden Mackay Logan Pty Ltd [‘GML’] 2013).
- *Drayton South Coal Project – Non-Aboriginal Heritage Preliminary Assessment Review Report – Report prepared for Hunter Thoroughbred Breeders Association* (GML 2015).
- *Drayton Extension: Non-Aboriginal Heritage Assessment* (VAHS 2005).
- *Muswellbrook Shire-Wide Heritage Study: Final Report* (EJE Group 1996).
- Muswellbrook LEP.

- Singleton LEP.
- *Hunter Estates: A Comparative Heritage Study of pre-1850s Homestead Complexes in the Hunter Region* (NSW Office of Environment and Heritage 2013).
- *Mount Pleasant Historic Heritage Study* (VAHS 2014).
- *Aboriginal and Non-Indigenous Cultural Heritage Assessment – Mt Arthur Coal Open Cut Modification* (RPS Australia East Pty Ltd 2013).
- *People Property Power: Plashett, Jerry's Plains* (Hunter 2010).

The above reports and documents include detailed histories of heritage places within or directly adjacent to the area of mining influence. This report draws on the historical research conducted as part of the above reports, with additional research supplementing it where necessary and as noted in the reference list.

## 1.6 Statutory Context

### 1.6.1 *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the 'EPBC Act') establishes an environmental assessment process for nationally and internationally significant natural and cultural heritage places – defined in the EPBC Act as matters of National Environmental Significance. Places on the World Heritage List, National Heritage List and Commonwealth Heritage List are protected by the EPBC Act.

The World, National and Commonwealth Heritage Lists were consulted in the preparation of this report. No cultural heritage places included on those heritage lists exist within the Study Area.

### 1.6.2 *Environmental Planning and Assessment Act 1979*

The NSW EP&A Act provides for the preparation of those planning instruments that govern development within NSW. This includes Regional Environmental Plans and Local Environmental Plans ('LEPs') which are administered by local government and determine land use and the process for assessing development applications (see below on the Muswellbrook LEP and Singleton LEP). The NSW EP&A Act also establishes the broad frameworks for environmental assessment that underpin this HHA and SOHI.

This HHA and SOHI forms part of an EIS prepared to accompany a Development Application pursuant to Part 4 of the NSW EP&A Act. The Development Application relates to proposed 'State Significant Development' as defined by section 4.36 of the Act and in accordance with *State Environmental Planning Policy (State and Regional Development) 2011*. Section 4.41(1) of the NSW EP&A Act describes the authorisations that are not required for a State Significant Development ('SSD') approved under Part 4, including those authorisations that would normally be obtained pursuant to the NSW *Heritage Act 1977*.

### 1.6.3 NSW *Heritage Act 1977*

Notwithstanding the above, the NSW Minister of Planning ('the Minister') may have regard to the NSW *Heritage Act 1977*, including the objects of the Act, its definition of 'relics', and the assessment criteria for heritage places within the Act. The Minister may also choose to seek advice from the Heritage Council.

Section 3 of the NSW *Heritage Act 1977* states (among other things) that an object of the Act is to promote an understanding of the State's heritage and to encourage its conservation.

The NSW *Heritage Act 1977* defines an archaeological 'relic' to mean '*any deposit, artefact, 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*'. The NSW *Heritage Act 1977* establishes the NSW Heritage Council and the NSW State Heritage Register (SHR) as important mechanisms for achieving its objectives. For development that is not SSD, the NSW *Heritage Act 1977* applies to certain aspects of local heritage (e.g. the Minister may make an interim heritage order in relation to places of local significance), but it principally applies to conserve places of State significance, especially through inclusion on the SHR.

No 'relics' would be impacted by the Project, provided the recommendations contained in this HHA and SOHI are observed (Section 6.13).

No items listed on the NSW State Heritage Register would be impacted by the Project.

Section 170 of the NSW *Heritage Act 1977* requires NSW Government agencies to maintain a register of heritage assets under their care and control (a 'Heritage and Conservation Register'). No places listed on a section 170 Heritage and Conservation Register would be impacted by the Project.

### 1.6.4 *Muswellbrook Local Environmental Plan 2009*

For projects that are not SSD, the Muswellbrook LEP controls development in relation to heritage items within the Muswellbrook Local Government Area. The Project lies within the Muswellbrook Local Government Area. The Muswellbrook LEP includes provisions relating to the conservation of heritage places. With respect to SSD, the Minister may take into consideration the provisions of relevant LEPs but is not bound by them.

Clause 5.10(1) outlines the aims of the Muswellbrook Shire Council in relation to heritage items, these being:

- (a) to conserve the environmental heritage of Muswellbrook;*
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views;*
- (c) to conserve archaeological sites; and*
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.*

The LEP also provides for the conservation of heritage places through the establishment of a list of locally significant places, described in Schedule 5 of the Muswellbrook LEP.

Three places on the Muswellbrook LEP are in the Project area or in the general vicinity of the Project.

### 1.6.5 The Singleton Local Environmental Plan 2013

For projects that are not SSD, the Singleton LEP controls development in relation to heritage items within the Singleton Local Government Area. The Project is outside of, but in the vicinity of the Singleton Local Government Area. The Singleton LEP includes provisions relating to the conservation of heritage places. In assessing SSD, the Minister may take into consideration the provisions of relevant LEPs but is not bound by them.

Clause 5.10(1) outlines the aims of the Singleton Shire Council in relation to heritage items, these being:

- (a) to conserve the environmental heritage of Singleton;*
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views;*
- (c) to conserve archaeological sites; and*
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.*

The Singleton LEP also provides for the conservation of heritage places through the establishment of a list of locally significant places, described in Schedule 5.

Two places listed in the Singleton LEP are in the general vicinity of the Project.

## 1.7 Non-Statutory Listings

### 1.7.1 Former Register of the National Estate

In 1997, the Council of Australian Governments determined that heritage conservation should be the responsibility of the level of government best placed to offer the required level of protection. After the introduction of the EPBC Act, new heritage lists were created, which led to the Register of the National Estate ('RNE') being phased out.

From 19 February 2012, all references to the RNE were removed from the EPBC Act. The RNE is now maintained on a non-statutory basis as an archive and educational resource. The existence of an entry for a place in the RNE does not in itself create a requirement to protect the place under Commonwealth law. Nevertheless, information in the register may be relevant to statutory decisions about protections.

One place on the former RNE is in the general vicinity of the Project.

### 1.7.2 Register of the National Trust of Australia

The National Trust is a not-for-profit organisation that maintains a register of landscapes, townscapes, buildings, industrial sites, cemeteries and other items or places, which the Trust determines to have cultural significance. The listing of a place on the Register of the National Trust of Australia carries with it no legal obligations; however, it is widely recognised as an authoritative statement of the cultural significance of a place.

The MJP LCA is classified by the National Trust (Appendix 1).

### 1.7.3 Register of Significant Buildings (Australian Institute of Architects)

The Australian Institute of Architects (AIA) maintains a register of twentieth century buildings of significance. This Register carries with it no legal obligations; however, it is recognised as an authoritative statement of the significance of listed buildings.

No places on the Register of Significant Buildings lie in the Study Area or in the vicinity of the Project.

## 1.8 Heritage Status

The following tables summarise the heritage listings and non-statutory assessments of places relevant to the present report.

Table 1 – A summary of the statutory heritage listings relevant to the Project.

Register/Listing	Item Listed (Y/N)	Item Name	Item Number
<b>Statutory Register</b>			
World Heritage List	N	-	-
National Heritage List	N	-	-
Commonwealth Heritage List	N	-	-
State Heritage Register (SHR)	N	-	-
S170 Heritage and Conservation Register	N	-	-
Muswellbrook LEP	Y	Edderton Homestead Plashett Homestead Woodlands Stud	189 190 115
Singleton LEP	Y	Arrowfield Estate Strowan Estate	131 132



Table 2 – A summary of the non-statutory heritage assessments of places relevant to the Project.

Register/Listing	Item Listed (Y/N)	Item Name	Item Number
<b><i>Non-Statutory Register</i></b>			
<i>Hunter Regional Environmental Plan 1989 (Heritage)</i> <sup>1</sup>	Y	'Woodlands' Stud	-
National Trust of Australia (NSW Branch)	Y	Muswellbrook-Jerrys Plains Landscape Conservation Area ('MJP LCA')	-
Register of Significant Buildings in NSW (Australian Institute of Architects)	N	-	-
Register of the National Estate	Y	Strowan Homestead	-

## 1.9 Limitations

The following sites are located on private property and they were not accessed for this report:

- M05 – Arrowfield Cottage.
- M06 – Randwick Homestead.
- M07 – Woodlands Homestead.
- M10 – Strowan Homestead.

Extent has not been engaged to assess Aboriginal cultural heritage places and values. This area has been covered in a separate report within the EIS.

Observations made concerning the possible social significance of places are based on publicly accessible published materials.

## 1.10 Author Identification

This report was prepared by Jacqui Pearce (Senior Associate) and Andrew Sneddon (Associate Director) of Extent Heritage Pty Ltd.

---

<sup>1</sup> The *Hunter Regional Environmental Plan 1989 (Heritage)* was repealed on 5 August 2016; however, items listed in this document have been considered for completeness.

## 1.11 Terminology

The terminology in this report follows definitions presented in *The Burra Charter: The Australian ICOMOS Charter for Conservation of Places of Cultural Significance* [*The Burra Charter*] (Australian ICOMOS 2013a). Article 1 provides the following definitions:

**Place** means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

**Cultural significance** means aesthetic, historic, scientific, social or spiritual value for past, present or future generations.

Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.

Places may have a range of values for different individuals or groups.

**Fabric** means all the physical material of the place including elements, fixtures, contents, and objects.

**Conservation** means all the processes of looking after a place so as to retain its cultural significance.

**Maintenance** means the continuous protective care of a place and its setting. Maintenance is to be distinguished from repair which involves restoration or reconstruction.

**Preservation** means maintaining a place in its existing state and retarding deterioration.

**Restoration** means returning a place to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.

**Reconstruction** means returning a place to a known earlier state and is distinguished from restoration by the introduction of new material.

**Adaptation** means changing a place to suit the existing use or a proposed use.

**Use** means the functions of a place, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.

**Compatible use** means a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

**Setting** means the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character.

**Related place** means a place that contributes to the cultural significance of another place.

## 2. Methodology

### 2.1 Guideline Documents

This report addresses the *Secretary's Environmental Assessment Requirements (SEARs)* issued for the Project (SSD 18\_9526).

Specifically, 'Key Issue – Heritage' requires 'preparation of a Heritage Impact Statement'. It also requires:

*an assessment of the potential impacts of the development on historic heritage items and cultural landscapes, including preparation of a Heritage Impact Statement and/or Historical Archaeological Assessment, prepared by a suitably qualified heritage expert.*

The report also addresses the requirements for impact assessment provided by the NSW Heritage Council (Doc 18/573236) in relation to the SEARs for the Project (SSD 18\_9526). The Heritage Council stated that the following be included in the relevant EIS:

1. The EIS must include a Heritage Impact Statement ('HIS') prepared by a suitably qualified Heritage Consultant, with experience in the assessment of cultural landscapes. The HIS should identify any State and local heritage items and heritage conservation areas within the SSD site and in the vicinity and provide an assessment of heritage impacts. Where impacts are identified, the HIS should outline the proposed mitigation measures.
2. The EIS is to include an assessment of the cumulative impacts resulting from the proposal on other known or potential heritage items and cultural landscapes. Where impacts are identified, the HIS should outline the proposed mitigation measures.
3. The EIS is to assess a method of mitigation/compensation to the community in the event the cultural landscape is impacted by potential subsidence.
4. The EIS must include a Historical Archaeological Assessment ('HAA'), prepared by a suitably qualified Historical Archaeologist, in accordance with the guideline documents, *Archaeological Assessments Guidelines* (NSW Heritage Office 1996); and *Assessing Significance for Historical Archaeological Sites and 'Relics' 2009* (NSW Heritage Council 2009). The HAA should identify what relics, if any, are likely to be present within the SSD site or in the vicinity, assess their significance and consider the impacts from the proposal on this potential resource. Where harm is likely to occur, it is recommended that the significance of the relics be considered in determining an appropriate mitigation strategy. If harm cannot be avoided in whole or part, an appropriate Research Design and Excavation Methodology should also be prepared to guide any proposed excavations.

In addition to the above, this report has been prepared in accordance with the principles and procedures established by the following documents:

- *Assessing Heritage Significance* (NSW Heritage Office 2001).
- *Archaeological Assessments Guidelines* (NSW Heritage Office 1996).
- *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Heritage Council 2009).

- *Criteria for the Assessment of Excavation Directors* (NSW Heritage Council 2011).
- *NSW Heritage Manual* (NSW Heritage Office and Department of Urban Affairs and Planning 1996).
- The latest version of *Statements of Heritage Impact* (2002), produced by the NSW Office of Environment and Heritage and Department of Urban Affairs and Heritage.
- *The Burra Charter* (Australian ICOMOS 2013a).
- *The Burra Charter Practice Note: Understanding and Assessing Cultural Significance* (Australian ICOMOS 2013b).

## 2.2 Assessment Criteria and Considerations

Assessing the cultural significance of a place is crucial to assessing the nature and extent of the potential adverse impacts of a project, and to identifying the appropriate mitigation measures where adverse impacts are identified.

Places and items of interest within, and in the vicinity of, the Project area were assessed against the heritage assessment criteria contained within the NSW guideline document entitled *Assessing Heritage Significance* (NSW Heritage Office 2001).

Specifically, places and items were assessed against the assessment criteria for heritage significance established in the NSW *Heritage Act 1977* (Table 3). These criteria are a reflection of the more broadly expressed criteria in Article 1.2 of *The Burra Charter* (Australia ICOMOS 2013a).

Table 3 – The assessment criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	An item is important in the course, or pattern, of NSW's cultural or natural history.
Criterion (b)	An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history.
Criterion (c)	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW.
Criterion (d)	An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons.
Criterion (e)	An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history.
Criterion (f)	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history.
Criterion (g)	An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments.

The significance assessments in this report distinguish between places of State and local significance. Any places that failed to meet the criteria for either State or local significance were assessed in this report as being ‘not a heritage place’.

The guideline document *Assessing Heritage Significance* (NSW Heritage Office 2001) states:

- State significance means significance to the people of NSW.
- Local significance means significance within the local government area.

This reflects section 4A of the NSW Heritage Act 1977, which states that ‘State heritage significance’:

*in relation to a place, building, work, relic, moveable object or precinct, means significance to the State in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.*

It then states that ‘local heritage significance’:

*in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.*

Many of the structures assessed in this report were in a very poor state of repair. A Practice Note, prepared as an adjunct to *The Burra Charter* (Australia ICOMOS 2013b), entitled *Understanding and Assessing Cultural Significance* states:

*The physical condition of a place does not generally influence its significance, but will often be a factor in determining policy for the place. Guidance: A place may be in ruinous condition, yet still be significant if its values can be clearly understood. In this case the condition does not influence significance, but will have a bearing on the development of policy for the place.*

Some structures were identified that were in such poor condition that substantive refurbishment and repair would be required to make them safe for use or occupation, including replacement of large quantities of failed original fabric. Where this would result in a significant loss of the structure’s ‘authenticity’ or ‘integrity’, and difficulty in appreciating its heritage values, a lower assessment was favoured in this report (see Pearson and Sullivan 1995).

The assessments in this report also appreciate that the fabric of a heritage place may be only part of its significance. Article 1.2 of *The Burra Charter* (Australia ICOMOS 2013a) states:

*Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.*

Conservation of the heritage values embodied in some of the places discussed in this report is dependent on an understanding of, assessment of, and response to, the ‘setting’.

The *Understanding and Assessing Cultural Significance* practice note (Australia ICOMOS 2013b) states:

*'Place' in the Burra Charter has a broad meaning, and includes its elements, objects, spaces and views. Place may have tangible and intangible aspects. Guidance: A place should be considered in its wider physical, social or spiritual context. It should not be assessed in isolation. A group of individual places with shared histories, common social associations, or complementary aesthetic characteristics may form a larger 'place' or a serial place. Care is needed in defining the extent of the place and the tangible and intangible elements of the place. Its setting may include views to and from the place, its cultural context and relationships, and links between this place and other places.*

## 2.3 Assessing the Potential Archaeological Resource

Being an underground mining operation, the Project will involve only small amounts of ground surface disturbance in discrete locations (e.g. at the mine entry area). General observations about archaeological potential and significance in this report are based on the statutory provisions outlined below.

