

## Appendix 23

### Statement of Heritage Impact

# Glendell Mine Extension Ravensworth, NSW

## Statement of Heritage Impact



Late 20<sup>th</sup> century aerial view of the Ravensworth Homestead Complex  
Source: Base photograph courtesy of G & J Marshall/Glencore

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# 1. Introduction

## 1.1. Background

This report is a Statement of Heritage Impact for a proposal to extend the existing Glendell Mine, taking in a new area of land located to the north-west of the existing mine (The Additional Disturbance Area/Glendell Pit Extension) and to install associated mining infrastructure adjacent, all on land that is part of the historic Ravensworth Estate, Ravensworth, NSW. The Glendell Mine forms part of the Mount Owen Complex located at Ravensworth in the Upper Hunter Valley of New South Wales.

As the Project involves mining the land on which the Ravensworth Homestead Complex is located, retention of the Homestead in its current location would not be possible. Therefore, the proposal also involves the relocation of the Ravensworth Homestead Complex to one of two possible recipient sites: Ravensworth Farm, Ravensworth, NSW or McNamara Park, Broke, NSW.

We understand that the applicant is seeking approval as part of a State Significant Development (SSD) application to relocate the Homestead on the basis that relocation will be either locally to Ravensworth Farm or alternatively to Broke. In the event that the Ravensworth Farm option is preferred by the Consent Authority then approval for this option, we are advised, would be under the SSD consent and would require no further approvals.

In the event that the Broke option is preferred by the Consent Authority, we are advised that, land tenure would then need to be secured for the proposed location or an alternative location, and all requisite statutory approvals (Secondary Approvals) would be required to be obtained. If the Broke approvals cannot be obtained in a timely manner (suggested by the applicant as within two years of the commencement of the SSD development consent), then the applicant will relocate the Homestead to the Ravensworth Farm site. We are advised that the applicant is requesting that the relocation of the Ravensworth Homestead Complex to the Ravensworth Farm site would be approved under the SSD consent subject to the Broke option not being available.

The purpose of this Statement of Heritage Impact is to assess the impacts of the above proposal on the heritage values of the former Ravensworth Estate lands and in particular the Core Estate lands and the Ravensworth Homestead Complex and its immediate surrounds, as well as the heritage values of the two relocation option sites: Ravensworth Farm and McNamara Park, Broke.

Ravensworth Homestead (Lot 228 DP 752470) is listed as an item of local heritage in Schedule 5 of the *Singleton Local Environmental Plan 2013* (Item No. I41).

This report has been commissioned by Glencore, Glendell Tenements Pty Ltd.

The preparation of this report was proceeded by the preparation of heritage analysis reports for the land affected by the proposal:

- *Heritage Analysis and Statement of Significance: Ravensworth Estate, Ravensworth, NSW* (the Place) (Appendix 23a)
- *Heritage Analysis and Statement of Significance: Ravensworth Farm, Ravensworth, NSW* (Ravensworth Farm Recipient Site) (Appendix 23g)

- *Heritage Analysis and Statement of Significance: McNamara Park, Broke, NSW* (Broke Recipient Site) (Appendix 23h)

The above reports involved substantial historical research, notable oral history, substantial landscape, Aboriginal and historical archaeological investigations and fabric surveys by numerous consultants (see *Heritage Analysis and Statement of Significance* reports, Appendices 23a, 23g and 23h).

## 1.2. The Land the subject of the Proposal

The proposed Glendell Mine extension relates to three areas of land, being the former Ravensworth Estate, Ravensworth NSW, and two proposed recipient site options: Ravensworth Farm, Ravensworth (within the Ravensworth Estate lands) and McNamara Park, Broke, NSW.



Figure 1. 1: Location plan of the Hunter Valley showing location of the former Ravensworth Estate and Broke, NSW.  
Source: whereis.com, 2019

The following is a description of the three areas of land that are the subject of the proposal.

The Ravensworth Estate, the Ravensworth Farm Recipient Site and the Broke Recipient site, have been visited and surveyed on numerous occasions by Ian Stapleton and the staff of Lucas Stapleton Johnson & Partners Pty Ltd and other heritage related consultants during 2018 and 2019. Refer to *Appendices 23a, 23g and 23h* for detailed descriptions of each place.



### 1.2.1. Ravensworth Estate, Ravensworth

The land into which the open cut coal mine is to be extended forms part of the former Ravensworth Estate, an historic pastoral property established in 1824 by Dr. James Bowman, the colony's principal surgeon. The historic focus of the Ravensworth Estate lands is the c1832 homestead, the Ravensworth Homestead Complex (RHC). In 1997 Glendell Tenements Pty Ltd acquired the homestead complex and surrounding lands.

The former Ravensworth Estate is located within the Upper Hunter Valley, NSW, within the Parishes of Liddell and Vane, the County of Durham, in the local government area of Singleton Council.

The Ravensworth Homestead Complex is located to the north of the New England Highway and the Main Northern Railway, approximately 20 kilometres northwest of Singleton, 25 kilometres southeast of Muswellbrook, 6 kilometres north of the village of Camberwell and 7 kilometres east of Lake Liddell (Refer to Figure 1.1). Access to the homestead is via Hebden Road, running northward from the New England Highway.

At its largest extent the Ravensworth Estate stretched from Davis Creek and Rouchel Brook near Mount Scrumlo in the north to the Hunter River near the town of Camberwell in the south with the Ravensworth Homestead Complex at the centre of the pastoral operations of the property.

Today, due to the history of subdivision that has occurred since the late 19<sup>th</sup> century and the subsequent sale of portions of the original estate lands, the land that once comprised Ravensworth Estate is now owned by various individuals, corporations and government agencies and has been developed for a mix of purposes by current and past owners.

For the purposes of this report, the Ravensworth Estate has been defined as being all the land located within the historic boundaries of the three land grants forming the core of the Ravensworth Estate, that is Portions 149 and 150 of the Parish of Liddell and Portion 1 of the Parish of Vane. Together this land comprises Dr. James Bowman's original "10,000" (10,439) acre land grants applied for under Governor Brisbane in 1824 (refer to *Appendix 23a* for further details).

As a result of the site inspections undertaken for the *Heritage Analysis and Statement of Significance for Ravensworth Estate* report a number of individual sites, features and components that relate to the history of development of the Ravensworth Estate were identified and subsequently graded as to their level of significance (see *Appendix 23a*).

Refer to Figures 1.2 and 1.3 below for location of the principal features of the Ravensworth Estate lands.

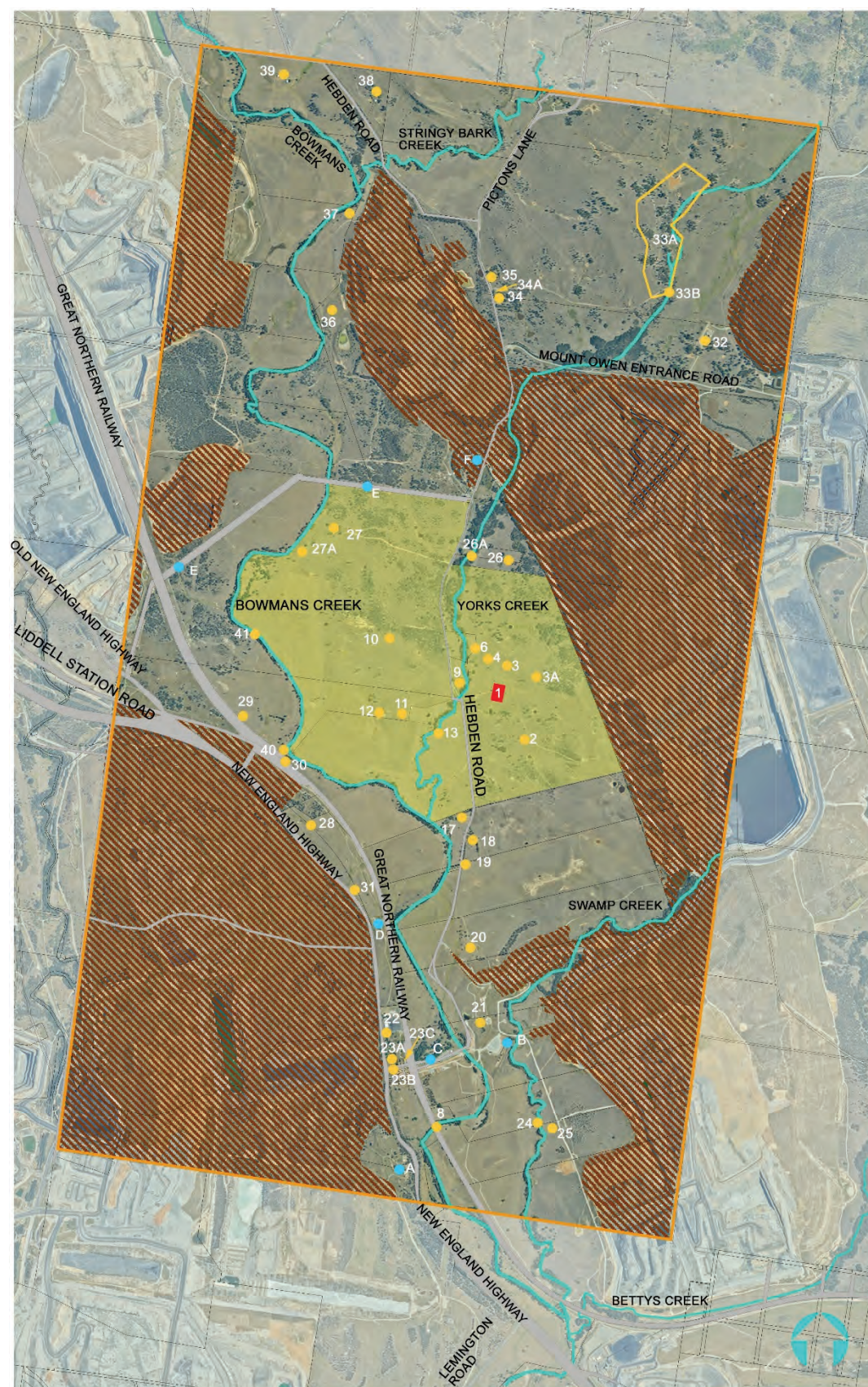


Figure 1. 2: Aerial view of the Place identifying the location of the principal components of the Place, the Ravensworth Estate core remains (Core Estate lands) and other sites within the boundaries of the Place. See overleaf for legend.  
Source: Base aerial and mapping information courtesy of Glencore/Umwelt, 2018



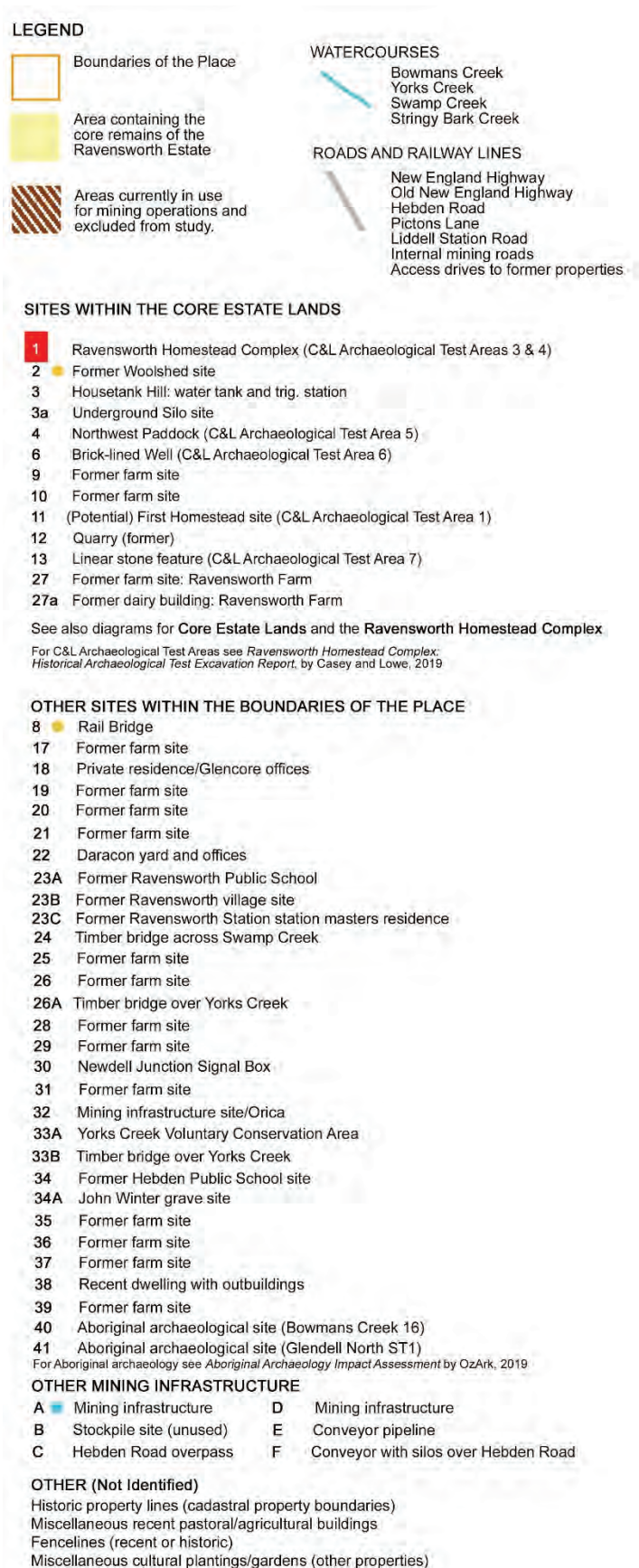


Figure 1. 3: Legend for Figure 1.2 (above).

### 1.2.2. Ravensworth Farm, Ravensworth

Ravensworth Farm, Ravensworth is located within the Upper Hunter Valley, NSW, within the Parish of Vane, the County of Durham, in the local government area of Singleton Council.

The nearest town to Ravensworth Farm is Camberwell, located approximately 8 km south of the farm site, via the New England Highway.

Ravensworth Farm is located within the boundaries of the former Ravensworth Estate, an area of 10,000 acres granted to Dr. James Bowman in the 1820s (refer to Figure 1.2). The allotment containing the subject property was formed as part of the history of later subdivision that occurred in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries and the subsequent sale of portions of the original estate lands.

Access to the farm is via Hebden Road, running northward from the New England Highway through the former Ravensworth Estate lands, now part of the Glendell Mine lands (refer to Figure 1.4).

The real property definition of the place is part Lot 32 of DP 545601 (refer to Figure 1.4).

Ravensworth Farm consists of a complex of farm buildings dating from the early to mid-20<sup>th</sup> century, including two houses, garage, a hay barn/shearing shed, dairy building and associated yards and enclosures. The farm is located on a ridge of land to the east of Bowmans Creek overlooking the alluvial plains of the creek to the south and southeast (refer to Figure 1.5).



Figure 1. 4: Aerial view of Ravensworth Farm (Part Lot 35 DP 545601) in relationship to main landscape features including creeklines, the Ravensworth Homestead Complex and Ravensworth Farm. Source: NSW Spatial Services, SixMaps, 2019





Figure 1. 5: Aerial view of existing Ravensworth Farm indicating main surviving components of the site. Source: NSW Spatial Services, SixMaps, 2019

### 1.2.3. McNamara Park, Broke, NSW

McNamara Park is located within the village of Broke, NSW, in the parish of Broke, county of Northumberland, within the local government area of Singleton Council.

Broke is located within the lower Hunter Valley Region, approximately 157 kms northwest of Sydney, 85 km west of Newcastle and 29 km south of Singleton.

McNamara Park is situated along the southwestern edge of the village on the western side of Wollombi Street (the main street in the village) and at the intersection with Milbrodale Road. The public reserve is approximately 12.5 ha in area. The real property definition of the place is Lot 701 of DP 93631.

McNamara Park is a relatively level area running north-south along the southwestern edge of the village and is bounded by Wollombi Street (the main street) on the east, Milbrodale Road on the south, Wollombi Brook on the west and residential allotments on the north. The southern portion of the park is covered with an open wood of native trees growing in grassland, with some mature, eucalypt trees. The northern portion of the park is open grassed areas. Adjacent to Wollombi Brook, the land falls steeply to the creek bed which is possibly 10 or 15 meters below the general level of the park. At the southern end there is a modern concrete bridge crossing the Brook, on Milbrodale Road.

The public reserve is used as a free camping ground and for occasional markets and festivals. The park is accessed by a gravel track from both the northern and southern ends of the park. Smaller dirt tracks lead off this main access road into the open areas of the reserve where camping occurs. Some facilities are provided throughout the camping grounds including an amenities block, car parking areas, picnic shelters, garbage bins, power outlets and the like.



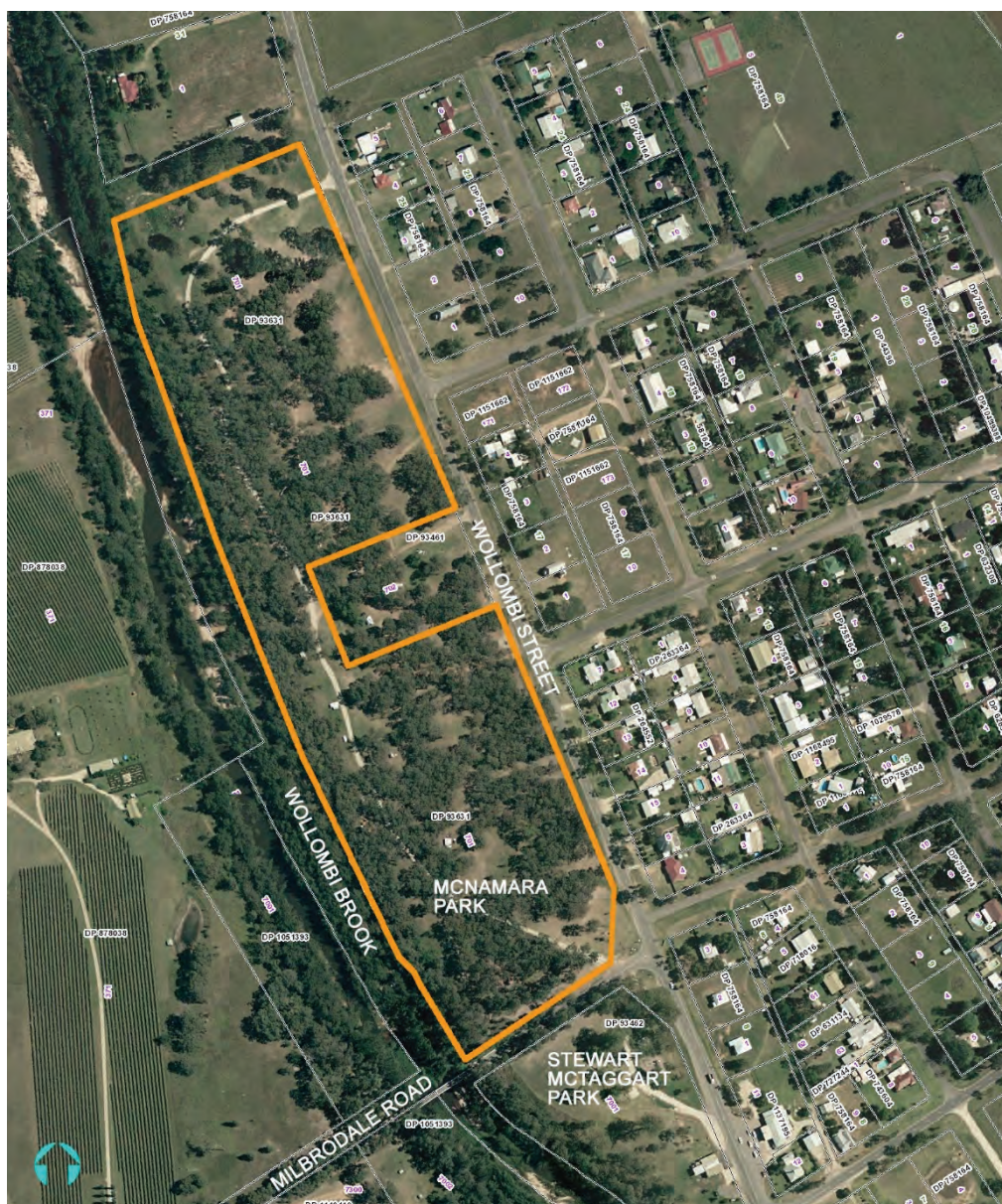


Figure 1. 6: Aerial view of the village of Broke, NSW showing the location of McNamara Park. The real property definition of the land is Lot 701 DP 93631

## 1.3. The Proposal

In brief, this statement is for a proposal to extend the existing Glendell mine and associated infrastructure further into the historic Ravensworth Estate, including demolition of the existing Glendell MIA, construction and use of a new MIA, construction and use of a Heavy Vehicle Access Road from the active pit area to the new MIA, realignment of a section of Hebden Road, realignment of the lower reach of Yorks Creek and to open-cut mine the land (including part of the Core Estate lands of the Ravensworth Estate lands, refer to Figure 1.2 above).

Refer to Figure 1.7 below for the extent of the proposed works associated with the Glendell Mine extension.

As the proposed Glendell Mine extension involves land on which the Ravensworth Homestead Complex (RHC) is located, the proposal also includes the relocation of the RHC group of buildings to one of two recipient site options and the adaptive reuse of the buildings. The two relocation options are as follows:

- Ravensworth Farm Recipient Site: relocate the Ravensworth Homestead Complex in full-building sections to the nearby site at Ravensworth Farm (Intact Move) and install it there and adapt for office use and staff training. Refer to Figure 1.7 for location of the RHS adjacent to Ravensworth Farm.
- Broke Recipient Site, conceptually proposed as McNamara Park: this is a proposal that was initiated by members of the Broke-Fordwich community and involves dismantling the Ravensworth Homestead Complex and rebuilding the buildings on the public reserve site at the town of Broke, NSW (Dismantle and Rebuild Move) and adapting for gallery, market and tourist uses. It is acknowledged that this option would be subject to separate approvals. Refer to Figure 1.8 for concept layout.

Prior to the extension of the mining activities over the land that holds the Ravensworth Homestead Complex, it is also proposed to carry out extensive archaeological salvage investigations under and adjacent to the existing homestead site.

A more detailed description of each proposal is included in *Section 3: Heritage Impact Assessments* below.



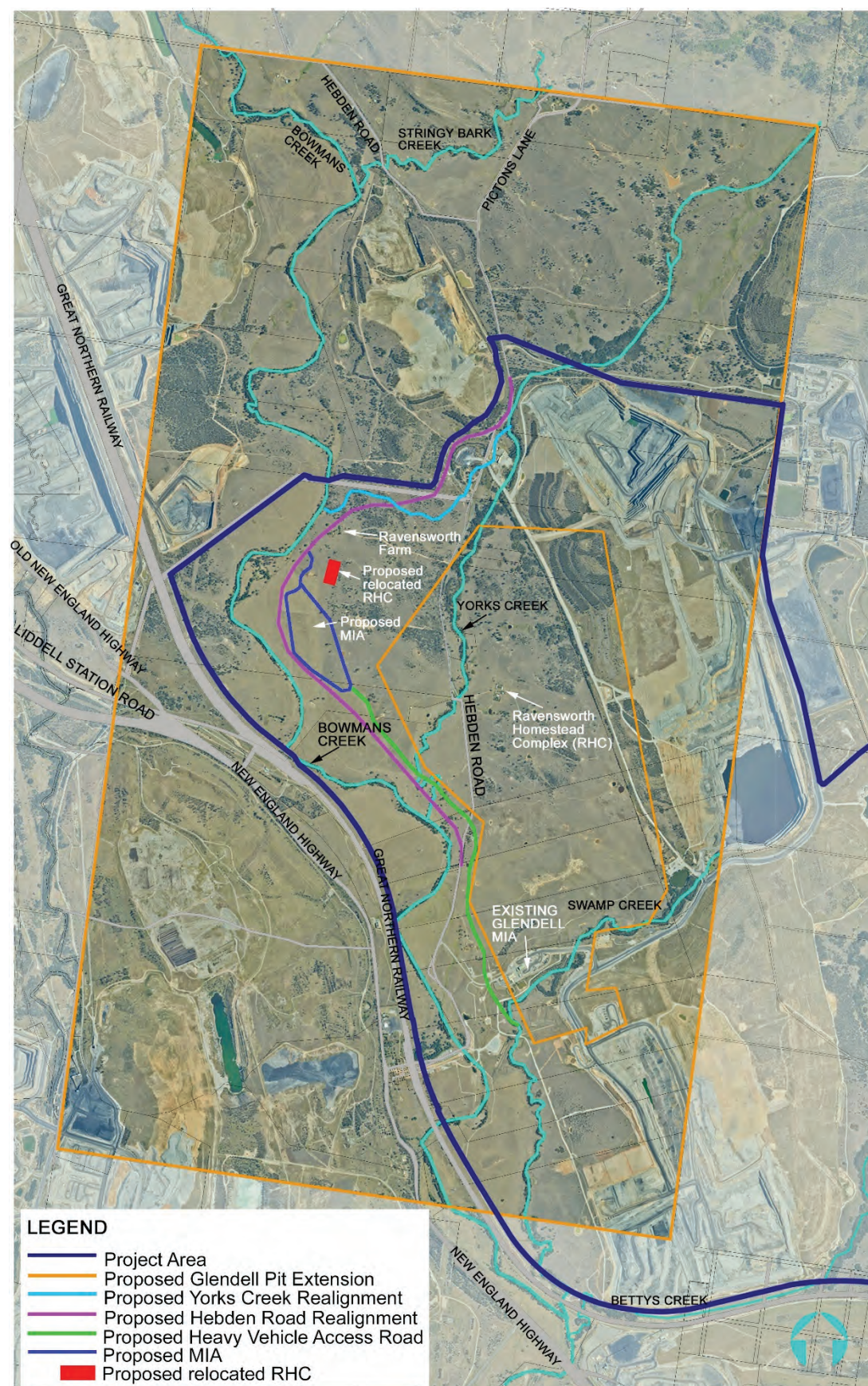


Figure 1. 7: Aerial view of the Ravensworth Estate indicating the components of the proposed Glendell Continued Operations Project. Source: Base aerial and mapping information courtesy of Glencore/Umwelt, 2018





Figure 1. 8: Conceptual layout plan for Broke Recipient Site, prepared by Shac Architects, September 2019

## 1.4. Author Identification

The author of this report is Ian Stapleton, Heritage Architect, Lucas Stapleton Johnson & Partners Pty Ltd and relies on material already compiled for the three preceding Heritage Analysis and Statements of Significance reports (*Appendices 23a, 23g and 23h*).

## 1.5. Acknowledgements

The authors wish to acknowledge the assistance of the following:

- Shane Scott, Bradly Snedden, Tim Walls, Catherine Fenton of Glencore
- Bret Jenkins, Bridie McWhirter, Dr. Sheridan Coakes of Umwelt Environmental Consultants
- Tim Duddy, heritage consultant

## 1.6. Copyright of Images

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## 1.7. Exclusions

This report does not include an assessment of the ecological values of the place. Refer to *Appendix 20: Biodiversity Development Assessment Report* accompanying the application.

## 1.8. Terms and Definitions

This report adheres to the use of terms as defined in the Australia ICOMOS *Burra Charter* 2013, together with the following definitions:

<b><i>Archaeological Investigation/Excavation</i></b>	The manual excavation of an archaeological site. This type of excavation on historic sites usually involves the stratigraphic excavation of open areas.
<b><i>Aboriginal object</i></b>	means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains (as per Clause 5 of the <i>National Parks and Wildlife Act</i> 1974).
<b><i>Aboriginal place</i></b>	means any place declared to be an Aboriginal place under section 84 of the <i>National Parks and Wildlife Act</i> 1974.
<b><i>Adaptation</i></b>	As per the <i>Burra Charter</i> definition. Changing a place to suit the existing use or a proposed use.
<b><i>Additional Disturbance Area</i></b>	The area of land that will be impacted on by the Project (additional to existing approved disturbance areas) including mining and non-mining related activities.
<b><i>Archaeological potential</i></b>	is here used and defined as a site's potential to contain archaeological relics which fall under the provisions of the Heritage Act 1977 (amended). This potential is identified through historical research and by judging whether current building or other activities have removed all evidence of known previous land use.
<b><i>Archaeological Site/Item</i></b>	A place that contains evidence of past human activity. Below ground sites include building foundations, occupation deposits, features and artefacts. Above-ground archaeological sites include buildings, works, industrial structures and relics that are intact or ruined.
<b><i>Core Estate Lands</i></b>	Area of land containing the Ravensworth Homestead Complex and land to the west comprising portions of other allotments owned by the extended Marshall family. The area contains standing structures, cultural plantings, cultivation sites and known archaeological sites associated with the Bowman period of occupation (1824-1842). Shaded yellow on the Place diagram.



<b><i>Estate</i></b>	A piece of landed property, especially one of large extent.
<b><i>Farm Yard</i></b>	The square or courtyard created by the buildings of the Ravensworth Homestead Complex.
<b><i>Glendell Pit Extension</i></b>	The area of the proposed extension of the current open cut mining operations at the Glendell Mine.
<b><i>Historical Archaeology</i></b>	<p>Historical (non-Indigenous/European) Archaeology (in NSW) is the study of the physical remains of the past, in association with historical documents, since the British occupation of NSW in 1788. The material remains studied include Archaeological Sites which may include:</p> <ul style="list-style-type: none"> <li>• below ground: relics which include building foundations, occupation deposits, rubbish pits, cesspits, wells, other features, and artefacts.</li> <li>• above ground: buildings, works, agricultural and industrial structures, and relics that are intact or ruined.</li> <li>• cultural landscapes: major foreshore reclamation;</li> <li>• maritime sites: infrastructure and shipbuilding;</li> <li>• shipwrecks; and</li> <li>• structures associated with maritime activities.</li> </ul>
<b><i>Homestead</i></b>	a parcel of land, originally one considered to be big enough to support a family; the main residence on a sheep or cattle station or large farm; of or relating to a building, settler, etc., on a homestead.
<b><i>Maintenance</i></b>	As per the <i>Burra Charter</i> definition. The continuous protective care of a place, and its setting.
<b><i>Pastoral</i></b>	of or relating to the raising of stock, especially sheep or cattle, on rural properties; used for pasture, as land.
<b><i>Place</i></b>	means a geographically defined area that may include elements, objects, spaces and views. Place may have tangible and intangible dimensions. The term place is defined under the <i>Burra Charter</i> and is used to refer to sites and areas of cultural significance.
<b><i>Ravensworth Estate The “10,000” acres The Place</i></b>	The 10,439 acres applied for by Bowman in 1824, being Portions 149 and 150 of the Parish of Liddell and Portion 1 of the Parish of Vane. Bowman himself referred to the area of land as being of 10,000 acres.
<b><i>Ravensworth Homestead Complex (RHC)</i></b>	Refers to the c1832 complex of buildings including the main house with attached kitchen wing, the stables, the barn, the men’s quarters, the privy, the gardens, farm yard and associated boundary fencing.
<b><i>Reconstruction</i></b>	As per the <i>Burra Charter</i> definition. Returning a place to a known earlier state and is distinguished from restoration by the introduction of new material.
<b><i>Repair</i></b>	The restoration and/or reconstruction of a place.
<b><i>Research Design</i></b>	A set of questions which can be investigated using archaeological evidence and a methodology for addressing them. An archaeological

research design is intended to ensure that archaeological investigations focus on genuine research needs. It is an important tool that ensures that when archaeological resources are destroyed by excavation, their information content can be preserved and can contribute to current and relevant knowledge.

***Research Potential***

The ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its 'relics'.

***Restoration***

As per the *Burra Charter* definition. Returning a place to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.

## 2. Methodology

### 2.1. Generally

The form and methodology of this report follows the general guidelines for statements of heritage impact outlined in the following documents:

- *Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter)*, Australia ICOMOS Inc. 2013
- *Assessing Heritage Significance*, NSW Heritage Office, 2001
- *Statements of Heritage Impact*, NSW Heritage Office, 2002
- *NSW Heritage Manual*, NSW Heritage Office, 1996

### 2.2. Methodologies

The following is a discussion of appropriate and usual methodologies implemented in the assessment of impact on places of cultural significance.

#### 2.2.1. Methodology 1

An appropriate methodology to assess the impact of the proposals on the places involved in this project is to compare each aspect of the proposal with the cultural significance of the associated places to determine if the carrying out of the proposal will impact on, lessen, compromise, interfere with, distort, misrepresent, etc., the significance of the place.

For such a comparison to be meaningful, the related place needs to have some perceived cultural significance. In this case, the cultural significance of the related places has been investigated and stated in reports separate to this (see *Heritage Analysis and Statement of Significance* reports listed above).

The degree of heritage impact can be summarised in key words as follows and for this report these have the following meaning:

#### Impact Assessment Terminology

Cultural Significance	Exceptional	High	Moderate	Little
Degree of Change				
A little	Some	Low	Nil	Nil
Some	Notable	Some	Low	Nil
Medium	High	Notable	Some	Low
A lot	Very High	High	Notable	Low

Note that these levels of impact and their meaning are not included in NSW Heritage Office and Department of Urban Affairs & Planning's guideline document *Statements of Heritage Impact*, 2002, but are nevertheless provided here to assist the reader in understanding the assessment provided for in this report.

### 2.2.2. Methodology 2

Another way to assess the impact of the relocation options is to compare aspects of the proposal with a properly prepared Conservation Management Plan. In such an assessment each aspect of the proposal is compared with the recommended conservation policy for the relevant place.

In this case, a Conservation Management Plan (CMP) does not exist for the Ravensworth Homestead Complex in its current location, and as it is proposed to be relocated as part of the current proposal, conservation policies relating to the care and maintenance of the RHC in its present location were considered by the applicant not to be needed.

Another reason that a CMP has not been prepared is that, at this point there is no agreed recipient location or new use for the RHC.

We are advised that typically, under the SSD approval process, a Historic Heritage Management Plan will be required for the management and maintenance of the RHC if relocated to the Ravensworth Farm site under SSD 9349.

If the Broke relocation site is pursued, once management, use and maintenance arrangements have been settled, detailed design matters could be confirmed in a secondary consent.

### 2.2.3. Methodology 3 & 4

Another appropriate methodology to assess heritage impact is to assess the proposal against the provisions of the local planning scheme that is in place, usually including a Local Environment Plan (LEP) (Methodology 3) and a Local Development Control Plan (DCP) (Methodology 4).

In this case the *Singleton Local Environmental Plan 2013* contains only the requirement that "The Consent Authority must, before granting consent .... in respect of a heritage item .... consider the effect of the proposed development on the heritage significance of the item ....." (Clause 5.10 (4)). This is a very general assessment methodology and its content is effectively covered by Methodology 1 as described above.

The *Singleton Development Control Plan 2014* includes more detailed assessment points. A copy of this DCP is attached as an appendix (see Appendix A).

Depending on the approval path, assessment against the Singleton DCP will not necessarily be needed (see *SEPP (State and Regional Development)* 2011 Part 2 Clause 11 which excludes the application of development control plans) nevertheless, comparison with the DCP can be used as an assessment methodology.

Part 2.19 of the Singleton DCP includes heritage objectives and guidelines of pertinence to both the Ravensworth Farm option and the Broke option and is a useful methodology to demonstrate the type of considerations a Consent Authority may take into account in the assessment of both options of the Project.

In the light of the above, Assessment Methodology 1 (assessment against significance) and Assessment Methodology 4 (assessment against *Singleton DCP 2014*) will be carried out in this report.

## 2.3. General Considerations

Salient to the proposals are several considerations which can be discussed in general terms prior to an item-by-item assessment being undertaken. These include the desirability of relocating a heritage item, the desirable future building configuration, interpretation techniques, the desirable attributes of any recipient site, the methodology of moving heritage buildings, possible alternatives to moving the buildings and the nature of archaeology.

### 2.3.1. Relocation of Heritage Items

The relocation of a heritage item to a new site is not generally considered desirable as it removes the item from its historical location and from its physical setting which may contribute to the cultural significance of the item.

The Australia ICOMOS *Burra Charter* (2013), which is considered an appropriate cultural heritage conservation philosophical authority, includes:

“Article 9.1 Location. *The physical location of the place is part of its cultural significance. A building, work or other element should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of insuring its survival*”.<sup>1</sup>

This is a general rule which is included, in my view, in the *Charter* because this consideration is generally applicable to a heritage place. It is likely that the location of the item is part of its history, part of the associations and meanings the place has and that the physical setting of the place contributes to its significance.

There are exceptions to this (see *Burra Charter* Article 9.2) which are not relevant here, but these exceptions point to the fact that this article is a general rule and there may be circumstances (heritage related) where it may not be applicable.

One of these exceptions is in fact included in Article 9.1 which says “..... *relocation is generally unacceptable unless it is the sole practical means of insuring its survival*.”<sup>2</sup>

In this regard a number of smaller rural structures around NSW have been moved into theme villages (at Forbes, Griffith & Wilberforce) because, otherwise, they would have fallen down over time or been demolished.

A smaller number of more important buildings have been relocated in Australia, either by moving intact or via being dismantled and rebuilt. A summary of these and their current heritage listing status is included below (see Table 2.1).

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<sup>1</sup> Australia ICOMOS Incorporated, 2013; *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, p. 5

<sup>2</sup> Ibid.



Table 2. 1: Buildings in Australia that have been Relocated.

Item	Moved to	Large sections/rebuilt?	Heritage listing
Brigidine Convent, Coonamble, NSW (weatherboard)	Convent Hotel, Halls Road, Pokolbin, NSW	Large sections	No
Buxton Cottage, Mount Hunter, NSW	Wirrinya Place, Grasmere, NSW	Rebuilt	No
Moore's Bond Store, Walsh Bay, NSW	Nearby at Walsh Bay, NSW	Rebuilt	Yes- S170 Register Sydney Ports Corporation
Hornsby Signal Box, Hornsby Railway Station, Hornsby, NSW	Closer to Station House, Hornsby Railway Station, Hornsby, NSW	Intact move	Yes- S170 Register State Rail Authority (part of a group)
Former National Mutual Life Assurance of Australia, Victoria Square, Adelaide, SA	34 metres to the north, 199-201 Victoria Square, Adelaide, SA	Intact move but only façade and 1 room deep.	Yes- SA State heritage register
Former skating rink, Ashfield, NSW	Beau Brown Pavilion, Bathurst Showground, Bathurst, NSW	Rebuilt	Yes- local heritage item

The above table shows that some of the places are still, after relocation, considered to be of cultural significance albeit that their significance may have been reduced by the relocation. Accordingly, it can be concluded that some aspects of significance can be conserved in spite of an item being moved and these may be sufficient to pass the threshold of state or local heritage significance listing.

### Relocating the Ravensworth Homestead Complex

In the case of the Ravensworth Homestead Complex (RHC), the location of the buildings is of significance and the setting of the buildings does contribute to its significance (refer to Statement of Significance in *Appendix 23a*). Accordingly, relocation is not desirable from a heritage point of view. However, relocation to the Ravensworth Farm site would mitigate loss of significance associated with location and setting (see *Appendix 23a: Heritage Analysis and Statement of Significance for Ravensworth Estate*).

Given the location of the proposed Glendell Pit Extension, it is not possible to retain the Homestead in its current location. Therefore, the proposal to relocate the RHC is the “sole practical means of insuring its survival.” The justification for this is included in a separate EIS document (*Appendix 23e: Relocation Justification Statement*). The justification is mainly the overwhelming economic value of the proposed mine and associated employment opportunities that would be produced, whilst also providing, in the case of the Ravensworth Farm option, a relocation option that provides substantial retention of heritage values. Refer also to discussion at Section 2.3.6 below.

In the case of the RHC there are several aspects of Exceptional significance under the criteria of aesthetic significance that *would, in fact, survive* relocation and be evident in the relocated buildings. These are the ‘H’ shaped plan of the house (which is recommended to be revealed) and the formal arrangement of the buildings around the farm yard. Both these architectural attributes are rare and

exceptional in art- historical terms (see *Appendix 23a: Heritage Analysis and Statement of Significance: Ravensworth Estate, Ravensworth, NSW*).

There are other attributes that would survive relocation including:

- Group of fine Colonial period buildings
- Good example of a Colonial Bungalow

Accordingly, the answer to the question, is there something worthwhile at the Ravensworth Homestead Complex that is worth (and would survive) moving (as opposed to recorded and demolished), then the answer, in my view, is yes.

### 2.3.2. Desirable Building Configuration

As substantial work is being proposed to the buildings and immediate surrounds of the buildings, consideration of the appropriate new configuration is needed.

#### Adaptations

The reasons for adaptation of the buildings and surrounds to enable new uses are reasonably self-explanatory. The heritage impact of these proposals is assessed below. The Australia ICOMOS *Burra Charter* guidance on adaptation is as follows:

*“Article 21.1. Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place.”*

*“Article 21.2. Adaptation should involve minimal change to significant fabric achieved only after considering alternatives.”*

The Ravensworth Farm relocation option includes adaptations by way of building additions. A summary of these and comments are as follows:

- On House, add reception pavilion and infill northern verandahs – the designs suggest light-weight construction that is reversible. The ‘H’ plan form of the House plan would still be clearly discernible.
- To Kitchen Wing, add verandahs on south side – the designs suggest these are light-weight and reversible. Seeing this elevation of the Kitchen Wing uncovered is not essential to the architectural appreciation of the group.
- At northern end of Farm Yard, the interpretation of the “convict barracks” by the reconstruction of the lower walls and the construction of other amenities buildings are, in our assessment, of suitable scale and materials and are appropriate. The reconstruction in some form of the “convict barracks” building is desirable for the interpretation of the place.
- To the Men’s Quarters building, add two small wet area structures – these are of an appropriate scale and materials and are reversible and are assessed as appropriate.

The Broke relocation option conceptual design includes adaptations of the Farm Yard configuration and these, together with comments, are listed below:

- At northern end of Farm Yard construct “covered outdoor seating,” “amenities” and “public hall/stage” – although the scale and materials of these proposals appears appropriate, no definite

sketch plans or elevations have been prepared and there is the possibility that unsympathetic buildings will be constructed.

- To the east of the Men's Quarters, construct a building called "café/restaurant" – although a sketch is provided – no elevations have been prepared. The proposed materials for this construction are also unknown.
- At the new place generally, the designs suggest the construction of many landscaping elements including pavings, garden beds, pergolas, pavilions etc – whilst the scale and materials of these appears appropriate for a retail precinct, no sketch plans or elevations or details have been prepared.

Further design development that includes the preparation of sketch plans, elevations and proposed material types could be completed for the Broke relocation option as part of any secondary approval process.

### Restorations & Reconstructions

Other changes to the buildings and surrounds that are proposed fall under the categories of repairs, restorations and reconstructions.

When proposed, repairs are of course usually desirable and of positive heritage impact.

Restoration and reconstruction works are also usually desirable and of positive heritage impact. However they may not be appropriate if they distort the understanding of the place. Both are considered to be acts of interpretation in that the actual physical history of changes to a place is reversed to show again some things that have been covered up or removed in the past.

The Australia ICOMOS *Burra Charter* guidance for this is as follows:

*"Article 18. Restoration and reconstruction should reveal culturally significant aspects of the place."*

*"Article 15.4. The contributions of all aspects of cultural significance of a place should be respected. If a place includes fabric, uses, associations or meanings of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished is of slight cultural significance and that which is emphasised or interpreted is of much greater cultural significance."*

In this case both options do not relocate the three northern rooms of the House (Spaces H1A, H2 & H14). This is assessed to be an appropriate interpretation. The original 'H' shape of the House plan is of exceptional significance whereas the addition, made about 1920, is of low significance and its presence confuses the understanding of the Colonial house form.

Both options also include the reconstruction of the rear (northern) verandahs of the House. In our assessment, this is part of the above restoration and is appropriate.

Both options include reconstructing the east wall of the Stable and the west wall of the Barn. As these changes, although part of the history of the place, can be seen as mutilations of the fine Colonial building group, our assessment is that these are appropriate.

Comments on other proposed restorations and reconstructions are as follows:

- Removal of skillion and gable vents to main roof of House – the House and Kitchen were reroofed in slate in the 1890s. As part of separate works, the skillion and gable vents were added to the roof of the House in about 1905. Restoring the broken-back Bungalow form of the roof to its original configuration is desirable for interpretative reasons and retaining the slate roofing is consistent to a configuration that the building once had.
- Reconstruction of the front verandah columns – although part of the history of the building, the extant front verandah cast iron columns are completely out of character with the significance of the building as a Bungalow. A very good photograph is available that allows a very accurate reconstruction of the original tapered timber columns and this is assessed to be desirable for interpretation reasons.
- Reconstruction of Kitchen bread oven – this is desirable for interpretation of the Kitchen. Photographic and physical evidence survive to allow accurate reconstruction as does the cast iron bread oven door which is stored at the site.
- At Stable, removal of shearing shed alterations in Space S4 and masonry tank at south end – documentary evidence exists that these were added in the later part of the Marshall occupation and so they are ranked of little significance in the heritage assessment. Removal (or rather non-relocation) is considered desirable in order that the fine symmetrical configuration of the colonial Stable is interpreted.
- Removal of cow-bales and power take off in Barn building – the evidence is that these were introduced in the later Marshall period. Also, these are of low intactness. Accordingly, they have been ranked as little significance in the conservation assessment. Removal (more correctly non-relocation) is desirable to restore the interesting form of the colonial Barn building.

### 2.3.3. Introduced Interpretation

As well as interpretation provided by restoration and reconstruction, providing introduced interpretive devices to heritage places is normally considered desirable. The *Burra Charter* (2013) guidance about this is as follows:

*Article 25. Interpretation: The cultural significance of many places is not readily apparent, and should be explained by interpretation. Interpretation should enhance understanding and engagement, and be culturally appropriate.*

*Article 22.1: New work such as additions or other changes to the place may be acceptable where it respects and does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation.*

In this case, both relocation options could include substantial amounts of interpretative information about the history and significance of the Ravensworth Homestead Complex and the Ravensworth Estate. This would be in the form of: audio-visual presentations and displays, signage, displays of artefacts etc.

Introduced interpretation devices at either relocation site could incorporate the extensive research carried out for this project including fly-through visualisations etc. which, given the cost and complexity of such an exercise, are generally not produced, but in this case has been made possible by the applicant.

In addition, the Ravensworth Farm proposal includes a dedicated Ravensworth History Building as an adaptation of the Men's Quarters. This facility will be nearby the proposed mining office and consequently will be available for public access.

The Broke relocation option is at present silent on interpretation, although the site is well placed for public visitation being located adjacent to the main road through the village of Broke and this option would benefit from incorporating introduced interpretation devices into the proposed relocation and adaptation scheme. Should the Consent Authority approve the Broke option, consideration should be given to make this a condition of approval.

### 2.3.4. Attributes of the Recipient Sites

This topic is discussed in detail elsewhere (see *Appendix 23f: Ravensworth Homestead Relocation Option Identification and Assessment Report*).

The Australia ICOMOS *Burra Charter* includes the following article:

“Article 9.3 Location. *If any building, work or other element is moved, it should be moved to an appropriate location and given an appropriate use. Such an action should not be to the detriment of any place of cultural significance.*”<sup>3</sup>

In determining a preferred recipient site (in heritage terms), the use of the words “appropriate location” needs expansion. The most obvious interpretation is a location that:

- Minimises the loss of significance.
- Which does not confuse the significance of the place.
- That allows the interpretation of the place.

Another interpretation is that of a location which facilitates an appropriate use.

As discussed in the *Ravensworth Homestead Relocation Option Identification and Assessment Report* (*Appendix 23f*) there are many desirable attributes for a recipient site for the RHC. This can be grouped into three categories:

- Attributes which assist in placing the buildings on a land form similar to the existing i.e. the gradient including crossfall.
- Attributes which provide a setting for the buildings with verisimilitude (the appearance of authenticity) to the existing setting, for instance, the scale of a visual catchment and the landscape character.
- Practical attributes which allow ongoing use, for example, a water supply.

The outcome of the *Ravensworth Homestead Relocation Option Identification and Assessment Report* was that an appropriate location is, firstly, one that gave verisimilitude to the existing landscape setting including the approach direction (thus allowing interpretation of the pastoral location and character of the existing location). Then, secondly, more practical attributes such as a water supply, proximity to services and proximity to public visitation.

In the case of the RHC, the Ravensworth Farm Recipient Site provides an immediate land form, verisimilitude of setting (not fully achieved until the completion of mining) and proximity to services and public visitation.

On the other hand, the Broke recipient site does not provide a similar immediate land form nor, in the current conceptual design, a completely authentic arrangement of buildings, nor a visual catchment with

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<sup>3</sup> Ibid.

verisimilitude to the existing. However, because of its location adjacent to a public through-road, it would provide ready access to services and ready public visitation.

### 2.3.5. Intact Relocation vs. Dismantle and Rebuild

For reasons described elsewhere in this application (see *Appendix 23f: Ravensworth Homestead Relocation Option Identification and Assessment Report*), the proposal to relocate the RHC to the Ravensworth Farm Recipient Site allows the buildings each to be moved intact to the new location (Intact Move). Each building would be picked up and moved in one whole piece. This is the case apart from the floor structures, some of which are stone, would have to be recorded, removed and reassembled at the new location, so that the moving contractors could get access to the footings of the buildings (see *Appendix 23g: Intact Move Methodology Report*).

After consideration, consultant engineers (Mott MacDonald) and this firm, have confirmed that they agree that an Intact Move is possible without damage to the buildings (see *Appendix 23g: Ravensworth Farm Proposal*).

On the other hand, the proposal to move the RHC to the Broke Village location involves recording and dismantling the buildings and rebuilding them (Dismantle and Rebuild Move) at the new site (see *Appendix 23h: Broke Village Proposal*).

Some components, such as the Barn and Stable roof trusses, could be moved intact. However, the majority of the building fabric would be disassembled, transported in small sections, and then rebuilt at the Broke Recipient Site (see *Appendix 23h*).

This procedure necessarily means that a notable amount of the original building fabric would be lost, in particular, mortar, plaster and fixings. The process would also mean that some building fabric, for instance, a white ant affected ceiling joist, would be replaced; whereas, in an intact move, it would survive. Although, in a planning consent, the replacement of significant fabric and elements could be conditioned against, there would also be a tendency to replace elements with new material that are concealed to view in the completed configuration, for instance, the internal walls (which are and would be covered with plaster).

However, regardless of any planning approval condition, rebuilding an item also tends to lead to minor changes to the original configuration of the item in order to accommodate adaptations; for instance, leaving a hole in a wall to allow new pipework. In this way, the desire to have air-conditioning machinery and ducting, for instance, may lead to less than authentic reconstruction of some elements of the item.

Consequently, rebuilding of an item brings into question whether, as rebuilt, the item is really authentic or just a copy of the original incorporating some of the original materials. This throws doubt on whether the item is “the real thing”.

Another problem with rebuilding is that the original item usually incorporates signs of wear commonly called “patina of age”. There are signs of wear, small defects and discolouration which subtly tells the viewer that a building is very old. This is unlikely to be reproduced in a rebuilt structure. The matter of patina is not of slight interest. Both the nineteenth century antiquarians, John Ruskin and William Morris, made patina a corner stone of their advocacy to preserve ancient buildings.

In some cases, the old structure is not level or plumb, making it difficult to build again completely matching the existing.

Referring to Table 2.1 again (see above), often after a Dismantle and Rebuild Move a heritage item is not re-listed.

The Australia ICOMOS *Burra Charter* includes the following:

“Article 3.1 Cautious Approach: *Conservation is based on a respect for the existing fabric, uses, associations and meanings – it requires a cautious approach of changing as much as necessary but as little as possible*”.<sup>4</sup>

Considering the above it can be concluded that, when there is a viable and proposed option of an Intact Move for the RHC, the decision to have a Dismantle and Rebuild Move does not follow this principle.

### 2.3.6. Alternatives to Moving the RHC

As the proposal to move the RHC has a high heritage impact, the question arises whether there is an alternative to this proposal which is feasible and would generally achieve the applicant’s objectives. This topic is discussed in a separate report entitled *Ravensworth Homestead Relocation Justification Report* (see *Appendix 23e*). However, in summary, and with comments, the alternatives are:

- a. Record and demolish the RHC. This alternative can be quickly rejected. In this situation where there is a definite proposal to relocate the buildings to an appropriate location and it is established that some worthwhile attributes of the buildings would survive such a move, then recording and demolition is clearly an inferior proposal.
- b. Retain and “mothball” the RHC until mining is complete. This alternative is not proposed by the applicant because, we are advised, retention of the RHC in situ, even with a small curtilage, would sterilise sufficient of the mine area to make the proposed mine extension not financially worthwhile (see *Appendix 23e: Ravensworth Homestead Relocation Justification Report*).

In addition to this economic argument, the procedure of “mothballing” is evident at the nearby Wambo homestead and Chain of Ponds Inn sites and has, in our view, led to less than ideal outcomes. It has also been suggested that this approach would likely result in a high risk of damage to the RHC buildings from mining vibration and dust.

In addition, the surrounding landscape of the “mothballed” RHC would not be capable of being reconstructed post-mining as the surrounding landscape will have completely changed.

One advantage of moving the RHC is that resources are expended on the buildings and they can obtain an immediate new use.

For the above reasons, the applicant is of the view that relocation is “the sole practical means of ensuring its [the RHC] survival” (*Burra Charter* Article 9.1).

### 2.3.7. The Nature of Archaeology

It is not just the Ravensworth Homestead Complex in its immediate setting that are of high significance. The recent Test Excavation Reports at Ravensworth have revealed archaeological potential that is considered of State heritage significance (*Ravensworth Homestead Complex and Surrounds: Historical Archaeological Test Excavation Report and Impact Statement for The Core Estate Lands*, Casey & Lowe, 2019) nearby. This means that relocation of the RHC is not the only main matter of

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<sup>4</sup> Australia ICOMOS Incorporated, 2013; p. 3

consideration relating to the proposal to extend the Glendell Mine further over the Ravensworth Estate. There is substantial archaeological research potential also to be conserved.

The Australia ICOMOS *Burra Charter* recognises only two heritage reasons to disturb fabric (including archaeological remains). These are firstly, “to provide data essential for decisions on the conservation of the place ...” (Article 28.1). And, secondly, “Investigation ..... on important research questions which have potential to substantially add to knowledge, which cannot be answered in other ways .....” (Article 28.2).

The *Charter* also includes the possibility of salvage archaeology to “obtain important evidence about to be lost or made inaccessible” (Article 28.1).

It is this last inclusion which is salient to the proposal to mine areas of the Ravensworth Estate which have archaeological research potential. In both proposals for the relocation for the RHC there is also full archaeological salvage investigations for the immediate site of the RHC and other areas of the Estate assessed to have high potential.

The most important of these areas are those areas around the RHC and to the north and north west of the complex of buildings where archaeological testing confirmed the presence of intact remains relating to the 1820s to 1850s (the Bowman era). Not only are these areas of significance because they are remains of an early Colonial pastoral estate but also because there is an opportunity to better understand the housing and life of the large numbers of convicts that lived there in the period 1820s –1830s. (Refer to *Appendix 23c: Historic Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands*, Casey & Lowe, 2019 for further details.)

As well as being salvaged, the proposal to carry out salvage archaeology pursuant to Article 28.1 of the *Burra Charter*, can be argued to be an opportunity to “substantially add to knowledge” (Article 28.2). This would be possible because the economic value of the proposed mine provides the resources to carry out archaeological investigations to a high standard and appropriately resourced in a way that would not otherwise be likely to occur. This would be another positive outcome of the Project because without the Project being approved, it is unlikely that any archaeological excavation would be undertaken. In addition, Casey & Lowe note: “the archaeological remains across the Project Area have been variously impacted by 19th and 20th-century agricultural activities (including the demolition of structures and the loss of some underfloor deposits) and are being further truncated by environmental processes (wind, weathering, animals etc), all of which have contributed to the general loss of topsoil (A horizon) across the site and the wider Project Area.”<sup>5</sup>

Archaeology is considered to be a science because it is a process of analysing the arrangement, stratigraphy and finds from an excavation investigation that adds to human knowledge that is not necessarily available in the documentary record. Archaeologists have claimed that it allows a more unbiased understanding of history than is got from documentary records as these are often coloured by the prejudices and interests of their day. Archaeology then, is about transferring the information found underground into the written record.

Accordingly, once a site has been investigated and recorded and the arrangement, stratigraphy and finds assessed, information that was once unknown and concealed underground is now known and written into the documentary record. Once this is done the actual physical state of the area of the excavation which has given up its information, has no longer the potential that it had before the investigation and, accordingly, destruction of that area does not have the heritage impact that it would otherwise have.

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<sup>5</sup> Casey & Lowe, 2019; *Historic Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands*, p. 126 (*Appendix 23c*)



There are only very rare cases, such as First Government House, Sydney, the Cumberland Street Archaeological Site and Parramatta Hospital that the remains were thought to have sufficient aesthetic value that resulted in them being preserved in-situ.

As such, the proposal to carry out full archaeological salvage (that is a detailed open area excavation of the identified archaeological resources according to best practice guidelines including excavation reporting and artefact analysis) within the Core Estate lands of the Ravensworth Estate, has been recommended by Casey & Lowe Archaeology and Heritage as a mitigation measure of the significant impacts of the Project (see *Appendix 23c: Historic Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands*).

### 3. Heritage Impact Assessments

The following undertakes assessments of the proposal in accordance with Methodology 1: Assessment against Significance and Methodology 4: Assessment against *Singleton Development Control Plan 2014*.

For gradings of significance for the individual components of the place impacted on by the proposal refer to the *Heritage Analysis and Statements of Significance* reports in *Appendices 23a, 23g and 23h*.

Refer also to the following reports for detailed assessments, recommendations and mitigation measures with respect to Aboriginal archaeology and historical archaeology:

- *Aboriginal Archaeology Impact Assessment: Glendell Continued Operations Project*, OzArk, 2019 (refer to *Appendix 22: ACHAR*)
- *Broke Village Aboriginal Due Diligence Assessment Report*, OzArk, 2019 (refer to *Appendix 23h*)
- *Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands*, Casey & Lowe, 2019 (refer to *Appendix 23c*).

#### 3.1. Methodology 1: Assessment against Significance

The assessment below deals with the individual components of the overall proposal potentially impacting on the heritage values of the Ravensworth Estate, the Ravensworth Farm Recipient Site and the Broke Recipient Site. Each aspect of the proposal is discussed and assessed, and any mitigation measure included in the proposal is nominated.

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### 3.1.1. Ravensworth Farm Recipient Site Option

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
<b>1.0 Mining Related Works</b>				
1.1	Extend open cut mining operations north from the existing Glendell Mine to increase the life of the Glendell Mine to 2044, resulting in the extraction of an additional approximately 135 million tonnes of run-of-mine (ROM) coal. Processing of the coal to utilise existing infrastructure at the Mount Owen CHPP and the existing Mount Owen Rail Loop for coal transport. (For Additional Disturbance Area see Figure 1.6 above.)	The existing Glendell Mine is partly located within the boundaries of the original Ravensworth Estate lands (the “10,000 acres”) and the Project is to extend this mine further within the historic Ravensworth Estate (“the Place”). Whilst the change is high, generally the land is of <b>moderate significance</b> and therefore the impact is notable.	Notable heritage impact.	The proposed rehabilitation of the land would form a low-level mitigation of this impact.
		Some of the mining would occur within the Core Area of the estate which is generally of <b>moderate significance</b> and so the impact here would be of note.	Notable heritage impact.	The proposal includes full salvage archaeology of these areas and this would be a substantial mitigation.
		The proposal includes mining within the visual catchment of the Ravensworth Homestead Complex (RHC) which is of <b>moderate significance</b> and so the heritage impact would be of note.	Notable heritage impact.	The proposal includes full salvage archaeology of these areas and this would be a substantial mitigation.
		The proposal includes mining the immediate setting and beneath and around the RHC which is of <b>high</b> , and in some aspects of <b>exceptional significance</b> . It would completely change the physical aesthetic values of the setting and destroy the existing archaeological potential of the land. As a high degree of change is proposed and the item is of high/exceptional significance, the heritage impact would be high.	High heritage impact.	The proposal includes full salvage archaeology which would be a substantial mitigation. The proposal also includes the relocation of the RHC to a new setting which has verisimilitude to the existing and this would be a substantial mitigation.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
1.1 cont.		The proposed mining activities would impact on the scientific significance of the Aboriginal archaeology located throughout the Ravensworth Estate. Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> . As per above, the proposal would destroy the existing Aboriginal archaeological potential of the land as well as the known Aboriginal archaeological sites at the place. As a high degree of change is proposed and the Aboriginal archaeology is of little/moderate significance, the heritage impact would be notable. Refer to <i>Appendix 22: Aboriginal Cultural Values Assessment Report (ACHAR)</i> .	Notable heritage impact	The proposal includes conserving Aboriginal archaeological sites outside of the identified Additional Disturbance Area, salvaging (collecting and recording) all surface artefacts at all sites within the Additional Disturbance Area and undertaking additional archaeological excavation to confirm the nature of archaeological deposits. This work would be a substantial mitigation.
		The proposal would also impact the social significance of the Ravensworth Estate as a marker of the historic locality of Ravensworth, which is of <b>high significance</b> . The proposal includes mining the setting of the Ravensworth Homestead Complex taking in historic markers across the landscape (including the RHC, Yorks Creek and Hebden Road) and the heritage impact would be high.	High heritage impact.	The relocation of the RHC to Ravensworth Farm Recipient Site, the diversion of Yorks Creek, the re-alignment of Hebden Road and the retention of the names: Ravensworth, Yorks Creek and Hebden at the place would be substantial mitigations.
1.2	Mining overburden to be placed in-pit to the south of the active mining area in the Glendell Pit Extension as mining progresses to the north.	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.
1.3	Other overburden emplacement to be located at the existing Glendell emplacement areas [to the south] and areas disturbed as part of the	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	Ravensworth East operations [to the east].			
1.4	New overburden emplacements to be developed using natural landform techniques and progressively rehabilitated over the life of the Project.	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.
1.5	Retention of final void in the north of the Glendell Pit Extension upon the completion of mining. A pit lake will be developed in the final void following the cessation of mining.	The void would not be seen in the visual catchment of the Ravensworth Farm Recipient Site, however part of the overburden emplacement area would be visible (and eventually remediated). Overburden emplacement areas would also be seen from the New England Highway and from some of the relocated Hebden Road.	No additional impact to that described above.	The rehabilitated land and void would form a general mitigation of the impact of mining the above areas of the former historic Ravensworth Estate.
1.6	Realignment of Hebden Road to the west of the proposed Glendell Pit Extension and associated mining infrastructure.	This constitutes a medium change to an item of <b>high significance</b> and therefore the impact would be notable.	Notable heritage impact.	The proposal is mitigated in that Hebden Road would be retained outside the Additional Disturbance Area and that it is proposed to re-route the road. The name of the road as Hebden Road is also to be retained.
1.7	Realignment of Yorks Creek with a new confluence with Bowmans Creek to the north of the current confluence. Existing section of Yorks Creek south of start of realignment to be removed through mining activities.	As the proposal is to make substantial change to an item of <b>moderate</b> and in some aspects of <b>high significance</b> the impact would be of note. Note the proposal will not impact the Yorks Creek Voluntary Conservation Area (Site 33a).	Notable heritage impact.	The proposal is mitigated in that Yorks Creek is retained elsewhere within the Ravensworth Estate and it is proposed to reconnect Yorks Creek to Bowmans Creek in a suitably landscaped way.
1.8	Remove existing Glendell Mine Infrastructure Area (MIA) (currently	This area is of <b>little significance</b> .	Nil heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	located within the proposed Glendell Pit Extension, north of the existing Glendell Mine).			
1.9	Construct a new MIA to the west of the Glendell Pit Extension [within Lot 32 DP 545601] below Ravensworth Farm site (see also Item 3.20). Facilities to include carparking, administration offices, vehicle workshops, pumping station, fuel facility and helipad. Visual buffer [earth berm or vegetation] to be developed between the realigned Hebden Road and the new MIA.	The MIA is proposed within the boundaries of the Ravensworth Estate but at a location that is of <b>moderate significance</b> therefore the impact is notable. The MIA is within the visual catchment of the Ravensworth Farm Recipient Site and the proposed MIA would be a substantial detracting element in that visual catchment over a period of about twenty years until the mine closes.	Notable heritage impact.	It is proposed to remove the MIA at completion of mining in order to provide an appropriate visual catchment for the relocated RHC.
1.10	Construct raw water supply extending from the existing Mount Owen Complex water management infrastructure to new MIA and new homestead site.	Needed service for relocated MIA.	Nil	N/A
1.11	Construct new heavy vehicle access road connecting the Glendell Pit Extension to the MIA.	See Item 1.9 above. The location of the new heavy vehicle access road is to travel across the alluvial plains to the north of Bowmans Creek, an area of <b>moderate significance</b> .	Notable heritage impact.	See Item 1.9 above.
1.12	Uplift the Ravensworth homestead buildings in single-building sections (see <i>Appendix 23g: Intact Move Methodology Report</i> ) including salvaging a selection of landscape/site features and historic plantings and removal from present site to be installed nearby at Ravensworth Farm site (see below). Mine through the site.	The Ravensworth Homestead Complex is of <b>high</b> and in some aspects of <b>exceptional significance</b> . For impact of moving individual components of the RHC and site and landscape feature, see below. For mining through the site see above.	Very high heritage impact.	This proposed relocation is a mitigation of mining the land formally the Ravensworth Estate. For mining through the site. See above.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
<b>2.0</b>	<b>Works in Vicinity of Ravensworth Homestead Complex (RHC)</b>			
2.1	Undertake survey and Test Excavation Reports for Aboriginal archaeology in and around the Ravensworth Homestead Complex (already completed. Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	-	Positive heritage impact.	This is a mitigation of the proposal to relocate the RHC and to mine within the Core Area of Ravensworth Estate lands (that has already been carried out).
2.2	Conserve all Aboriginal archaeological sites inside of the Additional Disturbance Area by extending the current site monitoring and verification protocols; undertake a collection and recording of all surface artefacts at all Aboriginal archaeological sites within the Additional Disturbance Area where there is a surface manifestation of artefacts; and undertake limited manual archaeological excavation at a number of locations to confirm the nature of the archaeological deposits. (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> .	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.
2.3	Undertake target open area stratigraphic excavation- archaeological salvage and archaeological sampling to Areas A to G within the Ravensworth Estate Core Estate lands. Note that other areas throughout the Core Estate lands that would be impacted on by mining activities would be managed through the unexpected find protocol if deemed	Areas A to G are located surrounding the RHC and include the underground areas and building cavities of the individual buildings within the complex, as well as areas to the north, north-west, west and south-west of the RHC. These areas are identified as being of <b>high research potential</b> . The proposal involves open cut mining to all identified historical archaeological areas which would	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	appropriate. (Refer to <i>Appendix 23c: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands</i> , Casey & Lowe, 2019).	have a high impact on the archaeological potential, research potential and scientific significance of the archaeology.		
2.4	Prior to moving of buildings, record to a high standard by photography and measured drawings of the buildings of the RHC (work largely completed- refer to <i>Appendix 23b: Measured and Conjectural Drawings</i> and archival photographic record).	Mitigation measure.	Positive heritage impact.	This work (largely completed) is a mitigation to the proposal to relocate the RHC.
2.5	Prior to moving of buildings, repair and carry out permanent stabilisation works to the following buildings: <ul style="list-style-type: none"> <li>House Main Wing</li> <li>House Kitchen Wing</li> <li>Men's Quarters</li> <li>Barn Building</li> <li>Stable Building</li> <li>Privy</li> </ul> (See <i>Appendix 23g: Preliminary Scopes of Work</i> for separate scopes of work.)	Some of this work can be considered repair, restoration and reconstruction that is desirable.	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.
		Some of this work is strengthening work related to relocation and may not be absolutely needed but could be done for prudence considering that relocation is proposed. This would be subject to further engineering investigation.	Low heritage impact	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.
2.6	Prior to moving buildings, record in detail for relocation, site and landscape features in vicinity of buildings as per separate lists and then carefully take up/salvage these items ready for relocation: <ul style="list-style-type: none"> <li>Trees identified to be relocated;</li> </ul>	Mitigation measure.	Positive heritage impact.	This work (already completed) can be considered, mitigation work to relocating the RHC.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	<ul style="list-style-type: none"> <li>Other landscape/site features identified to be relocated.</li> <li>Refer to <i>Appendix 23f: Relocation Option Identification and Assessment Report</i> for complete lists of relocated trees, landscape and site features and including list of trees to be retained at the Ravensworth Farm site.</li> </ul>			
2.7	Record other surface features in vicinity of Homestead Complex by photography and description.	Mitigation measure.	Positive heritage impact.	This work (partly already completed) can be considered mitigation to the proposal to relocate the RHC.
2.8	<p>Intact Move: Record in detail timber and stone floors and fitments supported on the floors within House Main Wing, House Kitchen Wing, Barn, Stable, Privy. Carefully dismantle for relocation. Carry out further detailed archaeological investigation and recording below all buildings to be relocated. Record and demolish rooms and features listed below which will not be relocated to new site.</p> <p><u>House Main Wing:</u></p> <ul style="list-style-type: none"> <li>Space H1A</li> <li>Space H2</li> <li>Space H14</li> <li>Space H4</li> </ul>	<p>Recording and dismantling the floors is medium change to elements of <b>high significance</b> and therefore the heritage impact would be of note. This degree of intervention is needed to allow the buildings to otherwise be <u>moved intact</u> to the recipient site.</p> <p>The proposal includes rebuilding the floor elements using original materials in the same configuration as they are now. However, inevitably, substrate and jointing material would be lost and some sections of stone and timber that are already fragile may be lost. In this case these would be reconstructed at the recipient site.</p>	Notable heritage impact.	This loss is mitigated by a proposal to otherwise move the buildings intact to a recipient site.
		Further archaeological investigation below the buildings is desirable and is a mitigation of the proposal to relocate the RHC.	Positive heritage impact.	-

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	<ul style="list-style-type: none"> <li>Space H5</li> </ul> <p><u>Barn Building</u>: Dairy stalls alteration at north end of Space B1</p> <p><u>Stable Building</u>: Shearing shed alteration in Space S4</p> <p><u>Garden</u>: Items not listed in 2.6 above.</p>	<p>The proposal not to relocate spaces and fabric added to the house in 1920 is a reasonable decision. See discussion regarding interpretive house reconstruction under Section 2.3.2 Desirable Building Configuration.</p> <p>The proposal not to salvage and relocate the Dairy Stalls alteration in the Barn Building, the Shearing Shed alteration in the Stable Building, and items not listed under Item 2.6 above is a reasonable one for the interpretation of the RHC.</p>	<p>Low heritage impact of interpreting the buildings in the desirable way.</p> <p>Low heritage impact of interpreting the buildings in the desirable way.</p>	-
2.9	Investigate, record and exhume the (Miss White's) grave adjacent to the homestead as in accordance with relevant legislation. Relocation options subject to future consultation.	The relocation of the grave (thought to be Miss White's) which is of <b>moderate significance</b> would be of notable heritage impact. Because of its nature, this proposal is controlled by statutory legislation. Refer to <i>Appendix 23c: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands</i> , regarding requirements for an Exhumation Management Plan.	Notable heritage impact.	The relocation can be considered a mitigation to the impact of relocating the RHC.
2.10	<p>Following investigation as per Item 2.1 and 2.6, excavate and install platforms below the following buildings ready for relocation, all in accordance with moving contractor's methodology (refer to <i>Appendix 23g: Methodology for the Relocation for the Ravensworth Homestead Complex</i>):</p> <ul style="list-style-type: none"> <li>House Main Wing (excluding Spaces H1A, H2, H14, H4, H5- refer to <i>Appendix 23g: Conceptual</i></li> </ul>	The installation of platforms would involve removal of some of the footings of the buildings (that is not generally exposed to view). Although the stone can be salvaged and reused, this is a big change to items of <b>moderate significance</b> and therefore the impact would be notable.	Notable heritage impact.	This impact would be mitigated by the otherwise Intact Move of the buildings which involves retaining all of the jointing, plastering, and fixings as well as other fragile components that might be lost in a Dismantle and Rebuild Move (see Section 3.1.2 Item 2.10 below).

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	<p><i>Adaptation Drawings: Dwg. Nos. 123800/SK106/J and SK109/E)</i></p> <ul style="list-style-type: none"> <li>• House Kitchen Wing</li> <li>• Men's Quarters</li> <li>• Barn Building</li> <li>• Stable Building</li> <li>• Privy</li> </ul>			
2.11	<p>Uplift the above buildings, intact and complete, nominated trees and landscape items (see Item 2.4) on transportation devices and transport from present site to recipient site nearby at Ravensworth Farm.</p> <p><i>For impact on the Ravensworth Farm Recipient Site see below.</i></p>	As discussed under General Considerations, relocating the buildings of the RHC would involve removing them from their historical location and from a setting which contributes to their significance.	Very high heritage impact.	This is mitigated to some degree by the proposal to relocate them in an <u>Intact Move</u> and to site the relocated buildings at a place of similar land form, orientation and pastoral character to the existing location.
		It would also remove the focal point of the place in NSW known as Ravensworth, which is of <b>high significance</b> .	High heritage impact.	The relocation of the RHC within the Core Estate lands, within close proximity to the existing location of the RHC would also be a mitigation of the heritage impacts, the RHC remaining a marker or focal point of the area of NSW known as Ravensworth. After the move, the RHC would still exist on the Ravensworth Estate lands.
		The proposal would also destroy the significant views from the RHC and to the RHC including its immediate setting.	High heritage impact.	This loss would be mitigated to a small degree by installing the relocated buildings at a site

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
				with verisimilitude. See above.
		The proposal would retain the great majority of the building fabric intact which would accordingly be of no heritage impact.	No heritage impact.	-
		The proposal would retain the aesthetic values of the buildings as examples of Colonial Bungalow architecture and a Colonial period farm building group and this would have no heritage impact.	No heritage impact.	-
		The proposal would retain the formal farmyard layout and retain and restore the H-form plan of the house which are attributes of <b>exceptional significance</b> with accordingly no heritage impact.	No heritage impact.	-
		The proposal would restore and repair dislodged and damaged parts of the building of <b>high</b> and in some aspects of <b>exceptional significance</b> which would be a positive heritage impact.	Positive heritage impact.	-
		The proposal would include a sympathetic adaptation of the RHC which is of <b>high</b> and in some aspects of <b>exceptional significance</b> which would be of low heritage impact.	Low heritage impact and desirable to provide a viable use.	
		The project would provide a confirmed and likely viable future use for the buildings which the applicant is in a position to offer and guarantee.	Positive heritage impact.	



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
<b>3.0</b>	<b>Heritage Related Works in the Vicinity of Ravensworth Farm Recipient Site</b>			
3.1	Undertake survey and Test Excavation Reports for Aboriginal archaeology in and around the Ravensworth Farm Recipient Site (already completed). (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	-	Positive heritage impact.	This is a mitigation of the proposal to relocate the RHC to the Ravensworth Farm Recipient Site, construct a new MIA, relocate a section of Hebden Road and divert a section of Yorks Creek.
3.2	Conserve all Aboriginal archaeological sites inside of the Additional Disturbance Area including around the Ravensworth Farm Recipient Site as per Item 2.2 above. (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> . The relocation of the RHC including the establishment of adapted landscape and landforms, introduction of new roads including relocated Hebden Road, construction of the new MIA and diversion of Yorks Creek all have the potential to remove surviving archaeology.	Positive heritage impact.	This is a mitigation of the proposal to relocate the RHC to the Ravensworth Farm Recipient Site, construct a new MIA, relocate Hebden Road and divert Yorks Creek.
3.3	Map, describe and collect surface artefacts and undertake archaeological excavation to gain a better understanding of the nature of deposits on the spur landform adjacent to Bowmans Creek. (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )		Positive heritage impact.	This is due diligence/mitigation work as above.
3.4	Map, describe and collect other surface artefacts only of the identified Aboriginal archaeological sites as per <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> .		Positive heritage impact.	This is due diligence/mitigation work as above.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.5	Further detailed recording by photography, description and drawings of surface features in the vicinity of the Ravensworth Farm recipient site including former dairy (Site 27a)		No heritage impact.	This is due diligence/mitigation work as above.
3.6	Record and retain timber cottage (Site 27).	The cottage is of <b>moderate significance</b> so this work is desirable.	Nil heritage impact.	Recording the timber cottage and shearing shed will maintain a record of the older built structures in the area, which are likely to disappear over time.
	Demolish brick residence and other ancillary structures.	This house is of <b>little significance</b> .	Low heritage impact.	
	Record and retain the shearing shed remains.	The sheds are of <b>little significance</b> but contribute to the rural character of the land.	Nil heritage impact.	
3.7	Preserve existing trees (refer to <i>Appendix 23g: Conceptual Landscape Plans LP03</i> ) Refer to <i>Appendix 23f: Relocation Option Identification and Assessment Report</i> for complete lists of relocated trees, landscape and site features and including list of trees to be retained at the Ravensworth Farm site.	The proposal includes retaining as many of the exotic trees adjacent the Ravensworth Farm Recipient Site as possible in order to retain the rural/pastoral character of the area outside the Glendell Pit Extension area but within the Additional Disturbance Area.	Positive heritage impact.	The retention of existing, established trees that form part of the cultural landscape of the Ravensworth Farm would be of benefit to the character of the area following the conclusion of mining.
3.8	Create temporary nursery at suitable location and install salvaged plantings from the existing homestead site ready for planting out at new site and maintain this nursery (see attachments).	This is a mechanism to allow the relocation of some of the plantings around the RHC which are of <b>high to exceptional significance</b> to allow their replanting as part of the landscaping of the relocated buildings.	Positive heritage impact.	Relocation of plantings forms part of the mitigation of the proposed relocation of the RHC by creating an appropriate landscaped setting at the new location.
3.9	Detail shaping, of land at the site to better simulate the landform of the existing homestead site including the homestead dam.	The land in this location, although part of the Place, is of <b>moderate significance</b> and accordingly the proposal has low heritage impact.	Low heritage impact.	This is part of the proposed works to create a recipient site at Ravensworth Farm that has verisimilitude to the existing site of the RHC.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.10	Provide new topsoil as needed to facilitate garden plantings around relocated homestead.	This is needed to facilitate garden plantings around the relocated RHC.	No heritage impact.	Assists in providing a new appropriate setting for the RHC buildings.
3.11	Provide screen planting along section of the new relocated Hebden Road to hide proximity of the road to homestead. (Refer <i>Appendix 23g: Conceptual Landscape Plans LP 04</i> )	Design to provide appropriate setting for relocated RHC.	No heritage impact.	This work is desirable in providing a new appropriate setting for the RHC buildings.
3.12	Provide screen planting within the visual catchment of Ravensworth Farm site to mitigate visual impact of main road, rail and transmission line corridors, to improve the setting of the homestead in 20 years time. (Refer <i>Appendix 23g: Conceptual Landscape Plans LP 04</i> )	This is proposed as early work so that, on completion of mining, the relocated RHC has a visual catchment of optimum character.	No heritage impact and desirable.	
3.13	Manage remediation of overburden deposits/areas on the perimeter of the visual catchment of the site that are within Glencore's control to provide improved setting of the homestead in accordance with a Mining Operations Plan/Rehabilitation Management Plan specific to this relevant mining operation (i.e. the Glendell Mine Extension) conditioned by the SSD approval.	As above.	As above.	
3.14	Following conclusion of mining activities, removal of MIA and other associated infrastructure and remediation of land to specified standards.	This proposal would give the relocated RHC a visual catchment of optimum character on completion of mining.	No heritage impact and desirable.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.15	Relocate existing/form new agricultural dam to interpret as the “homestead dam,” reshaped to consultants’ advice.	The proposed dam would simulate the Homestead Dam at the existing RHC site in order to give the new setting of the relocated RHC verisimilitude.	No heritage impact and desirable.	
3.16	Provide driveway access to homestead in same/similar alignment as current driveway access to homestead (for access and historical interpretation).	This proposal would provide an approach to the RHC similar to the existing approach from the relocated Hebden Road and add to the verisimilitude of the new setting.	No heritage impact and desirable.	
3.17	Provide access road from Hebden Road to new MIA (located to south of proposed homestead site).	Needed to service the proposed new MIA until the completion of mining.	No heritage impact.	
3.18	Shape site to include, building levels and future garden land forms matching existing homestead site (refer to <i>Appendix 23g: Proposed Homestead Relocation Earthworks Plan and Section</i> ).	Proposed to give the relocated RHC verisimilitude to the existing.	No heritage impact and desirable.	
3.19	Excavate and construct new footings for relocated buildings including any adaptations/additions proposed (refer to <i>Appendix 23g: Preliminary Footing Design</i> ).	Needed to support the relocated RHC. These would be concealed to view and not affect the surviving aesthetic cultural significance of the RHC buildings.	No heritage impact.	
3.20	Install relocated RHC buildings (in whole building sections) including repairs and restoration/reconstructions as recommended by consultants and build any adaptations as shown (refer to <i>Appendix 23g: Conceptual Adaptation Drawings</i> ).	Proposal includes repairs, restoration and reconstructions to the relocated RHC which are all desirable.	Positive heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.20 cont.	Install adaptation fitouts and equipment to allow use of buildings as regional mining office and training centre (refer <i>Appendix 23g</i> ).	The proposal includes clearly described adaptations to the RHC. These include the following:		
		<ul style="list-style-type: none"> <li>Door way between Space H12 and H13 in house.</li> </ul>	Notable heritage impact.	
		<ul style="list-style-type: none"> <li>Enclosure of northern verandahs (reversible).</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Construction of reception pavilion on north side of house (reversible).</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Construction of verandah on southern side of Kitchen (to access amenities spaces) (reversible).</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Install training room capsules in S1 and S4 of Stable and Barn (B1) (reversible).</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Construct Tea Room pavilion to north of Stable.</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Construct Tea Room and Unisex WC additions to Men's Quarters (reversible).</li> </ul>	Low heritage impact and reversible.	
		<ul style="list-style-type: none"> <li>Reconstruct knee high walls as interpretation of "Convict Barracks" along north side of farm yard including reconstruction of linking walls and gates to Barn and Stable buildings (sympathetic interpretation) using salvage stone from RHC.</li> </ul>	Positive heritage impact.	



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.21	Maintain fabric of the relocated Homestead Complex (as restored and adapted).	Because they are in active use, the relocated RHC would be maintained.	Positive heritage impact.	
3.22	Install relocated landscape features and plantings and then maintain landscape features and plantings (refer to <i>Appendix 23g: Conceptual Landscape Plans LP06</i> ) including those from site nursery.	The proposal involves giving relocated RHC an appropriate garden and other landscape features. A design has been proposed.	Positive heritage impact.	
3.23	Construct adaptation landscape features (fences, roads, car parking etc) (reversible) (refer to <i>Appendix 23g: Conceptual Landscape Plans LP05</i> ) to allow use of buildings as regional mining office and training centre ( <i>Appendix 23g</i> ).	The proposal includes designs ( <i>Appendix 23g: Conceptual Adaptation Drawings</i> ) to allow the relocated RHC to have a new use.	Positive heritage impact.	
<b>4.0</b>	<b>Heritage Related Works to Ravensworth Estate lands [The Place] Generally</b>			
4.1	Conserve all Aboriginal archaeological sites within the Additional Disturbance Area by extending the current site monitoring and verification protocols; undertake a collection and recording of all surface artefacts at all Aboriginal archaeological sites within the Additional Disturbance Area where there is a surface manifestation of artefacts; and undertake limited manual archaeological excavation at four locations to confirm the nature of the archaeological deposits. (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> .	Positive heritage impact.	This is a mitigation of the proposal to mine within the Additional Disturbance Area which includes the Core Estate lands of the Ravensworth Estate.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
4.2	Fence and sign the following Aboriginal archaeological sites within the Ravensworth Estate lands, but outside of the boundaries of the Additional Disturbance Area (within close proximity) (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> ).	As above.	No heritage impact.	This is due diligence/mitigation work as above.
4.3	Areas of historical archaeological potential within the Core Estate lands and within and surrounding the Additional Disturbance Area but not identified above (Areas A to G) to be managed during project works (refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project, OzArk, 2019</i> ).	Other areas of historical archaeology have the potential to contain archaeology of State and local significance and the construction of infrastructure, structures etc. have the potential to impact on these sites.	Low to some heritage impact.	To be managed through the unexpected finds protocol if deemed appropriate.
4.4	Realign a section of Hebden Road to a new route to the west of the Project area adjacent to Bowmans Creek utilising view and character analysis and incorporating landscaping design to integrate into rural landscape and retaining maximum trees around Site 27 Ravensworth Farm (refer to <i>Appendix 23g: Conceptual Landscape Plans LP03</i> ).	See Item 1.6 above.		
4.5	Divert a section of Yorks Creek to a new route to join Bowmans Creek to the northwest of the Project area utilising view and character analysis and incorporating landscaping design to	See Item 1.7 above.		

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	integrate same into rural landscape (refer to <i>Appendix 7: Yorks Creek Design Drawings</i> ).			
4.6	Ravensworth Public School site is subject of separate proposal. Works to this place are subject to separate development application.	Works to the Ravensworth Public School were initially part of the proposal but, after damage by fire in May 2019, proposed works to this site are the subject of a separate application.	N/A	-
4.7	External restoration and “mothball” Hebden Public School (Site 34) in accordance with separate scope of works for future sale. Erect new boundary fence and generally tidy up site (refer to <i>Appendix 23i: Hebden Public School Preliminary Scope of Works</i> ).	The proposal includes specific repair and “mothballing” works to the Hebden Public School which is of <b>moderate significance</b> . We are advised that this site is too close to the disturbance area to be habitable during mining. The structure is small enough to be “mothballed” and maintained until the end of mining when it could be easily reused as part of a house.	Positive heritage impact.	
4.8	Record surface remains by photography and measured drawing the following items/sites prior to mining through by mining operations: <ul style="list-style-type: none"> <li>Timber bridge across Swamp Creek (Site 24)</li> <li>Former farm sites (Sites 10 and 17)</li> <li>Early dams, cultivation sites and cultural plantings along Bowmans Creek and Yorks Creek.</li> </ul>	The timber bridge at Site 24 and former farm Site 10 which are of <b>little significance</b> can be adequately addressed by recording.	No heritage impact.	Mitigation of proposal to mine the land.
		The significance of the former farm site at Site 17 which is of <b>moderate significance</b> can be adequately addressed by recording.	No heritage impact.	
		The early dams, cultivation sites and cultural plantings along Bowmans Creek are of <b>moderate to high significance</b> with one dam (D4) of <b>exceptional significance</b> . As the proposal is to mine through these, there is a notable to very high heritage impact.	Notable to very high heritage impact.	The proposal to record these features by photography and measured drawing is a substantial mitigation of their loss. In addition, some of the cultural plantings along Yorks Creek and Bowmans Creek are to be propagated for inclusion in an appropriate

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
				landscaping scheme at the Ravensworth Farm Recipient Site.  Note: timber bridge over Swamp Creek already included in <i>Mount Owen Open Cut: Historic Heritage Management Plan</i> (document no. XMO SD PLN 0064), 2018, Glencore.
4.9	Record and retain the following: <ul style="list-style-type: none"> <li>Site 20: former farm building</li> <li>Site 21: former farm building</li> </ul>	These are considered of <b>moderate significance</b> and retaining them would contribute to the pastoral character of the land within the Additional Disturbance Area.	Positive heritage impact.	The proposal to record and retain these structures is a mitigation of the overall Project to mine the Ravensworth Estate lands, although the farm buildings are not being stabilised so it is anticipated that over time they will deteriorate.
4.10	Retain and protect the following sites for their historical archaeological significance: <ul style="list-style-type: none"> <li>John Winter grave site (Site 34a)</li> <li>Hebden Public School (Site 34)</li> </ul>	These items are of <b>moderate significance</b> and the proposal to retain and protect their archaeological potential is desirable. These items will continue to be managed in accordance with the existing approved <i>Mount Owen Open Cut: Historic Heritage Management Plan</i> (document no. XMO SD PLN 0064), 2018, Glencore.	Positive heritage impact.	
4.11	Relocate memorials presently located at existing Ravensworth East MIA to proposed new MIA	These memorials are of <b>little significance</b> however their location is not considered to be critical to their social values.	No heritage impact.	Relocating the memorials is desirable.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
4.12	Works to improve presentation of land adjacent to the heritage listed Ravensworth Public School.		Positive heritage impact	General mitigation of impact of mining in the locality and the installation of associated infrastructure.