This report assesses the potential for 'relics' to exist within the Project area. Archaeological 'relics' are protected by the NSW *Heritage Act 1977*. As noted in Section 1.6.3, section 4 of the Act defines a 'relic' as:

*any deposit, artefact, 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.*

In addition to the considerations contained in the relics provisions of the NSW *Heritage Act 1977*, where the potential archaeological resource has been assessed in this report, regard has been had to the following three fundamental questions:

- Might the site yield data that cannot be obtained from any other source?
- Might the site yield data that cannot be obtained from any other site?
- Might the site yield data that would contribute to addressing substantive research questions?

These questions are drawn from the NSW guideline document entitled *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Heritage Council 2009).

The intactness of the potential archaeological resource should also be central to the assessments of archaeological significance, on the grounds that disturbed sites generally have lower potential to yield meaningful data than intact sites.

## 2.4 Cumulative Impacts and Cultural Landscapes

As noted in Section 2.1, the NSW Heritage Council provided a number of recommendations concerning the appropriate content of any EIS for the project. These recommendations included the requirement that the EIS should include *‘an assessment of the cumulative impacts resulting from the proposal on other known or potential heritage items and cultural landscapes. Where impacts are identified, the HIS should outline the proposed mitigation measures’*.

This requirement reflects clause 228(2) of the *Environmental Planning and Assessment Regulation 2000* which states that an EIS must include an assessment of *‘any cumulative environmental effect with other existing or likely future activities’*.

‘Cumulative impacts’ are not defined by the EP&A Act but the concept has been considered in the NSW Land and Environment Court, where it has been stated that:

*The word ‘cumulative’ anticipates a consideration of not just the development the subject of the application, but the development in combination with other development in the locality and the effect that the accumulation of such development and successive development of a similar type, will have on the community or locality. (Pain J in Hastings Point Progress Association Inc v Tweed Shire Council and Ors [2008] NSWLEC 180 [77])*

The UK document entitled *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute 2002) also provides useful guidance. It states with respect to cumulative impacts on landscapes:

*Cumulative effects can also arise from the intervisibility of a range of developments and/or from the combined effects of individual components of the proposed development occurring in different locations or over a period of time. The separate effects of such individual components or developments may not be significant, but together they may create an unacceptable degree of adverse effects on visual receptors within their combined visual envelopes.*

In preparing this HHA and SOHI, regard has been had to the nearby MJP LCA, and to the concept of a ‘cultural landscape’ especially within the context of possible cumulative impacts.

Cultural landscapes are areas that embody *‘the interaction between humankind and its natural environment’* and which represent *‘the combined works of nature and of man’* (UNESCO 2012). The NSW historical themes define cultural landscapes as places that embody *‘activities associated with the interactions between humans, human societies and the shaping of their physical surroundings’* (NSW Heritage Council 2001, note to Theme 3).

In the case of the Muswellbrook region, there is an ‘organically evolved landscape’ that developed through the nineteenth and twentieth centuries in response to two main ‘social, economic and administrative imperatives’ (UNESCO 2012): rural activities and mining. These two activities responded to and modified the natural environment to create a cultural landscape that has existed in the Muswellbrook area for some generations: a mixed mining and farming landscape.

Importantly, and as previously noted in Section 1.2, the evolution of the cultural landscape at the Project area and the heavily mined areas to its immediate north and east has long involved both rural and mining activities. The result has been that farming structures and rural activities (cropping, grazing, etc.) have existed alongside mining operations for generations, and through that time it has been common for mine sites to form part of the visual setting of historic built heritage places.

The cultural landscape at the Project area and the heavily mined areas to its immediate north and east is not the same kind of cultural landscape as that captured by the MJP LCA, which retains its predominantly rural character.

The cumulative impacts of mine operations, including the Project, have been assessed in this report within this context.

## 2.5 Historical Themes as Part of the Assessment Process

Historical research presented in *Non-Aboriginal Heritage Impact Assessment: Drayton South Coal Project* (AECOM 2012) and *Drayton South Coal Project – Non-Aboriginal Heritage Impact Assessment* (AECOM 2015) was used during preparation of this report, augmented by additional research as required.

In making the assessments in this report, particular regard was given to the historical themes produced by the former Australian Heritage Commission (2001) and the NSW Heritage Council (2001) to guide heritage practitioners in the assessment of historical heritage places. Several of these historical themes are relevant to the sites that may be impacted by the Project and are presented in Table 4 and Table 5 below.

Table 4 – The relevant NSW historical themes applicable to the heritage significance of the sites identified in the vicinity of the Project (NSW Heritage Council 2001).

NSW Historical Theme	Notes
Migration	Activities and processes associated with the resettling of people from one place to another (international, interstate, intrastate) and the impacts of such movements.
Agriculture	Activities relating to the cultivation and rearing of plant and animal species, usually for commercial purposes, can include aquaculture.
Mining	Activities associated with the identification, extraction, processing and distribution of mineral ores, precious stones and other such inorganic substances.
Pastoralism	Activities associated with the breeding, raising, processing and distribution of livestock for human use.
Accommodation	Activities associated with the provision of accommodation, and particular types of accommodation.
Domestic life	Activities associated with creating, maintaining, living in and working around houses and institutions.



Table 5 – The relevant Australian historical themes applicable to the heritage significance of the sites identified in the vicinity of the Project (Australian Heritage Commission 2001).

Australian Historical Theme	Sub-themes
2. Peopling Australia	2.4 Migrating 2.5 Promoting settlement
3. Developing local, regional and national economies	3.4 Utilising natural resources (including 3.4.3 Mining) 3.5 Developing primary production 3.16 Struggling with remoteness, hardship and failure
4. Building settlements, towns and cities	4.1 Planning urban settlements 4.2 Supplying urban services 4.5 Making settlements to serve rural Australia
5. Working	5.8 Working on the land
8. Developing Australia's cultural life	8.14 Living in the country and rural settlements

## 2.6 Heritage Impact Assessments

This report assesses the potential direct heritage impacts of the Project (e.g. ground disturbance impacting archaeological sites) as well as indirect heritage impacts (e.g. on the setting of heritage places and longer-term management of heritage building fabric).

This HHA and SOHI applies the principles presented in the NSW Government guideline document entitled *Statements of Heritage Impact* (NSW Heritage Office 2002).

Where projects would *directly* impact a heritage item, the guideline requires that the following questions be addressed:

- Have all options for retention and adaptive re-use been explored?
- Can all of the significant elements of the heritage item be kept and can any new development be located elsewhere on the site?
- Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible?
- Has the advice of a heritage consultant been sought? Have the consultant's recommendations been implemented? If not, why not?

However, no heritage items have been identified in this HHA and SOHI that would be directly impacted by the proposed works.

In other cases (cases of potential 'indirect impacts'), this report considers the following questions in relation to 'new development adjacent to a heritage item' (although no heritage place identified within this report is closer than approximately 2.2 kilometres ('km') to proposed visible mine infrastructure i.e. the proposed mine entry area):

- How is the impact of the new development on the heritage significance of the item or area to be minimised?
- Why is the new development required to be adjacent to a heritage item?
- How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance?

- How does the new development affect views to, and from, the heritage item? What has been done to minimise negative effects?
- Is the development sited on any known, or potentially significant archaeological deposits? If so, have alternative sites been considered? Why were they rejected?
- Is the new development sympathetic to the heritage item? In what way (e.g. form, siting, proportions, design)?
- Will the additions visually dominate the heritage item? How has this been minimised?
- Will the public, and users of the item, still be able to view and appreciate its significance?

## 2.7 Fieldwork Methodology

This report was prepared based on desktop investigations and fieldwork undertaken by Jacqui Pearce in September 2018. The sites visited as part of this fieldwork were identified using:

- desktop review of previous reports, especially AECOM (2012);
- historical research via online sources;
- local knowledge provided by Malabar employees;
- aerial imagery that captured structures currently in use and abandoned derelict structures; and
- tenants.

Photographs were taken with the permission of tenants.

The survey underpinning this report typically relied on existing roads and tracks, as well as going off road in 4WD vehicle where necessary. All places where permission was granted for entry were inspected (6 places). Where possible, the inspection included the interior of those structures (e.g. of sheds and residences). Where structures were occupied, the inspection was generally confined to the accessible exterior.

This survey involved driving through the central area of the Maxwell Underground area. Aerial imagery was also studied to identify potential places of heritage significance within the Project area prior to the field surveys.

Searches of relevant heritage registers were also undertaken as a background to this report (Section 1.7).

The six sites that were physically inspected were:

- MP1 – Fence line.
- MP2 – Edderton Homestead.
- MP3 – Bowfield Homestead.
- MP4 – Nissen Hut and sheep shower.
- MP8 – Stockyard.
- MP9 – Plashett Homestead.

## 3. Historical Background

### 3.1 Introduction

The following history reproduces that presented in the AECOM report (2012).

The Hunter region was initially identified as an area of rich resources in 1797, when Lieutenant John Shortland found coal at the mouth of the Hunter's River, as it was then known. By 1801, a convict settlement was established at the mouth of the Hunter's River to gather coal and timber and burn shells for lime (Hunter 2010).

The 1810s saw increased pressure on land around Sydney, especially following several years of drought. The farmers on the Hawkesbury River around Windsor petitioned Governor Macquarie to allow exploration inland. In 1819, Macquarie authorised men to find an overland route into what is now the Hunter Valley. The leader of this party, Windsor Chief Constable John Howe, exclaimed it was the best pasture he had seen since leaving England. Macquarie rewarded the men in this second party with land grants around modern-day Singleton. Confirmation of the overland route was undertaken in 1820 (Hunter 2010). Land was quickly surveyed and, by 1823, grants along rivers and creeks were issued.

Settlement, however, seems to have been of a slower pace. In 1829, Jerrys Plains was surveyed as a town, although it had been a campsite for travellers for some years previous. The town was not proclaimed until 1840 and official grants were not given until several years later. Despite the absence of official land ownership, development of the town continued. Muswellbrook was proclaimed in 1833, although again, there had been earlier settlement in the vicinity. The surrounding area was largely used for grazing and cropping, with an increasing focus on dairying. Coal mining began in the 1890s, but did not become prolific until the twentieth century.

The land that now comprises the Study Area has primarily been used for pastoral activities since this early period of European settlement. The Hunter Valley's fertile alluvial soils and proximity to the Hunter River (and its associated tributaries) were key determinants in the establishment and development of major pastoral properties from the mid-nineteenth century. Key cattle and sheep properties include the Plashett, Edderton, Strowan, Randwick and Bowfield Estates.

Nineteenth century parish maps for Wynn indicate that the eastern portion of the Study Area was originally part of the Plashett Estate, first granted to James Robertson of Renfrew in Scotland, in 1827. Robertson had arrived in the colony in 1822 accompanied by his wife, Anna Maria and six children. In London, Robertson had been a watch and mathematical instrument maker for Grimaldi and Johnson of The Strand. In this capacity, Robertson had made friends with Thomas Brisbane and, when Brisbane was later appointed Governor of NSW, he encouraged Robertson to migrate to the colony.

A map of the Hunter River Land Grants produced in October 1829, shows the Robertson estate as 1,000 acres with a house built on it. This house is reportedly the slab cottage that remained standing until 1993, when it was reportedly demolished (AECOM 2015). On 15 September 1854, Plashett was advertised for sale in the *Maitland Mercury*, and was described as being ‘an excellent Stone House, not finished inside, which was located near to where the old homestead stood’. Plashett was purchased from Robertson in November 1854 by Joseph Pearse, who in turn transferred ownership to his son William Pearse in 1864. William Pearse married Catherine Langley in 1866. By the 1890s, the property was supplying sheep and cattle for both Sydney and Hunter Valley abattoirs. Cattle were sent to the Hunter from the Pearse properties in Queensland to be fattened up for the Sydney market. Corn, horse breeding, and shearing also took place at the property. By 1910, Plashett was producing milk from a herd of approximately 100 cows for the Jerrys Plains butter factory.

When William Pearse died in 1927, a probate valuation describes the property as pastoral, with 18 grazing paddocks, three for cultivation, and a few others as well. Timber had been left in the paddocks to provide shade for the cattle, and this included kurrajong and box species. Plashett remained in the Pearse family for 117 years, until 1971, when a portion of the property was transferred to Caroon Pty Ltd. In 1982, this portion was transferred to the Electricity Commission of New South Wales (Pacific Power). In that same year, Lot 2 DP 616024, which comprised half of the land owned by Pacific Power, was transferred to Mt Arthur Coal Pty Ltd. In 2000, the balance of property, Plashett Estate, was purchased by Anglo American plc. Plashett Estate remains a pastoral property now owned by Malabar.

The Wynn parish map indicates that the western portion of the Study Area was originally part of a 2,560-acre land grant to George Bowman and was part of the historic Arrowfield Estate. The property was subsequently purchased by a Mr Ryder, and Edderton Homestead was then built in 1908. Ryder named the property after the Edderton Meat Works in Brisbane, one of his business interests. The property was acquired by the McDonald family c.1910 and increased in acreage. It was purchased by Hector Cameron McDonald and then passed on to his son Douglas. When first purchased by McDonald, the property was approximately 4,000 acres. Over a period of 25 years, McDonald consolidated Edderton with other lands into a large pastoral property, increasing it to about 13,000 acres. Originally, McDonald ran about 16,000 sheep. After some time, sheep were replaced by cattle as a result of the damage caused to the land. The homestead was extended by the McDonalds from its original four rooms. The building is of quite unusual detail and is in excellent condition. Following World War II (‘WWII’), the Edderton property steadily became less economically viable and was gradually broken up. Edderton has since been acquired by Hunter Valley Energy Coal Pty Ltd (a subsidiary of BHP) and is currently leased as a working pastoral property primarily for cattle grazing.

Nineteenth century parish maps also indicate that the Study Area was originally part of the historic Bowfield Estate. The total area of this estate was approximately 5,000 acres, comprising part of George Blaxland's land grant and part of the grant of Arrowfield to George Bowman (AECOM 2012). George Blaxland's portion of the land grant, later part of W.H. White's property, was acquired by Squire Bowman (of Balmoral) and subsequently became known as 'Bowfield'. The original 'Bowfield' homestead was constructed in c.1928 and was reportedly of timber construction and clad in weatherboard with a tiled roof and veranda on the front and side. There was a kitchen and dining room, a small office, two bedrooms and a large sitting room with an open fireplace (Bowman 2000). Following the death of Squire Bowman in 1954, the property was left to his nephew, Mark Bowman; however, shortly after, in 1956, the property was subdivided and sold at auction. The house underwent substantial extensions and additions throughout the late 1950s and Bowfield has since been acquired by Malabar for lease as a working pastoral property, primarily for cattle grazing.

### 3.2 Land Use

The current dominant land use within the Study Area is cattle/sheep grazing and limited cropping as well as mining to the north. Since European settlement of the area in the 1820s, the flora and fauna, hydrology regimes and general landform have been subject to considerable modification as a result of European agricultural activities. Notable recent and historical land uses and associated ground surface impacts include:

- extensive native vegetation clearance;
- pastoral activities including livestock grazing, ploughing, fencing, the construction of multiple farm dams and contour banks for erosion control;
- fluvial erosion, particularly along creek lines and on cleared hillslopes;
- construction of residential dwellings and associated structures, driveways and access tracks;
- construction of essential services including power lines and roads (e.g. Edderton Road); and
- construction of the existing Maxwell Infrastructure complex and associated coal mining activities in the mining lease areas and minor exploratory drilling activities in the exploration licence area.

These matters are relevant to an assessment of any cumulative impacts that might arise out of the project because these past land uses have created the 'baseline' landscape against which all potential cumulative impacts should be measured. The past land uses have created a modified landscape which can be contrasted, for example, with the history and character of the nearby MJP LCA, where there are largely unmodified landscapes (a '*flat alluvial floodplain*' and '*low rolling hills*' and '*extensive views of the river flats, the enclosing hills and distant ranges*') (Appendix 1).

## 4. Assessments of Cultural Heritage Significance

### 4.1 M01 Fence

#### 4.1.1 Summary History

There is limited history available on fence M01. It is speculated to be part of an old boundary alignment that has since changed. The fence is an example of a 'Two Rail and Four Wire', sometimes known as a 'Cap and Wire' fence. This type of fence contains wire substitutes for one or more of the timber rails. Typically, the upper rail is retained and some or all of the lower rails are replaced with wires. The description herein differs in a minor way from the AECOM (2012) report following a close inspection of the split posts and positions of the wire and rail penetrations.

Pickard's (2009) *Illustrated Glossary of Australian Rural Fence Terms* refers to Armstrong and Campbell's (1882) *Australian Sheep Husbandry*, which describes the construction of this fence type in the following terms:

*Two-rail and four wire fences... The posts should be sunk to a depth of not less than 2 feet in the ground, and, if of tough timber, should have a length of 4 inches above the top rail, which by the following gauge will be seen to be 4 feet 6 in. from the ground. Should the timber not be of tough quality, the distance may be increased to 6 inches. They should be bored at distances of 6, 5, 5, and 5 inches, starting from the ground; from the top wire to the top of bottom rail, 16 inches, and from the top of bottom rail to top of top rail, 17 inches. Care must be taken in the boring, and the exercise of a very little forethought will show that the posts must be bored before the rails are placed. The change of work which must take place in the erection of this fence increases the liability of irregular boring more than in the wire fence, where the boring is straight ahead work. Staples are sometimes used to fasten the wires on either the inside or outside of the posts, but we cannot recommend them as being either more secure or less costly than the boring. To render this description of fence, if possible, more cattle-proof, the bottom rail may be lowered a few inches and the fourth wire removed and placed midway between the top and second rails. (Armstrong and Campbell 1882 pp.187–189)*

The fence posts contain two rectangular mortices for timber rails and four holes for wire, with the fourth wire (from the bottom) situated between the two upper timber rails. This is noted to be more suitable for cattle than sheep and indicates that use was engaged to contain cattle and is somewhat distinctive for this reason.

This fence type was not noted to be an advance in the evolution of fences, from post and rail to post and wire, as they negated the main advantages of wire that included cost savings through using longer panels, fewer posts and more efficient erection (Fetherstonhaugh 1917 in Pickard 2009).

### 4.1.2 Context and Location

Fence M01 is located in the vicinity of the northern boundary of the exploration licence area and in the corridor that would be impacted by the proposed 'surface development area' – i.e. the transport and services corridor (see Figure 2 and Figure 3).

### 4.1.3 Description

The surviving elements of the fence include timber posts, steel star pickets, and plain and barbed wire (see Figure 4–Figure 6). The original timber fence had been supplemented at some later time with a steel star picket and barbed wire fence. The current condition of the fence is dilapidated. The timber rails are missing, the timber posts have mostly fallen, with many rotted at the base, and the wire is loose or removed. Some posts show additional holes (later adaptations) and barbed wire strands. The star picket fence supplementing the timber post fence is similarly fallen and broken. Despite the dilapidation, the method of construction is clearly evident in the surviving fence posts.

There is little evidence of the stock yard that is likely to have been located at the termination of the fence (AECOM 2012) due to the fence posts being collapsed, missing or potentially concealed in grass.



Figure 4 – View of Fence M01 running east and west.



Figure 5 – Details of the fence posts forming part of the remains of M01.



Figure 6 – Example of a fence post from M01 that differs from the typical timber post. Note it has no mortices for timber rails, only holes for wires, and is therefore likely to be a later replacement post.



#### 4.1.4 Assessment of Significance

This HHA differs slightly from that in the AECOM report (2012). The differences are a result of the further investigation into fence design (above) and its deteriorated condition since 2012.

Fence M01 is of minor historical significance as an example of a ‘Two Rail and Four Wire’ fence of a kind that was not often utilised. The fence design and location provide some evidence of early settlement and farming practices (especially around cattle), dating from the late 1800s.

However, the fence fails to meet the threshold for local significance.

Table 6 – The significance assessment for M01 prepared in accordance with the criteria for heritage significance pursuant to NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	The Fence is of low historical interest as an example of a ‘Two Rail and Four Wire’ fence of a kind that was not often utilised. The fence design and location provide some evidence of early settlement and farming practices, dating from the late 1800s.
Criterion (b)	The Fence is not significant for representing a strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history.
Criterion (c)	The Fence is of minimal importance in demonstrating aesthetic characteristics and/or a degree of creative or technical achievement in the local area.
Criterion (d)	There is nothing to indicate that the Fence is of importance to a particular community or cultural group.
Criterion (e)	The Fence has limited potential to yield information that will contribute to an understanding of NSW’s cultural or natural history.
Criterion (f)	The Fence is of an atypical kind in the general area but is not rare or uncommon.
Criterion (g)	The Fence is not important in demonstrating the principal characteristics of a class of the Upper Hunter region’s or NSW’s cultural or natural places, or cultural or natural environments.

#### 4.1.5 Assessment of Archaeological Potential and Significance

The site has low potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*.

Further, it has low potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history.

## 4.2 M02 Edderton Homestead

### 4.2.1 Summary History

The following history is an extract from AECOM (2012).

Edderton is a large property of 3,000 acres to the north of the Project. The property was purchased by Mt Arthur Coal Pty Ltd in 1992 and is currently owned by Hunter Valley Energy Coal Pty Ltd (a subsidiary of BHP). The property was originally part of the historic Arrowfield Estate. The property was subsequently purchased by a Mr Ryder, and the original Edderton Homestead was built in 1908. Ryder named the property after the Edderton Meat Works in Brisbane, one of his business interests.

The property was later purchased by Hector Cameron McDonald in 1914 and then passed on to his son Douglas. Originally McDonald ran up to 16,000 sheep and today a six stand, galvanized iron shearing shed remains, together with the old shearer's quarters. After some time, sheep were replaced by cattle as a result of the damage caused to the land.

Along with the shearing shed and quarters, other buildings that contribute to the homestead complex include a Meat House, a substantial rendered masonry tank stand that also provides for a dairy, a former school house (as advised by the current occupants of Edderton) that has been converted to accommodation (described as a small hut in AECOM 2012), two timber dwellings and various machinery sheds, and stables.

The house was extensively modified with substantial additions to the rear and side of the original four-room core. The additions are carried out in an Art Deco style and created a number of spacious internal rooms. The large extension required unusual roof additions over the hipped roof of the original four room dwelling. The style of the additions indicates a construction date c.1930.

The property is currently managed by tenants who run a beef cattle farming enterprise.

### 4.2.2 Context and Location

Edderton Homestead (see Figure 7) is situated north of the Project and just inside the MJP LCA boundary, over 3km north-west of the proposed mine entry area. It sits on a gentle rise allowing for expansive views to the surrounding country of the Hunter Region (see Figure 8).

The homestead area is entered from Edderton Road via a long driveway. The front of the homestead is enclosed at the front and sides by a roughly coursed random rock fence that remains quite high in sections (see Figure 9). The eastern side is constructed as a drystone wall with double stone faces and gravel infill between. This section also contains an entry gateway flanked by taller columns and with a steel mesh frame arching over the opening, providing a trellis for a creeping plant.

The remaining two sides of the stone fence appear to be a reconstruction and the randomly coursed rocks are fixed with mortar.

The enclosed area contains paddock grasses and an arbour with flowering shrubs marks the location of an earlier pathway leading to the front door.



Figure 7 – View of Edderton Homestead M02 from the south-east.



Figure 8 – Views looking out to the south-east from the Edderton Homestead garden.

The former school house (see Figure 10) is located to the north-east, in close proximity to the homestead. The meat house and the dairy (see Figure 11–Figure 12) are located at the rear of the homestead. Other working rural buildings are also spread across the site to the rear of the homestead.

Two timber houses are located at some distance to the south-east (see Figure 13). Situated between these houses and the homestead are various ancillary structures including the former shearing shed, machinery sheds, stabling, yards and other equipment (see Figure 14–Figure 15).



Figure 9 – The former front entry gate to the 1904 Edderton residence.



Figure 10 – The former school house building at Edderton, now adapted to provide accommodation.



Figure 11 – The former dairy at Edderton constructed unusually in rendered masonry with a water tank.



Figure 12 – The meat house at Edderton, largely reconstructed and located east beyond the dairy.



Figure 13 – One the timber houses located at some distance south-east of Edderton Homestead.



Figure 14 – View of the machinery shed at Edderton.



Figure 15 – View of the stables and yards at Edderton.

### 4.2.3 Description

The design of the original Federation Bungalow (see Figure 16–Figure 23) consisted of four rooms with a central hallway, enclosed on at least three sides by verandas. The veranda roof was stepped down from the main hipped roof as separate element. The house was elevated approximately 500 millimetres above ground level with timber floors. The main entry is located on the west elevation facing the enclosed garden. It would have been typical for a kitchen to be provided in a separate or linked structure at the rear.

The major extension is of architectural merit in a California Bungalow style that became popular in the interwar era. The detailing is of a high standard with Arts and Crafts references. The large-scale extension has been integrated with the rear of the 1908 structure, which created a ‘T’-shaped floor plan. The roof features large gables projecting to the north (see Figure 20) and south, and a flyover roof on top of the original bungalow roof with a gable to the west.

A major new entry was created through the provision of a Porte Cochere on the south with a low-pitched roof, connected to the house at one side and the span supported on tapered columns and solid rendered balustrade at the south. To the rear on the east elevation, two roof gables project at each end with a covered veranda spanning between (see Figure 18). The external walls under the veranda are clad with wide western red cedar planks, fixed vertically, and clear finished (see Figure 19). The windows on the south and east have projecting hoods and decorative framing expressing the ends of the hood joists.

Internally, a large room, noted to be a former ‘ballroom’ (see Figure 22), is accessed directly from the Porte Cochere entry. This large space connects at the rear of the 1904 structure and via a wide hallway leads to the open dining and lounge room spaces at the northern end.

The spacious kitchen is accessed from the hall to the east. A cellar situated under the kitchen is accessed directly from the former ballroom via a stairwell at the eastern wall (see Figure 21). Both the generous dining room and living room (see Figure 23) feature decorative fibrous plaster panels, which are angled to suit the rake of the roof around the perimeter of each space. The large fireplace is constructed in dark brown face brick with a double-shelf mantelpiece. The timber detailing throughout is finished in a dark stain with clear finish. A timber picture rail trim is located at window head height.

The original 1908 structure has been refurbished with rendered walls and provides for bedrooms and bathrooms. Most of the original fabric appears to have been replaced. The external cladding, the addition of a suspended concrete veranda floor, doors windows and room layouts are modified from the original and are consistent with the 1930s adaptations.

In summary, Edderton Homestead is largely representative of the 1930s adaptation with the remnant 1908 structure visible in its form at the northern end.



Figure 16 – South elevation with the ‘Porte Cochere’ at the left and original 1904 section to the right.



Figure 17 – Original front entry of Edderton Homestead. Note the doors have been modified with arched transom lights in a style similar to the interior detailing of the 1930s adaptations.





Figure 18 – View of south-east corner of Edderton Homestead showing the 'Porte Cochere' to the right and rear elevation to the left.



Figure 19 – View of east elevation under veranda, showing vertical clear finished timber cladding and white painted, multi-paned joinery.



Figure 20 – View of north elevation showing the projecting gable with large rendered masonry fireplace.



Figure 21 – View of stairwell in the eastern wall of former ballroom providing access to cellar.



Figure 22 – Interior view of former ballroom opening to the Porte Cochere (right).



Figure 23 – The generous dining and living room areas are divided by a wall with a wide opening, featuring arched corners. This detail is repeated throughout the dwelling at several doorways.

#### 4.2.4 Assessment of Significance

The suite of structures comprising Edderton Homestead and its support buildings and gardens is of local significance.

Table 7 – The significance assessment for M02 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Edderton is of local significance for its history and association with the expansion of the wool industry. The significant adaptations to create a substantial California Bungalow design may reflect a successful rural farming property. The history, completeness and quality of the homestead complex contributes to the understanding of the management of the farm and its production of goods.
Criterion (b)	Edderton is not significant for representing a strong or special association with the life or works of a person, or group of persons, of importance in the Upper Hunter region or NSW's cultural or natural history.
Criterion (c)	The design of the homestead adapted in the c.1930s in California Bungalow style with Arts and Crafts details is of local significance for its important design and aesthetics in the Upper Hunter Region. The remnant original 1908 building fabric contributes to the aesthetic significance and is important in demonstrating origins of the property. The homestead complex as a collection of buildings is also of significance to the locality for the aesthetic contribution made in the landscape.
Criterion (d)	Edderton is not significant for representing a strong or special association with a particular community or cultural group in the Upper Hunter region or NSW for social, cultural or spiritual reasons.
Criterion (e)	The structures at Edderton are not significant for their potential to yield information that will contribute to an understanding of NSW's cultural history. There is low potential for early twentieth century archaeological 'relics'.
Criterion (f)	Edderton is significant locally as a fine representative example of an early working homestead complex. Such intact complexes are becoming rare in the area.
Criterion (g)	Edderton Homestead is important locally in demonstrating the principal characteristics of rural homestead complexes in the Upper Hunter region.

#### 4.2.5 Assessment of Archaeological Potential and Significance

The site has low potential to contain archaeological 'relics' as defined by the NSW *Heritage Act 1977*.

It also has low potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history. In any event, no ground disturbance is anticipated as a result of the Project.

## 4.3 M03 Bowfield Homestead

### 4.3.1 Summary History

Bowfield comprises part of George Blaxland's land grant, later part of W.H. White's property, while one portion is part of the grant of Arrowfield (approximately 2,600 acres in 1832) to George Bowman. The total area was approximately 5,000 acres. W.H. White sold his portion to Squire Bowman (of Balmoral) and the property subsequently became known as 'Bowfield'. The property was later acquired by Stanley Mackenzie 'Mac' Bowman (AECOM 2012).

The following is a summary of notes obtained from a copy of *A History of a Bowman Family* (Bowman 2000), viewed during the site inspection.

The original Bowfield Homestead was built c.1928. The house was small and suited the needs of Squire Bowman, a bachelor. Squire Bowman passed away in 1954 leaving the property to his nephew Mark Bowman, the son of Hatley, Squire Bowman's eldest brother. Both Hatley and Mark, a teacher, moved to Bowfield but neither knew much about operating a farm. Shortly after in 1956, the property was subdivided into five lots and sold at auction.

The new owners moved to Bowfield with a young family, arriving to a neglected property, previously overstocked with sheep and overrun with rabbits until the introduction of the disease myxomatosis. The house was reportedly of timber construction and on the arrival of the new owners, the place was described as being:

*clad in weatherboard with a tiled roof and verandah on the front and side. There was a kitchen and dining room, a small office, two bedrooms and a large sitting room (known as the ballroom) which had a huge open fireplace. This fireplace consumed large quantities of wood with most of the heat going up the chimney. (Bowman 2000)*

A separate building is reported as being a garage and saddle room with a bedroom attached. The garage was likely to have previously provided for horse stables. Another structure provided an:

*outside bathroom and laundry which had a copper. The copper was built-in with bricks and heated by a wood fire which required wood to be carted and cut up. It had to be lit every day to boil up the dirty nappies. Also, all the washing was boiled up in the cover every Monday morning. (Bowman 2000)*

Other site developments included:

*a windmill that pumped from a well below the house on the creek and the water was brackish. There was a small dam halfway to the wool shed for the garden which had a small electric pump. This pumped into an overhead tank at the back of the house. The garden consisted of trees and lawns. There was an 'ant-bed' tennis court out in front of the house.*

*The septic system was very 'Jerry built', as were all improvements on 'Bowfield'. The main power was connected but not used for cooking as the stove was useless. There was no machinery shed or workshop. The stock yards had fallen down. The woolshed needed new machinery and yards. (Bowman 2000)*

Improvements were soon undertaken, cleaning out the dams, repairing sheep yards and woolshed. A new machinery shed was constructed. The house underwent substantial extensions and additions through the late 1950s. A small area of timber weatherboards of the 1928 dwelling is evident at the centre with a large rendered masonry fireplace.

*A History of a Bowman Family* (Bowman 2000) refers to farm help staying in the 'cottage'; however, this is probably referring to the garage/saddle room and bedroom structure mentioned above. No other evidence has indicated another separate cottage in this investigation.

Bowfield is owned by Malabar and is leased as a working pastoral property primarily for cattle grazing.