### 3.1.2. Broke, NSW Recipient Site Option

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
<b>1.0 Mining Related Works</b>				
1.1	Extend open cut mining operations north from the existing Glendell Mine to increase the life of the Glendell Mine to 2044, resulting in the extraction of an additional approximately 135 million tonnes of run-of-mine (ROM) coal. Processing of the coal to utilise existing infrastructure at the Mount Owen CHPP and the existing Mount Owen Rail Loop for coal transport. (For Additional Disturbance Area see Figure 1.6 above.)	The existing Glendell Mine is partly located within the boundaries of the original Ravensworth Estate lands (the “10,000 acres”) and the proposed mine is to extend this mine further within the historic Ravensworth Estate (“the Place”). Whilst the change is high, generally the land is of <b>moderate significance</b> and therefore the impact is notable.	Notable heritage impact.	The proposed rehabilitation of the land would form a low-level mitigation of this impact.
		Some of the mining would occur within the Core Area of the estate which is generally of <b>moderate significance</b> and so the impact here would be of note.	Notable heritage impact.	The proposal includes full salvage archaeology of these areas and this would be a substantial mitigation.
		The proposal includes mining within the visual catchment of the Ravensworth Homestead Complex (RHC) which is of <b>moderate significance</b> and so the heritage impact would be of note.	Notable heritage impact.	The proposal includes full salvage archaeology of these areas and this would be a substantial mitigation.
		The proposal includes mining the immediate setting and beneath and around the RHC which is of <b>high</b> , and in some aspects of <b>exceptional significance</b> . It would completely change the physical aesthetic	High heritage impact.	The proposal includes full salvage archaeology which would be a substantial mitigation. The proposal also includes the relocation of the



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
		values of the setting and destroy the existing archaeological potential of the land. As a high degree of change is proposed and the item is of high/exceptional significance, the heritage impact would be high.		RHC to a new setting which has verisimilitude to the existing and this would be a substantial mitigation.
		The proposed mining activities would impact on the scientific significance of the Aboriginal archaeology located throughout the Ravensworth Estate. Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> . As per above, the proposal would destroy the existing Aboriginal archaeological potential of the land as well as the known Aboriginal archaeological sites at the place. As a high degree of change is proposed and the Aboriginal archaeology is of little/moderate significance, the heritage impact would be notable. Refer to <i>Appendix 22: Aboriginal Cultural Values Assessment Report</i> .	Notable heritage impact	The proposal includes conserving Aboriginal archaeological sites outside of the identified Additional Disturbance Area, salvaging (collecting and recording) all surface artefacts at all sites within the Additional Disturbance Area and undertaking additional archaeological excavation to confirm the nature of archaeological deposits. This work would be a substantial mitigation.
		The proposal would also impact the social significance of the Ravensworth Estate as a marker of the historic locality of Ravensworth, which is of <b>high significance</b> . The proposal includes mining the setting of the Ravensworth Homestead Complex taking in historic markers across the landscape (including the RHC, Yorks Creek and Hebden Road) and the heritage impact would be high.	High heritage impact.	The diversion of Yorks Creek, the re-alignment of Hebden Road and the retention of the names: Ravensworth, Yorks Creek and Hebden at the place would be substantial mitigations. Relocation of the RHC to McNamara Park, Broke, which is not near the Ravensworth Estate lands would not be much of a mitigation of these impacts.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
1.2	Mining overburden to be placed in-pit to the south of the active mining area in the Glendell Pit Extension as mining progresses to the north.	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.
1.3	Other overburden emplacement to be located at the existing Glendell emplacement areas [to the south] and areas disturbed as part of the Ravensworth East operations [to the east].	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.
1.4	New overburden emplacements to be developed using natural landform techniques and progressively rehabilitated over the life of the Project.	This would not attempt to recreate the existing landform.	No further impact to that above.	No further mitigation to that above.
1.5	Retention of final void in the north of the Glendell Pit Extension upon the completion of mining. A pit lake will be developed in the final void following the cessation of mining.	Overburden emplacement areas would be seen from the New England Highway and from some of the relocated Hebden Road.	No additional impact to that described above.	The rehabilitated land and void would form a general mitigation of the impact of mining the above areas of the former historic Ravensworth Estate.
1.6	Realignment of Hebden Road to the west of the proposed Glendell Pit Extension and associated mining infrastructure.	This constitutes a medium change to an item of <b>high significance</b> and therefore the impact would be notable.	Notable heritage impact.	The proposal is mitigated in that Hebden Road would be retained outside the Additional Disturbance Area and that it is proposed to re-route the road. The name of the road as Hebden Road is also to be retained.
1.7	Realignment of Yorks Creek with a new confluence with Bowmans Creek to the north of the current confluence. Existing section of Yorks Creek south of start of	As the proposal is to make substantial change to an item of <b>moderate</b> and in some aspects of <b>high significance</b> the impact would be of note.	Notable heritage impact.	The proposal is mitigated in that Yorks Creek is retained elsewhere within the Ravensworth Estate and it is

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	realignment to be removed through mining activities.	Note the proposal will not impact the Yorks Creek Voluntary Conservation Area (Site 33a).		proposed to reconnect Yorks Creek to Bowmans Creek in a suitably landscaped way.
1.8	Remove existing Glendell Mine Infrastructure Area (MIA) (currently located within the proposed Glendell Pit Extension, north of the existing Glendell Mine).	This area is of <b>little significance</b> .	Nil heritage impact.	
1.9	Construct a new MIA to the west of the Glendell Pit Extension [within Lot 32 DP 545601] below Ravensworth Farm site (see also Item 3.20). Facilities to include carparking, administration offices, vehicle workshops, pumping station, fuel facility and helipad. Visual buffer [earth berm or vegetation] to be developed between the realigned Hebden Road and the new MIA.	The MIA is proposed within the boundaries of the Ravensworth Estate but at a location that is of <b>moderate significance</b> therefore the impact is notable.	Notable heritage impact.	It is proposed to remove the MIA at completion of mining.
1.10	Construct raw water supply extending from the existing Mount Owen Complex water management infrastructure to new MIA.	Needed service for relocated MIA.	Nil	N/A
1.11	Construct new heavy vehicle access road connecting the Glendell Pit Extension to the MIA.	See Item 1.9 above. The location of the new heavy vehicle access road is to travel across the alluvial plains to the north of Bowmans Creek, an area of <b>moderate significance</b> .	Notable heritage impact.	See Item 1.9 above.
1.12	Dismantle Ravensworth homestead buildings into materials and components (refer to <i>Appendix 23h: Project Methodology for Dismantle and Rebuild at Broke</i> ) including salvaging a selection of landscape/site features and historic plantings and removal from present site	The Ravensworth Homestead Complex is of <b>high</b> , and in some aspects of <b>exceptional significance</b> . For impact of dismantling the RHC and landscape features see below and General Considerations/Intact Relocation versus Disassembly.	Very high heritage impact.	This proposed relocation is a mitigation of mining the land of the Ravensworth Estate. For mining through the site. See above.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	and rebuild/reassemble at site at Broke, NSW (see below). Mine through the site.			
<b>2.0</b>	<b>Works in Vicinity of Ravensworth Homestead Complex (RHC)</b>			
2.1	Undertake survey and Test Excavation Reports for Aboriginal archaeology in and around the Ravensworth Homestead Complex (already completed. Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	-	Positive heritage impact.	This is a mitigation of the proposal to relocate the RHC and to mine within the Core Area of Ravensworth Estate lands (that has already been carried out).
2.2	Conserve all Aboriginal archaeological sites inside of the Additional Disturbance Area by extending the current site monitoring and verification protocols; undertake a collection and recording of all surface artefacts at all Aboriginal archaeological sites within the Additional Disturbance Area where there is a surface manifestation of artefacts; and undertake limited manual archaeological excavation at a number of locations to confirm the nature of the archaeological deposits. (Refer to <i>Appendix 22: Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project</i> )	Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> .	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.
2.3	Undertake target open area stratigraphic excavation- archaeological salvage and archaeological sampling to Areas A to G within the Ravensworth Estate Core Estate lands. Note that other areas throughout the Core Estate lands that would be impacted on by mining activities would be managed	Areas A to G are located surrounding the RHC and include the underground areas and building cavities of the individual buildings within the complex, as well as areas to the north, north-west, west and south-west of the RHC. These areas are identified as being of <b>high research potential</b> . The proposal	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	through the unexpected find protocol if deemed appropriate. (Refer to <i>Appendix 23c: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands</i> ).	involves open cut mining to all identified historical archaeological areas which would have a high impact on the archaeological potential, research potential and scientific significance of the archaeology.		
2.4	Prior to moving of buildings, record to a high standard by photography and measured drawings of the buildings of the RHC (work largely completed- refer to <i>Appendix 23b: Measured and Conjectural Drawings</i> and archival photographic record).	Mitigation measure.	Positive heritage impact.	This work (largely completed) is a mitigation to the proposal to relocate the RHC.
2.5	Prior to moving of buildings, detailed recording and cataloguing of components to allow accurate rebuilding of the following buildings: <ul style="list-style-type: none"> <li>• House Main Wing</li> <li>• House Kitchen Wing</li> <li>• Men's Quarters</li> <li>• Barn Building</li> <li>• Stable Building</li> <li>• Privy</li> </ul>		Nil heritage impact but desirable.	No additional mitigation to the dismantle and rebuild option. See Item 1.12 above.
2.6	Prior to moving buildings, record in detail for relocation, site and landscape features in vicinity of buildings as per separate lists and then carefully take up/salvage these items ready for relocation:	Mitigation measure.	Positive heritage impact.	This work (already completed) can be considered, mitigation work to relocating the RHC.



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	<ul style="list-style-type: none"> <li>Trees identified to be relocated (refer to <i>Appendix 23h: Conceptual Landscape Plan</i>).</li> <li>Other landscape/site features identified to be relocated</li> </ul> <p>Refer to <i>Appendix 23f: Vegetation and Landscape Feature Relocation Schedule</i> for complete lists of relocated trees, landscape and site features.</p>			
2.7	Record other surface features in vicinity of Homestead Complex by photography and description.	Mitigation measure.	Positive heritage impact.	This work (partly already completed) can be considered mitigation to the proposal to relocate the RHC.
2.8	<p>Dismantle and Rebuild Move: Record and demolish rooms and features listed below which will not be rebuilt at new site. <u>House Main Wing:</u></p> <ul style="list-style-type: none"> <li>Space H1A</li> <li>Space H2</li> <li>Space H14</li> <li>Space H4</li> <li>Space H5</li> </ul> <p><u>Barn Building:</u> Dairy stalls alteration at north end of Space B1 <u>Stable Building:</u> Shearing shed alteration in Space S4 <u>Garden:</u> Items not listed in 2.6 above.</p>	The proposal not to relocate spaces and fabric added to the house in 1920 is a reasonable decision. See discussion regarding interpretive house reconstruction under Section 2.3.2 Desirable Building Configuration.	Low heritage impact of interpretations of the buildings in a desirable way.	-
		The proposal not to salvage and relocate the Dairy Stalls alteration in the Barn Building, the Shearing Shed alteration in the Stable Building, and items not listed under Item 2.6 above is a reasonable one for the interpretation of the RHC.	Low heritage impact of interpretations of the buildings in a desirable way.	-

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
2.9	Investigate, record and exhume the (Miss White's) grave adjacent to the homestead as in accordance with relevant legislation. Relocation options subject to future consultation.	The relocation of the grave (thought to be Miss White's) which is of <b>moderate significance</b> would be of notable heritage impact. Because of its nature, this proposal is controlled by statutory legislation. Refer to <i>Appendix 23b: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands</i> , regarding requirements for an Exhumation Management Plan.	Notable heritage impact.	The relocation can be considered a mitigation to the impact of relocating the RHC.
2.10	Dismantle and Rebuild Move: Dismantle and transport the dismantled components of the buildings and nominated trees and landscape items (see Item 2.6) from present site to recipient site at Broke NSW. <i>For impact on McNamara Park, Broke, NSW see below.</i>	The proposed Dismantle and Rebuild Move is discussed in General Discussion above. As the proposal has a high degree of change to items of <b>Moderate, High</b> and in some aspects of <b>Exceptional significance</b> the heritage impact would be very high.	Very high heritage impact.	The proposal to dismantle the buildings is not really mitigated by rebuilding at Broke, NSW as the process would: <ul style="list-style-type: none"> <li>• destroy a substantial amount of heritage fabric;</li> <li>• not put the building group in an authentic configuration; and</li> <li>• not put the buildings in an appropriate landform or location of pastoral character</li> <li>• have future maintenance and management uncertainties (see below).</li> </ul>
		It would also remove the focal point of the place in NSW known as Ravensworth, which is of <b>high significance</b> .	High heritage impact.	Not mitigated by relocation to Broke NSW, as this is at Ravensworth, NSW

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
		The proposal would also destroy the significant views from the RHC and to the RHC including its immediate setting.	High heritage impact.	Not mitigated by relocation to Broke NSW, as this is at Ravensworth, NSW
<b>3.0</b>	<b>Heritage Related Works in Vicinity of Broke, NSW, Recipient Site</b>			
3.1	Undertake survey and Test Excavation Reports for Aboriginal archaeology in and around the Broke Recipient Site (in accordance with <i>Appendix 23h: Aboriginal Due Diligence Assessment Report</i> )		Positive heritage impact.	Due diligence/prior to development of the land.
3.2	Further detailed recording by photography, description and drawings of surface features in the vicinity of the Broke Recipient Site.	Good practice prior to developing the Broke recipient site.	No heritage impact.	
3.3	Carry out a survey of existing trees in the vicinity of the relocation site and identify specimens for retention.	Good practice and to provide some amenity for the Broke recipient site.	No heritage impact.	
3.4	Create temporary nursery at suitable location and install salvaged plantings from the existing homestead site ready for planting out at new site and maintain this nursery.	The salvaged trees and plants have some small significance as coming from the Ravensworth Estate and so this action is desirable.	Positive heritage impact.	
3.5	Detail shaping of land at the site to partially simulate the landform of the existing homestead site (refer to <i>Appendix 23h: Preliminary Earthworks Plan</i> ).	The proposal is to shape the land beneath the house and kitchen wings to simulate the existing. However, because the topography across the Broke Reserve is generally flat, it is not possible to regrade the landform to replicate the existing.  Accordingly, the levels of some of the buildings will not be an authentic reconstruction. Combined with the proposal	Detrimental heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
		not to space the buildings north-south to match the existing, it can be concluded that the proposal is not an authentic reconstruction of the original configuration of the RHC. As people visiting this site will assume that it is a reconstruction, this has both a detrimental heritage impact and will be a misleading interpretation.		
3.6	Provide new topsoil as needed to facilitate garden plantings around relocated homestead.	Necessary to assist in relocated and new garden plantings.	No heritage impact.	
3.7	Provide plantings and other landscaping works to improve/make useable the locality. (Refer to <i>Appendix 23h: Conceptual Landscape Plan</i> ).	Needed/advisable to provide a pleasant setting for the relocated buildings.	Low heritage impact.	
3.8	Reserve land adjacent to the proposed site to ensure protection of the visual catchment in the future	Although this is desirable, no details have been provided in the proposal as to the extent of the land that is to be reserved for the proposal and whether this is sufficient to create a visual catchment around the relocated buildings.	Notable heritage impact.	
	<p>This proposal does not include to relocate existing/form new agricultural dam to interpret as the “homestead dam.”</p> <p>This proposal does not include to provide driveway access to homestead in same/similar alignment as current driveway access to homestead (for access and interpretation).</p>	The proposal does not include the creation of a Homestead dam or provide a driveway access from the west to simulate the existing configuration and accordingly visitors will not be able to understand from the physical arrangement what the original configuration of the garden or approach roads was.	Some heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.9	Shape site to include, building levels and future garden land forms partly matching existing homestead site. (Refer to <i>Appendix 23h: Conceptual Landscape Plan</i> ).	See Item 3.5 above.		
3.10	Excavate and construct new footings for rebuilt buildings including any adaptations/additions proposed (refer to <i>Appendix 23h: Project Methodology for Dismantle and Rebuild at Broke</i> )	Necessary for the rebuilding of the RHC at this site.	No further heritage impact.	
3.11	Rebuild homestead buildings using the salvaged materials and components including reconstructions as recommended by consultants and build any adaptations as shown (see attached sketch plans.). Install adaptation fitouts and equipment to allow use of buildings as gallery, museum, market, tourist office (see attachment re proposed use).	See discussion under Section 2.3.5 Intact Relocation vs Dismantle and Rebuild.  The adaptations as presently shown to the rebuilt RHC and their heritage impacts are as follows.  The designs would be subject to further development as part of secondary approvals which may be able to improve the following aspects:	High heritage impact.	Further design development would be undertaken as a part of secondary approvals.
		Provide a sympathetic garden at the front of house. However designed, because of the arrangement of Milbrodale Road, the proposal will not simulate the existing and accordingly, at best, this will have a low negative heritage impact.	At least low heritage impact.	
		Locate the buildings closer together and on levels not matching the existing – see comment above.	High heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
3.11 cont.		Construct addition on north side of house – no details provided. Has potential to be high heritage impact.	Potential high heritage impact.	
		Provide additional structures within the vicinity of building – conceptual designs only provided.	Possibly notable heritage impact.	
		Form square archways in internal walls of Men's Quarters – appropriate to moderate significance of this building.	Low heritage impact.	As above: Further design development would be undertaken as a part of secondary approvals.
		The following aspects of the proposal are not capable of being improved by design development:		
		Remove some walls within House wing/Kitchen wings and Barn buildings to suit proposed use – not considered appropriate for buildings of this high significance. The proposed uses are likely to demand joining of small spaces within the buildings.	High heritage impact.	
		Remove some external walls of the Barn and Stable buildings to suit proposed use – not considered appropriate for buildings of this high significance. The proposed uses are likely to demand opening up some external walls.	High heritage impact.	
		Construct Public Hall/Stage at north end of Farm yard – only notional design provided. Whilst an all-weather shelter or covered market could be designed, providing a proper multi-purpose public hall will require many attributes and inclusions that provision of	Possible notable heritage impact.	



No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
		these would very likely overwhelm/out-scale the remainder of the building group.		
		Use as galleries, museums, market, tourist office – no business case has been provided that these uses would be viable or would survive over time. Should this venture fail, the impact on the rebuilt buildings because of neglect or further proposals for change could be high.	Possibly high heritage impact.	
3.12	Maintain fabric of the rebuilt Homestead Group (as rebuilt and adapted).	No documentation provided that guarantees maintenance of the rebuilt buildings. Could be included in a condition of approval.	Possible high heritage impact.	
3.13	Install relocated landscape features and plantings and then maintain landscape features and plantings (refer to <i>Appendix 23h: Conceptual Landscape Plan</i> ) including those from nursery.	Reusing planting from the existing RHC which are of significance is desirable although the gardens and landscaping would not have verisimilitude to the existing RHC.	Low heritage impact.	
3.14	Construct adaptation landscape features (fences, roads, car parking etc) (reversible) (refer to <i>Appendix 23h: Conceptual Landscape Plan</i> ) to allow use of buildings as gallery, museum, market, tourist office (see attachment re proposed use).	Would be commensurate with proposed end use but none of these proposals are suggested more than notionally at present and have potential to be unsympathetic to or detract from the significance of the rebuilt RHC.	Possible high heritage impact.	
<b>4.0</b>	<b>Heritage Related Works to Ravensworth Estate lands [The Place] Generally</b>			
4.1	Conserve all Aboriginal archaeological sites within the Additional Disturbance Area by extending the current site monitoring and verification protocols; undertake a collection and recording of all surface artefacts at all Aboriginal archaeological sites within the Additional	Surviving Aboriginal archaeology has been graded as being of <b>little/moderate scientific significance</b> .	Positive heritage impact.	This is a mitigation of the proposal to mine within the Core Area of the Ravensworth Estate.

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
	Disturbance Area where there is a surface manifestation of artefacts; and undertake limited manual archaeological excavation at four locations to confirm the nature of the archaeological deposits. (Refer to <i>Appendix 22: Aboriginal Archaeological Impact Assessment Glendell Continued Operations Project</i> .)			
4.2	Fence and sign Aboriginal archaeological sites within the Ravensworth Estate lands, but outside of the boundaries of the Additional Disturbance Area (within close proximity) in accordance with <i>Appendix 22: Aboriginal Archaeological Impact Assessment Glendell Continued Operations Project</i> .	As above.	No heritage impact.	This is due diligence/mitigation work as above.
4.3	Areas of historical archaeological potential within the Core Estate lands and within and surrounding the Additional Disturbance Area but not identified above (Areas A to G) to be managed during project works.	Other areas of historical archaeology have the potential to contain archaeology of State and local significance and the construction of infrastructure, structures etc. have the potential to impact on these sites.	Low to some heritage impact.	To be managed through the unexpected finds protocol if deemed appropriate.
4.4	Realign a section of Hebden Road to a new route the west of the Project area adjacent to Bowmans Creek utilising view and character analysis and incorporating landscaping design to integrate into rural landscape and retaining maximum trees around Site 27 Ravensworth Farm (refer to <i>Appendix 23g: Conceptual Landscape Plan LP03</i> ).	See Item 1.6 above.		

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
4.5	Divert a section of Yorks Creek to a new route to join Bowmans Creek to the northwest of the Project area utilising view and character analysis and incorporating landscaping design to integrate same into rural landscape (refer to <i>Appendix 7: Yorks Creek Design Drawings</i> ).	See Item 1.7 above.		
4.6	Ravensthorpe Public School site is subject of separate proposal. Works to this place are subject to separate development application.	Works to the Ravensthorpe Public School were initially part of the proposal but, after damage by fire in May 2019, proposed works to this site are the subject of a separate application.	N/A	-
4.7	External restoration and “mothball” Hebden Public School (Site 34) in accordance with separate scope of works for future sale. Erect new boundary fence and generally tidy up site (refer to <i>Appendix 23i: Hebden Public School Preliminary Scope of Works</i> ).	The proposal includes specific repair and mothballing works to the Hebden Public School which is of <b>moderate significance</b> . We are advised that this site is too close to the Additional Disturbance Area to be habitable during mining. The structure is small enough to be mothballed and maintained until the end of mining when it could be easily reused as part of a house.	Positive heritage impact.	
4.8	Record surface remains by photography and measured drawing the following items/sites prior to mining through by mining operations: <ul style="list-style-type: none"> <li>Timber bridge across Swamp Creek (Site 24)</li> <li>Former farm sites (Sites 10 and 17)</li> <li>Early dams, cultivation sites and cultural plantings along Bowmans Creek and Yorks Creek.</li> </ul>	The timber bridge at Site 24 and former farm Site 10 which are of <b>little significance</b> can be adequately addressed by recording.	No heritage impact.	Mitigation of the proposal to mine the land.
		The significance of the former farm site at Site 17 which is of <b>moderate significance</b> can be adequately addressed by recording.	No heritage impact.	
		The early dams, cultivation sites and cultural plantings along Bowman’s Creek are of <b>moderate to high significance</b> with one dam (D4) of <b>exceptional significance</b> . As the	Notable to very high heritage impact.	The proposal to record these features by photography and measured drawing is a substantial mitigation of their loss. In addition, some of the

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
		proposal is to mine through these, there is a notable to very high heritage impact.		cultural plantings along Yorks Creek and Bowmans Creek are to be propagated for inclusion in an appropriate landscaping scheme at the Ravensworth Farm Recipient Site.  Note: timber bridge over Swamp Creek already included in <i>Mount Owen Open Cut: Historic Heritage Management Plan</i> (document no. XMO SD PLN 0064), 2018, Glencore.
4.9	Record and retain the following: <ul style="list-style-type: none"> <li>Site 20: former farm building</li> <li>Site 21: former farm building</li> </ul>	These are considered of <b>moderate significance</b> and retaining them would contribute to the pastoral character of the land within the Additional Disturbance Area.	Positive heritage impact.	The proposal to record and retain these structures is a mitigation of the overall Project to mine the Ravensworth Estate lands, although the farm buildings are not being stabilised so it is anticipated that over time they will deteriorate.
4.10	Retain and protect the following sites for their historical archaeological significance: <ul style="list-style-type: none"> <li>John Winter grave site (Site 34a)</li> <li>Hebden Public School (Site 34)</li> </ul>	These items are of <b>moderate significance</b> and the proposal to retain and protect their archaeological potential is desirable. These items will continue to be managed in accordance with the existing approved <i>Mount Owen Open cut: Historic Heritage Management Plan</i> (document no. XMO SD PLN 0064), 2018, Glencore.	Positive heritage impact.	

No.	Aspect of Proposal	Comment/Recommendation	Heritage Impact	Mitigation
4.11	Relocate memorials presently located at existing Ravensworth East MIA to proposed new MIA	These memorials are of <b>little significance</b> however their location is not considered to be critical to their social values.	No heritage impact.	Relocating the memorials is desirable.
4.12	Works to improve presentation of land adjacent to the heritage listed Ravensworth Public School.		Positive heritage impact.	General mitigation of impact of mining in the locality and the installation of associated infrastructure.

## 3.2. Methodology 4: Assessment against Singleton DCP 2014

The following is an assessment of the proposals against the provisions of the *Singleton Development Control Plan*, 2014. As discussed above, although depending on the approval path, assessment against the Singleton DCP will not necessarily be needed (see *SEPP (State and Regional Development)* 2011 Part 2 Clause 11 which excludes the application of development control plans).

However, given that the Broke Dismantle and Rebuild Move option will be the subject of secondary approvals under the *Environmental Planning & Assessment Act* 1979 and an assessment against the Singleton DCP will be required for any secondary approval, it is considered appropriate to address the heritage considerations of the Singleton DCP at this stage.

In addition, Part 2.19 of the Singleton DCP includes heritage objectives and guidelines of pertinence to both the Ravensworth Farm option and the Broke option and is a useful methodology to demonstrate the type of consideration a Consent Authority may take into account in the assessment of both options of the Project.

### 3.2.1. Part 2.19 Heritage Conservation

Part 2.19 of the *Singleton DCP*, 2014 provides objectives and guidelines with respect to development on land on which a heritage item is located or on land that is within the vicinity of land on which a heritage item is located. The following is a discussion against the relevant objectives and guidelines of the *Singleton DCP*, 2004.

#### 3.2.1.1. DCP Objectives

The following objectives for Heritage Conservation apply:

*“Objective 1(a) ..... to conserve the environmental heritage of the Singleton Local Government Area”*

**Comment:** The Ravensworth Homestead Complex (Lot 228 DP 752470) is included as a local heritage item under Schedule 5 of the *Singleton Local Environment Plan*, 2013 (Item I47). Accordingly, the DCP is applicable. See above assessment against significance (Methodology 1) for a discussion of the impacts of the proposal and whether or not it constitutes conservation of the Item.

*“Objective 1(b) ..... to prevent the deterioration of the heritage significance of heritage items and heritage conservation areas.”*

**Comment:** The proposal includes mining Lot 228 DP 752470 (a local heritage item) and this will have a high heritage impact. The proposal is mitigated by the proposal to relocate the buildings of the RHC to one of two locations. Both proposals for relocating the RHC involve substantial change to the buildings but both will certainly prevent initial deterioration of the buildings due to the amount of resources being spent on them. As above, the proposal to relocate the RHC to Ravensworth Farm has, in our assessment, a better likelihood of preventing future deterioration than the proposal to relocate to Broke.

*“Objective 1(c) .... to ensure that the impacts of development on the heritage significance of the heritage items and the conservation areas is adequately considered”.*



**Comment:** This objective is most certainly achieved as the proposal is accompanied by extensive research and this Heritage Impact Statement discusses the many aspects of the proposal.

### 3.2.1.2. DCP Guidelines

The following guidelines for the conservation and management of Heritage Items provided for within the *Singleton DCP*, 2014, apply:

*“2.19 Heritage Conservation (3) .... before granting consent for a building (including external alterations and additions to any existing building), on land to which this clause applies, the Consent Authority should be satisfied that the development will not unreasonably impact upon the heritage significance of the item or heritage conservation area concerned”.*

**Comment:** This provision is very similar to the standard LEP provision included under Clause 5.10. See the assessment against significance included above.

*“2.19 Heritage Conservation (4) ..... the Consent Authority may ..... require a statement of heritage impact to be prepared by a suitably qualified heritage professional who is registered on the NSW Office of Environment & Heritage Consultants register ..... “*

**Comment:** This Heritage Impact Statement has been prepared by Lucas Stapleton Johnson & Partners who are suitably qualified and specialists which are registered on the required register.

*“2.19 (4)(a) The statement of heritage impact must ..... assess the extent to which the development would affect the heritage significance of the heritage item or conservation area.”*

**Comment:** See above assessment against significance.

*“2.19 (4)(b) The statement of heritage impact must ..... be prepared in accordance with the relevant State government guidelines for preparation of statements of impact.”*

**Comment:** This Statement is in accordance with the required guidelines.

*“2.19 (4)(c) The statement of heritage impact must ..... be consistent with the principles of the ICOMOS Australia Burra Charter”.*

**Comment:** This Statement is in our view consistent with the *Burra Charter* principles and quotes and compares the proposal against these principles on numerous occasions.

*“2.19 (4)(d) The statement of heritage impact must ..... if in a heritage conservation area, consider the impact that the development will have on the special features and characteristics of the heritage conservation area”.*

**Comment:** The Item is not in the conservation area. However, the impact on the setting of the RHC has been considered in the assessment against significance above.

*“(4)(e) The statement of heritage impact must ..... if the development affects the heritage item, consider the built form elements”.*

**Comment:** The above assessment against significance has included the built form of the proposed restorations and reconstructions of the RHC and also the built form of the proposed adaptations of the RHC and its immediate setting.

*“2.19 (4)(f) The heritage impact statement must .... consider the effect of the development on the heritage significance of the item or conservation area concerned.”*

**Comment:** The assessment against significance above has considered the effect on proposals on the heritage significance of the item.

*“2.19 (5) Council guidelines ..... ”*

**Comment:** After enquiry from Council, there appear to be no guidelines available prepared pursuant this sub section.

*“2.19 Heritage Conservation, (6) Development consent should not be given for the removal of a tree within a heritage conservation area or on allotment containing heritage item unless ..... ”*

**Comment:** The above assessment against significance includes consideration of the impact of the proposal on trees. The proposals include an assessment of their significance and proposals to retain, propagate and relocate trees.

*“2.19 Heritage Conservation, (7) Tree Hazard Assessment”*

**Comment:** As it is not proposed to remove a tree at the Place because it is a hazard, no tree hazard assessment report has been prepared for this assessment.

### **3.2.2. Part 2.20 Demolition of Heritage Buildings or Contributory Buildings**

Part 2.20 of the *Singleton DCP*, 2014 provides objectives and guidelines with respect to any proposal that involves demolition in respect of a Heritage Item or to a proposal for demolition that is within the vicinity of land on which a Heritage Item is located. The following is a discussion against the relevant objectives and guidelines of the *Singleton DCP*, 2004.

#### **3.2.2.1. DCP Objectives**

*“2.20 Demolition of Heritage Buildings ..... (1)(a), The objectives of this clause are .... to conserve the environmental heritage of the Singleton government area.”*

**Comment:** See comments under 2.19 (1) above.

*“Objective (1)(b), The objectives of this clause are ..... to conserve the heritage significance of heritage items and conservation areas including associated fabric, settings and views.”*

**Comment:** An assessment of the heritage impact of the proposals on the Heritage Item, including associated fabric, setting and views, is included in the assessment against significance above.

### 3.2.2.2. DCP Guidelines

*“2.20 Demolition of Heritage Buildings ..... (2) ....This clause applies to development for the purpose of demolition on land ..... (a) on which a heritage item is located.*

**Comment:** As above, the item is Heritage Item I41 of the *Singleton LEP* and therefore this section of the DCP is applicable.

*“Demolition of heritage buildings ..... (3)(a) Development consent should not be granted ..... unless the Consent Authority is satisfied that ..... the building does not add to the character and heritage significance of the conservation area/heritage item”.*

**Comment:** Each aspect of the proposal is discussed in the assessments against significance above. The buildings of the RHC do contribute to the heritage significance of the heritage item as included in the assessment against significance above. The proposal is to either relocate the buildings or dismantle and rebuild the buildings and these relocating proposals are considered a mitigation of the proposal.

*“2.20 Demolition of heritage buildings ..... (3)(b) Development consent should not be granted to demolish a heritage building ..... unless the Consent Authority is satisfied that .... the building or Item has been determined by a structural engineer to be unsafe.”*

**Comment:** During investigation work to the buildings it has been determined that there are some parts of the buildings which need structural repair but the structural engineer did not consider any part of the buildings unsafe. Accordingly, the proposal to relocate the buildings does not rely on such a determination.

*“2.20 Demolition of Heritage Buildings ..... (3)(c) Development consent should not be granted to demolish a building ..... unless the Consent Authority is satisfied that ..... conservation of the building is unreasonable in the circumstances or the case.”*

**Comment:** The proposal to relocate the buildings of the RHC is made to allow the extension of the Glendell mine which has, in the view of the applicant, overwhelming economic value and would create significant employment opportunities within the Singleton local government area. Accordingly, it is the applicant’s view that relocation of the buildings is the appropriate action and that conservation of the buildings in situ, at their present location, is “unreasonable in the circumstances for the case” (see *Appendix 23e: Ravensworth Homestead Relocation Justification Report*).

## 4. Summary and Conclusion

### 4.1. Summary of the Proposal

This report is the Statement of Heritage Impact relating to the historic property Ravensworth Estate located near Singleton, NSW and the public reserve McNamara Park, adjacent to the town of Broke, NSW.

We understand that the applicant is seeking approval as part of a State Significant Development (SSD) application to relocate the Homestead on the basis that relocation will be either locally to Ravensworth Farm or alternatively to Broke. In the event that the Ravensworth Farm option is preferred by the Consent Authority then approval for this option, we are advised, would be under the SSD consent and would require no further approvals.

In the event that the Broke option is preferred by the Consent Authority, we are advised that, land tenure would then need to be secured for the proposed location or an alternative location, and all requisite statutory approvals (Secondary Approvals) would be required to be obtained. If the Broke approvals cannot be obtained in a timely manner (suggested by the applicant as within two years of the commencement of the SSD development consent), then the applicant will relocate the Homestead to the Ravensworth Farm site. We are advised that the applicant is requesting that the relocation of the Ravensworth Homestead Complex to the Ravensworth Farm site would be approved under the SSD consent subject to the Broke option not being available.

The principal components of the Project are as follows:

#### ***Common inclusions:***

- A. To carry out extensive archaeological salvage investigations under and adjacent to the existing homestead site; divert a section of Yorks Creek; re-route a section of Hebden Road; install mining infrastructure including new MIA and then open-cut mine to part of the Core Estate lands of the historic Ravensworth Estate.

#### ***Alternative proposals for the RHC:***

- B. To move the Ravensworth Homestead Complex (RHC) building group in full-building sections (Intact Move) to a nearby site at Ravensworth Farm (within the Core Estate lands of the Ravensworth Estate) and install it there, adapted for office and staff training use; or alternatively
- C. To dismantle the Ravensworth Homestead Complex (RHC) building group and rebuild the buildings on the public reserve site at the town of Broke, NSW (Dismantle and Rebuild Move) adapted for gallery, market and tourist uses.

#### 4.1.1. Identified Heritage Impacts

Based on the detailed itemised assessment of each relocation option provided above (refer to Section 3), the following is a precis of the principal identified heritage impacts associated with the Project:

The Project involves open-cut mining within the perimeter of the historic Ravensworth Estate ('the Place') which is generally of **moderate significance** and would be of some to notable heritage impact.

Additionally, the Project includes mining within an area of the Ravensworth Estate determined to be the 'Core Estate lands' which is of moderate to high significance and would have notable to very high heritage impact. The Aboriginal archaeological significance of the sites in this area are generally considered to be of **little to moderate significance** and accordingly, the impact would be low and is to be mitigated by appropriate salvaging procedures.

Both proposals include open-cut mining within the immediate setting of the Ravensworth Homestead Complex which is of **high to exceptional significance** and would cause high heritage impact.

The Project would also notably affect the regard in which the land the Ravensworth Homestead Complex is held, and the sense of place it provides as a focus of the locality to the local community (social significance). This would be mitigated considerably by the relocation of the Ravensworth Homestead Complex to the Ravensworth Farm site, which is nearby on the Ravensworth Estate, but would only be mitigated marginally by being relocated to Broke.

The Project includes open-cut mining of the immediate setting of the homestead and under the site of the RHC which is of high significance and would have high heritage impact in completely changing the physical aesthetic values of the setting and extinguishing the scientific (archaeological) potential of the land. This is mitigated to some extent by the proposal to relocate/rebuild the RHC at another site. This is mitigated substantially by the proposal for full salvage archaeology of this area which would mean that much of the embodied information about the land will be investigated, recorded and assessed.

The Project includes the open-cut mining of historical archaeological sites of **high research potential**, including the north-west paddock and the "8-acre garden", and would be of high heritage impact. However, this impact would be substantially mitigated by the proposal to carry out salvaged archaeology which would mean that much of the embodied information about the land will be investigated, recorded and assessed.

The Project includes the removal of some of the buildings, buildings sites and archaeology relating to the late 19<sup>th</sup> century subdivision of the Estate which is sometimes of **moderate significance** and this will have notable heritage impact. However, some of the former Ravensworth Estate lands will remain undisturbed including buildings and buildings and archaeology relating to the later period of subdivision.

The Project includes re-routing of a section of Hebden Road which is of **high significance** and would be of notable heritage impact. This is mitigated by the retention of Hebden Road outside the Additional Disturbance Area (but elsewhere within the Estate) and by the proposal to re-route the road within the Additional Disturbance Area.

The Project includes the re-routing of a section of Yorks Creek which is of **moderate significance** and will be of notable heritage impact. This is mitigated by the retention of Yorks Creek elsewhere within the Ravensworth Estate and the proposed reconnection to and landscaping of Yorks Creek to Bowmans Creek.

The proposal to relocate the RHC, which is of **high significance** and contains some **exceptional significance** values, in an Intact Move to the Ravensworth Farm site would:

- Remove buildings from their historic location which would be a high heritage impact. This is mitigated to some extent by the proposal to site the relocated buildings at a place with similar land form, orientation and pastoral character to the existing location (a visual catchment with verisimilitude to the existing).
- Involve the loss of some building footings which would be of notable heritage impact.
- Retain the great majority of the building fabric (moved in full building sections) intact which would be accordingly of no heritage impact.
- Retain the aesthetic values of the buildings as examples of Colonial Bungalow architecture and a colonial period farm building group which would have no heritage impact.
- Retain the formal farm yard layout and retain and reconstruct the H-form plan of the house which are attributes of exceptional significance with accordingly no heritage impact.
- Restore and repair dislodged and damaged parts of the buildings of high heritage significance which would be a positive heritage impact.
- Adapt the homestead buildings which are of high heritage significance in a manner that would be of low and acceptable heritage impact.
- Provide confirmed and likely viable future uses for the buildings which is an important consideration in reducing the likelihood of impact by damage-by-neglect in the future.
- Not have any substantial impact on the significance of the Ravensworth Farm Site (Site 27) as this site is of little significance as the proposed RHC site is suitably removed from the features that make up the modest significance of that site.

The proposal to relocate the RHC to Ravensworth Farm includes the removal of the homestead garden and other nearby plantings, some of which are of moderate to exceptional significance and this would have high heritage impact as they are part of the history of the property and the setting of the important buildings. This is mitigated by the proposal to salvage the most interesting of the planting, establish a temporary nursery for their care and to replant this vegetation as part of a sympathetic setting for the relocated RHC.

The proposal to dismantle the Homestead buildings, which are of **high significance** and contain some **exceptional significance** values, and rebuild them at Broke (Dismantle and Rebuild Move) would:

- Remove the buildings from their historical location which would be a high heritage impact. This is not mitigated by the proposed site at Broke which does not have a similar land form or pastoral character to the existing location (does not provide a setting with verisimilitude to the existing)
- Involve the loss of substantial building fabric such as mortar, plaster and fixings and this would have a high heritage impact as they are part of the buildings, although some of the elements such as roof trusses may be able to be relocated in whole sections.
- May retain the aesthetic values of the buildings as example of Colonial Bungalow architecture although this would be in the form of a rebuilt building or partial replica and this would be of substantial heritage impact as not being entirely the 'real' old buildings.
- Not retain a formal farmyard layout in the same dimensions of the existing which is one of the aspects of the place of exceptional significance and would be a high heritage impact. However, the proposal includes the reconstruction of the H-form plan of the main house which is also an attribute of exceptional significance.
- Not reconstruct/interpret the original layout of the buildings as they are not proposed to be rebuilt on the same gradient levels (except for the house/kitchen), which would be a high heritage impact.
- Restore dislodged parts of the buildings and repair by replacement other parts of the buildings of high significance and this would be of possibly neutral heritage impact.
- Adapt the homestead buildings which are of high significance, which would have a high heritage impact due to the amount of change proposed (removal of walls etc.).



- Provide possible viable future uses for the buildings which is an important consideration in reducing the likelihood of impact by damage-by-neglect in the future.
- Not have any substantial impact on the significance of the public reserve at Broke as this site is of little cultural significance (and not a local Heritage Item) and is suitably removed from other Heritage Items located at Broke (churches and war memorial).

The proposal to dismantle and rebuild the RHC at Broke includes the removal of the homestead garden and other nearby plantings, some of which are of moderate to exceptional significance and this would have high heritage impact as they are part of the history of the property and the setting of the buildings. This is only marginally mitigated by the proposal to salvage and establish for them a nursery and replant the vegetation as a part of a sympathetic setting for the Homestead buildings as the buildings are not being rebuilt in a configuration matching the existing or at a place with similar land form and pastoral character (verisimilitude) of the existing location.

Many of the assessment matters included in the *Singleton Development Control Plan 2014* are procedural and have been followed in this application. The main assessment criteria in the DCP is an assessment against significance, which has been undertaken above (refer to Section 3.1).

The *Singleton DCP* does include a policy (Part 2.20(3)(c)) that the Council should not grant consent for the demolition of a heritage building unless “conservation of the building is unreasonable in the circumstances of the case”. It is the applicant’s submission that this is applicable to this proposal.

## 4.2. Conclusion

Having made an assessment of the proposal to mine part of the historic Ravensworth Estate, the conclusion of this is that it will have notable heritage impact on the Core Area of the Estate and the setting of the Ravensworth Homestead Complex (RHC) but that this would be mitigated by the proposal to relocate the homestead buildings and carry out comprehensive salvage archaeology.

Having made a systematic assessment of the heritage impact of both the proposed (Intact Move) relocation to Ravensworth Farm and the proposed dismantling and rebuilding (Dismantle and Rebuild Move) to the town of Broke, the conclusion of this is that both proposals have high heritage impact in that they would remove the buildings from their historic location and remove them from their historic and aesthetic setting.

The loss of high archaeological potential of the RHC site and adjacent north-west paddock and “8-acre garden” sites can be substantially mitigated by undertaking comprehensive salvage archaeological investigation, recording and assessment, which is also proposed in this application. It can be argued that such archaeology is in fact an outstanding opportunity to investigate a rural-based Colonial convict site that, has not been substantially disturbed (by later development) since its construction in the early 19<sup>th</sup> century.

The proposal to relocate the Homestead buildings in whole-building sections (Intact Move) to the nearby Ravensworth Farm site which has an appropriate gradient, orientation and pastoral character (verisimilitude) and to adapt it for a substantive new use prior to it reverting to (potentially) a future use as a rural homestead is a substantial mitigation of the high heritage impact of removing the buildings from their historic location. The proposal to use the RHC once again as a homestead attached to an adequate parcel of land commensurate with viable pastoral uses is, in our view, the preferred long term/future use for the RHC in its new location at the Ravensworth Farm site.

However, it is acknowledged that following the closure of the mine in 20 years, the reinstatement of pastoral uses may not be appropriate depending on future community and local government requirements and

economic factors in the locality. As such, if an alternative compatible use is proposed prior to the end of mining, which is then assessed and implemented in accordance with any (required) approved historic heritage management plan for the RHC, then a new, compatible future use for the RHC may be appropriate. Such an arrangement could be dealt with via a condition of approval. (Refer also Section 3 above for discussion of aspects of the proposal relating to the immediate and long term use of the RHC and works to the setting of the homestead in 20 years time.)

The proposal to dismantle and rebuild the RHC buildings at the reserve in Broke, NSW, (Dismantle and Rebuild Move) is, in our view, not much of a mitigation of the proposal to remove the buildings from the historic location, as the process will destroy a substantial amount of heritage fabric, not put the building group in an authentic configuration, nor an appropriate land form or location of pastoral character (not give verisimilitude).

#### **4.2.1. Recommendation**

In the view of this firm, neither of the relocation proposals are desirable outcomes on the sole grounds that in isolation, they represent desirable heritage conservation work. However, in the context of the proposed Project, should the Consent Authority decide to approve removal of the RHC from its existing location for reasons other than heritage, then the best option, by a considerable margin, of the two relocation options proposed is the relocation, in whole-building sections (the Intact Move), to the nearby Ravensworth Farm site. This, in our view, puts the buildings in an appropriate setting, involves the least damage to the significant fabric and provides the most likelihood of ongoing sympathetic use, treatment and maintenance.

### **4.3. Recommendations Relating to Possible Conditions of Consent**

There are a number of aspects of the proposals that warrant clarification and sometimes the proposals need augmentation to improve the possible results in terms of heritage conservation.

This firm is not fully conversant with the procedures that the Consent Authority may wish to take in relation to the two proposals, and therefore the suggested recommendations included below may need to be recast in relation to possible conditions of consent.

The following recommendations are made to raise issues relevant to achieving the best result for the project in relation to heritage considerations.

For Option 1, the Intact Move to the Ravensworth Farm site, the arrangement and management of the new place and its visual catchment at the conclusion of mining needs to be confirmed and guaranteed.

As Option 2, the Dismantle and Rebuild Move to Broke, is not, in our view, yet in an approvable state, no specific recommendations are provided for this option.

### 4.3.1. Recommendations for the Consent Authority

The below are recommendations for application to either relocation option should approval be granted under SSD 9349 to relocate the homestead.

#### 4.3.1.1. Mining Activities

Should the relocation be approved, it is recommended that a condition is in place so that mining does not commence within the Core Estate Lands as shown in Figure 1.2 in this report, until:

- a) appropriate archaeological programs have been completed in accordance with the recommendations contained in Ravensworth Homestead Complex and Surrounds: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands, Casey & Lowe, 2019 (staged implementation may be authorised by the Planning Secretary);
- b) such time as the Ravensworth Homestead Complex (RHC) has been relocated to the Relocation Site; and
- c) Hebden Public School (Site 34) is treated as proposed (refer to *Appendix 23i: Hebden Public School Preliminary Scope of Works*).

#### 4.3.1.2. Ravensworth Heritage Management Plan

Prior to the commencement of any works relating to the relocation of the RHC, the applicant submits a Ravensworth Heritage Management Plan to the satisfaction of the Planning Secretary. This plan should include the following for managing the heritage aspects of the Project:

##### 1) Ravensworth Estate Heritage Management Measures

- a) Archival recordings to a nominated standard of the following sites within Ravensworth Estate prior to any activity associated with the Project that may disturb these sites (some of this work has already been completed):
  - Site No. 1 (RHC including its immediate setting)
  - Site No. 2 (woolshed site)
  - Site No. 3A (silo site)
  - Site No. 4 (northwest paddock)
  - Site No. 6 (brick-lined well site)
  - Site No. 13 (linear stone feature)
  - Site No. 17 (former farm site)
  - Site No. 20 (former farm site)
  - Site No. 21 (former farm site)
  - Site No. 27 (Ravensworth Farm site)
  - Site No. 27A (Ravensworth Farm dairy)
  - Site No 34 (Hebden Public School site)
  - Landscape Groups 1, 2, 3 and 4
  - Historic dams: D1 to D14
  - Modified historic dams: Dma to Dmf

- Hebden Road (within the Project Area)
  - Yorks Creek (within the Project Area)
- b) An updated scope of works for the stabilisation of the Hebden Public School building (Site No. 34).
- c) Detailed designs that are to be implemented for the diversion of Hebden Road and Yorks Creek.

## 2) Heritage Management Plan Requirements for Ravensworth Homestead Complex

- a) A program and description of the measures/procedures that would be implemented for the relocation of the Ravensworth Homestead Complex (RHC) including:
- i. Engagement of suitably qualified persons, including an experienced conservation architect, heritage landscape architect, historical archaeologist and Aboriginal archaeologist to work with the consultant team throughout the design development, contract documentation and construction stages of the project in relation to the RHC.
  - ii. Evidence and details of the above commissions on the above terms are to be provided to the Planning Secretary prior to commencement of any relocation work at the Place. These specialists are to sign off the completed project as being in compliance with the development consent prior to the issue of an Occupation Certificate or its equivalent or the commencement of use, whichever is the earlier.
  - iii. Compilation and recording of all archival records, research and recording material including historic photographs, reports, maps, plans, architectural and archaeological drawings etc. relating to the RHC including archaeological investigations.
  - iv. All of the above records are to be held by the Applicant and made reasonably available to the public for research purposes. A copy of measured drawings and details and a copy of archival photography of the pre-move configuration of the RHC prepared in accordance with the guidelines of the Heritage Council of NSW (largely already prepared, refer to *Appendix 23b: Measured and Conjectural Drawings*) is to be provided to the Singleton Public Library local history collection.
- b) Development of archaeological programs in accordance with the recommendations contained in *Ravensworth Homestead Complex and Surrounds: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands*, Casey & Lowe, 2019.

## 3) Interpretation Plan

- a) An Interpretation Plan to a nominated standard including an Implementation Strategy for the relocated RHC in the context of the Relocation Site. The Plan and Strategy should include the following:
- i. Restoration and reconstruction opportunities (both built and in the future possible) for the buildings of the relocated RHC.
  - ii. Display and storage proposals (on and/or off-site) for historical archaeological relics salvaged from the Core Estate Lands (including the RHC) during the required salvage archaeological investigations associated with this approval.
    - In the case of Option 1 (Ravensworth Farm), the proposals are to include the use of the Ravensworth History Building located within the adapted Men's Quarters of the relocated RHC.
  - iii. Preparation of detailed 3D digital recording of the exterior and interior of the existing RHC and development of a digital interpretation of the Ravensworth Homestead Complex for public viewing and research purposes.

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### 4.3.2. Recommendations Relating to the Ravensworth Farm Recipient Site (Option 1)

In the event that 'Ravensworth Farm' (Option 1) is preferred by the Consent Authority, we are advised that, approval for this relocation option would be included as part of the SSD 9349 development consent and would require no further statutory approvals as all necessary environmental assessments for this option have been completed as part of the current SSD 9349 application.

The below are recommendations for the Consent Authority should approval be granted under the SSD 9349 consent to relocate the RHC to Ravensworth Farm.

#### 4.3.2.1. Heritage Management Plan Requirements

Prior to the commencement of any works relating to relocating the RHC, the applicant submits a Ravensworth Heritage Management Plan to the satisfaction of the Planning Secretary. This plan should include the following for managing the heritage aspects of the Project:

- a) Development of a relocation methodology that includes:
  - i. Detailed designs and specifications for the re-assembling of the buildings of the RHC to match their original (existing relative) configuration to be generally in accordance with the adaptation plans, drawing nos. 123800/SK106/J, SK109/E, DK110/D, SK111/B and SL112/E prepared by Lucas Stapleton Johnson & Partners, dated August and October 2019 (refer to *Appendix 23g: Conceptual Adaptation Plans*).
  - ii. Structural and stabilisation works, both prior to and post relocation with structural certification;
  - iii. Details of the proposed new footings for the relocated buildings at the Relocation Site, with structural certification;
  - iv. Details for the introduction and connection of all needed services (electricity, water, sewer, communications, stormwater);
  - v. Details of landform modification, civil works and hard and soft landscape works to the Relocation Site and its setting. Landscaping work is to be generally in accordance with Landscape Plans LP 01-07, prepared by Geoffrey Britton, dated 12th June 2019 (refer to *Appendix 23g*).
- b) Proposed plans/strategies for the management, use, treatment and maintenance of the relocated buildings and adjacent landscape. These are to include:
  - i. Details of the entity that would be responsible for the management, use, treatment and maintenance of the relocated buildings and adjacent landscaping (the new place)
  - ii. A management plan for the management, use, treatment and maintenance of the relocated buildings and adjacent landscaping.
  - iii. Further details of the initial commitment of the Applicant to fit out and use the relocated RHC for mine offices and for staff training.
  - iv. Details, if any, of any fund to be established to facilitate the maintenance of the RHC in perpetuity and how it is proposed to administer that fund.
- c) Proposed conservation measures including:
  - i. Detailed designs and schedules of finishes to be implemented for the restoration, reconstruction and adaptation works for the proposed use of the Ravensworth Homestead Complex as mining offices and training facility. These designs are to be generally in accordance with drawing nos. 123800/SK106/J, SK109/E, DK110/D, SK111/B and SL112/E prepared by Lucas Stapleton

Johnson & Partners, dated August and October 2019 (refer to *Appendix 23g: Conceptual Adaptation Plans*).

- ii. Technical specifications to be implemented for all new materials, fittings and fixtures to be introduced to the buildings of the RHC to accommodate the proposed new use/s.
  - iii. Schedule to be implemented of colour schemes and other decorative finishes to be introduced to the buildings of the Ravensworth Homestead Complex, based on physical and/or documentary evidence of appropriate colour schemes for colonial farm buildings.
  - iv. Details of any floodlighting, BCA upgrades, wet area fitouts, needed or proposed.
- d) An Implementation Strategy that includes:
- i. Use of the Men's Quarters building to store and display the history (Aboriginal and historical) of Ravensworth Estate and the associated building group and select artefacts salvaged from the Core Estate Lands. This building would be reasonably accessible to the public by arrangement.
  - Whilst in Glencore control/ownership, public access would be provided to the relocated RHC upon reasonable request.

#### 4.3.2.2. Rehabilitation, Final Land Use and Mine Closure Plan Recommendations

As part of mine rehabilitation, final land use and mine closure planning the following should be included for managing heritage aspects to the satisfaction of the Planning Secretary, the object being to achieve a viable new use for the RHC and an appropriate adjustment of the building fabric and landscape setting to suit a new use:

- a) A management strategy, detailed designs and planting schedules for the removal and rehabilitation of the proposed MIA to ensure an optimum setting for the RHC following mine closure, to the satisfaction of the Secretary, DPIE.
- b) Update of the Rehabilitation Security Deposit to include:
  - i. Rehabilitation of Glendell Pit Extension overburden emplacement areas in accordance with Mining Operations Plan/Rehabilitation Management Plan
  - ii. Landscaping within the visual catchment (Project Area) generally in accordance with Landscape Drawings nos. LP01-07, prepared by Geoffrey Britton, dated 12th June 2019 (refer to *Appendix 23g: Conceptual Landscape Plans*)
  - iii. Removal of the MIA and rehabilitation of MIA site at completion of mining
- c) As part of mine closure planning:
  - i. Undertake a final land use assessment that considers alternate uses for the homestead with regard to:
    - a. land use in the area at the time of mine closure including return to use as a farmstead with an attached landholding; and
    - b. the potential viability of any future enterprise.
  - ii. For the post-mining use identified for the homestead as part of the final land use assessment provide:
    - a. The entity that would be responsible for the management, use, treatment and maintenance of the relocated buildings.
    - b. A management plan for the management, use, treatment and maintenance of the relocated buildings and adjacent landscape including the implementation of the cyclical maintenance plan.



- c. Details of the proposed alterations of the buildings and the adjacent landscape to be carried out by the Applicant at the conclusion of mining to make the new place suitable to suit the new end use as agreed to by the Secretary, DPIE.
- d. Identify existing commitments to rehabilitate overburden sites located on Glendell's land on the periphery of the visual catchment. Make supplementary proposals for further visual mitigation.
- e. Update the Conservation Management Plan (as recommended at 4.3.2.3 below) and a proposal as to how it is to be implemented.

#### 4.3.2.3. Conservation Management Plan

Prior to the issuing of an Occupation Certificate or its equivalent or before the RHC buildings are occupied, whichever is the earlier, it is recommended that a Conservation Management Plan (CMP) is prepared and submitted to the satisfaction of the Planning Secretary and to be implemented for the future management, treatment, use and maintenance of the RHC and its immediate landscape setting.

It is recommended that the CMP is of a form and content as recommended in guidelines produced by the NSW Heritage Council and Australia ICOMOS and shall include a revised detailed fabric survey indicating the date and relative significance of all of the components and finishes of the buildings as relocated and the recommended cyclical maintenance schedule (refer to Item 4.3.2.2. c) ii. b. above).



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# Appendix A

## **Extract of the *Singleton Development Control Plan 2013***

**Part 2.19 Heritage Conservation**

**Part 2.20 Demolition of Heritage buildings or Contributory buildings**

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2. Plans should include plant details (i.e. species, whether the plants will be planted as tube stock or saplings, planted height, established height, root system details) and details of such things as planting beds, seats, fences, bollards, paving and edging materials.
3. Developments are required to be constructed in accordance with the landscaping plans approved for the respective development proposal.
4. Australian native plants tend to grow faster and require less attention than introduced species. Landscaping treatments should be designed to complement and retain existing vegetation as appropriate. Landscaping must not impact upon electricity wires or other utility infrastructure.
5. Landscaping should enclose or screen any rural buildings, having regard to fire safety requirements, to achieve:
  - retention of the rural character,
  - protection from prevailing winds and summer sun,
  - minimal visual impact on open areas, and
  - increased privacy for residents.

## 2.19 Heritage conservation

- (1) The objectives of this clause are as follows:
  - (a) to conserve the environmental heritage of the Singleton Local Government Area,
  - (b) to prevent the deterioration of the heritage significance of heritage items and heritage conservation areas,
  - (c) to ensure that the impacts of development on the heritage significance of heritage items and heritage conservation areas is adequately considered.
- (2) This clause applies to any development:
  - (a) on land on which a heritage item is located, or
  - (b) on land that is within a heritage conservation area, or
  - (c) on land that is within the vicinity of land referred to in paragraph (a) or (b).
- (3) Before granting development consent for a building (including external alterations and additions to an existing building), on land to which this clause applies, the consent authority should be satisfied that the development will not unreasonably impact upon the heritage significance of the heritage item or heritage conservation area concerned.
- (4) The consent authority may, before granting consent to development on land to which this clause applies, require a Statement of Heritage Impact to be prepared by a suitably qualified heritage professional who is registered on the [NSW Office of Environment and Heritage Consultants Register](#). The Statement of Heritage Impact must:
  - (a) assess the extent to which the development would affect the heritage significance of the heritage item or heritage conservation area,
  - (b) be prepared in accordance with relevant [State government guidelines](#) for the preparation of Statements of Heritage Impact,
  - (c) be consistent with the principles of the [ICOMOS Australia Burra Charter](#),
  - (d) if in a heritage conservation area, consider the impact that the development will have on the special features and characteristics of the heritage conservation area,

- (e) if the development affects a heritage building, consider the built form elements, and
  - (f) consider the effect of the development on the heritage significance of the item or conservation area concerned.
- (5) The Council may prepare guidelines to inform decisions regarding building form elements of heritage items. The consent authority must have regard to such guidelines, when considering changes to the built form elements of heritage items.
- (6) Development consent should not be granted for the removal of a tree within a heritage conservation area or on an allotment containing a heritage item unless the consent authority is satisfied that:
- (a) the removal of the tree will not unreasonably impact upon the heritage significance of the heritage item or heritage conservation area concerned, or
  - (b) the condition of the tree is considered dangerous and the dangers cannot be overcome by alternative reasonable and practical means, or
  - (c) the removal of the tree is justified either on technical or legal grounds according to the circumstances of the case.
- (7) Applications for development to which subclause (6)(b) applies, must be supported by a tree hazard assessment report prepared by a suitably qualified arborist. The report must:
- (a) include a detailed assessment methodology,
  - (b) address the nature of the identified hazard,
  - (c) include a detailed risk assessment, and
  - (d) provide details of any alternative measures available to mitigate the danger.

- Notes.**
1. The [ICOMOS Australia Burra Charter](#) is generally accepted by National, State and Local Government Authorities and heritage conservation practitioners as providing a common set of definitions, principles and procedures for the care and management of Cultural Heritage resources. The ICOMOS Australia Burra Charter should be referred to when proposing to carry-out heritage works.  
  
Emerging from the principles of the [ICOMOS Australia Burra Charter](#) are four fundamental principles which should guide all conservation works:
    - Do as much as is necessary and as little as possible,
    - New work should be clearly distinguishable from original fabric,
    - New work should not adversely impact on original fabric, it should be inserted and/or attached in such a way that it is reversible, leaving original fabric in "as found" condition, and
    - Restoration work should never be based on guesswork but on careful research of the building itself and documentary sources.
  2. The [NSW Heritage Manual](#) contains guidelines for the preparation of Statements of Heritage Impact.
  3. In circumstances where removal of a tree within a heritage conservation area or on an allotment containing a heritage item cannot be avoided, consideration should be given to replacing the removed tree with a tree which is compatible with the heritage character of the heritage site and/or heritage conservation area.
  4. Tree hazard assessment reports should be prepared by a minimum Level 5 (Australian Qualification Framework) arborist that has no arrangements to actually remove the subject tree or vegetation.

## 2.20 Demolition of heritage buildings or contributory buildings

- (1) The objectives of this clause are as follows:
  - (a) to conserve the environmental heritage of the Singleton Local Government Area,
  - (b) to conserve the heritage significance of heritage items and conservation areas, including associated fabric, settings and views.
- (2) This clause applies to development for the purpose of demolition on land:
  - (a) on which a heritage item is located, or
  - (b) that is within a heritage conservation area, or
  - (c) that is within the vicinity of land referred to in paragraph (a) or (b).
- (3) Development consent should not be granted to demolish a building on land to which this clause applies unless the consent authority is satisfied that:
  - (a) the building does not add to the character and heritage significance of the conservation area/heritage item, or
  - (b) the building or item has been determined by a structural engineer to be unsafe, or
  - (c) conservation of the building is unreasonable in the circumstances of the case.

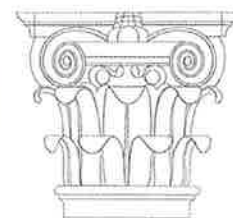
- Notes.**
1. The demolition of a heritage item or contributory building within a heritage conservation area is contrary to the the intent of the listing and should be avoided.
  2. If the structural capability of the building or item is in question, a report prepared by a suitably qualified structural engineer is required. A heritage impact assessment undertaken by a suitably qualified heritage professional who is registered on the [NSW Office of Environment and Heritage Consultants Register](#) must also be included. An archival recording of the building or item could be required where demolition is the outcome.

## 2.21 Earthworks and retaining

- (1) The objectives of this clause are as follows:
  - (a) to avoid the need for excessive cutting and filling,
  - (b) to encourage building design to work with the natural topographical conditions of the site,
  - (c) to encourage construction techniques which provide opportunities to minimise cut and fill.
- (2) This clause applies to development involving earthworks on any land to which this Plan applies.
- (3) Development consent should not be granted for earthworks or earth retaining measures that would lessen the structural integrity of any adjoining or adjacent building, retaining measure or service infrastructure.
- (4) Development consent should not be granted for retaining walls greater than 600mm in height, within 1m of the lot boundary, unless the consent authority is satisfied that:
  - (a) the design of the retaining wall incorporates suitable drainage measures, and

Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law, F.R.A.I.A.  
Registered Architect No. 4032 Nominated Architect  
Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728  
*Associate:*  
Kate Denny, B.A., M.Herit. Cons.

**LUCAS  
STAPLETON  
JOHNSON**



LSJ Heritage Planning & Architecture

## CURRICULUM VITAE

### IAN STAPLETON

Nominated Architect for Lucas Stapleton Johnson & Partners Pty Ltd

B.Sc.(Arch.), B.Arch., Grad. Dip. Env. Law, Sydney, F.R.A.I.A.

Born: Orange, New South Wales, 1951

Educated : Wolaroi College (now Kinross), Orange, NSW (Dux of School, 1969)  
University of Sydney graduating:  
B.Sc.(Arch.) with 1st class honours in 1974  
B.Arch. with 1st class honours in 1976

#### Personal Awards include:

Arthur Baldwinson Memorial Prize (Australian architectural history), 1973

Board of Architects Prize, 1975

RAIA (NSW) Adrian Ashton Award for Architectural Journalism, 1983

National Trust of Australia (NSW), Voluntary Service Medallion, 2001

#### Employment History:

Employed in Sydney in Government Architect's Office 1976-77

Employed by Fisher Lucas, Architects 1977 - 1981, Associate Partner 1979

Associate Partner Clive Lucas Pty Ltd 1981 - 1983

Director Clive Lucas & Partners Pty Ltd 1983 - 1988

Director Clive Lucas, Stapleton & Partners Pty Ltd April 1988 to June 2016

Director Lucas Stapleton Johnson & Partners Pty Ltd July 2016 to date

#### Registrations & Memberships:

Registered as an architect in NSW 16th October 1979 and enrolled in the Division of Chartered Architects on 1st December 1983, Reg. No.4032

Registered as an architect in Tasmania and Victoria, Reg. No. 4219

Registered as an architect in Queensland, Reg. No. 4109

Fellow of the Royal Australian Institute of Architects, member No.646

Life Member of National Trust of Australia (NSW)

Member of Australia ICOMOS

#### Architectural conservation projects include:

- |   |  |
|---|--|
| - Glenlee House, Menangle Park, NSW (1823)                      | RAIA Merit Award 1979                      |
| - Housing at Woolloomooloo, Sydney (1850s-1910s)                | RAIA Merit Award 1980                      |
| - Willandra, Ryde, Sydney (1840s)                               | RAIA Merit Award 1981                      |
| - Junior Medical Officer's House, Port Arthur, Tasmania (1840s) | RAIA Merit Award & L. Macquarie Award 1983 |
| - Pitt Street (Congregational) Church, Sydney (1841)            | RAIA Merit Award 1984                      |
| - Victoria Barracks, Paddington (1840s-1920s)                   | RAIA Merit Award 1985                      |
| - Commandant's Hs., Port Arthur, Tas. (1830s-60s)               | RAIA Merit Award 1986                      |
| - Boronia Restaurant, Mosman, Sydney (1886)                     |  |
| - The Hermitage, The Oaks, NSW (1841)                           | RAIA Merit Award 1987                      |
| - Kirribilli House, Sydney (1856), Stage I                      |  |
| - Her Majesty's Theatre, Ballarat, Victoria (1874-1905)         |  |



- Minter Ellison Building (old MLC Building), Sydney (1938) (foyers)	BOMA Certificate of Merit Award, 1991
- The Edward Winter House, Telopea, Sydney (Walter Griffin, 1935)	
- Blackdown Homestead, Bathurst, NSW (1823)	
- The Swan Brewery, Perth, WA (1879) (quality control)	
- The Merchant's House, The Rocks, Sydney (1848)	
- The Palmhouse, Royal Botanic Gardens, Sydney (1912)	
- Sydney GPO, No.1 Martin Place, Sydney (from 1864)	State MBA Award, Entertainment/Hospitality, 2000; PCA (NSW) Rider Hunt Award 2001; API Development & Heritage Awards, 2001
- Wyoming, Balmain, Sydney (1881)	
- Woolloomooloo Finger Wharf, Sydney (1911-15)	Waterfront Centre USA, Annual Top Honor, Excellence on the Waterfront, 2000; State MBA, Excellence in Construction Award, 2001
- Macleay Museum, Sydney (1887) (exterior works)	
- St. John's, Darlinghurst (1858 & 1886) (stone spire conservation)	National Trust of Australia (NSW) Heritage Award, 2002
- Wesley College, University of Sydney (1916), fire safety works	
- The Women's College, University of Sydney (1892, John Sulman)	
- Walsh Bay Redevelopment (1900-1920)	RAIA Lloyd Rees Award, 2005 RAIA Walter Burley Griffin Award, 2005
- Four historic glasshouses, Royal Botanic Gardens, Sydney (1898 – 1908)	
- Muritai, Cremorne, Sydney (1909, Waterhouse and Lake)	
- Redstone (Winter House), Dundas, Sydney (1935, Walter Griffin)	
- The Briars, Woolstonecraft (1914, Donald Esplin)	
- Vet Round House, University of Sydney (1920, Leslie Wilkinson)	National Trust of Australia (NSW) Conservation Award, 2012
- Restoration and rejuvenation of Sir Donald Bradman's Boyhood Home, Bowral NSW (1890)	National Trust of Australia (NSW) Joint Top Conservation Award, 2013 Wingecarribee Shire Council Heritage Award (Overall Winner), 2013
- Bronte House (c.1845, Mortimer Lewis)	AIA Architecture Award (Conservation), 2015
- Restoration Waverley Cemetery gates	National Trust of Australia (NSW), Highly Commended, 2018
- Restoration of Junior School Administration Building, St Catherine's School, Waverley	Waverley Heritage & Design Awards – shared Commendation, 2019
- Restoration of Roseneath, Parramatta (c.1837)	
- Restoration and adaptation of Headingley, Woollahra (1939, Leslie Wilkinson)	
<b>New construction projects include:</b>	
- Bennett Residence, Bayview, NSW (1999)	State and National MBA House of the Year, Open Category, 2000

Currently heritage architect for Figtree House, Hunters Hill (1830s) and Ravensworth, Singleton, NSW (c.1830).

**Special Projects/Appointments include:**

- Consultant to the Heritage Council of Western Australia for the brokering of the Heritage Agreement for the Swan Brewery, Perth, 1993-4
- Consultant to the NSW Heritage Office for statutory approvals for the Parramatta Rail Link Project, 2003.
- Consultant to Heritage Office of Queensland for Pioneer Council Chambers, Mackay (1935, Harold Brown, architect), 2008 and 2010.
- Reference committee to Sydney City Council for Commonwealth Bank Building (Money Box Bank), Sydney, 2008 and 2010.
- Consultant to University of Sydney for refurbishment of the Fisher Library, 2012-13

**Conservation Reports include:**

- Mulgoa Valley, NSW
- Victoria Barracks, Sydney
- Kirribilli House, Sydney
- Kingston and Arthur's Vale Historic Area (KAVHA), Norfolk Island
- The Treaty House, Waitangi, New Zealand
- Booloominbah, University of New England, Armidale, NSW
- The Swan Brewery, Perth
- Maatsuyker Island, Barrenjoey, and 15 other Australian light stations
- Bondi Pavilion, Sydney
- Woolloomooloo Finger Wharf, Sydney
- Walsh Bay Redevelopment Area, Sydney
- The Strand Arcade, Sydney
- Macquarie Lighthouse, Sydney (updated 2018)
- Snapper Island, Sydney
- Macleay Museum, University of Sydney
- Rose Cottage, Wilberforce, NSW
- Assessment of 23 contemporary houses in Woollahra Municipal Council area for heritage listing, Fisher Library, University of Sydney
- Cabarita Federation Pavilion, Cabarita, NSW
- University of Sydney, Camperdown and Darlington Campuses
- Many houses in Millers and Dawes Point Village Precinct, Sydney
- Double Island Point, Booby Island and Goods Island Lighthouses, Queensland
- General Post Offices, Sydney and Brisbane (with Kate Denny)
- Ravensworth, Singleton, NSW (with Kate Denny)
- 24 Cranbrook Avenue, Cremorne, NSW (Edwin Orchard, 1919, with Kate Denny)
- Parramatta Opportunity Sites, 2019 (with Kate Denny)

**Heritage Impact Statements for alterations include:**

- Igloo House, Sydney (1953), Harry Seidler architect
- Brett and Wendy Whiteley House, Sydney (1908)
- Woolloomooloo Finger Wharf (1915)
- Our Lady of Mercy College, Parramatta (from 1840)
- Roseneath, Parramatta (c.1837)
- Norwood, Goulburn (c.1837)

**Expert Witness engagements include:**

- St. John's, Paddington, Sydney (from 1842), Henry Robertson and David McBeath architects, for South Sydney Council
- Joylen (Lyon & Cottier House), Balmain, Sydney (1880s), for Leichhardt Council
- Strathmore, Cremorne Point, Sydney (1915), Edwin Orchard architect, for North Sydney Council
- Villa Floridiana, Hunters Hill, Sydney (1850s), Jules Joubert, for Hunters Hill Council
- Parklands, Blackheath, NSW (1878), John Pope estate, for Chase Properties

- St Kieran's, Bellevue Hill (1905), Maurice Halligan architect, for Woollahra Municipal Council
- Forrest Hill precinct, Vic, for City of Stonnington, Victoria
- Bidura Metropolitan Remand Centre, Glebe, NSW, Edmund Blacket architect, for City of Sydney Council
- 24 Cranbrook Avenue, Cremorne, NSW (Edwin Orchard architect) for North Sydney Council

**Participations and Appointments include:**

- 1975-78, tutor in graphic communication, School of Architecture, University of Sydney.
- Since 1980, visiting lecturer at various Sydney schools of architecture and building.
- In June 1980 was participant in UNESCO ICOMOS Historic Quarters Seminar and Training Course in - Czechoslovakia (historic town conservation).
- In July 1985 participated in Attingham Summer School in the U.K. (British country houses).
- In 1988 guest lecturer for UNESCO and ICOMOS at Regional Training Seminar for Cultural Personnel in Asia and the Pacific, Tokyo, Nara and Kyoto, 8 - 21 November 1988.
- In 1992 was conference convenor for Australia ICOMOS, international committee meetings, events and conference: "Whose Cultural Values?", 14-22 November 1992.
- In 1995 was co-organiser of Australia ICOMOS, Workshop on World Heritage Criteria for Associative Cultural Landscapes, 27-29 May 1995.
- In 2000 was conference convenor for the National Trust of Australia (NSW) conference "Adaptive Re-use, Creativity and Continuity", Sydney 9-10 November 2000
- Expert Member, Waverley Council Local Planning Panel, 2013 - to date
- Expert Member, Inner West Council Local Planning Panel, 2014 - to date
- Expert Member, Strathfield Council Local Planning Panel, 2017 - to date
- Expert Member, Lane Cove Council Local Planning Panel, 2108 - to date
- Expert Member, Ryde City Council Local Planning Panel, 2018 - to date
- Expert Member, Parramatta Council Local Planning Panel, 2017 - 2018

**Publications include:**

*Architects of Australia* (Bruce Dellit & Emil Sodersten), Macmillan, 1981 (co-author)  
*The Sydney Morning Herald*, Articles on restoration and architecture, 1981 - 1990  
*How to Restore the Old Aussie House*, Flannel Flower Press, Editions: 1983, 1991 & 2008  
*Colour Schemes for Old Australian Houses*, Flannel Flower Press, 1984 (co-author)  
*More Colour Schemes for Old Australian Houses*, Flannel Flower Press, 1993 (co-author)  
*Australian House Styles*, Flannel Flower Press, Editions: 1997 and 2010 (co-author)  
*The Illustrated Burra Charter*, Australia ICOMOS, 1992, co-project manager  
*New Taxation Incentives in Australia*, International Symposium: The Heritage and Social Changes, ICOMOS Bulgaria, October 1996  
*Australian Lighthouses*, Historic Environment, Vol.12, numbers 3 & 4, 1997  
*Thumbs up for the Finger Wharf*, Sydney Morning Herald, 7th August 2000  
*Recycling Heritage - Or Re-Vitalising*, Reflections, October-January 2001  
*Edwin Roy Orchard, Architect, Rediscovered*, Reflections, May-July 2003  
Contributions to *Encyclopaedia of Australian Architecture*, Cambridge University Press (4 entries), 2008  
*Sydney GPO – Ten years on*, Architecture Bulletin, November/December 2009  
*The Veterinary Round House at the University of Sydney*, Trust News Australia, August 2013  
*Restoration of Sir Donald Bradman's Boyhood Home*, National Trust Magazine, May-June 2014  
*Housing a Legend*, Inside History, January-February 2014  
*The Trust's Early Role In Saving Bronte House*, National Trust Magazine, August-October 2016

**Professional Committee Involvements include:**

- Chairman, Historic Buildings Committee of the RAIA (NSW Chapter) 1983 - 1988
- Councillor of the RAIA (NSW Chapter), 1983 - 1988, 1990 - 1994
- Joint researcher/author and co-ordinator of the *List of 20th Century Buildings of Significance* of RAIA (NSW Chapter), 1978 - 1988
- President Australia ICOMOS (International Council on Monuments and Sites), 1992 - 1994, executive committee member 1982 - 1988, 1990 - 1995, Honorary Secretary, 1986 - 1987, Vice President 1994 - 1995
- Member Architects Advisory Committee of the National Trust of Australia (NSW), 1986 - 2008
- Member of the Technical Advisory Group on Materials Conservation of the Heritage Council of NSW, 1983 - 1993

- Member of the National Advisory Committee of the Tax Incentives for Heritage Conservation Scheme (Department of Communications and the Arts), 1995 to 1999
- Member Australia ICOMOS committee to review the *Burra Charter*, 1996 - 1999.
- Member Wingecarribee Shire Council Heritage Advisory Committee, 2011 to date.

**September 2019**

## Appendix 23e

### Ravensworth Homestead Relocation Justification Report





COAL ASSETS  
AUSTRALIA

GLENCORE

*Glendell Continued Operations Project*

# Ravensworth Homestead Relocation Justification Report

**Status:** Issued for Exhibition

**Version:** 0

**Date:** 25.11.2019

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# 1 Introduction

## 1.1 Purpose

This report has been prepared to provide the justification for relocation of the Ravensworth Homestead, in support of the Glendell Continued Operations Project (the Project). This report is intended to supplement the Mine Planning Options Report, which demonstrates the extent of economically viable coal reserves.

This report is one of a number of heritage reports contained in Appendix 23 of the Project Environmental Impact Statement (EIS) that includes:

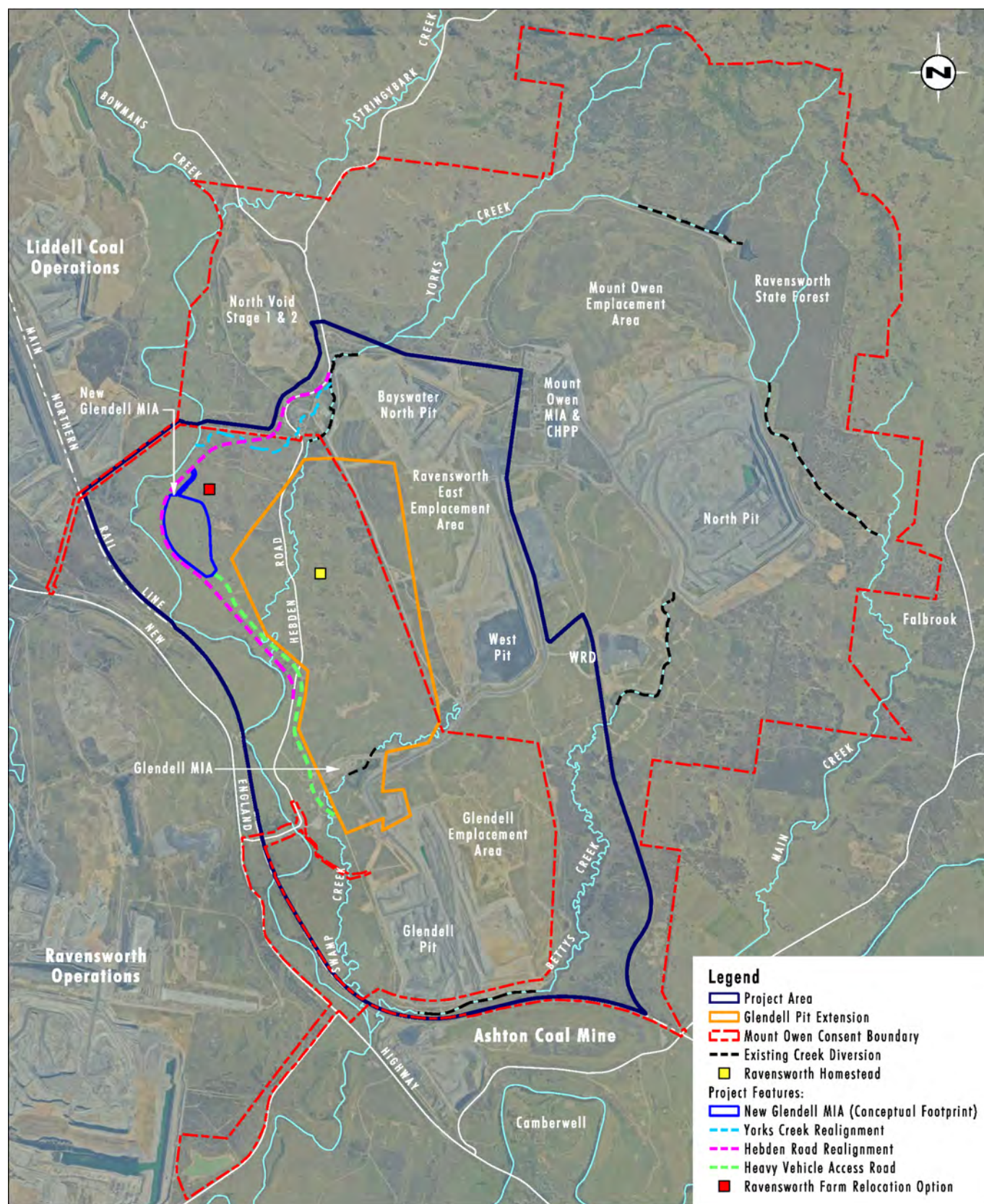
- Appendix 23a – Heritage Analysis and Statement of Significance - Ravensworth Estate and associated building group
- Appendix 23b – Ravensworth Homestead Measured and Conjectural Drawings
- Appendix 23c – Ravensworth Homestead Complex: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands
- Appendix 23d – Statement of Heritage Impact
- **Appendix 23e – Relocation Justification Statement**
- Appendix 23f – Ravensworth Homestead Relocation Option Identification and Assessment
- Appendix 23g – Ravensworth Farm Proposal
- Appendix 23h – Broke Village Proposal
- Appendix 23i – Hebden Public School Preliminary Scope of Works

## 1.2 The Project

The Project proposes the extension of Glencore's existing Glendell open cut mine to the north into mining tenements owned by Glencore and its joint venture partner (refer to **Figure 1**). The proposed extension would extract an additional 135 million tonnes (Mt), approximately, of run-of-mine (ROM) (which is unprocessed) coal, extend the life of mining operations at Glendell to approximately 2044 and provide ongoing employment opportunities. ROM coal from the proposed Glendell Pit Extension will continue to be processed by the adjacent Mount Owen Coal Handling and Preparation Plant (CHPP) and associated infrastructure, and utilise the Mount Owen Rail Loop for coal transportation.

The Project will necessitate the realignment of a section of Hebden Road, realignment of Yorks Creek and the relocation of Ravensworth Homestead to a new site. The Project will also require the construction of a new mine infrastructure area (MIA) including new bathhouses and offices for the mining personnel, stores, refuelling facilities and a maintenance workshop for the mining equipment fleet, along with associated infrastructure and services.

The Project will contribute substantial revenue to the NSW government with direct economic benefits of approximately \$963M (undiscounted, \$398M in NPV terms) in the form of company tax (total of \$523M of which \$167M is attributable to NSW), royalties (\$710M) and payroll tax (\$86M). At its peak production, the mine will provide employment opportunities for up to 690 skilled, full time, local personnel, and will provide substantial flow on effects through expenditure with contractors, suppliers and other existing businesses who rely on the mining industry in the Hunter Valley.



**Figure 1 - Glendell Continued Operations Project**

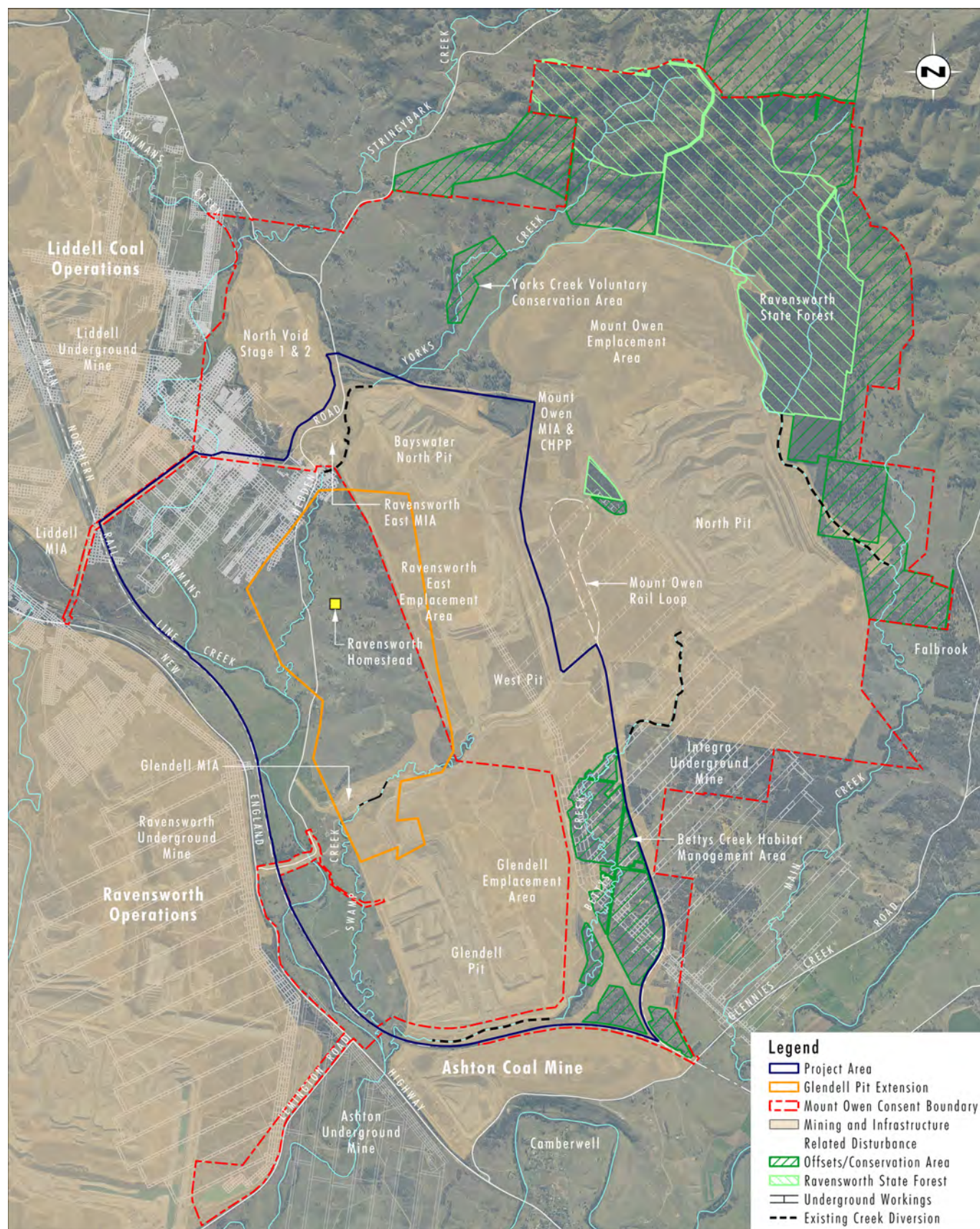
## 2 Mining Context

The proposed mining area represents one of the few remaining economic open cut coal resources in the Greater Ravensworth area with current and previous open cut and underground mining surrounding the Project area as shown in **Figure 2** and described below:

- Previous mining operations include open cut mining immediately to the north and east, (Swamp Creek and Ravensworth East mines), and underground mining to the north-west (Liddell, Cumnock and Foybrook underground mines).
- Current mining operations include open cut mining immediately to the north, south and east (Bayswater North Pit, Glendell and Mount Owen mines) and underground mining to the south and east (Ashton and Integra underground mines).