### 4.3.2 Context and Location

Bowfield Homestead is situated west of the Project and inside the MJP LCA. It sits on gently undulating land, with Saddlers Creek wrapping around the property. The homestead yard is surrounded with a wire and steel post fence (see Figure 24). There are several raised, rock-edged garden beds that have now collapsed (see Figure 26). The 'ant bed' tennis court is edged with a rock border and has become overgrown (see Figure 25). A low brick wall is constructed at the western end of the tennis court. Modern machinery sheds (see Figure 27) are located further to the west of the homestead and the working area is accessed via a driveway that wraps around from the front gate behind the homestead.



Figure 24 – Timber gate post at entry to yard of Bowfield Homestead.



Figure 25 – View west across the former tennis court.



Figure 26 – View of the collapsed rock-edged garden beds around the former tennis court.



Figure 27 – View of modern machinery and storage sheds at Bowfield.

### 4.3.3 Description

The Bowfield Homestead is a composition of several additions (see Figure 28–Figure 31). The front wing of the building contains a gable ended roof with a long, front veranda supported on cast iron columns (see Figure 30). The cast iron columns are detailed with capitals and the detail suggests they have been re-purposed from another building. The front wing contains a chimney and is constructed with concrete blockwork, which extends to enclose a rear skillion roofed area (see Figure 29). The roof is clad in Marseille style terracotta tiles. The windows and doors in this section are a modern sliding aluminium type. This wing of the homestead appears to originate in the late 1950s or early 1960s, consistent with the commencement in supply of standardised concrete block and sliding aluminium windows in the Australian market.



The second hip roof wing to the north is constructed with unusual off-form concrete walls featuring an atypical blockwork pattern embossed onto the surface (see Figure 31). The embossed block pattern does not continue up the chimney stack which remains with a flat trowed finish. The patterned finish and timber framed sash window evident on this wing indicate c.1950s additions. After WWII, with many building materials being scarce, there was a movement in experimental use of concrete in housing.

Added to the hipped roof wing, a corrugated galvanised iron, skillion roof supported on rendered walls appears as an enclosed veranda in form. A small awning protects the rear entry. These additions have been constructed in recent decades.

Situated behind the hipped roof and the chimney is a small corrugated iron hip roof, which is supported on a timber framed and weather board clad wall. Another chimney, constructed in brick, is located against the timber wall.

The earliest dwelling was noted to be a simple timber cottage and the small section surviving between the two tiled roof wings is surmised to be a surviving element of the original timber cottage.

The style of the two main wings is consistent with post-war housing design such as 'The Daily Telegraph house' and the designs published in booklets provided by the *Australian Women's Weekly* during this time.

In analysing the adaptations, it appears that there are around four stages. These commence with the small area of timber and brick chimney of the 1928 cottage, then a major extension being the rear, hipped roofed rear wing associated with the new occupants from 1956, and then the front gable roofed wing followed. Later skillion roofed areas were added or modified in following decades, bringing the building to its current form.



Figure 28 – View of the east elevation of Bowfield.



Figure 29 – View of the south-west corner of Bowfield, showing the hip roof of the second wing constructed in off form rendered concrete and chimney, as well as a more recent skillion roofed and enclosed addition of the homestead.



Figure 30 – View of the front wing of Bowfield Homestead, c.1960s.



Figure 31 – View of the south-east corner of Bowfield, showing the hip roof of the second wing constructed in off form concrete with an embossed block pattern and timber sash window dating to the c.1950s. The skillion roofed wing at the left is part of the c.1960s front wing of the homestead.

#### 4.3.4 Assessment of Significance

Bowfield M03 is of local heritage significance for its history and as a representative example of a mid-twentieth century rural homestead complex.

Table 8 – The significance assessment for M03 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Bowfield is of local significance as a homestead complex established in the late 1920s, for its history in the continued development of the rural industry of the Upper Hunter Region through the mid-twentieth century.
Criterion (b)	Bowfield has some association with the Bowman family who were of some importance in the locality.
Criterion (c)	Bowfield is not important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW.
Criterion (d)	Bowfield does not have a strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons.
Criterion (e)	Bowfield has limited potential to yield information that will contribute to an understanding of the locality, nor NSW's cultural or natural history e.g. through its archaeology.
Criterion (f)	Bowfield does not possess uncommon, rare or endangered aspects of local, nor NSW's cultural history.
Criterion (g)	Bowfield is of local significance as a good representative example of a rural homestead established in the late 1920s and progressively modified through the twentieth century.

#### 4.3.5 Assessment of Archaeological Potential and Significance

The site has low potential to contain archaeological 'relics' as defined by the NSW *Heritage Act 1977*.

It also has low potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history. In any event, no ground disturbance in this location is anticipated as a result of the Project.

### 4.4 M04 Nissen Hut and Sheep Shower

#### 4.4.1 Summary History

In *A History of a Bowman Family* (Bowman 2000), Stanley Mackenzie Bowman (known as Mac) states that he and his brother Robert built the Nissen Hut with a stockyard in 1950 (AECOM 2012). It is located in proximity to the Bowfield Homestead and appears to have some association with various owners of the property. There may be grounds for questioning Bowman's claim for the Nissen Hut's origin (for example, the Nissen Hut is now on the Plashett property) but the hut's past ownership does not impact its significance. The extant Nissen Hut is situated very close to a sheep shower identified as a Sunbeam Cooper HH model that is located to the north-east of the Nissen Hut with associated runs. Sheep were carried on the property until 1965 (Bowman 2000) when a severe drought caused discontinuation and a move to crop farming.

Nissen Huts were designed during World War I (1914–1918) by engineer Peter Norman Nissen, who began experimenting with the inventive design of these readily constructed huts in 1914. He achieved the rank of Lieutenant Colonel by the end of the war and eventually attained the rank of Major with the 29th Company of Royal Engineers.

Influenced by the form of a drill hall roof at Queen’s University, Kingston Ontario, he exploited the strong shape of the arch. Using the small corrugations to provide increased strength in the galvanised metal sheets and then arching the sheets 90 degrees produced an extraordinarily strong structural panel that spanned a broad space with minimal framing. Other military colleagues contributed to reviewing the design and it was the third prototype that was formalised, patented and put into production. Over 100,000 were produced for World War I.

Patents were taken out later in the United States, Canada, South Africa and Australia. The economical use of materials, especially during shortages in war time, the portability and ease of erection and relocation were the important factors of the design. Production waned but increased again in 1939 associated with the advent of World War II. The huts were mass produced and after the war, surplus huts were adapted to a variety of functions including churches, stores, wartime housing, and camps. They became farm buildings, aircraft hangars amongst many other uses and frequently varied in size.

The huts could be sited directly on the ground, on concrete base or elevated on small piers with suspended timber floors. Other variations to the design included additional tie bars or gussets for larger spanned types, windows that jutted out as flat roofed dormer style along the curved roof top or windows in the gable ends only. Some were lined and fitted out as offices, others unlined were used for sheds. The vertical walls infilling each end of the semi-circular form were often timber slats, placed vertically or horizontally, sometimes fully glazed or infilled with corrugated iron sheet. The entry access was often situated in these vertical walled ends. Currently, the Nissen Hut is owned by Malabar.

#### 4.4.2 Context and Location

The Nissen Hut and associated yards are located outside the MJP LCA but they are centrally placed in the Project area (that part that would constitute the underground mining area). The location is only accessible by going off-road. The site is a relatively flat area that has been used for grazing and contains eroded surfaces and light scrub cover.

The Nissen Hut is flanked by a four or five pepper trees on each side which creates an enclosed setting (see Figure 32). The planting of pepper trees was a common treatment around homesteads and the purposeful planting of the trees contributes to the understanding that the Nissen Hut was used as accommodation. The sheep run and stockyards are set outside the line of the trees to the north-east (see Figure 33). The area otherwise contains lightly vegetated, undulating land, with evidence of severe erosion in parts. The property has more recently been used for cattle grazing; however, grazing was not occurring on the property during the inspection.



Figure 32 – View of Nissen Hut M04 surrounded by pepper trees.



Figure 33 – View of concrete sheep run and yard in context with Nissen Hut.

#### 4.4.3 Description

The Nissen Hut (see Figure 34–Figure 39) has a long rectangular plan and is provided with an elevated timber floor. The characteristic barrel-shaped, corrugated iron roof sheeting arches over the elevated floor and is fixed to light steel framing. Most of the roof has collapsed with the remaining upright part being in a precarious state.

The exposed parts of the timber floor have also collapsed with only perimeter posts surviving for half of the structure. The timber floor boards that are protected by the remaining roof area survive in a more intact state. The hut once contained gable end walls clad with timber. These walls have completely collapsed with the timbers strewn around the vicinity.

There are galvanised water pipes fixed to the interior indicating that water was once supplied inside. A brick fireplace is located outside the north gable end with a plate indicating it was used for cooking.

At the rear to one side, four posts, with two braced sides, concrete floor and galvanised pipework provide evidence of a shower shed (see Figure 37). Two adjacent corrugated galvanised iron water tanks support this use. The hut was likely to have been used for accommodation, possibly this was used seasonally, associated with attending to the farming of sheep.

The surviving elements of the Nissen Hut continue to display the characteristics typical to World War II-era huts and, whilst dilapidated, are indicative of the structure's typology and original design.

A sheep shower – Sunbeam Cooper HH model – is located to the north-east of the Nissen Hut with associated runs (see Figure 39). There are remnants of stockyard areas that include timber posts connected with galvanised CHS rails and chain wire as well as areas of timber posts with split timber rails.



Figure 34 – The Nissen Hut at M04. Some debris of the structure is scattered around the site.



Figure 35 – View of the northern end of the Nissen Hut with the brick fireplace with plate for cooking.



Figure 36 – View of the collapsed rear (southern end) of the Nissen Hut with only the perimeter posts remaining in their original location. The flooring is completely missing with only a small area of collapsed roofing existing.





Figure 37 – Remains of four tall posts, two sides fitted with bracing, a concrete floor and galvanised water pipes, which are indicative of a shower shed having existed in this location.

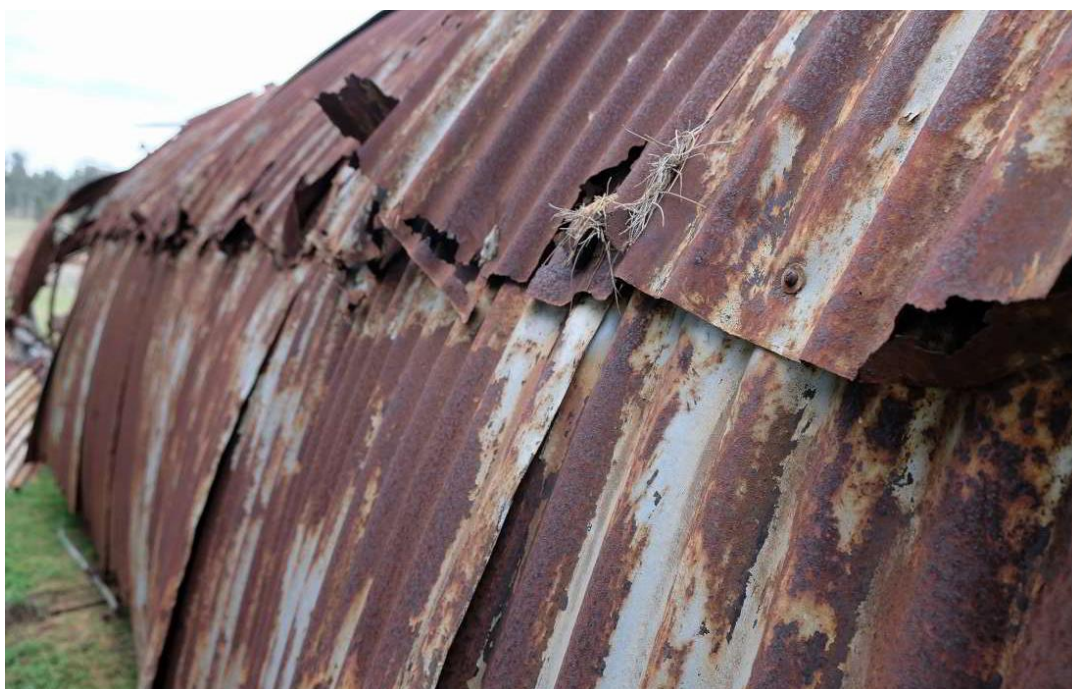


Figure 38 – Detail of the Nissen Hut's roof sheeting.



Figure 39 – The Cooper Type Sheep Shower elements surviving adjacent to the Nissen Hut. A concrete water tank and concrete-lined drainage channels sit adjacent to the enclosed showering area.

#### 4.4.4 Assessment of Significance

This assessment differs from the assessment provided in the AECOM report (2012). The variation results from further investigation into WWII-era Nissen Huts and sheep farming equipment as well as the deteriorated condition of the site.

The Nissen Hut is of minor historical interest as an example of a WWII-era military structure adapted to farming purposes in 1950. It is in very poor condition. The associated sheep shower is an unremarkable example of a type that was typical in the region in the mid-twentieth century, well-known through other sources. Neither the hut nor the sheep shower is rare.

The Nissen Hut and sheep shower fail to meet the threshold for local significance.

Table 9 – The significance assessment for M04 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	The Nissen Hut is of minor historical interest as an example of a WWII military structure adapted to farming purposes in 1950. However, it fails to meet the threshold for local significance.
Criterion (b)	The Nissen Hut does not have a special association with a group or individual of importance at the local or State level. It appears to have been used only seasonally by a family of no particular prominence.
Criterion (c)	The Nissen Hut is in a poor state of repair. It does not well demonstrate the aesthetic characteristics of Nissen huts from the era. The sheep shower and related elements are common examples of features from a well-understood process. They do not demonstrate a high degree of technical achievement.
Criterion (d)	There is no indication that the site has strong connections with a particular community or social group.
Criterion (e)	The Nissen Hut has limited potential to yield information that will contribute to an understanding of NSW’s cultural or natural history.
Criterion (f)	Nissen huts were mass produced and are common across rural Australia. It is an unremarkable example of its type. The associated sheep shower is an unremarkable example of a type that was typical in the region in the mid-twentieth century, well-known through other sources. Neither the hut nor sheep shower is rare.
Criterion (g)	The Nissen Hut is not important in demonstrating the principal characteristics of a class of cultural place in the local area or wider region.

#### 4.4.5 Assessment of Archaeological Potential and Significance

The Project would cause no ground surface disturbance at the site. In any event, given its date (1950) and unremarkable activities undertaken there, the site has low potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*.

It also has low potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history.

### 4.5 M05 Arrowfield Cottage

Extent did not access the site of Arrowfield Cottage for the preparation of this report, as it is a privately owned property and was recently inspected by AECOM in 2012. Additionally, the site would not be directly impacted by the Project. The following images, history and description therefore reproduce text from the AECOM (2012 and 2015) reports.

For this HHA and SOHI, a desktop review of the AECOM reports (2012 and 2015) was undertaken using publicly available published materials and images. Our conclusion is that the AECOM assessments are generally appropriate and we have adopted their conclusions herein for the purposes of the SOHI. However, in the case of Arrowfield Cottage, the Extent assessment elevates the significance of the site against certain criteria.

### 4.5.1 Summary History

George Bowman acquired Arrowfield in 1841. His son, John Woodward Bowman, was his tenant. Arrowfield was later sold to William Rupert Raleigh, who had been leasing and working the property. Raleigh then sold the property to brothers William and Frederick Albert Moses in April 1912. They operated it as an outstandingly successful thoroughbred stud.

In July 1925, Arrowfield was purchased by William Pearce Bowman in the name of two of his underage sons – Major Millington and Ray Millington Bowman. However, it was his third son, Tristan, who eventually became the sole owner. In 1946, Tristan sold the property to John Norman Lawson of Muswellbrook.

When Lawson died in 1956, his sons John Gordon and Rodney Beaumont inherited the property, which they used for dairying, cattle breeding, and ewes for meat.