The Main Northern Rail Line and the New England Highway, along with Bowmans Creek and associated alluvial floodplains lie to the south and west of the proposed mining area. It is not proposed to mine through these features, beyond which, previous open cut mines include the Ravensworth and Narama open cut mines and a previous underground mining operation to the south west being the Ravensworth Underground mine. Further west is the current Ravensworth North open cut mine. These surrounding mining operations have already removed the coal resource or are currently extracting the resource.



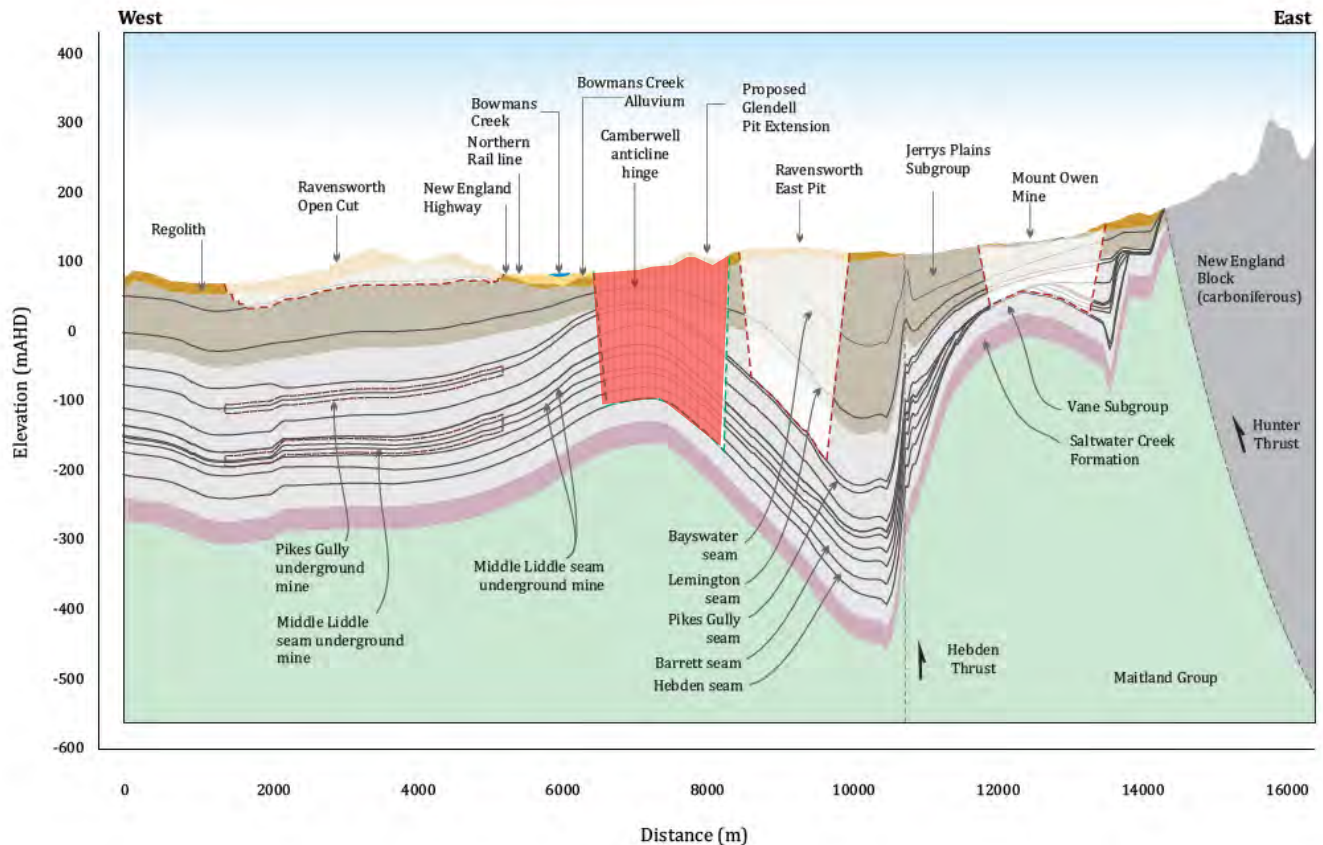


**Figure 2 - Mining Operations and Infrastructure in Ravensworth Area**



## 2.1 Proposed Mining

Glencore proposes to extend the existing Glendell open cut mine to the north into one of the few remaining economically viable open cut coal resources in the Greater Ravensworth area. **Figure 2** and **Figure 3** illustrate the existing geological and surface infrastructure constraints, including the extent of previous and current coal extraction.



**Figure 3 - Geological Constraints**

The open cut mining proposed would progressively backfill most of the open cut void with overburden, as is typical of open cut mining in the Hunter Valley. This will require removal of the existing Glendell MIA and construction of a new facility, relocation of a section of Hebden Road and Yorks Creek, relocation of public and private utilities, construction of water management infrastructure, and relocation of Ravensworth Homestead, which will incur a project capital cost of around \$230M. Additional capital spend will be required for the purchase and replacement of mining equipment throughout the mine life.

## 3 Ravensworth Homestead

### 3.1 Historic Significance

Ravensworth Homestead is a remnant of an early pastoral station that retains evidence of the colonial period of development including in the property boundaries, the road alignments, the Homestead building group and associated site features, the historical archaeological sites and remnant landscape features. The Ravensworth estate is associated with a number of notable historic persons, including Dr James Bowman, colonial surgeon, for whom the Homestead was constructed in c1832. Of high significance is the:

- Complex of early (colonial) Homestead buildings which are of high technical quality in design, stonework and carpentry;
- Rare house 'H' plan form and farmstead formal courtyard plan most probably designed by an architect or gentleman architect; and
- Archaeological potential of the estate, especially for convict-related archaeology.

Accordingly, Ravensworth Homestead is considered to have significant heritage value and is listed in Schedule 5 (Item No. 41) of the Singleton Local Environmental Plan (2013) as an item of local significance.

### 3.2 Current Setting

As evident from **Section 2**, mining operations dominate the land use in the Ravensworth area and surrounds. Glencore operates the Mount Owen Complex including the Ravensworth East, Glendell and Mount Owen open cut mines to the east, the Integra Underground operations to the south-east, Liddell Coal Operations to the north-west and Ravensworth Surface Operations to the south-west (refer to **Figure 2**).

The landscape and visual context of the area has significantly and dramatically changed since the construction of the original 'huts' and the current Homestead in the early nineteenth century.

The Ravensworth Homestead has been owned and managed by Glencore since 1997. Since then Glencore has invested in the restoration, conservation and ongoing maintenance of the Homestead buildings. In 2008-2009, Glencore completed significant repair and restoration works on the Homestead buildings that included structural stabilisation works, roof repairs and repointing of mortar joints.

In 2009, Glencore sought expressions of interest for the ongoing use and management of Ravensworth Homestead. Three parties registered an interest in the Homestead. However, rental of the property did not eventuate as the Homestead services (electricity, plumbing, heating, etc.) were considered inadequate for contemporary residential occupation purposes and the internal layout impractical.

The Ravensworth Homestead is inaccessible to the public in its current location. Glencore has facilitated visits to the Homestead as requested however there has been limited interest shown in accessing the site by the public and other interest groups with the last visit being by the Singleton Heritage Advisory Committee in October 2017. The buildings are not used and have remained vacant since the purchase of the property by Glencore. However, Glencore has voluntarily ensured that maintenance of the buildings has occurred over this period to prevent their deterioration, and where possible to preserve much of their current condition, as such they remain in relatively good repair.

## 4 Relocation of the Homestead

Various components of the Ravensthorpe Estate and the associated building group are considered historically significant. In recognition of this significance, combined with other factors detailed further in this report, the relocation of the Ravensthorpe building group to a new site is proposed. The relocation is required to allow recovery of the resource and would provide substantial benefits to the State and Federal Governments as well as people in the local area.

The Australia ICOMOS *Burra Charter* (2013), Article 9 (Location) states:

*‘Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.’*

In light of the principles within the Burra Charter, other heritage conservation philosophies, and given the heritage significance of the Homestead buildings, the relocation of the Homestead is considered a substantial mitigation measure that salvages the heritage values with a focus on recreating the Homestead in the most appropriate manner for a future useful life. Other options such as demolition were not considered appropriate given the heritage significance of the Homestead buildings, and if the Homestead is not relocated then the mine would not be able to be developed. In addition, parts of the site will be subjected to detailed archaeological investigation, recording and salvage as part of the relocation proposal.

Glencore formed the Ravensthorpe Homestead Advisory Committee (RHAC) to assist with its investigations and decision-making in regard to the relocation and options for the future use of the Homestead buildings. The RHAC is a community-based committee, chaired by an independent facilitator, and consists of former owners, local landholders, members of the local business sector and representatives from the local heritage community. The RHAC sees merit in the relocation as both a mitigation measure and to maintain and improve a useful community resource thus ensuring a useful next life for the Homestead.

In addition to the formation of the RHAC, Glencore has obtained input from specialist heritage consultants, contractors and advisors to ensure the relocation proposal meets the best possible professional standards. This has allowed Glencore to obtain as detailed an understanding of Ravensthorpe Estate and the associated building group in all of its elements. In addition, Glencore in consultation with the RHAC have investigated many relocation options and considered alternate methods for moving the buildings.

Detailed investigations of potential recipient sites have been conducted in consultation with heritage specialists and the RHAC. Assessment of each of the proposed options considered key matters such as land zoning, cultural heritage, planning constraints and hazards (e.g. flood prone areas and bushfire). Additionally, key attributes that are similar to the existing location such as proximity to creek, dam, land slope, vehicular approach and visual catchment have also been considered. Further, consideration was also given to the potential economic viability of each proposal with a view of avoiding the relocated Homestead becoming a stranded asset. These investigations assisted with the short-listing of potential recipient sites.

### 4.1 Attributes that are Worth Moving

From a conservation values point of view there would be little point in relocating the buildings if their heritage values were common and could be seen and experienced at numerous other places.

A key question is: are there heritage significant attributes of the Homestead that are worth moving?

In this case there are several attributes of the Homestead that are worth conserving and would be conserved by a relocation as follows:

1. As a marker for the place that is Ravensthorpe – this attribute is simply the ability of the building group, if relocated, to form a marker and confirm that the location in which it sits is that of the colonial and later 19<sup>th</sup> century place called Ravensthorpe, NSW. If the Homestead was merely demolished, no such marker would survive at or near the place to inform the public. This attribute would really only be conserved if the Homestead was relocated within the place that is considered to be Ravensthorpe. Notwithstanding, if the Homestead was relocated to a location other than Ravensthorpe, then the buildings would still hold some association with the place of Ravensthorpe though indirectly.



2. The H-shaped house plan – one of the attributes of high significance of the place is the H-plan of the Main house. As discussed in the Heritage Analysis and Statement of Significance report (Appendix 23a), this is thought to be the design of an architect or a gentleman architect influenced by the designs of Palladio and has art historical heritage value. Relocation would allow the conservation and interpretation of this feature of the Homestead and allow public appreciation of it.
3. The Farmstead Courtyard – as discussed in the Heritage Analysis and Statement of Significance report (Appendix 23a), the formal arrangement of the buildings around the farmstead courtyard is also of art/historical interest as it possibly was designed by or influenced by the gentleman architects Helenus and Robert Scott, noted colonial designers. The relocation of the Homestead would also conserve and interpret this configuration and allow public appreciation of it.

For the above reasons, Glencore's heritage consultants, Lucas Stapleton Johnson, are of the opinion that there are good heritage reasons that the relocation of the buildings is preferable to simply recording and demolition.

## 4.2 Methods of Relocation

This section briefly outlines the methods investigated to relocate the Ravensworth Homestead. Key aspects of the relocation methodologies are summarised below in **Table 1**.

Two options for relocating the buildings exist, namely, moving the buildings wholly intact (or in large intact sections) or dismantling and rebuilding the buildings at a new recipient site. Detailed analysis of the methods is contained within the Ravensworth Homestead Option Identification and Assessment Report (Appendix 23f).

Glencore considered the recording and demolition of the Ravensworth Homestead as a potential option (or mitigation measure of the Project). However, given the heritage significance of the Homestead complex, this was not considered appropriate and was assessed no further. Nonetheless, the option to dismantle and repurpose the materials, or some other alternative, remains a decision for the Consent Authority.

**Table 1 - Methods of Building Relocation**

Option	Method
<b>Intact Move</b>	<p>Involves the relocation of the buildings wholly intact (or in large intact sections) and requires pre-mobilisation works, design and foundation engineering, excavation of the buildings, placement of steel beams, and jacking and transferring the buildings onto dollies for transfer to the recipient site. Detailed investigations have confirmed that the buildings are able to be moved in this manner. Relocation will require a road corridor that is sufficiently wide enough with appropriate grade to enable the weight and size of each building unit to be transported.</p> <p>Constraints in the existing public road network (width, grade, fixed infrastructure, duration of road occupancy) limit the distance over which the buildings can be transported and subsequent recipient site options. Generally, the larger the building (or building section), the shorter the viable distance is that can be travelled.</p> <p>Heritage architects, Lucas Stapleton Johnson, and structural engineers, Mott MacDonald, have scrutinised the intact move methodology of the specialist move contractor and are satisfied that the buildings could successfully be relocated without significant damage.</p>
<b>Dismantle and Rebuild</b>	<p>Involves the dismantling of the Homestead stone by stone, transport and rebuilding at the recipient site. Some components such as roof trusses would be moved intact.</p> <p>The dismantle and rebuild method for moving the buildings removes the road network constraint that the intact move places on the buildings and allows for the buildings to be moved to recipient sites further afield (within economic and environmental constraints).</p> <p>Dismantling has a greater impact on the heritage fabric than an intact move however would enable the buildings to be positioned in a location that allows greater community access and would also allow the buildings to be repurposed to form a facility that meets a community need.</p>

## 4.3 Proposed Relocation Options

A range of relocation options have been investigated with consideration of sustainability, commercial viability, ability to retain heritage fabric and accessibility. Further details on the identification and assessment of options is included in the Ravensworth Homestead Relocation Option Identification and Assessment Report (Appendix 23f).

Two alternate relocation options are proposed for the Ravensworth Homestead, namely:

- Ravensworth Farm:
  - This option involves relocation of the complex of buildings to a Glencore-owned site situated within the original Bowman 10,000 acre land grant using the intact move methodology.
  - This option focuses on preserving the heritage values of the buildings and would see the buildings used by Glencore for administration purposes during mining.
  - Select plants, trees and landscape features from the existing Homestead garden and immediate surrounds would be incorporated into the landscape scheme.
  - At the completion of mining, the buildings would be sold with possible options including return of the facility to use as a private homestead with an attached landholding or an alternate use that suits future land use and interest in the area.
- Broke Village:
  - This option is a proposal by members of the Broke-Fordwich community and involves relocation of the complex of buildings to McNamara Park in Broke where they would have multi-purpose usage (administration and exhibition space, café and restaurant, cellar door/wine tasting, market space and space for annual events) and form the village square.
  - The buildings would be dismantled 'stone by stone' and then rebuilt at the new location.
  - This option provides a greater emphasis on placing the buildings in a publicly accessible location where they can be adapted to suit the intended end use and fulfil a community need.
  - Select plants, trees and landscape features from the existing Homestead garden and immediate surrounds would be incorporated into the landscape scheme.
  - The facility would be transferred to a new entity comprising members of the Broke-Fordwich community with financial benefits generated by the facility used for funding local community initiatives.

## 5 Relocation Justification

This section presents the justification for relocating the Ravensworth Homestead in order for the Project to proceed.

Through extensive consultation with heritage specialists, the RHAC and other stakeholders, it has been determined that the most desirable option, which achieves a balance between the conservation of heritage values and the economic benefits of the Project, is to relocate the Homestead to an alternative location for alternative use/s instead of being demolished or left in-situ with an unknown future. The RHAC formed the view early on that they wanted to avoid the less than ideal outcome that has resulted through the leaving of Wambo Homestead and Chain of Ponds Inn in-situ.

### 5.1 Economic Benefits

#### 5.1.1 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2017

Clause 15 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2017 (Mining SEPP) requires the consent authority of new mining developments to have regard to whether the proposal will be carried out in a manner that optimises the efficiency of resource recovery. In addition, the conditions of the existing Mining Lease CCL708 granted by the NSW Government (particularly CCL708 condition 3A), which applies to the Project area, impose statutory obligations on Glencore to make the most efficient use of the coal resources in the Project area. Both the Mining SEPP and conditions of the Mining Lease are in direct contradiction to the sterilisation of resources that would result if the Homestead was to remain in-situ and mining was undertaken either as closely as technically feasible from a blast management perspective, or, restricted to a significant distance from the Homestead.

##### 5.1.1.1 Resource Extraction Restrictions

Should the Ravensworth Homestead remain in-situ and mining is to progress to the north of existing operations, it would pose significant operational and economic constraints on the future mining operations.

In order to minimise structural damage to the buildings due to blast vibration, and to reduce the risk of potential impacts from blasting flyrock, it is likely that Glencore would have to implement significant constraints on blasting practices. This has the potential to introduce inefficient blast practices, increased mining costs and potentially reduced production rates, all of which result in a significant reduction in the financial viability of the mining operation.

Further, any potential exclusion zone could result in the sterilisation of around 80 million tonnes of coal, resulting in the loss of approximately \$420M (undiscounted) of direct revenue to the state through royalties. The life of the mining operation would be reduced by around 10 years, along with employment opportunities for around 690 personnel for that period and spend with local businesses.

##### 5.1.1.2 Geotechnical Constraints

If the Homestead was to be left in-situ and mining was to occur around the Homestead then a mine void would result to the east. Leaving the Homestead on a pillar could pose significant geotechnical constraints to maintaining the highwall stability around the Homestead. This is because the Homestead would be left sitting on strata that would be dipping into the mine void.

To mitigate these risks requires a highwall design with an increased geotechnical factor-of-safety, resulting in either further stand-off from the Homestead or reduced highwall batter angles and pit floor depth, both resulting in reduced recovery of the available coal resources.

### 5.1.2 Revenue

Relocation of the Ravensthorpe Homestead would provide a range of significant economic benefits that would be realized by allowing the Project to proceed in full. To this point, a detailed economic impact assessment is provided in the Project EIS. In summary, the proposed project would result in significant economic benefits to NSW and the Hunter region including:

- Directly contributing substantial revenue to the State of NSW through company tax (attributable to NSW), royalties and payroll tax in the order of \$963M (undiscounted, \$398M in NPV terms) over the mine life. With the Homestead left in-situ the loss of revenue to the state in terms of royalties alone is in the order \$420M (undiscounted).
- Additional flow-on economic benefits to the region and ongoing employment opportunities for approximately 690 skilled, full time local personnel.
- Capital expenditure on infrastructure of around \$230M is required to establish the Project, with much of this capital benefiting the state and region through construction workforce benefits and commercial benefits to local construction contracting businesses and suppliers.
- Substantial flow-on economic effects through 22 years of commercial benefits to a large range of equipment and service providers to the ongoing mining operation. Ongoing expenditure with local skilled contractors, suppliers and other existing businesses who rely on the Glendell operation is anticipated to total approximately \$100M per annum.

Refer to the Economic Impact Assessment (EY, 2019) for the Project for further information concerning these points.

### 5.1.3 Glencore Project Portfolio

Whilst the Project will make use of the existing CHPP infrastructure at the Mount Owen mine, there is a relatively high level of capital cost inherent in extending the existing Glendell mine that includes new infrastructure (in the order of \$230M) and mining equipment.

The high level of capital cost necessitates the development of the entire available coal resource within the proposed mining footprint to ensure that the Project is financially robust, and financially sustainable, in order to be well placed to compete on the international energy supply market into the future.

If the relocation of the Homestead cannot proceed and Glencore is required to consider alternative mine plan options (as raised in Section 5.2.1) that require the Homestead to be left in-situ, the alternative mine plans would result in the recovery of significantly reduced coal reserves and significantly reduced revenue and royalties to NSW.

Further, due to the relatively high level of capital cost required to establish the Project, the significantly reduced mine life and profitability of the Project may result in the Project not qualifying as a desirable investment for Glencore to pursue. This is particularly so in the context of Glencore's project portfolio in both NSW and Queensland, and internationally.

### 5.1.4 Summary

Glencore considers the Project an economically viable project for Glencore to pursue. The non-approval of the Project would result in sterilisation of significant coal reserves and loss of significant economic benefit to the State and region, as it is possible that Glencore would not pursue a smaller scale project, given the considerable capital investment required to continue the Glendell mining operation and the lower rate of investment return associated with a truncated mine plan.

Further, if the Homestead remains in-situ, when mining at Glendell (and more broadly the Mt Owen Complex) did finally cease, it is reasonable to conclude that the Homestead would not likely attract a new owner. Hence, the buildings would almost certainly continue to remain unused and unvisited in perpetuity and be both a financial and social burden on the locality and government.

## 5.2 Environmental and Social Benefits

The following are considered to contribute substantially to the environmental (heritage is an environmental matter in terms of the EP&A Act) and social benefits of relocating the Homestead (not exhaustive):

- Strong documented support for the relocation from the RHAC, particularly for options with community access opportunities, and also when compared to the impacts associated with leaving the Homestead in-situ.
- Maintenance of a social connection with Ravensworth Homestead, particularly for local residents of the area, should the Ravensworth Farm option be approved by the Consent Authority (often described as providing a 'sense of place'). This connection and 'sense of place' was identified through the Project's initial social impact scoping of issues with local landholders through face-to-face meetings and telephone discussions. Refer to the Social Impact Assessment (Umwelt, 2019) for the Project for further details.
- Opportunities for use of buildings is enhanced through internal refurbishments that are associated with relocation.
- Opportunities for community access, where previously there were none, is enhanced by positioning the buildings in a public location should the Broke Village relocation option be approved by the consent authority.
- Relocation is supported by the former owners of the Homestead, who are also members of the RHAC, which had been in the family for approximately 80 years.
- 'History' of site and broader region made available to community through interpretation work and results of historical investigations, partly already carried out and the desirable extensive archaeological investigations that would occur.
- Extended social benefits from increased mine life and associated employee and supplier benefits.

### 5.2.1 Salvage of Heritage Values

Heritage analysis completed to date indicates that the aesthetic and scientific values associated with the Homestead buildings can be and are worth salvaging. The archaeological resources of the site would be investigated, recorded and salvaged also, as deemed necessary.

A flow-on benefit from the salvage of these values is that it provides opportunity for the 'history' of the site and the broader region to be better understood and made available to the community through the results of the historical and archaeological investigations, and the publication of interpretive resources and reference material, to which Glencore is committed.

Key heritage values salvaged through relocation of the buildings include:

- Retention of the majority of the building fabric, if the Ravensworth Farm option is approved by the Consent Authority, and in both relocation options, retention of the house 'H' plan and farmstead layout attributes.
- On-going connection to original Ravensworth Estate land grant (if the Ravensworth Farm option is approved by the Consent Authority).
- Location in appropriate setting (a similar visual catchment) if the Ravensworth Farm option is approved by the Consent Authority.
- Scientific and education values realised through archaeological salvage and recording as well as training and development in specialist heritage building trades. These would not occur at all if the Project does not proceed. Consequently, the Project provides an opportunity to investigate historical archaeology associated with a colonial convict period premises.

## 5.2.2 Landscape and Setting Values

The notable colonial and late 19<sup>th</sup> century landscape context of the Ravensworth Homestead has been significantly modified, firstly through the impacts of land subdivision and sales and farming practices, and more extensively through the impacts of mining in the last 60 years. Only approximately 35 percent of the original 10,000 acre Ravensworth land grant remains undisturbed by approved mining activities and major infrastructure related works.

Views from the current Homestead and near adjacent areas include views of many current and former mining areas, which have significantly and dramatically altered the visual catchment from the present Homestead location compared to when the Homestead was built. Relocation of the Homestead to a new recipient site, for example closer to Bowmans Creek as proposed by the Ravensworth Farm option and therefore separated from mining and the final mine void by a natural hill, would greatly contribute to ensuring the Homestead remains in an appropriate semi-rural landscape setting with a similar visual catchment following the completion of the Project.

Accordingly it can be argued that the Ravensworth Farm option is desirable to retain the verisimilitude of the setting of the buildings however still has limited community access and reuse potential.

## 5.2.3 Re-use Opportunities

The relocation of the Homestead provides opportunity for re-use of the buildings. In its current location, the Homestead would remain vacant, be inaccessible to the public (without great and unlikely effort) and have no likely viable usage. As part of the Homestead relocation the buildings could be re-purposed to suit both interim and long term uses. Dependent on the recipient site, there could also be ongoing opportunities for the relocated Homestead and associated buildings to be accessible during mining.

A relocated Homestead also provides opportunities for a wider range of reuse options that would otherwise be constrained by mining. For instance, the Broke Village relocation option, which is a proposal by members of the Broke-Fordwich community, provides an opportunity for the buildings to be repurposed to produce a town centre in Broke that would provide additional recreational venues for residents as well as provide local employment opportunities and encourage enterprise growth.

Additionally, relocation of the buildings provides an opportunity to place the buildings on new engineered footings and undertake other structural remediation works and appropriate adaptation works that would otherwise not be undertaken if the buildings were to remain in-situ. These works would further extend the life of the buildings long into the future.

## 5.2.4 Summary

Relocation of the Homestead would enable the buildings to have a life into the foreseeable future and, depending on the relocation option determined, would make public access much more likely, and thus provide an on-going community benefit. The relocation could be viewed as providing a community value simply through extending the life of the buildings and providing greater certainty for the future use and maintenance of the buildings compared to them remaining in-situ.

For example, under a local intact move (Ravensworth Farm option), the Homestead would initially be integrated into the Glendell mine and used as an administration facility. A new owner would be found post-mining and the Homestead could be attached to remaining Bowmans Creek flats and other useful land making a potentially viable agricultural unit. This relocation option provides an opportunity to retain the majority of heritage attributes and values and landscape context.

For the Broke Village option, the Homestead would form a needed 'town centre' into the foreseeable future and offer a community-based use that is publically accessible.



## 5.3 Conclusion

There are significant disadvantages of leaving the Homestead in its current location including the imposition of inefficiencies on any future mining operation, the sterilisation of coal reserves and loss of significant revenue for the state of NSW, the reduction in economic benefits to the regional and state economies, the loss of employment opportunities for up to 690 personnel and the reduced revenue for mining support businesses in addition to the ongoing lack of public access and the questionable post-mining future for the Homestead.

Further, if the Homestead remains in-situ, when mining at Glendell (and more broadly the Mt Owen Complex) did finally cease, it is reasonable to conclude that it would not be likely to attract a new owner. Hence, the buildings would likely remain unused in perpetuity and be a financial burden to any landowner and potentially the State.

Whilst relocating the Homestead does incur the loss of some heritage values, the proposed mitigation measures would maximise the retention of many heritage values depending on the relocation option finally determined, and the relocation provides greater certainty for the future use and maintenance of the Homestead.

Finally, the relocation can be viewed as providing a community benefit simply through extending the life of these heritage buildings, which could be under threat of decay should they remain in-situ.

### 5.3.2 State Significance of the Project and the Homestead

Given the state significance of both the proposed Project, classified as State Significant Development (SSD) under the *Environmental Planning and Assessment Act 1979* (EP&A Act), and the state significance of the heritage values of the Ravensworth Homestead (as identified by heritage specialists Lucas Stapleton Johnson), Glencore believes that relocation of the Homestead provides an appropriate balance between the competing interests of mining and economic benefits to NSW, and the conservation of heritage values of the place for future NSW residents.



## Appendix 23f

### Ravensworth Homestead Relocation Option Identification and Assessment Report



COAL ASSETS  
AUSTRALIA

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GLENCORE

*Glendell Continued Operations Project*

# **Ravensworth Homestead Relocation Option Identification and Assessment Report**

**Status:** Issued for Exhibition

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**Appendix A – Ravensworth Homestead Advisory Committee Meeting Minutes**

**Appendix B – Route Assessment**

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**Appendix D – Planning Constraints Assessment**

**Appendix E – Vegetation and Landscape Feature Relocation Schedule**

# 1 Introduction

## 1.1 Purpose

This report discusses the process undertaken in identifying and assessing options to relocate the Ravensworth Homestead which led to selection of the preferred relocation options that have been assessed in the Glendell Continued Operations Project (the Project) Statement of Heritage Impact provided in Appendix 23d. It includes discussion on alternate move methodologies and the options reviewed as well as the function and makeup of the Ravensworth Homestead Advisory Committee, which was formed to assist with option assessment and selection.

This report is one of a number of heritage reports contained in Appendix 23 of the Project Environmental Impact Statement (EIS) that includes:

- Appendix 23a – Heritage Analysis and Statement of Significance - Ravensworth Estate and associated building group
- Appendix 23b – Ravensworth Homestead Measured and Conjectural Drawings
- Appendix 23c – Ravensworth Homestead Complex: Historical Archaeological Test Excavation Report and Impact Statement for the Core Estate Lands
- Appendix 23d – Statement of Heritage Impact
- Appendix 23e – Relocation Justification Statement
- **Appendix 23f – Ravensworth Homestead Relocation Option Identification and Assessment**
- Appendix 23g – Ravensworth Farm Proposal
- Appendix 23h – Broke Village Proposal
- Appendix 23i – Hebden Public School Preliminary Scope of Works

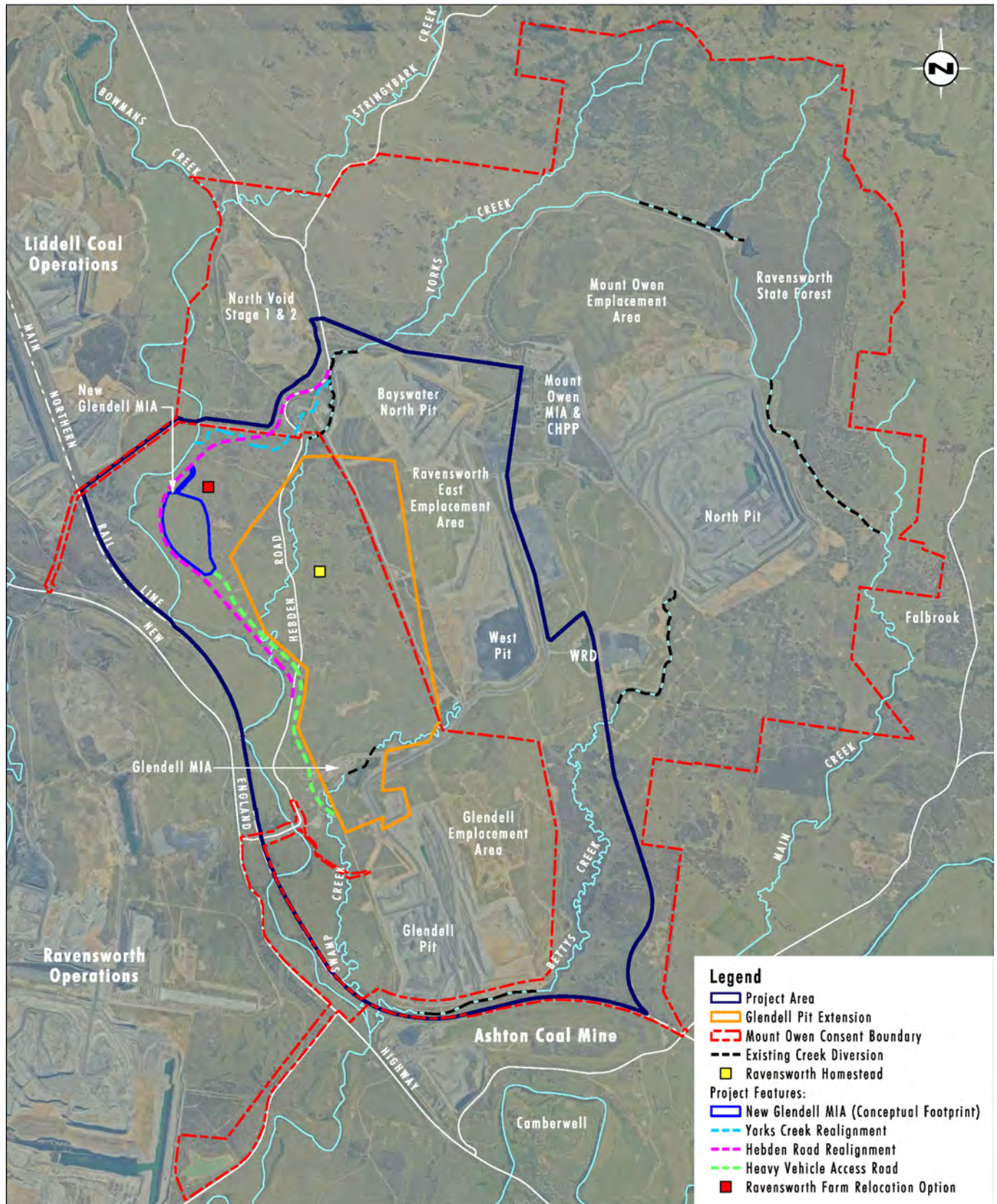
## 1.2 The Project

The Project proposes the extension of Glencore's existing Glendell open cut mine to the north into mining tenements owned by Glencore and its joint venture partner (**Figure 1**). The proposed extension will extract approximately 135 million tonnes (Mt) of run-of-mine (ROM) coal, extend the life of mining operations at Glendell to approximately 2044 and provide ongoing employment. ROM coal from Glendell will continue to be processed by the adjacent Mount Owen Coal Handling and Preparation Plant (CHPP) and associated infrastructure, and utilise the Mount Owen Rail Loop for coal transportation.

The Project will require realignment of a section of Hebden Road, diversion of a section of Yorks Creek and the relocation of Ravensworth Homestead to a new site. The Project will also require the construction of a new Mine Infrastructure Area (MIA) including new bathhouses and offices for the mining personnel, stores, refuelling facilities and a maintenance workshop for the mining equipment fleet, along with associated infrastructure and services.

The Project will contribute substantial revenue to the State of NSW through royalties over the mine life. The mine will also provide employment opportunities for local personnel and will provide substantial flow on effects through expenditure with contractors, suppliers and other existing businesses who rely on the mining industry in the Hunter Valley.





**Figure 1: Proposed Glendell Continued Operations Project**

## 2 Overview of Process

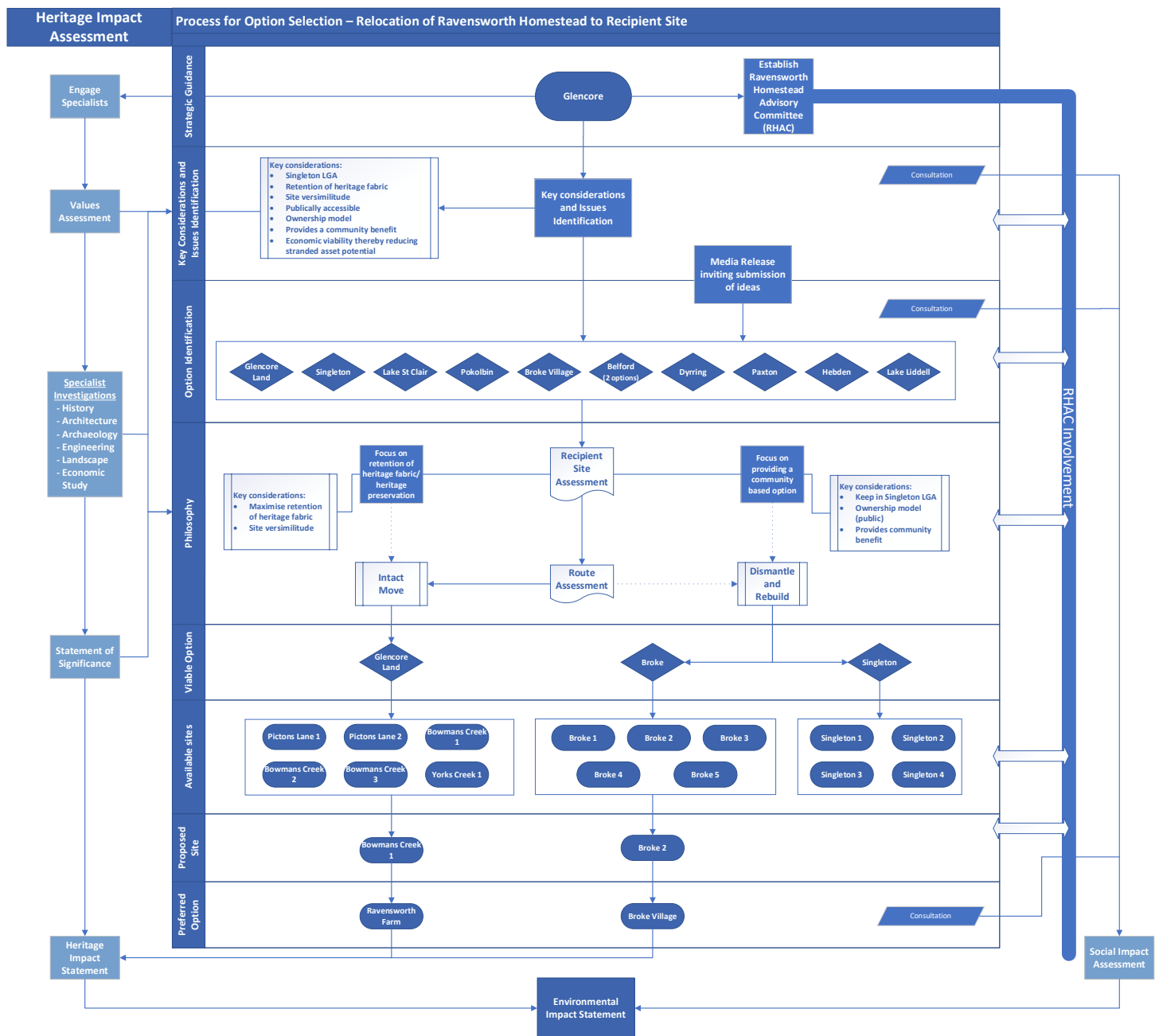
The process adopted for identifying and assessing relocation options is shown in **Figure 2**. The process included:

- The establishment of a community-based advisory committee, referred to as the Ravensworth Homestead Advisory Committee (RHAC), to assist in the investigation and assessment of homestead relocation options;
- Collection of social values of the RHAC, local landholders and other stakeholders completed as part of the Social Impact Assessment;
- The engagement of specialist consultants in the following fields:
  - Architecture;
  - Archaeology (both Aboriginal and European);
  - History (both early contact and post-European settlement);
  - Aboriginal cultural values;
  - Landscape;
  - Botanic;
  - Economic; and
  - Engineering

The consultants were used to investigate and assess the significance of Ravensworth Estate and associated building group, to assist in the development of the relocation philosophy and to ensure the relocation proposal meets the best possible professional standards;

- Relocation option identification including a public call seeking ideas and submissions from the broader Singleton LGA community;
- Review and assessment of available relocation sites; and
- Selection of preferred relocation sites.

Further details on the relocation option identification, assessment and selection process, including the establishment and workings of the RHAC, are provided below in subsequent sections.



**Figure 2: Process for Selection of Preferred Ravensworth Homestead Relocation Options**

## 3 Ravensworth Homestead Advisory Committee (RHAC)

This section discusses the RHAC makeup, its objectives and summarises the outcomes of meetings.

### 3.1 RHAC Establishment

Glencore established the RHAC in October and November 2017 as part of the stakeholder engagement and consultation strategy for the Project. The RHAC membership consisted of:

- Mrs Lindy Hyam, independent chair
- Ms Susan Gilroy, president of Singleton Business Chamber
- Dr Cameron Archer, former principal of Tocal College, local historian, Chair and Member to a range of historical and agricultural education boards, including a board with oversight and management of the Tocal Homestead.
- Mrs Jenny Marshall, former owner of Ravensworth Homestead
- Mr Geoff Marshall, former owner of Ravensworth Homestead
- Mrs Peggy Moore, president of Singleton Historical Society and Museum Inc
- Mr Graeme Cheetham, resident of Middle Falbrook
- Mr David Williams, former resident of Hebden
- Mr Bradly Snedden, Glencore
- Mr Shane Scott, Glencore

A formal approach was made to the Singleton Heritage Advisory Committee (SHAC), which is a Singleton Council formed committee, and Singleton Council for representation on the RHAC. Both the SHAC and Singleton Council chose not to provide representation on the RHAC. Both the SHAC and Singleton Council have been consulted with regarding the proposed relocation of Ravensworth Homestead.

The RHAC has been involved in all aspects of the Project including selection of the preferred relocation options.

### 3.2 RHAC Objectives

The RHAC's function was to assist with the identification and investigation of relocation options for the Ravensworth Homestead complex with consideration to preserving its heritage value, whilst also providing an end use that is economically viable and allows some form of on-going access.

Specifically, the RHAC gave consideration to relocation of the homestead with a view to:

- Location and end use/purpose of the proposed option;
- Cost and economic feasibility to establish and maintain the proposed option;
- Future ownership;
- Community accessibility; and
- Making optimum use of the existing structures.



### 3.3 RHAC Meetings

In total 14 RHAC meetings were held between December 2017 and November 2019, and a summary of each meeting is provided in **Table 1**. Minutes from the RHAC meetings are provided in **Appendix A**.

**Table 1: Summary of RHAC Meetings**

RHAC Meeting #	Date of Meeting	Summary of RHAC Meeting
1	7 December 2017	<ul style="list-style-type: none"> <li>• Committee member introductions</li> <li>• Overview of the Project by Glencore</li> <li>• Outlined purpose of RHAC</li> <li>• Summary of Glencore's homestead ownership history</li> <li>• Discussion on history of homestead</li> <li>• RHAC Terms of Reference</li> <li>• Considerations for the RHAC</li> <li>• Draft project process,</li> <li>• RHAC timetable</li> <li>• Inspection of homestead group</li> <li>• Commencement of values mapping and issues identification – facilitated by Umwelt.</li> </ul>
2	17 January 2018	<ul style="list-style-type: none"> <li>• Presentation by Mr Scott Franks of the Plains Clans of the Wonnarua People regarding significance of Ravensworth Estate and homestead to the Wonnarua people – it was suggested that the homestead could be used for the housing of Indigenous art</li> <li>• Discussion by Mr Tim Duddy, chair of the Historic Houses Association of Australia – provided some further history on the homestead</li> <li>• On-going identification of issues</li> <li>• Discussion on vision statement</li> <li>• Initial discussion on end use and relocation option identification.</li> </ul>
3	31 January 2018	<ul style="list-style-type: none"> <li>• RHAC inspection of Tocal Homestead</li> <li>• Umwelt presented the outcomes of the values mapping</li> <li>• Further development of issues identification</li> <li>• Continued to identify relocation options</li> <li>• Key stakeholders, informants and engagement process presented.</li> </ul>
4	15 February 2019	<ul style="list-style-type: none"> <li>• Inspection of recipient site options in Pokolbin</li> <li>• Update on engagement and heritage studies</li> <li>• Discussion on option assessment criteria and key considerations</li> <li>• Further discussion on relocation option identification.</li> </ul>
5	15 March 2018	<ul style="list-style-type: none"> <li>• Update on values mapping provided by Umwelt</li> <li>• Summary of homestead relocation submissions received following request in Singleton Argus</li> <li>• Update on engagement and progress of homestead/heritage studies</li> <li>• Engagement of specialist building mover to assess feasibility of moving buildings intact</li> <li>• Further discussion on option assessment criteria</li> <li>• Discussion on business model scenarios for relocation options</li> <li>• Process review and timing</li> <li>• Review of engagement and communication process.</li> </ul>
6	24 April 2018	<ul style="list-style-type: none"> <li>• Update on engagement/consultation and heritage studies including building move feasibility assessment, route study and commercial modelling.</li> </ul>
7	22 June 2018	<ul style="list-style-type: none"> <li>• Inspection of recipient sites in Hebden, Falbrook, Dyrring, Belford and Paxton</li> </ul>

RHAC Meeting #	Date of Meeting	Summary of RHAC Meeting
		<ul style="list-style-type: none"> <li>Update on engagement/consultation and heritage studies including building move feasibility assessment, route study and commercial modelling</li> </ul>
8	16 August 2018	<ul style="list-style-type: none"> <li>Update on engagement/consultation and heritage studies including route assessment, architectural recording of buildings, historical investigations and completion of commercial modelling.</li> </ul>
9	3 October 2018	<ul style="list-style-type: none"> <li>Inspection of recipient sites in Broke village</li> <li>Update on engagement and heritage studies including outcomes of route study and breaking of buildings to facilitate move further afield</li> <li>Presented preliminary outcomes of heritage consultant significance assessment - architectural</li> <li>Preliminary breakdown of buildings to facilitate move presented</li> <li>Discussed process for short-listing of relocation options</li> <li>Short-listing of relocation options on basis of being able to transport buildings either as one section or smaller units</li> </ul>
10	1 November 2018	<ul style="list-style-type: none"> <li>Update on engagement and heritage studies including progress of archaeological investigation and further detailed route study by building mover</li> <li>Heritage consultant feedback provided on recipient sites</li> </ul>
11	18 December 2018	<ul style="list-style-type: none"> <li>Update on engagement and heritage studies</li> <li>Presentation by heritage consultant on recipient site assessment</li> <li>Presentation by Glencore on route study</li> <li>Feedback from Glencore senior management on option viability – Glencore to review options</li> <li>Discussion on short-listed options</li> <li>Agreement on local intact move option given constraints with other options</li> <li>Concern raised regarding long term viability of local intact move option if moved to isolated location</li> </ul>
12	2 May 2019	<ul style="list-style-type: none"> <li>Update on engagement and heritage studies including historical research, significance assessment and archaeology investigations</li> <li>Presented outcomes of Glencore option review – Glencore wanting to pursue community-based option in addition to local move option</li> <li>Community-based option will require dismantle and rebuild of homestead at recipient site</li> <li>RHAC supportive of dismantling and rebuilding of homestead to a site that improves its long-term viability and provides greater accessibility</li> <li>Relocation to Singleton Showground identified as alternate community-based option</li> </ul>
13	3 July 2019	<ul style="list-style-type: none"> <li>Update on engagement and heritage studies including historical research, significance assessment and archaeology investigations</li> <li>Presented outcomes of assessment involving relocation of Main House to Singleton Showground – RHAC agreed not to pursue option further given presence of other heritage and minimal land availability</li> <li>RHAC endorsed and are supportive of both Ravensworth Farm and Broke Village relocation options</li> </ul>
14	27 November 2019	<ul style="list-style-type: none"> <li>Final review of proposed relocation options against RHAC key considerations and committee Terms of Reference</li> <li>Present outcomes of Project consultation</li> <li>Committee cessation</li> </ul>

Additional meetings were also held in December 2018 and January 2019 between Glencore senior management and the chair of the RHAC (representing the views of the RHAC) to review and discuss the proposed relocation options.



## 4 Heritage Consultants and Studies

A team of specialist consultants and contractors were engaged to complete detailed heritage-related investigations across the Project study area with particular focus on Ravensthorpe Estate and the associated building complex in order to understand the significance of the Homestead and its heritage values.

The outcomes of these investigations have been used to inform the selection and development of the proposed Homestead relocation options.

### 4.1 Heritage Consultants and Contractors

Heritage consultants, advisors and contractors engaged for the Project were:

- Mr Tim Duddy, Chair of Historic Houses Association of Australia – Heritage advisor
- Dr Terry Kass, Historian – Land ownership and tenure history
- Dr Mark Dunn, Historian – Early conflict history
- Aboriginal Cultural Heritage Management - Aboriginal cultural heritage assessment
- OzArk - Aboriginal archaeology impact assessment
- Casey & Lowe - Historic archaeology impact statement
- Lucas Stapleton Johnson - Heritage architecture, scheme development and Heritage Impact Statement
- Mr Geoffrey Britton and Ms Colleen Morris – Botanical study and landscape assessment
- Mott MacDonald - Heritage structural engineering
- Mammoth Movers - Intact relocation and route assessment
- Heritage Stone Restorations – Disassembly and rebuild relocation assessment
- Morrison Low – End-use commercial modelling
- SHAC Architectural – Scheme development
- Umwelt - Environmental constraints analysis

### 4.2 Heritage Studies

Heritage studies completed for the Project include:

- Historic landownership and tenure for Ravensthorpe and Broke (refer Appendix 23a and Appendix 23h of the Project EIS);
- Early conflict history between Aboriginal people and European settlers within and around Ravensthorpe Estate (refer Appendix 22 and 23 of the Project EIS);
- Aboriginal archaeology survey and test excavations (refer Appendix 22 of the Project EIS);
- Aboriginal cultural heritage assessment including consultation with Registered Aboriginal Parties and Knowledge Holder groups (refer Appendix 22 of the Project EIS);
- Architectural assessment including preparation of measured and conjectural drawings of the homestead building group (refer Appendix 23a and Appendix 23b of the Project EIS);
- Historic archaeology test excavation within and adjacent to the Ravensthorpe Homestead building complex including the site of the earlier 'Ravensthorpe hut' (refer Appendix 23c of the Project EIS);
- Landscape assessment of the homestead in its local setting and broader visual catchment (refer Appendix 23a of the Project EIS);

- Garden and vegetation assessment within the grounds of and adjacent to the Ravensworth Homestead building complex (refer Appendix 23a of the Project EIS). This included identification of plants, trees and landscape features within the Homestead garden and immediate surrounds that should be relocated to the new recipient site (refer Appendix E);
- Statement of significance including significance grading and Heritage Impact Statement (refer Appendix 23a and Appendix 23d of the Project EIS);
- Structural assessment of existing buildings including preliminary footing designs for intact relocation of the homestead buildings (refer Appendix 23g of the Project EIS);
- Structural engineering statement on feasibility of intact move methodology (refer Appendix 23g of the Project EIS)
- Feasibility assessments for relocating the homestead buildings using a number of alternate relocation methodologies;
- Development of homestead relocation scheme including landscaping (refer Appendix 23g and 23h of the Project EIS);
- Economic assessment of alternate homestead relocation options with consideration of location and end use;
- Relocation Methodology reports for intact relocation and disassembly and rebuild relocation (refer Appendix 23g and 23h of the Project EIS).

## 5 Key Considerations

The development and identification of key factors to be considered in the assessment of homestead relocation options was a critical part of the relocation option development and assessment process. The development of these key considerations incorporated findings from values mapping conducted by Umwelt and the requirements of the RHAC and Glencore.

### 5.1 Values Mapping

As part of the scoping phase of the Social Impact Assessment for the Project (refer Appendix 10 of the Project EIS for details), a number of stakeholders (in addition to members of the RHAC) with a particular interest in heritage were engaged to ascertain their views in relation to the potential social impacts associated with the proposed relocation of Ravensworth Homestead.

In particular, local landholders, key heritage stakeholders (Singleton Heritage Advisory Committee and Singleton Historical Society & Museum Inc) and Aboriginal groups participated in focus groups and interviews, and were asked to reflect on the values they associated with the homestead including their perceptions, impressions, interactions, experiences of, and relationships with the homestead complex.

The values of the RHAC, local landholders and key heritage stakeholders have been categorised in line with the *Australia ICOMOS Burra Charter (2013)* values of:

- Historic
  - Connection of homestead with broader historical themes
  - Association with notable people, events or movements in a local, regional or national context
  - Association with convict labour that lived and worked at Ravensworth Estate
- Scientific/evidential
  - Stories of evidence of past activity associated with the homestead
  - Existence of detail of original buildings
  - Interaction between the homestead and other buildings
- Aesthetic
  - Relates to appearance of the homestead and associated buildings including farmstead formal courtyard layout, design/style, traditional features, quality of craftsmanship and technology of construction
  - Relationship of the building(s) to their setting e.g. working agricultural or industrial landscape or townscape
- Social
  - Contribution the building makes to the wellbeing of its community
  - Social and economic
  - Commemorative
  - Spiritual
  - Symbolic
- Comparative
  - Comparison with other homesteads – locally, regionally, nationally

The *Burra Charter* provides guidance for the conservation and management of places of cultural significance. Whilst the values of key stakeholders have been categorised against the *Burra Charter* values, it should be noted that other key elements such as long term viability and community access should also be considered. Further discussion on these elements is provided in Section 5.2.

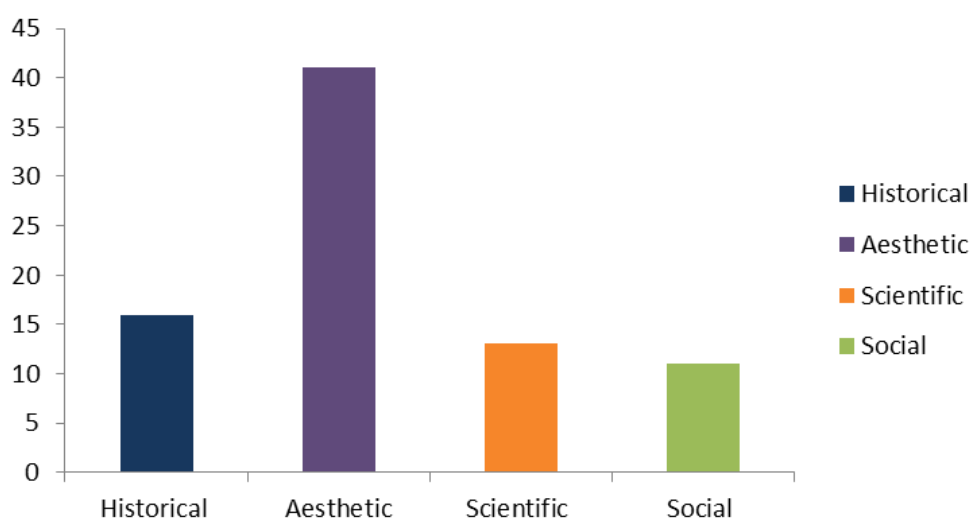
### 5.1.1 RHAC Values

The RHACs values were documented by Umwelt in December 2017 and a graph of these values categorised against the Burra Charter values is shown in **Figure 3** with a further breakdown of these values shown in **Figure 4**.

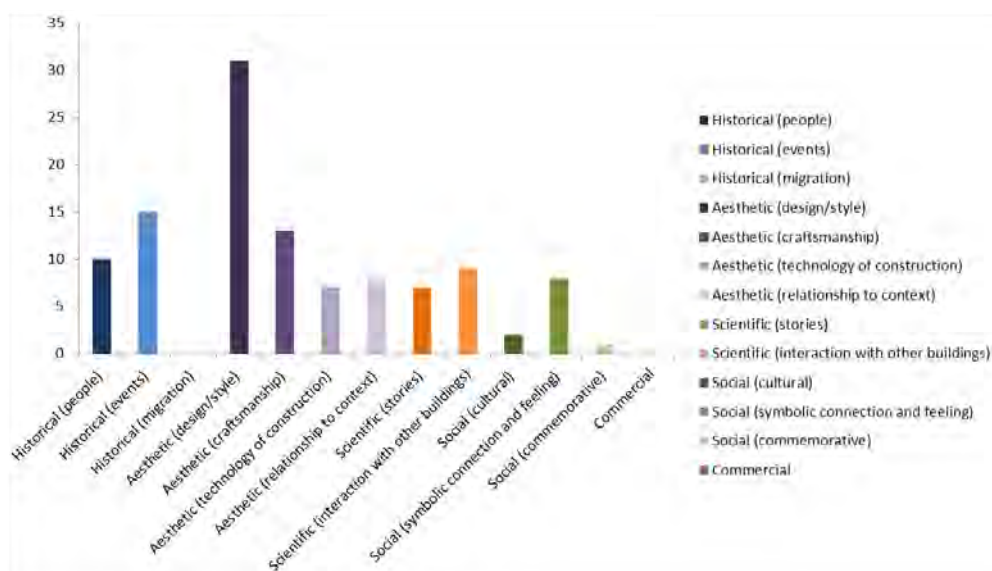
The homestead holds high aesthetic value to members of the RHAC, namely the layout/design/style of the homestead as being representative of the early colonial period, its craftsmanship and technology of construction using handcrafted sandstone, its use of convict labour in construction and the relationship of the homestead building group to its setting as a working agricultural complex.

The RHAC also considers the people and historical events associated with Ravensworth Estate and the homestead to be of high importance, in particular Dr James Bowman, original owner of Ravensworth Estate, and his links to the Macarthur family. Additionally, the RHAC acknowledged the Ravensworth Estate as a general location where interactions occurred between Aboriginal people and colonists.

Further details on RHAC member value mapping is provided in the Social Impact Assessment (refer Appendix 10 of the Project EIS).



**Figure 3: RHAC member values categorised against Burra Charter Values**

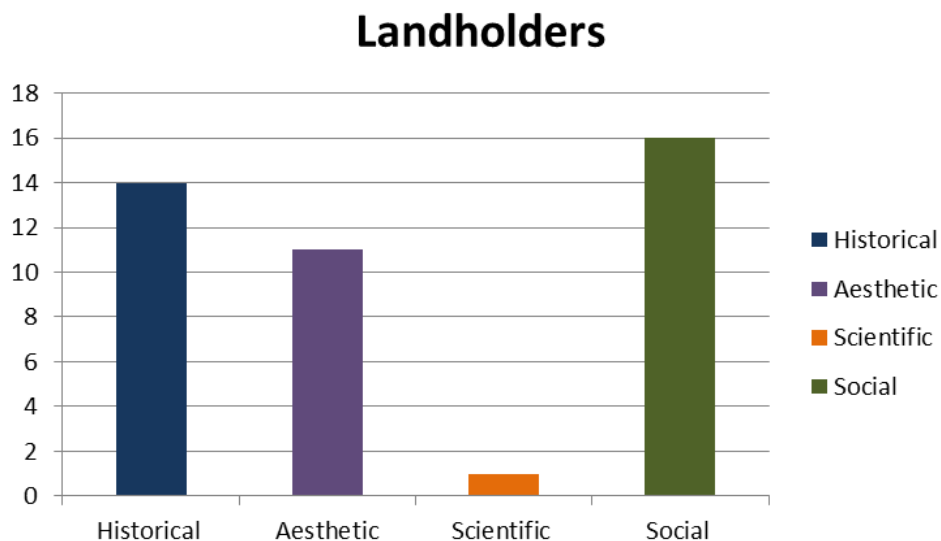


**Figure 4: RHAC Member Value Breakdown**

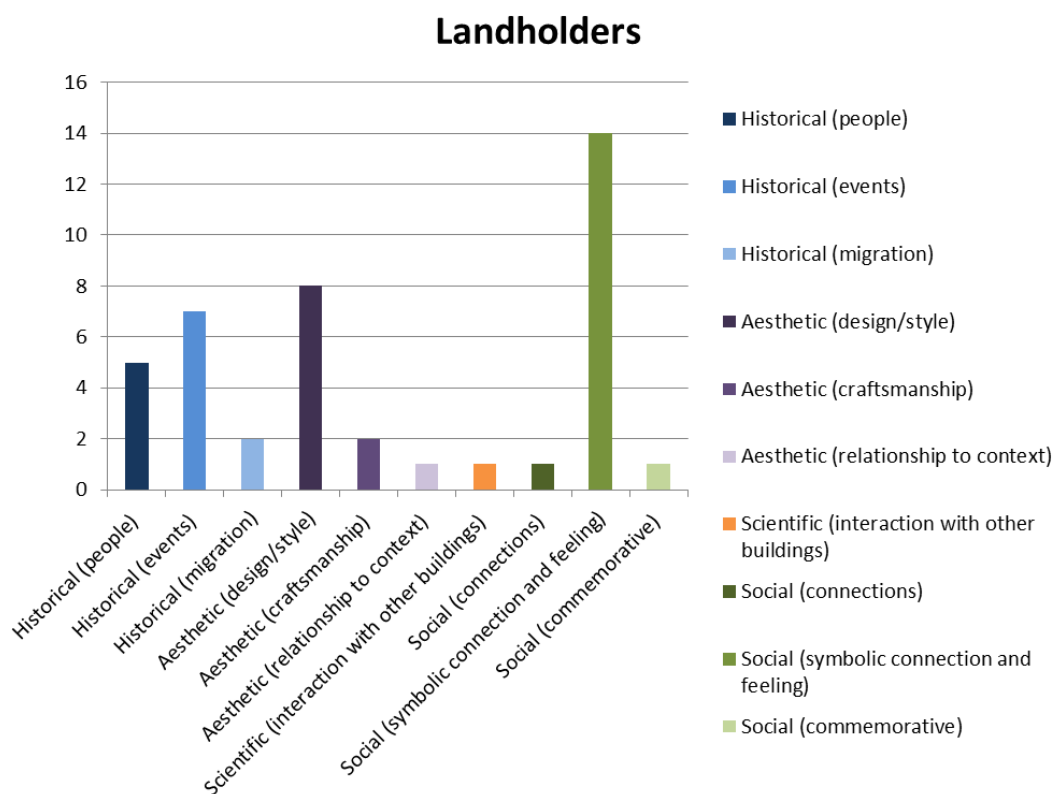
## 5.1.2 Community Values

Local landholders assigned greater social value to the homestead in that it provides a sense of place and belonging, and is considered a key part of the Ravensworth locality. Additionally, a number of local landholders hold connections with Ravensworth Homestead, both personally and through stories handed down from their families about events and people's lives at the homestead.

A graph of the local landholder values categorised against the Burra Charter values is shown in **Figure 5** with a further breakdown of these values shown in **Figure 6**.



**Figure 5: Local landholder values categorised against Burra Charter values**



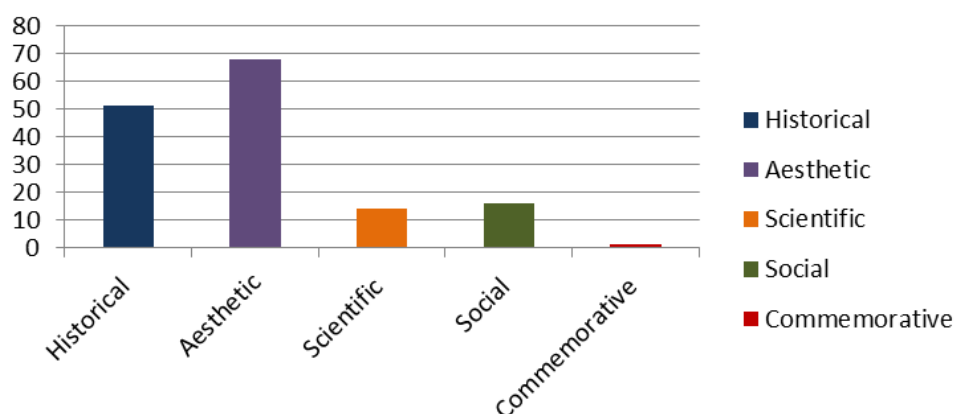
**Figure 6: Breakdown of Local landholder values categorised against Burra Charter values**

### 5.1.3 Heritage Stakeholder Values

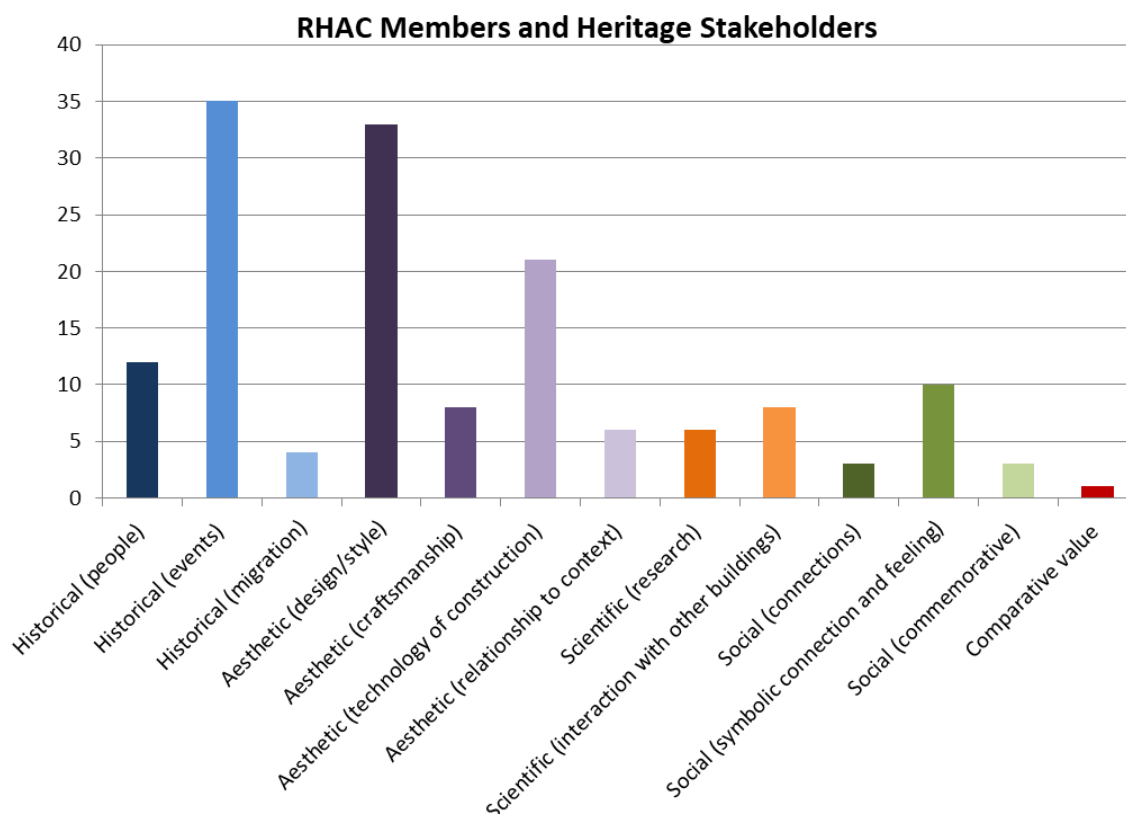
The views of heritage stakeholders were similar to the values expressed by members of the RHAC, with higher importance placed on historical (people who lived and visited the place, and events that have taken place on the landholding) and aesthetic (building construction, building style and contextual setting) values.

A graph of the heritage stakeholder values categorised against the Burra Charter values is shown in **Figure 7** with a further breakdown of these values shown in **Figure 8**.

#### RHAC Members and Heritage Stakeholder



**Figure 7: Heritage Stakeholder values categorised against Burra Charter values**



**Figure 8: Breakdown of Heritage stakeholder values categorised against Burra Charter values**

### 5.1.4 Aboriginal Community Values

Ravensthorpe Estate also has significance to the local Aboriginal community with views expressed that it was a site of both co-existence and conflict between Wonnarua people and the early European settlers of the Hunter Valley. There was some attachment to the Ravensthorpe Homestead expressed by the local Aboriginal community based largely on the premise that Wonnarua people had most likely lived and worked on the Ravensthorpe Estate through time, rather than any specific historical associations or direct family knowledge of ancestors living or working at Ravensthorpe.

The Plains Clans of the Wonnarua People (PCWP) presented to the RHAC at committee meeting #2 held on 17 January 2018. Key values presented by the PCWP were:

- Ravensthorpe area represents a period in history that brought violent conflict for Aboriginal people as it was a location of encounters with early settlers;
- Watercourses in the area are highly valued by the local Aboriginal community;
- Ravensthorpe Homestead was most likely used as a property for the resting of garrison soldiers; and
- A ceremonial site is located in Ravensthorpe State Forest to the East of homestead.

### 5.1.5 Values Summary

In summary, the key values of local landholders, members of the RHAC, heritage stakeholders and Aboriginal community representatives are:

- Historical
  - People who live at and visited Ravensthorpe Estate
  - Historic events that have taken place at Ravensthorpe Estate and the broader area including interactions between Aboriginal people and early European settlers
- Aesthetic
  - Design/style of the homestead as being representative of the early colonial period
  - Craftsmanship and technology of construction using handcrafted sandstone
  - Relationship of the homestead building group to its setting as a working agricultural complex
- Social
  - Sense of place within the Ravensthorpe environs and more broadly within Hebden area
  - Personal connection of local community with Ravensthorpe both through first-hand experiences and through stories handed down.

Further details on the values analysis are provided in the Social Impact Assessment for the Project.

## 5.2 Issues Identification and Key Considerations

The RHAC identified a range of issues and factors for consideration when investigating relocation options for the Homestead that included:

- The views of the previous owner (Marshall family);
- Indigenous and European history, particularly interactions between Aboriginal people and early settlers;
- Extent of heritage preservation considered appropriate and feasible;
- Whether the entire complex of buildings is to be relocated or only some of the buildings;
- Appropriate treatment of burial's across Ravensthorpe Estate, in particular Miss White's grave to the east of the building group, pet burial's and potential burial site of Dr James Bowman;



- The location of the recipient site and its proximity to major transport routes, public transport and utilities particularly water supply;
- Whether the recipient site is subject to flooding;
- Whether the recipient site is of sufficient size to allow for car parking and potential expansion of activities that enhanced the commercial viability of the facility;
- An end use option that provides community access;
- Whether the relocation of the buildings provides education opportunities (archaeological investigation, stone masonry etc);
- Long term commercial viability of the homestead post-relocation. The RHAC wanted to avoid the relocated homestead becoming a stranded asset and considered the Hunter Valley vineyards as a locality that could provide the buildings with their greatest chance of sustainability;
- Whether the homestead should remain within Singleton Local Government Area (LGA) or be relocated outside of Singleton LGA;
- Future ownership model and when transfer of ownership occurs;
- Opportunity for financial arrangements and partnerships; and
- Whether the homestead can be protected in future through covenants or other planning instruments.

The above factors and issues initially identified by the RHAC were then further refined in discussion with the project heritage consultants and internal Glencore stakeholders into the list of key considerations provided below.

### 5.2.1 Singleton Local Government Area (LGA)

The RHAC and Glencore expressed a preference for the relocated homestead to remain within the Singleton LGA. This preference was also supported through discussions with representatives from Singleton Council on the basis that the homestead is locally listed on the Singleton Local Environmental Plan (2013).

### 5.2.2 Retention of Heritage Fabric

The RHAC and Glencore acknowledged the heritage significance of the Ravensworth Estate and associated homestead complex. In recognition of this the RHAC expressed a preference for the relocation to involve all buildings in the complex in their current layout arrangement. Additionally, the method of moving should also be sympathetic to the heritage significance of the buildings in recognition of the outstanding technical excellence of the craftsmanship.

Two alternative methods for moving the buildings have been considered, namely:

- Move each building wholly intact or in large intact sections to a new recipient site, and;
- Dismantle, store, transport and rebuild at a new recipient site.

The RHAC was supportive of a wholly, or partly, intact move but recognised that a dismantle and rebuild methodology for relocating the homestead buildings, even though more intrusive to the heritage fabric, would provide greater opportunity to address the key considerations of accessibility, economic viability and reducing the potential of becoming a stranded asset. Further detailed discussion on the alternative methods of moving the buildings and the limitation of each option is provided in **Section 7** of this report.

### 5.2.3 Sustainability and Commercial Viability

The RHAC and Glencore placed a high degree of importance on the proposed homestead relocation being commercially viable to ensure its long term sustainability. The RHAC expressed a strong view that they wanted to avoid the relocated homestead becoming a 'stranded asset'. The RHAC considered

positioning of the homestead in a location of high tourist movements would assist with its commercial viability.

Morrison Low completed first pass financial modelling for the relocation of the homestead to a number of locations in order to understand the potential economic viability of the buildings for mixed use (café, restaurant, retail, administration, exhibition space and wine-tasting). The analysis considered potential revenue generation for alternative uses in different locations taking into consideration tourist demand and future growth opportunities. Running costs were also estimated including maintenance costs. The analysis indicated that multi-purpose usage of the buildings in a location with high exposure and tourist movements was more likely to be financially viable in the long term.

#### **5.2.4 Publicly Accessible**

Early on, both the RHAC and Glencore considered improved public access a key requirement when considering alternate homestead relocation options. The homestead currently resides on Glencore-owned land where access is controlled for safety reasons, and because the homestead is vacant. In the time of Glencore ownership there has been little interest shown by the public and other interest groups in requesting access to the homestead with the last visit being by the Singleton Heritage Advisory Committee in October 2017.

#### **5.2.5 Site Verisimilitude**

It is recognized that to maximize the authenticity of the relocated homestead at its recipient site, the new site should seek to replicate the key physical attributes of the current homestead site in terms of slope, visual catchment/outlook, proximity to a watercourse and dam, and vehicular approach. Whilst the RHAC considered these factors important, these elements weren't considered mandatory, particularly in instances where the recipient site was proposed in a location with greater public access and tourist movements, thus improving the viability of the relocated homestead.

#### **5.2.6 Ownership Model**

The ownership model for the relocated homestead is a consideration as Glencore has a preference that any relocation option that doesn't involve relocation of the homestead onto Glencore-owned land, involved some form of public ownership model. The key driver for Glencore's preference for a public ownership model is to ensure equitability. The ownership model was also a consideration of the RHAC in terms of its ability to operate and manage the asset.

#### **5.2.7 Provide a Community Benefit**

Both the RHAC and Glencore expressed a preference for a relocation option that fulfils a community need. A community-based option ideally would be owned and managed by Singleton Council or through some other public ownership model such as a community trust.

## 6 Option Identification

Early on the RHAC embarked on identifying possible relocation options for the Homestead. Through the RHAC, interest from the Pokolbin area was identified for the relocation of the Homestead (given the previous relocation and repurposing of two heritage buildings in the area). Additionally, an unsolicited request was received from a Hebden landowner for the relocation of the homestead onto their land at Scrumlo Road.

On 13 February 2018, Glencore posted an advertisement in the Singleton Argus seeking ideas and submissions from the public on possible relocation options for the homestead (refer <https://www.singletonargus.com.au/story/5224664/future-of-historic-homestead/>). From this notice, the following submissions were received:

1. Relocation to a site near Ben Ean, MacDonalds Road, Pokolbin
2. Relocation to Hunter Valley Resort, Hermitage Road
3. Relocation to Corunna Station, Hermitage Road,
4. Relocation to Dyring
5. Relocation to Paxton Colliery

Following the initial submissions, an additional request for ideas was included in the Project Community Information Sheet 02 that was issued in July 2018. No further submissions were received from this notification.

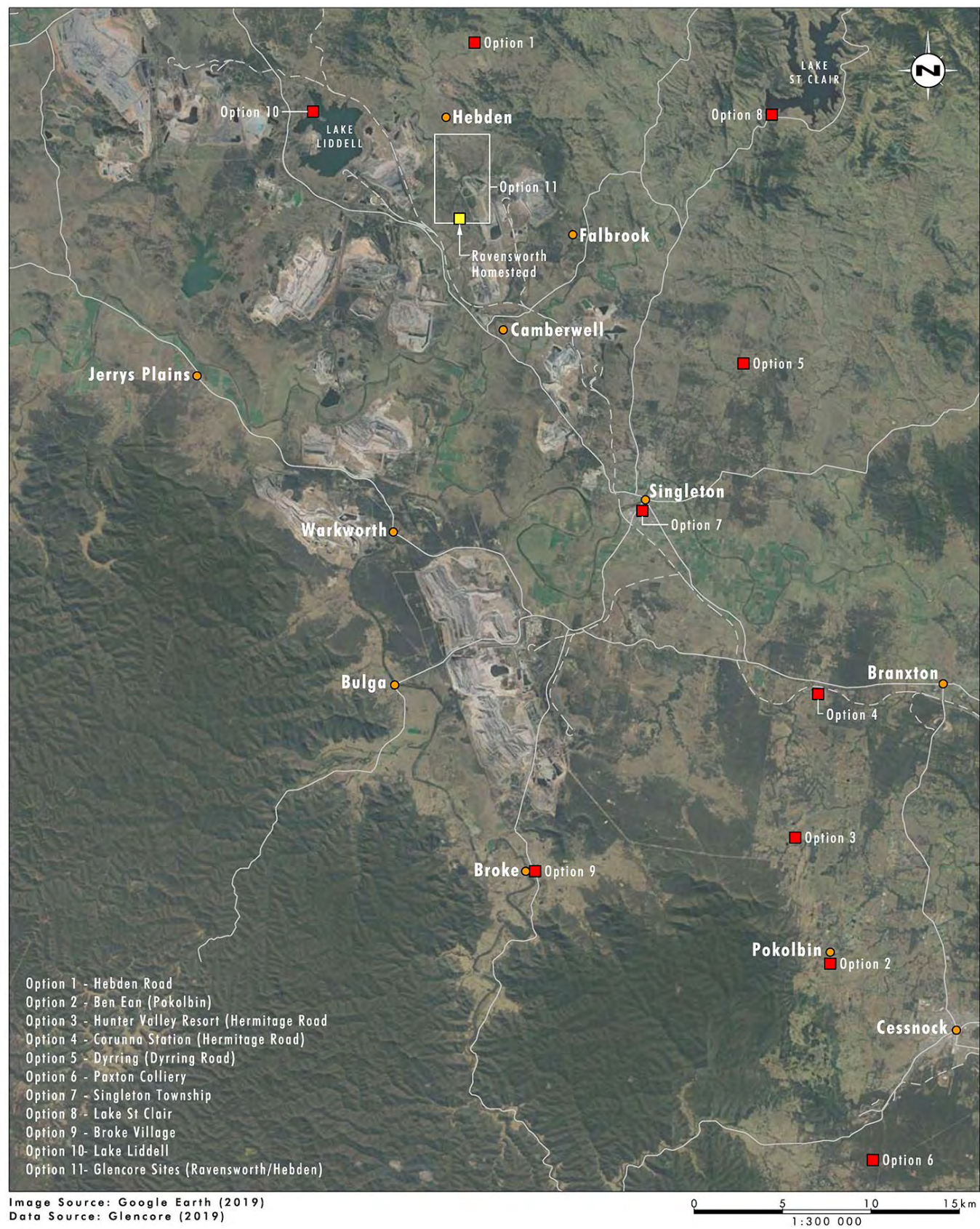
On the 18 September 2018 a submission was received from members of the Broke-Fordwich community proposing relocation of the homestead to Broke village. A further submission was also received on 3 December 2018 for relocation of the homestead to a number of sites in the vicinity of Lake Liddell.

Throughout 2018 and 2019 a number of meetings were also held with Singleton Council to discuss available Council land in Singleton for relocating the homestead. Council indicated that there was minimal available land in Singleton and that they were reluctant in becoming the end asset owner of the homestead due to the ongoing liability. However, Council did express a potential opportunity for the relocation of the homestead to a site near Lake St Clair.

Glencore also put forward options for relocating the homestead to one of their landholdings in the Ravensworth/Hebden area.

The approximate location of the proposed relocation options with respect to the homestead's current position is shown in **Figure 9**. A summary of relocation options considered in regard to proposed usage, LGA within which the option is located, accessibility, perceived commercial viability, ownership model and perceived community benefit is provided in **Table 2**. Further details on each homestead relocation option are provided below.





**Legend**  
■ Proposed Relocation Options

**Figure 9: Location of Proposed Relocation Options**

**Table 2: Summary of Homestead Relocation Options**

Relocation Option	Use	LGA	Commercial Viability	Accessibility	Ownership Model	Community Benefit
1. Hebden (Scrumlo Road)	Multi-purpose	Muswellbrook	Limited – low traffic area	Low	Private	Partly – stays in locality
2. Ben Ean (Pokolbin)	Multi-purpose	Cessnock	Yes – high tourist area	High	Trust	High
3. Hunter Valley Resort (Hermitage Road)	Multi-purpose	Singleton	Yes – high tourist area	High	Private	Partly
4. Corunna Station (Hermitage Road)	Short-stay accommodation	Singleton	Potential – high tourist area	Low	Private	Minimal
5. Dyrring (Dyrring Road)	Short-stay accommodation	Singleton	Would likely require a significant funding source	Restricted	State	High
6. Paxton Colliery	Short-stay accommodation	Cessnock	Low	Low	Private	Low
7. Singleton Township	Multi-purpose	Singleton	Potential – land size limitations	High	Public/Private	High
8. Lake St Clair	Multi-purpose	Singleton	Potential – low traffic	Limited	Public	Partly
9. Broke Village	Multi-purpose	Singleton	Potential – high tourist area	High	Trust	High
10. Lake Liddell	Multi-purpose	Muswellbrook	Limited – would most likely require funding	High	Private	High
11. Glencore sites (Ravensworth/Hebden)	Administration	Singleton	Yes – Glencore ownership	Low	Private (for duration of mining)	Partly – buildings maintained through use and stays in locality



## 6.1 Scrumlo Road, Hebden

The proposed recipient site in Hebden is situated off Scrumlo Road in Hebden, which is approximately 10km north of Ravensworth. The site is located within Muswellbrook LGA.

The site offering is situated in relatively steep terrain to the west of Bowmans Creek and overlooks semi-rural development. The buildings would have mixed usage and would transfer into private ownership following relocation.

Other potential recipient sites in the Hebden locality were also inspected.

## 6.2 Ben Ean, McDonalds Road, Pokolbin

The proposed recipient site at Pokolbin is located immediately adjacent to the Ben Ean winery, off McDonalds Road. The site is situated within the Cessnock LGA.

The site offering is a vine covered parcel of land situated immediately to the north of Ben Ean winery. The site has good visibility from McDonalds Road and has access to power and water.

The buildings would have mixed usage including restaurant, retail, administration and exhibition space. The facility would be owned and managed by a Trust.

## 6.3 Hunter Valley Resort, Hermitage Road, Belford

Hunter Valley Resort is situated off Hermitage Road in Belford and provides accommodation and leisure activities. Hunter Valley Resort is situated within Singleton LGA.

The site offering provides good visibility from Hermitage Road and would be accessible to the public throughout the year. The site is close to services (power, gas, water) and other facilities such as accommodation and tourist activities. The relocated buildings would transfer to private ownership and be integrated into the existing resort and used for the resort reception area, restaurant, cellar door and gift shop, wedding chapel and indigenous heritage exhibition space.

## 6.4 Corunna Station, Hermitage Road, Belford

Corunna Station is situated off Hermitage Road in Belford and offers short-stay accommodation. Corunna Station is located within Singleton LGA.

The site offering has good exposure along Hermitage Road, and is situated approximately 300m from the intersection with the New England Highway. The site offering also contains a dam.

The buildings would have mixed usage such as guest house, restaurant, conference centre, tourism accommodation, cellar door, wedding venue, tea rooms, riding school or private home.

The broader Corunna Station property is 200 acres in area and contains a number of original buildings from its previous use as a sheep station.

## 6.5 Dyrring Road, Dyrring

The Dyrring Road option is situated on land that has been granted to the Wanaruah Local Aboriginal Lands Council and is located within Singleton LGA.

The site offering is heavily vegetated and bound by First Creek to the south-west. The site is secluded and isolated and would lend itself to the end use proposed by the WLALC, which would be a women's refuge and healing centre. Access to the site would require a land access agreement with the adjacent landowner. The site has limited access to services.



## 6.6 Paxton Colliery

The Paxton Colliery site is located within the grounds of the former Paxton Colliery, which is situated within Cessnock LGA. Paxton Colliery is a historic underground coal mine that commenced operation in the 1920's. Historic infrastructure and buildings that relate to the original coal mine operation remain on site and are currently locally listed under the Cessnock LEP.

The site offering provides a rural outlook with the homestead proposed for use as short-stay accommodation.

## 6.7 Singleton Township

Relocation of the homestead building group to a suitable site in the township of Singleton presents an opportunity for the buildings to be positioned in a location where they can be readily accessed and utilised by the broader community, which would reduce its prospects of becoming a stranded asset and improve its potential long term sustainability. Potential uses of the buildings include gallery, museum, administration building, restaurant/café, and function centre.

In early 2018, discussions were held with Singleton Council to gain an understanding of whether an opportunity existed for the buildings to fulfil a community need and also the availability of suitable sites within Singleton that would be large enough to accommodate the homestead building group. At this meeting a number of potential sites were mooted including the vacant land situated immediately to the east of Council's administration building on Civic Avenue, vacant land to the south of Singleton Hospital and Albion Park. Council indicated a reluctance to being the end asset owner of the buildings and that any proposal for Council consideration would need to be supported by a robust business case.

An option involving the relocation of the Main House to Singleton Showground was also investigated where it would be used for administration purposes by the showground committee.

## 6.8 Lake St Clair

A potential relocation option nominated by Singleton Council was relocation of the building group to Lake St Clair, where the buildings could be adapted and used for higher end accommodation and conference facilities. Two sites were mooted by Council with the first being NSW Water owned land and the second being privately-owned land. The site offerings are situated within Singleton LGA.

## 6.9 Broke Village

Broke is a village located approximately 24km from Singleton which lies close to the boundary of the Hunter Valley mining and vineyard districts. The proposal by members of the Broke-Fordwich community is to relocate the Ravensworth Homestead to a site within Broke to become the village square. As with the Singleton Township option, this location provides an opportunity for the buildings to be positioned in a location where they can be readily accessed and utilised by the broader community.

A number of site offerings were mooted with the majority on Crown Land. The buildings would be repurposed for mixed usage including office administration, exhibition space, café, tourist office, restaurant, cellar door and market square. The facility would be transferred into community ownership following relocation.

## 6.10 Lake Liddell

A number of sites situated on the northern and western side of Lake Liddell were mooted by the Wonnarua Nation Aboriginal Corporation (WNAC) as part of the redevelopment of AGL owned land. Possible usage for the buildings included café, restaurant, community education centre and exhibition space.

The sites are situated within Muswellbrook LGA and in close proximity to a major transport route (New England Highway).

## 6.11 Glencore-owned land, Ravensworth

Glencore owns substantial land holdings around its open cut mining operations in the Ravensworth area. A number of sites within approximately 5km of the existing Ravensworth Homestead site were considered for their suitability as potential recipient sites. These sites are situated within Singleton LGA and within Bowman's original '10,000 acre' land grant.

All sites have access to power with some sites also with access to a water source (either dam or pipeline).

Possible end use options for the relocated homestead group onto a Glencore-owned site included short stay accommodation, use as a farm house and administration facilities (during mining operation).

## 7 Move Methodology and Relocation Option Assessment

This section discusses the alternate move methodologies considered for relocating the buildings and assesses the proposed relocation options.

### 7.1 Methods of Building Relocation

Two alternate methodologies were investigated for relocating the buildings, namely, moving the buildings wholly intact (or in large intact sections) or dismantling and rebuilding the buildings at a new recipient site. These move methodologies are discussed further below and are summarised in Table 3.

**Table 3: Summary of Methods of Building Relocation**

Option	Method
<b>Intact Move</b>	<p>Involves the relocation of each building intact whereby the building sits on a grid of steel beams that are supported by dollies that contain hydraulically linked rams that keep the building level as it is being transported.</p> <p>This move methodology has minimal impact on the heritage fabric of the building however limits the relocation to sites situated in close proximity to the current homestead location.</p>
<b>Dismantle and Rebuild</b>	<p>Involves the dismantling of the building stone by stone, transport and rebuilding at the recipient site. Some components such as roof trusses would be moved intact.</p> <p>Dismantling has a greater impact on the heritage fabric than an intact move, however would enable the buildings to be positioned in a location that allows greater community access and would also allow the buildings to be repurposed to form a facility that meets a community need.</p>

### 7.2 Intact Move

Initial investigations focused on relocating the homestead buildings to recipient sites using the intact move methodology.

A specialist building mover, Mammoth Movers, was engaged to assess the feasibility of moving the buildings wholly intact (or in large intact sections) and it was assessed that the buildings can be moved in this manner. This work also included extensive engineering investigation and analysis, including the assessment of transport routes.

Heritage architects, Lucas Stapleton Johnson, and structural engineers, Mott MacDonald, have scrutinised the intact move methodology of the specialist move contractor and are satisfied that the buildings could be successfully relocated without significant damage using this move methodology (refer Appendix 23g for structural engineers statement).

#### 7.2.1 Building Move

A summary of the main tasks involved in the intact relocation of a building are shown in **Figure 10**. Further details on the intact move methodology are contained in the Mammoth Mover move methodology report provided in Appendix 23g of the Project EIS. In summary, the key steps in moving a building intact are:

- Reinforce and brace the building internally including installation of fabricated steel frames and blockwork as required
- Excavate around and beneath building and install the jacking support frame consisting of steel beams used to spread the load onto a network of hydraulically linked dollies
- Uniformly raise the building and transfer onto dollies
- Transport the building to the recipient site

- Place building onto new footings and build up supports to the underside of the building
- Remove temporary bracing and supports and demobilize relocation equipment
- Separately relocate disassembled building components that were not suitable for intact relocation to the recipient site and reassemble in their new location using a suitably qualified heritage builder.
- (Note: the above works would occur after archaeological investigation within and adjacent to each building)

Step 1 – Organise all administration details prior to relocation of structure



[Times art: Michael G. Cothran]

Step 2 – The house is dug out and supported on temporary shoring to allow for the installation of beams to carry the structure.



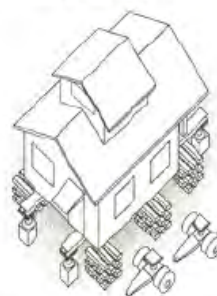
Step 3 – Steel main beams and traverse beams are installed under the house to create a grid like platform that will allow the structure to be moved without being damaged.



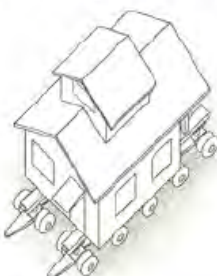
Step 4 – Cribbing columns and jacks are installed to enable the building to be raised.



Step 5 – Hydraulic jacks raise the house to allow dollies to be placed under the main beams using a unified jacking system.



Step 6 – The house is lowered onto the dollies which are connected hydraulically so the building "floats" on oil whilst being transported, through connecting hydraulic circuits.



**Figure 10: Intact Move Relocation Process Summary**

## 7.2.2 Key Considerations

The intact moving of the buildings requires consideration of the following:

- The arrangement, composition and condition of the existing building footings;
- The horizontal cutline for each building, which is the cutline where the relocated section of the building is to be parted from the existing building footings;

- The depth to bed rock in the immediate vicinity and beneath each building, which is particularly important when considering the building outline and the depth of excavation required for steel beam installation;
- The double skin arrangement of the wall construction of each building will require care when loading the building and the sealing of the underside of the wall once released from its footing to prevent the potential loss of rubble infill from the cavity;
- The weight of each building, which influences steel beam sizing and dolly arrangement, and ultimately the size of the unit (in height and width) that requires transportation;
- Constraints of the existing public road network in terms of width, height, longitudinal grade, crossfall, overhead power lines, bridge crossings and other fixed infrastructure. The road network constraints will influence the building unit size that is capable of being transported;
- Duration of public road occupancy whilst transporting the buildings to the new recipient site.

A key consideration and constraint in the intact relocation of the buildings are the physical attributes of the existing public road network and this aspect is discussed further below.

### 7.2.3 Route Assessment

The building mover has completed a detailed assessment that investigates the transport routes for moving the buildings to alternative recipient sites, and also investigates the required segmentation of the buildings to facilitate transport within the existing road corridor. The outcomes of the route assessment are provided below with the Mammoth Movers report provided in **Appendix B**.

Routes were identified and surveys conducted to determine existing road constraints and determine the feasibility of an intact move option along each route.

As travel distance increased for longer travel routes, the complexity of moving the buildings increased due to the multiplication of factors or increased probability of a number of issues arising such as:

- Number of overhead services or infrastructure – powerlines, phone lines, overhead bridges, etc.
- Roadside infrastructure – trees, signage, poles, etc.
- Road infrastructure – bridge and drainage culvert allowable loads
- Slopes and crossfalls – necessitating additional traction or braking requirements
- Parking/layover areas – required to check the buildings and equipment along the route and to enable the parking of the convo buildings before and after difficult sections such as major intersections or areas of high slope so that building sections can traverse the obstacle one at a time
- Potential for delay due to equipment failure – e.g. tyre puncture
- Stakeholder delays – i.e. hold ups due to the impact on road users during road occupancy and access requirements
- Gaining necessary approvals for significant possession of public roads during relocation works

#### 7.2.3.1 Key Route Constraints

Key route constraints that were identified for assessment were:

##### 1. Track Width

The track width of the existing road corridor was identified early on as a major constraint to relocating the buildings. A minimum track width of 9m (13m preferred) is required for moving the buildings wholly intact and presented problems for many of the chosen routes as the majority of routes were 7.5m or less. It was therefore determined that moves further afield would only be achievable if the Main House and Kitchen Wing were broken into smaller sections. Moves to sites located close to the homestead's current location (within approximately 2-5km) do not have the same track width constraints and allow the buildings to be moved wholly intact. Further details on

the required building segmentation in order to transport the buildings to sites further afield is provided in the Mammoth Movers route assessment report in Appendix B.

2. **Slope**

The maximum traversable slope is determined by the maximum allowable travel in the vertical hydraulic rams incorporated in the dolly load platform and the maximum wall lean that can be accommodated by the buildings. The maximum allowable wall lean was estimated for each building and combined with the physical hydraulic constraints of the dollies to determine the maximum slopes negotiable for each structure to be relocated. Each of the proposed transport routes were then driven by Mammoth Movers and high slope areas were identified and measurements of slope taken. The areas of concern were compared against the maximum negotiable slopes to identify problematic areas.

3. **Crossfall**

Similar to slope, the road crossfall along the routes will impact the stability of the load in the transverse direction. The maximum traversable crossfall is determined by the maximum float in the vertical hydraulic rams incorporated in the dolly and the maximum wall lean that can be accommodated by the buildings. The maximum crossfall that is negotiable by the buildings was determined by the mover taking into consideration allowable wall lean and physical constraints of the dolly hydraulic ram. Similar to slope, high crossfall areas were identified and measured along each route, and problematic areas were identified by the building mover.

4. **Slope and Crossfall Combination**

Along a transport route consideration also needs to be given to the scenario where both slope and crossfall occur concurrently. In this case the dolly hydraulics need to be applied to correct deficiencies in both the slope and crossfall. Whilst the slope (or crossfall) of a section of the route may be able to be accommodated by the dolly hydraulics, the combined effect of both may exceed the travel of the dolly hydraulics and wall stability.

The combined effect of slope and crossfall together with wall stability was used to determine the total allowable drop for each building. The total allowable drop was then reviewed against areas identified as high risk by the building mover along each route.

5. **Pavement, Bridge and Culvert Load Capacity**

The load capacity of the road pavement and existing structures such as bridges and culverts was not assessed in detail for the route assessment but was considered a potential constraint to moving the buildings, particularly to sites further afield. The width of existing bridge crossings was measured and considered when assessing available track width.

6. **Powerlines and Overhead Infrastructure**

Glencore completed survey of overhead powerlines and other fixed overhead structures to determine available vertical clearance along each route. Every effort was made to select routes that avoided, where practical, interference with existing overhead infrastructure.

7. **Trees and Other Roadside Infrastructure and Obstacles**

The overhang of the buildings beyond the dolly footprint has the potential to clash with roadside obstacles along each route. Typical obstacles include signage, power poles, roadside barriers, fencing, trees and road cuttings.

A high level review of roadside obstacles was completed as part of the route survey. Some individualised obstacles were identified along each of the routes and potential localised works were identified to overcome these constraints.

8. **Layover Sites**

Parking places are required along the route to enable the temporary parking of the buildings in convoy. Parking places need to be sufficiently large enough to accommodate up to 3 structures for moves further afield.

The above constraints were informed by the physical size and configuration of the building components being relocated, the type of construction of the building and the overall building weight.



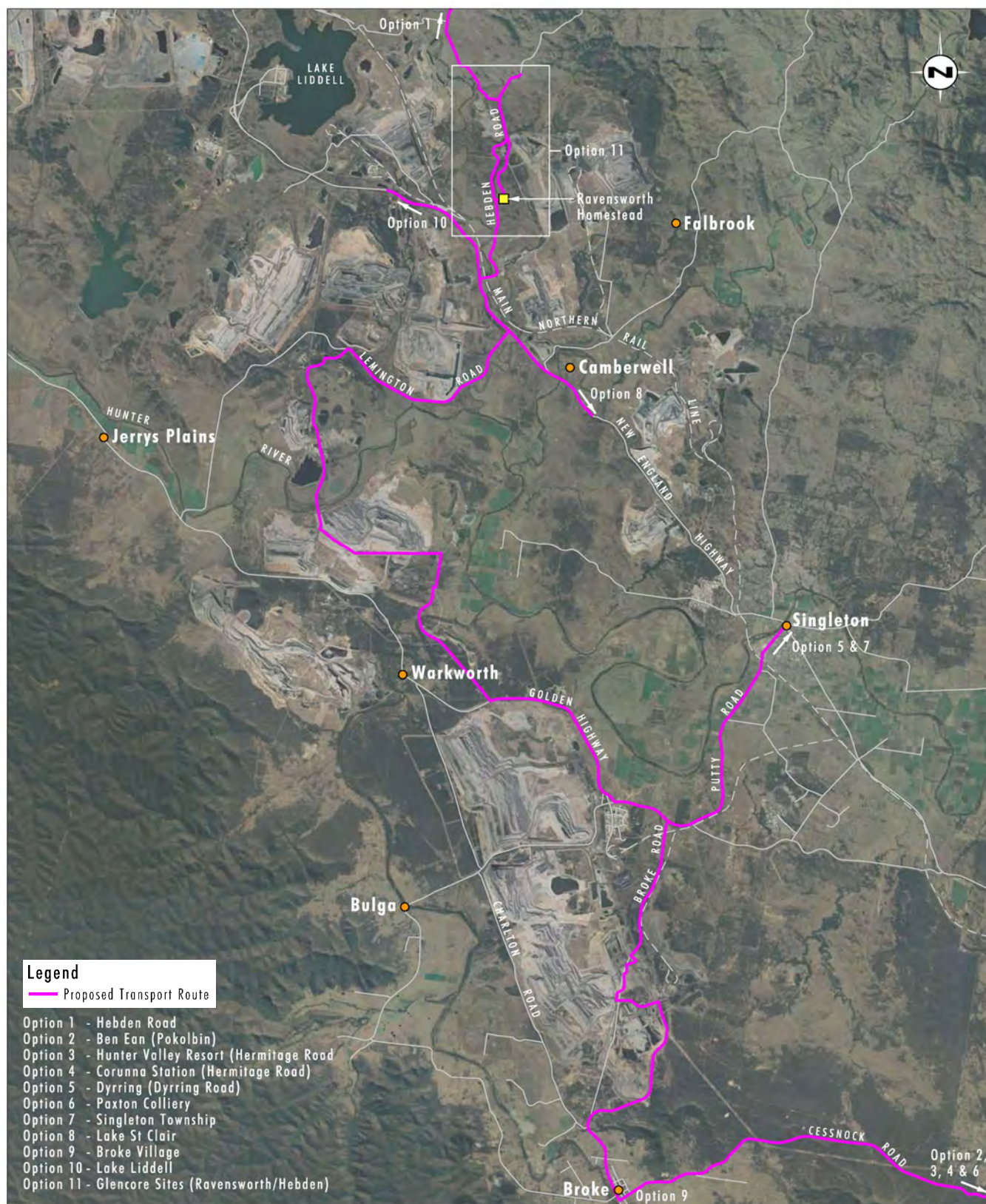
### 7.2.3.1 Proposed Routes

The routes investigated for transporting the buildings to the potential recipient sites were chosen to minimise route obstacles, and included the use of internal mine haul roads as they were considered to provide greater flexibility and minimise impact on other road users.

The proposed routes investigated are shown in **Figure 11**. Relocation of the homestead buildings to sites to the south (Singleton, Broke, Belford, Pokolbin, Dyrring) involves transportation of the buildings along:

- Hebden Road
- New England Highway
- Lemington Road
- Mine haul roads through Hunter Valley Operations
- Comleroi Road/Paynes Crossing Road
- Jerrys Plains Road
- Putty Road (and Glenridding Road through to Singleton and Dyrring)
- Mine haul roads through Bulga Coal Mine
- Broke Road
- Singleton Street (and Cessnock Road through to Belford and Pokolbin)

Relocation of the homestead buildings to the north to Hebden involves transportation of the buildings along Hebden Road and then Scrumlo Road.



**Figure 11: Proposed Transport Routes**

### 7.2.3.2 Route Review

Mammoth Movers reviewed each of the proposed routes considering the constraints of both the buildings and routes.

It was found that intact relocation of the buildings in sections to Belford, Pokolbin and Paxton is not feasible due to significant slope constraints along Cessnock Road.

The intact relocation of the buildings in sections to Broke, Singleton and Hebden is theoretically possible but requires road works at localised locations along each route. Capital estimates were prepared for the necessary road upgrades to enable relocation to these sites with these works not considered viable. In addition to the high cost of road upgrades, the duration of road occupancy would be excessive for these routes and the subsequent impact on existing road users is also considered a major constraint.

As a result, the intact move of the homestead buildings is limited to locations close to the homestead's current location. The intact move of the buildings to a local site removes the track width constraint and allows the buildings to be relocated wholly intact. The extent of this limit was defined as south along Hebden Road to Bowmans Creek and north along Hebden Road to the existing bridge crossing of Stringy Bark Creek including Pictons Lane.

A summary of the outcomes of the route assessment is shown in **Figure 12** and summarised in **Table 7**. Further details on the route assessment are provided in **Appendix B**.

**Table 4: Summary of Impact of Slope and Crossfall on Proposed Routes**

Site Name	Location	Move Configuration	Distance	Track Width	Slope and Crossfall Feasible	Powerline Clashes	Days of Road Occupancy	Layover Sites
Option 1 Hebden	Scrumlo Road, Hebden	In sections	11km	6m	Yes – with significant public roadworks	11	12	3
Option 2 Ben Ean	MacDonalds Road, Pokolbin	In sections	88km	7m	No	>50	>50	>14
Option 3 Hunter Valley Resort	Hermitage Road, Belford	In sections	82km	7m	No	>50	>50	>14
Option 4 Corunna Station	Hermitage Road, Belford	In sections	95km	7m	No	>50	>50	>14
Option 5 and 7 Singleton (incl Dyrring)	Singleton Township and Dyrring beyond	In sections	56km	7m	Yes – with significant public roadworks	>50	>50	>14
Option 6 Paxton	Paxton Colliery	In sections	108km	7m	No	>50	>50	>14
Option 8 Lake St Clair	Lake St Clair	In sections	55km	6m	No	>30	>50	>14
Option 9 Broke	Broke village	In sections	63km	7m	Yes – with significant public roadworks	>50	>50	>14
Option 10 Lake Liddell	Lake Liddell	In sections	18km	7m	No	>20	>20	>10
Option 11 Glencore sites	Pictons Lane and adjacent to Bowmans Creek	Wholly intact	2-5km	9m	Yes - with private road or minor roadworks	2	3	0

Consideration met

Consideration partially met

Consideration not met



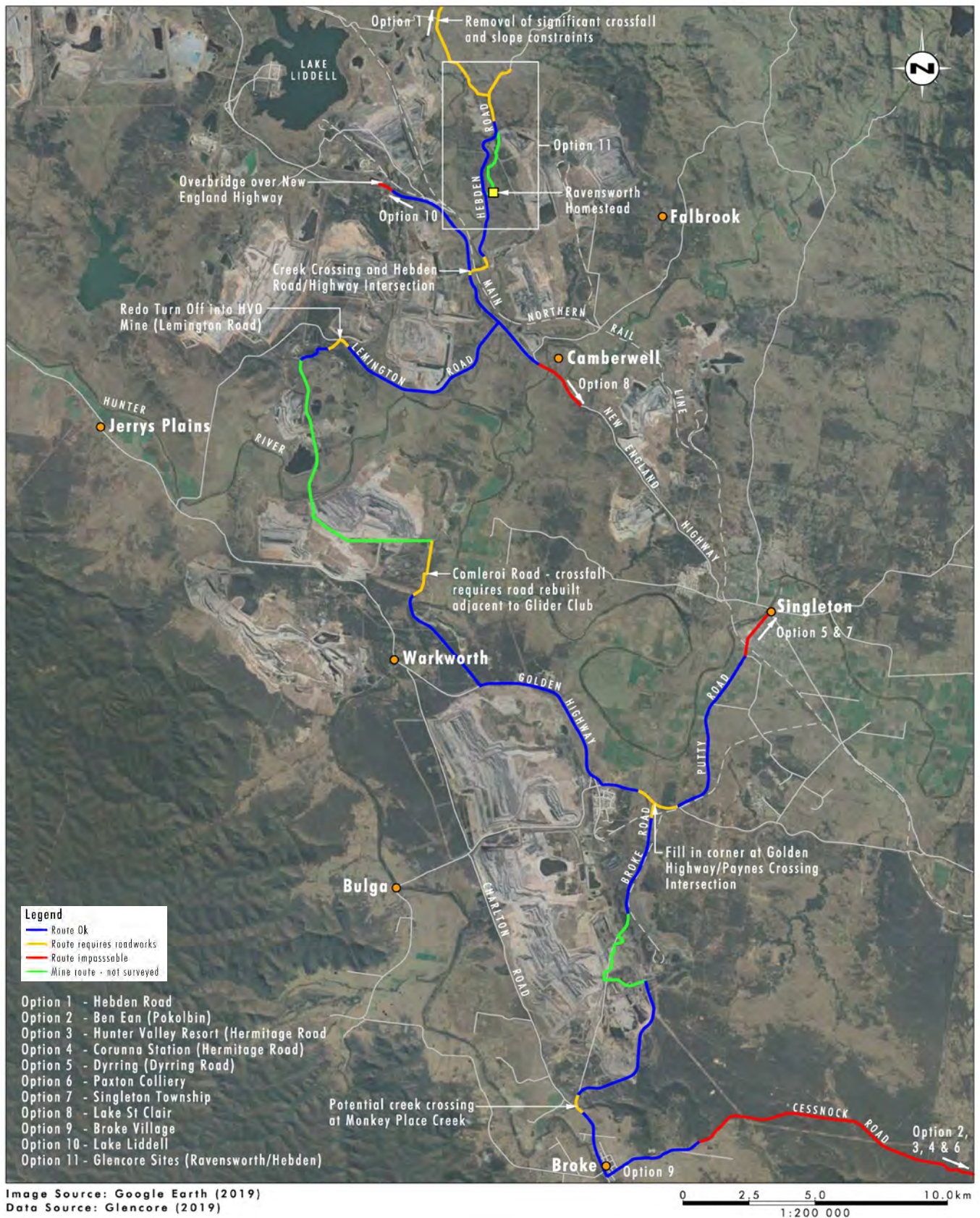


Figure 12: Outcomes of Route Assessment

## 7.2.4 Recipient Site Assessment

In parallel with the route assessment, the heritage consultants and the RHAC also completed inspections (separately) of each proposed recipient site. The heritage consultants developed a list of key attributes that they considered the homestead recipient site should have with the focus being on the sites physical attributes (immediate site gradient, proximity from a creek, direction of approach) and wider visual catchment in order to achieve verisimilitude to the existing site. The site assessment also included assessment against key considerations of the RHAC and Glencore including building relocation logistics, costs, accessibility and long term economic viability as well as preservation of heritage aspects. The outcome of this assessment is provided in **Appendix C**.

In summary:

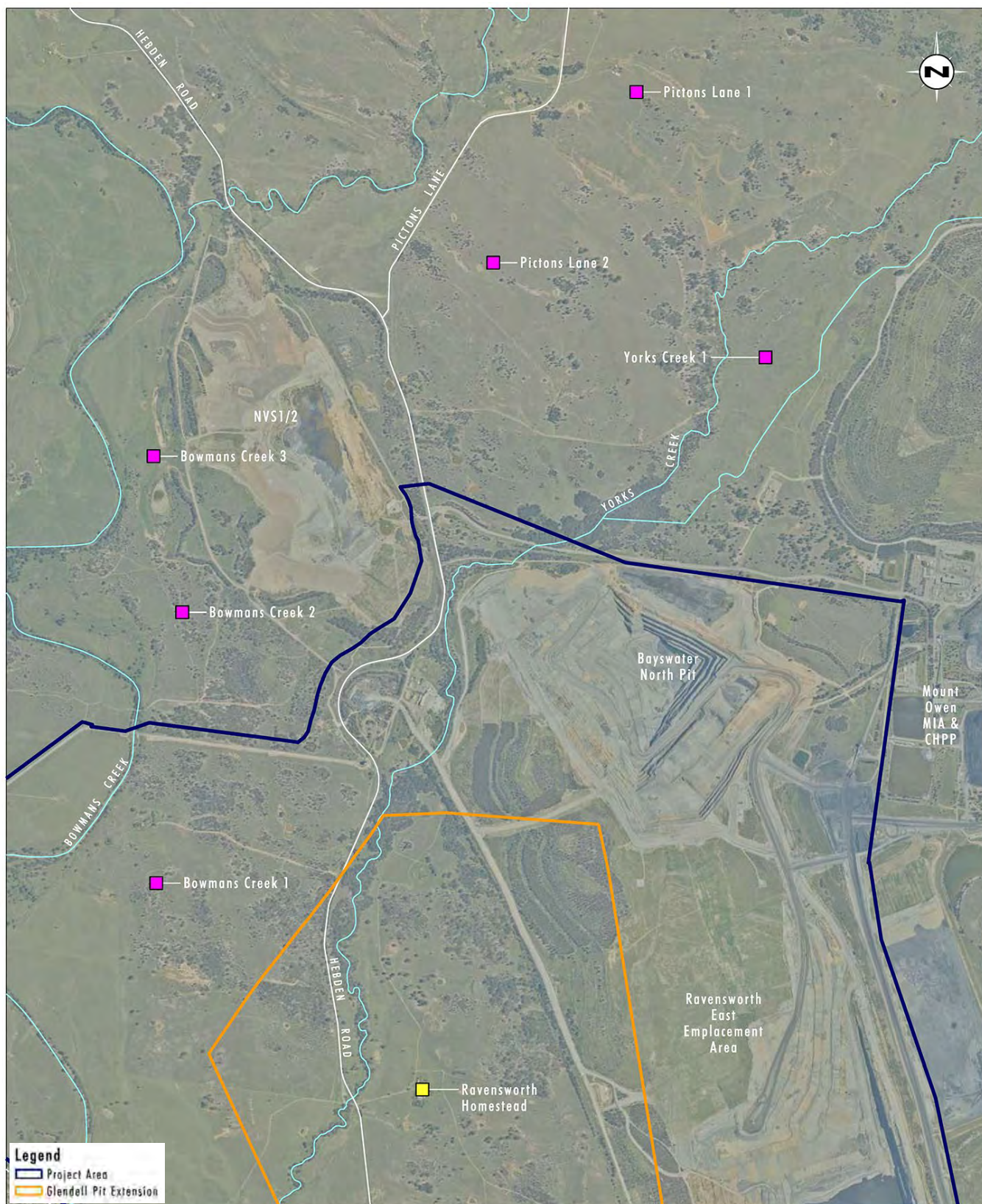
- Most of the sites inspected were considered to have unsuitable gradients and locations that did not resemble the existing homestead site in any way;
- Sites further afield contained complex logistical issues that were difficult to overcome; and
- Sites close to the homestead's current location in Ravensworth and Hebden were considered preferable given similar setting.

## 7.2.5 Site Options and Proposed Site

The relocation of the homestead buildings using the intact move methodology is limited to recipient sites within 2 to 5km of the homestead's current location as the constraints of the existing road network (grade, width, fixed infrastructure) make it impossible to move the buildings any further and/or the cost to upgrade the road to overcome the existing road network constraints is too expensive. In addition, the physical attributes of sites further afield are not considered consistent with the current setting of the Homestead with sites close to the current location of the Homestead in Ravensworth considered to more closely resemble the existing site in terms of gradient and outlook and having the additional benefit of being on the original Bowman '10,000 acre' land grant.

Six sites were investigated for the intact relocation of the homestead buildings and are shown in **Figure 13**. Each of these sites are situated on Glencore-owned land.





**Figure 13: Intact Move Recipient Site Options**



Each site was inspected by the RHAC and heritage consultants and further assessment undertaken that considered:

- Proximity to existing and proposed infrastructure and mining operations;
- Proximity to major transport routes;
- Outlook and visual catchment;
- Direction of vehicular approach
- Whether the site overlies coal reserves;
- Access to water; and
- Planning considerations including zoning and flood risk.

A summary of each site against these considerations is provided in **Table 5**.

Table 5: Summary of Intact Move Recipient Site Assessment

Recipient Site	Proximity to existing and proposed infrastructure	Proximity to major transport corridors	Outlook and visual catchment	Direction of vehicular approach	Overlies coal reserves	Access to water	Planning considerations (zoning, flood risk etc)
Bowmans Creek 1	Adjacent to new MIA for duration of mining. MIA to be removed and site rehabilitated at completion of mining.	Close to New England Highway relative to other sites with good visibility off relocated Hebden Road	Similar outlook and setting to existing homestead site	From west off relocated Hebden Road	Yes, however past underground mining has depleted reserves in locality (Homestead not directly over workings) and Bowmans Creek restricts access to reserves	Extension of existing raw water pipeline from Glennies Creek to be provided for new MIA	Zoning compatible with proposed use, flood free
Bowmans Creek 2	No infrastructure in immediate vicinity	Close to New England Highway though poor visibility	Rural outlook though enclosed	From south off relocated Hebden Road	Yes, however location of past open cut mining and close to Bowmans Creek	Adjacent to existing dam/s	Zoning compatible with proposed use, flood free
Bowmans Creek 3	No infrastructure in immediate vicinity	Close to New England Highway though with poor visibility	Rural outlook though enclosed	From south off relocated Hebden Road	Yes, however location of past open cut mining and close to Bowmans Creek	Adjacent to existing dam/s	Zoning compatible with proposed use, flood free
Pictons Lane 1	No infrastructure in immediate vicinity	Considerable distance from New England relative to other options with poor visibility	Rural outlook though enclosed	From west off Pictons Lane	No	Existing dam/s on adjacent creek line	Zoning compatible with proposed use, flood free
Pictons Lane 2	No infrastructure in immediate vicinity	Considerable distance from New England relative to other options with poor visibility	Rural outlook though enclosed	From west off Pictons Lane	Yes, though high strip ratio and generally uneconomic	Existing dam/s on adjacent creek line	Zoning compatible with proposed use, flood free
Yorks Creek 1	No infrastructure in immediate vicinity	Considerable distance from New England relative to other options with poor visibility	Rural setting though limited views of range to south	From west off Pictons Lane or south off mine access road	Yes, though high strip ratio and generally uneconomic	Would require construction of dam/s.	Zoning compatible with proposed use, flood free

- Consideration met
- Consideration partially met
- Consideration not met

Bowmans Creek 1 was selected by the RHAC, Glencore and heritage consultants as the preferred recipient site for an intact move as:

- It is located close to the New England Highway with good visibility off the proposed relocated Hebden Road with the homestead less likely of becoming isolated and a stranded asset relative to the other site options;
- The homestead will be situated to the west of the proposed relocated Hebden Road similar to its position relative to the existing Hebden Road;
- The site is closest to the existing homestead site relative to other site options, and has a similar setting and visual catchment with distant views of the Broken Back Range; and
- The site will have access to raw water from Glennies Creek via a new pipeline which will be installed as part of construction of the new MIA.

The Bowmans Creek 1 site is referred to as the Ravensworth Farm relocation option and further details including usage, ownership and key features of this option are discussed in **Section 8**.

## 7.3 Dismantle and Rebuild Move

Following the selection of the Bowmans Creek 1 site as the preferred intact move recipient site, the RHAC still had concerns regarding accessibility and the long term viability of having the homestead remain in the Ravensworth locality.

End-use commercial modelling for a range of alternate recipient sites completed by Morrison Low indicated that site options that place the buildings in higher tourist traffic areas such as the Pokolbin and Broke localities, and to a lesser extent Singleton township, had a greater potential to be economically viable and sustainable. However, relocation of the buildings to sites further afield can only occur if the buildings are dismantled and rebuilt due to the road constraints associated with moving the buildings intact.

In order to address the RHACs concerns regarding accessibility and long term viability of the local move option, Glencore considered options that sought to position the homestead in a more highly trafficked location. Key requirements identified by the RHAC and Glencore for this alternate option were:

- The homestead was to be kept within the Singleton LGA;
- The homestead once relocated was to be publically owned or owned under some other form of equitable ownership structure; and
- The proposed end use provides public access and fulfils a community need.

All relocation options previously considered for an intact move were re-examined in light of the above requirements. Further details on the dismantle and rebuild move methodology, option assessment and preferred dismantle and rebuild site option is provided below.

### 7.3.1 Building Move

Relocation of the Ravensworth Homestead complex using a dismantle and rebuild approach requires careful planning, documentation and use of specialist heritage contractors and trades to ensure that the works are carried out to maximise the retention of original materials and construction methods.

The dismantle and rebuild of the homestead buildings at a new recipient site would involve the following four phases:

- Phase 1: Pre-move – involves survey and laser scanning of buildings, development of a Building Information Model for each building, and testing of timber, stone and plaster elements to allow identification and sourcing of suitable replacement materials. This phase would also include completion of hazardous material testing (such as lead paint) and removal.
- Phase 2: Dismantle – involves the careful labelling, unpicking, dismantling and palletisation of building components. Building materials sensitive to weather exposure would be protected and

materials too dilapidated for reuse would be recorded and replaced with a suitable material. During this phase, selected plants would also be recovered, stored and maintained temporarily for re-planting post building works.

- Phase 3: Transport – dismantled building elements would be transported to the recipient site via road-registered truck.
- Phase 4: Rebuild – involves the rebuilding of each building at the recipient site in reverse order to the dismantle phase. During the rebuild phase the buildings would be modified and adapted to suit the proposed end-use. All civil works and footing construction would be completed at the recipient site prior to the commencement of the rebuild phase. Following completion of the building works, replanting of selected plants and planting of new plants would be completed.
- (Note: the above works would occur after archaeological investigation within and adjacent to each building)

Further details on the dismantle and rebuild of the buildings is provided in **Section 8**.

### 7.3.2 Option Assessment

All previously investigated relocation options were considered in consultation with the RHAC and assessed against the requirements of having the homestead:

- Remain within the Singleton LGA;
- Transferred into public ownership or some other equitable ownership structure following relocation; and
- With an end-use that provides public access and an ongoing community benefit.

An assessment of each relocation option against the above requirements is provided in Table 6. The results of the assessment identifies relocation of the buildings to either Singleton or Broke as being the preferred locality.

**Table 6: Summary of Relocation Options against Key Requirements**

Relocation Option	Use	LGA	Ownership Model	Public Access/Community Benefit
1. Hebden (Scrumlo Road)	Multi-purpose	Muswellbrook	Private	Private use
2. Ben Ean (Pokolbin)	Multi-purpose	Cessnock	Trust	Would provide public access
3. Hunter Valley Resort (Hermitage Road)	Multi-purpose	Singleton	Private	Attached to other development though accessible
4. Corunna Station (Hermitage Road)	Short-stay accommodation	Singleton	Private	Private use
5. Dyrring (Dyrring Road)	Short-stay accommodation	Singleton	Public (WLALC)	End-use likely to limit public access
6. Paxton Colliery	Short-stay accommodation	Cessnock	Private	Private use
7. Singleton Township	Multi-purpose	Singleton	Potentially Singleton Council	Community facility

Relocation Option	Use	LGA	Ownership Model	Public Access/Community Benefit
8. Lake St Clair	Multi-purpose	Singleton	Potentially Singleton Council	Attached to other development though accessible
9. Broke Village	Multi-purpose	Singleton	Trust	Community facility
10. Lake Liddell	Multi-purpose	Muswellbrook	Private	Would provide public access

- Consideration met
- Consideration partially met
- Consideration not met

### 7.3.3 Site Options and Proposed Site

A range of potential sites were investigated in Singleton and Broke with each subjected to a planning constraints assessment that considered:

- Land ownership
- Zoning compatibility
- Potential for flood inundation
- Impact of building relocation on existing heritage at the recipient site (both Aboriginal and historic); and
- Other environmental factors.

Further details on the planning constraints assessment completed for the sites in Singleton and Broke is provided in **Appendix D**.

In total four sites were identified by the RHAC and Glencore for investigation in Singleton (**Figure 14**), and five sites were investigated in Broke (**Figure 15**) and formed the basis of the proposal received from members of the Broke-Fordwich community. The sites were:

#### Singleton

- Site 1 – adjacent to Council offices on Civic Avenue
- Site 2 – adjacent to Singleton Hospital
- Site 3 – Albion Park
- Site 4 – Singleton Showground

#### Broke

- Site 1 – Stewart McTaggart Park
- Site 2 – McNamara Park
- Site 3 – Milbrodale Road
- Site 4 – Catholic Church (Adair Street)
- Site 5 – Anglican Church (Rogers Street)

A summary of the constraints assessment completed for the sites in Singleton and Broke is provided in **Table 7**.





Figure 14: Singleton Site Options





Figure 15: Broke Site Options

**Table 7: Constraints Assessment of Singleton and Broke Site Options**

Site	Land ownership	Other heritage?	Is zoning compatible?	Flood liable?	Other considerations	Preferred Site
<b>Singleton</b>						
Site 1 adjacent to Council offices	Singleton Council	Nil	Partially – suitable for office space	Yes	Council would have to agree to becoming asset owner	No – unlikely to obtain land from Council.
Site 2 adjacent to Singleton Hospital	Singleton District Hospital	Partially	No – health services only	Partially	Special purpose zoning under LEP.	No – unlikely to obtain land and would require rezoning
Site 3 Albion Park	Crown Land	Nil	Partially – community facility	Yes	Native Title considerations	No – would remove public open space from Singleton
Site 4 Singleton Showground	Private	Yes	Partially – community facility	Yes	Space for Main House only Local heritage listing of existing buildings.	No – space limitations and impact on other heritage items
<b>Broke</b>						
Site 1 Stewart McTaggart Park	Crown Land	Possible (cultural)	Generally – community facility, restaurants and cafes, markets	Yes	Require relocation of other facilities including war memorial, fire station and playground Native Title considerations	No – would require relocation of playground, fire station and war memorial
Site 2 McNamara Park	Crown Land	Possible (cultural)	Generally – community facility, restaurants and cafes, markets	Yes	Native Title considerations	Yes – centrally located, does not require relocation of existing facilities or buildings
Site 3 Milbrodale Rd	Crown Land	Possible (cultural)	Generally – community facility, restaurants and cafes, markets	Yes	Native Title considerations	No – considered too far removed from village
Site 4 Catholic Church (Adair Street)	Catholic Church, Crown Land and private	Yes (church)	No	Partially	Native Title considerations Grave sites May require relocation of church	No – unlikely to obtain land and would most likely require relocation of church and grave sites
Site 5 Anglican Church (Rogers Street)	Anglican Church and private	Yes (church)	No	Partially	May require relocation of church	No – unlikely to obtain land and would most likely require relocation of church



Consideration met



Consideration partially met



Consideration not met



Sites in Singleton are not considered viable due to either land ownership concerns (Council-owned and NSW Health owned land), space limitations, impacts on other existing heritage and incompatible zoning.

The majority of sites in Broke contain either existing facilities (fire station, playground, war memorial) or other local heritage listed buildings (Catholic and Anglican churches) which would most likely require relocation in order to accommodate the homestead buildings.

The preferred site is Site 2 (McNamara Park) in Broke as it does not impact upon other existing facilities and buildings, is situated on the highly tourist trafficked Wollombi Street (Broke Road) and Milbrodale Road, and is centrally located relative to other civic facilities within the village.

Site 2 is Crown Land and Native Title has not been extinguished. Discussions are currently underway with the Native Title Claimant and other key stakeholders regarding land access. The site is also flood prone and will require filling and localised regrading to ensure the relocated buildings are not subject to inundation. It is recognised that further approvals would be required to allow this option to proceed if selected by the approving authority.

Site 2 (McNamara Park) in Broke is referred to as the Broke Village relocation option and further details including usage, ownership and key features of this option are discussed in **Section 8**.

## 8 Preferred Relocation Options

This section discusses the two preferred homestead relocation options, namely Ravensworth Farm and Broke Village. A detailed heritage assessment of each relocation option is provided in the Statement of Heritage Impact (Appendix 23d of the Project EIS).

### 8.1 Ravensworth Farm

The Ravensworth Farm relocation option places an emphasis on conserving heritage significance by salvaging significant heritage features through:

- Moving the homestead buildings wholly intact to a site situated on the original Bowman '10,000 acre' land grant in Ravensworth
- Replicating existing site features (approach direction, landform, visual catchment) at the recipient site.

The buildings would be relocated to a site approximately 1.7km from the current homestead location situated outside the proposed Glendell Pit Extension (refer **Figure 18**) in a similar configuration and arrangement to their existing configuration and arrangement. At the completion of mining, the final pit crest would be situated approximately 630m from the relocated homestead. In its new location, views of the Glendell Pit Extension final void would not be visible from the homestead (refer **Figure 16**). However part of the rehabilitated in-pit overburden emplacement area would be visible (refer **Figure 17**).



**Figure 16: View from Ravensworth Farm towards Glendell Pit Extension Void**



**Figure 17: View from Ravensworth Farm towards Glendell Pit Extension Overburden Emplacement Area**

The land for the site is owned by Glencore and is zoned RU1 Primary Production and permits usage of the buildings for a wide variety of uses including dwelling, accommodation, information and education facilities and as a facility supporting an open cut mining operation. The site is situated approximately 350m to the east of Bowmans Creek and is situated outside of the Bowmans Creek floodplain and is therefore not subject to flood inundation.

Approach to the relocated homestead will be from the west via a newly constructed access road off the relocated Hebden Road.

The relocated homestead will initially overlook the proposed mine infrastructure area (MIA), which will be used to maintain the Project's mining equipment and provide administration and bathhouse facilities for the workforce. At the completion of mining, the MIA would be removed and the site rehabilitated.

Further details on the relocation of the buildings, proposed use, ownership and key site features is provided below.

### 8.1.1 Move Methodology

The intact relocation of the buildings is considered the most sympathetic to the significance of the buildings and would maximise the retention of the existing heritage fabric. The buildings would be transported along a purpose built road of sufficient width to accommodate the relocation of the Main House and Kitchen Wing as whole buildings.

The methodology for the intact relocation of the Ravensworth Homestead buildings would comprise three phases being:

- Phase 1: Pre-move works (including recovery of selected plants, trees and landscape features for final landscaping)
- Phase 2: Building move
- Phase 3: Post-move fit out and commissioning (including landscaping works using new and select recovered plants)

Specialist heritage contractors would continue to be engaged throughout the relocation process.

#### 8.1.1.2 Phase 1: Pre-move works

Includes those works required to prepare the buildings for moving and would occur post-approval. The pre-move works would comprise:

- Detailed archaeological (both Aboriginal and historical) investigation, recording and salvage within the immediate area of the proposed relocation works. Further details on the post-approval archaeological investigation is provided in the Heritage Impact Statement (Appendix 23c of the Project EIS).
- Salvage of select plants, trees and other garden features as identified in Appendix E. Trees and plants salvaged from the existing garden and immediate surrounds would be initially housed in a temporary nursery located onsite before being incorporated into the final landscape scheme.
- Hazardous material assessment and removal as required (e.g. asbestos, lead paint)
- Demolition and removal of identified structures considered of minimal heritage significance such as the Dairy Stalls alteration in the Barn building and the Shearing Shed alterations in the Stable building.
- Sensitive removal of the early 20<sup>th</sup> century addition to the Main House in order to reinstate the original 'H' plan form.
- Documentation, disassembly and palletisation of identified structures not suitable for intact relocation including the southern room of the Stables.
- Building repair and stabilisation works such as roof timber replacement, tie-down connection of roof members to walls, crack stitching, installation of wall through ties and permanent roof bracing. The final schedule of repair and stabilisation works would be determined following further investigation and consultation with the building mover and heritage structure engineer.
- Construction of transport route from existing site to recipient site.
- Civil works at recipient site including site regrading, drainage, construction of new House Dam, construction of new driveway, footing construction and conduit installation for services.

#### 8.1.1.3 Phase 2: Building move

These works would be completed by a specialist building mover contractor with expertise in the intact relocation of heritage stone buildings. A detailed move methodology for the intact relocation of the buildings to the recipient site has been prepared by Mammoth Movers and is provided in Appendix 23g of the Project EIS. In summary, the key steps in moving the buildings includes:

- Installation of temporary structural support or bracing to maintain the buildings in their existing condition during the move;
- Excavation around and beneath the buildings and installation of the jacking support frame consisting of steel beams used to spread the load onto a network of hydraulically linked dollies;
- The uniform raising of the buildings and transfer onto dollies;
- Transporting the buildings to the recipient site via a purpose built road that avoids interaction with public road users;
- Placing the buildings onto their new footings and the building up of supports to the underside of the buildings;
- Removal of the jacking support frame from under the buildings;
- Removal of temporary bracing and supports and demobilisation of relocation equipment;
- Backfilling around the buildings to the final design level; and
- Separate relocation of disassembled building components that were not suitable for intact relocation to the recipient site and reassembly in their new location using a suitably qualified heritage builder.

#### 8.1.1.4 Phase 3: Post-move fit out and commissioning

This phase would occur after the buildings have been moved and would include:

- Internal fit out to suit the proposed end use including service reticulation and wet areas;



- Construction of other adaptation works to suit the proposed end use;
- Planting of salvaged trees and plants and establishment of gardens in accordance with proposed landscape scheme; and
- Compilation of documentation of the move for information display within relocated buildings.

### 8.1.2 Proposed Use

For the duration of mining (approximately 20 years), the relocated homestead buildings would be used by Glencore as an administration centre consisting of office space, meeting facilities and training rooms as indicated in **Figure 19**. Adaptation drawings for the proposed use are shown in Appendix 23g of the Project EIS.

The relocated Men's Quarters would be used to store and display the history (Aboriginal and historical) of Ravensworth Estate and the associated building group. Additionally, select artefacts salvaged from the archaeological (Aboriginal and historical) investigations would be stored and incorporated into the new grounds.

At the completion of mining, possible options include return of the homestead to use as a private homestead with an attached landholding or an alternate use that suits future land use and interest in the area.

Further details on proposed building modification and adaptation works required to suit the intended end-use are provided in Appendix 23g of the Project EIS.

### 8.1.3 Ownership

During mining the buildings will be owned and maintained by Glencore. At the completion of mining, the buildings would transfer ownership in accordance with the future use and interest in the area.

Whilst in Glencore ownership, public access would be provided to the relocated homestead upon request.

### 8.1.4 Key Features

The Ravensworth Farm relocation option has a strong focus on replicating the physical characteristics of the existing homestead site in order to maintain verisimilitude. A summary of the key physical features of the existing and proposed Ravensworth Farm site are provided in **Table 8**.

The Ravensworth Farm relocation option keeps the homestead buildings on the original Bowman '10,000 acre' land grant and within the Ravensworth locality. Under this relocation proposal, all buildings would be relocated, arranged and oriented in their existing configuration. A conceptual perspective view of the relocated homestead is shown in **Figure 20**.

The recipient site would be reshaped so that the landform upon which the relocated buildings would sit would be similar to the current landform. Additionally, the visual catchment from the recipient site will be similar to the current with mid-range views to the south of Ravensworth Operations emplacement areas and distant views of the Broken Back Range.

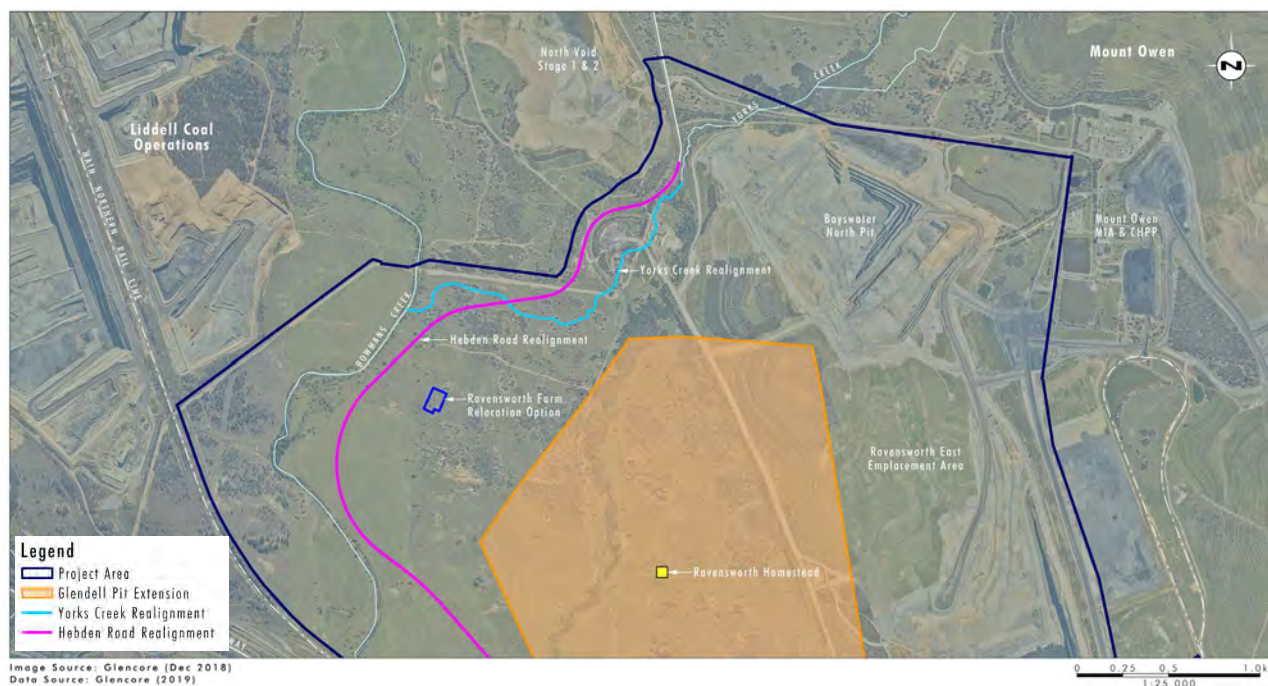
Approach to the Ravensworth Farm site would be from the west via the relocated Hebden Road at an alignment similar to the approach to the current site from Hebden Road. Further, the offset of the recipient site to the relocated Hebden Road is similar in distance to the offset of the current homestead site from the existing Hebden Road.

The landscape scheme for the proposed Ravensworth Farm option will include the relocation of significant trees and plants and other landscape features from the existing garden to the new site. Additional vegetation planting is also proposed along the approach road to the new site and along parts of the relocated Hebden Road. Plantings along the relocated Hebden Road would screen road user views of the MIA. At the completion of mining and following removal of the MIA, select areas of planting along the relocated Hebden road would be removed in order to provide road users with views of the homestead upon approach from the south.

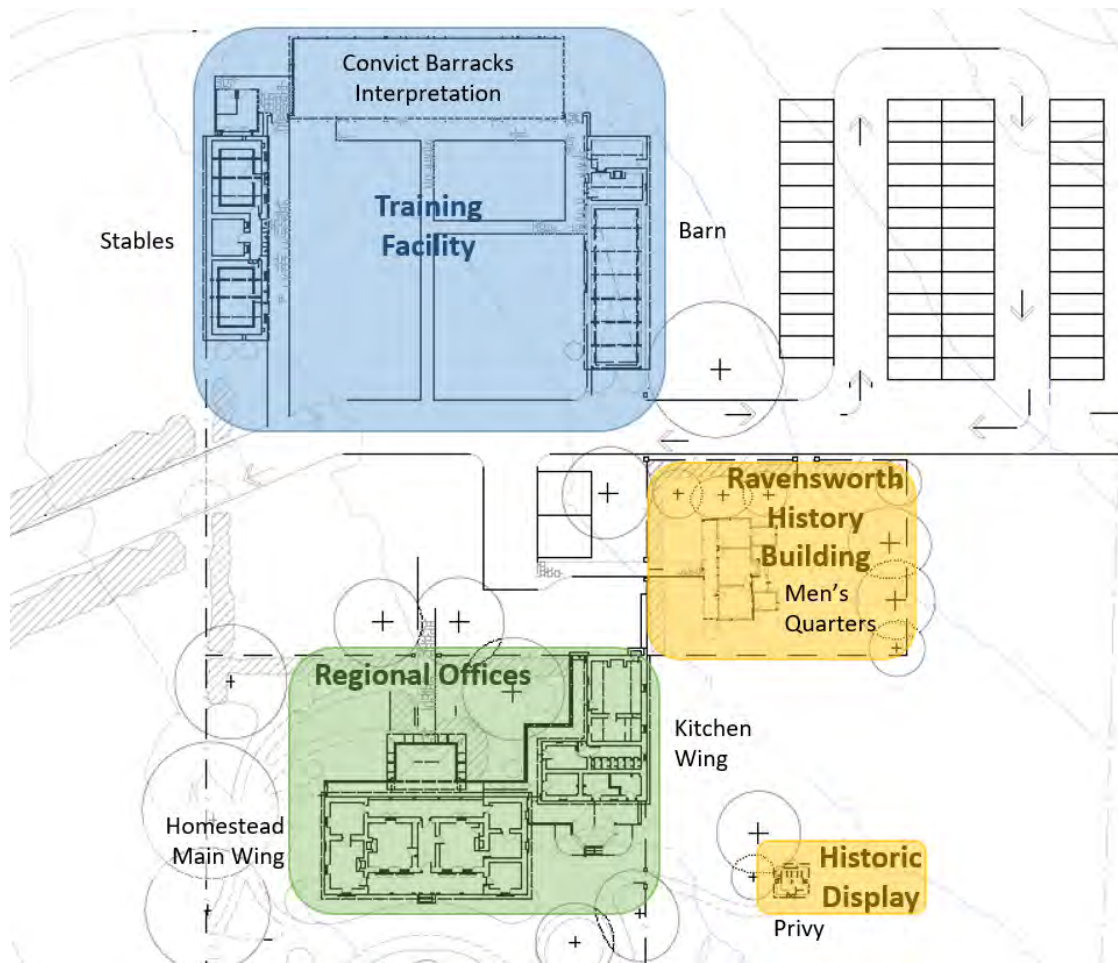
The Ravensworth Farm would have access to water via a pipeline that will be constructed for transferring raw water from Mount Owen mine to the proposed MIA. Further, a new house dam will be constructed to the south of the new site to replicate the House Dam that is present at the homestead's current site.

**Table 8: Summary of Key Features of Existing and Proposed Ravensworth Farm Sites**

Key Features	Existing Site	Ravensworth Farm
Landform gradient upon which buildings sit	3.1% fall towards the Homestead (2.9m fall between north-east corner of Barn and south-west corner of Main House)	3.1% fall towards the Homestead (2.9m fall between north-east corner of Barn and south-west corner of Main House)
Approximate elevation of landform at site of Main House	96m AHD	100m AHD
Distance of homestead buildings from Public Road	275m to the east of existing Hebden Road	297m to the east of relocated Hebden Road
Direction of approach	Approach from west off Hebden Road	Approach from west of relocated Hebden Road (at similar alignment to existing)
Distance of homestead to watercourse	Western wall of Main House 242m to the east of Yorks Creek	Western wall of Main House 395m to the east of Bowmans Creek
Distance of homestead buildings from waterbody	132m from Main House southern entrance to centroid of Dam to the south 253m from existing Main House north-west corner to centroid of Dam to the north-west	124m from Main House southern entrance to centroid of Dam to the south 245m from new Main House north-west corner to centroid of Dam to the north-west



**Figure 18: Ravensworth Farm Locality**



**Figure 19: Ravensworth Farm Conceptual Use Plan**



**Figure 20: Ravensworth Farm Perspective View (Conceptual)**



### 8.1.5 RHAC feedback

The RHAC confirmed their support for the Ravensworth Farm option as one of the relocation options at committee meeting #13 held on 3 July 2019.

## 8.2 Broke Village

The Broke Village relocation option is a proposal by members of the Broke-Fordwich community that sites the buildings in a publically accessible location to provide an ongoing community benefit through dismantling and rebuilding the homestead buildings to form the Broke village square.

The buildings are proposed to be rebuilt at the southern end of McNamara Park on the corner of Wollombi Street (Broke Road) and Milbrodale Road, and would provide a focal point that links the existing playground (Stewart McTaggart Park), fire station, war memorial and general store to the south with other civic facilities such as churches, Broke Town Hall and Broke Public School to the north (refer to **Figure 21** and **Figure 22**).

The buildings are proposed for multi-purpose usage and would provide local employment opportunities, communal interaction and encourage enterprise growth.

Landscaping for the grounds will incorporate elements from the original homestead site, including transplanting of select trees and plants. The existing site would require the clearing of vegetation to accommodate the proposed scheme, and additional clearing (including thinning) is likely to be required around the facility to manage bushfire risk.

The site is zoned RE1 Public Recreation Zone and permits with consent usage such as community facilities, information and education facilities, markets, recreation areas, and restaurants and cafes. The site is Crown Land and Native Title has not been extinguished. Discussions are currently underway with the Native Title Claimant and other key stakeholders regarding land access.

The proposed site is currently prone to flooding and would need to be filled with the proposed finished floor levels to be situated above the 1 in 100 year flood level with an appropriate freeboard.

Relocation of the homestead to Broke would be subject to the securing of land tenure, secondary approvals and completion of the requisite accompanying assessments (refer to Section 5 of EIS for further details).

Further details on the relocation of the buildings, proposed use, ownership and key site features is provided below.



Figure 21: Broke Village Locality Plan





*Figure 22: Broke Village Perspective View*

## 8.2.1 Move Methodology

The dismantle and rebuild move methodology is separated into four main phases being:

- Phase 1: Pre-move
- Phase 2: Dismantle
- Phase 3: Transport and
- Phase 4: Rebuild (including post move fit-out and commissioning)

Key components of these phases are described below and further details are provided in Appendix 23g of the Project EIS.

### 8.2.1.1 Phase 1: Pre-move

The pre-move phase (Phase 1) would involve the detailed survey, photographing and laser scanning of the in-situ building elements to develop a digital Building Information Model of the homestead complex capturing detail and labelling down to individual structural components, fixtures and individual stones on exposed stone walls.

During this phase, testing would be completed for timber, stone and plaster elements of the buildings and suitable replacement materials would be sourced for use in the rebuild phase should building components be too dilapidated for re-use (e.g. termite affected timbers). Approval for replacement materials would be sought from the heritage specialist.

Testing would also be completed for lead paint to supplement previous testing completed for hazardous materials and any identified hazardous materials would be removed from the building complex to enable safe dismantling works.

Salvage of select plants, trees and other garden features as identified in Appendix E would also occur during this phase. Trees and plants salvaged from the existing garden and immediate surrounds would be initially housed in a temporary nursery before being incorporated into the final landscape scheme.

### 8.2.1.2 Phase 2: Dismantle

The dismantle phase (Phase 2) would involve the careful labelling, unpicking and dismantling of building components in a planned approach to keep the building watertight for as long as possible. As such,

internal fixtures, floors, ceiling panels and non-structural walls would be removed first, with the roof and structural walls following.

As part of the process, each building component would be cleaned and detailed appropriately and labelled as per the Building Information Model before being stacked onto pallets for transport. Each pallet would be numbered and the contents recorded on a pallet tracking register so that individual building components could be found easily during the rebuild process.

Pallets and building materials sensitive to exposure to weather would be stored in steel containers or suitable shedding and other less weather sensitive materials would be wrapped in plastic or tarpaulin to contain and protect the materials as appropriate.

Elements of the building that are found to be too dilapidated for re-use would be recorded and a suitable replacement sourced using dimensions from the Building Information Model and the approved replacement materials identified in the Preconstruction phase.

Should the plastered inner wall leaf be found to be of stone rubble construction then consideration would be given to replacing the inner wall leaf.

### 8.2.1.3 Phase 3: Transport

Transport (Phase 3) of the dismantled building elements would be carried out via road-registered trucks from the current site to the recipient site.

A transport route is available from the current site to the recipient site that doesn't impose restrictions on standard sized truck loads. Building elements would be packaged and arranged in such a way to minimise the number of oversized loads required.

The pallet register would be updated through the transport process as a live document so that transport between sites is tracked.

### 8.2.1.4 Phase 4: Rebuild

During the Dismantle phase (Phase 2), civil works and footing construction would be occurring at the recipient site. At the completion of these recipient site works, dismantled and replacement building materials would be transported to the new site in an ordered fashion to allow reconstruction of the buildings in the reverse process of the Dismantle phase.

Structural walls, both internal and external would be completed first and then the roof structure, non-structural walls, ceiling panels, floors and internal fixtures.

The works would involve specialist heritage trades using traditional construction methods and mortar and plaster mixes that are representative of the original construction. Nails and other fixings would be replaced during this process. Fixings that are visible, such as bolted truss connections in the stables, would be replaced with appropriate materials as approved by the heritage specialist.

Following reconstruction of the buildings and service installation, final finishes including plaster would be applied and fit out of the buildings for the proposed end use would be completed as well as landscaping using a combination of relocated and new plants.

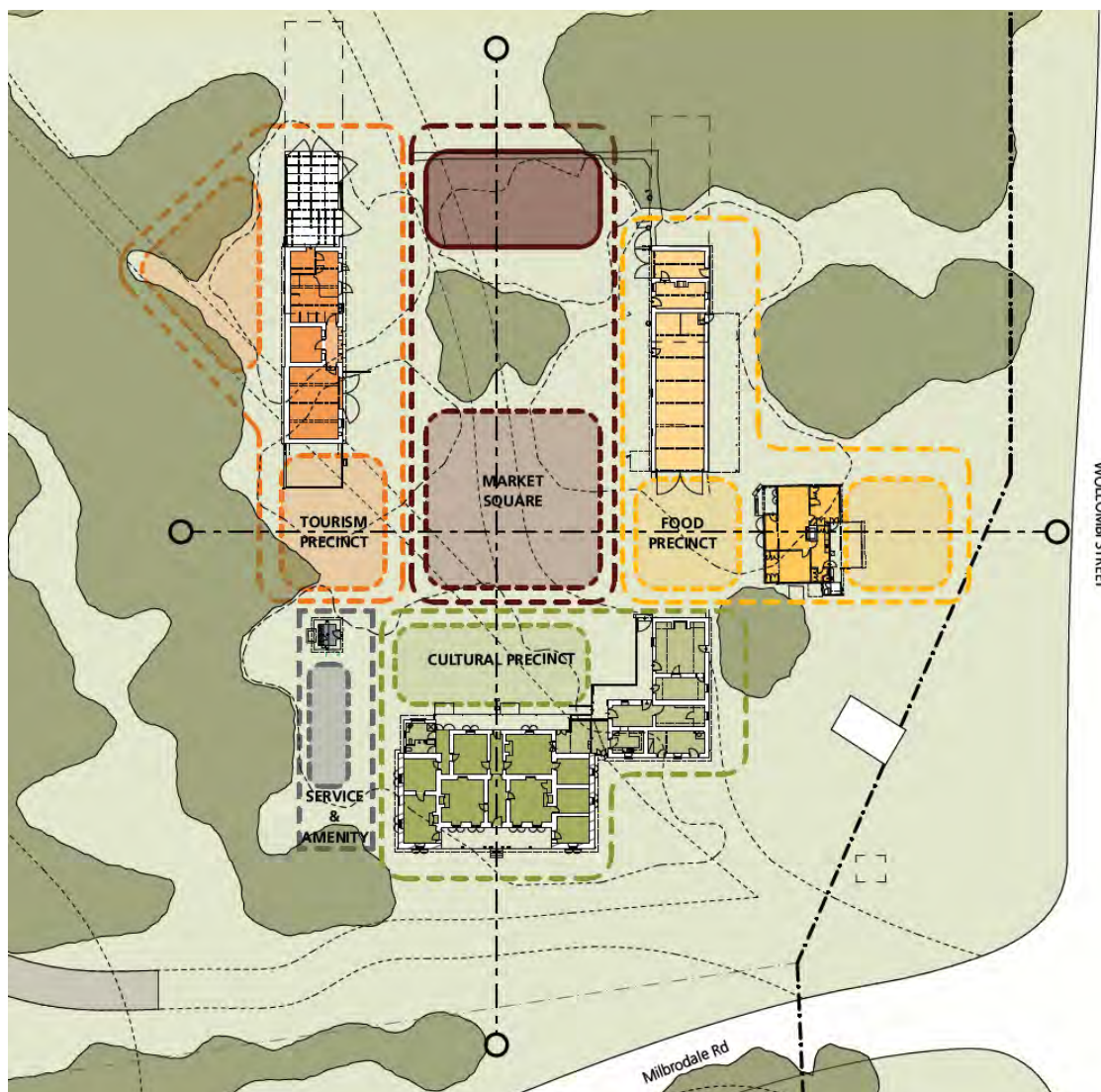
Through the rebuild process the pallet tracking register would be maintained and the Building Information Model would be updated with locations of replaced components.

## 8.2.2 Proposed Use

The relocated homestead under the Broke Village option would have multi-purpose usage. The facility would comprise a number of precincts as shown conceptually in **Figure 23** with varying uses including:

- **Cultural Precinct (Main House and Kitchen Wing):**
  - Offices
  - Exhibition (art) space
  - Interpretation space

- **Food precinct (Men's Quarters and Barn):**
  - Café/restaurant premises
  - Local produce (cheese, bread, ice creamery)
- **Tourism precinct (Stables):**
  - Cellar door/wine tasting
  - Micro-brewery
  - Function space
- **Market Square:**
  - Markets (monthly)
  - Major events (Broke Fair, Smoke in Broke etc)
- **Service & Amenity:**
  - Toilets
  - Maintenance and greenkeeper



**Figure 23: Broke Village Conceptual Precinct Plan**

Further details on proposed building modification and adaptation works required to suit the intended end-use are provided in Appendix 23h of the Project EIS.



### 8.2.3 Ownership

The Broke Village facility would be owned by a new entity formed under an incorporated association (or similar) comprising members of the Broke-Fordwich community and governed by a board of trustees. The entity would be responsible for the management and maintenance of the facility. Financial benefits generated by the facility would be used for funding other community initiatives in the Broke-Fordwich region such as providing improved infrastructure, services and facilities.

### 8.2.4 Key features

The Broke Village relocation option's main focus is providing a useful life for the relocated building group through adaptive reuse in a location where they are publicly accessible and can provide an ongoing community benefit. The location selected within Broke is appropriately positioned for the relocated buildings to function as the village square and provide a focal point for tourist driven opportunities including monthly and annual community events (Smoke in Broke, Broke Village Fair, Broke Community Markets). The facility would include car parking and other services and amenities.

In recognition of the heritage significance of the building group it is proposed to relocate all buildings to the new site in a configuration that is similar to their current configuration, though it is noted that the distance between the Barn and Stables, and Kitchen Wing has been reduced to improve the facility layout. Additionally, the alignment of the building group along the north-south axis has been skewed by approximately 35 degrees in order to better fit with the site arrangement and frontage to Wollombi Street (Broke Road) and Milbrodale Road.

The site would be filled and regraded to be flood free. It is not possible to replicate the gradient of the existing site at the recipient site as the adjacent landform is generally flat and would result in a final landform that is not in keeping with the surrounding topography. However, approximately 1m of fall has been incorporated into the proposed landform from the north-east corner of the Kitchen Wing to the south-west corner of the Main House, which is consistent with the fall across these buildings at the existing site.

A summary of the key physical features of the Broke Village site and how they compare to the physical features of the existing homestead site are provided in **Table 9**.

**Table 9: Summary of Key Features of Existing and Proposed Broke Village Sites**

Key Features	Existing Site	Broke Village
Landform gradient upon which buildings sit	3.1% fall towards the Homestead (2.9m fall between north-east corner of Barn and south-west corner of Main House)	1.1% fall towards the Homestead (approx. 1m fall from north-east corner of Kitchen Wing to south-west corner of Main House)
Approximate elevation of landform at site of Main House	96m AHD	79m AHD
Distance of homestead buildings from Public Road	275m to the east of existing Hebden Road	60m to the west of Wollombi Street (Broke Road) and 28m to the north of Milbrodale Road
Direction of approach	Approach from west off Hebden Road	From east off Wollombi Street and north off Milbrodale Road
Distance of homestead to watercourse	Western wall of Main House 242m to the east of Yorks Creek	Western wall of Main House 140m to the east of Wollombi Brook
Distance of homestead buildings from waterbody	132m from Main House southern entrance to centroid of Dam to the south 253m from existing Main House north-west corner to centroid of Dam to the north west	No dams present

### 8.2.5 RHAC feedback

The RHAC confirmed their support for the Broke Village option as one of the relocations options at committee meeting #13 held on 3 July 2019.



## 8.3 Summary

Comparison of each relocation proposal against the key considerations identified by the RHAC, Glencore and heritage consultants is provided in **Table 10**. In summary, neither relocation proposal meets all considerations.

The Ravensworth Farm option retains the significant heritage values of the buildings by moving them wholly intact using specialized equipment on a purpose built road. Further, this option seeks to replicate the existing site landform and setting (site verisimilitude), and positions the homestead on a site that lies within the original Bowman 10,000 acre land grant. However, the siting of the buildings close to the existing site places them in a location that provides limited direct public access. Additionally, this option is not considered to meet a direct community need relative to the Broke Village option.

The Broke Village option involves relocation of all the buildings to a new site in Broke where it would form the village square with multi-purpose usage of the buildings. Relocation to Broke requires the buildings to be dismantled and rebuilt resulting in the loss of large parts of the heritage fabric, however some elements would be retained where practicable (e.g. roof trusses). Additionally, the proposed recipient site and setting lacks verisimilitude to the existing homestead site. However, the relocation of the homestead to Broke places the buildings in a location and provides a usage that would maximize public access. Further, the facility would meet a community need by providing local employment opportunities with financial benefits from the facility used for funding community initiatives within the Broke-Fordwich area.

**Table 10: Summary of Relocation Proposals against Key Considerations**

Proposal	Move all buildings and maintain layout	Site verisimilitude (setting, context, visual catchment)	Move methodology retains heritage fabric	Within Singleton LGA	Stays in Ravensworth on original land grant	Sustainable and commercially viable	In a location that is publicly accessible	Meets a community need
Ravensworth Farm								
Broke Village								

- Value/consideration met
- Value/consideration partially met
- Value/consideration not met

## 9 Conclusion

Glencore is seeking to extend the Glendell Mine operation to the north with the proposed extension allowing extraction of an additional 135Mt of coal reserves and extending the existing mine by a further 20 years.

The proposal includes relocating the Ravensthorpe Homestead building group to a new site as the current site is within the mine extension footprint.

Glencore has completed extensive heritage studies in order to understand the significance of the homestead and its heritage values. Through comprehensive engagement processes, the heritage values of the community and key heritage stakeholders have also been ascertained.

A community-based committee has been formed to identify and investigate relocation options. The committee comprises representatives from a range of interest groups including the former owners of the homestead and have been involved in all stages of the project.

The Ravensthorpe Estate and associated homestead could be considered to be of State heritage significance and the homestead relocation is a proposed mitigation measure of the Project that salvages heritage values for future NSW residents.

A range of relocation options and move methodologies have been investigated with consideration of sustainability, commercial viability, ability to retain heritage fabric and accessibility.

Two preferred relocation options have been identified, namely:

- **Ravensthorpe Farm:**
  - This option involves relocation of the complex of buildings to a Glencore-owned site situated within the original Bowman 10,000 acre land grant using a methodology that moves the buildings wholly intact on a purpose built road using highly specialized equipment.
  - This option focuses on preserving the heritage values of the buildings and would see the buildings used by Glencore for administration purposes during mining.
  - Select plants, trees and landscape features from the existing Homestead garden and immediate surrounds would be incorporated into the landscape scheme.
  - At the completion of mining, the buildings would be sold with possible options including return of the facility to use as a private homestead with an attached landholding or an alternate use that suits future land use and interest in the area.
- **Broke Village:**
  - This option is a proposal by members of the Broke-Fordwich community and involves relocation of the complex of buildings to McNamara Park in Broke where they would have multi-purpose usage (administration and exhibition space, café and restaurant, cellar door/wine tasting, market space and space for annual events) and form the village square.
  - The buildings would be dismantled 'stone by stone' and then rebuilt at the new location.
  - This option provides a greater emphasis on placing the buildings in a publicly accessible location where they can be adapted to suit the intended end use and fulfil a community need.
  - Select plants, trees and landscape features from the existing Homestead garden and immediate surrounds would be incorporated into the landscape scheme.
  - The facility would be transferred to a new entity comprising members of the Broke-Fordwich community with financial benefits generated by the facility used for funding local community initiatives.

# Appendix A – Ravensworth Homestead Advisory Committee Meeting Minutes

**Ravensworth Homestead Advisory Committee - Meeting #1**  
**Minutes of Meeting**

Time/Location	9:30am, Glendell Mine Training Room	Date	7/12/17	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Shane Scott (SS) Sherie Coakes (SC) Emma Mudford (EM)	Apologies	David Williams DW	Who	When Req'd	Date Raised
		Copy				
1. Welcome and apologies						
<ul style="list-style-type: none"><li>Welcome provided by LH and SS</li><li>David Williams an apology</li><li>Committee member introductions</li></ul>						
2. Purpose of today						
<ul style="list-style-type: none"><li>LH provided an overview of the purpose of today's meeting</li></ul>						
3. Overview of project						
<ul style="list-style-type: none"><li>SS provided an overview of the Glendell Continued Operations Project and how the identification of a preferred relocation option for the Ravensworth Homestead by the Ravensworth Homestead Advisory Committee (RHAC) is part of the broader environmental approval process.</li></ul>						
4. Purpose of Committee						
<ul style="list-style-type: none"><li>LH provided an overview of the purpose of the committee, which is to investigate and put forward advice on the preferred relocation option for the future use and management of the Ravensworth Homestead.</li><li>CA raised the importance of media management and that this Project is likely to attract media attention. SS indicated that Glencore intend on taking a proactive approach to media with the issuing of frequent communicate to keep the public informed of the advisory committee's progress.</li></ul>						
5. Glencore's ownership history to date						
<ul style="list-style-type: none"><li>SS provided an overview of Glencore's ownership history and outlined the Expression of Interest process completed in 2009 that sought interest for the ongoing use and management of the homestead.</li></ul>						
6. History of homestead						
<ul style="list-style-type: none"><li>JM provided a detailed account of the history of the homestead during the period of Marshall ownership. JM to provide copy of history document for circulation amongst committee members. Key points noted:<ul style="list-style-type: none"><li>Marshall's owned the property for 70 years</li><li>Underground water tank at rear of outbuilding</li><li>Old grain silo dug into side of hill</li><li>Convict quarters constructed between two outbuildings</li><li>Grave site - believed to be James Bowman – only known gravesite</li><li>Pet grave outside house perimeter</li><li>Homestead contains a Stranger's Room</li><li>Semi-circular stone template for wheel making</li><li>Significant trees for inclusion of relocation considerations</li><li>Perimeter stone walls believed to have been constructed in part from stone out of original convict quarters</li><li>Sandstone for homestead construction sourced from near Chain of Ponds Inn.</li></ul></li><li>CA highlighted that the committee should not understate the value of the timber cottage. Important to the evolution and adaptation of the homestead complex.</li><li>JM to take photograph of for sale sign showing subdivision of 13,000 acres by Measures</li><li>Committee felt relocation should be based on current adaptation of the homestead</li><li>JM to provide photos of residence at the time of use and departure.</li></ul>				JM	17/1/18	7/12/17
				JM	17/1/18	7/12/17
				JM	17/1/18	7/12/17
7. Terms of Reference						

Time/Location	9:30am, Glendell Mine Training Room	Date	7/12/17	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Shane Scott (SS) Sherie Coakes (SC) Emma Mudford (EM)	Apologies	David Williams DW	Who	When Req'd	Date Raised
		Copy				
<ul style="list-style-type: none"> <li>LH stepped through the terms of reference with the committee. No issues were raised in relation to the terms.</li> <li>LH indicated that the committee had already been approached by a number of private parties regarding potential relocation options.</li> </ul>						
<b>8. Considerations for the Committee</b>						
<ul style="list-style-type: none"> <li>SS provided a brief overview of homestead statutory context. The homestead is listed locally on the Singleton Local Environmental Plan (LEP).</li> <li>SS briefly discussed the studies previously completed for the homestead including investigation of relocation options and relocation feasibility study completed by Godden Mackay Logan.</li> <li>Existing studies to be forwarded to committee members as background documentation.</li> </ul>				LH	17/1/18	7/12/17
<b>9. Draft Project Process</b>						
<ul style="list-style-type: none"> <li>LH provided an overview of the draft project process. No issues raised by Committee members in relation to draft project process.</li> <li>BS provided an overview of Project environmental assessment process and where output from RHAC feeds into the broader project approval.</li> </ul>						
<b>10. Committee timetable</b>						
<ul style="list-style-type: none"> <li>LH presented the schedule of upcoming committee meetings.</li> </ul>						
<b>11. Site Inspection</b>						
<ul style="list-style-type: none"> <li>Committee members undertook an inspection of the homestead complex.</li> </ul>						
<b>12. Value Mapping</b>						
<ul style="list-style-type: none"> <li>SC facilitated the capturing of committee member values in relation to the homestead.</li> <li>Stakeholder and community values of homestead to be captured as part of the broader Social Impact Assessment and Heritage Impact Assessment for the Project.</li> <li>Outcomes from values mapping exercise to be presented by SC at upcoming meeting.</li> <li>SC contact details to be distributed to committee members by LH.</li> <li>Committee members to forward through any additional values to SC for inclusion in values mapping.</li> </ul>				SC LH All	16/2/18 17/1/18 17/1/18	7/12/17 7/12/17 7/12/17
<b>13. Issues Identification</b>						
<ul style="list-style-type: none"> <li>Issues identification to be completed at Meeting #2.</li> </ul>						
<b>14. Key informants and stakeholders</b>						




Time/Location	9:30am, Glendell Mine Training Room	Date	7/12/17	Minute Taker		SS/BS																																													
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Shane Scott (SS) Sherie Coakes (SC) Emma Mudford (EM)	Apologies	David Williams DW	Who	When Req'd	Date Raised																																													
		Copy																																																	
<ul style="list-style-type: none"><li>Key informants and stakeholders identified by committee:</li></ul> <table><tr><th>Group</th><th>Category</th><th>Who</th></tr><tr><td>State Member</td><td>Stakeholder</td><td>Michael Johnson/ Scott MacDonald</td></tr><tr><td>Federal Member</td><td>Stakeholder</td><td>Joel Fitzgibbon</td></tr><tr><td>National Trust</td><td>Stakeholder</td><td>Brian Scarsbrick (former CEO)</td></tr><tr><td>Sydney Living Museum</td><td>Key Informant</td><td></td></tr><tr><td>Historic Houses Association of Australia</td><td>Key Informant</td><td>Tim Duddy</td></tr><tr><td>Heritage Architect</td><td>Key Informant</td><td>Hector Abraham ,Clive Lucas, Eric Martin, Barney Collins, Howard Tanner, Phillip Cox, Brian Suters</td></tr><tr><td>Office of Environment and Heritage</td><td>Stakeholder</td><td>Thomas Richards Siobhan Lavelle</td></tr><tr><td>ICOMOS</td><td>Key Informant</td><td></td></tr><tr><td>Godden Mackay Logan</td><td>Key Informant</td><td></td></tr><tr><td>Art Community</td><td>Key Informant</td><td>Julie Baird (curator), Ron Ramsay</td></tr><tr><td>Aboriginal community</td><td>Key Informant</td><td>Scott Franks (PCWP)</td></tr><tr><td>Singleton Council, Singleton Heritage Committee, Councillors</td><td>Stakeholder</td><td></td></tr><tr><td>Singleton Historical Society and Museum Inc</td><td>Stakeholder</td><td></td></tr><tr><td>Singleton Business Chamber</td><td>Stakeholder</td><td></td></tr></table>				Group	Category	Who	State Member	Stakeholder	Michael Johnson/ Scott MacDonald	Federal Member	Stakeholder	Joel Fitzgibbon	National Trust	Stakeholder	Brian Scarsbrick (former CEO)	Sydney Living Museum	Key Informant		Historic Houses Association of Australia	Key Informant	Tim Duddy	Heritage Architect	Key Informant	Hector Abraham ,Clive Lucas, Eric Martin, Barney Collins, Howard Tanner, Phillip Cox, Brian Suters	Office of Environment and Heritage	Stakeholder	Thomas Richards Siobhan Lavelle	ICOMOS	Key Informant		Godden Mackay Logan	Key Informant		Art Community	Key Informant	Julie Baird (curator), Ron Ramsay	Aboriginal community	Key Informant	Scott Franks (PCWP)	Singleton Council, Singleton Heritage Committee, Councillors	Stakeholder		Singleton Historical Society and Museum Inc	Stakeholder		Singleton Business Chamber	Stakeholder				
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15. Next meeting																																																			
<ul style="list-style-type: none"><li>Next meeting scheduled for 17 January 2018 at Singleton Youth Centre from 10am to 2pm.</li><li>Meeting #3 to be held at Tocal Agricultural College and include an inspection of Tocal Homestead.</li></ul>																																																			
16. Other																																																			
<ul style="list-style-type: none"><li>CA noted the importance of understanding that an estate such as this constantly evolved/changed over time, through building structure changes and varying owner's use of the land. For example, the timber cottage is an integral part of the social context over time, even though it is not built of the same materials as the other buildings.</li><li>Singleton Golf Club identified as potential party interested in having homestead relocated on their land.</li><li>Ryedale House is a Georgian stone house and has potential relevance to Ravensworth Homestead. Moved from Ryde by Warren Peel. SS/LH to contact Warren Peel.</li><li>CA suggested sourcing case studies from overseas and contacting SMEs via Skype to discuss each project.</li><li>Land availability for relocation:<ul style="list-style-type: none"><li>Singleton Council</li><li>Crown Lands</li><li>Glencore</li><li>David Williams</li><li>Camberwell (Yancoal)</li></ul></li></ul>				SS	17/1/18	7/12/17																																													
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Next Meeting	Singleton Youth Centre	Date	17/1/18 at 10am																																																

Ravensthorpe Homestead Advisory Committee - Meeting #2  
 Minutes of Meeting

Time/Location	10:00am, Singleton Youth Centre		Date	17/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA)	Shane Scott (SS) David Williams (DW) Tim Duddy (TD) Scott Franks (SF) Robert Lester (RL) Mike Buchan (MB)	Apologies		Who	When Req'd	Date Raised
			Copy				
1. Welcome and apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Guest introductions by SS</li><li>Welcome to Country by Scott Franks</li></ul>							
2. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
3. Purpose of today							
<ul style="list-style-type: none"><li>LH provided an overview of the purpose of today's meeting.</li></ul>							
4. Presentation by Mr Scott Franks, Plains Clan of the Wonnarua People Registered Native Title Claimant							
<ul style="list-style-type: none"><li>Copy of presentation provided by SF and to be circulated amongst RHAC.</li><li>Key comments:<ul style="list-style-type: none"><li>Ravenstworth area represents a period in history that brought violent conflict for Indigenous people - location of encounters with early settlers.</li><li>Watercourses/songlines in the area are highly valued by the Indigenous people.</li><li>SF indicated that the Ravenstworth Homestead was most likely used as a property for the resting of garrison soldiers.</li><li>Ceremonial site located in Ravenstworth State Forest to east of homestead.</li><li>SF suggested possible use of the homestead as an Indigenous museum for the housing of art (Morrisey collection), artefacts, remains etc.</li></ul></li></ul>							
5. Discussion by Mr Tim Duddy, Chair of Historic Houses Association of Australia							
<ul style="list-style-type: none"><li>The HHAA has 3000 members and represent 35 houses around Australia</li><li>TD indicated that a real opportunity exists to change the heritage paradigm, which is currently fixated on leaving things untouched and preserving insitu.</li><li>TD indicated that through the HHAA he has had contact with both the Macarthur and Bowman families and is confident that letters of support could be obtained from the families if the right relocation option is selected and developed.</li><li>TD indicated that through his discussions with the Bowman family, the grave on-site is thought to be the daughter (potentially a child) (hence the size of the sarcophagus) of James White who drowned in the creek.</li><li>TD indicated that James Bowman is thought to be buried down by the creek in exotic garden that he planted.</li><li>TD indicated that homestead garden may have some historical significance and be home to medicinal plants and succulents planted by James Bowman. TD also indicated that James Bowman wrote the Australian version of Pharmacopoeia.</li></ul>							
6. Minutes of last meeting							
<ul style="list-style-type: none"><li>JM brought to meeting sale sign showing subdivision of property by Measures</li><li>SS indicated that he is currently pursuing Dr Tom Thorvaldson regarding Ryedale House (current owner).</li><li>SS has been in contact with Pokolbin Estate Cottage regarding information on those involved in the relocation of the cottage in the 1970's. Currently waiting on further information.</li></ul>							
7. Update on engagement and reports							

Time/Location	10:00am, Singleton Youth Centre		Date	17/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA)	Shane Scott (SS) David Williams (DW) Tim Duddy (TD) Scott Franks (SF) Robert Lester (RL) Mike Buchan (MB)	Apologies		Who	When Req'd	Date Raised
			Copy				
<ul style="list-style-type: none"> <li>Significance assessment report on homestead currently being completed by EJE (Barney Collins). EJE to present outcomes of assessment to committee on 15 February 2018 (Meeting #4).</li> <li>Outcomes of values mapping exercise to be presented to committee by Sherie Coakes on 31 January 2018 (Meeting #3).</li> <li>SS indicated that project was presented to Singleton Councillors and Executive team on 18 December 2017</li> <li>The Social Impact Assessment face-to-face engagement process has commenced and the Homestead will be discussed with those stakeholder that participate.</li> </ul>							
<b>8. Issues identification</b>							
<ul style="list-style-type: none"> <li>Previous owner's views</li> <li>Indigenous history</li> <li>Full and proper recording of history</li> <li>Preservation of heritage - progressive vs non-progressive</li> <li>Burials - James Bowman and James White's daughter (plus pet burial)</li> <li>Location of new site - don't want stranded asset</li> <li>Sustainable business model - NFP model may not be best</li> <li>Passive vs active working space</li> <li>Covenants/planning instruments</li> <li>Inside vs outside LGA</li> <li>Sale of homestead to private entity</li> <li>Community access - longterm survival important</li> <li>Education opportunities - stonemasonry</li> <li>Commercial vs non-commercial</li> <li>Storage of Aboriginal artefacts</li> <li>Opportunity to look at interface of Aboriginal and European history</li> <li>Short timeframe for option development and selection</li> <li>Timing required for physical relocation</li> <li>Maintenance requirements prior to relocation</li> <li>Site selection, utility availability, context of new site</li> <li>Taxation incentives</li> <li>Financial arrangements/partnerships</li> <li>Transfer of ownership - when does this occur?</li> </ul>							
<b>9. Initial discussion on vision statement</b>							
<ul style="list-style-type: none"> <li>Commercial facility</li> <li>Carefully relocated to be sustainable</li> <li>Whole complex ##</li> <li>Public space/accessible</li> <li>Leading example</li> <li>Heritage importance</li> <li>Sustainable ##</li> <li>Second life ##</li> <li>Retain heritage significance</li> <li>Administrative centre <ul style="list-style-type: none"> <li>Relocated to new site (Singleton LGA)</li> <li>Recognises Indigenous heritage</li> </ul> </li> <li>Relocated on by-pass (Hunter Expressway)</li> <li>Pride/Purpose</li> <li>Economical</li> <li>Vibrant, inclusive, loved by all, living heritage</li> </ul>							

Time/Location	10:00am, Singleton Youth Centre		Date	17/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA)	Shane Scott (SS) David Williams (DW) Tim Duddy (TD) Scott Franks (SF) Robert Lester (RL) Mike Buchan (MB)	Apologies		Who	When Req'd	Date Raised
			Copy				
10. Initial End Use Identification and Option Development							
<ul style="list-style-type: none"><li>End Use:<ul style="list-style-type: none"><li>Art gallery</li><li>Museum (coal, Indigenous, art, wine, agriculture)</li><li>Commercial centre</li><li>Multi-purpose function centre</li><li>Front-end of a bigger development (e.g. Morpeth House)</li><li>Front-end of a retirement village</li><li>Private ownership (B&amp;B, use as a homestead) – provided the long term viability of that private entity can be demonstrated e.g. land not in the path of another future mine, or the current and future land use is sustainable</li><li>Education purposes (UoN)</li><li>Wine Centre (multi-purpose centre, TIC, exhibitions etc)</li><li>Sale to private entity (end use unknown)</li></ul></li><li>Location:<ul style="list-style-type: none"><li>No floodplains - needs to be flood free</li><li>Needs to be visible, accessible, exposed</li><li>Vineyards</li><li>Parking considerations</li><li>Hospital land</li><li>Glencore land/offset land</li><li>Crown land/Council owned land</li><li>Outlook, setting/topography to be similar</li></ul></li><li>Owner:<ul style="list-style-type: none"><li>Governance body made up of representatives from the local wine industry and other community groups.</li><li>Indigenous ownership - have access to land, Government grants to assist with long term management</li></ul></li></ul>							
11. Other matters							
<ul style="list-style-type: none"><li>Consideration to be given to undertaking a detailed historical investigation of homestead including encounters between Indigenous and non-Indigenous people, history of coal mining in the area, and burial site/s (particularly James Bowman). Approach to be made to the UoN for assistance (Julie McIntyre and Gionni di Gravio).</li><li>Early and continued contact with OEH and Heritage Council to be made by Glencore.</li><li>Schedule of committee meetings reviewed and agreed. SS to send out Placeholder for future meetings. It was agreed that future meetings will be held from 9am to 1pm.</li><li>Committee in support of sitting fee (\$220/meeting) and reimbursement for travel (\$0.66/km). Claim form to be prepared and brought to next meeting.</li></ul>					SS/BS SS  SS	Noted 31/1/18  31/1/18	

Time/Location	10:00am, Singleton Youth Centre		Date	17/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) Sue Gilroy (SG) Peggy Moore (PM) Graeme Cheetham (GC) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA)	Shane Scott (SS) David Williams (DW) Tim Duddy (TD) Scott Franks (SF) Robert Lester (RL) Mike Buchan (MB)	Apologies		Who	When Req'd	Date Raised
			Copy				
12. Next meeting							
<ul style="list-style-type: none"><li>Next meeting scheduled for 31 January 2018 at Tocal Homestead from 9am to 1pm.</li></ul> 							
<ul style="list-style-type: none"><li>Singleton residents to meet in Pitt Street car park across from Singleton Youth Centre at 8am.</li></ul>							
Next Meeting	Tocal Homestead		Date	31/1/18 at 9am			



**Ravensthorpe Homestead Advisory Committee - Meeting #3**  
**Minutes of Meeting**

Time/Location	9:00am, Tocal Homestead/Ag College		Date	31/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC) Dr Sherie Coakes (SC)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies	Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome and apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li> </ul>							
<b>3. Inspection of Tocal Homestead and surrounding buildings</b>							
<ul style="list-style-type: none"> <li>CA led committee on inspection of Tocal Homestead</li> </ul>							
<b>4. Purpose of today</b>							
<ul style="list-style-type: none"> <li>LH provided an overview of the purpose of today's meeting.</li> </ul>							
<b>5. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes accepted by DW.</li> <li>LH indicated that there is strong interest from HVW&amp;TA on homestead</li> <li>SS indicated that Tim Duddy is supportive of project and that a meeting is to be held on 1 Feb to discuss ways in which Tim can assist on project.</li> <li>BS indicated that EJE are currently completing an Assessment of Significance of the homestead.</li> </ul>							
<b>6. Presentation by Dr Sherie Coakes, Umwelt</b>							
<ul style="list-style-type: none"> <li>SC presented the preliminary results of the values mapping exercise.</li> <li>Burra Charter values have been used to categorise the values identified.</li> <li>Homestead holds high aesthetic value to members of RHAC.</li> <li>Homestead holds high social value with broader stakeholders (near neighbours) - 'last symbol of Ravensworth'.</li> <li>JM/DW/GC to provide list of previous Hebden residents to SC for contacting.</li> <li>Layout plans of homestead to be sent to SC</li> <li>PM mentioned the Historical Society met with Umwelt staff to discuss values and issues.</li> </ul>					SS	2/2	
<b>7. Issues identification</b>							
<ul style="list-style-type: none"> <li>Additional issues identified by group:               <ul style="list-style-type: none"> <li>Ability to access funds</li> <li>Timeliness of approvals (e.g. Development Application) for land receiving the complex</li> <li>Potential pushback/blockages from approving bodies, particularly the Heritage Council</li> <li>Need to micro-manage relocation</li> <li>Core infrastructure (power supply, water, sewer) is key to minimise overheads</li> <li>People sometimes use heritage as a vehicle to stop development</li> <li>Challenges associated with sourcing appropriate funds for on-going management of the relocated complex, particularly the on-going maintenance of such buildings</li> <li>Need for a long-term business plan</li> <li>Practical consideration vs romanticism</li> <li>Consideration should be given to whether people interviewed as part of the SIA are long-term (inter-generational) resident views compared to those only recently moved to the area.</li> </ul> </li> </ul>							