In the 1970s, vines were planted on the property and it appears that Carpenter's Ltd acquired and set about planting the grapes in partnership with Penfold Wines through Francis Investments Pty Ltd. Carpenter's Ltd eventually bought out Francis Investments Pty Ltd and established their own winery, as opposed to just selling grapes. As they were not profitable, the focus was changed to white wine production, and the property was taken over once again, this time by Griffin Holdings. Griffin Holdings sold to the Australian Racing and Breeding Stables Ltd in 1986, Arrowfield was then acquired by Hokuriku Coca Cola Bottling Co Ltd in 1991 (AECOM 2015). Subsequently, Arrowfield Cottage was bought by Hollydene Estate Wines, and the property is now currently owned by Coolmore Australia.

### 4.5.2 Context and Location

Arrowfield Cottage is located on the southern boundary of the exploration licence area and outside the Project footprint. It is within the MJP LCA.

### 4.5.3 Description

Arrowfield Cottage (see Figure 40) is located south of the Golden Highway and Maxwell Underground. The historical component of Arrowfield consists of a two-storey sandstone cottage, which has been renovated for use as a guest house.

The present structure is not the original homestead and may originally have been used as the stables. There is a cellar underneath the building, with chains on the walls.

The original Arrowfield Homestead is said to have been located behind (to the south) of this cottage. A memorial in the form of a bathtub with a plaque marks the location of the former homestead. The view from the cottage and former homestead site to the mine location is limited by local trees and the range.



Figure 40 – The Arrowfield Cottage at Site M05 (Source: AECOM 2015).

#### 4.5.4 Assessment of Significance

The below assessment is taken from the AECOM (2015) report and while Extent agrees with the general content, some minor modifications have been included herein.

Arrowfield Cottage is of high local significance due to its role in the history and development of pastoralism and particularly horse breeding in the Upper Hunter region. This item has historical associations with the eminent local pioneering family of the Bowmans, and other key influential pastoral and business families and figures in the region. This item is also of technical/research significance on a local level as the house and former homestead site retain a good level of integrity and possess the potential to contribute to and enhance our understanding of the nature and history of pastoralism and horse breeding, and their development and evolution in the Upper Hunter region from the nineteenth century through to the present day.

Table 10 – The significance assessment for M05 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Arrowfield is of local historical significance due to its strong association with the history and development of pastoralism and particularly horse breeding in the Upper Hunter region.
Criterion (b)	Arrowfield has some association with the Bowman family who were of some importance in the locality.
Criterion (c)	Arrowfield embodies important aesthetic qualities, being an attractive example of a Colonial Georgian and Early Victorian structure.
Criterion (d)	Arrowfield does not appear to be of social significance for an important or special association with a particular community or cultural group in the locality.
Criterion (e)	Arrowfield has some potential to yield information that will contribute to an understanding of the nature and history of pastoralism and its development and evolution in the Muswellbrook area throughout the nineteenth century. This includes both the built form and potential archaeology.
Criterion (f)	Arrowfield is an uncommon example of its type in the region.
Criterion (g)	Arrowfield is a good representative example of homestead complexes from its period of construction in the Upper Hunter region.

#### 4.5.5 Assessment of Archaeological Potential and Significance

The site has some potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*. It also has some potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history.

However, the Project would cause no ground disturbance at the site.

#### 4.6 M06 Randwick Homestead

Extent did not access the site of Randwick Homestead for the preparation of this report, as it is a privately owned property and would not be directly impacted by the Project. The following images, history and description therefore reproduce text from the AECOM (2012 and 2015) reports.

For this HHA and SOHI, a desktop review of the AECOM reports (2012 and 2015) was undertaken using publicly available published materials and images. AECOM was unable to assess this site given limited access and data. This report seeks to assess the site to a baseline level, hampered by lack of access to the place.

### 4.6.1 Summary History

Randwick Homestead is reported to be part of the original Woodlands Estate being just under 10,000 acres, that was subdivided and auctioned in April 1908. There were 28 farms included in the auction sale. The promotion of the auction stated that the 'Hunter River farms are the best of the flats' (*Farmer and Settler*, 24 April 1908). One of the farms contained the Woodlands Homestead but it has not been possible to establish if any other farms contained existing dwellings or structures.

One relatively small block of 260 acres was sold to Reginald Edward White on the day of the auction. Reginald White is likely to be a descendent of James White who was owner the Woodlands Estate from 1860 (also associated with Edinglassie Homestead) and passed the property to his son H.C. White in 1868. Unsold portions were advertised for a subsequent auction later in April (*Muswellbrook Chronicle*, 13 May 1908) and others were privately sold over the following months (*Muswellbrook Chronicle*, 23 May 1908).

Tenders were called for the erection of a weatherboard cottage and hay shed at Woodlands for J Brennan, in May 1908. The tender was called by James Hicks, Architect Muswellbrook (*Muswellbrook Chronicle*, 23 May 1908). James Hicks was a prominent architect in Muswellbrook and later designed the Federation Gothic sandstone St James Catholic Church. However, it cannot be confirmed if this is the same dwelling that is now known as Randwick.

The present Randwick Homestead contains the arched roof vents, Dutch gable and lead-light sidelights, which indicate a more sophisticated design. There is a possibility it is the James Hicks design of c.1908. Other elements such as the brick chimney and general building style may indicate earlier origins.

### 4.6.2 Context and Location

Randwick Homestead is located on the Godolphin Woodlands Stud south of the Golden Highway and Maxwell Underground. It is situated within the MJP LCA but approximately 8km west of the main entry area.

Based on publicly accessible images, the homestead is located within a rural setting with expansive views towards the north, although it is some 8km east of the proposed mine entry area.

### 4.6.3 Description

Randwick Homestead (see Figure 41) consists of a weatherboard house oriented to the west. The main house has a brick chimney and semi-circular roof vents. The front door has leadlight side windows. Extensions to the west and north form a T-shaped plan.



Figure 41 – View of the front elevation of Randwick Homestead (Source: AECOM 2015).

#### 4.6.4 Assessment of Significance

The following assessment is based on desktop research and a review of the limited available photographic images. It takes a cautious approach. However, further research would be necessary to confirm these assessments.

This report concludes that, for the purposes of this SOHI, Randwick Homestead should be treated as a place of local significance.



Table 11 – The significance assessment for M06 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Randwick Homestead is likely to be of some local interest for its role in the development of pastoralism and horse breeding.
Criterion (b)	Randwick Homestead is potentially significant for its strong or special association with the life of the White family.
Criterion (c)	Randwick Homestead embodies aesthetic values as a typical Hunter Valley homestead of its era in a rural setting.
Criterion (d)	There is no evidence to indicate that this place is of social significance for an important or special association with a particular community or cultural group in the locality.
Criterion (e)	Based on similar sites in the region there is generally low potential for archaeological 'relics' to exist at the site.
Criterion (f)	Based on accessible images, this site does not appear to be rare or uncommon in the area.
Criterion (g)	Based on accessible images, the homestead is an unremarkable example of its type.

#### 4.6.5 Assessment of Archaeological Potential and Significance

Based on similar sites in the region the site has low potential to contain archaeological 'relics' as defined by the NSW *Heritage Act 1977*.

In any event, the Project would cause no ground surface disturbance at the site.

#### 4.7 M07 Woodlands Homestead

Extent did not access the site of Woodlands Homestead for the preparation of this report, as it is a privately owned property and was recently inspected by AECOM in 2012. Additionally, the site would not be directly impacted by the Project. The following images, history and description therefore reproduce text from the AECOM (2012 and 2015) reports.

For this HHA and SOHI, a desktop review of the AECOM reports (2012 and 2015) was undertaken using publicly available published materials and images. Our conclusion is that the AECOM assessment is generally appropriate and we have adopted their conclusions herein for the purposes of the SOHI.

### 4.7.1 Summary History

The following history is an extract from AECOM (2012).

Woodlands was the name of a small land grant of 960 acres on the Goulburn River given to James Arndell, the son of First Fleet surgeon Thomas Arndell, in 1824. The property was held by the Arndells until c.1860, when it was bought from them by James White, who passed it on to his son H.C. White in 1868. It was used by the Whites as a Shorthorn cattle stud, but was also used for thoroughbred horses. In 1908, the property was subdivided and the homestead lot passed to E.G. Blume, who made it famous as a thoroughbred stud. He subsequently sold it to A.E. Grace of Grace Bros., and it then passed to E. McManamin who ran sheep in the area.

From 1971, Woodlands was developed as part of the largest private racing enterprise in Australasia according to its then owners, Ingham's Enterprises. The homestead is said to date from the early decades of the nineteenth century.

The item is currently owned by Godolphin Australia Pty Ltd, part of HH Sheikh Mohammed bin Rashid Al Maktoum's global horse breeding operation.

### 4.7.2 Context and Location

Woodlands is located approximately 10km south-west of the proposed mine entry area. It is within the MJP LCA, within a pleasant rural setting. The homestead sits behind a ridge and landscaping, which restricts views towards the Project.

### 4.7.3 Description

M07 Woodlands Homestead (see Figure 42) consists of a dressed sandstone house in Colonial Georgian style, oriented to the south. The exterior consists of stone walls with metal roofing. Simple sandstone columns support the older, front veranda, whilst timber columns support those of a subsequent extension. There are seven symmetrical French doors across the front of the residence, with the central door being flanked by two small rectangular windows.

To the north-west side of the house is a sandstone set of outbuildings, which form part of an L-shape design. Behind the main house is a small, square kitchen, which was renovated in 2009.

As stated in the AECOM (2015:34) report, there are no original internal fittings in the main building of the Woodlands Homestead.



Figure 42 – View of Woodlands Homestead M07 (Source: AECOM 2015).

#### 4.7.4 Assessment of Significance

The below assessment is taken from the AECOM (2015) report and while there is agreement with the content, some minor inconsistencies in the wording have been addressed.

Woodlands Homestead is of historical and aesthetic significance at State level, as the substantial 1830s dwelling sits in outstanding condition alongside the later residence, indicating the earliest phase of Hunter region development.

The item is also of associative significance on a local scale as it is associated with eminent pioneering and business families of the Muswellbrook area.

Scientifically, the property is also of State significance for its rare potential to reveal information which could contribute both to an understanding of thoroughbred horse breeding and cattle raising over a period of a hundred and fifty years, and to the lifestyle of the wealthy initial settlers of the Hunter region.

Table 12 – The significance assessment for M07 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Woodlands Homestead is of historical significance on a State level, as the substantial 1830s dwelling sits in outstanding condition alongside the later residence, indicating the earliest phase of Hunter region development.
Criterion (b)	Woodlands Homestead is of associative significance on a local scale as it is associated with eminent pioneering and business families of the Muswellbrook area.
Criterion (c)	Woodlands Homestead is of State significant aesthetic value. It is a superbly sited and proportioned building with unique and unequalled views of the Hunter River. The renovations undertaken are sympathetic and do not detract from the significance of the item.
Criterion (d)	Woodlands Homestead is not of social significance on a State or local level as it does not have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
Criterion (e)	Woodlands Homestead is of scientific significance as the property has unique potential to contribute to and enhance our understanding of thoroughbred horse breeding and cattle raising over a period of a hundred and fifty years, and to the lifestyle of the wealthy initial settlers of the Hunter region land.
Criterion (f)	Woodlands Homestead is a rare example on a regional level.
Criterion (g)	Woodlands Homestead does not meet this criterion as it does not demonstrate the principal characteristics of a class of cultural places or environments.

#### 4.7.5 Assessment of Archaeological Potential and Significance

The site is likely to have potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*.

However, the Project would cause no ground surface disturbance at the site.

### 4.8 M08 Stockyard

#### 4.8.1 Summary History

There is limited history available on the Stockyard. The Stockyard structure does not form a yard but double runs of fencing oriented in an ‘L’ shape. The structure utilises a sturdy construction design known as ‘four rails and a cap’, although there are two bays with five rails. The cap is the top rail of a post and rail fence, fitted into a slot cut into the top of the post so that the rail is level with the post top which achieves a smooth top to the fence.

Pickard's (2009) *Illustrated Glossary of Australian Rural Fence Terms*, notes that caps were more commonly incorporated in the construction of stockyards than general paddock fencing. The stockyard's construction detail was typically employed during the late 1800s (Pickard 2009):

*1879 (NSW) – Fencing required. The description of the fencing itself used for the erection of the stock-yard, where expense is no object, and the main object of the proprietor is to have the work done well and substantially, is usually what is known by bushmen as 'four rails and a cap.' The posts and rails, of split eucalyptus, are about double the substance of ordinary fencing stuff. The posts should be from eighteen inches to two feet wide, standing seven feet out of the ground and two feet in it, the post-holes being well rammed. The rails are from nine to fifteen inches broad, and from three to five inches thick; care should be taken to fill up the mortices well; the rails are about nine feet in length and not more than six, or indeed four, inches apart.*

*When the rails and posts are fairly up, the top rails being about six feet from the ground, and the bottom one not more than six inches, the cap or capping is put on. A stout round sapling is fixed upon, from eighteen to twenty feet in length, if procurable, if not, shorter, just sufficiently long to pass over two or two and a half panels. This is generally morticed, and the tops of the posts being tenoned, the heavy sapling is dropped on. It consolidates the fence, holding the panels together laterally; the height, too, is raised to seven feet, which hardly any cow or bullock will try to jump. (Boldrewood 1879:225)*

The structure of the Stockyard does not form an actual yard, but is two close-set fences forming a corridor, corralling animals along a narrow path.

#### 4.8.2 Context and Location

The Stockyard is located just south of the southern boundary of the exploration licence boundary and within the MJP LCA.

The 'L'-shaped Stockyard and fence runs are incorporated into a corner of a paddock now enclosed with contemporary steel and barbed wire fencing which is strung through the timber structure.

The more intact run is roughly oriented north-south and the less intact run is oriented roughly east-west. The elevation location allows extensive views across the Hunter River Valley and surrounding landscape (see Figure 43).

The elevated paddocks are in poor condition being heavily eroded and affected by long-term stock farming.



Figure 43 – View of M08 Stockyard situated on an elevated site that falls to the south-west. Views across the Hunter River extend beyond the fence to the south-east.

### 4.8.3 Description

The fencing of the Stockyard M08 (see Figure 44–Figure 45) does not form a yard but a stock run formed by two ‘L’-shaped corridors of narrowly spaced fences, between which a single file of sheep, cattle or horses could be encouraged. The structure is constructed from timber log posts and split timber rails.

The north-south run is more intact and contains a drop-down gate at the terminating end. The gate has a chain fixed, which would allow the barrier to be hauled upwards to provide passage through. The first bays and the last bays of this run have been constructed with five rails and a cap rather than four rails and a cap to the infilling length, providing an extra height at these locations as further discouragement to escaping animals.

The east-west run would appear to have been of similar construction although much of this section is lost or collapsed. The material on the ground appears to indicate the corridor construction also continued in this direction. Confirming the construction, a central pair of posts in this run contains a header beam connecting across the top of the caps of each side indicating a similar corridor width.

Whether these two runs were constructed to intersect or just to provide two separate means of funnelling animals, is not clear. The history of farming practices in the area may reveal more about the purpose for the double runs of fencing. In any event, the fencing was certainly substantial and a significant investment in infrastructure on the property.

Nearby there is a line of three, widely spaced split posts with holes for three strands of wire forming a less substantial paddock fence.



Figure 44 – View of the east-west run with the head beam connecting the two mid-posts.



Figure 45 – View of the north-south run, looking from the southern end.

#### 4.8.4 Assessment of Significance

The Stockyard M08 in its own right is of limited heritage significance.

However, it comprises a picturesque ruin within the MJP LCA. It should be managed as a place of local significance.

Table 13 – The significance assessment for M08 prepared in accordance with the criteria for heritage significance defined in the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	The Stockyard is of limited historical interest, although it appears to date to the later nineteenth century and reflects the historical development of farming in the locality.
Criterion (b)	The Stockyard has no clear association with any person or group of importance in the area’s cultural history.
Criterion (c)	The Stockyard is a ‘picturesque ruin’ in the MJP LCA, although its contribution in that regard is limited.
Criterion (d)	The Stockyard does not have an important strong or special association with a particular community or cultural group in the Upper Hunter Region for social, cultural or spiritual reasons.
Criterion (e)	The Stockyard has little potential to yield further information that will contribute to an understanding of the area’s cultural o history.
Criterion (f)	The Stockyard is not rare.
Criterion (g)	The Stockyard is an unremarkable example of its type, in poor condition.

#### 4.8.5 Assessment of Archaeological Potential and Significance

The site has low potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*. It also has low potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history.