Time/Location	9:00am, Tocal Homestead/Ag College		Date	31/1/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC) Dr Sherie Coakes (SC)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologues	Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
<b>8. Site selection options</b>							
<ul style="list-style-type: none"> <li>First pass Glencore land options were presented: <ul style="list-style-type: none"> <li>Homestead to be used as working home for manager of Glencore grazing enterprise.</li> <li>Homestead would remain in private ownership</li> <li>Committee not supportive of option</li> <li>Committee was concerned the entire complex may not be moved to Colinta land</li> </ul> </li> <li>Unsolicited submission from James Clydsdale of Hebden was presented, which proposes relocation of homestead to their property located off Scrumlo Road. <ul style="list-style-type: none"> <li>Committee considered this a good option</li> <li>Adjacent properties have other historic buildings</li> <li>Keeps homestead in similar location/setting</li> <li>Homestead would be used as a private home with annual opening for public viewing</li> <li>Concern with it becoming a stranded asset</li> <li>Concern with equity of this option - 'gifting' of new home</li> <li>Would be difficult to access - being accessible to the general public once or twice a year is not considered enough</li> <li>Long term future of homestead is unknown.</li> <li>Ability of Clydsdale family to maintain for the long term is unknown</li> <li>Glencore to seek further clarification on long term future and ability to maintain.</li> </ul> </li> <li>Three Pokolbin land options were presented: <ul style="list-style-type: none"> <li>Roche land to north of Harrigan's Pub</li> <li>Oaks Cypress Lakes land north of golf course</li> <li>Ben Ean land near Pokolbin Hall</li> <li>Committee agreed that relocation to a parcel of land in Pokolbin is appealing <ul style="list-style-type: none"> <li>Good accessibility</li> <li>Highly visible</li> <li>Tourism</li> </ul> </li> <li>Ownership model to be investigated: Private vs Trust (with governance structure)</li> <li>Inspection of sites to be part of meeting #4.</li> </ul> </li> <li>Potential land available in Camberwell through partnership with Yancoal <ul style="list-style-type: none"> <li>Keeps homestead in general location</li> <li>Option to be investigated further</li> <li>End owner to be determined</li> </ul> </li> <li>The committee unanimously agreed that a venue-based use of the complex was the preferable option at this stage of the process.</li> </ul>					SS		
<b>9. Key stakeholders/informants and engagement process</b>							
<ul style="list-style-type: none"> <li>Key stakeholders/informants list presented <ul style="list-style-type: none"> <li>State opposition spokesperson/s to be briefed</li> </ul> </li> <li>Engagement process discussed: <ul style="list-style-type: none"> <li>Glencore media release in February calling for submissions from public</li> <li>Information session/s held in Singleton following development of preferred option/s</li> <li>Consider telephone surveys for seeking feedback on options</li> </ul> </li> <li>PM mentioned the Historical Society Committee will be meeting to discuss the Homestead next week</li> <li>Politicians – the need to discuss project with both sides of politics.</li> <li>The potential need for a separate newsletter for the Homestead was raised for consideration</li> </ul>							
<b>10. Other matters</b>							
<ul style="list-style-type: none"> <li>Glencore to arrange detailed survey of homestead complex.</li> <li>Glencore to investigate whether broader SSD approval would alleviate DA process with Council.</li> <li>Glencore meeting with Singleton Council on 8 Feb to discuss community asset needs.</li> <li>Glencore to arrange video/photographic recording of homestead.</li> </ul>					SS SS SS SS	8 Feb	
<b>11. Next meeting</b>							
<ul style="list-style-type: none"> <li>Next meeting scheduled for 15 February 2018 in Pokolbin (location TBC) from 9am to 2pm. Meeting to include inspection of potential vineyard sites.</li> <li>Singleton residents to meet in Pitt Street car park across from Singleton Youth Centre at 8:15am.</li> </ul>							
Next Meeting	Pokolbin	Date	15/2/18 at 9am				

**Ravensthorpe Homestead Advisory Committee - Meeting #4**  
**Minutes of Meeting**

Time/Location	9:00am, Harrigan's Pub, Pokolbin		Date	15/02/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC) Sue Gilroy (SG)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies		Who	When Req'd	Date Raised
			Copy				
1. Inspection of potential sites							
<ul style="list-style-type: none"><li>Inspection of Oaks Cypress Lakes site - Niel Mason</li><li>Inspection of Ben Ean site - Brian McGuigan</li><li>Inspection of Pokolbin Estate Cottage</li><li>Inspection of Roche site</li><li>Inspection of Hunter Valley Resort site - Philip Hele (occurred at 3pm - David Williams, and Geoff and Jenny Marshall absent)</li></ul>							
2. Welcome & apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Welcome to Country by LH</li></ul>							
3. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
4. Minutes of last meeting							
<ul style="list-style-type: none"><li>Minutes accepted by CA.</li></ul>							
5. Update on engagement and reports since last meeting							
<ul style="list-style-type: none"><li>Meeting with Singleton Council held on 8 Feb to understand Council's community asset needs.<ul style="list-style-type: none"><li>Attendees: Jason Linnane, Mark Ihlein, Nat Zagninski, Brad Snedden, Shane Scott</li><li>Council indicated that they have no desire to take on any new assets. They presently have difficulty managing and generating revenue from their existing assets.</li><li>A number of site options were discussed - Civic Ave (between Council and Gym and Swim), Townhead Park and Albion Park</li><li>Any proposal to relocate the homestead complex to council land in Singleton would need to be supported by a robust business case.</li><li>Nat Zagninski mentioned potential opportunity exists for relocation of homestead complex to Lake St Clair</li><li>Council inspection of homestead scheduled for 2 March</li></ul></li><li>Media Release has been issued to Singleton Argus providing public with an update on the status of the committee and seeking ideas on potential relocation options and sites.</li><li>Article has been placed in the HVW&amp;TA newsletter calling for ideas on potential relocation options and sites.</li><li>UoN to be engaged to complete a historic research paper on the homestead</li><li>Eric Martin (Heritage Architect) site inspection on 17 Feb.</li><li>Alan Croker (Heritage Architect) site inspection on 1 March</li><li>Letter issued to James Clydsdale requesting further information on his submission.</li><li>Currently exploring option of moving portions of the homestead complex buildings intact with US-based company Wolfe Movers.</li><li>Betts Bower Haulage currently completing Route Study for three site options (Hebden, Singleton and Pokolbin). Study to provide guidance on allowable cube size given route constraints (road width, powerlines etc)</li><li>Video recording of homestead to be taken by Enigma in mid March.</li><li>Contact has been made with Tom Thorvaldson of Ryedale House. SS contact details to be passed onto Peel family. Inspection of house available to committee.</li><li>Correspondence received from Paul Hagarty on proposed relocation of homestead complex to Singleton.</li></ul>							
6. Discussion on option assessment criteria							
<ul style="list-style-type: none"><li>Committee discussed their understanding of the criteria and expanded upon the elements covered by each. Group ranking process completed to identify key assessment criteria with the remaining criteria rolled up into the key criteria. Key criteria identified were:<ol style="list-style-type: none"><li>Location and accessibility</li><li>Financial</li><li>Heritage</li></ol></li></ul>							

Time/Location	9:00am, Harrigan's Pub, Pokolbin		Date	15/02/18	Minute Taker		SS/BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC) Sue Gilroy (SG)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies		Who	When Req'd	Date Raised
			Copy				
7. Option identification							
<ul style="list-style-type: none"><li>Form, site, end-use and ownership options discussed</li><li>The following options have been identified for first pass high-level business modelling:<ul style="list-style-type: none"><li>1. Complex used as a multi-purpose function centre in Pokolbin with public ownership</li><li>2. Complex used as a multi-purpose function centre in Pokolbin with private ownership</li></ul></li><li>Financial modelling to consider complex location with regard to low and high patron traffic</li><li>Multi-purpose function centre may comprise:<ul style="list-style-type: none"><li>a. Hospitality facility<ul style="list-style-type: none"><li>High end restaurant</li><li>Function/venue centre</li><li>Café</li></ul></li><li>b. Retail</li><li>c. Exhibition (art/museum) - convertible to event space</li><li>d. Office space</li></ul></li><li>Glencore to seek legal advice on Trust ownership arrangement.</li></ul>							
8. Process review							
<ul style="list-style-type: none"><li>Not discussed at this meeting</li></ul>							
9. Review of engagement process							
<ul style="list-style-type: none"><li>Not discussed at this meeting</li></ul>							
10. General business							
<ul style="list-style-type: none"><li>Nil</li></ul>							
11. Next meeting							
<ul style="list-style-type: none"><li>Next meeting scheduled for 15 March 2018 at Singleton Diggers (9am to 1pm).</li></ul>							
Next Meeting	Singleton Diggers		Date	15/03/18 at 9am			

**Ravensthorpe Homestead Advisory Committee - Meeting #5**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	15/03/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Dr Sherie Coakes (SC)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes accepted by DW and CA.</li> </ul>							
<b>4. Update on Values Mapping by Dr Sherie Coakes</b>							
<ul style="list-style-type: none"> <li>Umwelt have completed the scoping phase for the Preliminary Environmental Assessment/Environmental Impact Statement. SC presented outcomes of values mapping exercise following stakeholder consultation.</li> <li>Online survey to be provided to members of Singleton Business Chamber for completion to inform the Social Impact Assessment</li> <li>Umwelt met with members (5) of Singleton Heritage Committee on 9th March to identify their values and issues associated with the Glendell Continued Operations Project including the proposed relocation of Ravensthorpe Homestead</li> </ul>							
<b>5. Update on engagement and reports since last meeting and any Committee member feedback</b>							
<ul style="list-style-type: none"> <li>The following submissions were received following a request in the Singleton Argus for potential relocation options: <ul style="list-style-type: none"> <li>Adam Cooney - relocation to Paxton for use as short-term accommodation (private ownership)</li> <li>Wanaruah Local Aboriginal Land Council - relocation to Dyring for use as an Aboriginal Women's Healing House (public ownership)</li> <li>Brian McGuigan - relocation to Pokolbin (Ben Ean site) for use as a multi-purpose function centre (public ownership)</li> <li>Philip Hele - relocation to Pokolbin (Hunter Valley Resort) for use as a multi-purpose function centre (private ownership)</li> <li>Gerard Kesby - relocation of cottage to Pokolbin (Corunna Station) for use as a museum (private ownership)</li> <li>Peggy Moore - relocation to McDougalls Hill for use as a multi-purpose function centre (private ownership - Bloomfield Group)</li> </ul> </li> <li>Meeting held with OEH Heritage Division (Katrina Stankowski) on 14 March to provide an update on the project</li> <li>Site visits completed by the following people: <ul style="list-style-type: none"> <li>Eric Martin and Cameron Archer on 17<sup>th</sup> February</li> <li>Alan Croker - Heritage Architect on 1<sup>st</sup> March</li> <li>Singleton Council (Jason Linnane, Tony Chadwick and Claire Briggs) on 2<sup>nd</sup> March</li> <li>Philip Hele on 8<sup>th</sup> March</li> <li>Matthew Manifold from Mammoth Movers on 14<sup>th</sup> March</li> </ul> </li> <li>Glencore are currently progressing the following studies: <ul style="list-style-type: none"> <li>UoN have commenced historical due diligence research project <ul style="list-style-type: none"> <li>Research to capture oral history</li> </ul> </li> <li>Mammoth Movers engaged to complete feasibility assessment and cost estimate to relocate the homestead complex. Glencore are currently exploring the option of relocating parts of the homestead complex intact in order to preserve the heritage fabric.</li> <li>Survey study to identify constraints (formation width, bridges, power lines and other barriers) for each transport route. Locations being assessed are Hebden, Pokolbin and Singleton.</li> <li>Morrison Low engaged to complete first pass commercial modelling to assess the viability of multi-purpose function centre end use in Pokolbin, Singleton and Lake St Clair.</li> </ul> </li> <li>Alan Croker (Heritage Architect) has been approached to be involved in the relocation project.</li> <li>Other correspondence received from: <ul style="list-style-type: none"> <li>Singleton Shire Healthy Environment Group (SSHEG)</li> <li>Janet de Castro Lopo</li> </ul> </li> </ul>							



Time/Location	9:00am, Singleton Diggers, Singleton		Date	15/03/18	Minute Taker		SS
Attendees	Lindy Hyam (LH)	Shane Scott (SS)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
	David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Dr Sherie Coakes (SC)	Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Copy				
<b>6. Discussion on option assessment criteria</b>							
<ul style="list-style-type: none"> <li>Option assessment criteria reviewed and weighting assigned:               <ol style="list-style-type: none"> <li>Financial - 30%</li> <li>Heritage - 40%</li> <li>Location and accessibility - 30%</li> </ol> </li> <li>Brief description to be added below each sub-category</li> </ul>							
<b>7. Business Model Scenarios</b>							
<ul style="list-style-type: none"> <li>Morrison Low engaged to complete first pass commercial modelling for multi-purpose function centre located in Pokolbin, Singleton and Lake St Clair assuming public ownership</li> <li>Analysis to use m<sup>2</sup> rates for revenue and cost estimates</li> <li>Analysis to account for revenues resulting from modern extensions to the existing buildings (e.g. reconstruction of Convict Quarters, extension to main house)</li> <li>Size of endowment fund to be estimated for each option</li> </ul>							
<b>8. Preliminary option assessment</b>							
<ul style="list-style-type: none"> <li>Not discussed at this meeting</li> </ul>							
<b>9. Process review and timing</b>							
<ul style="list-style-type: none"> <li>Glencore presented draft project schedule showing relationship between the RHAC relocation option selection process and the broader heritage impact assessment and architectural studies</li> <li>Schedule to be updated to include gravesite investigation, Aboriginal cultural heritage investigation and homestead archaeological investigation.</li> </ul>							
<b>10. Review of engagement and communication process</b>							
<ul style="list-style-type: none"> <li>Glencore to revisit media strategy with Media Relations Manager. Concern that ABC (or other) will support argument of those opposed to project. Consider running news item with NBN.</li> <li>Inspection of homestead to be arranged with Louise Nichols of the Singleton Argus for mid April</li> <li>Homestead external communiques to be added to schedule. Communique #1 to be issued mid-April and Communique #2 to be issued mid-June (prior to community information session)</li> </ul>							
<b>11. General business</b>							
<ul style="list-style-type: none"> <li>Nil</li> </ul>							
<b>12. Next meeting</b>							
<ul style="list-style-type: none"> <li>Next meeting scheduled for 4 April 2018 at Singleton Diggers (9am to 12pm).</li> </ul>							
Next Meeting	Singleton Diggers		Date	04/04/18 at 9am			

## Ravensthorpe Homestead Advisory Committee - Meeting #6

### Minutes of Meeting

Time/Location	9:00am, Singleton Diggers, Singleton		Date	24/04/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes accepted by DW and PM.</li> </ul>							
<b>4.4 Update on engagement and reports since last meeting</b>							
<ul style="list-style-type: none"> <li><b>Site visits:</b> <ul style="list-style-type: none"> <li>Inspection by Jenny and Geoff Marshall, Victoria Grey, Ann Hardy and Tim Duddy on 12 April. Underground silo location identified.</li> <li>Inspection by Stephen Gallilee on 16 April</li> <li>Upcoming site visits by Mary Casey and Ian Stapleton</li> </ul> </li> <li><b>Historic Houses Association of Australia Conference:</b> <ul style="list-style-type: none"> <li>Conference held on 5/6 April and attended by Brad Snedden</li> <li>Current owners of historic houses struggle to maintain and manage them</li> <li>Currently no government support/assistance to maintain and manage heritage houses</li> <li>Open house days are difficult to run and require large voluntary workforce to manage</li> <li>Smaller homesteads require other attractions in the nearby locality to attract visitors/interest</li> <li>In some instances, the homestead garden/s are the main attraction</li> <li>Seeing a gradual shift in what is considered heritage with 'newer' buildings by prominent architects being heritage listed</li> <li>Considered that heritage conservation is the key with the end-use/accessibility not as high a priority</li> </ul> </li> <li><b>Route study:</b> <ul style="list-style-type: none"> <li>Laser survey of routes completed by RPS on 21 April</li> <li>First pass constraints assessment to be completed by week commencing 30 April</li> </ul> </li> <li><b>Mammoth Movers feasibility assessment:</b> <ul style="list-style-type: none"> <li>Dolly layout for moving of homestead currently being finalised</li> <li>7.5m running width is likely to constrain the maximum longitudinal grade to 5%</li> <li>Mammoth Movers to provide advice on alternate dolly layouts and longitudinal grade constraints</li> </ul> </li> <li><b>Morrison Low:</b> <ul style="list-style-type: none"> <li>Currently building cost models for alternate end uses</li> <li>Met with Muswellbrook Council (Carolyn O'Brien) to gain an understanding of their costs for maintaining heritage buildings in Muswellbrook township – Carolyn expressed an interest in the Ravensthorpe Homestead</li> <li>Draft report due early May</li> </ul> </li> <li><b>Heritage Architect:</b> <ul style="list-style-type: none"> <li>Alan Croker has declined to be involved in the project – he has insufficient resources to meet the proposed timelines</li> <li>Ian Stapleton site visit scheduled for 26 April</li> </ul> </li> <li><b>Archaeologist:</b> <ul style="list-style-type: none"> <li>Mary Casey from Casey &amp; Lowe inspecting the site on 4 May</li> <li>Casey &amp; Lowe have expertise in subsurface investigations for identifying potential grave sites</li> </ul> </li> <li><b>Project Update:</b> <ul style="list-style-type: none"> <li>Glencore to lodge Preliminary Environmental Assessment by 4 May</li> <li>Aboriginal archaeology fieldwork currently underway</li> </ul> </li> <li><b>Process Review:</b> <ul style="list-style-type: none"> <li>Process and timing to be revisited following site inspections by Ian Stapleton and Mary Casey, and completion of key technical studies (route study, Mammoth Movers feasibility assessment, commercial viability modelling).</li> </ul> </li> </ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	24/04/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG)	Shane Scott (SS) Jenny Marshall (JM) Bradly Snedden (BS) Cameron Archer (CA) Geoff Marshall (GM)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
			Copy				
<ul style="list-style-type: none"> <li><b>Consultation:</b> <ul style="list-style-type: none"> <li>Marshall family stories of Ravensworth Homestead provided by Anne Blackstone (niece of Marshall's)</li> <li>Further consultation with Singleton Heritage Committee and other key stakeholders (SSHEG, Wendy Bowman, Deidre Oloffson) as part of broader project Social Impact Assessment</li> <li>Discussion with Janet de Castro Lopo regarding proposed relocation of homestead. Has requested further information on proposed method of relocating the buildings.</li> <li>James Clydesdale still to prepare a response in relation to queries raised by the RHAC in relation to his submission. Site visit of Clydesdale property to be arranged for June</li> </ul> </li> </ul>							
<b>5. General Business</b>							
<ul style="list-style-type: none"> <li>LH indicated that the Upper Hunter Economic Development Corporation is expected to be established with tourism as one of its areas of focus. Consider approach to gauge interest and support for project if established.</li> <li>Media Risk: <ul style="list-style-type: none"> <li>SS to identify in discussion with Tim Duddy/Allyn Hamonet whether there is a heritage advocate supportive of the project that could tell the Glencore story</li> <li>SS to determine in discussion with Tim Duddy whether there are any heritage magazine writer's that may be interested in preparing a story on the project</li> <li>Consider approach to Scott Bevan (Fairfax journalist) to write an article on the homestead. Story could be of former owner (Marshall Family) – personal story.</li> </ul> </li> <li>Further Glencore Briefings to be arranged: <ul style="list-style-type: none"> <li>Muswellbrook Council – Carolyn O'Brien (Martin Rush meeting to be considered later)</li> <li>Cessnock Council (once preferred option/s identified)</li> <li>Muswellbrook Chamber of Commerce</li> <li>State MP Michael Johnsen (priority)</li> <li>Federal MP Joel Fitzgibbon</li> </ul> </li> <li>Shearing Shed: <ul style="list-style-type: none"> <li>Consideration to be given to replicating old shearing shed designed by Pender – could provide additional revenue generating floor space</li> <li>Pender plans can be sourced through Google search (John di Gravio site)</li> </ul> </li> </ul>							
<b>6. Next Meeting</b>							
<ul style="list-style-type: none"> <li>Inspections of Clydesdale, WLALC, Paxton and Corunna Station sites to be arranged for June</li> <li>Next meeting scheduled for 22 June 2018 at Singleton Diggers (9am to 12pm).</li> </ul>							
Next Meeting	Singleton Diggers		Date	22/06/18 at 9am			

**Ravensthorpe Homestead Advisory Committee - Meeting #7**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	22/06/18	Minute Taker		BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA)	Apologies	Jenny Marshall (JM) Geoff Marshall (GM)	Who	When Req'd	Date Raised
			Copy				
1. Welcome & apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Welcome to Country by LH</li></ul>							
2. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
3. Minutes of last meeting							
<ul style="list-style-type: none"><li>Minutes accepted.</li></ul>							
4. Update on engagement and reports since last meeting							
<ul style="list-style-type: none"><li><b>Route study:</b><ul style="list-style-type: none"><li>Constraints assessment of the different routes to potential sites for the homestead is on-going</li><li>SS presented outcomes of preliminary analysis</li></ul></li><li><b>Mammoth Movers feasibility assessment:</b><ul style="list-style-type: none"><li>Mammoth Movers to provide advice on alternate dolly layouts and longitudinal grade constraints for each route</li></ul></li><li><b>Morrison Low:</b><ul style="list-style-type: none"><li>SS presented preliminary outcomes of draft commercial viability study</li><li>Final first-pass report to be prepared</li></ul></li><li><b>Heritage Architecture:</b><ul style="list-style-type: none"><li>Ian Stapleton, from Lucas Stapleton Johnson (LSJ) has accepted the offer as lead Heritage Architect firm.</li><li>LSJ will lead the Heritage Significance Assessment and Heritage Impact Assessment with input from archaeology and other studies.</li></ul></li><li><b>Historic Archaeology:</b><ul style="list-style-type: none"><li>Mary Casey from Casey &amp; Lowe inspecting the site on 4 May</li><li>Casey &amp; Lowe have expertise in subsurface investigations for identifying potential grave sites</li></ul></li><li><b>Heritage Landscapes:</b><ul style="list-style-type: none"><li>Colleen Morris and Geoffrey Britton</li></ul></li><li><b>Project Update:</b><ul style="list-style-type: none"><li>The Department of Planning and Environment (DPE) supplied the Secretary's Environmental Requirements (SEARs) for the Project EIS, in light of PEA submission.</li><li>NSW Heritage Council letter, an attachment to the SEARs, was somewhat emotive and referred to the potential for State Significance Status for the Homestead.</li></ul></li><li><b>Process Review:</b><ul style="list-style-type: none"><li>Process and timing still being finalised, and completion of key technical studies (route study, Mammoth Movers feasibility assessment, commercial viability modelling).</li></ul></li><li><b>Site visits:</b><ul style="list-style-type: none"><li>Inspections of the following sites was undertaken, as part of the committee meeting, with landowners present:<ul style="list-style-type: none"><li>Ross Clydesdale property at Hebden,</li><li>Glencore sites in Falbrook area,</li><li>WLALC site (Noel Downs) near Singleton,</li><li>Corunna Station (Gerard Kesby), Belford</li><li>Paxton Colliery site (Adam Cooney)</li></ul></li></ul></li></ul>							
<ul style="list-style-type: none"><li><b>Consultation:</b><ul style="list-style-type: none"><li>Michael Johnsen MP site visit proposed for 26/6</li><li>Community Information Sheet (#2) to be prepared to assist in addressing media risk</li></ul></li></ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	22/06/18	Minute Taker		BS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA)	Apologies	Jenny Marshall (JM) Geoff Marshall (GM)	Who	When Req'd	Date Raised
			Copy				
5. General Business							
<ul style="list-style-type: none"><li>Media Risk:<ul style="list-style-type: none"><li>SS to determine in discussion with Tim Duddy whether there are any heritage magazine writer's that may be interested in preparing a story on the project</li><li>Consider approach to Scott Bevan (Fairfax journalist) to write an article on the homestead. Story could be of former owner (Marshall Family) – personal story.</li></ul></li><li>Further Glencore Briefings to be arranged:<ul style="list-style-type: none"><li>Muswellbrook Council – Carolyn O'Brien (Martin Rush meeting to be considered later)</li><li>Cessnock Council (once preferred option/s identified)</li><li>Muswellbrook Chamber of Commerce</li><li>State MP Michael Johnsen (priority)</li><li>Federal MP Joel Fitzgibbon</li></ul></li><li>Committee members agreed to filming of future committee meetings included member interviews</li><li>PM provided information on the former Ravensworth Woolshed, which may have been moved to Scrumlo.</li></ul>							
6. Next Meeting							
<ul style="list-style-type: none"><li>Next meeting scheduled for 16 August 2018 at Singleton Diggers (9am to 11am).</li></ul>							
Next Meeting	Singleton Diggers		Date	16/08/18 at 9am			



**Ravensthorpe Homestead Advisory Committee - Meeting #8**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	16/8/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA) Jenny Marshall (JM) Geoff Marshall (GM)	Apologies		Who	When Req'd	Date Raised
			Copy				
1. Welcome & apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Welcome to Country by LH</li></ul>							
2. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
3. Minutes of last meeting							
<ul style="list-style-type: none"><li>Minutes accepted.</li></ul>							
4. Update on engagement and reports since last meeting							
<ul style="list-style-type: none"><li><b>Submissions:</b><ul style="list-style-type: none"><li>Gerard Kesby – additional information submitted by Gerard Kesby. Circulated by Lindy Hyam.</li><li>Noel Downs (WLALC) – additional information submitted to Shane Scott on 12 July. Information to be circulated.</li></ul></li><li><b>Route study:</b><ul style="list-style-type: none"><li>SS indicated that cost estimate for route upgrades is currently being prepared. Cost estimate allows for widening of existing roadways to minimum 7.5m running width to accommodate moving of buildings.</li><li>Initial analysis suggests that cost to upgrade road for relocation to either Hebden or Pokolbin are similar order of magnitude.</li></ul></li><li><b>Morrison Low:</b><ul style="list-style-type: none"><li>Final first-pass report received.</li><li>CA indicated that in order for any proposal to be viable as a wedding function centre it would need to service approx. 70 weddings per year with a minimum function space capacity of 100 people. Also requires good gardens and access to close accommodation to be attractive.</li></ul></li><li><b>Heritage Architecture:</b><ul style="list-style-type: none"><li>Architectural recording of buildings by LSJ complete.</li><li>Preparation of CMP has commenced.</li></ul></li><li><b>Historic Archaeology:</b><ul style="list-style-type: none"><li>Commenced historical investigations to inform Archaeological Research Design.</li><li>Archaeological site inspection complete.</li></ul></li><li><b>Heritage Landscapes:</b><ul style="list-style-type: none"><li>Commenced historical investigations</li></ul></li><li><b>Survey:</b><ul style="list-style-type: none"><li>3D/detailed survey of buildings completed</li></ul></li><li><b>Site visits:</b><ul style="list-style-type: none"><li>Inspections of homestead:<ul style="list-style-type: none"><li>Michael Johnsen MP</li><li>Representatives of Aboriginal community as part of values assessment</li><li>Colleen Morris, Geoffrey Britton, Jenny and Geoff Marshall, Tim Duddy and film crew. Included interview.</li><li>Stewart Ewen representing a consortium from Broke community. Stewart has expressed a strong interest in the buildings with a submission likely to be pending.</li></ul></li></ul></li></ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	16/8/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA) Jenny Marshall (JM) Geoff Marshall (GM)	Apologies		Who	When Req'd	Date Raised
			Copy				
5. General Business							
<ul style="list-style-type: none"><li>Media:<ul style="list-style-type: none"><li>SS to determine in discussion with Tim Duddy whether there are any heritage magazine writer's that may be interested in preparing a story on the project</li><li>Consider approach to Scott Bevan (Fairfax journalist) to write an article on the homestead. Story could be of former owner (Marshall Family) – personal story.</li></ul></li><li>Further Glencore Briefings to be arranged:<ul style="list-style-type: none"><li>Muswellbrook Council – Carolyn O'Brien (Martin Rush meeting to be considered later)</li><li>Cessnock Council (once preferred option/s identified)</li><li>Muswellbrook Chamber of Commerce</li><li>State MP Michael Johnsen (priority) - complete</li><li>Federal MP Joel Fitzgibbon</li></ul></li><li>LH identified need for Glencore to consider impacts of new Aboriginal cultural legislation on approval pathway</li><li>CA suggested need to review historic aerial photographs covering the site (1950/60s) to assist with identification of key features</li><li>Ground penetrating radar across targeted sites scheduled for week commencing 20 August.</li><li>Briefing/site inspection to be arranged with Scot MacDonald</li><li>Possible site visit pending by representatives of Hunter Business Chamber</li></ul>							
6. Next Meeting							
<ul style="list-style-type: none"><li>Next meeting scheduled for 3 October 2018 at Singleton Diggers</li></ul>							
Next Meeting	Singleton Diggers		Date	3/10/18 at 9am			

**Ravensthorpe Homestead Advisory Committee - Meeting #9**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	3/10/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA) Jenny Marshall (JM) Geoff Marshall (GM)	Apologies	Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
1. Welcome & apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Welcome to Country by LH</li></ul>							
2. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
3. Minutes of last meeting							
<ul style="list-style-type: none"><li>Minutes accepted.</li></ul>							
4. Site Inspection							
<ul style="list-style-type: none"><li>Inspection of proposed Broke township site/s held with Stewart Ewen.</li></ul>							
5. Update on engagement and reports since last meeting							
<ul style="list-style-type: none"><li><b>Submissions:</b><ul style="list-style-type: none"><li>Broke: submission received from Broke consortium via Stewart Ewen</li><li>Gerard Kesby: further correspondence received regarding presence of old saw mill on Corunna Station</li></ul></li><li><b>Route study:</b><ul style="list-style-type: none"><li>SS indicated that cost to upgrade road to provide a 9m wide trafficable corridor is prohibitive.</li></ul></li><li><b>Building Mover:</b><ul style="list-style-type: none"><li>Mover provided advice regarding division of Main House and Kitchen Wing to facilitate move further afield within width constraints of existing road network.</li></ul></li><li><b>Heritage Architecture:</b><ul style="list-style-type: none"><li>CMP preparation progressing</li><li>Preliminary assessment of significance complete</li></ul></li><li><b>European Archaeology:</b><ul style="list-style-type: none"><li>Archaeological Research Design complete and submitted to OEH Heritage Division for consultation.</li><li>Meeting held with OEH Heritage Division and confirmed acceptance of proposed methodology.</li><li>Archaeological investigation scheduled to commence week of 8 October.</li></ul></li><li><b>Heritage Landscapes:</b><ul style="list-style-type: none"><li>Investigations ongoing</li></ul></li><li><b>Site visits:</b><ul style="list-style-type: none"><li>Inspections of homestead:<ul style="list-style-type: none"><li>Lucas Stapleton Johnson inspection of roof cavities and sub-floors</li><li>Mott MacDonald structural inspection of buildings</li><li>Aboriginal archaeology being led by OzArk and including RAPs is underway.</li></ul></li></ul></li></ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	3/10/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Graeme Cheetham (GC)	Shane Scott (SS) Bradly Snedden (BS) Cameron Archer (CA) Jenny Marshall (JM) Geoff Marshall (GM)	Apologies	Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
6. Option Short-listing							
<ul style="list-style-type: none"><li>Preliminary outcomes of LSJ significance assessment presented to committee<ul style="list-style-type: none"><li>Outstanding attributes of homestead group identified</li><li>Components of homestead group worth saving identified</li></ul></li><li>Preliminary breakdown of buildings to facilitate move presented</li><li>Option selection process discussed – two stage process<ul style="list-style-type: none"><li>Stage 1 – option short-listing</li><li>Stage 2 – selection of preferred option</li></ul></li><li>Relocation options reviewed by committee</li><li>Options short-listed on the basis of accessibility of recipient site in relation to ability to transport buildings either as one piece or smaller units within the constraints of the existing road network.<ul style="list-style-type: none"><li>Consideration also given to whether proposed recipient site was located within Singleton LGA, however committee did not consider this a key constraint. Committee considered the long term commercial viability (sustainability) of the homestead group as important.</li></ul></li><li>Short-listed options were:<ul style="list-style-type: none"><li>Option 1 – relocation to Ben Ean (Pokolbin)</li><li>Option 2 – Relocate to Hunter Valley Resort (Hermitage Rd)</li><li>Option 3 – Relocation to Corunna Station (Hermitage Rd)</li><li>Option 8 – Relocate to Glencore Site (Hebden Area)</li><li>Option 9 – Relocate to Broke township</li></ul></li><li>All other options discarded as the buildings cannot be transported within constraints of existing road network unless completely disassembled.</li><li>Next steps:<ul style="list-style-type: none"><li>Further development and investigation of short-listed options – Oct/Nov 2018<ul style="list-style-type: none"><li>Obtain agreement on short-listed options from Glencore senior management</li><li>Assessment of recipient sites against desirable attributes</li><li>Consideration of planning constraints</li><li>Discussions with road owners regarding transport passage</li><li>Discussion with utility owner regarding power line raising/dropping</li><li>Discussions with mining operations regarding transport passage</li><li>Detailed assessment of moveability/transportability</li><li>Refinement of cost estimates</li><li>Repurposing to suit end use</li><li>Ownership model/governance structure</li><li>Reaccessioning/endowment considerations</li></ul></li><li>Test options with broader community – Nov 2018</li><li>Selection of preferred option/s for inclusion in EIS – Dec 2018</li></ul></li></ul>							
7. General Business							
<ul style="list-style-type: none"><li>Film footage: committee agreed for film crew to attend next meeting to capture film footage – no sound to be captured.</li><li>Inspection of archaeological investigation test areas to be offered to committee members in October</li></ul>							
8. Next Meeting							
<ul style="list-style-type: none"><li>Next meeting scheduled for 1 November 2018 at Singleton Diggers</li></ul>							
Next Meeting	Singleton Diggers		Date	1/11/18 at 9am			

## Ravensthorpe Homestead Advisory Committee - Meeting #10

### Minutes of Meeting

Time/Location	9:00am, Singleton Diggers, Singleton		Date	1/11/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG)	Shane Scott (SS) Cameron Archer (CA) Jenny Marshall (JM) Geoff Marshall (GM)	Apologies	Graeme Cheetham (GC) Bradly Snedden (BS)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes accepted.</li> </ul>							
<b>4. Update on engagement and reports since last meeting</b>							
<ul style="list-style-type: none"> <li><b>Heritage Architecture:</b> <ul style="list-style-type: none"> <li>CMP preparation progressing</li> <li>Inspection of proposed recipient sites completed 16 and 17 October 2018 by Ian Stapleton, Geoffrey Britton, Colleen Morris, Tim Duddy and Shane Scott</li> <li>Recipient site attribute list complete</li> </ul> </li> <li><b>European Archaeology:</b> <ul style="list-style-type: none"> <li>Archaeological investigation commenced 29 October 2018.</li> <li>Investigating site of original cottage, 'convict quarters' located at northern end of homestead complex, and potential for west wing.</li> </ul> </li> <li><b>UoN historical piece:</b> <ul style="list-style-type: none"> <li>Draft historical paper due December 2018</li> <li>Paper to include both written and oral histories</li> </ul> </li> <li><b>Route study:</b> <ul style="list-style-type: none"> <li>Building mover currently completing detailed assessment of each route.</li> <li>Powerline crossings currently being surveyed – survey to be completed on hot days</li> </ul> </li> <li><b>Building Mover:</b> <ul style="list-style-type: none"> <li>Mover onsite the week commencing 5 November 2018 to inspect building footings, assess routes, meet with steel fabricators, and discuss battery limits and scope of works with heritage architect and structural engineer.</li> </ul> </li> <li><b>Site visits:</b> <ul style="list-style-type: none"> <li>Inspections of homestead: <ul style="list-style-type: none"> <li>Aboriginal test-pitting is complete for cultural impact assessment</li> </ul> </li> </ul> </li> </ul>							
<b>5. Short-listed relocation options - recap</b>							
<ul style="list-style-type: none"> <li>Recap and discussion on short-listed recipient sites</li> <li>Confirmed that Glencore management also requested that Hebden (Clydsdale) option also be included in short-list. This option requires road upgrades to facilitate move, however total cost is comparable to other further afield options.</li> <li>SS provided initial feedback from architect on proposed recipient sites</li> <li>Architect currently preparing an assessment paper on the recipient sites and will present outcomes to RHAC at next meeting.</li> <li>DW suggested that Glencore also investigate potential recipient site adjacent to existing Glendell Mine near Swamp Creek.</li> </ul>							
<b>6. General Business</b>							
<ul style="list-style-type: none"> <li>Muted film footage captured of committee on 1 November 2018. Film footage to also be captured of archaeology field work.</li> <li>RHAC to inspect archaeology and proposed Glencore recipient sites on 9 November 2018.</li> </ul>							
<b>7. Next Meeting</b>							
<ul style="list-style-type: none"> <li>Next meeting 9 November 2018 at 1pm</li> </ul>							
Next Meeting	Site inspection, meet at Singleton Diggers		Date	9 November 2018 at 1pm			



**Ravensthorpe Homestead Advisory Committee - Meeting #11**

**Minutes of Meeting**

Time/Location	10:00am, Singleton Diggers, Singleton		Date	18/12/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Tim Duddy (TD) Graeme Cheetham (GC)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Ian Stapleton (IS)	Apologies	Cameron Archer (CA)	Who	When Req'd	Date Raised
			Copy				
1. Welcome & apologies							
<ul style="list-style-type: none"><li>Welcome provided by LH</li><li>Welcome to Country by LH</li></ul>							
2. Conflict of Interest							
<ul style="list-style-type: none"><li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li></ul>							
3. Minutes of last meeting							
<ul style="list-style-type: none"><li>Minutes accepted.</li></ul>							
4. Update on engagement and reports since last meeting							
<ul style="list-style-type: none"><li><b>Heritage Architecture:</b><ul style="list-style-type: none"><li>CMP preparation continuing to progress</li><li>Inspection of other structures located within The Place by LSJ as part of CMP preparation</li><li>Recipient site assessment report complete</li></ul></li><li><b>European Archaeology:</b><ul style="list-style-type: none"><li>Archaeological investigation complete.</li><li>Draft archaeology report currently being prepared – due mid-January.</li></ul></li><li><b>UoN historical piece:</b><ul style="list-style-type: none"><li>Draft historical paper due 18 December 2018</li></ul></li><li><b>Route study:</b><ul style="list-style-type: none"><li>Building mover has completed the detailed route assessment</li><li>Route assessment report due 19 December 2018.</li></ul></li><li><b>Building Mover:</b><ul style="list-style-type: none"><li>Cutline location for buildings discussed with architect</li><li>Preliminary assessment of depth to rock adjacent to buildings complete</li><li>Cost estimate current being reviewed and updated.</li></ul></li><li><b>Site visits:</b><ul style="list-style-type: none"><li>Archaeological test excavations completed over period 5 November to 23 November 2018</li><li>Inspection of building group by LSJ, building mover and heritage structural engineer to discuss cutline, footing composition and pre-move stabilisation works</li></ul></li><li><b>Consultation/Media:</b><ul style="list-style-type: none"><li>Project briefing provided to NSW Heritage Council on 5 December 2018</li><li>S9/S10 application has been lodged by Senator David Shoebridge on behalf of PCWP seeking protection of Ravensworth Estate under the Cth Aboriginal and Torres Strait Islander Heritage Protection Act.</li><li>Articles in Newcastle Herald and Muswellbrook Chronicle regarding S9/S10 application and claim that massacre event occurred on Ravensworth Estate.</li><li>OEH Heritage Division are progressing the nomination of Ravensworth Homestead for listing on the State Heritage Register</li></ul></li></ul>							
5. Presentation on Recipient Site Assessment and Route Analysis							
<ul style="list-style-type: none"><li>Presentation given by IS and SS on outcomes of recipient site assessment and route analysis for short-listed relocation options.</li><li>Recipient site assessment – options located further afield do not meet key site attributes. Sites closer to homestead current location are more suitable.</li><li>Route assessment – not feasible to move buildings intact beyond Broke due to road geometry constraints. An intact relocation to Broke or Hebden is possible but would require substantial road upgrade works to facilitate move. A local move does not require substantial road works.</li></ul>							
6. Feedback from Glencore senior management							
<ul style="list-style-type: none"><li>Not considered viable to relocate building group to Broke or Hebden using methodology that moves buildings largely intact</li><li>Cost of local move is expensive – Glencore currently reviewing all mine plan options.</li></ul>							
7. Discussion on short-listed options							

Time/Location	10:00am, Singleton Diggers, Singleton		Date	18/12/18	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Tim Duddy (TD) Graeme Cheetham (GC)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Ian Stapleton (IS)	Apologies	Cameron Archer (CA)	Who	When Req'd	Date Raised
			Copy				
<ul style="list-style-type: none"><li>RHAC reviewed and considered outcomes of studies, and recommendations of heritage consultant and resolved that a local move is the most cost-effective option and more likely to be approvable relative to other options using a methodology that moves the buildings (largely) intact</li><li>DW expressed concern with viability of local option if moved to an isolated location</li><li>RHAC had a preference for Bowmans Ck 1 site over other local site options given its exposure adjacent to the relocated Hebden Road and relative distance from the New England Highway.</li><li>LH suggested that expertise be sought from Sasha Degen regarding requirements for short stay accommodation.</li><li>LH suggested speaking to contact at LLS to understand landholding requirements for future viability as a pastoral estate</li><li>BS mentioned other potential local option with the Wonnarua Nation Aboriginal Corporation for relocation onto AGL land adjacent to Lake Liddell</li><li>IS tabled draft sketches showing possible repurposing of buildings for use as Glencore office space (Stage A) and short stay accommodation (Stage B).</li></ul>							
8. Next steps							
<ul style="list-style-type: none"><li>Identify and investigate other local site options for intact move</li><li>Further refinement of local move (intact) cost estimate</li><li>Explore alternate end use options for local move – may require staged usage</li><li>Discuss and agree on consultation strategy</li></ul>							
9. Next Meeting							
<ul style="list-style-type: none"><li>Early February 2019 – date to be confirmed</li></ul>							
Next Meeting	Singleton Diggers, York St	Date	Early February 2019 – date to be confirmed				

**Ravensthorpe Homestead Advisory Committee - Meeting #12**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	2/05/2019	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Cameron Archer (CA)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Mike Carrucan (MC)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Associated and declared a conflict of interest given that opportunity exists with that industry.</li> <li>DW is member of Singleton Showground committee</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes accepted.</li> </ul>							
<b>4. Update on engagement and reports since last meeting</b>							
<ul style="list-style-type: none"> <li>Glencore provided an updated on reports:</li> <li><b>Heritage Architecture:</b> <ul style="list-style-type: none"> <li>Draft significance assessment complete</li> <li>Draft CMP preparation continuing to progress – CA noted that Glencore should be wary of contents of CMP and ensure policies are not too onerous</li> <li>Ongoing scheme development for intact local move to Bowmans Creek site</li> </ul> </li> <li><b>European Archaeology:</b> <ul style="list-style-type: none"> <li>Draft archaeology report complete</li> </ul> </li> <li><b>UoN historical piece:</b> <ul style="list-style-type: none"> <li>Draft historical paper complete and undergoing review</li> </ul> </li> <li><b>Early conflict history:</b> <ul style="list-style-type: none"> <li>Early conflict historical piece completed by Mark Dunn (including figure showing location of events)</li> </ul> </li> <li><b>Economic Analysis:</b> <ul style="list-style-type: none"> <li>Update completed by Morrison Low for Broke site – may require endowment for long-term viability</li> </ul> </li> <li><b>Route study:</b> <ul style="list-style-type: none"> <li>Route assessment report complete</li> </ul> </li> <li><b>Building Mover:</b> <ul style="list-style-type: none"> <li>Feasibility level cost estimate complete</li> <li>Move methodology report complete</li> </ul> </li> <li><b>Consultation/Media:</b> <ul style="list-style-type: none"> <li>SHR listing: OEH Heritage Division inspection on 7 February 2019. SHR listing recommendation being presented by OEH at June 2019 NSW Heritage Council meeting.</li> <li>S9/S10 application: DoE has assigned a Reporter to assess the S9/10 application. Reporter to provide recommendation to Minister following completion of assessment.</li> </ul> </li> </ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	2/05/2019	Minute Taker		SS
Attendees	Lindy Hyam (LH)	Shane Scott (SS)	Apologies	Graeme Cheetham (GC)	Who	When Req'd	Date Raised
	David Williams (DW) Peggy Moore (PM) Sue Gilroy (SG) Cameron Archer (CA)	Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Mike Carrucan (MC)	Copy				
<b>5. Outcomes of Glencore Option Review</b>							
<ul style="list-style-type: none"> <li>Focus in 2018 was on development of an option that moved the buildings intact, providing greater emphasis on heritage conservation.</li> <li>Early 2019 Glencore conducted a review of all homestead relocation options – decided to investigate a community-based option that provides improved accessibility and would require disassembly of the homestead buildings</li> <li>Glencore community-based option preferences (consistent with RHAC): <ul style="list-style-type: none"> <li>Homestead to be kept in Singleton LGA</li> <li>Either public ownership or other equitable ownership model (not private entity)</li> <li>Proposed end use provides public access and ongoing community benefit</li> </ul> </li> <li>Noted that RHAC has preference for site to be in tourist area (higher traffic volumes)</li> <li>Review of all previously considered relocation options identified Broke or Singleton as preferred community-based option</li> <li>Planning constraints assessment was completed for all previously mooted sites in Broke and Singleton</li> <li>Further meeting held with Singleton Council where it was confirmed that they do not want to be owner of relocated homestead – concerns with long-term viability.</li> <li>Based on constraints assessment, McNamara Park in Broke identified as preferred location for community-based option</li> <li>Glencore to put forward two relocation options in the EIS: <ul style="list-style-type: none"> <li>Intact local move to Glencore site within Ravensworth Estate</li> <li>Dismantle and rebuild community-based option in Broke</li> </ul> </li> </ul>							
<b>6. Feedback from RHAC Members</b>							
<ul style="list-style-type: none"> <li>RHAC are supportive of dismantling and rebuilding the homestead to enable relocation to a site that improves its long-term viability and provides greater accessibility <ul style="list-style-type: none"> <li>Singleton was expressed as preferred location by some RHAC members</li> </ul> </li> <li>Concerns expressed with preferred Broke site in terms of land ownership (Crown Land and lack of Native Title extinguishment), flooding and viability. <ul style="list-style-type: none"> <li>SG indicated that may be difficult to attract health professionals to facility if Main House to be used as consulting rooms</li> <li>Preferable that Broke option has strong tourism focus to maximise accessibility and revenue generating potential</li> </ul> </li> <li>Alternate option identified by DW involving relocation of Main House to Singleton Showground for use as administration building – site is freehold land <ul style="list-style-type: none"> <li>Glencore to investigate option further to confirm available land area and configuration</li> </ul> </li> <li>Intact local move option to Glencore site – potential to be part of a Ravensworth heritage precinct that includes Ravensworth School and other heritage items: <ul style="list-style-type: none"> <li>Key issue of RHAC with this option is accessibility, particularly in the long-term if homestead is sold with landholding to private entity</li> <li>Option meets heritage criteria only</li> <li>Proposed location considered too far away by some RHAC members</li> <li>Need to consider appropriate landscape scheme (indigenous plantings)</li> </ul> </li> </ul>							
<b>7. Next steps</b>							
<ul style="list-style-type: none"> <li>Development of scheme for community-shared town square development in Broke including: <ul style="list-style-type: none"> <li>Ownership/governance model</li> <li>Consideration of long-term sustainability</li> <li>Review and update of capital estimate</li> </ul> </li> <li>Investigate and assess Singleton Showground relocation option</li> <li>Further development of scheme for intact local move with consideration of above RHAC issues.</li> <li>RHAC to provide comment on proposed schemes at next meeting</li> <li>External consultation to follow June RHAC meeting</li> </ul>							
<b>8. Next Meeting</b>							
<ul style="list-style-type: none"> <li>24 June 2019</li> </ul>							
Next Meeting	Singleton Diggers, York St		Date	24 June 2019			

**Ravensthorpe Homestead Advisory Committee - Meeting #13**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	3/07/2019	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Cameron Archer (CA)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Mike Carrucan (MC)	Apologies	Graeme Cheetham (GC) Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Association and declared a conflict of interest given that opportunity exists with that industry.</li> <li>DW is president of Singleton Showground committee</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes of last meeting accepted.</li> </ul>							
<b>4. Update on engagement and reports since last meeting</b>							
<ul style="list-style-type: none"> <li>Glencore provided an updated on reports:</li> <li>Heritage Architecture:               <ul style="list-style-type: none"> <li>Statement of significance complete</li> <li>Heritage Impact Statement to comprise 2 volumes: Volume 1 includes site history, architectural assessment, landscape assessment and statement of significance. Volume 2 will comprise assessment of proposed homestead relocation options.</li> <li>3D perspectives for Ravensworth Farm (local move) option currently being finalised</li> </ul> </li> <li>European Archaeology:               <ul style="list-style-type: none"> <li>Draft archaeology report complete</li> <li>Report to include zoned archaeology map</li> <li>Opportunity for some salvaged artefacts to be given to the Singleton Historical Society &amp; Museum Inc raised – opportunity to be explored further post-approval with consideration to space/storage requirements</li> </ul> </li> <li>UoN historical piece:               <ul style="list-style-type: none"> <li>Draft historical paper to be finalised</li> </ul> </li> <li>Aboriginal archaeology and values:               <ul style="list-style-type: none"> <li>Draft Aboriginal archaeology report complete</li> <li>Draft cultural values assessment report being finalised</li> </ul> </li> <li>Building Move – Dismantle &amp; Rebuild:               <ul style="list-style-type: none"> <li>Dismantle &amp; rebuild move methodology report being prepared</li> </ul> </li> <li>Consultation:               <ul style="list-style-type: none"> <li>SHR listing: SHR listing of homestead not discussed at Heritage Council June 2019 meeting.</li> <li>S10 application: Glencore preparing submission in response to S10 application.</li> </ul> </li> </ul>							
<b>5. Singleton Showground homestead relocation option</b>							
<ul style="list-style-type: none"> <li>Glencore presented outcomes of assessment involving relocation of the Main House to Singleton Showground.</li> <li>Singleton Showground is within a heritage conservation area with existing Showground group listed as a local heritage item on Singleton LEP (2013)</li> <li>Two sites considered with frontage on Bathurst Street. Both site options require the removal of existing buildings to accommodate the Main House (not enough room to relocate entire homestead complex). Concerns raised in relation to gaining consent to demolish existing locally listed building/s to accommodate Main House.</li> <li>RHAC acknowledged local heritage listing for Showground group and that not enough room exists to relocate entire homestead complex. Other potential site options within the showground are considered too far removed from other buildings and unlikely to be utilised. RHAC agreed not to pursue option further.</li> </ul>							

Time/Location	9:00am, Singleton Diggers, Singleton		Date	3/07/2019	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Cameron Archer (CA)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Mike Carrucan (MC)	Apologies	Graeme Cheetham (GC) Sue Gilroy (SG)	Who	When Req'd	Date Raised
			Copy				
6. Update on Relocation Options							
<ul style="list-style-type: none"><li>Glencore provided an update on the two preferred relocation options that will be included in the Environmental Impact Statement</li><li>Ravensworth Farm:<ul style="list-style-type: none"><li>Local intact move to site located on original Bowman land grant</li><li>Homestead complex positioned on similar slope/landform and with similar visual catchment as existing site</li><li>Approach alignment from relocated Hebden Road at new site will be similar to existing site</li><li>House Dam to be constructed to south of relocated homestead similar to existing site</li><li>Water to be supplied from Glennies Creek via pipeline from Mt Owen operation</li><li>Relocated homestead to be used as regional office space for Glencore</li><li>RHAC feedback:<ul style="list-style-type: none"><li>Suggested relocation of proposed car park within square to the east of Barn</li><li>Consideration to be given to Miss White's grave and pet grave/s (Marshall)</li><li>Considered water pipeline from Glennies Creek as good asset</li><li>RHAC are supportive of Ravensworth Farm option</li></ul></li></ul></li><li>Broke Village:<ul style="list-style-type: none"><li>Dismantle &amp; rebuild homestead complex in McNamara Park</li><li>Homestead to form village square of Broke with buildings adapted for potential use as art space, museum space, office space, café, restaurant, wine-tasting, micro-brewery and market area</li><li>Public ownership model proposed with profits invested back into complex or other Broke community initiatives</li><li>Site is flood prone and will need to be filled</li><li>Site is Crown Land and native title has not been extinguished – ongoing discussions with Native Title Claimant are being held</li><li>RHAC feedback (note LH abstained from providing feedback):<ul style="list-style-type: none"><li>Proposal requires a viable business model</li><li>Consideration to be given to how complex is managed to avoid future 'boundary' disputes</li><li>Complex costs to include building maintenance, grounds keeping etc</li><li>Support provided for dismantling and rebuilding the homestead in a location that provides increased public access</li><li>RHAC are supportive of Broke village option</li></ul></li></ul></li></ul>							
7. Next steps							
<ul style="list-style-type: none"><li>Initial review of preferred relocation options against RHAC Terms of Reference and Key Considerations completed. Glencore to circulate for review and comment.</li><li>Project consultation:<ul style="list-style-type: none"><li>Glencore presented upcoming consultation timeline for Project, which includes broader community consultation</li><li>RHAC requested follow up meeting to receive feedback from consultation</li></ul></li></ul>							
8. Next Meeting							
<ul style="list-style-type: none"><li>To be advised – likely to be end August/early September</li></ul>							
Next Meeting	Singleton Diggers, York St		Date	To be advised			



**Ravensthorpe Homestead Advisory Committee - Meeting #14**  
**Minutes of Meeting**

Time/Location	9:00am, Singleton Diggers, Singleton		Date	27/11/2019	Minute Taker		SS
Attendees	Lindy Hyam (LH) David Williams (DW) Peggy Moore (PM) Cameron Archer (CA) Graeme Cheetham (GC) Sue Gilroy (SG) Sherie Coakes (SC)	Shane Scott (SS) Brad Snedden (BS) Jenny Marshall (JM) Geoff Marshall (GM) Mike Carrucan (MC) Angela Peace (AP)	Apologies		Who	When Req'd	Date Raised
			Copy				
<b>1. Welcome &amp; apologies</b>							
<ul style="list-style-type: none"> <li>Welcome provided by LH</li> <li>Welcome to Country by LH</li> </ul>							
<b>2. Conflict of Interest</b>							
<ul style="list-style-type: none"> <li>LH is chair of Hunter Valley Wine and Tourism Association and declared a conflict of interest given that opportunity exists with that industry.</li> </ul>							
<b>3. Minutes of last meeting</b>							
<ul style="list-style-type: none"> <li>Minutes of last meeting accepted.</li> </ul>							
<b>4. Update on Project</b>							
<ul style="list-style-type: none"> <li>Update on Project provided by Glencore:               <ul style="list-style-type: none"> <li>Heritage studies are complete</li> <li>Two homestead relocation options being put forward in Environmental Impact Statement (EIS) – Ravensworth Farm and Broke Village</li> <li>Noted that Broke Village option will require securing of land tenure and secondary approvals</li> </ul> </li> </ul>							
<b>5. Outcomes of Project Consultation</b>							
<ul style="list-style-type: none"> <li>Umwelt (SC/AP) presented outcomes of Project consultation relating to Ravensworth Homestead with the findings discussed by the Committee               <ul style="list-style-type: none"> <li>Consultation undertaken with key stakeholders (heritage groups, near neighbours, Aboriginal stakeholders) and wider Singleton LGA community</li> </ul> </li> <li>Relocation option preference amongst key stakeholders generally balanced</li> <li>Preference for Broke relocation option by wider Singleton LGA community</li> </ul>							
<b>6. Review of relocation options against RHAC considerations and Terms of Reference</b>							
<ul style="list-style-type: none"> <li>RHAC reviewed relocation options against RHAC considerations and objectives in Terms of Reference</li> <li>Proposed relocation options met majority of RHAC considerations – Committee agreed with final assessment</li> <li>Proposed relocation options met Terms of Reference objectives</li> </ul>							
<b>7. Next steps in State Significant Development assessment process</b>							
<ul style="list-style-type: none"> <li>EIS currently scheduled to be on exhibition until the end of January 2020</li> <li>Following exhibition Glencore will respond to submissions received</li> <li>Duration of assessment and determination period unknown</li> </ul>							
<b>8. General</b>							
<ul style="list-style-type: none"> <li>Broke Village option: The committee discussed the need for separation between the new entity that ends up owning and managing the relocated Homestead, and those responsible for the commercial management of the facility. Glencore to consider as part of further development of Broke Village option.</li> <li>Committee members confirmed that their names may appear in EIS documentation.</li> </ul>							
<b>9. Committee cessation</b>							
<ul style="list-style-type: none"> <li>RHAC closed by chair at 10:40am</li> </ul>							
<b>Next Meeting</b>	Nil	<b>Date</b>					

## Appendix B – Route Assessment

# REVIEW OF PROPOSED ROUTES FOR THE RELOCATION OF RAVENSWORTH HOMESTEAD COMPLEX RAVENSWORTH, HUNTER VALLEY



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**14 October 2019**

**MM-REP-RAVT-00013 Rev 1**

**Unrestricted**





## Limitations Statement

The sole purpose of this estimate and the associated services performed by Mammoth Movers Pty Ltd (Mammoth) is to assess the option of relocating the Ravensworth Homestead Precinct, located at Ravensworth NSW; in accordance with the scope of services set out in Mammoth's email to Glencore dated 18 September 2018. This assessment has been made on behalf of Glencore ('the Client'). The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client.

Mammoth derived this report primarily from visual inspections, site and route inspections, Client personnel supplied data, drawings and phone conversations with the Client's personnel. The passage of time, manifestation of latent conditions or impacts of future events may require further exploration at the site and subsequent data analysis, and re-evaluation of the findings and observations expressed in this document.

In preparing this report, Mammoth has relied upon and presumed accurate certain information (or absence thereof) relative to drawings and surveys of the existing site and buildings provided by the Client and others. With the exception of random cross checking against site measurements taken during inspection, Mammoth has not attempted to verify the accuracy or completeness of any such information and would recommend further work be undertaken to mitigate associated project risks should the Client wish to proceed to the next stage.

This report has been prepared on behalf of and for the exclusive use of the Client and is subject to and issued in accordance with the provisions of the confidentiality agreement between Mammoth and the Client. Mammoth accepts no liability whatsoever for or in respect of any use of or reliance upon this report by any third party.

## Revision History

Revision	Date	Comment	Signatures		
			Originated by	Checked by	Authorised by
0	08 Sep 2019	Issue to Client	MJM	LC	MJM
1	14 Oct 2019	Incorporation of minor Client comments	MJM	-	MJM



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## 1. Executive Summary

Mammoth Movers has investigated the feasibility of the relocation of the Ravensworth Homestead Complex from its current site to proposed sites including local sites on Glencore land and sites further afield to the north (Clydsdale) and to the south at Broke, Singleton, Pokolbin and Hermitage Rd.

Routes were identified together with Glencore personnel and preliminary surveys conducted to determine constraints/areas of concern. In parallel, Mammoth Movers determined preliminary load arrangements and loaded building weights in order to assess the interfaces between the loaded buildings and the proposed routes.

Mammoth Movers' review has identified that relocation is possible to Broke, Singleton and Clydsdale assuming significant road preparation works are completed, and necessary approvals can be obtained. Moves closer to home to proposed Glencore sites are also achievable and are preferred both technically and from a project risk viewpoint.

Moves further afield to Pokolbin or Hermitage Road and beyond are not possible due primarily to restrictive road topography on the Broke to Cessnock Road.



## 2. Introduction

This document has been prepared to review the constraints associated with the relocation of the Ravensworth Homestead Complex along the existing road network or “cross country” via a designated mine road built to meet the movers’ specifications.

Mammoth Movers [**Mammoth**] was engaged by Glencore to undertake the review and company representative Matthew Manifold, visited the Homestead and proposed routes between 5 and 9 of November 2018. During this visit Mammoth conducted a first pass route assessment of the existing route topography together in the main with Glencore staff in order to identify constraints and associated works necessary to move the buildings to any of several proposed sites.

In parallel and subsequent to the site visit, Glencore personnel collected wire height data along the proposed routes.

Mammoth also undertook a desktop analysis of route data collated by RPS and WSP to determine route timing requirements as a result of gradients present on the routes.

The above data was collated, assessed and is presented herein.



### 3. Purpose

This document was created to assist Glencore in understanding technical limitations associated with the relocation of the Ravensworth Homestead Complex to a selection of proposed recipient sites.

Limitations are imposed on the relocation of the complex buildings as a result of their construction, the building weights, dimensions and configuration; as well as associated route constraints such as topography, road widths and road infrastructure.

This report is *not* intended to cover all elements to be considered when assessing the viability and suitability of potential relocation sites. Rather the scope of the report is restricted to the practical elements of the relocation, covering technical constraints or considerations associated with the buildings and the routes.

It is intended that this report provides sufficient information on the proposed sites and associated routes to assist Glencore to shortlist sites from a practical perspective.

This document is one of several inputs which will assist Glencore to limit the viable relocation sites. Other considerations for the project include:

- Future utilization of the buildings;
- Appropriate setting of the buildings;
- Heritage conservation and minimising disruption of building fabric;
- Removal of the buildings from possible future viable mine land;
- Removal of the buildings from potential impact due to nearby/adjacent mining;
- Meeting of community expectations;
- “Relative” value for money;
- Approvability of the proposed project;

These further considerations are outside of the scope of this report and are being addressed separately by Glencore.

This document consciously presents differing levels of detail for individual routes. As specific elements of an individual route exclude it from further consideration, further work on that route was halted. Conversely, where further detail was required to quantify possible commercial, technical and/or logistical impacts of a specific route, Mammoth investigated the route in more detail.

Mammoth has limited the work undertaken to that necessary for Glencore personnel to clearly understand the requirements of each route and proposed site from a technical viewpoint.





## 4. Move Building Configurations

Two alternative configurations of the structures were considered for the structural relocation and associated route review:

- Option A – Relocation of the buildings in one piece<sup>1</sup>; and
- Option B – Relocation of the buildings in sections.

Relocation in one piece is the preferred option for relocation as it retains structural integrity of the buildings and their heritage fabric. The one-piece relocation of the structures requires a trafficable pavement width of at least 9 m. Where the route restricts pavement width to less than 9 m, Option B must be considered.

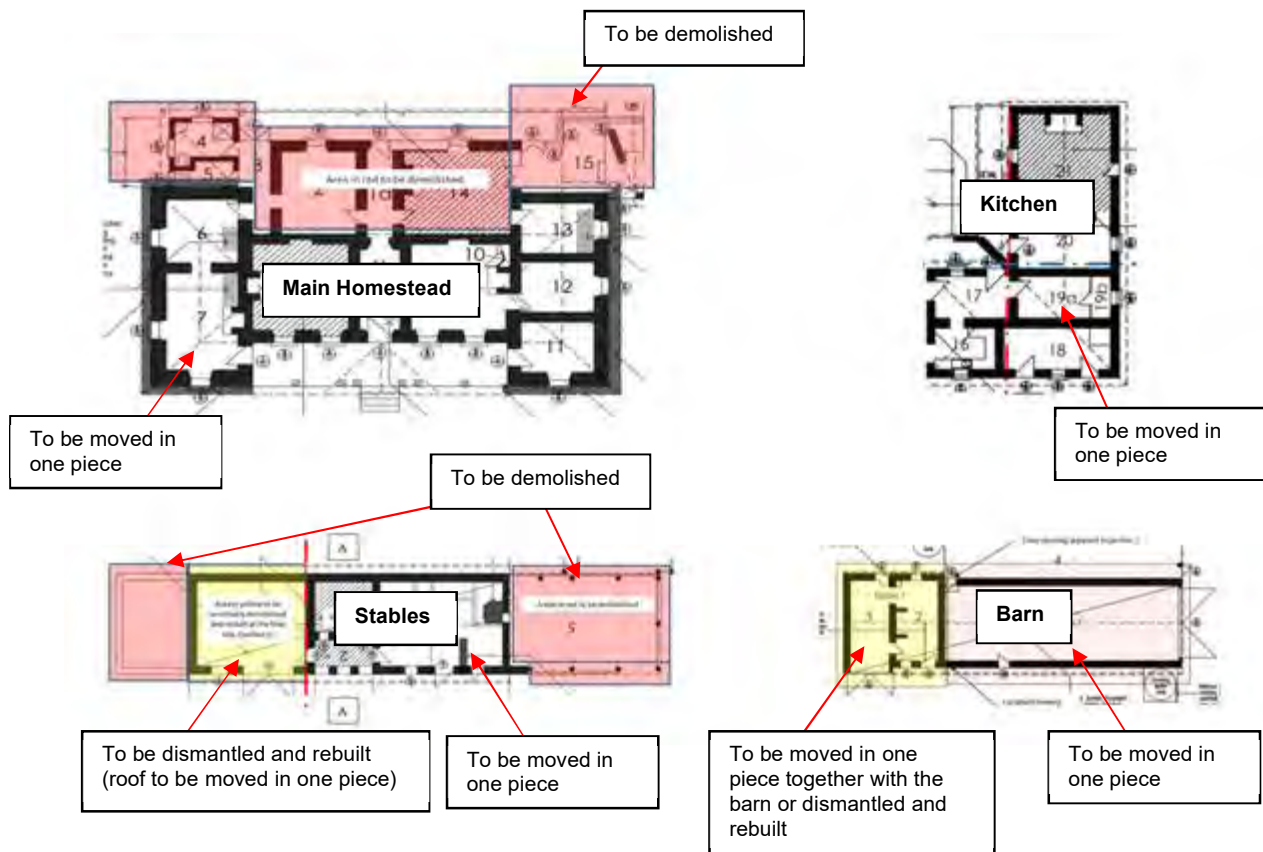
Initial investigations into the potential relocation sites and the associated routes to transport the buildings to the sites revealed that many of the routes further afield would require the cutting of the buildings into sections to enable a reduced tracking width as necessary to access the roads.

The impact of the sectioning on the relocation approach is outlined in subsequent sections of this document.

### 4.1 Proposed Building Arrangements to be Moved – Option A

Figure 1 identifies the proposed arrangement of buildings to be relocated based on the “move in one piece” scenario.

*Figure 1 – Proposed relocation “segments” for Option A*



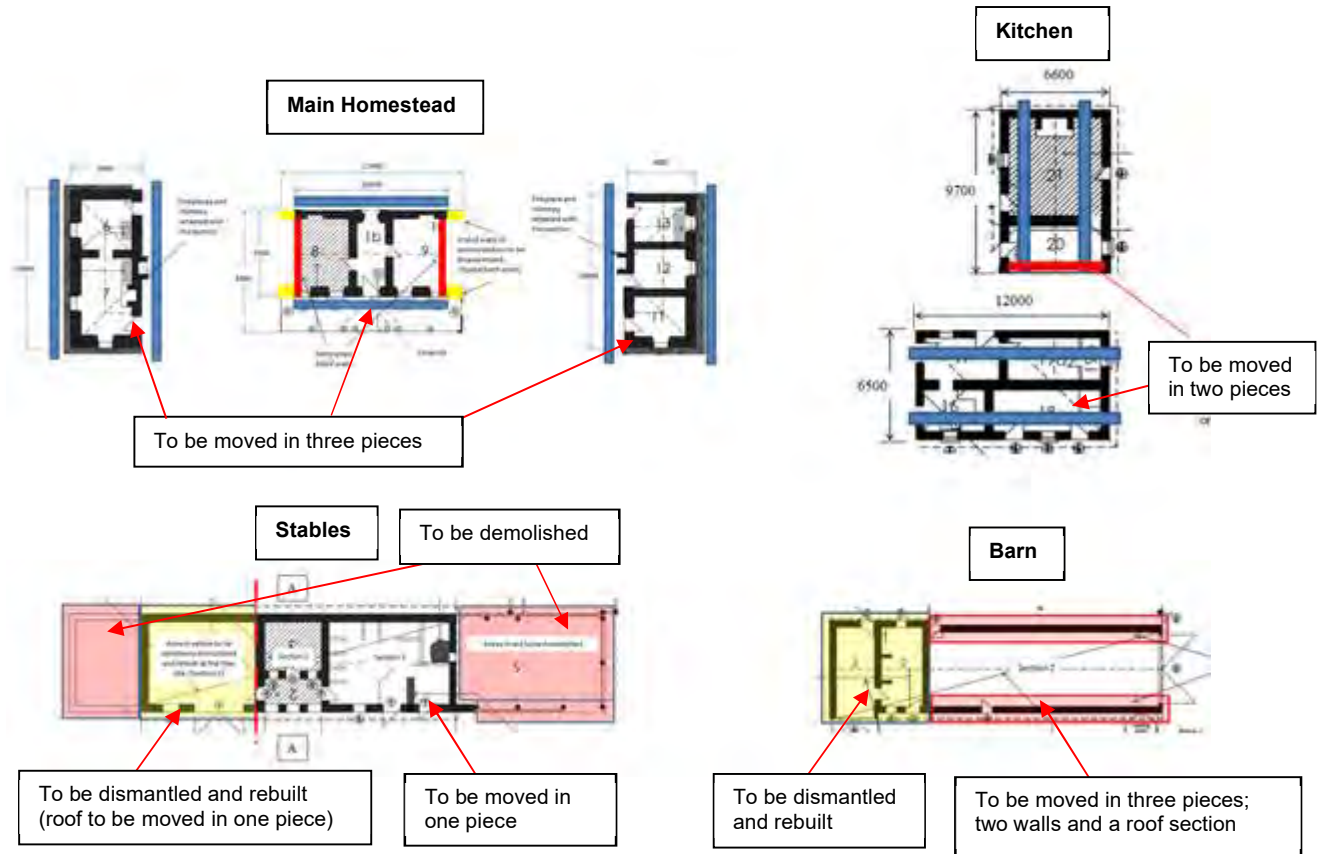
<sup>1</sup> With the exception of the stable building; for which the central section would be moved in one piece and the southern section be sensitively demolished and rebuilt as identified in Figure 1.



## 4.2 Proposed Building Arrangements to be Moved – Option B

Figure 2 identifies the proposed arrangement of buildings to be relocated based on the “move in sections” scenario.

Figure 2 – Proposed relocation “segments” for Option B



For both Option A and B, the Privy and cottage will be moved in one piece. It is still to be determined what sections of the cottage will be demolished assuming relocation via the road network.



## 5. Horizontal Separation/Cutlines

The relocation of buildings preserves the bulk of building fabric above the cutline. For most projects, the building cutline datum is determined by the building construction and is generally nominated just below the building floor level.

In the case of the Ravensworth Complex, the nominated cutlines were chosen to afford maximum possibility of approval from a heritage conservation perspective; i.e. the preservation of all fabric above the current ground datum. As the buildings are sited on uneven ground, this requires the cutline to be dropped below grade to enable a level cutline and to pick up footing sections currently visible (above grade).

In some cases this approach may not result in an optimal cutline for move purposes (where it requires the relocation of significant sections of footer which may be in poor shape). There is also a threat of rock in the excavation zone which may further impact the final cutline datum. Refer to Mammoth's methodology report MM-REP-RAVT-00012 for details regarding the presence of rock at the current site.

For the purpose of assessing the impact of the interface between the building and the route the following cutline datums were assumed:

*Table 1 – Assumed horizontal cutlines on buildings*

Building	Cutline
Homestead	450 mm below the building basecourse.
Kitchen	At the base of the building basecourse as a minimum – Dependent on presence and strength of bedrock.
Barn	70 mm above grade at the south western corner of the Barn extending to the northern end of the Barn section. Cutline of the Barn quarters to be determined but as a minimum to be below the basecourse at the lowest corner relative to grade.
Stables	At the bottom of the building basecourse on the western wall.
Privy	At the bottom of the building basecourse as a minimum – dependent on presence of bedrock.



## 6. Building Bracing

The relocation of the buildings (irrespective of methodology) requires a level of bracing. The purpose of the bracing is to retain the structures in their current condition and configuration during the move.

Two levels of bracing were assumed to suit the two relocation options presented in section 4:

- Option A – relocation in one piece – The building has an existing diaphragm in the roof support structure to resist the parallelogramming of the top of the walls, however the absence of a cohesive floor in any of the buildings requires the installation of a temporary bracing system to provide a plenum or diaphragm at floor level; preserving the building structural integrity throughout the move. Similarly, temporary bracing will be installed in window and door openings as these represent areas of weakness within the building walls.
- Option B – relocation in sections – for this option the both the floor and ceiling planes need to be braced to ensure a stable diaphragm and integrity of the building parts as it moves over unlevel topography. Cross bracing will also be employed within the frame work at each plane and between the planes to connect the framework and ensure they work together. The bracing for this option will need to extend into the roof cavity to support gabled walls which in many cases will no longer be tied into the roof structure as a result of the division of the building(s) into sections. Again diagonal bracing would be used to tie the gabled walls back into the rest of the structure.

In the case of the barn building, it is proposed to separate the roof from the barn walls for Option B and to carry each wall separately. Bracing has been considered as necessary to enable this to be achieved for further afield options.

In all case the proposed bracing in **not** designed to add strength to the buildings in order to overcome obstacles over and above the inherent strength of the structures being relocated. This is especially critical when considering the impact of route topography (slope and crossfall) as discussed in sections 7.2, 10.2, 10.3 and 10.4 of this document.

The adoption of and reliance on bracing to “strengthen” the structures to overcome route obstacles and constraints requires significantly more bracing and would introduce additional risk to the project given the fragility of the buildings and the double leafed construction of the walls (refer to section 7.2). Detailed scrutiny would need to be undertaken of any approach proposed to “strengthen” a section being relocated before adopting.

In general, the mover **does not** support the incorporation of bracing to “strengthen” the buildings being relocated where the intended purpose is to overcome significant route constraints which would otherwise be not negotiable based on the inherent strength alone of the structure being relocated.



## 7. Building Constraints

### 7.1 Building Dimensions

There are three critical physical dimensions to each building in terms of its ability to negotiate a route.

They are:

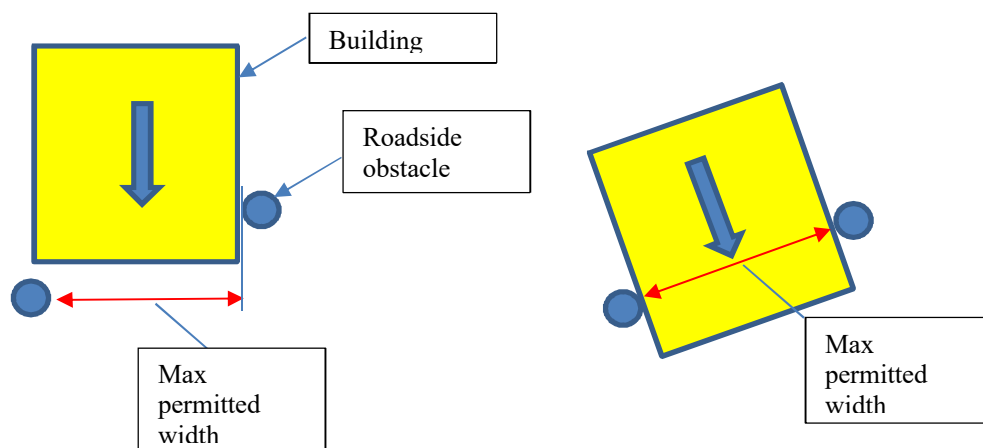
- Loaded building height;
- Loaded building width; and to a lesser extent,
- Loaded building length

The building height is critical for traversing under trees and overhead services such as power lines and phone lines. The building width is critical in terms of road side infrastructure such as trees, signs, poles, cutting benching, bridge and roadside guard rails etc.

A loaded building envelope can be developed to appraise a route. There are two levels of envelope:

- Static envelope – which is a section through the loaded building showing the worst case (most extreme dimensions).
- Dynamic envelope – this is a larger envelope as it consider the impact of the movement of the building through the road network and the potential for increase in the worst case dimensions due to the orientation of the building at a particular location. For example, the width of the building envelope will increase if the building is moving through a location on an angle rather than straight. (refer to Figure 3). In some cases dynamic envelopes also consider the impact of tolerances and movement or shifting of the load. Given the slow speed required in tight areas this is generally not necessary for structural moves.

*Figure 3 – Impact of attack angle on required clearance envelope – view from above*



Mammoth's review of the routes has been limited to the static envelope as the dynamic envelope only requires to be considered for areas of tight clearance or particularly complicated sections.

#### Loaded Height Clearance

The worst case loaded height of the constellation of buildings belongs to the Main Homestead's central section which measures 6.2 m from floor level to roof ridge. The required cutline for the Main Homestead will be 450 mm below floor level (refer to Table 1).

Adding to the overall height is the dolly height and the support steel profile height. The support steel is dependent on the weight distribution and dolly load plan. Initial review of the loads and layout plans indicates that conservatively the depth of support steel will be in the order of 1.2 m





Assuming an average running height of the rams at half extension, the height of the dollies is  $980 + 203 \text{ mm} = 1183 \text{ mm}$

The clearance height was calculated adding the building height, steel height and dolly heights to determine an overall height. This height was used as the basis of assessment of overhead or overhanging services and applies for both Option A and Option B.

*Table 2 – Clearance height required assuming half ram travel*

contributor	Approx dimension/height (mm)
House section + footer	6200 + 450
Support Steel	1200
Dollies (half ext)	1180
<b>Total height</b>	<b>9030</b>

### Loaded Width Clearance

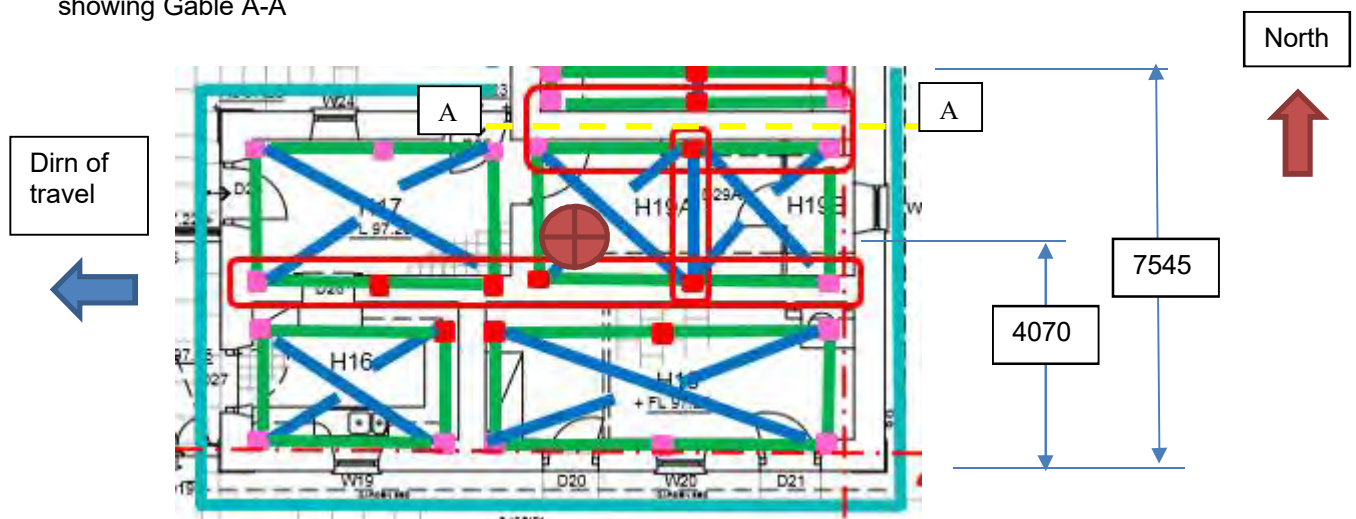
The width of the loaded buildings is fixed by their dimensions however the offset from the centre of the track width is dependent on the weight distribution of the structure.

Mammoth has developed some initial load plans for the Main Homestead and the Kitchen section. These are the widest of the buildings when divided into sections (Option B).

Whilst there is potential to manipulate the load plan; traditionally, the dollies will be tracking such that the building Centre of Gravity (CofG) and longitudinal Centre of Balance (CofB) are straddled by the dollies, i.e. the CofG and CofB are positioned in the centre of the track width.

The loaded width of the southern part of the Kitchen is the widest building section at 7545 mm (excluding eaves) when divided through the wall and window section north of the gable wall A-A as shown in Figure 4.

Figure 4 – Basic plan view of the widest Kitchen section (southern section of the building) and showing Gable A-A



The CofG of the Kitchen section is offset to the North due to the presence of the gable wall A-A which runs longitudinally to the direction of travel and adjacent to the cutline for this section. The gabled wall adds additional weight to this side of the building.

Initial calculations for this building section estimate the CofG in the north south direction as 4070 mm from the southernmost wall. This results in an offset of the tracking centre of around 300 mm north of the dimensional centre.

The leg sections of the Main Homestead also have offset CofGs due to an internal gable which runs parallel and adjacent to the proposed homestead vertical cutlines.

This is more pronounced on the western section due to the presence of two fireplaces and associated flue structures incorporated into the gable wall. In terms of the offset of the track relative to the

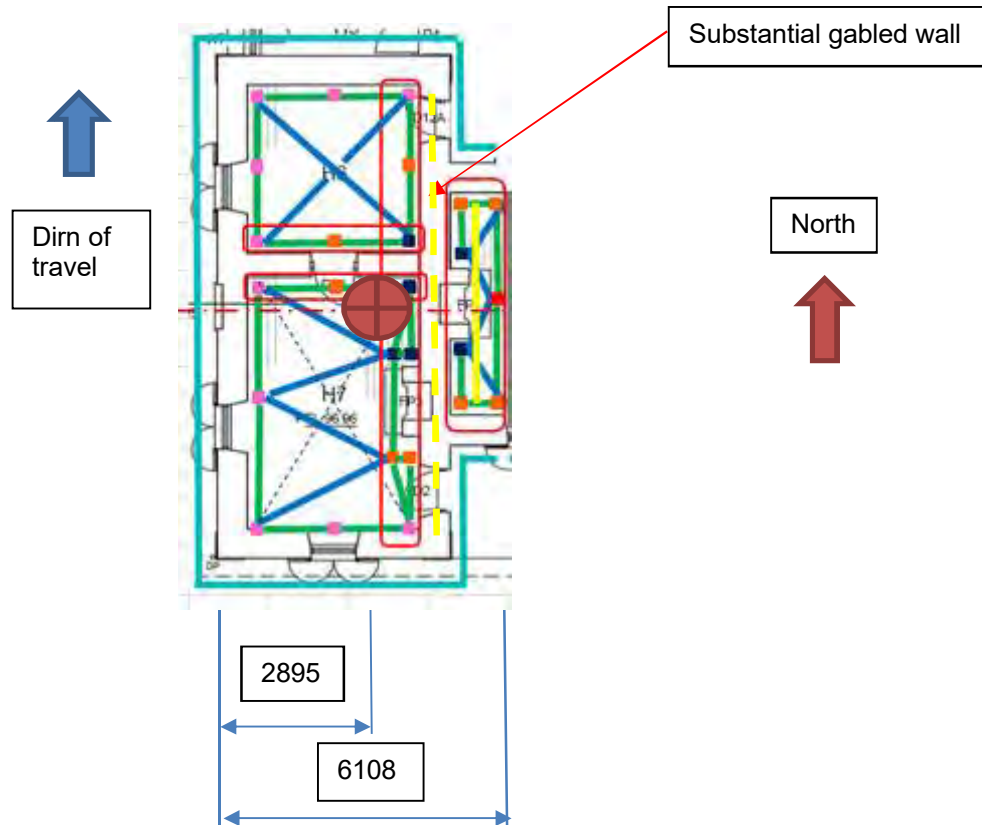




supported section, the offset is less pronounced as the division in a small section of the centre of the H of the homestead in the leg sections. This results in the gabled wall being located further towards the centre of the leg section and the additional part of the central section being located at the edge of the structure when divided. This part of the structure is relatively light weight compared to the rest of the structure. This results in correction of the CofG offset due to the substantial gabled wall.

The overall width of the western section/leg of the homestead (excluding eaves but including hearths) is 6108 mm with the CofG offset towards the fireplaces up to 235 mm.

*Figure 5 – CofG of the western leg of the Homestead*





Most of the obstructions on route will occur around the height of the load plane (i.e. road signs, fences, main boxes, bridge rails etc). However there can be issues with obstructions higher up on the building from items like overhead wires running parallel to the road or overhanging trees. In this case the additional width of the eaves should be considered which in the case of the Kitchen are 350 mm wide and 400 mm for the main house.

This adds to the overall clearance requirement for the Kitchen of 350 mm at 4909 mm above ground level for the Kitchen (assuming a cutline at grade). Note that the eave is only present on one side (the left side) of the sectioned building therefore the width is only increased by one eave width.

A cutline at 450 mm below grade has been specified for the Main Homestead. This will result in an additional 400 mm added to the overall clearance requirement at 5534 mm above ground due to the eave overhang. However again there will only be one eave present on the sectioned building; (again on the left-hand side). This will alter the worst case offset from the right-hand side to the left-hand side for this section of the Main Homestead.

The issue of overall clearance width at the eave height is magnified for the central section of the homestead **if the verandah roofing is to be retained** on the structure during the move. In this case the overall clearance width required at 5534 mm above grade would be 11800 mm if there was veranda present on the front and rear of the central section. However, the original veranda has been replaced by a newer roof structure as part of the additions to the rear of the building. As this would be removed prior to relocation as part of the demolition of the rear additions, it will not impact the clearance width of the central section.

*Figure 6 – Roof arrangement to the rear of the homestead central section – showing the addition roof structure*



Removal of the rear additions reduces the overall clearance requirement to 9060 mm for the central section with significant overhang of the front veranda on one side if retained; and a worst case offset of around 5968 mm from the centre of the track width would result at 5534 mm above grade.

Lucas Stapleton Johnson has produced roof framing drawings which show that the veranda framing is separate from the main building roof. This is logical given the change in pitch of the veranda compared with the main roof and the absence of rafters at the reduced pitch in the main roof space.



Theoretically the veranda could therefore be removed without permanent damage to the roof framing; however the veranda ceiling rafters are recessed into pockets within the southern perimeter wall of the homestead. A meticulous approach would need to be developed to prevent damage to the existing structure should it be required to remove the veranda. Mammoth recommends the veranda is not removed unless unavoidable due to a significant consequential impact on the route.

*Figure 7 – The front veranda roof framing showing the ceiling joists recessed into pockets in the front perimeter wall*



*Figure 8 – A close up of the pocket configuration taken from the western section of the homestead.*

This arrangement is comparable to that found at the veranda ceiling joist/wall interface





Figure 9 – Front verandah from the outside



The barn and the stable are both wider than the main house (when split in sections) however as they are essentially symmetrical and less in half width than the offset on the Kitchen section or the homestead central section (at the eave height) they are not the worst-case building sections in terms of clearance width.

The Kitchen was used as the basis for the clearance width for the route analysis given that the veranda could be removed from the Main Homestead if need be.