In any event, no ground disturbance is anticipated in this location as a result of the Project.

### 4.9 M09 Plashett Homestead

#### 4.9.1 Summary History

The following history is an extract from AECOM (2012).

James Robertson of Renfrew, Scotland had been a watch and mathematical instrument maker for Grimaldi and Johnson of The Strand, London. In this capacity, Robertson had made friends with Thomas Brisbane, who was a keen astronomer. When Brisbane was appointed Governor of NSW, he encouraged Robertson to migrate to the colony.

On arrival in 1822, Robertson and his family (his wife, Anna Maria, and six children) lived in George Street, Sydney, where he established a jewellery and watchmaking business. However, prior to his arrival in the colony, Brisbane had arranged with Governor Macquarie that Robertson be given a 500-acre grant, which Brisbane increased to 1,000 acres. Robertson took half of this at Baulkham Hills and the other at Broken Bay. He made substantial improvements to the Baulkham Hills property stocking it with sheep and cattle; however, there was not sufficient pasture to support his livestock during the 1826–27 drought.



On 24 August 1824, Robertson applied for an additional grant, which he was entitled to for completing a specified amount of improvements to his current land holdings. On 19 November, Governor Brisbane authorised a grant of 1,000 acres and reserved a further 1,000 acres as a purchase. Robertson took up his 1000-acre grant on the northern side of the Hunter River at Jerrys Plains in early 1827, naming the property 'Plashett' after his father-in law's property in Essex, England. The 1828 census lists Robertson as holding 2,000 acres of land (Plashett), on which 170 acres were cleared and 80 acres cultivated, with 5 horses, 250 cattle, and 800 sheep.

A map of the Hunter River Land Grants produced in October 1829, shows the Robertson 1,000 acres with a house built on it, reflecting the 1827 land grant. This house is reportedly the slab cottage which remained standing until 1993, when it was reportedly demolished (AECOM 2015:13, 27). On 15 September 1854, Plashett was advertised for sale in the Maitland Mercury, and was described as being 'an excellent Stone House, not finished inside, which was located near to where the old homestead stood'.

Plashett was purchased from Robertson in November 1854 by Joseph Pearse, who in turn transferred ownership to his son William Pearse in 1864. By the 1890s, the property was supplying sheep and cattle for both Sydney and Hunter Valley abattoirs. Cattle were sent to the Hunter from the Pearse properties in Queensland to be fattened up for the Sydney market. Corn, horse breeding, and shearing also took place on the property. By 1910, Plashett was producing milk from a herd of approximately 100 cows for the Jerrys Plains butter factory.

When William Pearse died in 1927, a probate valuation describes the property as pastoral, with 18 grazing paddocks, three for cultivation, and a few others as well. Timber had been left in the paddocks to provide shade for the cattle, and this included kurrajong and box species.

Plashett remained in the Pearse family for 117 years, until 1971, when a portion of the property was transferred to Caroon Pty Ltd. In 1982, this portion was transferred to the Pacific Power. In that same year, Lot 2 DP 616024, which comprised half of the land owned by Pacific Power, was transferred to Mt Arthur Coal Pty Ltd. In 2000 the property was purchased by Anglo American plc. Plashett is now owned by Malabar. Plashett remains a pastoral property, the main homestead is vacant, a cottage on the property is occupied.

#### 4.9.2 Context and Location

The Plashett Homestead is located over 4km south-east of the proposed Project mine entry area and inside the MJP LCA. The homestead site is accessed from the north and situated at an elevation overlooking the Hunter River to the south-west (see Figure 46–Figure 47).

The homestead complex retains the sandstone residence, has overgrown remnants of the garden, and none of the old outbuildings remain with the exception of a manager's residence located to the north-east.

A stone footpath providing access to the Hunter River is still evident (see Figure 50).

### 4.9.3 Description

The original sandstone core of the Plashett Homestead has a 'T'-shaped plan that is wrapped by verandas under a separate lower roof. The wide top of the 'T' addresses the Hunter River and contains the main entry along with the more formal rooms. The separately roofed rear wing (see Figure 51) with several rooms extending to the east, was possibly a staff area or bedrooms.

A large timber extension, again with separate roof, linked via a veranda, has been added to the northern side of the main core and this contains a kitchen complete with a large wood fired cooking range.

An underground concrete lined water tank is located south of the rear wing (see Figure 49). A large cellar (see Figure 52) is accessed via a stone stair at the rear, located at the intersection of the two wings, leading to the area underneath the rear wing.

The veranda floor at the exterior is finished with stone flags (see Figure 48) and the interior of the house contains a suspended timber floor. The main entry features rendered walls with curved corners and niches (see Figure 53). Other rooms in the main wing feature the stone walls finished with a 'picked' face surface. Several substantial cedar doors and windows survive in good condition throughout the formal spaces. Areas of the cedar joinery are finished clear; however, some spaces have painted joinery (see Figure 54).

In 2013, the owners proposed a full restoration of the place to bring it to a habitable condition. The extent of work undertaken at the time has not been established, although the dwelling has been re-roofed in Colorbond Zinalume relatively recently. The verandas have been replaced and there is evidence of various repairs in and around the building.

While the condition of the place is good in some areas, there are a number of urgent repairs required. A collapse of soil adjacent to the underground water tank has led to an area of subsidence adjacent to the cellar stairs and access is unsafe. Due to collapse of the floor, the laundry area is also in a dangerous state. Timber wall cladding is missing in a localised area of the rear wing and birds and other pests are able to gain entry.

The methodology and materials of some of the existing repair work is not considered to be high standard conservation practice; for example, the use of stirrup-foot metal fixings to support the veranda posts. Evidence shown by the closely spaced roof battens, visible through dilapidated ceiling spaces, indicates the roof would have originally been clad with slate (see Figure 55). The reconstruction of the verandas with skillion roof pitch and with simple, unrefined framing details, especially when a curved roof is evident, is not usually considered appropriate under *The Burra Charter* (Australian ICOMOS 2013a).



Figure 46 – View of the front of Plashett Homestead overlooking the Hunter River to the south-west.



Figure 47 – View of the south-east corner of Plashett Homestead.



Figure 48 – View of the front veranda showing the stone flag finish.



Figure 49 – The underground concrete-lined water tank located south of the rear wing.



Figure 50 – A stone footpath at Plashett providing access to the Hunter River.



Figure 51 – View of the north elevation of the rear wing of Plashett Homestead.



Figure 52 – View of stone stairs leading down to the cellar at Plashett Homestead.



Figure 53 – Interior view of the rendered, curved walls and niches of the homestead's main entry.



Figure 54 – Interior view of typical painted joinery (left) and clear finished joinery (right).



Figure 55 – View up through ceiling space in Plashett Homestead showing closely spaced roof battens indicative of slate roof cladding at time of construction.

#### 4.9.4 Assessment of Significance

This assessment generally agrees with the level of significance provided in the AECOM (2012) report. However, since the AECOM report was completed a number of changes have occurred to the place e.g. the ‘carefully conceived’ garden has largely been lost and the associated homestead structures (including the Meat Shed, Hayshed and Dairy Complex) no longer exist.

Plashett Homestead is of potential State significance as a rare, almost intact survivor of the mid-nineteenth century period in the region. The item is also of aesthetic significance, as the homestead has a sophisticated building design set in what was in the past a carefully conceived garden. The property is also of significance due to its association with the eminent local pioneering Robertson and Pearse families. The property has archaeological and broader research potential as a source of information which could contribute to an understanding of the operation of a major mid-nineteenth century pastoral property.

Table 14 – The significance assessment for M09 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Plashett Homestead is important for its role in the history of the Hunter Valley and potentially for its part in the course, or pattern, of NSW’s cultural history.
Criterion (b)	Plashett Homestead is significant for its strong or special association with the life or works of the Robertson and Pearse families.
Criterion (c)	Plashett Homestead is significant for its aesthetic characteristics and creative achievement, including its high-standard sandstone construction and Georgian design.
Criterion (d)	There is potential for Plashett Homestead to be of social significance.
Criterion (e)	Plashett Homestead has potential to yield information that will contribute to an understanding of NSW’s cultural history through both its built form and potential archaeology.
Criterion (f)	Plashett Homestead is important as a rare example of a prominent pastoral homestead complex.
Criterion (g)	Plashett Homestead is important for demonstrating the principal characteristics of homestead dwellings in the Hunter region, and possibly the State, from the time of early rural settlement.

#### 4.9.5 Assessment of Archaeological Potential and Significance

The site has the potential to contain archaeological ‘relics’ as defined by the NSW *Heritage Act 1977*. It also has the potential to yield scientific data through its archaeology that could make a contribution to substantive questions relating to Australian or local history.

However, no ground disturbance is anticipated in this location as a result of the Project.



## 4.10 M10 Strowan Homestead

Extent did not access the site of Strowan Homestead for this report, as it is a privately owned property and was recently inspected by AECOM in 2012. Additionally, the site would not be directly impacted by the Project. The following images, history and description therefore reproduce text from the AECOM (2012 and 2015) reports.

A review based on desktop research of images and data provided in the AECOM reports (2015 and 2012) was undertaken. This review led to agreement with the existing assessments.

### 4.10.1 Summary History

The following history is an extract from AECOM (2012).

The property on which Strowan Homestead is located was originally two portions of land located on the southern side of the Hunter River. The first portion of land was granted to John Hosking in 1820, and became known as Hosking Park. Hosking was an absentee owner, and in 1836 he sold the land to George Bowman. The second portion of land was granted to James Robertson, the father of Sir John Robertson, in 1825. This land grant comprised 1,000 acres, and Robertson subsequently purchased a further 1,000 acres. The 1,280 acres situated on the southern bank of the Hunter River became Strowan, so named after the ancient barony of Clan Robertson. The land on the northern bank became Plashett. Strowan remained in Robertson hands for 30 years.

In 1840, James Robertson transferred Strowan to his son John, who had joined his father on the property in 1835. In 1843, John was declared bankrupt and Strowan was sequestered. Eventually the property reverted to James and his wife. They then sold it to George Bowman in 1854. George made his sixth son, James, manager of Strowan. James would later become the owner of this property as well. The property subsequently passed to Walter Bowman, and on his death, it was inherited by his nephews, brothers Robert and Mackenzie. On dissolution of the partnership, Robert Bowman became the sole owner of the property. The 'chief glory' of Strowan during the Bowman years was its Clydesdale Stud. Strowan remained in the Bowman family for more than 130 years, until it was purchased by the Arrowfield Group Ltd in 1986.

In 1985, John Messara gained controlling interest in the Australian Racing and Breeding Stables Ltd. He later purchased Arrowfield and the adjacent properties, including Strowan, for the establishment of what is now a leading horse stud. The property is now owned and operated by Calogo Bloodstock AG trading as Coolmore Australia (as noted in the AECOM [2012, 2015] reports).

### 4.10.2 Context and Location

Strowan Homestead is located on the southern side of the Golden Highway and Hunter River, across the river from Plashett Homestead. It is inside the MJP LCA and approximately 5km from the proposed mine entry area.

### 4.10.3 Description

The following description is an extract from AECOM (2012).

Strowan Homestead (see Figure 56–Figure 57) was designed by O.H. Lewis, the son of Mortimer Lewis, and was built in 1860 in an early Victorian style. It consists of a single storey main section constructed from rendered handmade bricks, shuttered French windows, flagged veranda, cast iron columns and trellis. It originally featured a shingled roof, since replaced by corrugated galvanised iron. A two-storied sandstone kitchen and loft section (for storage) was located to the rear.

Strowan Homestead is of similar symmetrical design to Plashett Homestead, with a central door flanked by side lights and two sets of French doors. The windows and French doors have arched tops. The French doors were also observed to have shutters on them. The house has a simple, pitched roof with a separate veranda; the sandstone veranda pairing is in quite poor condition. The house is painted white and has ornate, metal veranda supports.

Internally, however, the Strowan Homestead is more resolved than Plashett Homestead, mainly due to a lack of unsympathetic additions. All of the rooms have fireplaces. The entry hall is tiled in marble and slate diamonds. These are probably a later insertion over floorboards. Multi-coloured diamond side lights around the windows are also probably later insertions. There is evidence of a rear addition to the house that has been recently removed (AECOM 2015). In the rear room a bathroom/toilet has been inserted. This is entirely contained and could be removed without damage to the fabric of the homestead. While in relatively good condition, there is evidence internally of rising damp.

Outbuildings associated with the homestead in 1980 were observed to be of ironbark slab construction, and include stables, a hayshed, a buggy shed, and a workman's cottage. There was also said to be another structure, similar to the Arrowfield Cottage, situated behind Strowan Homestead, that has since been relocated to Pokolbin as a church. To the south-west is a stable/barn, constructed from well-dressed vertical slabs, with original feed troughs and a wooden floor. The over-loft of the barn can be accessed via external stairs on the northern side. During the AECOM (2015) field inspection, the loft area was not inspected as the stairs were deemed to be unsafe. Despite this, AECOM (2015) recorded this structure was overall in very good condition.



Figure 56 – View of the front elevation of Strowan Homestead (Source: AECOM 2015).



Figure 57 – View of the barn at Strowan Homestead (Source: AECOM 2015).

#### 4.10.4 Assessment of Significance

The below assessment is taken from the AECOM (2015) report and while there is general agreement with the content, some inconsistencies in the wording have been rectified. For example, in one location the AECOM report states that this site is of ‘national historical significance’ (2015) but this appears to be confusion with a reference to the now defunct NSW Register of the National Estate. This has been modified to ‘potential State significance’ below.

Strowan Homestead is of potential State significance as a rare, almost intact surviving homestead of the mid-nineteenth century in the region. The property is also of local historical associative significance due to its association with eminent local pioneering and business families in the Upper Hunter region.

Strowan Homestead has very good research potential to contribute to an understanding of the conduct of a major mid-nineteenth century pastoral property and of the manner in which wealthy pastoralists lived during that time. Furthermore, the homestead is of local representative and aesthetic significance as it provides a largely intact, early Victorian style homestead in a regional context and retains a high level of integrity.

Table 15 – The significance assessment for M10 prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	Strowan Homestead is of potential State significance as a rare, almost intact surviving homestead of the mid-nineteenth century in the region.
Criterion (b)	Strowan Homestead is of local significance due to its association with eminent local pioneering and business families, including the Bowman family.
Criterion (c)	Strowan Homestead is of local aesthetic significance, being a well-proportioned and elegantly executed house of the 1860s.
Criterion (d)	Strowan Homestead does not appear to be of social significance on a state or local level for a strong or special association with a particular community or cultural group for social, cultural, or spiritual reasons.
Criterion (e)	Strowan Homestead has good research potential, as it has the potential to contribute to an understanding for the conduct of a major mid-century pastoral property and of the manner in which wealthy pastoralists lived at that time.
Criterion (f)	Strowan Homestead is important as a rare, almost intact example of a well-executed, early homestead in the Upper Hunter area.
Criterion (g)	Strowan Homestead is of local representative significance as it provides a largely intact, early Victorian style homestead in a regional context.

#### 4.10.5 Assessment of Archaeological Potential and Significance

The site has some potential to contain archaeological 'relics' as defined by the NSW *Heritage Act 1977*. It also has some potential to yield scientific data that could make a contribution to substantive questions relating to Australian or local history.

However, the Project would cause no ground surface disturbance at the site.

### 4.11 Muswellbrook-Jerrys Plains Landscape Conservation Area

#### 4.11.1 Summary History

Many of the large homestead estates that became established in the Jerrys Plains area played a leading part in the development of the substantial rural wealth of the Hunter Valley.

It is recorded that as early as 1817 a mineralogist named William Parr explored as far north as the hills above Doyles Creek and reached land to the south-west of Jerrys Plains. This followed with an expedition in 1819, led by John Howe, and including George Bowman who squatted on what is now Arrowfield Estate, that returned to where Parr had explored and followed Doyles Creek until it reached the Hunter River. Howe is recorded as referring to the area as 'Coomery Roy' (Appendix 1). They followed the Hunter downstream to where Jerrys Plains now stands before returning to Sydney (Elder 2018).

In 1820, the expedition returned and followed the Hunter River downstream to Maitland. John Howe was accompanied by an Aboriginal guide named Myles who explained that the land was known as 'Coomery Roy', the land of the Kamilaroi people who called it 'Pullmyheri' or 'Pullumunbra'. In 1825, land at the junction of the Hunter River and a creek was granted to Cyrus Doyle, the son of a convict, and the creek took his name (Elder 2018).

#### 4.11.2 Description

The area commences along the Hunter River not far south of Muswellbrook and includes the long sweep of valley floor extending to the south-west for approximately 25km to town of Denman at the junction of the Goulburn River. The area continues for 25km in a south-east direction along the Hunter Valley to Jerrys Plains Ridge.

In this lower section, the valley widens and embraces several major tributaries. The escarpment of Wollemi National Park comprises the southern boundary of the area (Appendix 1). The MJP LCA covers an area of 67,447 hectares.

The sandy alluvial terraces forming the verdant floodplain surrounding the Goulburn and Hunter Rivers make up a large part of the MJP LCA and are its key feature. The rivers wind through a range of fertile land areas which are extensively cultivated. On either side of the floodplain, rocks derived from the Singleton Coal Measures occur which include rock of sandstone, shale, conglomerate and coal seams and give rise to the gentle undulating land surface which adjoins the flat alluvial plain (Appendix 1).

The area of the Project extends to an area flanking the floodplains that includes an undulating hilled area. These areas have been farmed extensively and are typically eroded as a result of over farming.

As noted in Section 1.1, the eastern boundary of the MJP LCA (see Figure 2–Figure 3) abuts and slightly overlaps the Project area. Part of the footprint of the underground mining area would extend into (under) the MJP LCA.

The MJP LCA was described in 1985 by the National Trust as extending ‘*some 25 km south-easterly down the Hunter Valley to Jerrys Plains Ridge*’ (Appendix 1). The citation notes the prominence of the ‘*flat alluvial flood plain contained on each side by low rolling hills*’ and ‘*extensive views of the river flats, the enclosing hills and distant ranges*’.

The National Trust citation emphasises that its ‘*high scenic and cultural qualities*’ should be recognised in future open cut mining operations and rehabilitation programmes (Appendix 1; Figure 58).



Figure 58 – View across the Hunter River typical of the Muswellbrook-Jerrys Plains Landscape Conservation Area.

#### 4.11.3 Assessment of Significance

This HHA and SOHI adopts the National Trust citation (Appendix 1) for the purposes of the assessments in this report.

Table 16 – The National Trust significance assessment for the Muswellbrook-Jerrys Plains Landscape Conservation Area prepared in accordance with the criteria for heritage significance pursuant to the NSW *Heritage Act 1977* (NSW Heritage Office 2001).

Criterion	Description
Criterion (a)	The MJP LCA area is important in the course, or pattern, of NSW's cultural history for the prosperous homestead estates that were established there, being a leading part of the development of the substantial rural wealth of the Hunter Valley.
Criterion (b)	The MJP LCA area has a special association with the life or works of prominent early settlers in the region, and is of importance in NSW's cultural history.
Criterion (c)	The MJP LCA of fertile alluvial plains flanking a meandering river set in rolling hills is important in demonstrating significant aesthetic, scenic landscapes in NSW.
Criterion (d)	The MJP LCA does not have a special association with a particular group in NSW for social, cultural or spiritual reasons.
Criterion (e)	The MJP LCA has some potential to yield information that will contribute to an understanding of NSW's cultural or natural history.
Criterion (f)	The MJP LCA area is of importance in demonstrating first settlement and the development of the homestead estate which are becoming rare or endangered aspects of NSW's cultural or natural history.
Criterion (g)	The MJP LCA is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments.

#### 4.11.4 Additional Observations Concerning the Cultural Landscape

Most of the Project area is not within the MJP LCA. The discrete elements of visible infrastructure proposed for the Project would all be located outside of the MJP LCA.

The character of the Project area can be contrasted with the description of the MJP LCA above. Today, the Study Area and its immediate surrounds are characterised by a mix of land uses and a range of activities, each one represented by a variety of infrastructure and built form.

The land has been cleared for some 100–150 years and the remnants of past pastoral and agricultural activities are visible in the landscape. However, they sit in close proximity to mining operations and mine infrastructure that have been part of the wider landscape for decades (Figure 1 shows extensive mining operations and power generation infrastructure to the north, north-east and east of the Project). Mining and power generation have long formed a part of the wider setting in the areas to the north and east of the MJP LCA.

## 5. Assessment of Heritage Impacts

### 5.1 M01 Fence

M01 is not a heritage place. If it is disturbed or destroyed by the Project (which is possible given its location between the Maxwell Underground and the Maxwell Infrastructure) this would not constitute an adverse heritage impact.

### 5.2 M02 Edderton Homestead

The suite of structures comprising Edderton Homestead, its support buildings and gardens are of local significance.

The Project would not result in subsidence effects or impacts at the Edderton Homestead. As noted in the report by Mine Subsidence Engineering Consultants Pty Ltd ('MSEC'), entitled *Maxwell Project: Environmental Impact Statement-Subsidence Assessment* (2019), Edderton Homestead is located outside the area of underground mining influence.

The Project may result in a realignment of Edderton Road. However, the entry to Edderton Homestead would remain unchanged.

Based on the above, the structure and fabric of the Edderton Homestead would not be directly impacted by the Project.

Edderton Homestead would be located over 3km north-west of the mine entry area and would be separated from the mine operations by Saddlers Creek. Edderton Homestead's heritage significance principally rests in the homestead's built form, located within a contained garden setting. Views towards the homestead and its garden setting, which permit an appreciation of its aesthetic values, would remain unaffected by the mine entry area and transport and services corridor.

Long views out of the property also make a contribution to the homestead's significance in that they permit enjoyment and appreciation of the homestead's wider rural setting. The existing easterly views from the property include the Bayswater Power Station and some high voltage transmission line pylons along the horizon ridgeline. Open cut mining areas at the Mt Arthur Mine are also visible from some areas of the property.

Based on the Landscape and Visual Impact Assessment prepared for the Project, there would be limited views of the mine entry area and the transport and services corridor from a viewpoint along Edderton Road, which is adjacent to Edderton Homestead (VPA Visual Planning and Assessment ['VPA'] 2019). At this similar viewpoint, the mine entry area and the transport and services corridor would occupy a small portion of the long view, and would be partially screened by existing vegetation. It would have a minor impact on the wider rural setting of the homestead. Subject to consultation and agreement with the landowner and tenant, these visual impacts could be mitigated by measures such as the installation of additional vegetation along the eastern and southern fence boundary to further screen views (VPA 2019).



Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Edderton Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Edderton Homestead would not be materially impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be materially impacted.

In conclusion, the potential impacts on the heritage values of Edderton Homestead would be very low.

### 5.3 M03 Bowfield Homestead

Bowfield Homestead is of local heritage significance for its historical importance and is a good representative example of an early-to-mid-twentieth century rural homestead complex. It is located within the MJP LCA on Saddlers Creek, in a pleasant rural environment.

The Project would not result in subsidence effects or impacts at the Bowfield Homestead. As noted in the report by MSEC (2019), it is located outside the area of underground mining influence.

The Project may result in a realignment of Edderton Road, which would require modification to the entry of the Bowfield Homestead. It is expected that the entry would connect with the current driveway alignment and would not materially impact on the heritage values of the Bowfield Homestead.

Based on the above, the structure and fabric of the Bowfield Homestead would not be directly impacted by the Project.

Bowfield Homestead is located over 6km west of the mine entry area, and it would be separated from it by the ridgeline on the south side of Saddlers Creek. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded the occupants of the Bowfield Homestead would have limited views of the mine entry area and the transport and services corridor. At this viewpoint, the components would occupy a small portion of the view and would be limited by intervening topographic features and vegetation. Any light spill at night discernible from a distance of 6km would be in the context of other mining operations in the immediate vicinity.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Bowfield Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Bowfield Homestead would not be materially impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Bowfield Homestead would not be impacted by the Project.

## 5.4 M04 Nissen Hut and Sheep Shower

The Nissen Hut and sheep shower fail to meet the threshold for local significance. M04 is not a heritage place. The Project would result in subsidence of the structures at this site, which would result in deformation and further deterioration of these structures.

In conclusion, subsidence impacts on these already significantly dilapidated structures, would not constitute an adverse heritage impact.

## 5.5 M05 Arrowfield Cottage

Arrowfield Cottage is of local significance due to its association with the history and development of pastoralism and particularly horse breeding in the Upper Hunter region. It is located within the MJP LCA.

The Project would not result in subsidence effects or impacts at Arrowfield Cottage. As noted in the report by MSEC (2019), Arrowfield Cottage is located outside the area of underground mining influence. Based on the above, the structure and fabric of Arrowfield Cottage would not be directly impacted by the Project.

Arrowfield Cottage would be located over 6km south of the mine entry area. Further, being located on a bend in the Hunter River, it is separated from the Project by a ridgeline. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that the occupants of Arrowfield Cottage would have no views of the Project due to intervening topography. Therefore, there would be no adverse visual impacts to Arrowfield Cottage.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Arrowfield Cottage, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Arrowfield Cottage would not be impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Arrowfield Cottage would not be impacted by the Project.

## 5.6 M06 Randwick Homestead

For the purposes of this SOHI ('Statement of Heritage Impact'), Randwick Homestead should be treated as a place of local significance. It is located within the MJP LCA, in a pleasant rural environment.

The Project would not result in subsidence effects or impacts at the Randwick Homestead. As noted in the report by MSEC (2019), Randwick Homestead is located outside the area of underground mining influence.

The Randwick Homestead would be located approximately 8km south-west of the mine entry area, and it would be separated from the Project by elevated topography and existing vegetation. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that the occupants of Randwick Homestead would have no views of the Project. Therefore, there would be no adverse visual impacts.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Randwick Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Randwick Homestead would not be impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Randwick Homestead would not be impacted by the Project.

## 5.7 M07 Woodlands Homestead

Woodlands Homestead is of State significance for satisfying a range of criteria. It is also located within the MJP LCA in a pleasant rural environment.

The Project would not result in subsidence effects or impacts at the Woodlands Homestead. As noted in the report by MSEC (2019), Woodlands Homestead is located outside the area of underground mining influence.

The Woodlands Homestead would be located approximately 10km south-west of the mine entry area and it would be separated by elevated topography and existing vegetation. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that there would be no views of the Project. Therefore, there would be no adverse visual impacts to occupants of Woodlands Homestead.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Woodlands Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Woodlands Homestead would not be impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Woodlands Homestead would not be impacted by the Project.

## 5.8 M08 Stockyard

The Stockyard (stock run) in its own right is of limited heritage significance. However, it comprises a 'picturesque ruin' that makes a minor contribution to the MJP LCA. It should be managed for that contribution.

As noted in the report by MSEC (2019), the Stockyard would be located a short distance outside the area of underground mining influence and there would be negligible subsidence impacts.

The Stockyard would be located over 3km south of the mine entry area, separated from it by a ridgeline. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that there would be no adverse visual impacts on the Stockyard as there would be no views of the Project.

In conclusion, the limited heritage values of the Stockyard would not be impacted by the Project and its place within the wider rural landscape would not be compromised.

## 5.9 M09 Plashett Homestead

Plashett Homestead is of potential State significance for satisfying a number of criteria. It is also located within the MJP LCA.

The Project would not result in subsidence effects or impacts at the Plashett Homestead. As noted in the report by MSEC (2019), Plashett Homestead is located outside the area of underground mining influence. Based on the above, the structure and fabric of the Plashett Homestead would not be directly impacted by the Project.

The Plashett Homestead would be located over 4km south-east of the mine entry area, and it would be separated from the Project by elevated topography and existing vegetation. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that there would be no views of the Project from Plashett Homestead. Therefore, there would be no adverse visual impacts to any visitors of Plashett Homestead.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Plashett Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Plashett Homestead would not be impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Plashett Homestead would not be impacted by the Project.

## 5.10 M10 Strowan Homestead

Strowan Homestead is of potential State significance for satisfying a range of criteria. It is also located within the MJP LCA, in a pleasant rural environment.

The Project would not result in subsidence effects or impacts at the Strowan Homestead. As noted in the report by MSEC (2019), Strowan Homestead is located outside the area of underground mining influence.

The Strowan Homestead would be located approximately 5km south of the mine entry area, and it would be separated from the Project by the Hunter River and the elevated topography north of the Hunter River. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that there would be no views of the Project. Therefore, there would be no adverse visual impacts on Strowan Homestead.

Based on the *Maxwell Project: Noise Impact Assessment* (Wilkinson Murray 2019), the Project would not result in adverse acoustic impacts on Strowan Homestead, having regard to its present rural character. Therefore, the present setting and quiet rural environment of Strowan Homestead would not be impacted by the proposed works. The benefits that have accrued to the place as a result of its location within the MJP LCA would not be impacted.

In conclusion, the heritage values of Strowan Homestead would not be impacted by the Project.

### 5.11 Muswellbrook-Jerrys Plains Landscape Conservation Area

The Project is located on an eastern boundary of the MJP LCA. In this location, the MJP LCA's boundary forms a narrow U-shape around the bulk of the Project area. This boundary configuration reflects the local topography, generally following elevated ridgelines south of Saddlers Creek and north of the Hunter River. As a result, most views from within the MJP LCA towards the Project area are truncated.

Given that the Project would be an underground mining operation, there would be few visible elements. Insofar as there may be subsidence caused by underground mining activities, the changes that this would cause to the local topography would not be readily discernible from within the MJP LCA.

The limited above-ground infrastructure proposed by the Project (e.g. the mine entry area, the transport and services corridor, ventilation infrastructure, water management infrastructure, and Project powerline) would be confined to discrete locations mostly in the north-east of the Study Area. The Landscape and Visual Impact Assessment prepared for the Project (VPA 2019) concluded that this limited above-ground infrastructure would not be visible from most places within the MJP LCA.

The potential Edderton Road realignment is located within the MJP LCA; however, rural roads are a common occurrence within the MJP LCA. It is noted that the current alignment of Edderton Road also passes through the MJP LCA.

A viewer standing on the eastern boundary of the MJP LCA, on elevated positions, would be able to look down on the area of the Project. However, they would still be some kilometres from the main above-ground elements (e.g. the mine entry area and covered overland conveyor system) and would have limited views due to intervening topography (VPA 2019).

In any event, as noted in Section 1.2, most of the Project area is not within the MJP LCA and its character can be contrasted with that of the MJP LCA. Today, the Project area and its immediate surrounds are characterised by a mix of land uses and a range of activities, each one represented by a variety of infrastructure and built form. The land has been cleared for some 100–150 years and the remnants of past pastoral and agricultural activities are visible in the landscape. However, they sit in close proximity to mining operations and mine infrastructure that have been part of the wider landscape for decades.

Insofar as new mine infrastructure resulting from the Project might be visible from some locations on the boundary of the MJP LCA, this would be consistent with the landscape that has existed in this area for decades i.e. a rural landscape set against a mining landscape.

Therefore, the Project would result in no adverse heritage impacts in relation to the MJP LCA.

## 5.12 Cumulative Impacts

The Project would be one of several mining operations that have existed in the local area over a number of decades. There has been some incremental loss of historic places as a result of those operations, over many years. However, the Project would not result in any additional adverse impacts.

No heritage places would be directly impacted by the Project.

Being an underground mining operation, there would be no material adverse impacts on the pleasant rural character of the MJP LCA. Where there would be new above-ground infrastructure, it would generally be in discrete locations outside the MJP LCA, in a landscape that has long had a mixed rural and mining setting.

## 5.13 Summary of Impacts

The following table summarises the potential adverse heritage impacts caused by the Project.

Table 17 – A summary of the potential adverse heritage impacts caused by the Project in relation to Sites M01–10 and the Muswellbrook-Jerrys Plains Landscape Conservation Area. Cumulative impacts on the wider landscape are also summarised below.

Place	Potential Impacts
M01 Fence	Nil – not a heritage place.
M02 Edderton Homestead	Very low.
M03 Bowfield Homestead	Nil.
M04 Nissen Hut and Sheep Shower	Nil – not a heritage place.
M05 Arrowfield Cottage	Nil.
M06 Randwick Homestead	Nil.
M07 Woodlands Homestead	Nil.
M08 Stockyard	Nil.
M09 Plashett Homestead	Nil.
M10 Strowan Homestead	Nil.
Muswellbrook-Jerrys Plains Landscape Conservation Area	Very low.
Cumulative Impacts	Very low.