Table 3 – Clearance requirements – worst case sections

Section	Overall clearance at load plane (mm)	Worst case offset from centre of track at load plane (base of building) (mm)	Overall clearance at eave height (when loaded) (mm)	Worst case offset from centre of track at eave height (mm)
Kitchen southern section	7545	4070 on left hand side at load plane	7895 at 4909 mm above grade	4420 on left hand side at 4909 (+/- 200 mm) above grade
Homestead left leg	6108	3128 on right hand side at load plane	6908 at 5534 mm above grade	3380 on left hand side at 5534 (+/- 200 mm) above grade
Homestead central section	6185	3093 either side	9060 at 5534 mm above grade	5968 on any hand side (flexible) at 5534 (+/- 200 mm) above grade

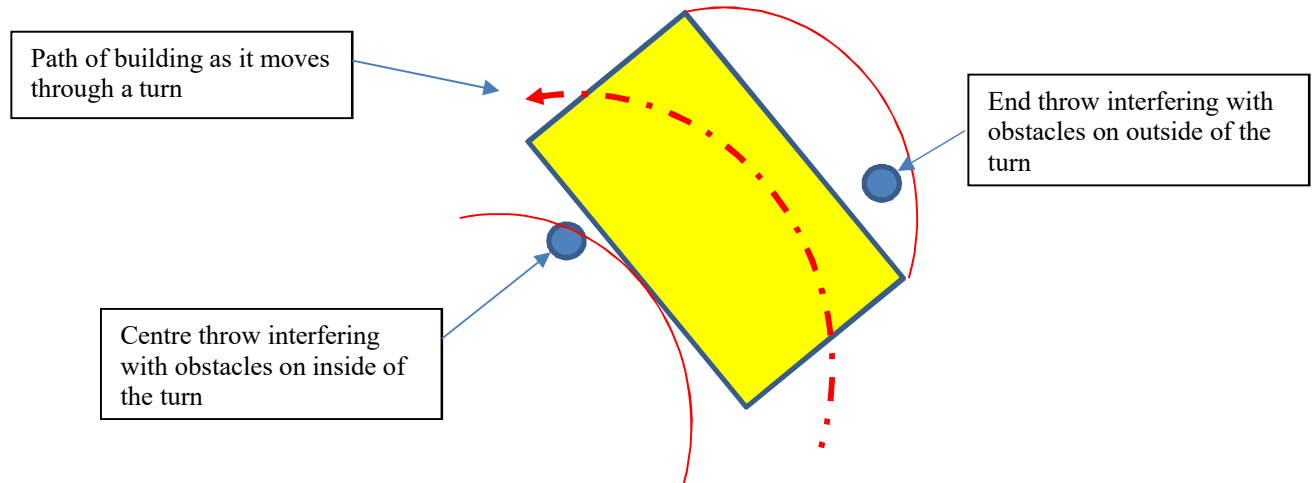
### Loaded Length

The length of the building is generally not an issue for relocation in terms of clearance between the building and route obstacles. An exception to this is when the building is being transported around a sharp corner where the end throw can be an issue with clearance of obstacles on the outside of the curve if the centre throw on the inside of the curve is limited. (refer Figure 10).



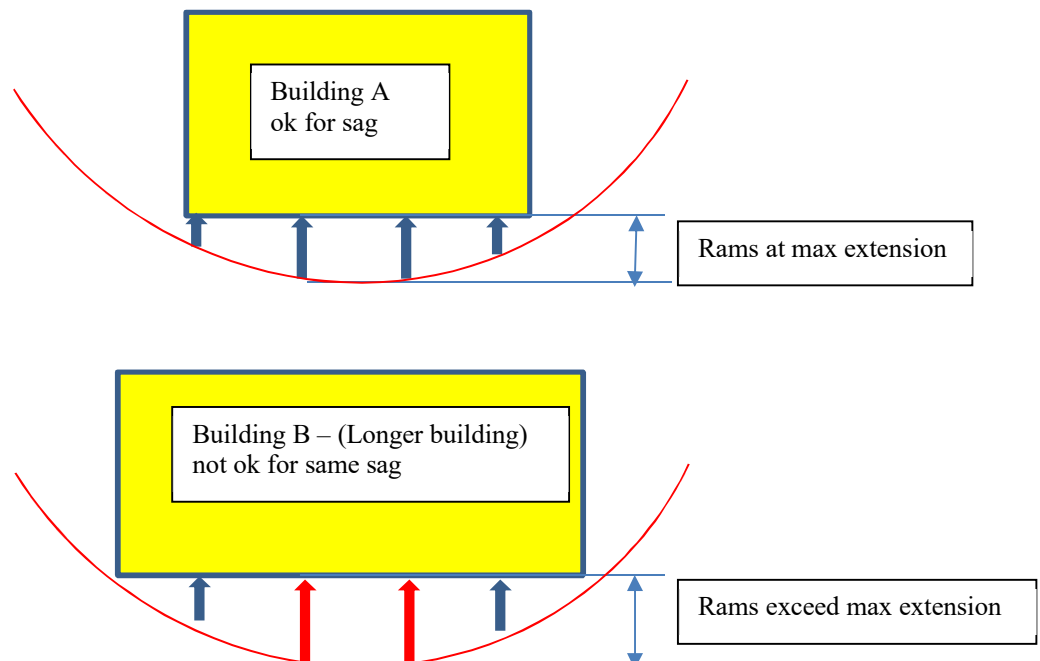


Figure 10 – Example layout where the end or centre throw of the building can conflict with external obstacles. Building moving around a curve



The loaded length can present other potential challenges for routes with significant **change in slope** as the hydraulics need to continue to support the building as it moves through the topography. This is particularly relevant for severe crests or sags on route. (Refer to Figure 11).

Figure 11 – Theoretical example where fast changes of grade can cause problems for the support system



The changes in the slope on the proposed routes are generally reasonable along the routes apart from some intersections such as the Hebden Rd/New England Highway intersection<sup>2</sup> and entrances

<sup>2</sup> The technical impact of the Hebden Rd/NE Highway intersection is incorporated in section 12.3 with the time impact incorporated into section 16.3.



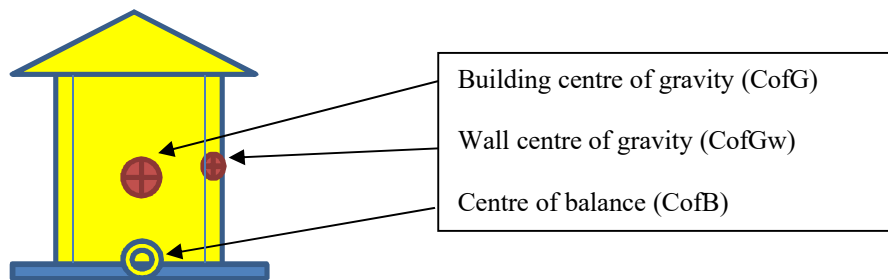
into the mine sites for the southern routes. These sections crest and fall away quickly. Other areas where this needs to be considered include creek and bridge crossings.

## 7.2 Sensitivity to Slope and Crossfall

### Centre of Gravity versus Lines of Balance

Figure 12 clarifies the main parameters for consideration when evaluating the buildings sensitivity to slope and crossfall.

Figure 12 – Terminology



The following “definitions” are applicable to building moving only:

- Building Centre of Gravity (CofG) - a singular point through which the weight of the building can be assumed to act for stability analysis and where no moment is applied by the load to the support structure when in level position; (i.e. the structure remains stable). The CofG remains constant relative to the physical building dimensions but will move relative to the support platform if the building lists sideways due to crossfall or forward/backwards due to slope;
- Wall Centre of Gravity (CofGw) – a singular point through which the weight of the wall can act and the structure will remain stable as no moment is applied to the base of the wall when in the level position. The CofGw is wall specific and relevant only to an individual wall leaf or to the wider structure as a result of the impact the weight of the wall has on the building CofG. The further the CofGw is from the CofG, the bigger the influence the individual wall has on the balance of the overall structure; and
- Centre of Balance (CofB) – a line or axis of balance, sometimes referred to as a “line of balance”, which can be visualised as similar to the hinge axis on a seesaw. The CofB is located on the load plane supported at the top of the dolly rams and is always lower than the CofG unless the building is supported above the CofG; i.e. hung.

Unlike the CofG, the CofB does not change position relative to the individual support platform designed by the mover, as it is two dimensional and contained within the load platform itself. Calculations for loading of the building and the zoning of the hydraulics, (and consequential pressures seen in the hydraulics) are based on the CofB when the building is sited on level ground. This physical loading arrangement is generally fixed throughout the move.

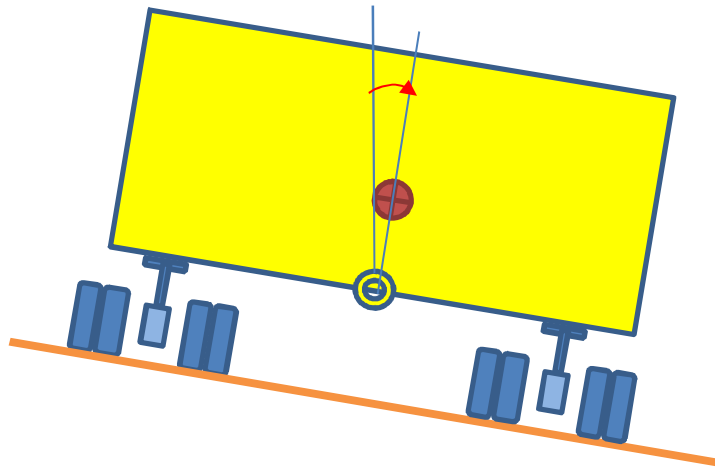
The change in the CofG position relative to the load platform in effect creates a new balance point and will introduce new forces into the load plane. This needs to be managed to ensure it does not translate into forces imparted into the supported building. Examples of techniques available to the mover are provided later in this section.

When level, the calculated pressures within the hydraulics will be identical whether based on the CofB or the CofG. However, as the building moves down a slope or leans due to superelevation, camber or crossfall on the route, there will be a change in the pressure applied to the dolly vertical support hydraulic ram as the CofG moves relative to the support platform and the CofB. (Refer to Figure 13).





*Figure 13 – Relative movement of the CofG compared to the CofB as a building lists (assuming no hydraulic correction)*



Masonry buildings are unable to accommodate torsion or bending forces. A technique called zoning of the dolly hydraulics is utilised to ensure the building is “floating” on oil. Together with a sufficiently stiff support framework; zoning prevents the twisting or torsion of the platform from front to back as the building moves over uneven ground traverse to the direction of motion.

The stabilizing of the load plane can be achieved through implementation of one or a combination of techniques to resist torsion and bending. These techniques include the manipulation of the hydraulics and zoning footprint or structural strengthening techniques such as strongbacks

Each technique comes with compromises and the load plane needs to be carefully configured to suit the topography to be traversed.

*Figure 14 – Strong back incorporated on a masonry move to stabilize the building platform (and cross steel cantilevers)*



Building listing can be corrected as the structure moves down the road through manipulation of the oil volumes in the zones and therefore the stroke of the dolly rams. However this requires manual intervention and will slow the move.

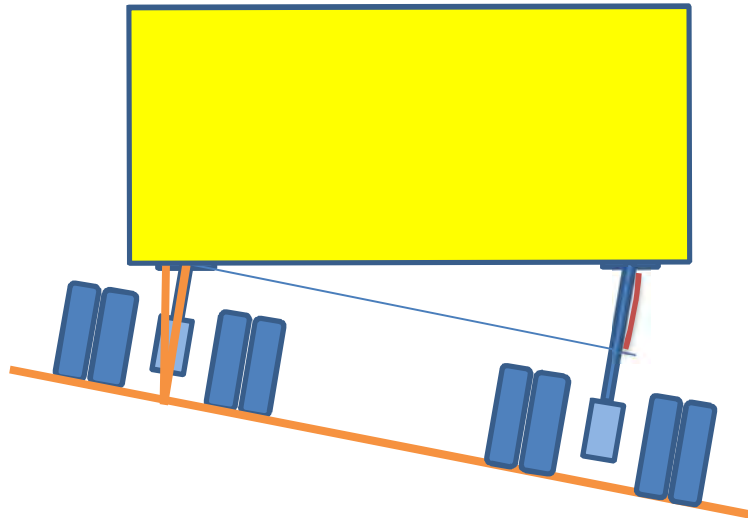


## Wall Stability

The hydraulic system incorporated in the supporting dollies will enable the temporary levelling of the building relative to the localized topography within the limits of the hydraulics. The impact of this on the proposed load planes for this project is presented in section 11.2.

The movement of the hydraulic cylinders within each zone enable correction of localized slope, crossfall or both.

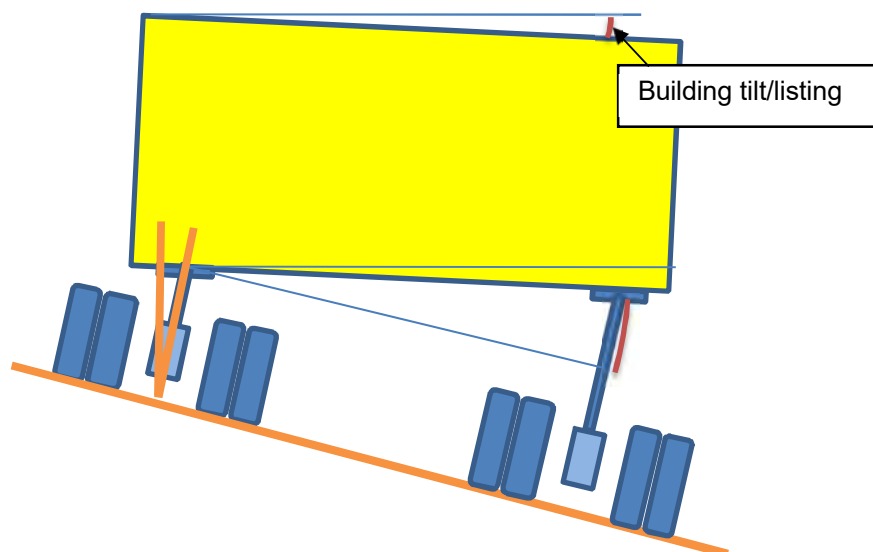
*Figure 15 – Out of level correction using hydraulics*



However in order to maintain the load plane (as a plane in space), the supporting vertical hydraulics within the dollies need to be retained within their limits of extension otherwise the loading on the load plane will alter (either spike at a load point if the ram bottoms out or drop off as the dolly hangs in the case of overextension of a ram at a load point).

Once the travel of any hydraulic ram supporting the building is at its extent (either fully retracted or fully extended) any further/additional difference in the slope or crossfall needs to be accommodated by the building/building section structural integrity.

*Figure 16 – Building attitude once hydraulic extent is surpassed*





The construction of the existing walls for all building in the Ravensworth complex are a three leafed system in approximately 1:1:1 ratio across the width i.e. 1/3 outside stone: 1/3 rubble: 1/3 inside stone. This compares to a monolithic wall construction where the walls are built as one solid leaf.

*Figure 17 – The inner leaf and rubble construction evident in a window in the stable. The outside leaf is not visible and is on the other side of the window frame*



The walls of all stone buildings on the site vary between 470 and 640 mm thick. However the outer and inner leaves are estimated to be less than 180 mm thick in some places and are not well tied together with the use of tie stones appearing to be limited. In our assessment of the wall stability and resistance to listing, Mammoth has treated each wall as three separate leaves which are not tied together.

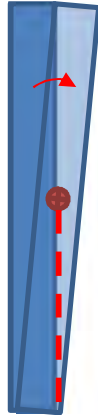
Whilst it is required to install a matrix of pins through the internal leaf and epoxied into the external leaf for the longer relocation routes – Option B (to Clydsdale or Broke and beyond); these pins are chiefly to prevent the wall leaves from separating, peeling or bulging. Whilst they may help, it should not be assumed that these pins will provide a positive tie connection between the outer and inner leaves if the wall is leaning. The pins are therefore not considered in the analysis of the constraints imposed by the building construction on the building relocation.

For the purpose of the route analysis, Mammoth has assumed a wall thickness equal to 1/3 of the wall thickness as the leaf thickness. (e.g. for a 540 mm wall, the assumed wall leaf thickness would be 180 mm).

Once localized defects in the walls/buildings are repaired, Mammoth considers it reasonable to assume that the walls will retain their integrity if their CofGw is retained within the base dimension of the wall leaf. That is, the CofGw does not move further over than half of the assumed leaf thickness relative to the base, (i.e. 90 mm in the example above) when the wall leans over.



Figure 18 – Maximum allowable lean on wall leaf



It is noted that the rooms in the buildings are generally quite small resulting in the regular tying in of cross walls at 90 deg. This coupled with the installation of a diaphragm at floor level, selected cross bracing in open areas and the presence of existing roof framing/sheeting acting (which act as a limited shear plane at the top of each building), further assists the building integrity as each wall is part of a larger system. However, as it is not clear to what level the leafs are tied together or how the crosswalls are laced into the perimeter walls the potential benefits of these features are not considered in Mammoth's assessment of the structures.

Once the CofGw passes the wall base dimension as a result of leaning of the building the wall would theoretically fall over without the above identified tying in to the rest of the building. 'Therefore, if the wall passes this extremity, the integrity of the individual wall is relying on:

- the installed bracework; and
- the mortar adhesion; or if not existent
- the friction between the stacked stones.

Mammoth considers this level of leaning to be the absolute maximum permitted lean for any wall given the fragile nature of the building wall construction and current condition.

The wall height and wall width vary for all buildings and within each building section. Mammoth reviewed this as part of its assessment of each section of building and identified the worst-case walls for each building or building section.

A high-level analysis of the existing wall lean "out of plumb" was also undertaken on site for those walls which have moved substantially over time with the settlement of their foundations. This analysis was limited to those sections being relocated and clearly showing significant wall lean. The review included the western wall of the Main Homestead, most of the barn together with its northern section (the Quarters) and the stable north east wall. Details of the review are included in Attachment A.

In the case of the barn and associated northern quarters, the walls currently encompass a significant lean. In some cases, measured walls were found to be leaning in the order of 60 - 100 mm over a 2000 mm vertical change in height. In the case of the stables there is localized peeling of the wall leaves on the northeastern wall. The bulging of the western wall on the homestead is also significant, measuring 100 mm out of alignment over a 2000 mm change in vertical height. However, as the exterior walls of the homestead are the thickest of all the walls; so, the relative impact on this building is reduced.

### Worst Case Walls for Relocation

In general, the relocation of the buildings in one piece is limited to those routes where a purpose-built road is installed, or the existing road network is relatively absent of significant slopes or crossfalls and is wide enough to accept the buildings in one piece.

The identification of the least stable walls in terms of tilt/listing was therefore evaluated on the basis of the configurations once the buildings were sectioned/divided as necessary to travel the routes to the proposed sites further afield.



The height of the wall impacts its CofGw with a taller wall having a higher CofGw. This parameter together with the assumed wall leaf thickness are the critical parameters to determine the least stable wall for each building section. Review of the buildings showed that wall thicknesses vary between buildings and within buildings. The worst-case walls were chosen as the limiting factor for each building in terms of susceptibility to out of level.

Mammoth determined that the worst-case building section with respect to sloped sections of route were the centre section of the Main Homestead and the northern section of the Kitchen (due to the presence of a relatively thin (470 mm) internal gabled wall running traverse to the direction of travel).

The ratio of the wall thickness to the vertical height of the CofGw for the Kitchen and the central section of the Main Homestead are similar. Initial review of the northern section of the Kitchen building indicates that the building load plan could be shorter when compared to the central section of the Main Homestead. A shorter load plan enables better utilization of the dolly hydraulics to accommodate changes in grade.

Mammoth's review was limited to the Main Homestead sections (as these encompassed the highest gabled walls); and the northern barn quarters building due to the extent of existing tilting of walls. Mammoth considered that a detailed analysis of the Kitchen with respect to the longer routes was unnecessary at this stage and recommends this be held off until a decision on the preferred route is finalised.

The walls nominated in Table 4 were identified as the most susceptible to tilting/listing for the Main Homestead due to a combination of orientation, wall thickness and CofGw height. The worst-case walls nominated are identified in the plan view of the homestead shown in Figure 19 with the approximate height of the CofGw for each critical wall shown in the corresponding elevation view.



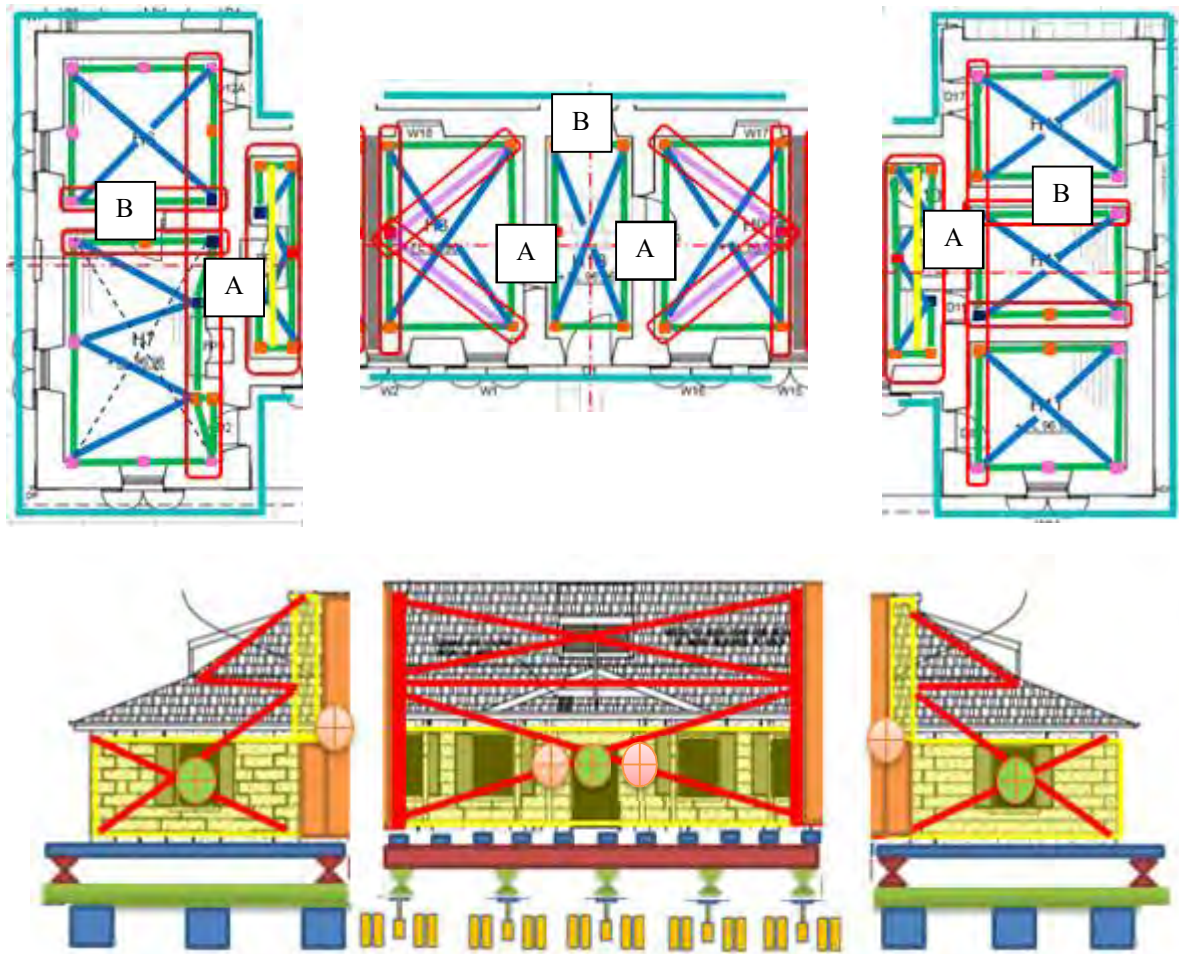
Table 4 – Most susceptible walls to tilting – Main Homestead

Section	Crossfall		Slope		Comments
	Worst case wall for crossfall	Assumed CofGw height; and Assumed leaf wall thickness (1/3 wall thickness)	Worst case wall for slope	Assumed CofGw height; and Assumed leaf wall thickness (1/3 wall thickness)	
Main Homestead western section	Internal gabled wall A (external once cut into sections)	<ul style="list-style-type: none"> <li>2.73 m</li> <li>0.213 m</li> </ul>	Internal traverse wall B	<ul style="list-style-type: none"> <li>1.58 m</li> <li>0.213 m</li> </ul>	Wall B is the same height as the other traverse walls but has a smaller base width. Wall A is gabled and therefore has a significantly higher CofGw
Main Homestead central section	External longitudinal wall B	<ul style="list-style-type: none"> <li>2.04 m</li> <li>0.220 m</li> </ul>	Internal traverse walls A	<ul style="list-style-type: none"> <li>2.04 m</li> <li>0.170 m</li> </ul>	The temporary blockwork gabled walls on either end of the central section is the worst wall in terms of a higher CofGw but this can be overcome by increasing the thickness of the wall base. (as this is new construction). This leaves the two traverse walls (A) as the worst-case walls for slope.
Main Homestead eastern section	Internal gabled wall A (external once cut into sections)	<ul style="list-style-type: none"> <li>2.73 m</li> <li>0.217 m</li> </ul>	Internal traverse wall B	<ul style="list-style-type: none"> <li>1.58 m</li> <li>0.135 m</li> </ul>	The two walls B are the same height as the other traverse walls but have a smaller base width than the external walls. The northern traverse internal wall is a little thinner (by 40mm) and is therefore the worst case. Wall A is gabled and has a significantly higher CofGw





Figure 19 – Walls most susceptible to tilting during relocation – Main Homestead



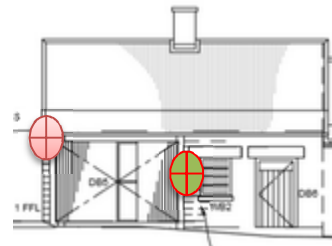
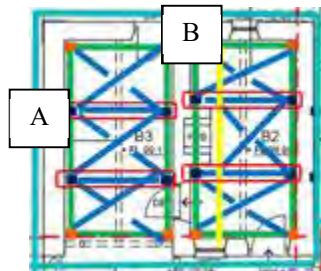
For the northern barn quarters, further correction was made to the assumed wall thickness to account for those walls which were out of plumb. This was achieved by reducing the assumed wall leaf width by the offset distance measured for the specific wall to determine an “equivalent” wall leaf width.



*Table 5 – Most susceptible walls to tilting – Northern Barn Quarters*

Section	Crossfall		Slope		Comments
	Worst case wall for crossfall	Assumed CofGw height; and  Assumed leaf wall thickness (1/3 wall thickness)	Worst case wall for slope	Assumed CofGw height; and  Assumed leaf wall thickness (1/3 wall thickness)	
Northern Barn Quarters building	External wall B	<ul style="list-style-type: none"> <li>1.48 m</li> <li>0.167 m</li> </ul>	External gabled wall A	<ul style="list-style-type: none"> <li>2.20 m</li> <li>0.010 m</li> </ul>	Wall B is the same height as the other longitudinal wall. No correction for wall lean was allowed for here. Wall A is gabled and therefore has a significantly higher CofGw. A lean offset distance of 80mm was assumed for this wall based on the site measured offsets. This reduce the allowable slope considerably on what was already a relatively thin and tall wall.

*Figure 20 – Walls most susceptible to tilting during relocation – Northern Barn Quarters*



The southern section of the Kitchen is also susceptible to crossfall due to the presence of gabled walls running longitudinal to the direction of travel (and on the edge of the load for the wall adjacent to the vertical cutline; relative to the track centreline). It is expected that these will be similarly sensitive to crossfall. No investigation has been done with respect to the Kitchen building as the ratio of the wall heights to the wall thicknesses are equivalent to that of the Main Homestead.



## 8. Proposed Recipient Sites

Several potential recipient sites have been identified for the Ravensworth Homestead Complex. It is understood that each of the sites has differing merit in terms of future use, heritage context and technical risks associated with the move to site. Mammoth's involvement in the project is limited to the relocation of the buildings to the final site. The scope of this document is therefore limited to the technical constraints and risks associated with the relocation of the buildings to each of the proposed recipient sites.

The sites provided for assessment are outlined below and identified in Figure 21.

*Table 6 – List of potential recipient sites*

Site No.	Site Name	location	Approximate distance from current site (km)
1	Ben Ean	Pokolbin	88
2	Hunter Valley Resort	Heritage Rd	82
3	Corunna Station	Heritage Rd	95+
4	Clydsdale	Northern end of Hebden Rd	11
5	Broke	Broke Township	63
6	Glencore site 1	Picton's Lane, north of current location	6
7	Glencore site 2	Bowman's Creek. Over Hebden Rd, west of current location	3
8	Singleton <sup>3</sup>	Singleton Township	56

*Figure 21 – Map of Potential sites*



<sup>3</sup> A detailed review of the route to Singleton was not conducted. The review of the Singleton route was limited to the identification of significant constraints.



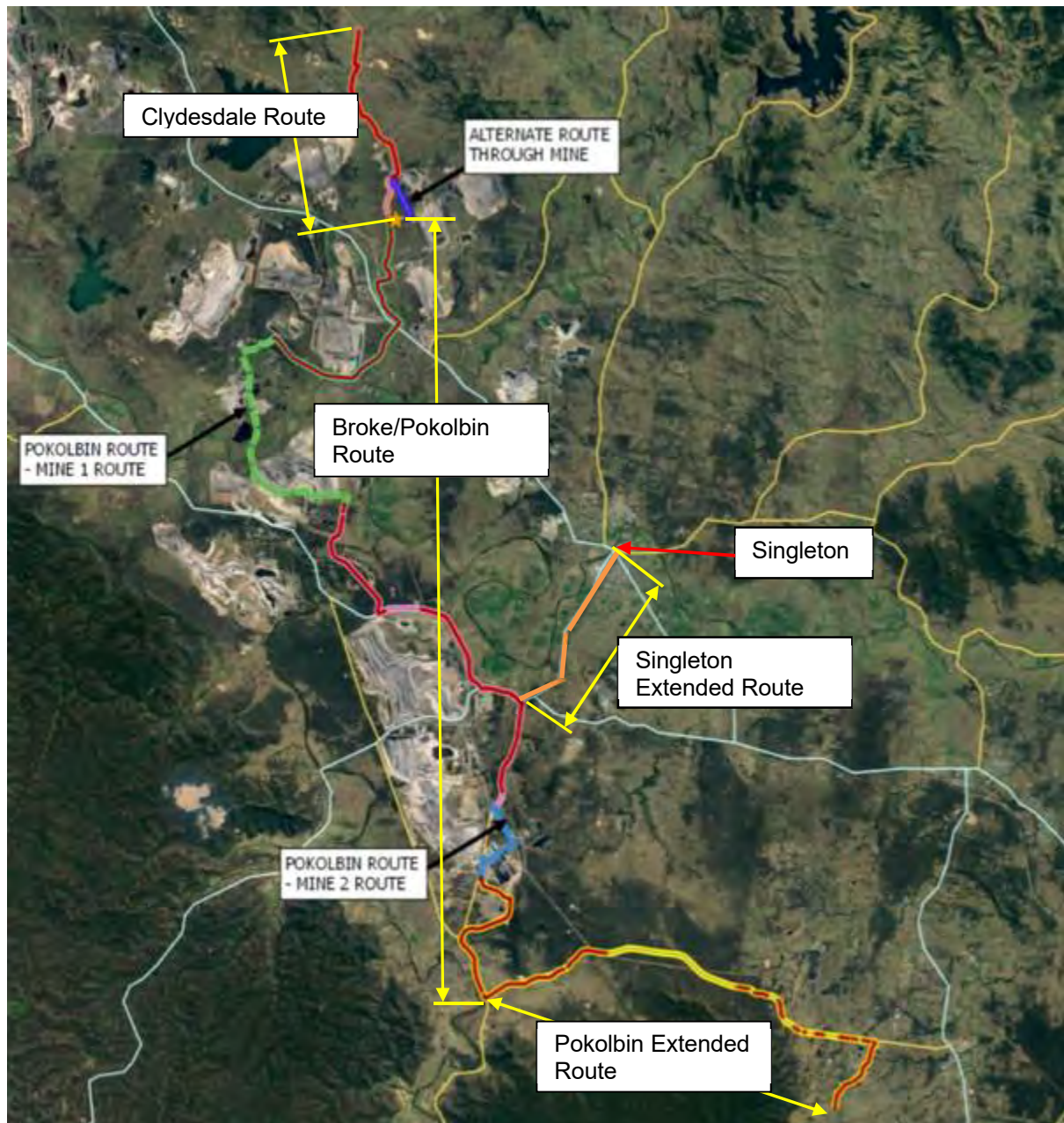


## 9. Proposed Routes

The proposed routes to each site were determined in the main by Glencore personnel in conjunction with input from Mammoth regarding constraints. The routes were chosen to minimize route obstacles and where practical, internal mine routes were selected as they provide greater flexibility and minimize impact on other road users.

Relocation to Singleton (and beyond) would involve the relocation towards Broke along the Broke/Pokolbin route up to the Paynes Crossing road turn off but continuing on Putty Rd to Singleton (where it becomes Glenridding Rd).

*Figure 22 – Map of proposed routes*





## 10. Route Constraints

It is reasonable to assume that in most cases; the closer an existing site is to the final site, the lower the number of constraints. However, there may be cases where even a close move is hampered or a longer move is preferable due to individual constraints.

The overall distance of the move increases project complexity as it results in a multiplication of factors or increased probability of issues such as:

- Number of overhead services or infrastructure – Powerlines, phone lines, tunnels, overhead bridges etc;
- Roadside infrastructure – road side trees, signage, poles etc;
- Road infrastructure – e.g. bridge and culvert allowable loads;
- Slopes and crossfalls – necessitating additional traction or braking requirements – i.e. utilization of dolly braking systems and braking vehicles;
- Parking/layover areas – required to check the buildings and equipment along the route and to enable the parking of convoy buildings before and after difficult sections such as major intersections or areas of high slope so that building sections can traverse the obstacle one at a time. The location of parking areas needs to consider “what if scenarios”;
- Potential for delay due to equipment failure, e.g. a tyre puncture;
- Stakeholder delays – i.e. hold ups due to the impact on road users and access requirements.

The approximate distance of each route is provided in Table 6 above.

### 10.1 Track Width

For the Ravensworth Complex the track width of the buildings once loaded, was identified as a significant limiting factor on the routes which could be navigated. Mammoth identified the minimum track width of the homestead building if relocated in one piece as 7.5 m. However, whilst this is technically possible, a 9 m track width is necessary should the weight of the building prove to be more than that estimated, as more dollies would be required to support the load with insufficient room to accommodate them.

Further investigations into the building construction determined that the building weight would in fact surpass that which could be supported on the narrower 7.5 m track width. This additional weight was attributable to internal gabled walls in the Homestead discovered when access to the roof space was gained, and a requirement to lower the cutline to 450 mm below grade further adding to the loaded building weight.

A 9 m track width presented problems for many of the chosen routes as a significant portion of most routes was 7.5m or less. It was therefore determined that moves further afield would only be achievable if the Kitchen and Main Homestead were cut into sections (Option B section 4.2).

The required track width for the proposed routes is summarised in section 11.1. The sectioning requirements for each option are included in Table 7.

.



*Table 7 – No. of sections depending on approach*

Building	Option A – Move as a whole No. sections if moved nearby	Option B – Move in sections' No. of sections if moved further afield
Main Homestead	1	3
Servant Kitchen	1	2
Outbuilding 1 - Stable	2 (including roof section of demolished area)	2 (including roof section of demolished area)
Outbuilding 2 - Barn	1	4 (including roof section of Barn area)
Privy	1	1
Cottage	1	1
<b>total</b>	<b>7</b>	<b>13</b>

## 10.2 Pure Slope

### Maximum Traversable Slope

The Maximum traversable slope is determined by the maximum float in the vertical hydraulic rams incorporated in the dolly load platform/plane and the maximum lean (foreward or aft) that can be accommodated by the buildings.

Mammoth developed preliminary load platforms based on the calculated lines of balance for the Main Homestead (when relocated in sections) and for the northern section of the barn. The preliminary load platforms are provided in Attachment B.

The geometry of the load platforms together with the building wall susceptibility to leaning, define the limiting topography when relocating the building sections. The limitations in each building identified in Table 4 and Table 5 were combined with the physical hydraulic constraints to determine the maximum slopes negotiable for each structure to be relocated.

*Table 8 – Maximum slopes which can be negotiated for differing levels of hydraulic extension<sup>^</sup>*

Building Section	Maximum slope assuming no crossfall and no hydraulic correction	Maximum slope assuming no crossfall and 8"extension of rams (i.e. 50% hydraulic correction)	Maximum slope assuming no crossfall and 16"extension of rams (i.e. 100% hydraulic correction)
Western section of Main Homestead	5.5%	7.2%	8.8%
Eastern section of Main Homestead	4.3%	5.9%	7.6%
Central section of Main Homestead	4.2%	5.8%	7.5%
Northern section of barn	0.2%	2.4%	4.7%

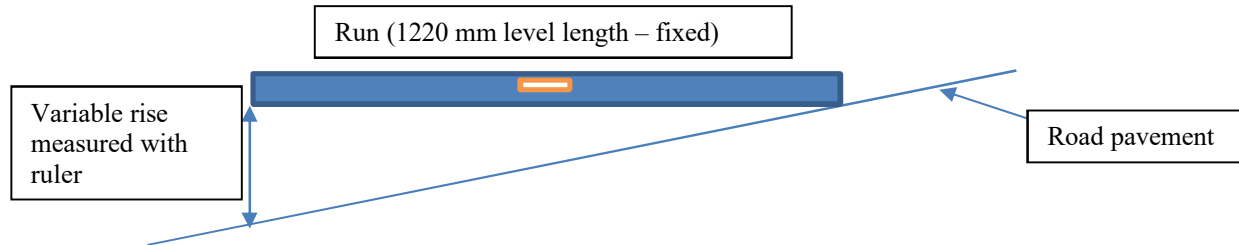
<sup>^</sup>The differing maximum slope and the impact of the hydraulics on what slope can be achieved is determined by the differing length of the load platforms and sensitivity of the individual section walls to listing. The northern section of the barn is particularly sensitive to slope changes as a result of the existing out of plumb northernmost wall.

Each of the routes were driven by Mammoth and high slope areas identified. Preliminary measurements of the slope at each of the high slope areas were recorded using a spirit level and ruler to establish rise over run.





Figure 23 – Preliminary slope measurement technique



The areas of concern were compared against the maximum negotiable slopes to identify problematic areas. The result of this assessment is included in section 11.2.

### Impact of Slope on Travel Speed

Mammoth developed a table of principles for travel speed versus slope for the Ravensworth buildings (ref to Table 9).

Table 9 – Impact of pure slope on travel speed – General Principles

Slope (longitudinal)	Travel Speed	Additional impacts	Comments
0-3% (i.e. up to 1 m rise over 33 m run)	Up to maximum of 7 km/hr	Power dollies disengaged – pulling with tow vehicle and dollies set in trailing mode	Assumes no appreciable crossfall
3-5% (i.e. between 1 in 33 and 1 in 20 m)	5 km/hr	Power dollies disengaged – pulling with tow vehicle and dollies set in trailing mode. Reduced speed to maintain control	Assumes no appreciable crossfall
5-7% (i.e. between 1 in 20 and 1 in 14 m)	<3 km/hr	Power dollies engaged together with tow/brake vehicles to ensure control in maintained	Assumes no appreciable crossfall
> 7% (i.e. worse than 1 in 14m)	Crawling speed i.e. 1 – 1.5 km/hr	Power dollies engaged together with tow/brake vehicles to ensure control in maintained. Individual section review required	Assumes no appreciable crossfall

Glencore commissioned RPS to undertake a survey of the proposed routes. The outputs of this survey were evaluated by WSP, dissecting each route in terms of percentage slope ranges and determining the total distance of route applicable to each range. WSP's analysis categorized the longitudinal topography of each route into one of four slope ranges as per Table 10. Mammoth's general principles were then applied to the nominated slope categories and an average travel speed the building sections could be moved along each route assumed.

Table 10 – Categorization of average travel speed for differing slope categories

Longitudinal Slope Category	Travel Speed per section (km/hr)	Comments
< 4.6%	4	Buildings can travel in convoy
4.6 – 5.0 %	4	Buildings can travel in convoy
5.0 – 6.0 %	2	Buildings travel through these sections 1 at a time
> 6.0 %	0.5	Buildings travel through these sections 1 at a time



The average speeds were used to identify the expected time necessary to move through each of the routes.

### Impact of Slope of Traction and Braking

More significant slopes require the addition of extra tow vehicles or braking vehicles to control the load. Perhaps unintuitively, the negotiating of downwards slopes is generally more time consuming than pulling uphill due to the need to control the significant weight of the structures. The relocation of buildings of this nature differs markedly from the relocation of heavy loads which are inherently stable, e.g. tanks or transformers. Control of the load down the hill needs to ensure sufficient braking effort but *also* needs to prevent shock (jerk) being transferred to the building as this could cause cracking of the structure. As such the control needs to be constant and positive.

For slopes greater than 5-6% additional vehicles are likely to be required to control the structure on downward grades or to pull the building up the higher slope.

*Figure 24 – Example of tow vehicles used to anchor a building as it goes down a significant slope*



The route review must consider the inclusion of tow or braking vehicles for high slope sections and also for the leap frogging of the vehicles from front to back or vice versa where there is a change in slope from uphill to downhill or downhill to uphill.

### 10.3 Crossfall

As with the slope, the cross fall across the route will impact the stability of the load in the traverse direction.

The maximum traversable crossfall is determined by the maximum float in the vertical hydraulic rams incorporated in the dolly load platform and the maximum lean (listing to the left of right) that can be accommodated by the buildings.

The preliminary load platforms (Attachment B) were again used as the basis for the evaluation of the maximum crossfall which could be accommodated by the Main Homestead (when relocated in sections) and the northern (quarters) section of the barn.

The limitations in each building section identified in Table 4 and Table 5 were combined with the physical hydraulic constraints to determine the maximum crossfall negotiable for each structure to be relocated.



Table 11 – Maximum crossfall which can be negotiated for differing levels of hydraulic extension\*

Building Section	Maximum crossfall assuming no slope and no hydraulic correction	Maximum crossfall assuming no slope and 8" extension of rams (i.e. 50% hydraulic correction)	Maximum crossfall assuming no slope and 16" extension of rams (i.e. 100% hydraulic correction)
Western section of Main Homestead	3.9%	8.3%	12.7%
Eastern section of Main Homestead	3.9%	8.5%	13.1%
Central section of Main Homestead	5.4%	9.3%	13.2%
Northern section of barn	5.6%	10.0%	14.4%

*\*The differing maximum crossfall and the impact of the hydraulics on the crossfall which can be achieved is as a result of the differing track width and sensitivity of the individual section walls to listing. As the longitudinal walls on the barn quarters are much straighter than the traverse walls, this building section is far more resilient to crossfall than it is to slope changes.*

When negotiating areas of significant crossfall, the limitations of the hydraulic system need to be considered. Any localized areas where the maximum crossfall is exceeded can be mitigated by blocking up under the wheels with fill, plating or cribbing; or by resetting of dollies (blocking out) at the dolly heads. This will increase the time to negotiate the specific section of route but will be a localized delay.

As with the slope, the areas with significant crossfall were measured using a spirit level and ruler along each of the routes. This was evaluated to determine areas which would not be navigable (in their current configuration), by one or more of the building sections.

#### 10.4 Crossfall and Slope Combination

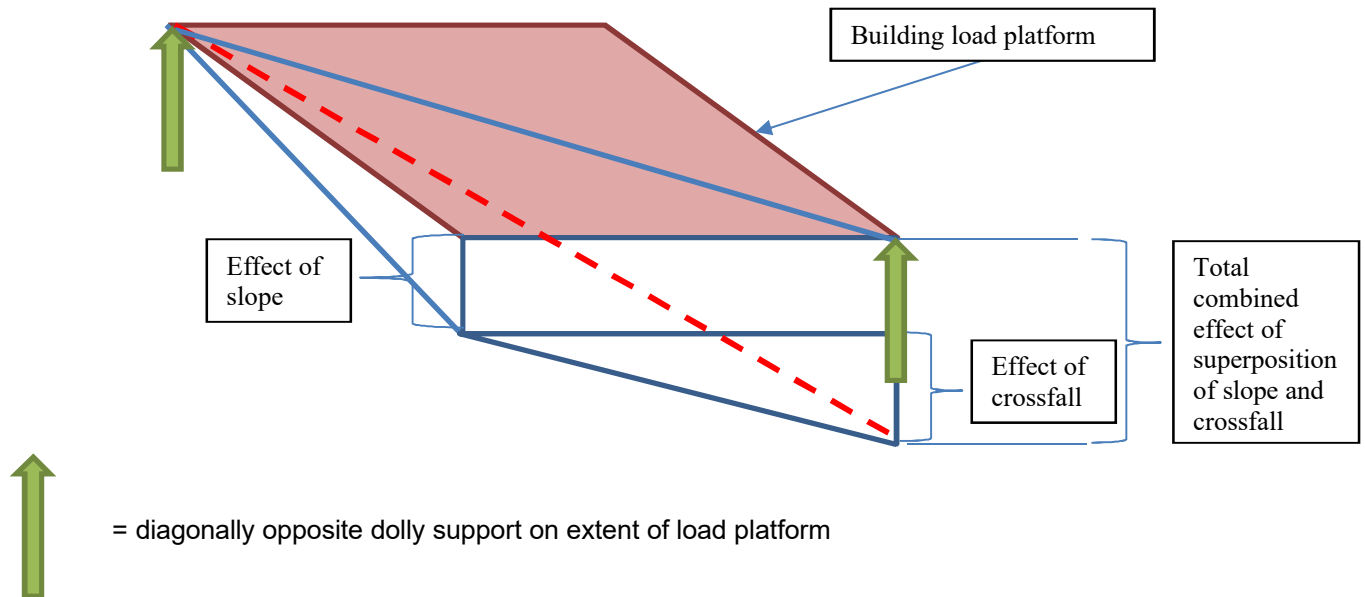
Sections 10.2 and 10.3 discuss the issue of the slope and crossfall as independent parameters. However, in many sections of the route there are areas where *both* slope and crossfall are present. In this case the system hydraulics need to be applied to correct deficiencies in both the slope and crossfall depending on where the need is greatest.

Whilst the slope of a section of the route may be able to be accommodated by the hydraulics or the crossfall; the combined effect of both in superposition may exceed the travel of the hydraulics and the wall stability.

In order to assess areas of significant combined crossfall and slope, Mammoth reviewed the maximum combined drop across the diagonal of the load platform which would be permitted when the crossfall and slope were superimposed on each other.



Figure 25 – Sketch of the impact of a combined slope and crossfall on the building support system.



The total allowable drop (combining the allowable wall tilt/list and the hydraulic correction for the slope and crossfall) for each of the structures was determined and included in Table 12. The allowable drop was then reviewed against the location specific superposition at critical sections of route.

Table 12 – Worst case allowable drop across diagonal of each load platform

Building Section	Allowable drop – 8" hydraulic float	Allowable drop – 16" hydraulic float
Western section of Main Homestead	1209	1412
Eastern section of Main Homestead	1201	1404
Central section of Main Homestead	984	1187
Northern section of barn	486	689

## 10.5 Pavement, Bridge and Culverts Load Capacity

A full assessment of bridges and culverts has not been undertaken to date. Obvious bridges and culverts were identified on the route survey whilst assessing slope and crossfall. Available width on bridges was confirmed but no further review was undertaken. These structures need to be reviewed based on allowable wheel loading and preliminary load plans provided in Attachment B.

Initial dolly and wheel loads for each of the structures to be relocated are provided in Table 13.



*Table 13 – Dolly and wheel loads for the proposed load platforms*

Building Section	Single dolly load	Individual tyre load
Western section of Main Homestead	27.4 tonne	3.43 tonne
Eastern section of Main Homestead	27.1 tonne	3.39 tonne
Central section of Main Homestead	27.3 tonne	3.41 tonne
Northern section of barn	Not calculated	

The footprint of the load platform can be determined from the dolly centres provided in Attachment B combined with the dolly plan dimensions. Tyre sizes on dollies vary. This impacts load distribution. For first pass assessment purposes a standard Holland dolly configuration is provided in Attachment C.

## 10.6 Powerlines and Overhead Infrastructure

Identification of overhead lines was excluded from Mammoth's scope. Glencore personnel reviewed the routes and identified the overhead power lines and clearance requirements. The worst case loaded building height is provided in section 7.1. This was compared with the collected data and is discussed in section 11.4.

The proposed routes were chosen to avoid interference with overhead infrastructure such as tunnels, bridges, conveyors etc.

## 10.7 Trees and Other Roadside Infrastructure

Depending on the width of the buildings there is potential for clash between the buildings and roadside obstacles during relocation. Typical obstacles include telephone/power poles, roadside barriers, bridge fencing, trees and roadside signs. A high-level review of obvious roadside obstacles was undertaken as part of the route survey. The review was limited to those routes which were deemed practical to negotiate based on the other building and route constraints identified.

## 10.8 Other Obstacles

Some individualized obstacles (such as creek crossings or intersections) were identified on each of the selected routes. To overcome these constraints localized works will be necessary and/or time penalties incurred to negotiate the obstacles.

Mammoth reviewed each of the proposed routes to identify those obstacles which will result in delay and/or require additional work during the move to negotiate. Required work was determined and a time penalty applied to each obstacle. (Refer to section 16.3).



## 11. Route Review – All Routes

Mammoth Movers reviewed each of the proposed routes considering the building and route constraints. This section presents the findings of Mammoth's review.

### 11.1 Track Width

The required track width is determined by whether the buildings are moved in sections or in one piece.

The division of the buildings into sections enables the track width to be reduced to 7 m and is discussed earlier in sections 4 and 10.1.

A 6 m track width would be considered for route 4 as it is relatively close and is expected to result in a considerable cost saving for road works along this route; however a 7 m track width is *recommended* due to the additional stability it provides for the transport of the sections and will reduce the intervention due to the relatively narrow "wheel base". A 7 m track width is considered minimum for the longer routes.

The track width limits for each of the proposed routes is provided in Table 14.

*Table 14 – Route track width minimum requirements*

Site No.	Site Name	location	Move configuration as per section 4	Minimum required track width
1	Ben Ean	Pokolbin	Option B (in sections)	7 m
2	Hunter Valley Resort	Heritage Rd	Option B	7 m
3	Corunna Station	Heritage Rd	Option B	7 m
4	Clydsdale	Northern end of Hebden Rd	Option B	6 m (7 m preferred)
5	Broke	Broke Township	Option B	7 m
6	Glencore site 1	Picton's Lane, north of current location	Option A (in one piece)	9 m
7	Glencore site 2	Bowman's Creek. Over Hebden Rd, west of current location	Option A	9 m (13 m preferred)
8	Singleton	Singleton Township	Option B	7 m

### 11.2 Slope and Crossfall

A detailed desktop analysis of critical crossfall and slopes identified for each route was undertaken. The detailed result associated with the routes to Clydsdale/Picton's lane, Broke and Pokolbin are included in Attachment D. The detailed calculations convey the extent of the problem encountered on each of the routes.

The Pokolbin/Hermitage Rd routes incorporate a series of "roller coaster" hills past Broke on the Broke – Cessnock road. This would require the leap frogging of tow/braking vehicles from front to back or vice versa. It is estimated that at least 6 changes would be required between Broke and Hermitage road with a further 16 changes required between Hermitage Road turn off and Ben Ean or 2 to 3 changes from the Hermitage Road turnoff to the Hunter Valley Resort. The number of changes to Corunna was not evaluated.

The Broke to Hermitage Rd section offers few potential passing points, and a significant portion of the road is bounded on both sides by defence land, (restricting the possibility to park outside of the road corridor). It is considered impractical to adopt the leap frogging approach for this section. An





alternative solution of permanent tow AND braking vehicles fore and aft of the building would need to be utilized instead.

The road from Broke to Pokolbin also incorporates many sections which exceed the parameters for the maximum allowable slope, maximum allowable cross fall or a combination of both. The work required to rectify this issue would be prohibitive as there are a significant number of long stretches of road which breach the slope and crossfall constraints and would necessitate cut and filling of large sections of the route. This issue has resulted in the exclusion of all routes east of chainage 13600 on the Broke to Pokolbin (Cessnock) Rd from further consideration.

The routes to Clydsdale and Broke also require route work due to significant slopes and crossfalls however these issues could be theoretically overcome if significant investment was made into the routes. As such these routes are still considered "viable" for consideration.

*Table 15 – Summary of impact of slope and crossfall analysis on proposed routes*

Site No.	Site Name	location	Impact of slope and crossfall review
1	Ben Ean	Pokolbin	Excluded – relocation east of chainage 13600 m on the Broke to Pokolbin Rd impassible
2	Hunter Valley Resort	Heritage Rd	Excluded – relocation east of chainage 13600 m on the Broke to Pokolbin Rd impassible
3	Corunna Station	Heritage Rd	Excluded – relocation east of chainage 13600 m on the Broke to Pokolbin Rd impassible
4	Clydsdale	Northern end of Hebden Rd	<p>Achievable subject to the following localized upgrades to slope and/or crossfall:</p> <ul style="list-style-type: none"> <li>Utilisation of Haul road from homestead to site office - chainage 11150 - 8400 Hebden Rd – avoid localized slope changes on route</li> <li>Slope – culvert – chainage 8400 Hebden Rd –chainage 3500 Hebden Rd – Remove constraint as part of new road incorporating diverted creek crossing</li> <li>Crossfall – chainage 7050 Hebden Rd – upgrade to remove crossfall and improve slope on corner</li> <li>Crossfall – chainage 6750 Hebden Rd – upgrade to remove crossfall</li> <li>Crossfall and slope – chainage 5000 Hebden Rd – upgrade to remove significant crossfall and slope</li> <li>Crossfall and slope – chainage 3650 Hebden Rd – upgrade to remove significant crossfall and slope</li> <li>Crossfall – chainage 2400 Hebden Rd – upgrade to remove crossfall and potentially straighten curve</li> <li>Crossfall – chainage 2175 Hebden Rd – upgrade to remove crossfall and potentially straighten curve</li> <li>Crossfall and slope – chainage 475 Hebden Rd – upgrade to remove significant crossfall and slope – fill in valley</li> </ul>



Site No.	Site Name	location	Impact of slope and crossfall review
5	Broke	Broke Township	<p>Achievable subject to the following localized upgrades to slope and/or crossfall:</p> <ul style="list-style-type: none"> <li>Slope - Bridge – chainage 2800 to 2950 Hebden Rd - fill in creek crossing</li> <li>Slope - Hebden Rd/Highway intersection – chainage 3500 Hebden Rd – reduce slope of approach road</li> <li>Slope - Turn off into HVO mine – chainage 13800 Lemington Rd – reduce slope of entrance road, fill inside of corner</li> <li>Crossfall - Turn at glider club - chainage 1250 Comleroi Rd – rebuild road with reduced camber or temporary fill</li> <li>Crossfall – Golden hwy/Paynes Crossing Rd int – chainage 15800 Golden Hwy– recommend fill inside of corner or full survey of this intersection</li> <li>Change of slope – Turn off into mine – chainage 20200 Paynes Crossing Rd - fill inside of corner to avoid rapid slope change</li> </ul>
6	Glencore site 1	Picton's Lane, north of current location	<p>Requires localized upgrades to slope and crossfall at</p> <p>Utilisation of Haul road from homestead to site office - chainage 11150 - 8400 Hebden Rd – avoid localized slope changes on route</p> <p>Slope – culvert – chainage 8400 Hebden Rd –chainage 3500 Hebden Rd – Remove constraint as part of new road incorporating diverted creek crossing</p> <p>Crossfall – chainage not provided – basic grading of dirt road at corner required to remove bump and crossfall</p>
7	Glencore site 2	Bowman's Creek. Over Hebden Rd, west of current location	<p>Requires localized upgrades to slope and crossfall</p> <p>Installation of new road to movers' specifications between the existing site and proposed new site – no significant slope issues identified.</p>

## 11.3 Pavement, Bridges and Culverts

The wheel loads and load platform arrangement identified in section 10.5, together with the load plans in Attachment B, require review against the load capacity of the pavement, bridges and culverts.

This work has been deferred until the number of routes for assessment has been reduced. This work requires interfacing with road asset owners. It is anticipated that this work will be undertaken by Glencore and/or RMS for the proposed route with input from Mammoth where necessary.

The route review conducted by Mammoth excluded the identification of culverts and bridges. However obvious major culverts or bridges were noted as constraints as part of the route audit and are included in the constraint summary for information. Identification of culverts and bridges was also noted on the RPS surveys and this information need to be pooled and crosschecked against existing asset databases anticipated to be held by council or RMS<sup>4</sup>.

<sup>4</sup> Council and RMS asset management databases should be available to extract a conclusive table of culverts and bridges for each route.



If conclusive bridge and culvert databases do not currently exist, a separate exercise will be required to identify all culverts and bridges in the next stage. Some localized surveying of this infrastructure may also be required if engineering drawings of the assets are not available.

Should the capacity of any bridge or culvert be exceeded, it is recommended that load plans are revisited based on input from the structural engineer(s) assessing the assets. In some cases, it is possible to improve the load plan to suit an individual structure and avoid additional strengthening works. Should the loads remain too high for individual structures, localized temporary strengthening works will be required to facilitate the move.

Structural strengthening options include bridging on top of the structure with beams and/or plate or temporary shoring works under the structure. Generally, strengthening via works on top of the structure will be cheaper to implement but will have a greater impact on road users. A case by case review for each structure is recommended.

*Figure 26 – Example of localized bridge strengthening with beams*



## 11.4 Powerlines and Overhead Obstacles

The identification of powerlines and overhead utilities for each route was undertaken by Glencore personnel and is included as part of the route constraint audit provided in Attachment E.

Glencore has undertaken a preliminary assessment of overhead powerline clearance infringements; reviewing the loaded building height provided in section 7.1 against the parameters nominated in Workcover NSW's "Work Near Overhead Powerlines" Code of Practice, 2006.

Table 16 provides the assessment criteria adopted by Glencore.



*Table 16 – Electrical approach distance clearance requirements based on service type*

Extracted from *Work Near Overhead Powerlines*, Code of Practice, Workcover NSW, 2006 – Table 3, page 26.

Approach Distances for Vehicles	
Nominal phase to phase a.c. voltage (volts)	Approach distance (m)
Low voltage conductors up to 1000	0.6
Above LV, up to and including 33,000	0.9
Above 33,000 up to and including 132,000	2.1
Above 132,000 up to and including 220,000	2.9
330,000	3.4
500,000	4.4
Nominal pole to earth d.c. voltage (volts)	Approach distance (m)
Up to and including +/- 1500 Volts	0.9

Where infringements occur, the service will either need to be raised by utility crew as part of a rolling campaign to allow each relocation convoy to pass, or new poles be put in place to permanently raise the individual line. The preliminary review of infringements for each route is provided in Table 17. Review of the Pokolbin/Hermitage Rd routes was not undertaken due to their prior exclusion (refer to section 11.2).

*Table 17 – Clearance infringements for remaining routes*

Route	No. of powerlines identified	No. of infringements	Comments
Picton's Lane	2	2	
Clydsdale	13	11	Includes 1 x 33 kV line
Broke	67	39	Includes interference with 5 x 66 kV lines and 2 x 132 kV lines

Other overhead obstacles such as bridges and tunnels were bypassed by selection of alternative routes.

## 11.5 Roadside Obstacles

Assuming the track width and sectioning of the buildings as per section 10.1, there are relatively few roadside obstacles to contend with. Minor tree trimming is required towards the end of the Broke route and some minor bridge widening on the Clydsdale route and Broke route (if heading out of Broke towards Pokolbin) but these are small issues and are covered by the road works allowance.

Only a small section of the routes within Glencore require access to public roads. There were no significant roadside obstacles on route to Picton's lane except for road side power on Picton's lane itself. An allowance for minor roadwidening of the right hand shoulder may be necessary to ensure that the homestead building can be moved parallel to the Picton's Rd wires (in one piece).

## 11.6 Mine Haul Road Access

The relocation to Broke (and Singleton) requires the traversing of Glencore joint venture mine Hunter Valley Operations (or HVO). The relocation to Broke further requires access to the Bulga Surface mine to bypass haul road overbridges on route.



It is envisaged that the existing old mine access roads will be utilized as far as possible to achieve the bypass in conjunction with the mine haul roads contained within the two mines. Some new access road construction will be necessary to enable traversing back to the public road network.

Transport to Clydsdale or Picton's Road requires bypassing the initial section of Hebden Road between the existing homestead site and the mine entrance road approximately 2.3 – 2.4 km north of the homestead site. The bypassing can be achieved through the utilization of an existing Haul road to the north east of the Homestead together with a proposed new crossing of a tributary of York's creek planned to be installed as part of a proposed localized diversion of the Hebden road for the mine expansion. The route would then join back into the public road network (Hebden Road) just north of the existing project site offices.





## 12. Individual Obstacles - Broke

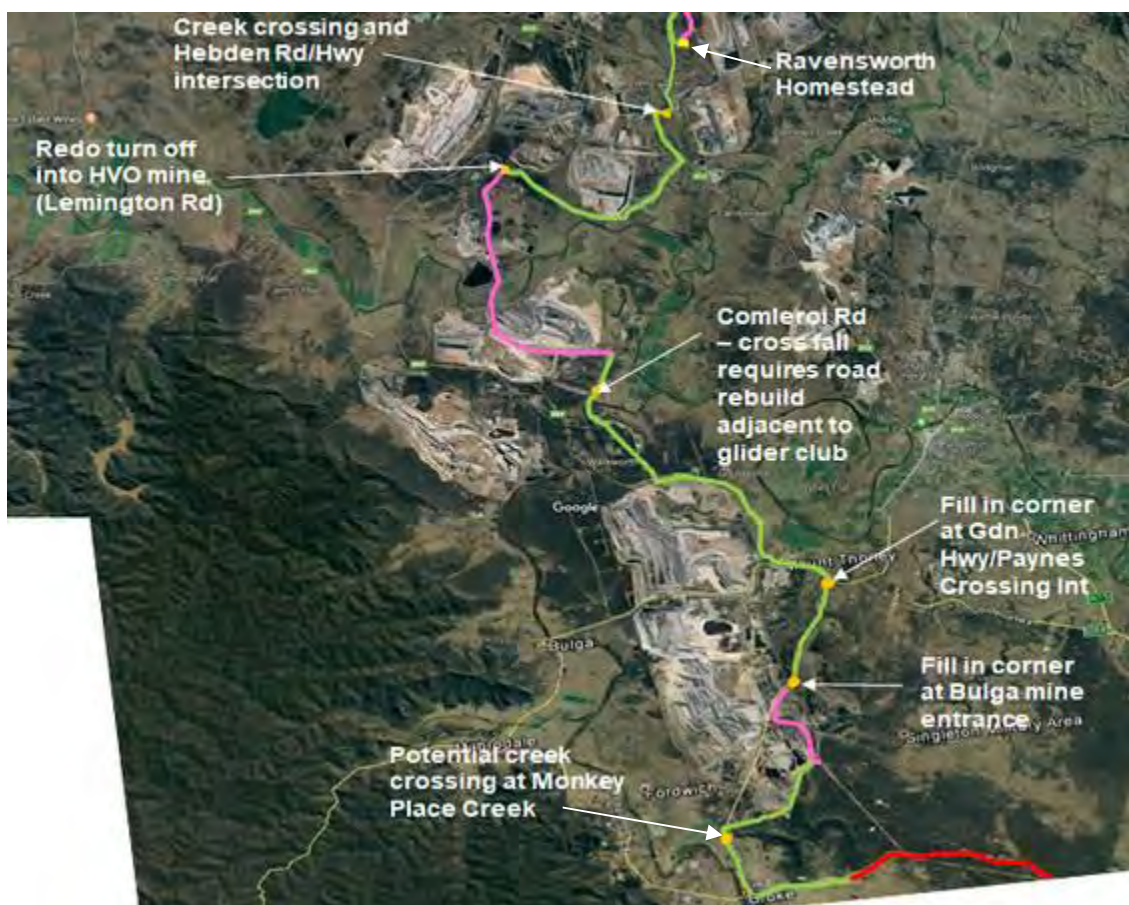
Further to the obstacles identified in section 11, the following sections of the Broke route require attention and further work to enable the structures to pass. These obstacles were identified during the constraint audit for each route and are detailed in Attachment E.

Of the routes remaining; the Broke route presents the largest number of individual obstacles to the building moves.

Details of all identified Broke route constraints/obstacles are detailed in Attachments E (constraints audit) and F (RPS data and photos) including itemized obstacles, marked up RPS survey images (showing context and location) and photos of the obstacle's constraints.

Discussion with respect to the individual obstacles herein is limited to the obstacles of note which may further impact the move and is supplementary to the discussion in section 11.

Figure 27 – Broke major constraints/obstacles locations







## 12.1 Creek Crossings

Located on the Broke route are four significant creek crossings. The first (chainage 2800) is picked up in Table 15 and is required to avoid the Bowman Creek bridge at the southern end of Hebden Road. This bridge may be negotiable however as it incorporates significant crossfall on its approach and is in the order of 45 m long, it is considered that bypassing the bridge and crossing the creek via a temporary crossing is likely to be the most cost effective and lower impact solution. A survey of this crossing is required should this option progress to the next stage.

A second creek crossing is located at chainage 11350 on Lemington Rd. This is a long bridge in the order of 70 m long but is relatively shallow. The bridge is located on a new stretch of road built by Glencore. Load analysis is required in the next stage to determine whether this bridge will withstand the loading requirements without significant additional support.

A 50 m long bridge (of sufficient width - approx. 7.5 m) is present on Putty Road (chainage 15280). This bridge will require analysis.

The final major creek crossing is located at Monkey Place creek on the approach to Broke (Chainage 7150). This crossing is deep, but the bridge is relatively short (approximately 25 m long) and is sufficiently wide. If the bridge is not sufficiently strong or the supporting requirements too extreme, it is proposed to ford the creek at a cleared area to the west on the creek. Powerlines currently span the proposed ford point and the crossing would need to accommodate relevant clearance requirements.

A minor 15 m long bridge of sufficient width was also identified at chainage 13920 Putty Rd. This bridge too will require load analysis should the Broke route progress to the next stage.

## 12.2 Railway Crossings

Two railway crossings were identified on the Broke route. The first is located at the southern end of Hebden Road directly after the Bowmans creek and prior to the New England Highway intersection (Chainage 3320). A new bridge spans this crossing but has steep approach and departure ramps which exceed allowable gradients. For this location, the bridge can be by-passed using an old level crossing, but approval would need to be sought with the asset owner (ARTC).

The second railway is located at the end of Comleroi road just before entering onto the Golden Highway (Chainage 6225). This is a single-track crossing traversable via a flat road bridge. Should this bridge not be strong enough to support the loaded structures, a temporary structural platform (refer to Figure 26) or steel plates could be placed over the existing bridge to increase its load capacity and mitigate the constraint.

## 12.3 Intersections

There are 8 main intersections on the Broke Route of which 6 are more complicated and will take time to traverse.

### Hebden Rd – New England Hwy

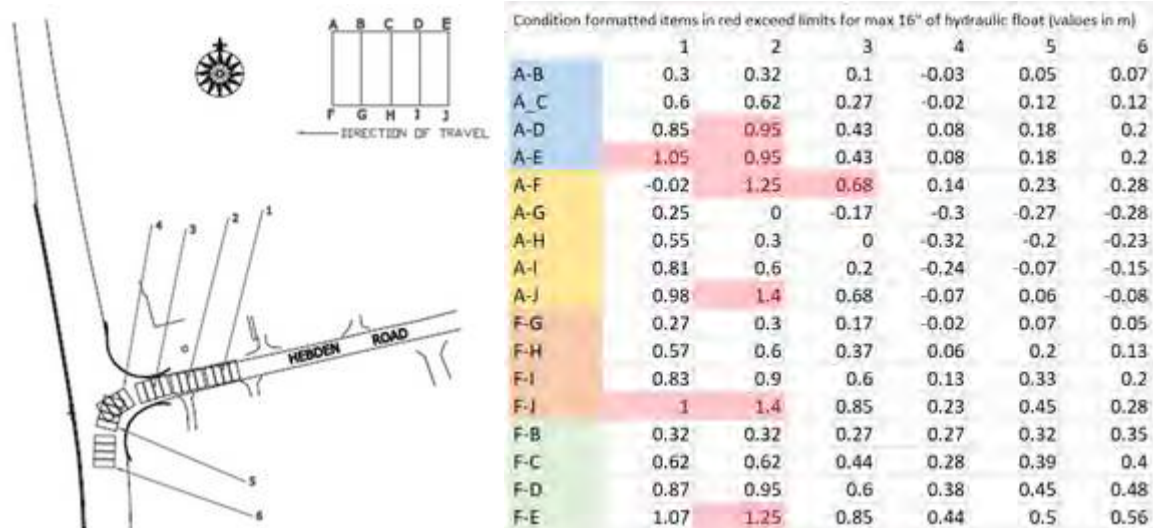
The first intersection is at the junction of Hebden Rd and New England Highway (Chainage 3500). This is a difficult intersection in terms of the relocation due to the steep gradient approach and the falling away of the camber/crossfall on the highway once the building enters the intersection. This combination results in utilization of the hydraulic float as the buildings move over the top of the crest and turn left into the intersection.

A review of the impact of the topography on the central section of the homestead load platform (worst case) was undertaken as part of the preliminary route review due to the criticality of this intersection. The review identified that additional fill will be required to reduce the slope of the approach to the intersection as this exceeds the maximum available float of the load plan hydraulics.



Figure 28 – Hebden Rd/NE highway intersection analysis with the homestead central section load plan

Showing the configuration and running out of the hydraulics on the approach to the intersection



## Notes

- Maximum slope across dolly longitudinal track length for 16"max hydraulic correction = 0.915 m (ctr to ctr rams)
- Maximum crossfall across dolly traverse track length for 16"max hydraulic correction = 0.678 m (ctr to ctr rams)
- Total allowable drop diagonally across load plan for 16"max hydraulic correction = 1.187 m (ctr to ctr rams)

## New England Hwy – Lemington Rd (chainage 5800)

The New England Highway – Lemington Rd intersection includes central medium strips and banks to the left as the building navigates a righthand turn into Lemington Rd. There is enough room to pass between the medium strips with a 7 m track width.

No additional roadworks is required however this turn will take time to negotiate.

## Lemington Rd – HVO Mine turnoff (chainage 13800)

This intersection requires additional road works to accommodate the significant slope into the old mine road. It is proposed that the inside of the turn be filled and graded to overcome a significant change in grade as the structure negotiates the corner. Roadside barrier fencing and a height indicator pole will need to be removed from the inside of the corner.

## Comleroi Rd – Golden Hwy (chainage 6375)

This intersection is a straightforward 90 degree turn and should pose few problems.

## Golden Hwy – Putty Rd (chainage 13200)

This intersection involves a narrow slip road combined with a relatively high slope. The intersection is located at the top of the slip road and is relatively flat. Time will be required to crawl up the slip road.

## Putty Rd – Broke Rd turnoff (chainage 5800)

This intersection requires additional roadworks to cut the inside of the right-hand corner in order to overcome significant crossfall from right to left on the approach to the intersection. This will require the buildings to move onto the wrong side of the busy highway. The filling in of the corner may require negotiation with the land owner on the inside of the corner as the paddock fencing is close to the intersection and may need to be removed for the move to enable sufficient benched fill; with reinstatement required after the final relocation along the route.



Broke Road – Bulga Mine turnoff (chainage 20200)

The Bulga mine turnoff also requires the infill of the inside of the corner and the removal of the crest located at the intersection on the old mine road entrance. There is adequate room in the road reserve to accommodate this infill.

Bulga Mine Exit Intersection – Broke Rd (chainage not available)

The exit from the mine is relatively flat with a negotiable path without crossfall available on the wrong side of the road as the intersection is approached.



## 13. Individual Obstacles - Clydsdale

The Clydsdale route significant obstacles pertain to the topography of the land – there are several slopes and crossfalls as identified in Table 15. These constraints need to be removed through additional roadworks.

The obstacles between the existing location and the north of the creek adjacent to the site office (i.e. from chainage 11200 to 8050 Hebden Rd) will be avoided by diverting this section of the route along the internal mine road and onto a new (built for purpose) section of the new Hebden Rd which should be extended slightly to chainage 8050 to mitigate an existing culvert incorporating a significant slope change at chainage 8100.

### 13.1 Road Width

The road width drops progressively as the user drives further north on Hebden/Scrumlo Rd.

The seal width reduces from 7.5 m to < 7 m after the bridge on “stringy bark” creek (chainage 6200) quickly converging to 6.4 m at chainage 6050.

The seal width reduces further to approximately 3.5 m at chainage 2375.

The road width will need to be increased from chainage 6200 to enable a track width of 7 m. A 6 m track width may be able to be accommodated though this is not preferred in terms of structure stability during relocation. Movements to Clydsdale will require buildup of shoulders to accommodate the necessary road widening.

### 13.2 Creek Crossings

A significant crossing (causeway) of Bowman’s Creek occurs at the end of the route (chainage 375 Scrumlo Rd). The crossing is significant due to high crossfall followed by untraversable slope on the approach and again a significant slope on the departure. This section of the route needs to be surveyed and the creek crossing built up to enable the relocation of the building sections to Clydsdale.

There are also another three smaller creek crossings:

- one at chainage 8050 (culvert referred to above to be incorporated into other road works);
- a short bridge (15 m long) at 6200 which is wide enough to accommodate the building sections but will require load analysis; and
- a bridge at chainage 1750 which will need replacing as it is too narrow.

### 13.3 Railway Crossings

There are no railway crossings on the Clydsdale route.

### 13.4 Intersections

There are 2 public intersections on the Clydsdale Route, none of which are significant in terms of traffic use. The intersections are:

- Hebden Rd – Picton’s Lane Int – Chainage 7100 Hebden rd; and
- Hebden Rd – Scrumlo Rd Int – Chainage 3250 Hebden rd.

There are two 90 deg turns on the road which are narrow and will take some time to traverse with the first incorporating some crossfall. The turns are located at 2375 and 2175 chainage.

The first turn is adjacent to the entrance to the quarry and it is at this location that the road reduces in width due, it is assumed, to the lower traffic volumes on the road beyond this point.



## 14. Individual Obstacles – Picton's Lane

### 14.1 Creek Crossings

There are two creek crossings on the Picton's Lane route which are the first two crossings encountered on the Clydsdale route. The first is prior to the chainage 8050 and will be on the new redirected section of Hebden rd just north of the site office. The second is the culvert at 8050. Both will be mitigated as a result of the proposed new road works to redirect Hebden Rd.

### 14.2 Railway Crossings

There are no railway crossings on the Picton's Lane route.

### 14.3 Intersections

There is 1 public intersection on the Picton's Lane Route. This is the turn off into the Lane itself. If the buildings are relocated to Picton's Lane, turn off at this location will need re-work. Ideally the corner of the intersection would be cut to avoid a difficult turn with cross fall. However a power pole exists at this point which incorporates a stay which traverses the alignment of the proposed redirection. This pole will therefore need to be removed and or re-stabilised in some way. The powerlines will also need to be crossed at this point and sufficient clearance will need to be maintained

*Figure 29 – Picton's Lane – Hebden Rd intersection at road level and from above showing the powerpole with stay and proposed realignment.*







## 15. Extension to Singleton

The Singleton Route is largely common with the Broke route reviewed previously. The routes alter at the Paynes Crossing road turn off, with the route to Singleton continuing along Putty Rd which eventually changes to Glenridding Rd.

The Singleton relocation option shares the same obstacles as the Broke relocation apart from the Paynes crossing road (i.e. the major constraints being the intersection with Putty Rd, the entrance into the Bulga mine and the Monkey Place Creek crossing).

The final section of the Singleton route introduces a few significant new obstacles:

### 15.1 Road Width

There will be an issue with the roadside light poles located along the main street (John Street) and at zebra crossings. The distance between the light poles was measured as approximately 9 m. This clear width also applies to mature street trees on the northern end of John Street. There are also smaller street trees planted the length of John Street at around 9.5 m width centre to centre. The 9 m clearance width is equivalent to the loaded building width of the central section of the Main Homestead *with the veranda roof retained in place* (refer to Table 3).

If the Singleton option is to be a contender as a relocation site, Mammoth recommends that either:

- The veranda roof is removed for this route; or
- the obstacles on the main street are surveyed as part of the next stage to determine whether the central section can traverse John Street without removal of the veranda.

A railway bridge is located at the southern end of John Street (refer to section 15.2). The bridge also incorporates light poles which would potentially impact with the central section if the veranda is retained.

If it is permitted to remove the veranda, the pricing of this option will need to include the removal and reinstatement of the veranda.

*Figure 30 – Singleton Main Street and associated roadside obstacles*







Figure 31 – Typical widths on the railway bridge



## 15.2 Railway Crossings

There is a significant railway crossing on the outskirts of Singleton. This involves navigating over a 50 m long road bridge which spans three rail tracks. The bridge is wide enough to accommodate the proposed load plans.

If the bridge is not structurally capable of taking the wheel loads presented by the structure it may be difficult to support without impacting the rail operations.

The bridge also incorporates a significant slope on its approach and exit though it is expected that this can be accommodated by the proposed load plans.

Figure 32 – Rail bridge at Singleton





## 15.3 Power lines

Numerous low powerlines are encountered on the Glenridding Rd. The occurrence of powerlines and overhead services increases markedly on the outskirts of Singleton.



## 16. Timing

### 16.1 Convoying

In order to minimize the time on the route and associated indirect costs of the move component of the relocation works (s.t. piloting/police, utility crews, permitting costs) it is recommended that a degree of convoying of buildings/building sections is adopted. The number of buildings or building sections in each convoy is limited by the following inputs:

- Available equipment resources for each move;
- Available labour resources for each move.

Given the fragile nature of the buildings being relocated and the complexity of the route, Mammoth recommends three specialist movers per building for the “move in one piece” relocation scenario or two specialist movers per section for the “split building” scenario.

Whilst it is possible to invest in more equipment to enable the in parallel relocation of more buildings the associated benefit for increased building elements per convoy reduces compared with the equipment outlay cost. Further there is a limit to the number of qualified resources available to supervise and control the buildings given the specialist nature of the move.

Mammoth considers 6 specialist resources per move is a reasonable basis for the development of convoys for the relocation. The number of buildings or building sections to be moved per convoy is therefore:

- Option A – Move buildings in one-piece – move two buildings per convoy; and
- Option B – Move buildings in sections – move three building sections per convoy

The number of elements to be relocated for the entire project is provided in Table 7, section 10.1.

The number of convoys required for each move scenario are therefore:

- Option A – Move buildings in one-piece – 3 convoys (assumes the roof of the stable will be moved together with the stable building and one other building);
- Option B – Move buildings in sections – 4 convoys (assumes all four sections of the barn will be moved together).

### 16.2 Lay-over Sites

Parking places or “layovers” are required on route to enable the temporary parking of the buildings in the convoy. Parking places need to accommodate either 3 sections or 2 whole buildings depending on the route and the loading arrangements.

Layovers for Option A - Move buildings in one-piece – have a minimum dimension of 35 long x 30 m wide or 60 m long x 15 m wide.

Layovers for Option B – Move buildings in sections – have a minimum dimension of 30 m wide by x 30 m long or 90 m long x 10 m wide.

Layover sites are required along the route to enable:

- Parking of structures and the traversing of difficult route sections one structure at a time;
- Load checks as progress through route minimizing impact on road users;
- Overnight parking for routes which take more than one day to traverse;
- Temporary parking to enable the passing of traffic.



The number of layover sites is related to the overall route length and the number of difficult sections. Parking spaces are required before and after difficult route sections to enable the traversing of obstacles one loaded element at a time like stepping stones over a creek. A list of layover/parking sites is included in Attachment E for the Broke route. Photos of the proposed locations are included in Attachment F including mark up of their locations on Google Earth plans.

*Table 18 – No. of layover sites required based on route*

Relocation Site No.	Site Name	No. of parking places	Comments
4	Clydsdale	3	May not be required if can park on road – low traffic volume
5	Broke	14-17	Min 14 required but 17 recommended as risk mitigation of technical issue on long unencumbered stretches of the route.
6	Glencore site 1 (Picton's Rd)	none	Local move predominantly off public roads (only approximately 1 km on sealed roads)
7	Glencore site 2 (Bowman's Creek)	none	Local move predominantly off public roads (only required to cross Hebden road once)

## 16.3 Time on the Road

Mammoth reviewed the route topography against the speed criteria identified in Table 9 to determine a travel time along the route. The following additional allowances were also calculated:

- allowance for the traversing of mine roads;
- allowance for parking checks of 10 minutes per section/building being relocated; and
- time allocation to traverse individual constraints/difficult sections of each route.

Details of the associated timing allowances for each constraint are captured in Attachment G.

A summary of the total timing requirements for each route and for the passing of all convoys are provided in Figure 33.



Figure 33 – Relative timing on route – remaining routes

	time (hrs)	(days) based on 8 hr day	no. move convoys	comments
<b>Broke</b>				
total general travel (road only)	12.99			
total mine road 1	4.17			
total mine road 2	1.60			
total difficult int	64.50			
total parking checks	8.50			
total hours on route	91.75			
contingency	9.18			
	100.93	12.62		
total time per move			4	
Relocation Timing and Cost - total project			52	
				moving through joint owned mine moving through Glencore Bulga mine consists of intersections, difficult road geometry and creek crossings assumes 17 checks on route - 3 sections to be checked each time (10 min check per section)
				<b>Matthew Manifold:</b> rounded to whole days per move
				<b>Total time – all moves = 52 days</b>
<b>Clydesdale</b>				
total general travel (road only)	8.30			
total mine road 1	0.82			
total difficult int	6.00			
total parking checks	1.50			
total hours on route	16.61			
contingency	1.66			
	18.28	2.28		
total time per move			4	
Relocation Timing and Cost - total project			12	
				assumes moving via mine road to site office and new creek crossing limited to one corner - estimated 2 hrs per section - remainder designed out as not negotiable assumes 3 checks on route - 3 sections to be checked each time (10 min check per section)
				<b>Matthew Manifold:</b> rounded to whole days
				<b>Total time – all moves = 12 days</b>
<b>Picton Lane</b>				
total general travel (road only)	0.82			
total mine road 1	0.82			
total difficult int	0.00			
total parking checks	1.00			
total hours on route	2.64			
contingency	0.26			
	2.90	0.36		
total time per move			3	
Relocation Timing and Cost - total project			3	
				assumes moving via mine road to site office and new creek crossing none - issues to be removed by site work assumes 2 checks on route - 2 buildings to be checked each time (15 min check per building)
				<b>Matthew Manifold:</b> rounded to whole days per move
				<b>Total time – all moves = 3 days</b>

A detailed analysis has not been undertaken for relocation to Singleton; however, it is reasonable to assume that it would take similar time to the relocation to Broke as the move would slow considerably once in the Singleton Centre.

The times presented in Figure 33 are indicative of the move timing for all convoys assuming good weather. The occurrence of bad (wet weather) has not been allowed for. Given the durations on the longer routes is a legitimate possibility. Extreme weather and wet roads could impact the move process significantly. Braking and traction issues are likely to constrain moves on higher sloped sections of the route and result in delay due to consequential technical and safety risk.



## 17. Project Risks Associated with the Route and Relocation Approach

The following high-level risks related to the proposed sites and routes were identified during the route review.

The nominated risks do not constitute a conclusive list of all project risks. Nor are they a full list of risks relevant to the physical relocation of the buildings. Rather the identified risks are those unique to each relocation approach (Option A or B) and are provided for qualitative comparison purposes and to assist in the evaluation of proposed sites and routes. They provide an indication of the level and quantum of risks associated with each approach.

Mammoth recommends that a formal and detailed risk assessment and weighted risk provision process is undertaken for the entire project once the proposed sites and associated routes has been reduced.

### 17.1 Option A – Relocation in One Piece (Local Relocations)

The following risks apply to Glencore site 1 (Picton's Lane) and Glencore site 2 (Bowman's Creek)

#### Technical Risk

- Wheel loads – Higher wheel loads are experienced if required to be restrained to 9 m track width and therefore limit space for dollies – innovative loading arrangements would need to be adopted if these wheel loads are not accepted by RMS;
- Reduced operational flexibility – The one piece move results in reduced flexibility in allowable route topography due to increased load plan dimensions (see section 7.1). This will lead to a requirement for tighter road specifications in terms of slope and crossfall. This is mitigated to a large extent by the fact that much of the route(s) are under Glencore control;
- Congestion of equipment under the load plane – There will be more congestion of equipment under the buildings as more weight is to be supported on a smaller overall load plan footprint. This results in more equipment to monitor per building during each relocation.

### 17.2 Option B – Relocation in Sections (Further Afield Routes)

The following risks apply to the Clydsdale, Broke and Singleton routes

#### Project Approvals

- RMS – More significant access to road network required. Approval is required from RMS to accommodate access requirements, for the higher than “standard” wheel loads on the pavement and road infrastructure (e.g. bridges) and to undertake road reserve preworks such as filling in intersection corners, widening road sections, installation of layover/parking pads etc. These activities will have impact on road users which will need to be managed and approved.
- ARTC – Confirmation ARTC will permit crossing of MNRL at the southern end of Hebden Rd and associated conditions – This may impact the project schedule if approval is conditional to crossing the train line during a possession. (It is anticipated that this line will only have two or three possessions a year for track maintenance);
- Retention of heritage fabric – The movement in sections of the buildings results in greater deconstruction of the original building fabric. This will be looked upon unfavourably by heritage personnel and may prevent the approval of the project by heritage authorities;
- Consequential loss – The temporary closure of roads, mine haul roads and/or overhead utilities may hold have consequential impact on others and may impact the ability to obtain approvals and/or have a financial impact;
- Site risk – The moves afar are to sites which are generally considered less sensitive to the desired heritage outcome as they remove the buildings from the Ravensworth area and place them in an urban environment. Glencore has engaged an expert heritage consultant (LSJ) to





make the relevant heritage assessments. This risk is not specific to the relocation works and perhaps doesn't belong in this report. The reader is directed to LSJ's work in this respect.

## Stakeholders

- Mine access – Confirmation structures can be transported through active mining operations. Relevant for the HVO mine, Bulga Surface mine and the Ravensworth East mine;
- Traffic impact – The buildings will be travelling on high impact public roads for the Broke and Singleton routes – i.e. Golden Hwy and New England Highway. This is a lower risk for the Clydsdale route. Potential for extended delay to motorists should there be a technical issue on these sections.

## Technical

- Greater distance – The longer distances results in a greater chance (statistically) of a delay due to a technical issue. Whilst the equipment will always be operating within its design limits, it will be subject to ongoing operation at the upper band of its operational range;
- Structural integrity – All buildings have inbuilt structural integrity when fully constructed. The roof structure and wall structure act together to create a closed system to resist potential paralleling of the structure as the individual components act as shear planes to resist this action. Whilst the methodology to relocate the buildings is designed to avoid the parallelogramming the splitting of the buildings compromises the structures ability to resist this action as the closed system is breached. The relocation in sections requires the implementation of additional methods; namely additional pinning and bracing to compensate for the removed inherent strength of the closed system;
- Additional bracing – The proposed pinning is not designed to stabilize the walls beyond their existing inherent strength. Additional pinning and *structural* bracing of the northern section of the barn (the barn quarters) will be necessary to enable the relocation of this building in one piece. It is noted that the walls of the barn quarters are significantly out of plumb and the relocation afar will subject the buildings to significant slopes which will not be able to be withstood by the barn quarters unsupported. This requires the installation of structural bracing in the barn quarters or for this section of the complex to be disassembled and rebuilt.
- Interfacing for separation and reconnection – The splitting of the buildings into sections introduces additional risks associated with the move and reinstallation. There is loss of fabric issues due to damage to the original structure occurring as a result of the severing of the buildings. There are realignment risks at the new site as the various sections need to line up exactly for reconnection otherwise the joins will not be flush. Coupled with this is the impact on the appearance of the finished product. Irrespective of the skill of the tradesmen the rejoining of the sections is likely to be visible due to the critical eye. The flexibility of the load plans for the building sections will also be limited due to the proximity of the neighbouring sections on loading and unloading and the track width constraint of 7 m. This reduces the options available to address difficult route constraints;
- Equipment congestion – The disconnection and reconnection process will introduce logistical and methodology issues due to the concentration of support equipment necessary at the interfaces;
- Route constraints – the longer routes introduce significantly more technical sections to be negotiated including sections of higher slope and crossfall. The fact that much of each of the routes are located on public roadways, limits the control the mover and Glencore have on the route preparation;
- Bridges – Potential for additional upgrade works to bridges to be traversed based on SWL of the bridges and loaded structure wheel loads and load footprint.
- Control of structures – The higher slope sections result in additional project risk as the building sections need to be controlled on these areas of greater slope. The mover will



incorporate a layered approach to the control of the structures as they move up or down the slope to avoid the possibility of an unsafe situation as a result of a single failure.

Nevertheless, bad weather may impact on the Mover's ability to traverse high sloped areas and delay time on route;

- Availability of skilled resources – the move afar approach requires the conveying of sections and increased time on route compared with the local move. A larger pool of specialized resources is required on site to do each move and for a longer period. Specialist resources will be sourced from premier move companies in the US through Mammoth's established network. Each of the proposed resources are affiliated with successful US/Canadian structural moving companies. The logistics and timing of such a move will need to be planned well in advance to ensure that the right people and number of people are available for each convoy move.



## 18. Project Benefits Associated with the Route and Relocation Approach

The two relocation approaches (Options A and B) offer a range of benefits. Benefits noted here are limited to those which make one approach more attractive than the other. Benefits which are shared by both, e.g. the removal extending the life of the mine; are not listed as they are not crucial to the decision on relocation site and route.

### 18.1 Option A – Relocation in One Piece (Local Relocations)

- Limited impact on third party assets on route – no railway crossings and very limited road access requirements. In the case of the Bowman's Creek site, interfacing with the public road is limited to the crossing of Hebden Road adjacent to the existing homestead site. For the Picton's lane site, the impact on public roads is limited to approximately 1.2 km on Hebden Road, north of the current site project office and a further 1.5 km on Picton's Lane, a low traffic volume dirt road. Whilst the wheel loads will be higher for these moves, options exist to reduce these loads whilst on Hebden road if the need arises;
- Control of route preparation – As most of the routes are on Glencore land, the project retains control of the preparation of the route without the need for external stakeholder involvement. This enables the route to be constructed in line with the needs of the project and the building and load plan constraints;
- No realignment risk – As the buildings will not be divided the logistics, technical complexities and resourcing accompanying the division and reinstatement of sections of buildings is removed from the project – this will also result in a commercial benefit to the project;
- Reduced permitting risk – The limited public road access requirement and the fact that the impacted roads are a lower classification, (compared with highways encountered on the further afield moves), reduces the permitting risk substantially;
- Less deconstruction – Highest retention of heritage fabric. As the buildings are not been divided there is next to no loss of heritage fabric above ground level;
- Project duration – The relocation of the buildings in one piece results in less moves and less preparation and demobilization works once the buildings are at the new site.
- Project cost – The removal of the division of the buildings will reduce the project cost in terms of bracing requirements, specialist equipment requirements, labour resourcing and move duration;
- More stable relocation configuration – The move in one piece allows for a wider track width which will increase the stability of the load plane during the move. Coupled to this is the retention of the inherent structural integrity of the building construction as they are not being cut up. The division of masonry buildings is generally detrimental to the structure (and is certainly the case for this project). The avoidance of this requirement is a definite benefit to the project.

### 18.2 Option B – Relocation in Sections (Further Afield Routes)

- Traversable distance – The division of the buildings enables the buildings to be relocated further – the reasoning for the division in the first place. This provides further flexibility in the new siting of the buildings.
- End use flexibility – the fact that the buildings can be relocated to more sites as a result of their division means that they can be taken to areas of greater population or areas where there is more potential for a useable life once relocated and restored (e.g. in the Hunter wine regions). The end use options of the buildings would be markedly improved as a result of this scenario. Whilst technically not a comparative benefit in terms of the relocation works, this benefit has been included in the list as it is specific to relocation option B.



## 19. Further Work and Next Steps

The following work is required to close out the technical and associated mover related commercial aspects of the relocation of the buildings to the preferred site(s).

The further work specified is limited to that work necessary to finalise the mover's input. Further additional work may be required to finalise other aspects of the project. This work is not captured in this report.

Further work for the completion of mover input into Glencores' project reporting and approval requirements and to mitigate move related risks:

- Remove floors in the Main Homestead to expose the extent of footers internally;
- Finalisation of engineering weights and load plans for the complex and as required to feed into methodology and cost calculation;
- Developed list of project risks associated with the relocation of the buildings;
- Further route analysis and upgrade investigation (dependent on option/s taken forward). Refer to Attachment E for further investigation works.
- Specify requirements for internal mine road as required to relocate the structures.

Should the sites further afield continue to be considered:

- Initiate discussions with relevant stakeholders where relevant and identify associated constraints including:
  - Mining Operations - HVO and Bulga;
  - Road asset owners and maintainers - RMS and Singleton Council;
  - Railway owners and operators – ARTC;
  - Overhead utilities owners and operators - Ausgrid and Transgrid;
- Identify the extent of necessary tree trimming on the chosen route(s);
- Specific to the Singleton option - Survey the Singleton Main St and where necessary identify costs for removal and reinstallation of the veranda.



## 20. Summary Discussion/Overview of Practicality of Proposed Relocation Sites

The review of the selected sites and associated relocation route constraints considered, together with the buildings constraints; in terms of their limitations during relocation resulted in the exclusion of the following proposed sites:

- Ben Ean
- Hunter Valley Resort
- Corunna Station

The review determined that the relocation of the buildings to Clydsdale and Broke sites via the proposed routes is technically achievable subject to the following considerations which directly affect the viability of the relocation<sup>5</sup>:

- The division of the buildings into sections, namely the Main Homestead into three parts, the Kitchen into two parts, the barn into four parts (northern quarters, individual barn walls and roof structure);
- The disassembly and rebuild of the barn quarters or the implementation of significant strengthening and bracing of the quarters to enable its successful relocation on existing sloped sections of the route and to supplement the strength of the barn quarter's walls;
- Approval of access and permitting the relocation of the building sections over the ARTC railway at the end of Hebden road (Broke only) and on the RMS/local council road networks and acceptance of the associated wheel loadings;
- The undertaking of significant roadworks to mitigate localized constraints as identified in Attachments E and F and further elaborated in sections 12 and 13;
- Completion of strengthening of bridges where necessary to accommodate the traversing of the structures;
- Approval and coordination of overhead utilities companies to remove or raise existing overhead infrastructure which is present on the specified routes and is at such a height that clearance distances will be breached by the loaded building section(s);

The relocation to Singleton was reviewed on a high-level basis and has similar challenges to those presented above for the Broke option. Additional considerations include:

- The removal or raising of a significant number of powerlines (number to be determined) on the outskirts of Singleton on Glenridding Road;
- Confirmation that the road bridge traversing the rail tracks southeast of Singleton in the Singleton outskirts is strong enough to support the sections being relocated;
- Removal of the front veranda from the central section of the Main Homestead or the survey of the main street confirming that sufficient room is available to enable the traversing of this section between the roadside trees and light poles without the need to remove the veranda.

Significantly more work and risk is associated with the relocation of the buildings to the further afield sites, namely Clydsdale, Broke and Singleton. A corresponding increase in the overall order of magnitude of the relocation costs can be expected for these routes. Equally important is the introduction of significant additional complexity to what already is a complex relocation project.

The relocation of the buildings to proposed local relocation sites at Picton's Lane and Bowman's Creek are possible and preferred as they:

- Result in lowest impact on the buildings;
- Have significantly lower approval risk;
- Have significantly lower technical risk;

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<sup>5</sup> Other considerations such as heritage and development approvals, project funding etc also need to be met to enable the relocation to any site. Specified considerations are specific to the sites and proposed routes.



- Will offer the lowest cost;
- Reduce the overall project complexity markedly.





## 21. Conclusion

The relocation of buildings like those found in the Ravensworth Complex requires careful consideration of the buildings' needs and their fragile condition. Moves such as these are a significant undertaking and require considerable planning and care to ensure successful execution.

The buildings themselves are in fair to poor condition and incorporate several construction techniques which are not conducive to their relocation. A detailed and methodical approach is necessary to mitigate each of the building and route constraints.

The relocation of the buildings to a local site on Glencore land (i.e. Picton's Lane or Bowman's Creek) offers substantial benefits in terms of technical complexity of the move, impact on third party stakeholders and expected overall cost.

The Glencore site routes require only minor engagement with public roads. It is the mover's view that these options present significantly lower permitting and access risk to the project, (which is significant for the further afield sites). The added benefit of reduced presence on public roads is that the project retains control of the route preparation for much of the route as it is traversing Glencore land.

Other major benefits of the local moves are the retention of heritage fabric as the buildings are being moved as a whole and a consequently more stable load plane as the mover has flexibility to widen the track width to suit the buildings rather than forcing the load plan to suit a reduced pavement width. The risks associated with the division of the buildings, their realignment and impact on structural integrity are also removed from the project risk profile.

Whilst technically feasible, the relocation of the buildings further afield to Clydsdale, Broke or Singleton is less attractive. These routes require significant public road interfacing and premove roadworks to mitigate route constraints. Significant consultation will be necessary to obtain approval for the access to roads crossing of train lines where necessary and to mitigate overhead services. Of these routes the Clydsdale route is probably the most practical from a move logistics view as the roads to be traversed are lower status roads and would be significantly improved by the upgrade works necessary to make them navigable.

Routes further afield to Pokolbin and Hermitage Road are not viable due to the constraints imposed by the Broke to Pokolbin (Broke – Cessnock) road.

From a technical view alone, the relocation of the buildings to a local site (Bowman's creek or Picton's Lane) offers significant benefits and a much-reduced project risk profile. This option is unquestionably the preferred and recommended option in terms of the physical relocation element of the project.



## Attachment A

### Wall Vertical Alignment

### Ravensworth Complex



## 1. Introduction

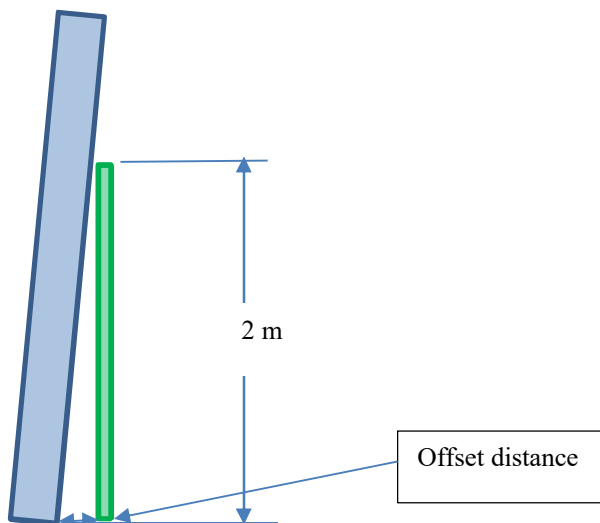
Measurements were taken to determine the level of “out of plumb” of walls on those sections of the Ravensworth complex buildings which possessed a significant lean visible to the naked eye. This data was used (in combination with other parameters) to determine the level of listing or leaning the buildings would be able to withstand whilst being relocated.

## 2. Methodology

A 2m straight edge was utilized together with a bubble level (to ensure it was vertical) to identify the offset distance of the wall as a result of its lean over a 2 m vertical change in height.

The offset distance provided an indication of the degree of tilt on the wall. Measurements were generally taken with the straight edge starting at around floor level but were adjusted in some cases to ensure the worst case section of tilt was picked up.

*Figure 2.1 – Measuring methodology*



## 3. Key

Offset dimensions are reported on the building floor plans in section 4.

A positive dimension equates to the wall is leaning away from the measurer on the side of the wall being measured. The provided value is the offset distance over 2 m.

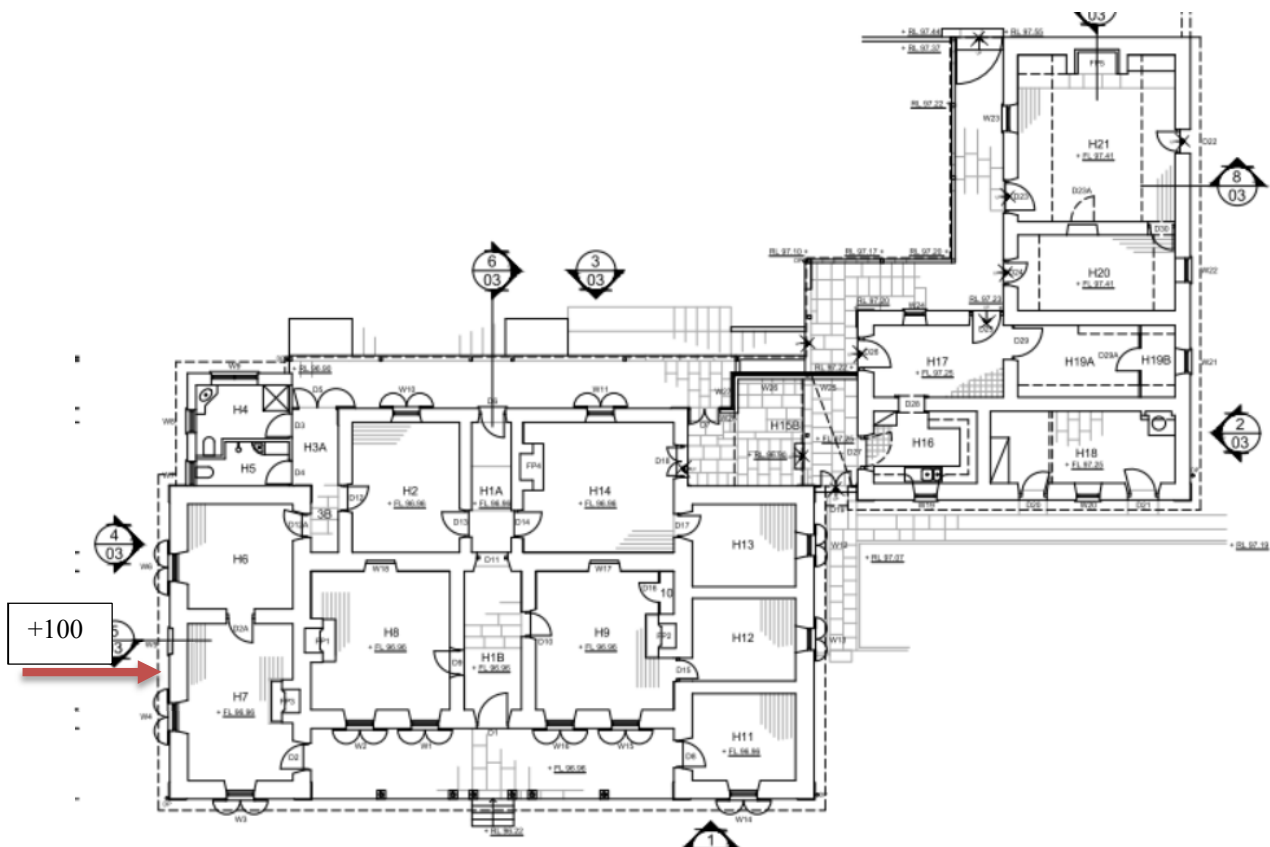
A negative dimension means the wall is leaning towards the measurer at that point. The values are indicated on the side of the wall that they are measured.



*Figure 3.1 – Example of nomenclature used to identify the offset distance and hence the lean on a wall leaf*

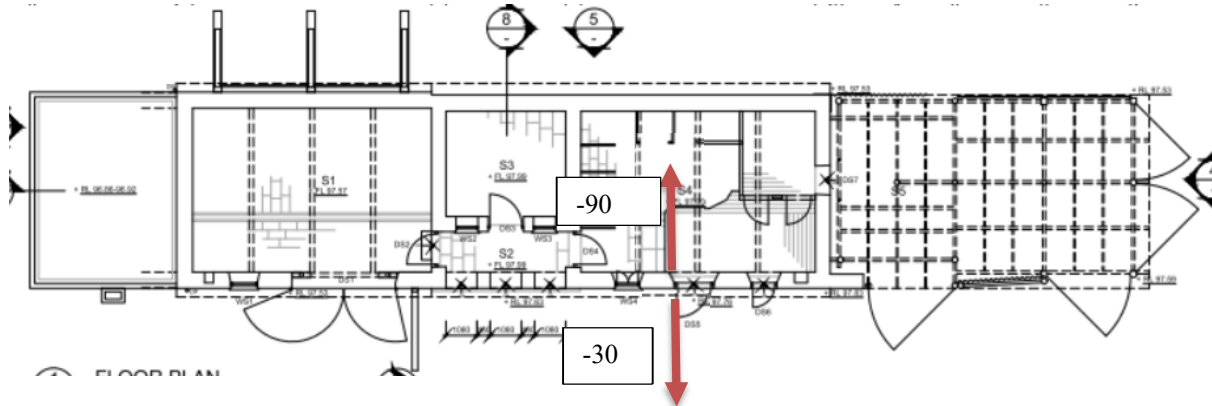


#### 4.1 Main Homestead

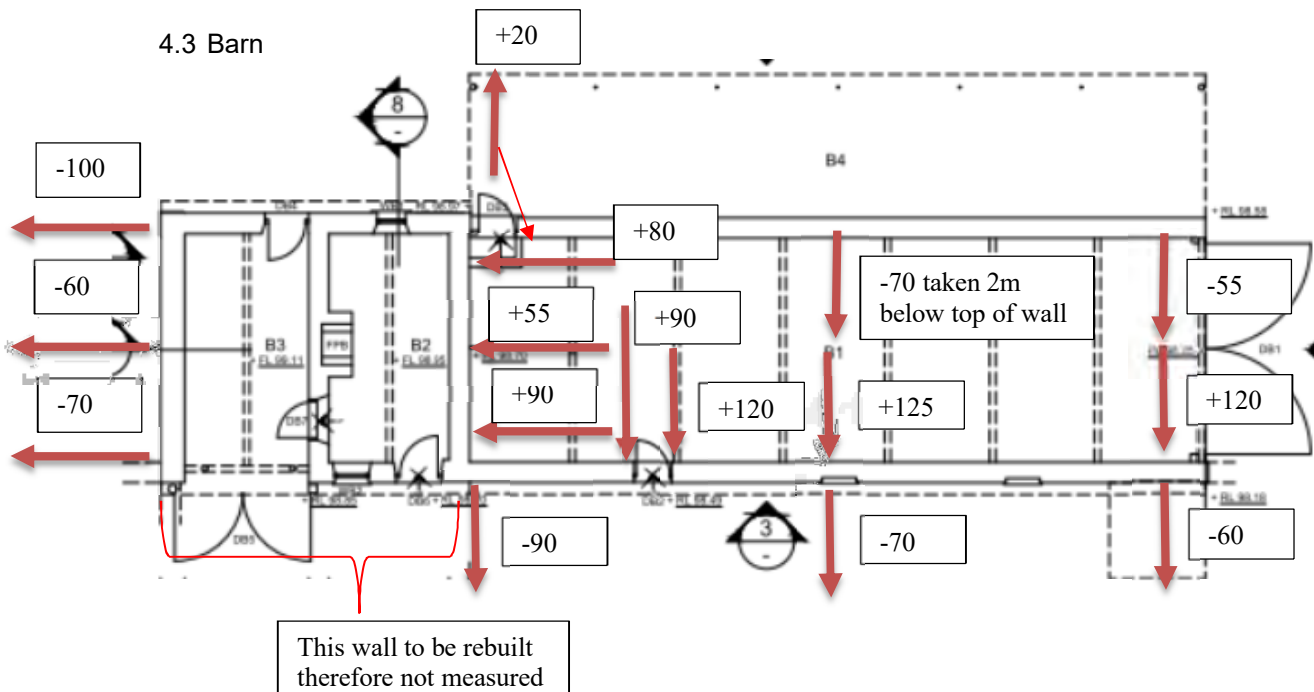




## 4.2 Stable



## 4.3 Barn





## **Attachment B**

### **Load Platforms**

### **Ravensworth Complex**



West Section:

Note: For estimation purposes the cutline was established at 600 mm. below the top of the floor.

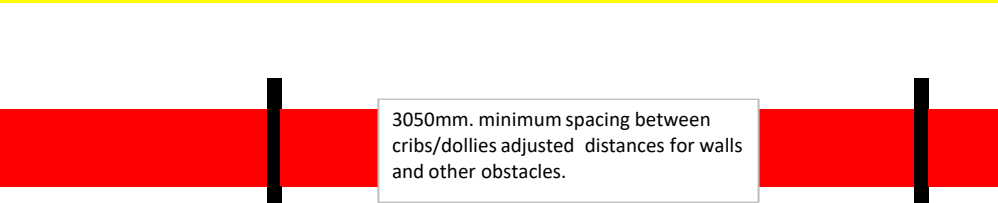
48.2 tonne

5496mm.

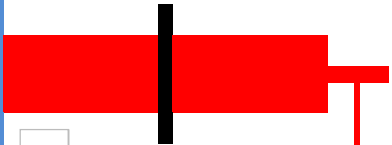
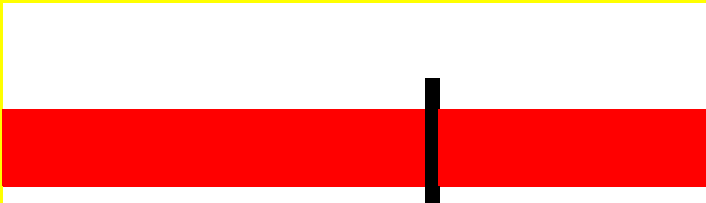
COG

5508 mm.

48.1 tonne



3050mm. minimum spacing between cribs/dollies adjusted distances for walls and other obstacles.



3289. mm.

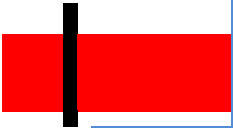
COG

The necessary beam offsets benefit from the large weight differential on these two sections. Total weight of the structure alone is est. 207 tonne . Bracing and support equipment brings the total to 259 tonne.

3246 mm.

COG

2819 mm.



56.3 tonne

5416 mm.

COG

5587 mm.

2862 mm.

54.5 tonne

4640 mm.

The blue lines indicate the COG envelope with the weights in metric tons on the corners and the COG distances are indicated on each side of the structure. The envelope is 6108 mm. X 11003 mm. The black lines on the red main beams represent jack/dollie average positions, with a minimum spacing for dollies to be 3050 mm. . Jack positions will be adjusted to allow for any obstructions.

East section:

Note: For estimation purposes the wall cut line was established at 600 mm. below the top of the floor.

49.5 tonne

5485 mm.

COG

5512 mm.

49.3 tonne

3050mm. minimum spacing between cribs/dollies . Distances on the jack positions will be adjusted for walls and other obstacles. True dolly postions will not be impacted .

The necessary beam offsets benefit from the large weight differential on these two sections. Total weight of the structure alone is est. 205 tonne. bracing and support equipment brings the total to 256 tonne.

3121 mm.

COG

2902 mm.

3128 mm.

COG

2895 mm.

4432 mm.

53.3 tonne

5496mm.

COG

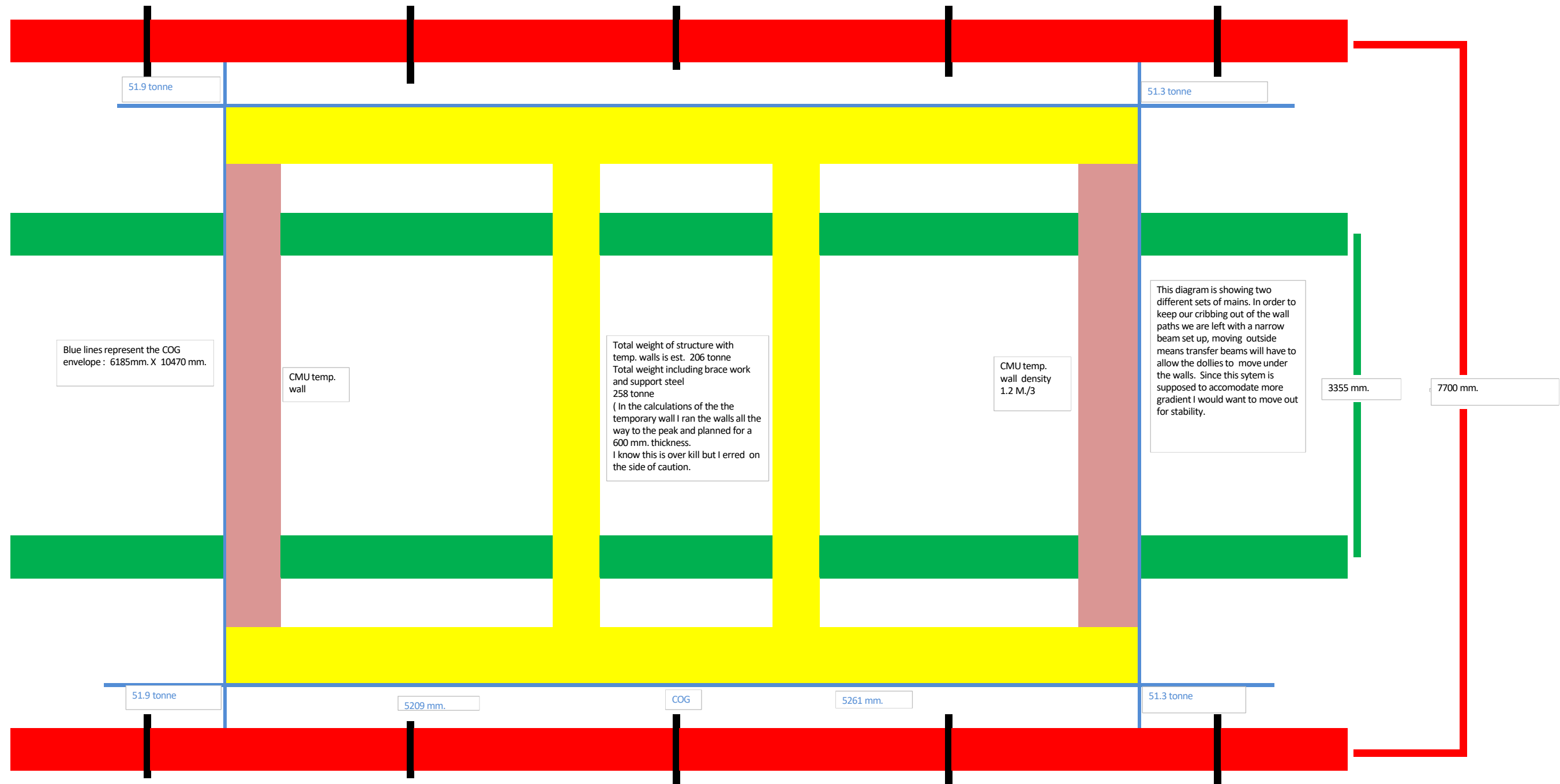
5502 mm.

52.9 tonne

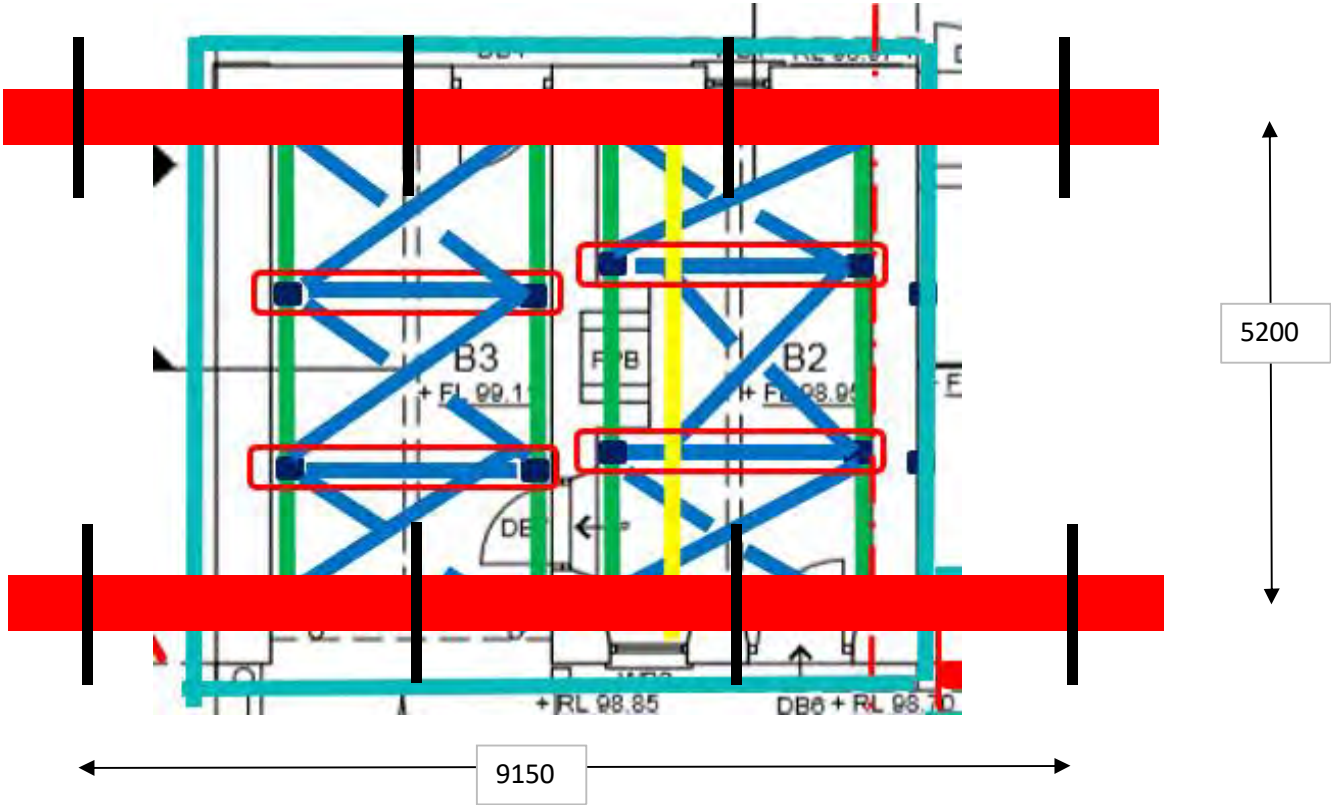
The blue lines indicate the COG envelope with the weights in metric tons on the corners and the COG distances are indicated on each side of the structure. The envelope is 6023 mm. X 10997 mm. The black lines on the red main beams represent jack/dollie average positions, with a minimum spacing for dollies to be 3050 mm.. Jack positions will be adjusted to allow for any obstructions.

Center section:

Note: For estimation purposes the cutline was established at 600 mm. below the top of the floor.



Barn Northern section





## **Attachment C**

### **Holland Dollies**

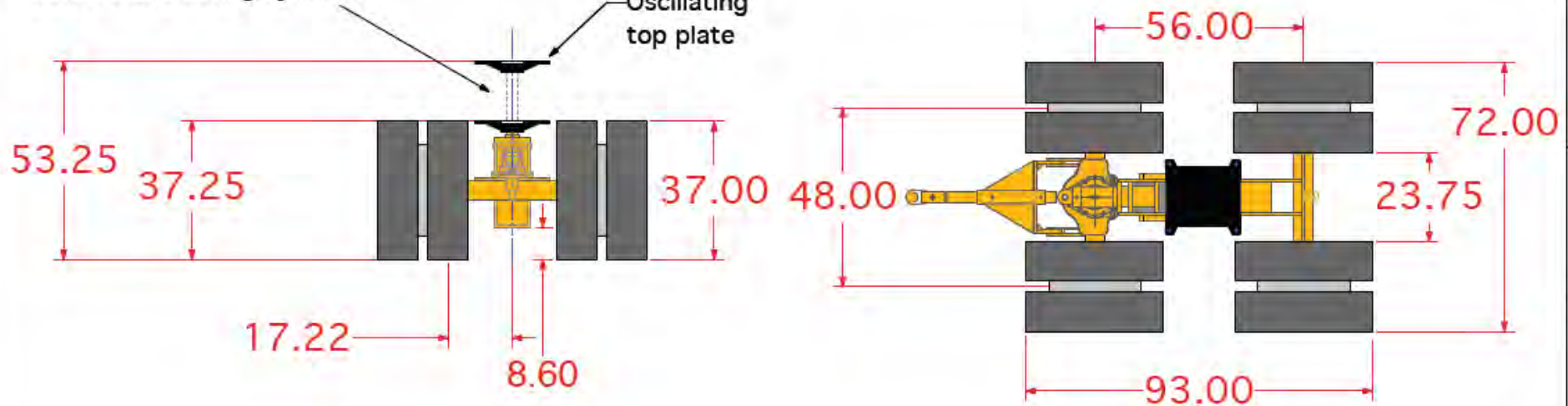
#### **Trailer Dolly Dimensions**

# 40 ton plate dolly with 275/70R22.5 16 ply tires

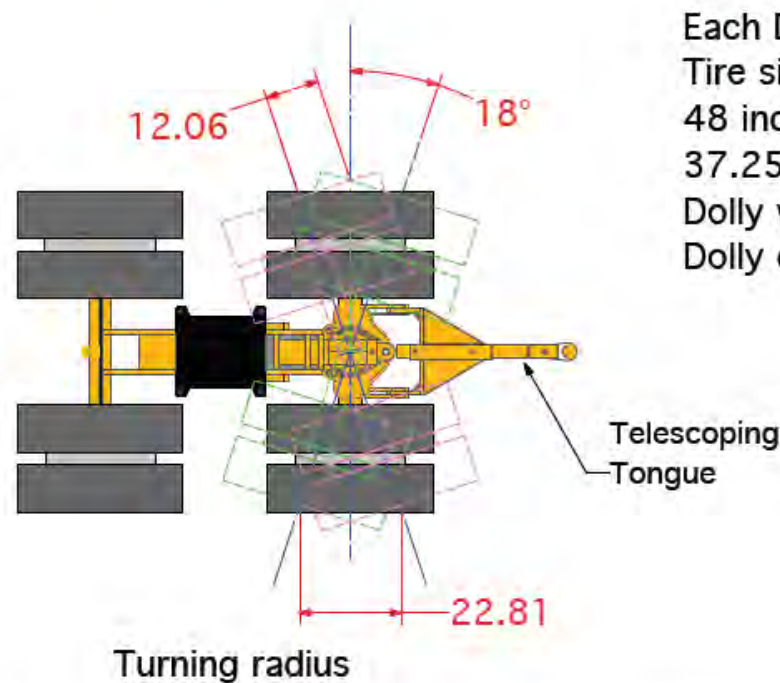
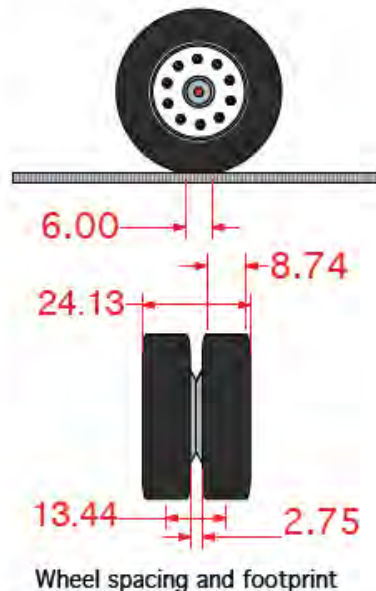
ISSUE #	DATE	DESCRIPTION	APPRO

Dolly has 16 inch stroke on 5 inch bore double acting cylinder.

Oscillating top plate



Each Dolly - 2 Axles, 4 Tires / Axle  
Tire size = 22.5  
48 inch Track  
37.25 inch Load Height  
Dolly weight is 3800 lbs  
Dolly capacity rated at 40 tons



Holland Moving & Rigging			
TITLE 22.5 Specs.			
PART NUMBER	DRAWN BY PO	DATE 8/20/01	
CAD FILE NAME	APPROVALS	SIZE C	





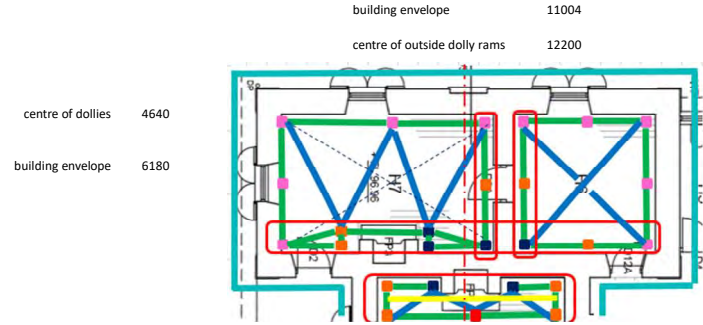
## Attachment D

### Slope and Crossfall Analysis – All routes

#### Ravenworth Relocation

CROSSFALL AND SLOPE ANALYSIS FOR VARIOUS ROUTES ASSUMING FLOAT UP TO 8 " WITH RAMS

WEST SECTION MAIN HOMESTEAD



BROKE

No	Chainage	Constrain t Type	Details	Crossfall	allowabl e cross fall with correctio n (no slope)	allowabl e cross fall with no correctio n	% crossfall	mm drop (cross fall)	Slope	allowabl e slope with correctio n (no crossfall)	allowabl e slope with no correctio n (no camber)	% slope	mm drop (slope)	total drop	allowable total drop 8"float	allowable total drop 16"float	Analysis
1	2750	Camber		70	101	48	6	266	0	87	67	0	0	266	1209	1412	ok
5	3500	Highway intersection		40	101	48	3	152	74	87	67	6	740	892	1209	1412	ok
5	3500	Highway intersection		40	101	48	3	152	102	87	67	8	1020	1172	1209	1412	slope exceeded
7	9150, (9.5	Hill		74	101	48	6	281	0	87	67	0	0	281	1209	1412	ok
8	9600	Hill		70	101	48	6	266	35	87	67	3	350	616	1209	1412	ok
10	13800	Turn off	into HVO	70	101	48	6	266	0	87	67	0	0	266	1209	1412	ok
10	13800	Turn off	into HVO	0	101	48	0	0	108	87	67	9	1080	1080	1209	1412	slope exceeded
12	1250	Com	Camber + slope	110	101	48	9	418	45	87	67	4	450	868	1209	1412	crossfall exceeded
14	5750	Camber +		68	101	48	6	259	35	87	67	3	350	609	1209	1412	ok
16	6480	Gold slope		86	101	48	7	327	18	87	67	1	180	507	1209	1412	ok
16	6480	Gold slope		83	101	48	7	316	58	87	67	5	580	896	1209	1412	ok
17	13200	Slip road		60	101	48	5	228	65	87	67	5	650	878	1209	1412	ok
17	13200	Slip road		50	101	48	4	190	35	87	67	3	350	540	1209	1412	ok
20	15800	Camber + slope		70	101	48	6	266	59	87	67	5	590	856	1209	1412	ok
21	20200	Camber + slope		65	101	48	5	247	62	87	67	5	620	867	1209	1412	ok

POKOLBIN

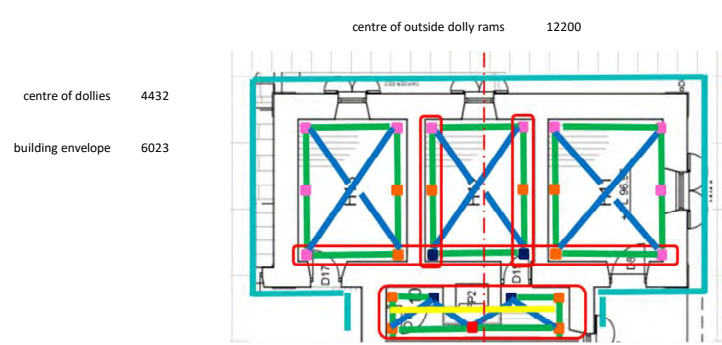
24	12500	Slope and camber		90	101	48	7	342	42	87	67	3	420	762	1209	1412	ok
26	13600	uphill + camber thro		160	101	48	13	609	62	87	67	5	620	1229	1209	1412	crossfall exceeded
26	13600	uphill + camber thro		190	101	48	16	723	75	87	67	6	750	1473	1209	1412	crossfall exceeded
27	16700	uphill + camber thro		132	101	48	11	502	70	87	67	6	700	1202	1209	1412	crossfall exceeded
27	16700	uphill + camber thro		148	101	48	12	563	25	87	67	2	250	813	1209	1412	crossfall exceeded
27	16700	uphill + camber thro		142	101	48	12	540	81	87	67	7	810	1350	1209	1412	slope and crossfall issues
27	16700	uphill + camber thro		140	101	48	11	532	93	87	67	8	930	1462	1209	1412	slope and crossfall issues
29	24300	uphill + camber thro		100	101	48	8	380	35	87	67	3	350	730	1209	1412	ok
31	29300	Severe slope + cuttin		0	101	48	0	0	90	87	67	7	900	900	1209	1412	slope exceeded

CLYDESDALE

1	8400	crossfall	around corner	119	101	48	10	453	27	87	67	2	270	723	1209	1412	crossfall exceeded
2	8100	slope	at culvert	not meas	101	48	0	0	not meas	0	0	0	0	0	1209	1412	localised change in slope
1	7050		around corner	96	101	48	8	365	56	87	67	5	560	925	1209	1412	ok
				119	101	48	10	453	55	87	67	5	550	1003	1209	1412	ok
3	6750			112	101	48	9	426	42	87	67	3	420	846	1209	1412	ok
			hill with crossfall + change of grade at the														
5	5000	Steep hill	crest	127	101	48	10	483	142	87	67	12	1420	1903	1209	1412	slope exceeded
6	3650	hill		125	101	48	10	475	94	87	67	8	940	1415	1209	1412	issue on mixture of crossfall and slope
7	2400	bend		0	not meas	101	48	0	0	not meas	87	67	0	0	1209	1412	review next stage
8	2175	bend		142	101	48	12	540	22	87	67	2	220	760	1209	1412	ok
11	475	Bend and slope	bend and slope	135	101	48	11	513	156	87	67	13	1560	2073	1209	1412	slope exceeded

Picton lane turn off

EAST SECTION MAIN HOMESTEAD



No	Chainage	Constrain t Type	Details	Crossfall	allowabl e cross fall with correctio n (no slope)	allowabl e cross fall with no correctio n	% crossfall	mm drop (cross fall)	Slope	allowabl e slope with correctio n (no crossfall)	allowabl e slope with no correctio n (no camber)	% slope	mm drop (slope)	total drop	allowable total drop 8"float	allowable total drop 16"float	Analysis
1	2750	Camber		70	103	48	6	254	0	73	52	0	0	254	1201	1404	ok
5	3500	Highway intersection		40	103	48	3	145	74	73	52	6	740	885	1201	1404	slope exceeded
5	3500	Highway intersection		40	103	48	3	145	102	73	52	8	1020	1165	1201	1404	slope exceeded
7	9150, (9.5	Hill		74	103	48	6	269	0	73	52	0	0	269	1201	1404	ok
8	9600	Hill		70	103	48	6	254	35	73	52	3	350	604	1201	1404	ok
10	13800	Turn off	into HVO	70	103	48	6	254	0	73	52	0	0	254	1201	1404	ok
10	13800	Turn off	into HVO	0	103	48	0	0	108	73	52	9	1080	1080	1201	1404	slope exceeded
12	1250	Com	Camber + slope	110	103	48	9	400	45	73	52	4	450	850	1201	1404	crossfall exceeded
14	5750	Camber +		68	103	48	6	247	35	73	52	3	350	597	1201	1404	ok
				86	103	48	7	312	18	73	52	1	180	492	1201	1404	ok
16	6480	Gold slope		83	103	48	7	302	58	73	52	5	580	882	1201	1404	ok
17	13200	Slip road		60	103	48	5	218	65	73	52	5	650	868	1201	1404	ok
17	13200	Slip road		50	103	48	4	182	35	73	52	3	350	532	1201	1404	ok
20	15800	Camber + slope		70	103	48	6	254	59	73	52	5	590	844	1201	1404	ok
21	20200	Camber + slope		65	103	48	5	236	62	73	52	5	620	856	1201	1404	ok

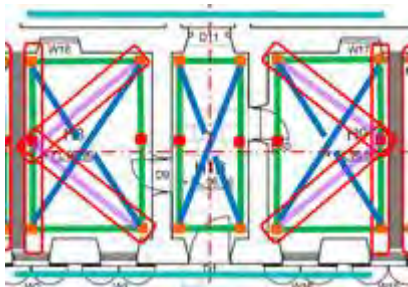
24	12500	Slope and camber		90	103	48	7	327	42	73	52	3	420	747	1201	1404	
26	13600	uphill + camber thro		160	103	48	13	581	62	73	52	5	620	1201	1201	1404	crossfall exceeded
26	13600	uphill + camber thro		190	103	48	16	690	78	73	52	6	750	1440	1201	1404	crossfall and slope exceeded
27	16700	uphill + camber thro		132	103	48	11	480	70	73	52	6	700	1180	1201	1404	crossfall exceeded
27	16700	uphill + camber thro		148	103	48	12	538	25	73	52	2	250	788	1201	1404	crossfall exceeded
27	16700	uphill + camber thro		142	103	48	12	516	81	73	52	7	810	1326	1201	1404	crossfall and slope exceeded
27	16700	uphill + camber thro		140	103	48	11	509	93	73	52	8	930	1439	1201	1404	crossfall and slope exceeded
29	24300	uphill + camber thro		100	103	48	8	363	35	73	52	3	350	713	1201	1404	ok
31	29300	Severe slope + cuttin		0	103	48	0	0	90	73	52	7	900	900	1201	1404	slope exceeded

1	8400	slope	around corner	119	103	48	10	432	27	73	52	2	270	702	1201	1404	crossfall exceeded
2	8100	slope	at culvert	not meas	103	48	0	0	not meas	0	0	0	0	0	1201	1404	localised change in slope
1	7050		around corner	96	103	48	8	349	56	73	52	5	560	909	1201	1404	ok
				119	103	48	10	432	55	73	52	5	550	982	1201	1404	crossfall exceeded
3	6750			112	103	48	9	407	42	73	52	3	420	827	1201	1404	crossfall exceeded
			hill with crossfall + change of grade at the														
5	5000	Steep hill	crest	127	103	48	10	461	142	73	52	12	1420	1881	1201	1404	crossfall and slope exceeded
6	3650	hill		125	103	48	10	454	94	73	52	8	940	1394	1201	1404	crossfall and slope exceeded
7	2400	bend		0	not meas	103	48	0	0	not meas	73	52	0	0	1201	1404	review next stage
8	2175	bend		142	103	48	12	516	22	73	52	2	220	736	1201	1404	crossfall exceeded
11	475	Bend and slope	bend and slope	135	103	48	11	490	156	73	52	13	1560	2050	1201	1404	crossfall and slope exceeded

CENTRAL SECTION MAIN HOMESTEAD

building envelope 10470  
centre of outside dolly rams 12200

centre of dollies 5200  
building envelope 6185



BROKE

No	Chainage	Constraint Type	Details	Crossfall	allowable cross fall with correction (no slope)	allowable cross fall with no correction	% crossfall	mm drop (cross fall)	Slope	allowable slope with correction (no crossfall)	allowable slope with no correction (no camber)	% slope	mm drop (slope)	total drop	allowable total drop 8"float	allowable total drop 16"float	Analysis
1	2750	Camber		70	113	66	6	298	0	71	51	0	0	298	984	1187	ok
5	3500	Highway intersection		40	113	66	3	170	74	71	51	6	740	910	984	1187	slope exceeded
5	3500	Highway intersection		40	113	66	3	170	102	71	51	8	1020	1190	984	1187	slope exceeded
7	9150, (9.5	Hill		74	113	66	6	315	0	71	51	0	0	315	984	1187	ok
8	9600	Hill		70	113	66	6	298	35	71	51	3	350	648	984	1187	ok
10	13800	Turn off	into HVO	70	113	66	6	298	0	71	51	0	0	298	984	1187	ok
10	13800	Turn off	into HVO	0	113	66	0	0	108	71	51	9	1080	1080	984	1187	slope exceeded
12	12500	Com	Camber + slope	110	113	66	9	469	45	71	51	4	450	919	984	1187	ok
14	5750	Camber +		68	113	66	6	290	35	71	51	3	350	640	984	1187	ok
16	6480	Gold	slope	86	113	66	7	367	18	71	51	1	180	547	984	1187	ok
17	13200	Slip road		83	113	66	7	354	58	71	51	5	580	934	984	1187	ok
17	13200	Slip road		60	113	66	5	256	65	71	51	5	650	906	984	1187	ok
17	13200	Slip road		50	113	66	4	213	35	71	51	3	350	563	984	1187	ok
20	15800	Camber + slope		70	113	66	6	298	59	71	51	5	590	888	984	1187	ok
21	20200	Camber + slope		65	113	66	5	277	62	71	51	5	620	897	984	1187	ok

POKOLBIN

24	12500	Slope and camber		90	113	66	7	384	42	71	51	3	420	804	984	1187	ok
26	13600	uphill + camber thro		160	113	66	13	682	62	71	51	5	620	1302	984	1187	not ok - crossfall
26	13600	uphill + camber thro		190	113	66	16	810	75	71	51	6	750	1560	984	1187	not ok - crossfall and slope
27	16700	uphill + camber thro		132	113	66	11	563	70	71	51	6	700	1263	984	1187	not ok - crossfall
27	16700	uphill + camber thro		148	113	66	12	631	25	71	51	2	250	881	984	1187	not ok - crossfall
27	16700	uphill + camber thro		142	113	66	12	605	81	71	51	7	810	1415	984	1187	not ok - crossfall and slope
27	16700	uphill + camber thro		140	113	66	11	597	93	71	51	8	930	1527	984	1187	not ok - crossfall and slope
29	24300	uphill + camber thro		100	113	66	8	426	35	71	51	3	350	776	984	1187	ok
31	29300	Severe slope + cutting		0	113	66	0	0	90	71	51	7	900	900	984	1187	not ok - slope

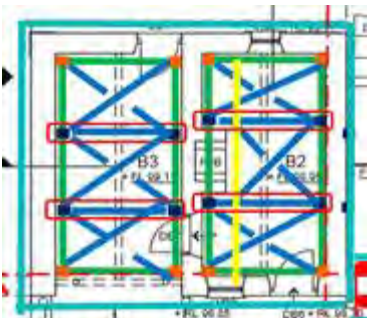
CLYDESDALE

1	8400	slope	around corner	119	113	66	10	507	27	71	51	2	270	777	984	1187	crossfall exceeded
2	8100	slope	at culvert	not meas	113	66	0	0	not meas	0	0	0	0	0	984	1187	localised change in slope
1	7050		around corner	96	113	66	8	409	56	71	51	5	560	969	984	1187	ok
				119	113	66	10	507	55	71	51	5	550	1057	984	1187	slope and crossfall exceeded
3	6750			112	113	66	9	477	42	71	51	3	420	897	984	1187	ok
			hill with crossfall + change of grade at the														
5	5000	Steep hill	crest	127	113	66	10	541	142	71	51	12	1420	1961	984	1187	slope and crossfall exceeded
6	3650	hill		125	113	66	10	533	94	71	51	8	940	1473	984	1187	slope and crossfall exceeded
7	2400	bend		0	not meas	113	66	0	not meas	71	51	0	0	0	984	1187	review next stage
8	2175	bend		142	113	66	12	605	22	71	51	2	220	825	984	1187	crossfall exceeded
11	475	Bend and slope	bend and slope	135	113	66	11	575	156	71	51	13	1560	2135	984	1187	slope and crossfall exceeded

NORTHERN SECTION - BARN QUARTERS

centre of outside dolly rams 9150

centre of dollies 4640  
building envelope 6710



No	Chainage	Constraint Type	Details	Crossfall	allowable cross fall with correction (no slope)	allowable cross fall with no correction	% crossfall	mm drop (cross fall)	Slope	allowable slope with correction (no crossfall)	allowable slope with no correction (no camber)	% slope	mm drop (slope)	total drop	allowable total drop 8"float	allowable total drop 16"float	Analysis
1	2750	Camber		70	122	69	6	266	0	30	3	0	0	266	486	689	ok
5	3500	Highway intersection		40	122	69	3	152	74	30	3	6	555	707	486	689	not ok - slope
5	3500	Highway intersection		40	122	69	3	152	102	30	3	8	765	917	486	689	not ok - slope
7	9150, (9.5	Hill		74	122	69	6	281	0	30	3	0	0	281	486	689	ok
8	9600	Hill		70	122	69	6	266	35	30	3	3	263	529	486	689	not ok - slope
10	13800	Turn off	into HVO	70	122	69	6	266	0	30	3	0	0	266	486	689	ok (slight exceedance on cross fall which can be taken up with ad
10	13800	Turn off	into HVO	0	122	69	0	0	108	30	3	9	810	810	486	689	not ok - slope
12	12500	Com	Camber + slope	110	122	69	9	418	45	30	3	4	338	756	486	689	not ok - slope
14	5750	Camber + slope		68	122	69	6	259	35	30	3	3	263	521	486	689	not ok - slope
				86	122	69	7	327	18	30	3	1	135	462	486	689	ok
16	6480	Gold	slope	83	122	69	7	316	58	30	3	5	435	751	486	689	not ok - slope
17	13200	Slip road		60	122	69	5	228	65	30	3	5	488	716	486	689	not ok - slope
				50	122	69	4	190	35	30	3	3	263	453	486	689	not ok - slope
20	15800	Camber + slope		70	122	69	6	266	59	30	3	5	443	709	486	689	not ok - slope
21	20200	Camber + slope		65	122	69	5	247	62	30	3	5	465	712	486	689	not ok - slope

24	12500	Slope and camber		90	122	69	7	342	42	30	3	3	315	657	486	689	not ok - slope
26	13600	uphill + camber thro		160	122	69	13	609	62	30	3	5	465	1074	486	689	not ok - crossfall and slope
26	13600	uphill + camber thro		190	122	69	16	723	75	30	3	6	563	1285	486	689	not ok - crossfall and slope
27	16700	uphill + camber thro		132	122	69	11	502	70	30	3	6	525	1027	486	689	not ok - crossfall and slope
27	16700	uphill + camber thro		148	122	69	12	563	25	30	3	2	188	750	486	689	not ok - crossfall and slope
27	16700	uphill + camber thro		142	122	69	12	540	81	30	3	7	608	1148	486	689	not ok - crossfall and slope
27	16700	uphill + camber thro		140	122	69	11	532	93	30	3	8	698	1230	486	689	not ok - crossfall and slope
29	24300	uphill + camber thro		100	122	69	8	380	35	30	3	3	263	643	486	689	not ok - slope
31	29300	Severe slope + cutting		0	122	69	0	0	90	30	3	7	675	675	486	689	not ok - slope

1	8400	slope	around corner	119	122	69	10	453	27	30	3	2	203	655	486	689	ok
2	8100	slope	at culvert	not meas	122	69	0	0	not meas	0	0	0	0	0	486	689	localised change in slope
1	7050		around corner	96	122	69	8	365	56	30	3	5	420	785	486	689	slope exceeded
				119	122	69	10	453	55	30	3	5	413	865	486	689	slope exceeded
3	6750			112	122	69	9	426	42	30	3	3	315	741	486	689	slope exceeded
			hill with crossfall + change of grade at the														
5	5000	Steep hill	crest	127	122	69	10	483	142	30	3	12	1065	1548	486	689	slope and crossfall exceeded
6	3650	hill		125	122	69	10	475	94	30	3	8	705	1180	486	689	slope and crossfall exceeded
7	2400	bend		0	not meas	122	69	0	not meas	30	3	0	0	0	486	689	review next stage
8	2175	bend		142	122	69	12	540	22	30	3	2	165	705	486	689	crossfall exceeded
11	475	Bend and slope	bend and slope	135	122	69	11	513	156	30	3	13	1170	1683	486	689	slope and crossfall exceeded



## **Attachment E**

### **Route Constraint Audit**

### **Ravensworth Relocation**

## Broke Route

level length

1220 mm

Data gathered by MM

No	Chainage	Constraint Type	Details	Camber/crossfall	Slope	Width	Time	Action	Additional Comments	Photos included in Photos
1	2750	Camber	Just before creek bridge (photos 1-4) guard rail to be removed	5.7% LtoR (69)					falling away to the right (inside of curve)	3
2	2850	Creek crossing	Creek Crossing, local earthworks required over temporary crossing. (photos 5-7)					survey elevation change between constraint 1 to other side of creek.	fill in creek to accommodate maximum negotiable slope	1
3	3070	Culverts	Culverts either side of Hebden rd (1 photo). Potential local earthworks and fence removal on both sides						remove fencing and fill in with earthworks or cribbing and steel plate to enable easy traversing without need to reset dollies	1
4	3320	Railway crossing								1
5	3500	Highway intersection	6 photos. Fence and guardrails to be removed, earthworks required on Hebden road to reduce slope approach to highway	40	74, 102			Detailed survey of intersection to capture crossfall and slope	survey available - completed	5
6	5800	Lemington road intersection	approx 8m gap between islands (3 photos)	37 on hwy at island, 30 R to L on Lemington road				Detailed survey of intersection to capture crossfall and slope	fill in for parking place on bunkers lane southwest of intersection	3
7	9150, (9.5km from Hill		2 photos	74 L to R						3
8	9600	Hill	1 photo	70	35					
9	11350	Bridge	2 photos					Requires wheel load analysis		1
10	13800	Turn off into HVO Hunter Valley	6 photos	70 on Lem rd	108 on side rd			Make allowance to remove guard rail and fill inside of corner approx 10m from intersection to overcome camber. Remove height indicator pole. Note there is a culvert here and design needs to accommodate fill downhill from culvert	significant slope and cross fall	3
		Mine road - not reviewed								
11	100-400 Comleroi	Trees, + bumpy rd (reduce speed)	1 photo					Tree trimming required		11
12	1250 Comleroi rd	Camber + slope	2 photos	110	45			detailed survey around corner on the fog lines - localised earthworks desirable to correct crossfall - currently at the limit of what is allowable on the building	worst case camber with significant slope	2
13	1600	Intersec tion	2 photos, narrow rd					local earthworks required		1
14	5750	Camber + slope	2 photos	68 86	35 18					2
15	6225	Rail Overpass Bridge	Width ok, 6 photos					Confirm bridge loading. Remove strainer fence post at intersection. If bridge loading is not sufficient build structure on top of road to enable traversing and avoid train impact	Sufficient room between the medium and the side at the intersection	2
16	6480 Golden Hwy	slope		83, 35	58				camber varied from 83-35, across width of road	1
17	13200	Slip road	4 photos	60, 50	65, 35	6m		Width of the slip road is marginal. Suggest some road widening - shoulder stability works in this section	Second readings were after the intersection onto Golden HWY	4
18	13920	Bridge						Confirm allowable bridge loading		0
19	15280	Bridge						Confirm allowable bridge loading		0

## Broke Route

level length

1220 mm

Data gathered by MM

No	Chainage	Constraint Type	Details	Camber/crossfall	Slope	Width	Time	Action	Additional Comments	Photos included in Photos
20	15800	Intersection						Detailed survey of intersection to capture crossfall and slope		2
21	20200	Intersection	4 photos, onto mine road					Make allowance for the cut and fill inside of curve to avoid cross fall and significant slope.		2
		Mine road - not reviewed								
22	chainage not avail	Camber + slope	(Park at exit to mine prior to traversing this constraint) 2 photos MM	70	59			Recommend survey of sweeping corner	survey available - completed	2
23	chainage not avail	Camber + slope	1 photo MM, long downward slope	65	62					1
24	7150	Bridge/creek	11 photos MM			approx 8 m		Monkey face creek - check loading allowable on bridge. If not ok then survey creek ford. This will require filling in of creek to achieve maximum combination of slope and crossfall and will include work on charlton rd entrance to ford. Suggest two additional parking places incorporated in these roadworks should the ford route be necessary - one either side of the creek	if bridge not ok ford creek off charlton rd. Width ok	6



No	Chainage	Constraint Type	Details	Camber	Slope	Width	Time	Action	Additional comments	Photos
25	11600	bridge						check load rating	there are no obvious parking spots on this route	
26	12500	Slope and camber		83, 90, 85, 95	27, 42, 33, 0					
27	12950	Bridge				6.4m		load rating to be verified		
28	13600	uphill + camber through turn	1 photo	160, 190	62, 75			not negotiable - end of route		1
29	16700	uphill + camber through turn	2 photos	132, 148, 142, 140	70, 25, 81, 93	7m			Photos by DL	
30	18000	Severe slope + cutting	18800 - potential park up area							
31	24300	uphill + camber through turn	2 photos	100	35					
32	25650	Hermitage rd intersection						Detailed survey of intersection to capture crossfall and slope		
33	29300	Severe slope + cutting	1 photo		90					
34	31250	Roundabout	4 photos. Islands will be mounted. May need to lay plate and run on footpath or lay plate and cribbing and run on median strip. Will be cutting across on wrong side of road - road will need to be closed							

No	Chainage	Constraint Type	Details	Camber	Slope	Width	Time	Action
n/a	11150 - 8400	existing road to be bypassed using existing haul road and proposed new creek diversion						include requirements for traversing the building in the new road design at the creek crossing
1	8400	crossfall	around corner	119	27			remove this issue as part of the proposed new road realignment (widen culvert and remove slope)
2	8100	slope	localised depression at culvert					remove this issue as part of the proposed new road realignment (widen culvert and remove slope)
3	7900 - 7100	road width	widen eastern side of road by approx 3 m to avoid road side powerlines running parallel to and on western side of the road			approx 7.5 m		Allow for localised roadworks as per details column. Note shoulder in place - only requires top grasses removed and compacted gravel laid

No	Chainage	Constraint Type	Details	Camber	Slope	Width	Time	Action
	7100	turn off to Pictons Lane						
1	7050		around corner	96	56			make allowance for upgrade - cross fall too great
				119	55			make allowance for upgrade - cross fall too great
2	6200	Culvert						confirm allowable loading
3	6750			112	42			make allowance for upgrade - cross fall too great
4	5150	Culvert				6.1		confirm allowable loading
5	5000	Steep hill	hill with crossfall + change of grade at the crest	127	142			make allowance for upgrade - cross fall and slope too great
6	3650	hill		125	94			make allowance for upgrade - cross fall and slope too great
7	2400	bend	tight LH bend - will take time to navigate or may not be negotiable	not measured	not measured			provide slope and cross fall measurements
8	2175	bend	tight RH bend - not negotiable	142	22			make allowance for upgrade - cross fall too great
9	2100	culvert	road narrows			4.8		confirm allowable loading and make allowance for upgrade - culvert too narrow
10	1725	Bridge	road narrows			4.27		confirm allowable loading and make allowance for upgrade - culvert too narrow
11	475	Bend and slope	bend and slope	135	156			make allowance for upgrade - cross fall and slope too great

No	Chainage	Constraint Type	Details	Camber/crossfall	Slope	Action	Photos
P1	1850	Parking place	Provides parking area prior to constraint 1			cut and fill required	0
P2	3250	Parking place	Provides parking area after creek crossing and prior to railway. Note could also park between constraint 2 and 3 prior to crossing road if necessary - this would need little work				1
P3	3800	Parking place	Provides parking area directly after the hebden rd, highway intersection - this is a critical and busy intersection and a parking place is necessary directly after it			cut and fill	0
P4	5850	Parking place	provided to enable parking once left the highway. Note it needs to be determined whether the buildings will be taken individually down the highway or in convoy - given the criticality of disruptions on this road			enlarge current parking place and level	1
P	around 9200	Parking place if required	may be prudent to allow for an additional parking place near to constraint 7. At this stage this not required and given the width of the road unforeseen stops may be catered for with traffic management activities			would require fill and compaction on side of road with hardstand	0
P5	1150	Parking place	provides parking prior to constraint 12 to enable one building to traverse at a time			no work required	1
P6	1750	Parking place	provides parking post constraint 12 and 13			needs enlarging - cut and fill	1
P	5000-5550	Parking place if required	may be prudent to allow for an additional parking place prior to constraint 14 and 15.			Sites available and generally flat but will require removal of vegetation/topsoil and top dressing	0
P7	6340	Parking place	provides parking post constraint 14 and 15			needs enlarging - cut and fill - some vegetation to be removed	1
P8	7080	Parking place	provides parking post constraint 16 (slope) if necessary			flat site just needs topsoil removed and hardstand created. Check for potential interference with overhead wires	1
P9	13520	Parking place	provides parking place at top of slip road			Cut and fill - suggest this is cut in as part of localised road works	1
P10	14100	Parking place	provided as a precaution on Golden Highway			This is a narrow parking place but should be lengthened to enable two buildings - provided as precaution only and to enable decoupling of brake vehicles if necessary	1
P11	15760	Parking place	choice of two - provided prior to traversing of intersection of Paynes Crossing rd - a difficult turn			parking on LHS of Golden Hwy requires filling in of roadside drain. Parking on LHS requires work on shoulder - probably the better option as this lines up with the proposed path around constraint 20	2
P12	16180	Parking place	prior to rail bridge - closest logical spot after constraint 20			Cut and fill to widen	1
P13	19200	Parking place	precautionary parking place for Paynes Crossing rd	68	20	ponly minor works - remove topsoil and add hardstand	1
P	chainage not available		Park at exit to mine prior to traversing onto the main road	70	59	Recommend survey of sweeping corner	0
P14	chainage not avail	Parking Place	Precutionary parking place post constraint 22 and prior to constraint 23 - enables resetting of tow/braking vehicles 2 photos MM			numerous spots on this section - cut and fill in roadside drain	1

[illegible]

No	Chainage	Date	Time	Height measured (m)	Temp (deg C)	Powerline type (KV)	Clearance required	Final Clearance	Comments
1	0	12/11/2018	15:05	12.05	31	11	0.9	2.15	Height indicators each side 7.91m and light poles over road 10.5m
2	0.9	12/11/2018	15:15	9.68	31.5	?	#N/A	#N/A	Check voltage
3	2.0	12/11/2018	15:17	12.64	31.1	11	0.9	2.74	
4	4.2	12/11/2018	15:25	9.7	31.4	66	2.1	-1.4	Height Indicators
5	5.8	12/11/2018	15:30	18.79	31.6	330	0.6	9.19	Height Indicators 7.74m
6	6.1	12/11/2018	15:35	9.53	32	66	2.1	-1.57	
7	6.8	12/11/2018	15:40	13.08	31.6	330	0.6	3.48	
8	7.2	12/11/2018	15:41	7.96	31.6	240	0.6	-1.64	Insulated
9	8.7	12/11/2018	15:45	17		stay	0	8	Inaccurate readings
10	8.8	12/11/2018	15:47	24.06	32.6	330	0.6	14.46	
11	8.9	12/11/2018	15:50	11.95	32.6	66	2.1	0.85	66/132kV need to confirm
12	10	12/11/2018	15:52	23.2	32	66	2.1	12.1	66/132kV need to confirm
13	10.5	12/11/2018	15:55	8.21	31.6	66	2.1	-2.89	66/132kV with underslung comms
14	11	12/11/2018	15:57	12.08	31.5	66	2.1	0.98	66/132kV need to confirm
15	11.1	12/11/2018	16:00	8.97	31.3	11	0.9	-0.93	
16	12.7	12/11/2018	16:02	9.58	30.5	11	0.9	-0.32	
17	13.2	12/11/2018	16:05	9.84	30.7	stay	0	0.84	
18	13.3	12/11/2018	16:05	8.98	30.7	stay	0	-0.02	
19	13.4	12/11/2018	16:07	unable to measure	30.7	11	0.9	#VALUE!	with underslung comms
20	13.6	12/11/2018	16:12	10.5	31.2	66	2.1	-0.6	66kv with 11kv underneath



No	Chainage	Date	Time	Height measured (m)	Temp (deg C)	Powerline type (KV)	Clearance required	Final Clearance	Comments
21	14.1	12/11/2018	16:15	13.9	31.2	stay	0	4.9	
22	14.1	12/11/2018	16:15	13.62	31.2	stay	0	4.62	
23	14.6	12/11/2018	16:17	8.15	30.5	stay	0	-0.85	
24	15	12/11/2018	16:20	21.5	30.5	stay	0	12.5	appears to be much less (-8), inaccurate readings
25	15.3	12/11/2018	16:23	23	30.5	stay	0	14	appears to be much less (-8), inaccurate readings
26	15.4	12/11/2018	16:25	7.93	30.3	11	0.9	-1.97	+ stay @8.93m
27	16.4	12/11/2018	16:30	9.12	30.1	132	2.1	-1.98	
28	16.4	12/11/2018	16:30	10.57	30.1	66	2.1	-0.53	
29	17.2	12/11/2018	16:35		30.1	11	0.9	-9.9	Unable to measure
30	17.4	12/11/2018	16:35		30.1	11	0.9	-9.9	Goes to Glencore house being demolished
31	19.5	12/11/2018	16:38	18.76	30.3	11	0.9	8.86	
32	20.3	12/11/2018	16:41	7.4	30.1	415	0.6	-2.2	Insulated
33	20.3		16:41	10.05	30.1	11	0.9	0.15	
									Finished at Bulga Mine entrance

No	Chainage	Date	Time	Height measured (m)	Temp (deg C)	Powerline type (KV)	Clearance required	Final Clearance	Comments
1	0	19/11/2018	15:50	9.6	24.9	11	0.9	-0.3	
2	2.4	19/11/2018	15:54	9.64	25.4	11	0.9	-0.26	
3	2.8	19/11/2018	15:55	9.72	25.7	11	0.9	-0.18	Pole is close to rd, 1.7m from fog line, 3.5m lane width
4	3.6	19/11/2018	16:02	8.86	26	11	0.9	-1.04	
5	3.6	19/11/2018	16:02	6.8	26	stay	0	-2.2	
6	3.9	19/11/2018	16:04	7.32	26	240	0.6	-2.28	
7	4	19/11/2018	16:06	7.85	26.2	415	0.6	-1.75	These are in the same location
8	4	19/11/2018	16:06	10.18	26.2	11	0.9	0.28	
9	4.1	19/11/2018	16:08	8.65	26.6	11	0.9	-1.25	
10	4.2	19/11/2018	16:09	6.75	26.7	240	0.6	-2.85	2x240v lines
11	4.3	19/11/2018	16:10	7.73	26.7	stay	0	-1.27	
12	4.5	19/11/2018	16:12	5.86	26.7	240	0.6	-3.74	
13	4.7	19/11/2018	16:13	6.23	27.1	240	0.6	-3.37	
14	4.7	19/11/2018	16:13	6.78	27.1	stay	0	-2.22	
15	5	19/11/2018	16:15	7.43	27.1	415	0.6	-2.17	non-insulated 3 phase
16	5.4	19/11/2018	16:17	6.76	27.3	11	0.9	-3.14	Also a 240v line approx 3m below, unable to measure.

Chainage	Date	Time	Height measured (m)	Temp (deg C)	Powerline type (KV)	Clearance required	Final Clearance	Comments
0	14/11/2018	13:23	9.18	28.3	33	0.9	-0.72	check voltage
0.4	14/11/2018	13:26	6.67	28.5	240	0.6	-2.93	
1.0	14/11/2018	13:29	9.72	28.6	11	0.9	-0.18	
1.3	14/11/2018	13:37	7.55	28.6	stay	0	-1.45	
2.7	14/11/2018	13:45	7.9	29.1	11	0.9	-2	
4.7	14/11/2018	14:00	7.41	29.1	stay	0	-1.59	
5	14/11/2018	14:02	5	29.1	240	0.6	-4.6	low voltage, insulated, <6m. Unable to measure
6.7	14/11/2018	14:15	6.38	29.1	stay	0	-2.62	
6.7	14/11/2018	14:15	7.38	29.2	stay	0	-1.62	
6.8	14/11/2018	14:18	6.53	29.3	stay	0	-2.47	
7.3	14/11/2018	14:20	7.38	29.3	stay	0	-1.62	
7.7	14/11/2018	14:27	15	29.1	11	0.9	5.1	>15m -Unable to measure
7.9	14/11/2018	14:27	12.25	29.1	11	0.9	2.35	



## **Attachment F**

### **Route Overview and Photos – Constraints and Layovers**

#### **Broke Route**

#### **Ravensworth Relocation**



Constraint 1





Constraint 2



Constraint 3







Constraint 4 and Park Place 2



Park Place 2

Constraint 5











Constraint 6 and Park Place 4



Park Place 4





Constraints 7 and 8







Constraint 9



Constraint 10









Constraint 11



Park Place 5







Constraint 12





Constraint 13







Park Place 6



Constraint 14





Constraint 15







Constraint 16



Park Place 7



Park Place 7



Park Place 8







Constraint 17









Park Place 9



Park Place 10





Park Place 11 (LHS of Highway)



Park Place 11 (RHS of Highway)







Constraint 20





Park Place 12



Park Place 13







Constraint 21



Propose to fill in this corner to avoid traversing of intersection and reduce slope





Constraint 22







Park Place 14



Constraint 23





Constraint 24



Constraint 24 – creek crossing alternative









Constraint 28





## Attachment G

### Route timing breakdown – All Routes

#### Ravensworth Relocation



## Summary – All Routes



Timing and Cost Overview for Relocation on Selected Routes - Ravensworth Homestead Complex

Rev A - MIM - 22/11/18

	time (hrs)		time (days) based on 8 hr day	no. move convoys	comments	from		to		time (hrs)		time (days) based on 8 hr day
	Section											
Broke	total general travel (road only)		12.99			Hebden Rd	Homestead	Hebden Rd/Hwy int		11.18		
	total mine road 1		4.17		moving through joint owned mine	Highway	Hebden Rd/Hwy int	Lemington Rd int		14.48		
	total mine road 2		1.60		moving through Glencore Bulga mine	Lemington rd	Lemington Rd int	mine entrance		9.96		
	total difficult int		64.50		consists of intersections, difficult road geometry and creek crossings	Mine Haul Rd	mine entrance, lemington Rd	mine exit - Comleroi Rd		4.17		
	total parking checks		8.50		assumes 17 checks on route - 3 sections to be checked each time (10 min check per section)	Comleroi to Golden Highway	mine exit - Comleroi Rd	Golden Highway (adj rail bridge)		16.16		
	total hours on route		91.75			Golden Highway	Golden Highway (adj rail bridge)	Putty Rd slip lane - Mt Thorley		7.31		
	contingency		10%			Putty rd to Paynes crossing rd	Putty Rd slip lane - Mt Thorley	Paynes crossing int		6.42		
	total time per move		100.93	4		Paynes crossing rd pre mine	Paynes crossing int	Bulga Mine entrance		6.25		
	Relocation Timing and Cost		12.62	52		Mine Haul Rd	Bulga Mine entrance	Bulga Mine exit		1.60		
						Paynes crossing rd post mine	Bulga Mine exit	Broke		14.24		
						contingency				91.75		
						10%				9.18		
total time per move						contingency				100.93	12.62	

Clydesdale	
total general travel (road only)	
total mine road 1	8.30
total difficult int	0.82
total parking checks	6.00
total hours on route	1.50
contingency	16.61
10%	1.66
total time per move	18.28
	2.28
	12
assumes moving via mine road to site office and new creek crossing limited to one corner - estimated 2 hrs per section - remainder designed out as not negotiable assumes 3 checks on route - 3 sections to be checked each time (10 min check per section)	

Picton Lane	
total general travel (road only)	
total mine road 1	0.82
total difficult int	0.82
total parking checks	0.00
total hours on route	1.00
contingency	2.64
10%	0.26
total time per move	2.90
	0.36
	2
assumes moving via mine road to site office and new creek crossing none - issues to be removed by site work assumes 2 checks on route - 2 buildings to be checked each time (15 min check per building)	

Convoy calc		as a whole (Picton Lane)	sections (clydsdale and Broke)
main house		1	3
kitchen		1	2
Outbuildin g 2 – quarters and barn			
Outbuildin g 1 – stable	1	1	4
toilet block			
cottage	1	1	1
total sections		6	13
assume 2 trips, 2 per trip assume 4 trips 3 per trip			











**Broke Route Details**

Broke Route - General timing (Utilising WPS data for route grades)

Section					Speed km/hr	Time on section hrs
HOMESTEAD SITE TO HWY INTERSECTION - HEBDEN RD - PART 1						
SECTION 2A HEBDEN ROAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
	Grades < 4.6 %					
N/A		1234	0	1234	4.00	0.31
Total						
1234						
HOMESTEAD SITE TO HWY INTERSECTION - HEBDEN RD - PART 1						
SECTION 2B HEBDEN ROAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	relevant section+H105:L124	3502	0	3502	4.00	0.88
Total						
3502						
INT WITH HEBDEN RD TO MINE 1 ENTRANCE VIA NEW ENGLAND HIGHWAY-LEMINGTON ROAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	Grades < 4.6 %	600	13150	13750	4.00	0.15
		1100	11850	12950	4.00	0.28
		5450	5900	11350	4.00	1.36
		5750	0	5750	4.00	1.44
Total						
12900						
	Centre Line grade 4.6-5.0%	500	11350	11850	4.00	0.13
		200	12950	13150	4.00	0.05
		150	5750	5900	4.00	0.04
850						
13750						
total						
						4.62
OUT OF MINE 1 ONTO COMELEROI RD TO MINE 2 ENTRANCE ON PAYNES CROSSING RD						
SECTION 3 COMLEROI ROAD-PAYNES CROSSING ROAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	Grades < 4.6 %	4980	15200	20180	4.00	1.25

### Broke Route - General timing (Utilising WPS data for route grades)

Section				Speed km/hr	Time on section hrs
	8740	6320	15060	4.00	2.19
	456	5860	6316	4.00	0.11
	3760	2020	5780	4.00	0.94
	1840	0	1840	4.00	0.46
Total	19776				
 Centre Line grade 4.6-5.0%	140	15060	15200	4.00	0.04
	80	5780	5860	4.00	0.02
Total	220				
 Centre Line grade 5.0-6.0%	100	1840	1940	0.67	0.15
Total	100				
 Centre Line grade >6.0%	80	1940	2020	0.17	0.48
Total	80				
total					5.63

OUT OF MINE 2 ONTO PAYNES CROSSING RD TO NORTH OF MONKEY FACE CREEK						
FROM MINE ROAD DATA - FROM GUY						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	Grades < 4.6 %	460	3000	3460	4.00	0.12
		220	2780	3000	4.00	0.06
		1480	840	2320	4.00	0.37
		0			4.00	0.00
		0			4.00	0.00
Total		2160				
	Centre Line grade 4.6-5.0%	300	2320	2620	4.00	0.08
		120	720	840	4.00	0.03
Total		420				
	Centre Line grade 5.0-6.0%	160	2620	2780	0.67	0.24
		690	30	720	0.67	1.04
Total		850				
	Centre Line grade >6.0%				0.17	0.00
Total		0				
					total	1.92

NORTH OF MONKEY FACE CREEK THROUGH TO BROKE						
Section 4						
Survey	Longitudinal grade (%)	Length	Chainage	Chainage		
Colour		(m)	start (m)	finish (m)		
N/A	Grades < 4.6 %	3280	7000	10280	4	0.82
total						<b>0.82</b>

[illegible]

Broke Route - Parking Layover Allowance

No	Chainage	Constraint Type	Details	Camber/c crossfall	Slope	additional time each building section (hrs)	additional time three building section (hrs)
P1	1850	Parking place	Provides parking area prior to constraint 1			0.17	0.50
P2	3250	Parking place	Provides parking area after creek crossing and prior to railway. Note could also park between constraint 2 and 3 prior to crossing road if necessary - this would need little work			0.17	0.50
P3	3800	Parking place	Provides parking area directly after the hebdan rd, highway intersection - this is a critical and busy intersection and a parking place is necessary directly after it			0.17	0.50
P4	5850	Parking place	provided to enable parking once left the highway. Note it needs to be determined whether the buildings will be taken individually down the highway or in convoy - given the criticality of disruptions on this road			0.17	0.50
P	around 9200	Parking place if required	may be prudent to allow for an additional parking place near to constraint 7. At this stage this not required and given the width of the road unforeseen stops may be catered for with traffic management activities			0.17	0.50
P5	1150	Parking place	provides parking prior to constraint 12 to enable one building to traverse at a time			0.17	0.50
P6	1750	Parking place	provides parking post constraint 12 and 13			0.17	0.50
P	5000-5550	Parking place if required	may be prudent to allow for an additional parking place prior to constraint 14 and 15.			0.17	0.50
P7	6340	Parking place	provides parking post constraint 14 and 15			0.17	0.50
P8	7080	Parking place	provides parking post constraint 16 (slope) if necessary			0.17	0.50
P9	13520	Parking place	provides parking place at top of slip road			0.17	0.50
P10	14100	Parking place	provided as a precaution on Golden Highway			0.17	0.50
P11	15760	Parking place	choice of two - provided prior to traversing of intersection of Paynes Crossing rd - a difficult turn			0.17	0.50
P12	16180	Parking place	prior to rail bridge - closest logical spot after constraint 20			0.17	0.50



**Broke Route - Parking Layover Allowance**

[illegible]



## Clydesdale Route Details

Clydesdale Route - General timing (Utilising WPS data for route grades)

Section					Speed	Time on section
					km/hr	hrs
CLYDSDALE ROUTE FROM HOMESTEAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	Grades < 4.6 %	167	0	167	4.00	0.04
		50	300	350	4.00	0.01
		50	500	550	4.00	0.01
		999	675	1674	4.00	0.25
		68	1700	1768	4.00	0.02
		1360	1775	3134	4.00	0.34
		250	3250	3500	4.00	0.06
		223	3677	3900	4.00	0.06
		713	4000	4713	4.00	0.18
		100	4850	4950	4.00	0.03
		52	5114	5165	4.00	0.01
		200	5300	5500	4.00	0.05
		50	5550	5600	4.00	0.01
		213	5724	5937	4.00	0.05
		823	6127	6950	4.00	0.21
		949	7127	8076	4.00	0.24
		446	8176	8622	4.00	0.11
		2566	8650	11216	4.00	0.64
		9277				
	Centre Line grade 4.6-5.0%	37	4713	4750	4.00	0.01
		50	4800	4850	4.00	0.01
		50	5250	5300	4.00	0.01
		50	5500	5550	4.00	0.01
		35	5937	5972	4.00	0.01
		177	6950	7127	4.00	0.04
		15	8162	8176	4.00	0.00
		414				
	Centre Line grade 5.0-6.0%	18	167	185	0.67	0.03
		18	350	368	0.67	0.03
		13	487	500	0.67	0.02

Clydesdale Route - General timing (Utilising WPS data for route grades)

Section					Speed	Time on section
					km/hr	hrs
	26	1674	1700		0.67	0.04
	7	1768	1775		0.67	0.01
	100	3900	4000		0.67	0.15
	50	4750	4800		0.67	0.08
	14	5100	5114		0.67	0.02
	17	5165	5182		0.67	0.02
	15	5235	5250		0.67	0.02
	155	5972	6127		0.67	0.23
	85	8076	8162		0.67	0.13
	28	8622	8650		0.67	0.04
Total		546				
Centre Line grade >6.0%	115	185	300		0.17	0.69
	119	368	487		0.17	0.71
	125	550	675		0.17	0.75
	116	3134	3250		0.17	0.69
	177	3500	3677		0.17	1.06
	150	4950	5100		0.17	0.90
	53	5182	5235		0.17	0.32
	124	5600	5724		0.17	0.74
Total		979				
total						9.11

## Clydesdale Route - Additional Constraint Allowance

Chainage	Constraint Type	Details	Camber	Slope	additional time each building section (hrs)	additional time three building section (hrs)
11150 - 8400	existing road to be bypassed using existing haul road and proposed new cr				0	0
8400	slope	around corner	119	27	0	0
7900 - 7100	road width	widen eastern side of road by approx 3 m to avoid road side powerlines running parallel to and on western side of the road				0
7050		around corner	96	56		0
			119	55		0
6200	Culvert					0
6750			112	42		0
5150	Culvert					0
5000	Steep hill	hill with crossfall + change of grade at the crest	127	142		0
3650	hill		125	94		0
2400	bend	tight LH bend - will take time to navigate	?	?	2	6
2175	bend	tight RH bend - will take time to navigate	142	22		0
2100	culvert	road narrows				0



Clydesdale Route - Additional Constraint Allowance

Chainage	Constraint Type	Details	Camber	Slope	additional time each building section (hrs)	additional time three building section (hrs)
1725	Bridge	road narrows				0
475	Bend and slope	bend and slope	135	156		0
					2.00	6.00



Picton’s Lane Details

Picton's Lane Route - General timing (Utilising WPS data for route grades)

Section					Speed	Time on section
					km/hr	hrs
PICKTON LANE ROUTE FROM HOMESTEAD						
Survey Colour	Longitudinal grade (%)	Length (m)	Chainage start (m)	Chainage finish (m)		
N/A	Grades < 4.6 % pictons lane length	1900			4	0.48
		949	7127	8076	4	0.24
		446	8176	8622	4	0.11
		2566	8650	11216	4	0.64
		5860				
	Centre Line grade 4.6-5.0%	15	8162	8176	4	0.00
		15				
	Centre Line grade 5.0-6.0%	85	8076	8162	0.67	0.13
		28	8622	8650	0.67	0.04
	Total	114				
		5989	total			1.64

# Appendix C – Recipient Site Assessment

# LUCAS STAPLETON JOHNSON



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## **Ravensworth Homestead, Ravensworth, NSW**

### **PROPOSED RELOCATION OF HOMESTEAD BUILDINGS – ASSESSMENT OF POTENTIAL RECIPIENT SITES**

Prepared for: Glendell Tenements Pty Ltd

Revised: 29<sup>th</sup> October 2019

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#### **INTRODUCTION**

This report is an assessment of the suitability of a number of locations that have been mooted at as the possible recipient site for the relocated Ravensworth Homestead Buildings. The report has been prepared by Ian Stapleton of this office (see attached CV) with inputs from landscape consultants, Colleen Morris and Geoffrey Britton (also see attached CVs).

Site visits to the locations included were made by Ian Stapleton, Colleen Morris and Geoffrey Britton on 17<sup>th</sup> October 2018 and 21<sup>st</sup> February 2019. Access to the sites was arranged by Shane Scott of Glencore Pty Ltd who also provided aerial photography, mapping and preliminary research on planning and other constraints (see Attachments 1 & 2).

Some mooted sites have been the result of submissions received to an invitation by Glencore Pty Ltd to house the buildings on other properties in the region. These have been summarised in Attachment 2.

#### **APPROPRIATE CONSIDERATIONS**

Prior to and during site visits to the potential recipient sites this firm and the other consultants have considered and developed a list of attributes which a recipient site should possess in order to be suitable. These attributes include a consideration of the aesthetics of the location, the ability of the place to provide historic verisimilitude (the appearance of authenticity) to the existing site, the avoidance of impact on other heritage places, the ability of the place to allow interpretation of significance, the future use and viability of the place and the logistics of relocating the buildings to that place (see Attachment 3).

Of the above, this firm and the other consultants consider that historic verisimilitude and the suitability of the place for interpretation are the key desirable attributes for the new configuration of buildings and landscape to be considered a satisfactory mitigation of the heritage impact and therefore approvable by the consent authority.

This view springs from the underlying principle of heritage conservation that places should have an appropriate setting.

The Australian ICOMOS *Burra Charter*, which is the accepted conservation philosophy for heritage places in Australia includes the following article:

*Article 8 – Conservation requires the retention of an appropriate setting. This includes retention of visual and sensory setting as well as the retention of spiritual and other cultural relationships that contribute to the cultural value of the place.*

*New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.*

Although not straight forward, as in this case the proposal is to relocate the buildings, this article, in our view, remains largely true for any new site for the buildings and associated landscape features. In our view, although in a new setting, the visual and sensory setting as well as spiritual and other cultural relationships will still be important in giving meaning to the relocated buildings and new construction, demolition, intrusions and other changes that may be needed for viability or other reasons should not adversely impact on any cultural values that are able to be retained after relocation. This is confirmed by another Burra Charter article:

*Article 9.3 – If any building, work or other element is moved, it should be moved to an appropriate location and given an appropriate use. Such action should not be to the detriment of any place of cultural significance.*

Accordingly, in our view, a pastoral outlook, not cluttered with other development, a similar immediate landform under the buildings and a similar land form/visual curtilage around the buildings, are the key attributes to give the relocated buildings a dignified locality and the capability of immediate and future historical interpretation.

As raised by the Ravensworth Homestead Advisory Committee, viability is also essential. There should be a high probability that, in the medium and long term (and hopefully immediately), the new arrangement will have an appropriate use and that the new use is economically viable in



terms of income to the owners/occupiers and the ability to maintain the significant buildings and other features.

The Burra Charter also includes:

Article 7.1 *Where the use of the place is of cultural significance it should be retained.*

Article 7.2 *A place should have a compatible use.*

The Burra Chapter also includes many other salient articles including:

Article 15.1 *Change may be necessary to retain cultural significance, but is undesirable where it reduces cultural significance. The amount of change to a place and its use should be guided by the cultural significance of the place and its appropriate interpretation.*

In this case, where a great deal of change is proposed, the amount of change to the character of the setting of the place and its ability for appropriate interpretation can, never-the-less, be minimised by the appropriate selection of the new site with pastoral character and controllable visual catchment.