## 6. Conclusions and Recommendations

### 6.1 M01 Fence

M01 is not a heritage place. No specific action is required. If the disturbance or destruction of the fence is required for the Project, this would be appropriate without the need for further action (e.g. monitoring or recording).

### 6.2 M02 Edderton Homestead

Edderton Homestead would not be directly impacted by the Project. The potential indirect impacts on heritage values would be very low and manageable with the introduction of modest screen planting in discrete locations along the eastern and southern boundary fence line of Edderton Homestead, subject to consultation and agreement with the landowner and/or tenant.

### 6.3 M03 Bowfield Homestead

Bowfield Homestead would not be impacted by the Project. No specific action would be required.

### 6.4 M04 Nissen Hut and Sheep Shower

The Nissen Hut and sheep shower are not heritage places. No specific action would be required. The Nissen Hut is in a very poor state of repair. It would be appropriate to leave it in situ, without taking remedial action, allowing its natural deterioration to continue. If it must be removed (e.g. if it poses a safety risk) it would be appropriate to do so without the need to archivally record it or to seek the input of an archaeologist.

### 6.5 M05 Arrowfield Cottage

Arrowfield Cottage would not be impacted by the Project. No specific action would be required.

### 6.6 M06 Randwick Homestead

Randwick Homestead would not be impacted by the Project. No specific action would be required.

### 6.7 M07 Woodlands Homestead

Woodlands Homestead would not be impacted by the Project. No specific action would be required.

## 6.8 M08 Stockyard

No specific action would be required. This structure is in a poor state of repair. It would be appropriate to leave it in situ, without taking remedial action, allowing its natural deterioration to continue.

## 6.9 M09 Plashett Homestead

Plashett Homestead would not be impacted by the Project. No specific action would be required.

## 6.10 M10 Strowan Homestead

Strowan Homestead would not be impacted by the Project. No specific action would be required.

## 6.11 Muswellbrook-Jerrys Plains Landscape Conservation Area

The MJP LCA would not be directly impacted by the Project and there would be negligible impacts on its broader setting. No specific action would be required.

## 6.12 Cumulative Impacts

The Project would result in no material adverse cumulative impacts to heritage places. No specific action would be required.

## 6.13 Archaeological 'Relics'

No 'relics' as defined by the NSW *Heritage Act 1977* would be impacted by the Project in either those heritage places described above or elsewhere within the Project area.

## 6.14 Summary

The following table summarises the recommendations contained in this report with respect to the assessed heritage places.



Table 18 – A summary of the management recommendations with respect to Sites M01–10.

Place	Recommendations
M01 Fence line	No specific action would be required. If the disturbance or destruction of the fence is required for the Project, this would be appropriate without the need for further action (e.g. monitoring or recording).
M02 Edderton Homestead	Screen plantings along the eastern and southern boundary fence line of Edderton Homestead are desirable, subject to consultation and agreement with the landowner and/or tenant.
M03 Bowfield Homestead	No specific action would be required.
M04 Nissen Hut and Sheep Shower	No specific action would be required. The Nissen Hut is in a very poor state of repair. It would be appropriate to leave it in situ, without taking remedial action, allowing its natural deterioration to continue. If it must be removed (e.g. if it poses a safety risk) it would be appropriate to do so without the need to archivally record it or to seek the input of an archaeologist.
M05 Arrowfield Cottage	No specific action would be required.
M06 Randwick Homestead	No specific action would be required.
M07 Woodlands Homestead	No specific action would be required.
M08 Stockyard	No specific action would be required.
M09 Plashett Homestead	No specific action would be required.
M10 Strowan Homestead	No specific action would be required.
Muswellbrook-Jerrys Plains Landscape Conservation Area	No specific action would be required.
Cumulative Impacts	No specific action would be required.

## 7. References

AECOM Australia Pty Ltd. 2012. *Non-Aboriginal Heritage Impact Assessment: Drayton South Coal Project*. Prepared for Anglo American Metallurgical Coal Pty Ltd.

AECOM Australia Pty Ltd. 2015. *Drayton South Coal Project – Non-Aboriginal Heritage Impact Assessment*. Prepared for Anglo American Metallurgical Coal Pty Ltd.

Armstrong, AS, and GO Campbell. 1882. *Australian Sheep Husbandry: A Handbook of the Breeding and Treatment of Sheep and Station Management. With Concise Instructions for Tank and Well-Sinking, Fencing, Dam-Making etc.* Melbourne: G Robertson.

Australia ICOMOS. 2013a. *The Burra Charter: The Australia ICOMOS Charter for Conservation of Places of Cultural Significance*. Burwood, Vic: Australia ICOMOS.

Australia ICOMOS. 2013b. *Practice Note: Understanding and Assessing Cultural Significance*. Burwood, Vic: Australia ICOMOS.

Australian Heritage Commission. 2001. *Australian Historic Themes: A Framework for Use in Heritage Assessment and Management*. Canberra: Australia Heritage Commission.

Boldrewood, R. 1879. *Silver & Cos Australian Grazier's Guide. I. Sheep & II. Cattle*. Modified ed. Edited by JS Ryan. Arncliffe, NSW: Centre for Australian Language and Literature Studies, University of New England.

Bowman, S.M. 2000. *The History of a Bowman Family: The First 200 Years 1798–1998*. Dubbo: Development and Advisory Publications Australia.

EJE Group. 1996. *Muswellbrook Shire-Wide Heritage Study*. Prepared for Muswellbrook Shire Council.

Elder, B. 2018. Aussie Towns (website). Accessed 7 November 2018. Available from: <http://www.aussietowns.com.au/>.

GML (Godden Mackay Logan Pty Ltd). 2013. *Drayton South Coal Project Heritage Report – Report prepared for Hunter Thoroughbred Breeders' Association*.

GML (Godden Mackay Logan Pty Ltd). 2015. *Drayton South Coal Project – Non-Aboriginal Heritage Preliminary Assessment Review Report – Report prepared for Hunter Thoroughbred Breeders Association*.

Hunter, C. 2010. *People Property Power: Plashett, Jerrys Plains*. Brisbane: Anglo American Metallurgical Coal Pty Ltd.

Landscape Institute. 2002. *Guidelines for Landscape and Visual Impact Assessment*. London: Spon Press.

MSEC (Mine Subsidence Engineering Consultants Pty Ltd). 2018. *Maxwell Project: Environmental Impact Statement-Subsidence Assessment*.

NSW Heritage Council. 2001. *New South Wales Historical Themes*. Prepared for the NSW Office of Environment and Heritage. Sydney: NSW Heritage Council.

NSW Heritage Council. 2009. *Assessing Significance for Historical Archaeological Sites and 'Relics'*. Parramatta: NSW Heritage Council and Heritage Branch, Department of Planning.

NSW Heritage Council. 2011. *Criteria for the Assessment of Excavation Directors*. Sydney: NSW Heritage Council.

NSW Heritage Office. 1996. *Archaeological Assessment Guidelines*. Sydney: NSW Heritage Office and Department of Urban Affairs and Planning.

NSW Heritage Office. 2001. *Assessing Heritage Significance*. Prepared for the NSW Office of Environment and Heritage. Sydney: NSW Heritage Office.

NSW Heritage Office. 2002. *Statements of Heritage Impact*. Prepared for the NSW Office of Environment and Heritage.

NSW Heritage Office and Department of Urban Affairs and Planning. 1996. *NSW Heritage Manual*. Prepared for the NSW Office of Environment and Heritage.

NSW Office of Environment and Heritage. 2013. *Hunter Estates: A Comparative Heritage Study of pre-1850s Homestead Complexes in the Hunter Region. Volume 1: Historical Context and Survey of Sites*.

Pearson and Sullivan 1995. *Looking After Heritage Places*. Carlton: Melbourne University Press.

Pickard, J. 2009. *Illustrated Glossary of Australian Rural Fence Terms*. Sydney: Heritage Branch, New South Wales Department of Planning.

RPS Australia East Pty Ltd. 2013. *Aboriginal and Non-Indigenous Cultural Heritage Assessment – Mt Arthur Coal Open Cut Modification*.

UNESCO World Heritage Centre. 2012. *Operational Guidelines for the Implementation of the World Heritage Convention*. Available from: <https://whc.unesco.org/archive/opguide12-en.pdf>

VPA (Van Pelt & Allen Visual Planning and Assessment). 2019. *Maxwell Project, Landscape and Visual Impact Statement*.

VAHS (Veritas Archaeology & History Services). 2005. *Drayton Extension: Non-Aboriginal Heritage Assessment*.

VAHS (Veritas Archaeology & History Services). 2014. *Mount Pleasant Historic Heritage Study*. Prepared for Rio Tinto Coal Australia.

Wilkinson Murray. 2019. *Maxwell Project: Noise Impact Assessment*. Prepared for Malabar Coal Ltd.

*Newspapers*

*Farmer and Settler*

*Muswellbrook Chronicle*

## Appendix 1 – National Trust Citation – Muswellbrook- Jerrys Plains Landscape Conservation Area

<b>LANDSCAPE CONSERVATION AREA</b>		
<b>DENMAN</b>	<b>MUSWELLBROOK-JERRYS PLAINS</b>	<b>HUNTER</b>
Location	Name or identification of listing	Region
Proposer: <b>A.M. WARD R.MCDOUGALL</b>	Crown land                      Freehold  X    X	Map reference Singleton 1 : 250 000
Date of Proposal: <b>16.8.84</b>	Local Govt Areas	Owner/s  PRIVATE/VARIOUS
Suggested Listing Category: <b>CLASSIFIED</b>	<b>MUSWELLBROOK SHIRE</b>	
Committee (Trust use): <b>LANDSCAPE CONSERVATION</b>		
Council (Trust use): <b>21.1.85</b>		
<b>Reasons for Listing</b>		
<p><b>Aesthetic:</b> The lush cultivated alluvial flats of the central Hunter and lower Goulburn Rivers present a magnificent view, with the wide valley floor of majestic scale bounded by low hills to the east and west and the rugged escarpment of Wollemi National Park to the south (Appendix A).</p> <p><b>Social:</b> This area contains many of the high quality properties and large pastoral estates which contribute to the great rural wealth of the Hunter Valley (Appendix B).</p>		
<b>Description</b>		
<p>The area begins along the Hunter River a short distance below Muswellbrook and comprises the long sweep of valley floor extending south-westerly some 25 km to the junction of the Goulburn River at Denman. The section of the Goulburn River Valley below Sandy Hollow is included. The area then extends some 25 km south-easterly down the Hunter Valley to Jerrys Plains Ridge. In this lower section, the valley widens and embraces several major tributaries. The escarpment of Wollemi National Park comprises the southern boundary of the area.</p> <p>Geology and Landform - (Appendix C)</p>		
<b>Recommendations</b>		
<p>The high scenic and cultural qualities of the listed area should be protected through appropriate Environmental Protection zonings under a Local Environmental Plan.</p> <p>Open cut mining of the alluvial river flats should not be permitted. Should it be necessary for open-cut mining of the non-alluvial lands, the aesthetic and social values of the Classified area should be recognised in the mining operation and the rehabilitation programme.</p>		
<b>Bibliography</b>		
<p>W. Allan Wood : Dawn in the Valley : Wentworth Books 1972 C.S.I.R.O. : General Report on the Lands of the Hunter Valley 1963</p>		

National Trust of Australia (N.S.W.) Listing Proposal NTM.06

MUSWELLBROOK–JERRYS PLAINS

APPENDIX A

Scenic Values

The upper section of the area comprises a flat alluvial flood plain contained on each side by low rolling hills. The land has been cleared for intensive farming - crops, dairy farming and vineyards - on the floodplain and grazing on the foothills.

The area has an air of rural prosperity, many large holdings with magnificent historic homesteads contributing to this atmosphere.

The lower Goulburn River Valley also comprises flat valley floor, much narrower than the Hunter, and contained between the foothills. Mount Dangar stands dominant over the western end of the area, marking the eastern end of the Goulburn River National Park.

Below the Goulburn River junction, the Hunter flows south-easterly. The valley floor widens and the listed area embraces several major tributaries. The valleys of the creeks which enter from the north are wide and mostly cleared; those entering from the south are narrower and more rugged, with rough sandstone escarpments.

Throughout the whole area there are extensive views of the river flats, the enclosing hills and distant ranges. The colourful bluffs of Wollemi National Park dominate to the south, contrasting with the rolling hills which form the other boundaries. Overall the area provides continuous vistas of pleasant landscapes, with no intrusive elements.

APPENDIX B

Historical and Social Values

John Howe, Chief Constable of Windsor, was the first white man to see the Upper Hunter, when he led a small party to the crest of the Hunter Range and looked down over the Hunter Valley at what is now Jerrys Plains, but which he called Coomery Roy, in November, 1819. He travelled down Doyles Creek to reach the Hunter and was greatly impressed with the quality of the country. He remarked, "It is the finest sheep land I have seen since I left England and will grow as good a swath ....."

Five years later Henry Dangar completed the discovery of the Upper Hunter. In August, 1824, he proceeded westward from Foy Brook, crossed the watershed between Saltwater Creek and Muscle Brook, and entered the valley of the Upper Hunter - the first white man to do so.

In October of the same year he left Jerrys Plains, (then the limit of settlement) and proceeded westward up the unexplored section of the Hunter River beyond the limit discovered by John Howe five years earlier. Reaching the junction of the Goulburn and Hunter Rivers, he decided to follow up the latter, and eventually came to the area he had found earlier near Muscle Brook.

Dangar named the alluvial flats of the Hunter upstream from the junction of the Goulburn "Twinkenham Meadows". Surgeon Peter Cunningham (brother of the explorer, Allen) described these meadows thus : "One of the finest natural prospects that can be witnessed ..... The flat alluvial lands spread out before you are matted with luxuriant herbage. Branching evergreens are scattered singly or in clumps, with the river winding through the midst; its steep and grassy banks bordered with a deep green fringe of dark-foliaged swamp oaks. The gently rising hills beyond, thinly clothed with wide-spreading forest trees, extend in diversified magnificence as far as the eye can reach."

Following Dangar's expedition, there was a scramble for land in the area and all river frontages were soon taken. The beginnings of large pastoral estates were strung along the river upstream from Merton, the original village of the town of Denman.



APPENDIX B (CONTINUED)

Many of the grants were made to Civil Servants and retired Navy and Army Officers. Two people who came to the colony on the same ship in 1825 applied for grants adjoining each other on the Upper Hunter. Surgeon Peter Cunningham located his grant at the confluence of the Hunter and Goulburn Rivers, and named his farm "Dalswinton" after his family's estate in Dumfriesshire. William Ogilvie, Lieut. R.N., selected the land immediately upstream on the Junter and named his farm "Merton" after a village in Surrey. The village of Merton developed in this area and soon became the regional centre of administration, and the mother village of the town of Denman.

"Piercefield" was originally a grant of 2,030 acres, in 1824, to William Carter, Master in Chancery in the Colony. The area of the property was increased to 9,000 acres in a few years, but Carter became disasterously involved in land and stock deals and mortgages, and his estate passed into the hands of James Bettington.

Captain John Pike of 73rd Regiment secured a grant of 2,000 acres and purchased a further 4,000 acres, to establish "Pickering" in 1825. He was the first man to take a dray to that part of the country, and his track, which others followed, became known as Captain Pike's Road. His wife Justine and daughter Mary Elizabeth were the first white women to go to the Upper Hunter.

Two of the most prominent properties in the area were those of the Hon. Francis Forbes, Chief Justice, and his brother, George. The former named his estate "Skellator" after a Forbes Estate near Aberdeen, Scotland, and the latter, "Edinglassie" after the ancestral home in Aberdeenshire.

Most of the large estates established in this era played a leading part in the development of the substantial rural wealth of the Hunter Valley.

MUSWELLBROOK-JERRYS PLAINS

APPENDIX C

Geology and Land Form

The area includes a large part of the floodplain surrounding the Goulburn and Hunter Rivers and as such it consists mainly of sandy alluvial terraces (Quaternary age) within which the River follows a meandering course. A wide range of fertile soils occur and are extensively cultivated. The system of alluvial terraces is well developed with local relief up to 10 m.

On either side of the floodplain, rocks of the Singleton Coal Measures (Permian age) occur. These include sandstone, shale, conglomerate and coal seams and give rise to the gently undulating land surface which adjoins the flat alluvial plain.