For a discussion about the philosophy of the proposal to relocate the buildings, see elsewhere.

## **ASSESSMENT OF MOOTED RECIPIENT SITES**

For further details of these sites see Attachment 2. For the proposed use of each site see summary at Attachment 3.

### Corunna Station Site 1

This is a site off Hermitage Road, Belford, NSW, currently zoned RU1: Primary Production.

The proposal is for uses yet to be decided.

The land falls appropriately to the south and there is an attractive billabong in front. There is the possibility of an approach from the west. The property appears of reasonable fertility.

The disadvantages of this site are that there is another possible heritage place (residence) immediately to the west and that the current owners do not control much of the visual catchment to the south. The owner also does not control the wooded land to the east and north and the main NSW northern rail line and highway are near and visible to the north.

### Corunna Station Site 2

This site is adjacent to Hermitage Road, Belford, NSW, and is currently zoned RU1: Primary Production. The proposal is for uses yet to be decided.

The land falls appropriately to the south west and there is a possibility of a vehicle approach from the west. However, Heritage Road is very close. There is the possibility of a dam to the south. The land appears to be of reasonable fertility. However the owners do not control appropriately the development on the land nearby to the south.

#### Hunter Valley Resort Site 1

This is a location off Heritage Road, Pokolbin, NSW, and is currently zoned RU4: Primary Production (Small Lots). The proposal is generally for hotel reception, dining, cellar door and function centre uses with the Men's Quarters used to showcase indigenous heritage.

The land falls quite steeply the wrong way and there is little similarity to the landform of the existing site. There is no opportunity for a dam or an approach from the west. Whilst the land fertility appears reasonable, the owners do not control development within the visual catchment.

#### Hunter Valley Resort Site 2

This location is adjacent the current buildings at this resort which is zoned RU4: Primary Production (Small Lots). The proposal is for used as above.

The land falls suitability to the south but the site is very cramped by other development. There is the possibility of a western approach but probably no room for a dam in front of the house. The land is reasonably fertile, but the current owners do not control development on the visual catchment to the south of the boundary of which is very close.

#### Broke, NSW, Site 1

This location is adjacent the general store in Broke, NSW, township and is currently zoned RE1: Public Recreation. The proposal is to incorporate the buildings into a village town centre.

The site is level and appears to be flood prone. There is no opportunity for a western approach or dam in front of the house. Whilst of reasonable fertility, there is no similarity with the existing visual catchment. At this location the property would become part of the Broke village. Planning approval/public opinion may be difficult for this site as it is recreational land and contains a war memorial and the current town fire station.

### Broke, NSW, Site 2

This location is also adjacent the Broke township and is zoned RE1: Public Recreation. The proposal is as described above.

Comments are as for Broke Site 1. Although not involving the fire station and war memorial, this site appears to be used for public camping.

### Broke, NSW, Site 3

This location is across the Wollombi River on the creek flat near the Broke, NSW, township and is currently zoned RE1 Public Recreation. The proposed use is yet to be decided on.

The land is level and appears to be flood prone and, due to the restricted site, there will be no opportunity for a western approach or dam in front of the house. The land fertility appears good, however, Milbrodale Road would be very close at the rear and the owner of the property, which appears to be Crown Land, does not control development that could occur close by within the visual catchment to the south and west.

### Broke, NSW, Site 4

This location is a town block within Broke, NSW, township facing Wollombi Road and zoned R5: Large Lot Residential (or R1 General Residential)? The site contains another heritage item, the Maria Immaculate RC Church, (Singleton, Heritage Item No I6). Whilst an approach from the western side is possible, the site is a constrained township lot with no possibility of a dam in front of the house. The land appears to be of reasonable fertility but development all round is not within the control of the current owners nor are we sure that the current owners would agree to the use of this site or having even been consulted.

### Clydesdale, Hebden Site 1

This location is on a rural property adjacent Scrumlo Road, Hebden, NSW, currently zoned RU1: Primary Production. The proposal is for residences, function centre and gallery.

The land falls too steeply to the west to simulate the existing. The place has a pastoral setting and aesthetic appeal and there is a possibility of a dam in front of the house. The land would be of reasonable fertility. Vehicle approach is from the east. The current owners have much better control of the visual curtilage than the above sites. However, land to the east and south across

Bowman's Creek is outside their control. Existing development to the south is a little unsightly but could be improved by screening.

Glencore Site 1 (Bowman's Creek 1) (Subsequently called Ravensworth Farm)

This location is on Ravensworth land to the west of Hebden Road overlooking for flood plain of Bowman's Creek and is zoned RU1: Primary Production. The proposal is to use the buildings initially as company regional offices and a staff training facility but eventually (if nothing else is thought better at that time) as a farm including Glencore rural lands and put up for sale with suitable controls.

The land falls suitably to the south and there is a possibility of a dam in front of the house. The current vehicle approach is from the east. The location is near an old cottage and sheds of some heritage interest. Whilst the land fertility is probably good and Glencore controls much of the land in the visual catchment, it is proposed to relocate Hebden Road running across the flats the front of this site and to locate Glencore's new workshops facility (MIA), approved under the same application, on the flat in front of the house and this would have a life of some twenty years.

With a pastoral outlook and the potential to screen and revegetate the land on the perimeter of the visual catchment, the site offers good verisimilitude to the existing place, whilst having reasonable access to services and public visitation.

Glencore Site (Bowman's Creek 2 & Bowman's Creek 3)

These locations are on Ravensworth land to the west of Hebden Road, adjacent to Bowman's Creek and are zoned RU1: Primary Production. The immediate proposed use is unclear. The eventual use would be as a farm attached to Glencore rural lands and put up for sale at the conclusion of mining with suitable controls.

The site could be engineered to fall to the north-west and there is the possibility of dams constructed in front of the house. Because of extensive plantings there is no pastoral outlook to the south. However Bowman's Creek 3 site has a very attractive pastoral outlook to the north-west.

Both sites suffer from the proximity of mining emplacements located on the other side of Bowman's Creek to the west. However, the fertility of the land is moderately good and permanent water might be brought from the MIA located to the south.

The sites also suffer from a sense of isolation more apparent than real because the proposed rerouted Hebden Road will be nearby to the south.

#### Glencore Site (Picton's Lane 1)

This location is adjacent Picton's Lane to north of the current homestead site located on the Ravensworth property and is currently zoned RU1: Primary Production. The proposal is for farm use possibly immediately (as the site is just outside the non-habitable zone regarding mine noise and dust) attached to Glencore rural lands and put up for sale with suitable controls.

The land falls suitably to the south west, slightly more steeply than the current site and there is a possibility of a dam in front of the house and an approach from the west. There is a pastoral outlook and very little intrusion on the visual catchment. The current owner, Glencore, controls most of the visual catchment. However, the fertility of the land is probably poor, and the availability of permanent water is very problematical.

#### Glencore Site (Picton's Lane 2)

This location is adjacent Picton's Lane to the north of the Picton's Lane 1 site but still on Ravensworth and land. The proposal is as above but farm use is probably not available until close of mining.

The land falls appropriately to the south west and there is a possibility of a dam in front of the house and an approach from the west. The outlook is slightly more enclosed than the Picton's Lane 1 site but retains a pastoral outlook and little visual intrusion. However, the land is probably of low fertility and there are serious doubts about a permanent water supply.

#### Glencore Site (Yorks Creek 1)

This site is located to the north of the current Bayswater North (mining) Pit. The land is a wide flat adjacent to Yorks Creek. The setting could be called almost 'grand' in its scale and character and a homestead located there would feel very comfortably sited. There is a hill of mining overburden to the east but this has a very naturalistic appearance.

The site is adjacent the Yorks Creek Voluntary Conservation Area (Aboriginal related).

Whilst a dam could easily be constructed in front of the house, the driveway from Hebden Road would be very long, and would have to cross Yorks Creek and the Conservation Area.

Alternatively an approach could be made from Picton's Lane.

The place feels quite isolated, and would be well 'out of the way' and, like the Picton's Lane sites, probably lacks permanent water.

#### Ben Ean Site, Pokolbin, NSW

This location is adjacent MacDonald's Road, Pokolbin, near the Linderman's cellar door complex. The proposed use would be reception/function/historical display associated with a new proposed hotel/motel built further to the west and mostly out of sight. The current zoning is RU4: Primary Production (Small Lots).

The site is presently covered with terraced grapevines. The land falls steeply to the south and any approach from the west or dam in front of the house would have to be highly contrived.

Whilst the land would be of good fertility, and any outlook is very attractive, the site is part of a developing village precinct and the current owners do not control development within the majority of visual catchment.

### **CONCLUSIONS**

Considering the desirable attributes discussed above, the following mooted sites are not considered by this firm to be suitable to receive the relocated Ravensworth buildings:

Corunna Station Site 1

Corunna Station Site 2

Hunter Valley Resort Site 1

Hunter Valley Resort Site 2

Broke Site 1

Broke Site 2

Broke Site 3

Broke Site 4

Glencore Sites 2 & 3

Ben Ean Site



In most cases the reasons for this is that the immediate land form is of unsuitable gradient and/or the location does not resemble in any way the current site of the homestead buildings and/or the current owner does not control development within the visual catchment.

The following sites are considered marginally suitable for the relocation of the Ravensworth buildings:

Clydesdale, Hebden Site 1

As discussed above this has an attractive rural, pastoral setting. However the gradient of the immediate land and proposed approach are not satisfactory. Other development nearby is a visual intrusion and some of the visual catchment is not controlled by the owner.

The following mooted sites are considered acceptable in terms of their site attributes (verisimilitude).

Glencore Site (Bowman's Creek 1, Ravensworth Farm)

Glencore Site (Picton's Lane 1)

Glencore Site (Picton's Lane 2)

Glencore Site (Yorks Creek 1)

The attributes of these include the gradient of the immediate site, the possibility of a western approach and a dam in front of the house and good control of the visual catchment. Although not all on fertile land, better land, nearby and owned by Glencore, could be attached.

Of these, the Picton's Lane sites and Yorks Creek 1 all appear to suffer practical problems of remoteness for services (including permanent water) and the lack of good public visibility and access. We are advised, however, that Picton's Lane 1 and Yorks Creek 1 have the advantage of being just outside the non-habitable zone (dust and noise) of the proposed mine.

We are further advised that permanent water can be provided to the Bowman's Creek 1 (Ravensworth Farm) site. This together with the nearer proximity to the rerouted Hebden Rd, and the New England Highway for public visibility and visitation make this site the most attractive of the mooted possible sites.

The proposal to use the buildings as regional mining offices and training facility, together with the proposal to remove the MIA at closure of mining (in approx. 20 years) in order to repurpose the buildings and landscape as a farm homestead, make the Ravensworth Farm site the recommended choice of sites for the relocated Ravensworth Homestead Complex if the decision is made to move it.

We are advised also that relocation to a site near the present location can be achieved by moving the buildings in intact sections (Intact Move) and this would be done on a specially constructed road (see Intact Move Methodology, Appendix 23(g) of the EIS). This would be another very good reason to select this site rather than one remote from the present location that might require dismantling and rebuilding of the buildings in order to relocate them.

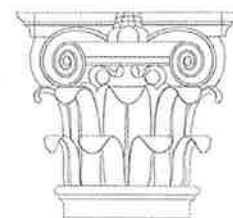
A handwritten signature in black ink, appearing to read 'Ian', followed by a long, sweeping horizontal stroke.

Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture

Encls    CVs for I Stapleton, C Morris, G Britton  
          Attachment 1  
          Attachment 2  
          Attachment 3

Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law, F.R.A.I.A.  
Registered Architect No. 4032 Nominated Architect  
Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728  
*Associate:*  
Kate Denny, B.A., M.Herit. Cons.

**LUCAS  
STAPLETON  
JOHNSON**



LSJ Heritage Planning & Architecture

## CURRICULUM VITAE

### IAN STAPLETON

Nominated Architect for Lucas Stapleton Johnson & Partners Pty Ltd

B.Sc.(Arch.), B.Arch., Grad. Dip. Env. Law, Sydney, F.R.A.I.A.

Born: Orange, New South Wales, 1951

Educated : Wolaroi College (now Kinross), Orange, NSW (Dux of School, 1969)

University of Sydney graduating:

B.Sc.(Arch.) with 1st class honours in 1974

B.Arch. with 1st class honours in 1976

#### Personal Awards include:

Arthur Baldwinson Memorial Prize (Australian architectural history), 1973

Board of Architects Prize, 1975

RAIA (NSW) Adrian Ashton Award for Architectural Journalism, 1983

National Trust of Australia (NSW), Voluntary Service Medallion, 2001

#### Employment History:

Employed in Sydney in Government Architect's Office 1976-77

Employed by Fisher Lucas, Architects 1977 - 1981, Associate Partner 1979

Associate Partner Clive Lucas Pty Ltd 1981 - 1983

Director Clive Lucas & Partners Pty Ltd 1983 - 1988

Director Clive Lucas, Stapleton & Partners Pty Ltd April 1988 to June 2016

Director Lucas Stapleton Johnson & Partners Pty Ltd July 2016 to date

#### Registrations & Memberships:

Registered as an architect in NSW 16th October 1979 and enrolled in the Division of Chartered Architects on 1st December 1983, Reg. No.4032

Registered as an architect in Tasmania and Victoria, Reg. No. 4219

Registered as an architect in Queensland, Reg. No. 4109

Fellow of the Royal Australian Institute of Architects, member No.646

Life Member of National Trust of Australia (NSW)

Member of Australia ICOMOS

#### Architectural conservation projects include:

- Glenlee House, Menangle Park, NSW (1823)
- Housing at Woolloomooloo, Sydney (1850s-1910s)
- Willandra, Ryde, Sydney (1840s)
- Junior Medical Officer's House, Port Arthur, Tasmania (1840s)
- Pitt Street (Congregational) Church, Sydney (1841)
- Victoria Barracks, Paddington (1840s-1920s)
- Commandant's Hs., Port Arthur, Tas. (1830s-60s)
- Boronia Restaurant, Mosman, Sydney (1886)
- The Hermitage, The Oaks, NSW (1841)
- Kirribilli House, Sydney (1856), Stage I
- Her Majesty's Theatre, Ballarat, Victoria (1874-1905)

RAIA Merit Award 1979

RAIA Merit Award 1980

RAIA Merit Award 1981

RAIA Merit Award & L.

Macquarie Award 1983

RAIA Merit Award 1984

RAIA Merit Award 1985

RAIA Merit Award 1986

RAIA Merit Award 1987

- Minter Ellison Building (old MLC Building), Sydney (1938) (foyers)	BOMA Certificate of Merit Award, 1991
- The Edward Winter House, Telopea, Sydney (Walter Griffin, 1935)	
- Blackdown Homestead, Bathurst, NSW (1823)	
- The Swan Brewery, Perth, WA (1879) (quality control)	
- The Merchant's House, The Rocks, Sydney (1848)	
- The Palmhouse, Royal Botanic Gardens, Sydney (1912)	
- Sydney GPO, No.1 Martin Place, Sydney (from 1864)	State MBA Award, Entertainment/Hospitality, 2000; PCA (NSW) Rider Hunt Award 2001; API Development & Heritage Awards, 2001
- Wyoming, Balmain, Sydney (1881)	
- Woolloomooloo Finger Wharf, Sydney (1911-15)	Waterfront Centre USA, Annual Top Honor, Excellence on the Waterfront, 2000; State MBA, Excellence in Construction Award, 2001
- Macleay Museum, Sydney (1887) (exterior works)	
- St. John's, Darlinghurst (1858 & 1886) (stone spire conservation)	National Trust of Australia (NSW) Heritage Award, 2002
- Wesley College, University of Sydney (1916), fire safety works	
- The Women's College, University of Sydney (1892, John Sulman)	
- Walsh Bay Redevelopment (1900-1920)	RAIA Lloyd Rees Award, 2005 RAIA Walter Burley Griffin Award, 2005
- Four historic glasshouses, Royal Botanic Gardens, Sydney (1898 – 1908)	
- Muritai, Cremorne, Sydney (1909, Waterhouse and Lake)	
- Redstone (Winter House), Dundas, Sydney (1935, Walter Griffin)	
- The Briars, Woolstonecraft (1914, Donald Esplin)	
- Vet Round House, University of Sydney (1920, Leslie Wilkinson)	National Trust of Australia (NSW) Conservation Award, 2012
- Restoration and rejuvenation of Sir Donald Bradman's Boyhood Home, Bowral NSW (1890)	National Trust of Australia (NSW) Joint Top Conservation Award, 2013 Wingecarribee Shire Council Heritage Award (Overall Winner), 2013
- Bronte House (c.1845, Mortimer Lewis)	AIA Architecture Award (Conservation), 2015
- Restoration Waverley Cemetery gates	National Trust of Australia (NSW), Highly Commended, 2018
- Restoration of Junior School Administration Building, St Catherine's School, Waverley	Waverley Heritage & Design Awards – shared Commendation, 2019
- Restoration of Roseneath, Parramatta (c.1837)	
- Restoration and adaptation of Headingley, Woollahra (1939, Leslie Wilkinson)	
<b>New construction projects include:</b>	
- Bennett Residence, Bayview, NSW (1999)	State and National MBA House of the Year, Open Category, 2000

Currently heritage architect for Figtree House, Hunters Hill (1830s) and Ravensworth, Singleton, NSW (c.1830).

**Special Projects/Appointments include:**

- Consultant to the Heritage Council of Western Australia for the brokering of the Heritage Agreement for the Swan Brewery, Perth, 1993-4
- Consultant to the NSW Heritage Office for statutory approvals for the Parramatta Rail Link Project, 2003.
- Consultant to Heritage Office of Queensland for Pioneer Council Chambers, Mackay (1935, Harold Brown, architect), 2008 and 2010.
- Reference committee to Sydney City Council for Commonwealth Bank Building (Money Box Bank), Sydney, 2008 and 2010.
- Consultant to University of Sydney for refurbishment of the Fisher Library, 2012-13

**Conservation Reports include:**

- Mulgoa Valley, NSW
- Victoria Barracks, Sydney
- Kirribilli House, Sydney
- Kingston and Arthur's Vale Historic Area (KAVHA), Norfolk Island
- The Treaty House, Waitangi, New Zealand
- Booloominbah, University of New England, Armidale, NSW
- The Swan Brewery, Perth
- Maatsuyker Island, Barrenjoey, and 15 other Australian light stations
- Bondi Pavilion, Sydney
- Woolloomooloo Finger Wharf, Sydney
- Walsh Bay Redevelopment Area, Sydney
- The Strand Arcade, Sydney
- Macquarie Lighthouse, Sydney (updated 2018)
- Snapper Island, Sydney
- Macleay Museum, University of Sydney
- Rose Cottage, Wilberforce, NSW
- Assessment of 23 contemporary houses in Woollahra Municipal Council area for heritage listing, Fisher Library, University of Sydney
- Cabarita Federation Pavilion, Cabarita, NSW
- University of Sydney, Camperdown and Darlington Campuses
- Many houses in Millers and Dawes Point Village Precinct, Sydney
- Double Island Point, Booby Island and Goods Island Lighthouses, Queensland
- General Post Offices, Sydney and Brisbane (with Kate Denny)
- Ravensworth, Singleton, NSW (with Kate Denny)
- 24 Cranbrook Avenue, Cremorne, NSW (Edwin Orchard, 1919, with Kate Denny)
- Parramatta Opportunity Sites, 2019 (with Kate Denny)

**Heritage Impact Statements for alterations include:**

- Igloo House, Sydney (1953), Harry Seidler architect
- Brett and Wendy Whiteley House, Sydney (1908)
- Woolloomooloo Finger Wharf (1915)
- Our Lady of Mercy College, Parramatta (from 1840)
- Roseneath, Parramatta (c.1837)
- Norwood, Goulburn (c.1837)

**Expert Witness engagements include:**

- St. John's, Paddington, Sydney (from 1842), Henry Robertson and David McBeath architects, for South Sydney Council
- Joylen (Lyon & Cottier House), Balmain, Sydney (1880s), for Leichhardt Council
- Strathmore, Cremorne Point, Sydney (1915), Edwin Orchard architect, for North Sydney Council
- Villa Floridiana, Hunters Hill, Sydney (1850s), Jules Joubert, for Hunters Hill Council
- Parklands, Blackheath, NSW (1878), John Pope estate, for Chase Properties

- St Kieran's, Bellevue Hill (1905), Maurice Halligan architect, for Woollahra Municipal Council
- Forrest Hill precinct, Vic, for City of Stonnington, Victoria
- Bidura Metropolitan Remand Centre, Glebe, NSW, Edmund Blacket architect, for City of Sydney Council
- 24 Cranbrook Avenue, Cremorne, NSW (Edwin Orchard architect) for North Sydney Council

**Participations and Appointments include:**

- 1975-78, tutor in graphic communication, School of Architecture, University of Sydney.
- Since 1980, visiting lecturer at various Sydney schools of architecture and building.
- In June 1980 was participant in UNESCO ICOMOS Historic Quarters Seminar and Training Course in - Czechoslovakia (historic town conservation).
- In July 1985 participated in Attingham Summer School in the U.K. (British country houses).
- In 1988 guest lecturer for UNESCO and ICOMOS at Regional Training Seminar for Cultural Personnel in Asia and the Pacific, Tokyo, Nara and Kyoto, 8 - 21 November 1988.
- In 1992 was conference convenor for Australia ICOMOS, international committee meetings, events and conference: "Whose Cultural Values?", 14-22 November 1992.
- In 1995 was co-organiser of Australia ICOMOS, Workshop on World Heritage Criteria for Associative Cultural Landscapes, 27-29 May 1995.
- In 2000 was conference convenor for the National Trust of Australia (NSW) conference "Adaptive Re-use, Creativity and Continuity", Sydney 9-10 November 2000
- Expert Member, Waverley Council Local Planning Panel, 2013 - to date
- Expert Member, Inner West Council Local Planning Panel, 2014 - to date
- Expert Member, Strathfield Council Local Planning Panel, 2017 - to date
- Expert Member, Lane Cove Council Local Planning Panel, 2108 - to date
- Expert Member, Ryde City Council Local Planning Panel, 2018 - to date
- Expert Member, Parramatta Council Local Planning Panel, 2017 - 2018

**Publications include:**

*Architects of Australia* (Bruce Dellit & Emil Sodersten), Macmillan, 1981 (co-author)  
*The Sydney Morning Herald*, Articles on restoration and architecture, 1981 - 1990  
*How to Restore the Old Aussie House*, Flannel Flower Press, Editions: 1983, 1991 & 2008  
*Colour Schemes for Old Australian Houses*, Flannel Flower Press, 1984 (co-author)  
*More Colour Schemes for Old Australian Houses*, Flannel Flower Press, 1993 (co-author)  
*Australian House Styles*, Flannel Flower Press, Editions: 1997 and 2010 (co-author)  
*The Illustrated Burra Charter*, Australia ICOMOS, 1992, co-project manager  
*New Taxation Incentives in Australia*, International Symposium: The Heritage and Social Changes, ICOMOS Bulgaria, October 1996  
*Australian Lighthouses*, Historic Environment, Vol.12, numbers 3 & 4, 1997  
*Thumbs up for the Finger Wharf*, Sydney Morning Herald, 7th August 2000  
*Recycling Heritage - Or Re-Vitalising*, Reflections, October-January 2001  
*Edwin Roy Orchard, Architect, Rediscovered*, Reflections, May-July 2003  
Contributions to *Encyclopaedia of Australian Architecture*, Cambridge University Press (4 entries), 2008  
*Sydney GPO – Ten years on*, Architecture Bulletin, November/December 2009  
*The Veterinary Round House at the University of Sydney*, Trust News Australia, August 2013  
*Restoration of Sir Donald Bradman's Boyhood Home*, National Trust Magazine, May-June 2014  
*Housing a Legend*, Inside History, January-February 2014  
*The Trust's Early Role In Saving Bronte House*, National Trust Magazine, August-October 2016

**Professional Committee Involvements include:**

- Chairman, Historic Buildings Committee of the RAIA (NSW Chapter) 1983 - 1988
- Councillor of the RAIA (NSW Chapter), 1983 - 1988, 1990 - 1994
- Joint researcher/author and co-ordinator of the *List of 20th Century Buildings of Significance* of RAIA (NSW Chapter), 1978 - 1988
- President Australia ICOMOS (International Council on Monuments and Sites), 1992 - 1994, executive committee member 1982 - 1988, 1990 - 1995, Honorary Secretary, 1986 - 1987, Vice President 1994 - 1995
- Member Architects Advisory Committee of the National Trust of Australia (NSW), 1986 - 2008
- Member of the Technical Advisory Group on Materials Conservation of the Heritage Council of NSW, 1983 - 1993



- Member of the National Advisory Committee of the Tax Incentives for Heritage Conservation Scheme (Department of Communications and the Arts), 1995 to 1999
- Member Australia ICOMOS committee to review the *Burra Charter*, 1996 - 1999.
- Member Wingecarribee Shire Council Heritage Advisory Committee, 2011 to date.

**September 2019**

## **Colleen Morris**

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## **Curriculum Vitae**

### Professional Affiliations

- Australian Garden History Society
- committee member, National Management Committee 1996-
- Chair, Sydney and Northern NSW branch 1997-2001
- Garden History Society (UK)
- National Trust of Australia(NSW)
- Parks and Gardens Conservation Committee 1993-
- Royal Australian Historical Society, Councillor 2002-
- Member Historic Houses Trust of NSW
- Member Australiana Society

### **Current Projects**

- **Conservation Management Plan for Royal Botanic Gardens, Sydney**, Colleen Morris and Richard Aitken in association with Conybeare Morrison Partners ( in progress)
- **Conservation Management Plan Port Macquarie Former Government House Ruins** in association with Dr Rosemary Annable, Chris Marks and Margaret Betteridge (Draft)

### **Relevant Experience**

- **Spring Farm Urban Release Area, Heritage Assessment, Report for The Council of Camden** May 2002, heritage landscape component for Godden Mackay Logan
- **Conservation Management Plan for the Garden and Grounds, Rose Seidler House**, in association with Geoffrey Britton for the Historic Houses Trust of NSW (2000)
- **Additions and Amendments, Conservation Management Plan for the Garden and Grounds, Carrington Hotel**; Heritage Impact Statement for proposed Carrington Place for Blue Mountains City Council.
- **Elderslie Urban Release Area, Heritage Assessment, Report for The Council of Camden** May 2001, heritage landscape component (in association with Richard Lamb) for Godden Mackay Logan
- **The Domain, Sydney, Master Plan** heritage component with Geoffrey Britton, Dr Rosemary Annable, and Mather & Associates for the Royal Botanic Gardens & Domain Trust
- **Government House Garden and Grounds Masterplan**, in association with Richard Aitken, for the Historic Houses Trust of NSW and Government House Gardens Steering Committee (1999)

- **Conservation Plan, landscape component, 14 The Parapet, Castlecrag**, a Walter Burley Griffin house, (1998) in association with Michael Lehany.
- Expert witness, for Ku-ring-gai Council SEPP5 Development of **Craignairn, Burns Road, Wahroonga**.
- **Heritage Assessment for Katoomba and Leura Village Areas Draft LEP 2000** with Assoc-Professor R Ian Jack, Pamela Hubert and Siobhan Lavelle for Blue Mountains Council 2001
- **Colonial Landscapes of the Cumberland Plain and Camden Study**, National Trust of New South Wales (Heritage Assistance Program grant), in association with Geoffrey Britton
- **Conservation Management Plan, Blue Mountains Cemeteries** in association with Pamela Hubert, Assoc-Professor R Ian Jack and Siobhan Lavelle for Blue Mountains Council (2001-2)
- **Conservation Management Plan, landscape component, Rozelle Hospital** for Tanner & Associates (2000)
- **Conservation Management Plan, landscape component, Redleaf, Wahroonga**, in association with Barbara van den Broek, and Clive Lucas Stapleton & Partners (2000).
- **Conservation Plan for the Former Randwick Destitute Asylum, Landscape Component**, Noni Boyd project architect, Otto Cserhalmi and Partners (2000)
- **Experiment Farm, Harris Park, Landscape Masterplan**, for the National Trust of Australia (NSW) with Geoffrey Britton and Dr Robert Varman (2000).
- **Willoughby Heritage Assessment update**, subconsultant for Clive Lucas, Stapleton and Partners (2000)
- **North Parramatta Government Sites Landscape Conservation Plan**, in association with Geoffrey Britton, for Heritage Group DPWS (1998).
- **Castlereagh Cultural Landscape Study**, in association with Geoffrey Britton, for Penrith Lakes Development Corporation (1998).
- **Colonial Plants Database**, in association with botanist Tony Rodd, for Historic Houses Trust of NSW.
- **Camden Scenic and Cultural Landscape Study**, subconsultant for Lambcon Associates (1997).
- **Landscape History, Tree Inventory and Assessment Report, Old Lidcombe Hospital, Olympic Media Village**, in conjunction with Arterra Design (1997).
- Co- coordinator, Conservation Methods and Practices Course, Heritage Program, University of Sydney (1995-98), visiting lecturer 1999-

#### **Publications:**

Colleen Morris has written articles and papers for numerous journals and is a major contributor to the *Oxford Companion to Australian Gardens* (2002) She co-authored, with Trevor Howells, *Terrace Houses in Australia*, (Lansdowne Press, Sydney, 1999) and with Richard Lamb, "Cultural values in the assessment of old growth forests", for John Dargavel, (ed), *Australia's Ever-Changing Forests III*, The Australian National University, Centre for Resource and Environmental Studies, Canberra, 1997.



Photos: Water feature (after a recurrent motif of Spanish artist Antoni Tapies, 1923-2012), Garden of Health, Botanic Gardens of Adelaide, South Australia, 2011 with Tony Beattie (Sydney) & Darryl Cowie, DCG (Melbourne)

## Education & Practice

1966-1975	Piano Studies to LMusA (AMEB)
1975-1976	Music (majoring Composition with Don Banks) at Canberra School of Music, ANU Fine Art (printmaking), ANU, Canberra
1975-1978	BLArch (University of Canberra)
1979	Research, State Forests, Melbourne, Victoria + Inaugural Design Tutor, School of Design and Architecture, University of Canberra
1980-1990	Government Architect's Office, Sydney
1981-1983	Studied music composition with Moya Henderson, Sydney
1990-1995	Manager, Environmental Design Services, Sutters Architects, Sydney and Newcastle,
1995 to present	Independent design/heritage consultancy
1997	Elected as a full international member of Australia ICOMOS (affil. with UNESCO)
2003	Guest Design Tutor in urban landscape, Faculty of the Built Environment, UNSW
2010-2014	Preliminary Theology Certificate (Moore Theological College, Newtown)
2016-2019	National Capital Authority's (NCA) Estate Services Panel for Heritage Advice

## Selected Published Articles

Entries for the Oxford Companion to Australian Gdns, OUP, 2002:- *Redleaf*; *Bella Vista*; *Aeolia*; Sandgate Cemetery; Wallsend Park; 19th c. British artist Alfred Sharp; Czech urban designer Prof Vladimir Sitta; *Denbigh, Maryland & Horsley* (with Colleen Morris); and the Hordern family (with Howard Tanner)

**Journal Article** - *Colonial Cultural Landscapes of the Cumberland Plain and Camden - the Challenge to Manage a Disappearing Legacy* (with Colleen Morris) in **Locality, Vol 10 Number 2, 1999: Cultural Landscapes**, Guest Edited by Associate Professor Carol Liston, Centre for Community History, UNSW

**Joint Paper** for the 1999 Australia ICOMOS Conference *The Burra Charter in the Bush* at CB Alexander Agricultural College, Tocal, NSW in ICOMOS journal **Historic Environment**, Vol 15 Nos. 1 & 2, 2001

**Journal Article** - *Sydney University's early landscape: ET Blacket's brush with Cambridge?* in the **Australian Garden History** journal, Vol. 27 No. 1, July 2015

## Selected Awards

1978	Artist's Traineeship Grant through the Visual Arts Board of the Australia Council
1983	Selected to participate in the National Composers Workshop and Chamber work performance with the Seymour Group at the University of Sydney
	Joint Winner of a National Composers Competition through the University of Sydney Music Department (Peter Sculthorpe was to blame on this occasion)
1984	Selected to participate in the National Young Composers School with ABC Sinfonia through the Australian Music Centre
1990	Australian Heritage Award 1990: for Rookwood Necropolis Plan of Management from the Australian Council of National Trusts & 1990 Project Award for Heritage at AILA National Awards
1995	Arts Council of NSW Creative Village Design Project (1995), with architect Roger Johnson and visual artist Kris Smith, through the Australia Council & the NSW Ministry for the Arts
2000	First Prize: Mt Penang State Design Competition for permanent landscape facilities for the NSW Festival Development Corporation with Anton James Design, Craig Burton and Mather & Associates (project team)
2004	Merit Award for Mt Penang Parklands from AILA to project team
2008	National Trust Award for the Taronga Zoo LMP with Design 5 Architects & Dr Ben Wallace
2011 / 2012	National Trust Award for the Exeter Farm restoration project with Design 5 Architects, Historic Houses Trust of NSW and Sydney Restoration Company; also 2012 Architects Institute of Australia (NSW) Greenway Award for restoration
2014	UNESCO Asia-Pacific Awards - Merit Award for the Exeter Farm restoration project led by Design 5 Architects (46 entries from 14 countries)

## Selected Studio Projects

1993	Throsby Creek Landscape Master Plan with Terragram, Dr John Turner, Tony Rodd & Dr Anne-Marie Clements for the Hunter Catchment Authority & City of Newcastle		Adaptive Reuse design for the grounds of Experiment Farm Cottage (1830s), Parramatta for the National Trust of Australia ( <i>Substantially implemented 2001 with Parramatta City Council</i> )
	Stockton Peninsula Foreshore Land Use and Development Study for the Strategic Planning Section, City of Newcastle	2000	National Competition for a Federation Site installation at Centennial Park with Anton James Design (Finalist)
1994	Cultural Landscape Assessment and Conservation Policy for <b>City Hill</b> , Canberra with Michael Lehany & Meredith Walker for the National Capital Planning Authority		Cultural Landscape Assessment and Conservation Policy for <b>The Domain</b> , Sydney for the Royal Botanic Gardens & Domain Trust
1995	Landscape Resource Assessment for the Mount Pleasant EIS & State Commission of Enquiry for Coal & Allied (now Rio Tinto)		Survey of Colonial Landscapes of the Cumberland Plain with Colleen Morris on behalf of the National Trust of Australia (NSW) for the NSW Heritage Office
	Cultural Landscape Master Plan for the Harris Park conservation area for Parramatta City Council		Advice on the cultural landscape management of <b>Tomago House</b> , NSW with Michael Lehany & Joy Hughes for the National Trust of Australia
	Landscape Assessment for <b>Anglewood</b> , Burradoo (1890s Maurice B Adams design) with Garry Clubley for DPWS		Cultural Landscape Assessment for the Gladesville Hospital campus with Tony Rodd for DPWS
1996	Conservation Plan for <b>Werribee Park</b> , Victoria with Michael Lehany, Jessie Serle, Dr James Broadbent and Meredith Walker for Melbourne Parks & Waterways, Victoria		Cultural Landscape Assessment for <b>The Maltings</b> , Mittagong with Design 5 Architects & Tony Rodd for Allen Jack + Cottier
	Cultural Landscape Assessment for the Tallaganda Shire Rural Heritage Study with Clive Lucas, Stapleton & Partners	2001	Cultural Landscape Review for the grounds of <b>Cleopatra</b> , Blackheath with Design 5 Architects and Tony Rodd for Alexander Tzannes Associates
1997	Conservation Plan for St Patrick's Cathedral and Site Precinct, Parramatta ( <i>Newly rebuilt Cathedral complex by Romaldo Giurgola won the Sir Zelman Cowan Award for Public Buildings in the 2004 RIAA National Awards</i> )		Competition for a Federation installation at Government House, Sydney with Anton James Design for the Historic Houses Trust of NSW (Finalist)
	Cultural Landscape Assessment for the Newcastle-wide Heritage Study		Grounds Conservation Management Plan for the <b>Rose Seidler House</b> , Wahroonga with Colleen Morris for the Historic Houses Trust of NSW
	Concept Master Plan for Fort Scratchley, Newcastle for the Federal Department of Administrative Services	2002	Cultural Landscape Assessments for Sydney Water s170 Review with AWT & Truman Zaniol & Associates
	Conservation Management Plan for <b>Redleaf</b> , Double Bay with principal consultant Design 5 Architects and Dr Rosemary Annable for Woollahra Municipal Council ( <i>Project won RIAA Award, 2001</i> )		Adaptive Reuse Master Plan for the former Wesleyan Cemetery (1840s) now the Walter Lawry Memorial Park, Parramatta ( <i>Mostly built under Council guidance only, 2005</i> )
1998	Cultural Landscape Study for the Castlereagh Valley with Colleen Morris for PLDC		Adaptive Reuse design for Hambledon Cottage (1820s) grounds for Parramatta City Council ( <i>Partly implemented through Council only, 2005</i> )
	Conservation Management Plan for <b>Babworth House</b> , Darling Point with lead consultant Design 5 Architects, Dr Rosemary Annable and Allen Jack + Cottier for the Sisters of Charity Area Health Service (St Vincent's Hospital)	2003	Assessment and Interpretation Concept for 1 Fraser Road, Duntroon, Canberra for the Department of Defence
	Site Master Plan for St Paul's College, University of Sydney with Clive Lucas, Stapleton & Partners		Statement of Heritage Impact for the Elizabeth Macarthur Agricultural Institute, Camden Park for Sydney Gas Ltd
	Cultural landscape component of the North Parramatta Government Institutional Sites Conservation Management Plan with Colleen Morris for the NSW DPWS	2004	Detailed Curtilage Study for <b>Denbigh</b> (1810s) Estate, Cobbitty, NSW with Design 5 Architects for the owners
	Heritage Impact Assessment for the grounds of <b>Aeolia</b> (1850s), Randwick with Clive Lucas, Stapleton & Pirs and Tony Rodd for Centrecare		Conservation Management Plans for three Lachlan Macquarie parks (1810s) Richmond, Windsor and Wilberforce with Colleen Morris and Associate Professor Ian Jack
1999	Cultural Landscape Assessment for <b>The Hermitage</b> , Denistone with Robert A Moore and Tony Rodd for City of Ryde		Urban Design concepts for Paddington PAMP Study with URaP-TTW for Woollahra Council

	Urban Design concepts for North Sydney CBD 40kph Study with URaP & CivilPlan for North Sydney Council		Heritage Impact Review of a 26ha proposed development for Jamberoo Valley NSW for Kiama Municipal Council
	Interpretive Site Design & Documentation for I Fraser Road, Royal Military College, Duntroon, ACT with Design 5 Architects for Department of Defence ( <i>Large interpretive site installation now built</i> )		Conservation Management Plan for the grounds of Taronga Zoo (1913) with Design 5 Architects & Dr Ben Wallace for Zoological Parks Board of NSW ( <i>Document won the CMP category at 2008 Annual National Trust Awards</i> )
	Urban Design analysis & concepts for the North Sydney Centre Traffic and Pedestrian Study & Nth Sydney CBD Public Domain Strategy with URaP	2007	Cultural landscape component of a CMP for <b>Hadley Park</b> (1811), Castlereagh for Stedinger Associates
	Landscape and Archaeology Assessment of the former <b>Brush Farm</b> Estate (1810s) with Dr Siobhan Lavelle for the City of Ryde		Conservation Advice to Pamille Berg Consulting, Canberra for the 1850s Dean Coffey intramural memorial restoration at St Patrick's Cathedral, Parramatta
	Detailed Curtilage Study for <b>Horsley</b> estate, Horsley Park with Colleen Morris for Fairfield City Council		Urban Design for Charlestown Town Centre Transport Strategy + PAMP with URaP P/L & CivilPlan for Lake Macquarie City Council
	Site Recording <b>Hailsham</b> , Leura with Colleen Morris and Hubert Architects for the RTA		Heritage Impact Assessment for Mosman Park with Beattie Co Architects for Mosman Cricket Club Inc.
	Heritage Impact Assessment for proposed works in Centennial Park for the Centennial Park & Moore Park Trust		Consultant to Context Pty Ltd (Melbourne) for a Conservation Policy for The Meeting Place, Kurnell, for NSW DEC ( <i>Project won at the 2008 Planning Institute of Australia Awards</i> )
2005	Cultural Landscape Review of the <b>Wivenhoe, Orierton &amp; Harrington Park</b> estates with Clive Lucas, Stapleton & Partners for Camden Council		Curtilage Study for <b>Raby</b> , Catherine Field with GML for Macquarie Bank
	Concept & Advice for South China Botanic Garden, Guangzhou, Peoples Republic of China with Dr Ben Wallace & Xiaomei Zhu of Green Eco P/L for the Sth China Institute of Botany and the Chinese Academy of Sciences, Beijing ( <i>Substantially built 2006</i> )		Urban Design input for Wagga Wagga City Movement Plan with URaP/CivilPlan for Wagga City Council
	Site design for the residential estate <b>Eastwood</b> , Woollahra (1902) with Design 5/Beattie Co Architects & Garry Clubley ( <i>Siteworks completed 2006</i> )		Public Domain Design for former Bonnyrigg Farm site with Paul Davies Pty Ltd for DoP
	New Village Design, Mittagong (Masterplan and Draft DCP stages) with Marylyn Abbott & Dr James Broadbent for Landcom		Urban Design for Maitland LGA Integrated Land Use & Transport Strategy with URaP TTW for Maitland City Council
	Heritage Impact Assessment for the <b>Sugarloaf Farm</b> estate for Sydney Gas		Design Concept for <b>Exeter Farm</b> grounds, Glenwood for Historic Houses Trust of NSW ( <i>Overall project winner of National Trust Award 2011, AIA Greenway Award 2012, UNESCO Asia-Pacific Merit Award, 2014</i> )
	Heritage Impact Assessment for the <b>Mount Gilead</b> estate, Appin for Sydney Gas		Design Advice for the reconstruction of Taronga Zoo's Aquarium/Aviary/Bridge precinct for the Zoological Parks Board of NSW
	Heritage Impact Assessment for former South West Rocks Public School and site, NSW for QTOSEND		Adaptive Reuse Design & Documentation for Liverpool Pioneer Memorial Park (formerly Liverpool General Cemetery, c. 1821) with Jackson Teece Architects & Architectural Lighting Design for Liverpool City Council
	Court-appointed heritage expert, Land & Environment Court re St Mary The Virgin Anglican Church, Denham Court, NSW		Appointed to specialist Heritage Committee for Jenner House, Potts Point by the City of Sydney
2006	Cultural landscape component of the Conservation Assessment for The Meeting Place, Kurnell, Kamay National Park with Design 5 Architects for the Department of Environment & Conservation		
	Conservation Advice to Pamille Berg Consulting, Canberra for an interpretive program at Murphy House, St Patrick's Cathedral for the Diocese of Parramatta	2008	Goat Island CMP cultural landscape components with Paul Davies Architects & Austral Archaeology for the NSW DECC
	Heritage Review: Rushcutter's Bay Park (1870s) to inform a master plan by Anton James Design and Mather & Associates for the City of Sydney		Bonnyrigg House CMP cultural landscape components with Paul Davies Architects for the NSW DECC
	Design advice and Conservation Policy reviews, former Lidcombe Hospital grounds (1885-1997) with Mather & Associates and GML for Australand		



- Gledswood** CMP cultural landscape component with Godden Mackay Logan for Paynter Dixon Golf
- Concept Design & Developed Designs for Red Panda Exhibits at Taronga Zoo with Beattie Co & Dr Ben Wallace for the Zoological Parks Board of NSW
- Conservation management advice for the grounds of Manning Clark House, (Robin Boyd design, 1952) Canberra, ACT for MCH Inc.
- Cultural landscape components for the School of Artillery, North Head CMP with Dawbin Architects for the Sydney Harbour Federation Trust
- Denbigh**, Cobbitty CMP cultural landscape components with Design 5 Architects for the owners
- Urban Design input to the Maitland CBD Structure Plan with URaP-TTW for the City of Maitland
- Expert witness for Kiama Council with RMB Lawyers/ Kearns Garside, in relation to DA proposal for a 26ha seniors living village within the Jamberoo Valley before Land & Environment Court (*Successful determination in favour of Council given in December 2008*)
- Concept Design for the new Garden of Health and strategic new Western Site Entry, with Melbourne-based architectural historian Richard Aitken, at the Botanic Gardens of Adelaide for the Department of Environment & Heritage, SA
- 2009 Conservation Assessment of **Victoria Park**, Camperdown for the City of Sydney
- Cumberland Hospital CMP cultural landscape components with Perumal Murphy Alessi, Dr Terry Kass & Dr Ted Higginbotham for NSW Dept. Health
- Advice to MCH Inc for a CMP for Manning Clark House, Canberra, ACT with Eric Martin & Associates and The National Museum of Australia
- Design Development/Documentation for the Garden of Health, Adelaide Botanic Gardens with Tony Beattie, Dr Roger Hooke, SAS and BDA quantity surveyors for Department of Environment & Heritage, South Australia
- Scenic Hills Land Use Planning Study with Robyn Conroy & PDA for the City of Campbelltown
- 2010 Heritage Impact Assessments for two new public domain spaces in Woolloomooloo with Terragram & Chris Elliott Architects for the City of Sydney (*Completed project won an award at the 2013 Sydney Design Awards*)
- Documentation and site advice for **Exeter Farm** grounds, Glenwood for the Historic Houses Trust of NSW (*Won the Conservation of Built Heritage Award for projects under \$1 million at the 2011 Annual National Trust Awards; 2012 AIA Greenway Award & 2014 UNESCO Asia Pacific Awards*)
- Cultural landscape components for Bankstown Airport (1940) CMP with Dawbin Architects & Roger Hobbs for Sydney Metropolitan Airport, Bankstown
- Grounds components for a CMP upgrade for the *Calthorpe's House* (1927), Canberra with Eric Martin & Associates for ACT Historic Places
- Cultural landscape components for a CMP for **Weston Park** (1915), Yarralumla, Canberra with GML et al for the ACT Government's Territory and Municipal Services
- 2011 Documentation of Urban Design proposals for interfaces of St Patrick's Cemetery (1820s), North Parramatta with Beattie Co for the RTA in conjunction with Parramatta City Council
- Cultural landscape components for a CMP upgrade for **Mugga Mugga** Cottage (1850s), Canberra with Eric Martin & Assoc. for ACT Historic Places, ACT Museums & Galleries
- Cultural landscape components for a CMP for the **Tocal** Estate (1822) with Eric Martin & Associates architects for Tocal College
- Site advice with Beattie Co to Department of Environment & Natural Resources, SA for the construction phase of the Garden of Health project, Botanic Gardens of Adelaide
- Master Plans to guide two rehabilitation & Restoration projects along the Parramatta River for the Parramatta Park Trust in conjunction with the Western Sydney Area Health Service, Cumberland Hospital (*Stage 1 of this project won a Heritage Award for the PPT at the 2012 Annual National Trust Awards*)
- Cultural landscape components for a CMP for the Old Tuggeranong Schoolhouse, ACT (1880) with Eric Martin & Associates & Marilyn Truscott, archaeologist for the ACT Property Group
- Cultural landscape Assessment for the East Leppington Precinct with GML for Stockland
- Cultural landscape components for a CMP for the former Gungahleen School site, ACT with Eric Martin & Associates for the ACT Property Group
- Cultural landscape components for a CMP for the **Duntroon Dairy** site (1832), ACT with EMA architects for ACT Property Group
- 2012 Cultural landscape components for CMP update for **Tuggeranong Homestead**, ACT (1830s) with Eric Martin & Associates architects for the ACT Property Group
- Cultural landscape components for a Conservation Analysis of the Port Kembla No. 2 Colliery Site, Mt Kembla (including 1947 conceptual input by Edna Walling) for the NSW OEH with GML
- Cultural landscape components for a CMP for the **Belconnen Farm**, ACT (1850s) with Eric Martin & Associates architects for Reid & Stevens Pty Ltd
- Cultural landscape components for a CMS for the Abbotsford Quarantine Station site with Paul Davies & Associates for the City of Canada Bay
- Heritage Impact Assessment for additions to **Brackhill** (1911/1915), Centennial Park with Nicholas Jackson, historian for Tony Beattie,
- Advice/Critical Review of an Urbis CMP for **Yobarnie** (fmr PA Yeomans farm)(1943), North Richmond for Heritage Division, OEH & NSW Heritage Council



ABOVE LEFT: Calthorpe's House (1927), Canberra (CMP 2010) TOP RIGHT: Mugga Mugga Cottage (1850s), ACT from the northeast (more recent cottage in front) RIGHT: Mugga Mugga Cottage from the southwest showing the existing outbuilding group and 1920s shelterbelt of conifers (CMP 2011)



Total Homestead (1840s), Paterson River – Felix & Caleb Wilson's mansion built near the site of James Webber's original 1820s homestead (CMP 2011)



View of Varro Ville (William Weaver, 1858-59), in its pastoral landscape setting, from St Andrews Road (Curtilage study 2016)



West Block (JS Murdoch, 1924), Canberra (Curtilage assessment 2014)

	Conservation Plan upgrade and Design Advice for <b>The Prime Minister's Lodge</b> (1927), Canberra with Design 5 architects <i>et al</i> for the Department of the Prime Minister & Cabinet, Canberra		Curtilage & SHR Listing Study for the <b>Mount Gilead</b> estate with GML for the client
	Conservation Plan upgrade and Design Advice for <b>Kirribilli House</b> (1855), Sydney with Design 5 <i>et al</i> for Department of the Prime Minister & Cabinet		Cultural landscape components for a CMP for <i>All Saints</i> , Ainslie ACT (1860s Rookwood Necropolis, re-erected Canberra 1950s) with EMA for Diocese
	Urban design advice for sandstone, metalwork & fence reconstruction, new shared pathway, lychgate and restoration works at <b>St Patrick's Cemetery</b> , North Parramatta with Beattie Co for RMS	2015	Conservation advice & proposals for the <b>Don Bank</b> (c. 1840s) Museum grounds, North Sydney for North Sydney Council
	Heritage Impact Assessment for Rosebank College proposals, Five Dock by JMD Design & Thomson Adsett architects for the College		Cultural landscape components for a CMP for <b>Casey House</b> , ACT (1938) with EMA for tenant
	Heritage Impact Assessment for a community shed (1950s R1 Class tram) by Andrew Burges Architects, Bourke St, Woolloomooloo for City of Sydney		Heritage Impact Assessment for a new ferry wharf at Ermington in association with Ted Higginbotham for M Projects & Payce Consolidated on behalf of Parramatta City Council
	Heritage Impact Assessment for proposed works at Fitzroy Gardens, Kings Cross for the City of Sydney		Heritage-related advice to Sekisui House for parts of the remnant <b>Gledswood</b> estate in conjunction with Envirolex Consulting
	Heritage Impact Assessment for a proposed lift at the McElhone Stairs, Potts Point/Woolloomooloo with Nick Jackson, historian for the City of Sydney		Cultural landscape components for a CMP for Morpeth Cemetery (1820s) with Long Blackledge architects for Maitland Council
2013	Cultural landscape components for a CMP for <b>Pine Island Homestead</b> , ACT (1920s) with EMA & Dr Peter Dowling for the ACT Property Group		HMP update for the RMC <b>Duntroon</b> campus, ACT for Department of Defence with GML and Kirsty Altenburg
	Conservation Management Plan for three urban parks (Amcliffe, Gardiner and Bexley) with Nick Jackson & Beattie Co for Rockdale City Council		HMP update for <b>Kirribilli House</b> for Department of Finance with GML
	Revised Heritage Impact Assessment for proposed additions to <b>Brackhill</b> (1911/ 1915), Centennial Park for Tony Beattie, architect ( <i>Approved by Council</i> )		Cultural landscape components for a CMP for <b>Dalwood House</b> (1829-1833), Braxton with Design 5 architects for the National Trust
	Visual Effects Study for proposed Emerald Hills development and the Scenic Hills of Campbelltown Council for Camden Council		Cultural landscape components for a CMP for <b>Heathcote Hall</b> (1880s), Heathcote with Anne Warr Heritage Consulting for the client
	Cultural landscape components for heritage reviews at West Belconnen & NSW with Eric Martin & Associates architects for Reid & Stevens Pty Ltd <i>et al</i>	2016	Grounds proposal DA documentation for <b>Juniper Hall</b> , Paddington with Dr James Broadbent and AJ + C for the Moran Arts Foundation
2014	Curtilage assessment for West Block (JS Murdoch, 1924), Canberra with Eric Martin & Associates for Department of Finance		Curtilage Extension Study for <b>Varro Ville</b> , Minto with Orwell & Peter Phillips, Architects for owners ( <i>SHR extension listing recommended by the Heritage Council at its special meeting of September 2017</i> )
	HIA for the <b>Wyckliffe</b> (1905) grounds with Helen Wilson, architect for Edge Design P/L		Heritage Impact Assessment for 22 Trinity Avenue, Millers Point with Beattie Co for the owner
	Conservation Management Plans for five urban parks (Cook, Scarborough, Rockdale, Seaforth and Barwell Parks) with Nick Jackson for Rockdale City Council		SHR listing proposal for the Brett & Wendy Whiteley House and Lavender Bay curtilage for the NSW Heritage Council ( <i>SHR listing was officially announced by the Hon. Gabrielle Upton March 2018</i> )
	Cultural landscape components for a CMP for the Glebe Cemetery (1820s-1890s), East Maitland with Long Blackledge architects for Maitland Council		Advice to the National Trust of Australia (NSW) Re site planning for the <b>Tomago House</b> grounds and its remnant estate
	Campus heritage assessment for University of Canberra, Belconnen/Bruce, ACT with EMA	2017	Heritage Impact Assessment report and advice for proposed African Waterhole and Congo exhibits at Taronga Zoo with Nick Jackson, Ashley Built Heritage and TZG P/L for the TCSA
	Cultural landscape components for a CMP for <b>Old Tralee</b> (1905)/ <b>Couranga</b> (1927) homestead group, Canberra with EMA for the ACT Government		Advice to the National Trust of Australia (NSW) re access & site planning proposals for <b>Woodford Academy</b>
	Advice to Canada Bay Council re the remnant Yaralla Estate in relation to proposed playing fields		

Heritage Impact Assessment report re proposed new buildings at Bexley Oval for Bayside Council

State Heritage Register listing proposal for Central Park (1870s), Armidale for Armidale Regional Council (*SHR listing recommended by the Heritage Council at its meeting of September 2018*)

Cultural landscape and curtilage assessment for **Mirrabooka** (Bruce Rickard, 1963) with Robert A Moore P/L for the Reid family

Cultural heritage advice to JMD Design re master planning analysis and concepts for the Cumberland Hospital precinct, North Parramatta

- 2018 Heritage Impact Assessment report re proposed Foreshore works within the SHR-listed curtilage of **Carss Cottage** (1850s), Carss Bush Park for Georges River Council

CMP update components for Duntroon Dairy, Old Tuggeranong School site and the former Gungahleen School site, ACT with EMA for ACT Property Group

**Thompson Square** (1795) Conservation Area CMP (cultural landscape component) with Lucas, Stapleton & Johnson architects for Hawkesbury Council

ILP review and cultural heritage advice to the NSW Department of Planning and Environment in relation to a part of the South West Growth Centres region

Cultural landscape review and visual analysis for a new planning precinct for the NSW Department of Planning and Environment in relation to part of the South West Growth Centres region

Cultural landscape advice re **Wybalena** (1875), Hunters Hill with LSJ architects for the owners

**Ravensworth** homestead estate (1820s) CMP with Colleen Morris, LSJ architects, Casey & Lowe and Dr Terry Kass for Glencore

Moyne Farm Cemetery conservation strategy cultural landscape components with Long Blackledge architects for NSW Office of Environment and Heritage

Reader's Digest Building, Surry Hills (John James, 1967), Assessment & advice to Design 5 architects for the owners

Cultural heritage and DA advice to OLMC, North Parramatta re the grounds of **Roseneath Cottage** (c. 1837) with LSJ architects

- 2019 **Ravensworth** homestead estate (1820s) HIA & site reconstruction design with Colleen Morris, LSJ architects, Casey & Lowe and Dr Terry Kass for Glencore

**Susannah Place**, The Rocks, CMP cultural landscape components with Orwell & Peter Phillips, architects, Dr Terry Kass and Casey & Lowe for Place Management NSW

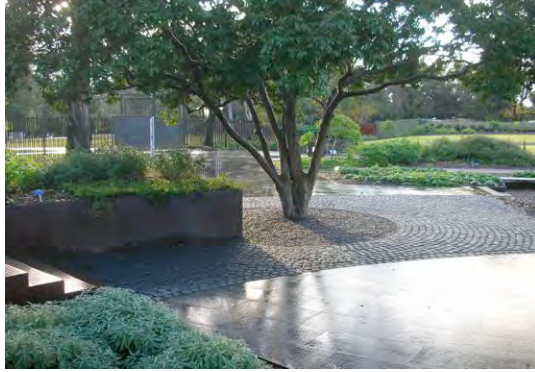




Experiment Farm Cottage (1830s), Harris Park, NSW 2001-14



Exeter Farm, Glenwood (mid-19<sup>th</sup> century) Complete grounds adaptive reuse & reconstruction for HHT, 2010



New Garden of Health, Adelaide Botanic Gardens, SA 2011



Exeter Farm, 2010



St Patrick's Cemetery (1820s), Main entry & perimeter fencing



Exeter Farm, 2010



St Patrick's Cemetery (1820s), North Parramatta, 1936 Lychgate fence restoration and reconstruction for south entry - 2012



Dalwood House, Branxton CMP with Design 5 2015



Brett Whiteley House Visual Curtilage Study & SHR Listing 2016 (View courtesy of Wendy Whiteley)

## ATTACHMENT 1



# GLENCORE



## **Ravensworth Homestead Recipient Site Assessment**

30 October 2018

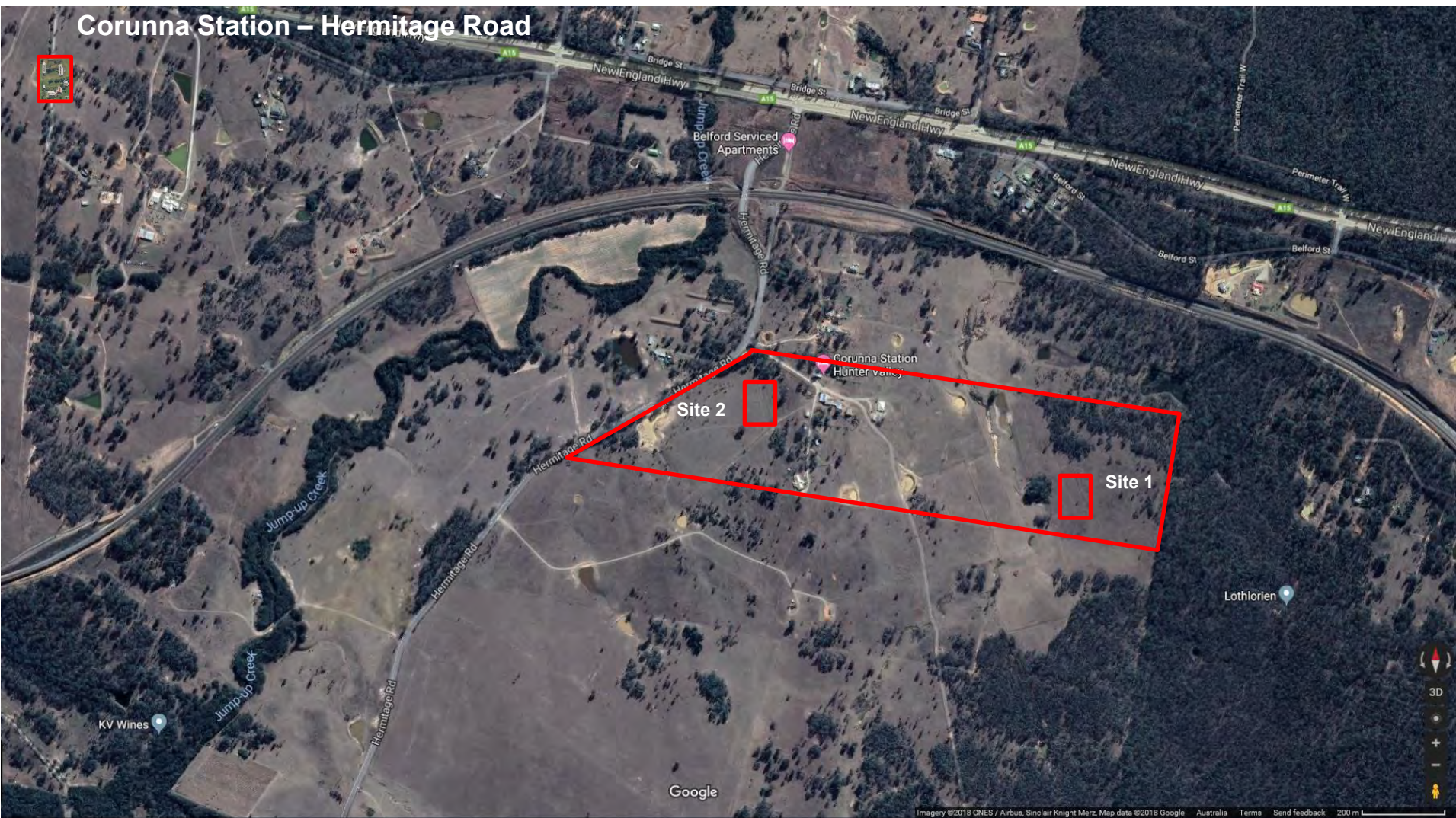
GLENCORE



**Corunna Station – Hermitage Road**

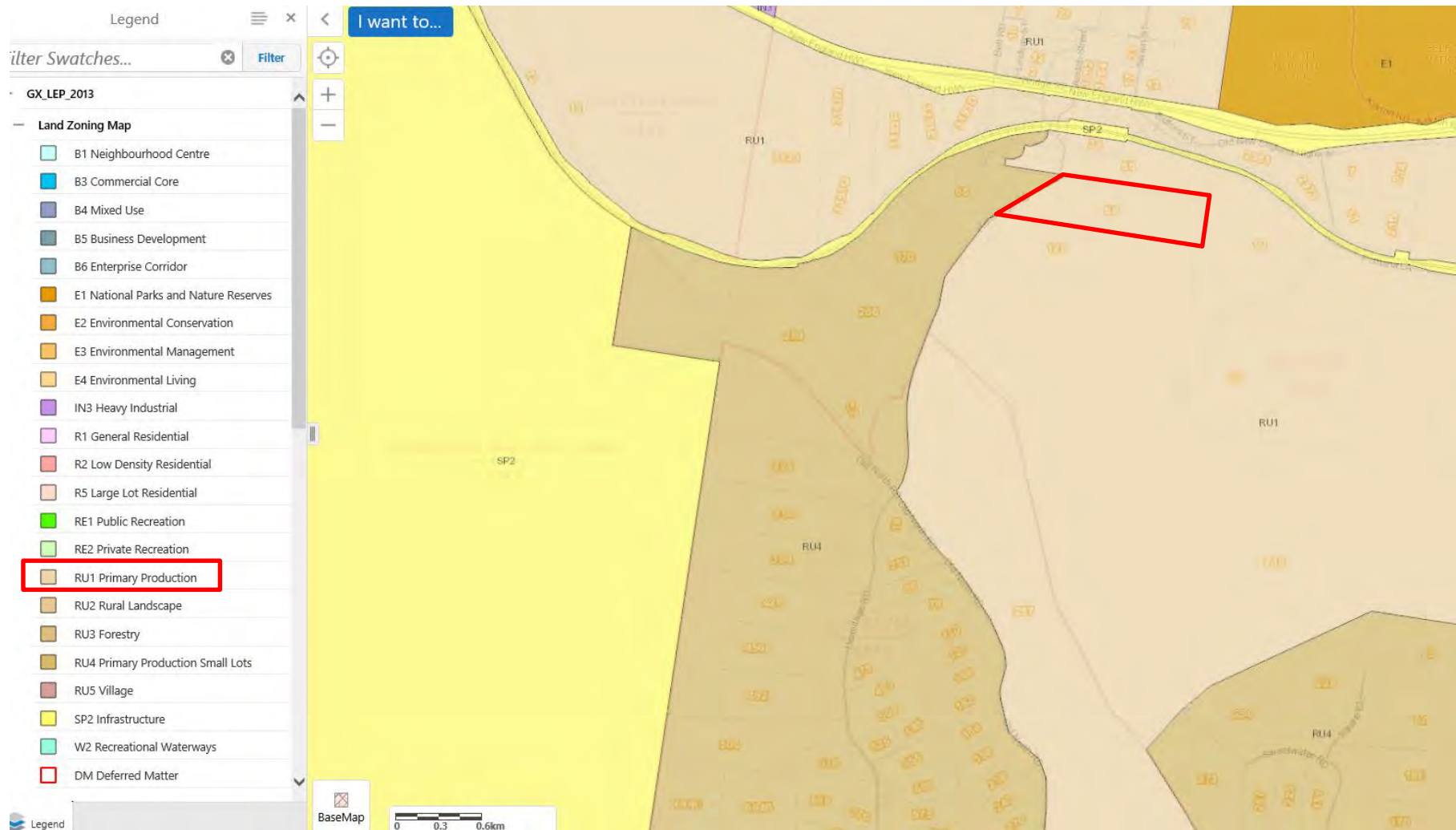
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# Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:18)

[Land Use Table](#) > [Zone RU1](#)



## Zone RU1 Primary Production

### 1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

### 2 Permitted without consent

Extensive agriculture; Forestry; Home occupations; Intensive plant agriculture

### 3 Permitted with consent

Agriculture; Airstrips; Animal boarding or training establishments; **Bed and breakfast accommodation**; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; **Cellar door premises**; Cemeteries; Community facilities; Crematoria; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Extractive industries; **Farm buildings**; **Farm stay accommodation**; Flood mitigation works; Hazardous industries; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; **Information and education facilities**; **Intensive livestock agriculture**; Jetties; Moorings; Offensive industries; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Service stations; Sewerage systems; Truck depots; Turf farming; Veterinary hospitals; Water supply systems

### 4 Prohibited

Any development not specified in item 2 or 3



GLENCORE



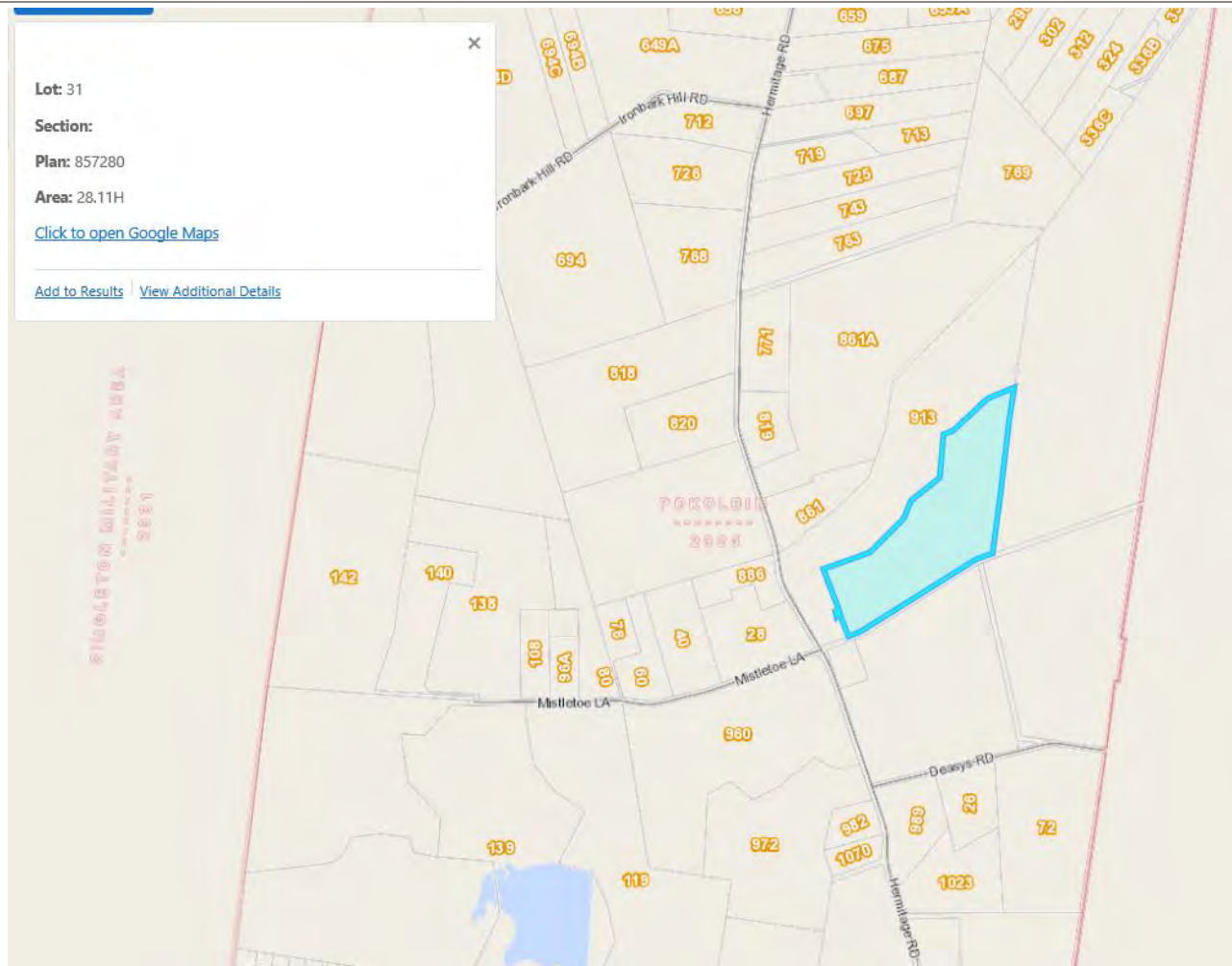
**Hunter Valley Resort – Hermitage Road**

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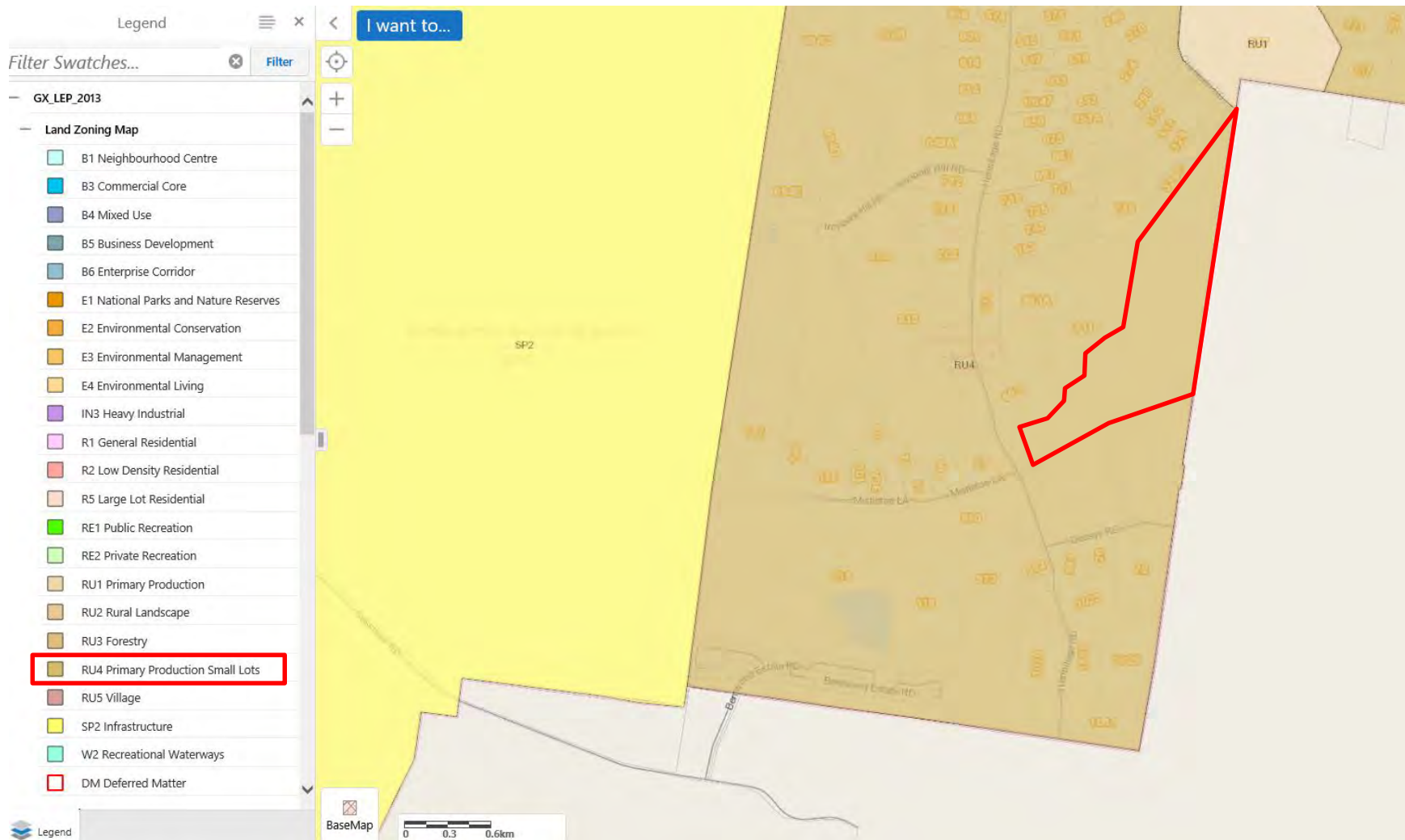


## Hunter Valley Resort – Hermitage Road









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## Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:20)

[Land Use Table](#) > [Zone RU4](#)



### Zone RU4 Primary Production Small Lots

#### 1 Objectives of zone

- To enable sustainable primary industry and other compatible land uses.
- To encourage and promote diversity and employment opportunities in relation to primary industry enterprises, particularly those that require smaller lots or that are more intensive in nature.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To recognise Hunter Valley Wine Country and the adjoining environs of Broke-Fordwich as a major viticultural and tourist destination by providing additional opportunities for compatible tourist uses.

#### 2 Permitted without consent

Extensive agriculture; Home occupations; Intensive plant agriculture

#### 3 Permitted with consent

Airstrips; Animal boarding or training establishments; Aquaculture; Building identification signs; Business identification signs; **Cellar door premises**; Community facilities; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; **Farm buildings**; Flood mitigation works; Forestry; **Function centres**; Helipads; Home-based child care; Home businesses; Home industries; **Information and education facilities**; Plant nurseries; Recreation areas; Recreation facilities (outdoor); **Restaurants or cafes**; Roads; Roadside stalls; Rural industries; Sewerage systems; **Tourist and visitor accommodation**; Turf farming; Viticulture; Water supply systems

#### 4 Prohibited

Backpackers' accommodation; Intensive livestock agriculture; Livestock processing industries; Sawmill or log processing industries; Serviced apartments; Stock and sale yards; Any other development not specified in item 2 or 3

GLENCORE



**Broke Township**

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## Broke Township







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## Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:13)

[Land Use Table](#) > [Zone RE1](#)



### Zone RE1 Public Recreation

#### 1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

#### 2 Permitted without consent

Environmental protection works

#### 3 Permitted with consent

Boat launching ramps; Boat sheds; Camping grounds; Centre-based child care facilities; Community facilities; Emergency services facilities; Environmental facilities; Flood mitigation works; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Water recreation structures; Water supply systems

#### 4 Prohibited

Any development not specified in item 2 or 3

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## Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:14)

[Land Use Table](#) > [Zone R5](#)



### Zone R5 Large Lot Residential

#### 1 Objectives of zone

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

#### 2 Permitted without consent

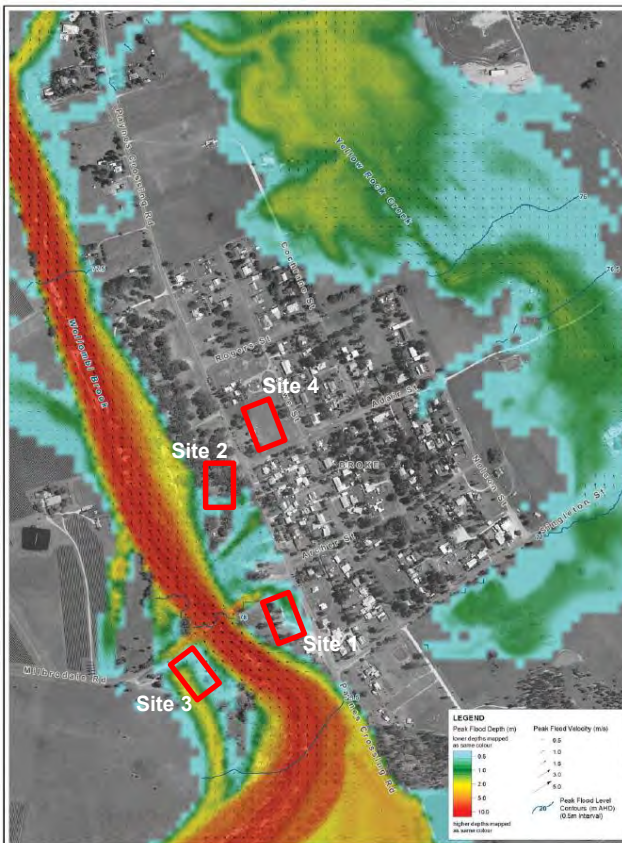
Home occupations

#### 3 Permitted with consent

[Bed and breakfast accommodation](#); Building identification signs; Business identification signs; Dual occupancies; Dwelling houses; [Food and drink premises](#); Group homes; Home industries; Neighbourhood shops; Roads; Any other development not specified in item 2 or 4

#### 4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; [Commercial premises](#); Correctional centres; Crematoria; Depots; Eco-tourist facilities; Entertainment facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Residential accommodation; Restricted premises; Rural industries; Sex services premises; Signage; Storage premises; Transport depots; Truck depots; [Tourist and visitor accommodation](#); Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Wharf or boating facilities; Wholesale supplies



Title: Wollombi Flood Study - Modelled Peak Flood Conditions  
1% AEP (100 yr ARI)

Figure E-5 Rev: A

BMT WBM  
www.bmtwbm.com.au

0 125 250m  
Approx. Scale

Filepath: K:\102395\_Wollombi\_Flood\_Study\MapDocs\WorkspaceDesign\_Mapping\GIS\_E-5\_Flood\_100yr.aux



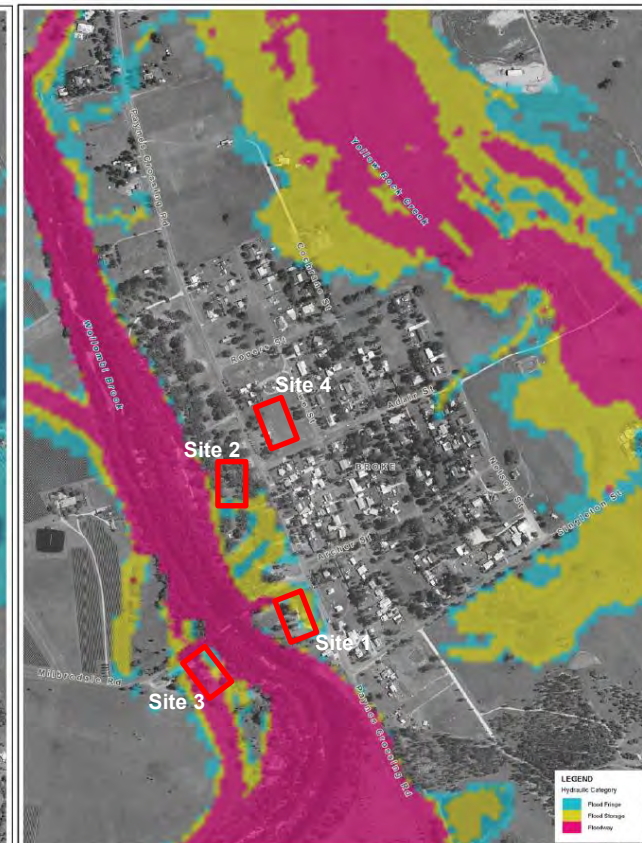
Title: Wollombi Flood Study - Provisional Flood Hazard  
1% AEP (100 yr ARI)

Figure E-8 Rev: A

BMT WBM  
www.bmtwbm.com.au

0 125 250m  
Approx. Scale

Filepath: K:\102395\_Wollombi\_Flood\_Study\MapDocs\WorkspaceDesign\_Mapping\GIS\_E-8\_Hazard\_100yr.aux



Title: Wollombi Flood Study - Hydraulic Categorisation  
1% AEP (100 yr ARI)

Figure E-10 Rev: A

BMT WBM  
www.bmtwbm.com.au

0 125 250m  
Approx. Scale

Filepath: K:\102395\_Wollombi\_Flood\_Study\MapDocs\WorkspaceDesign\_Mapping\GIS\_E-10\_HydrCat\_100yr.aux



GLENCORE



**Clydsdale - Hebden**

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# Muswellbrook Local Environmental Plan 2009

## Land Zoning Map - Sheet LZN-022

### Muswellbrook LGA

— LGA Boundary

### Roads

— Highway

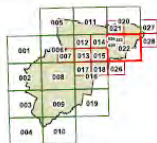
— Main Road

### Cadastral

— Cadastre 1/211 © Dept of Lands

### LZN Legend

- B2 Local Centre
- E1 National Parks and Nature Reserves
- E3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- R1 General Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU3 Forestry
- RU5 Village
- SP2 Infrastructure
- W1 Natural Waterways

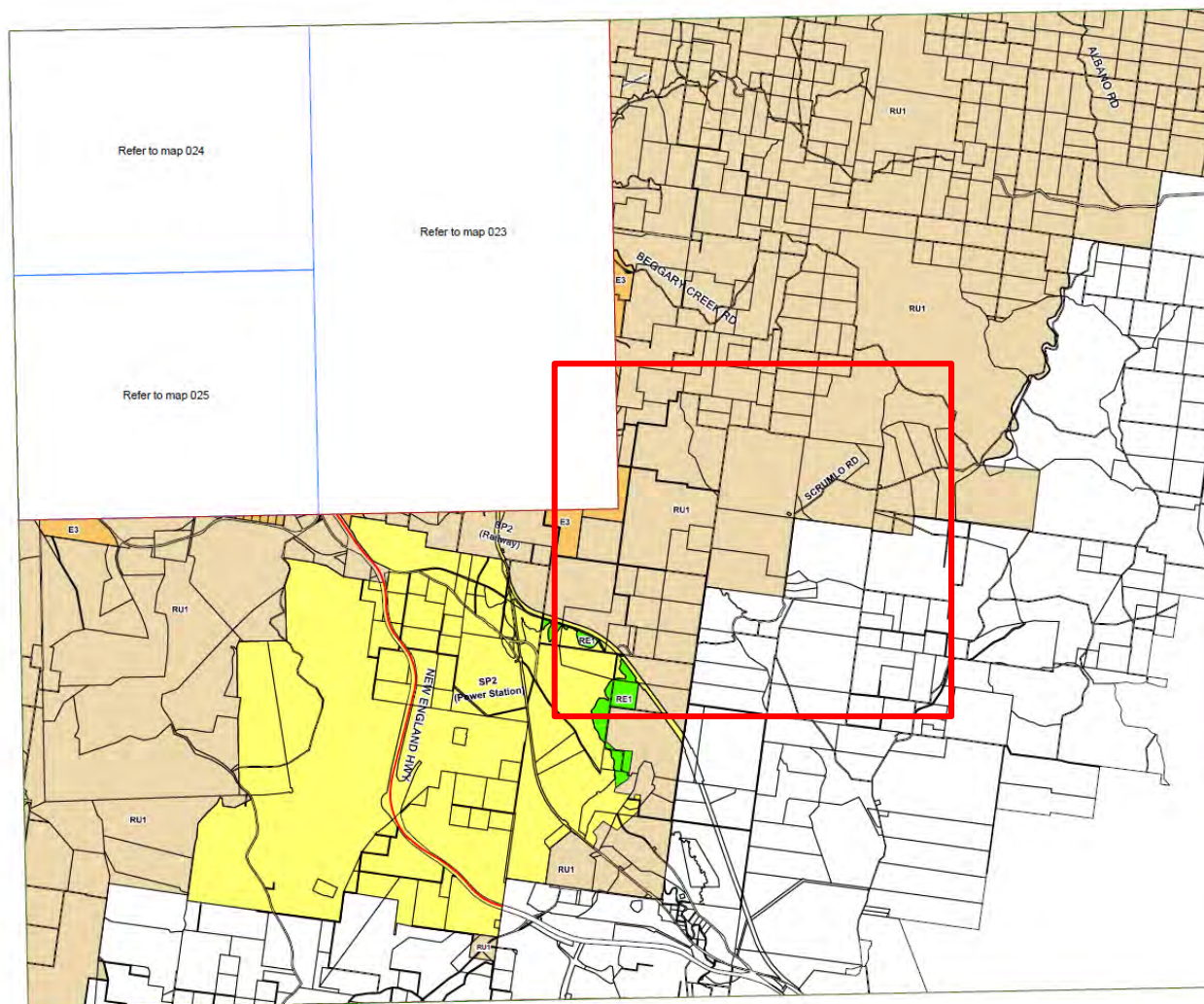


0 1600 3200

metres

Scale: 1:80,000 @ A3

Projection: GDA 1984  
Zone 56



## Muswellbrook Local Environmental Plan 2009

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:46)

[Land Use Table](#) > [Zone RU1](#)

### Zone RU1 Primary Production

#### 1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To protect the agricultural potential of rural land not identified for alternative land use, and to minimise the cost to the community of providing, extending and maintaining public amenities and services.
- To maintain the rural landscape character of the land in the long term.
- To ensure that development for the purpose of extractive industries, underground mines (other than surface works associated with underground mines) or open cut mines (other than open cut mines from the surface of the flood plain), will not:
  - (a) destroy or impair the agricultural production potential of the land or, in the case of underground mining, unreasonably restrict or otherwise affect any other development on the surface, or
  - (b) detrimentally affect in any way the quantity, flow and quality of water in either subterranean or surface water systems, or
  - (c) visually intrude into its surroundings, except by way of suitable screening.
- To protect or conserve (or both):
  - (a) soil stability by controlling development in accordance with land capability, and
  - (b) trees and other vegetation, and
  - (c) water resources, water quality and wetland areas, and their catchments and buffer areas, and
  - (d) valuable deposits of minerals and extractive materials by restricting development that would compromise the efficient extraction of those deposits.

#### 2 Permitted without consent

Extensive agriculture; Home occupations; Intensive plant agriculture

#### 3 Permitted with consent

Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Community facilities; Crematoria; Depots; Dwelling houses; Eco-tourist facilities; Educational establishments; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Function centres; Group homes; Hazardous industries; Health consulting rooms; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; Industrial retail outlets; Information and education facilities; Intensive livestock agriculture; Kiosks; Landscaping material supplies; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Research stations; Restaurants or cafes; Roads; Roadside stalls; Rural industries; Rural supplies; Rural worker's dwellings; Secondary dwellings; Service stations; Sewerage systems; Signage; Storage premises; Take away food and drink premises; Tourist and visitor accommodation; Transport depots; Truck depots; Turf farming; Veterinary hospitals; Waste disposal facilities; Water supply systems

#### 4 Prohibited

Any development not specified in item 2 or 3







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# Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:18)

[Land Use Table](#) > [Zone RU1](#)



## Zone RU1 Primary Production

### 1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

### 2 Permitted without consent

Extensive agriculture; Forestry; Home occupations; Intensive plant agriculture

### 3 Permitted with consent

Agriculture; Airstrips; Animal boarding or training establishments; **Bed and breakfast accommodation**; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; **Cellar door premises**; Cemeteries; Community facilities; Crematoria; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Extractive industries; **Farm buildings**; **Farm stay accommodation**; Flood mitigation works; Hazardous industries; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; **Information and education facilities**; **Intensive livestock agriculture**; Jetties; Moorings; Offensive industries; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Service stations; Sewerage systems; Truck depots; Turf farming; Veterinary hospitals; Water supply systems

### 4 Prohibited

Any development not specified in item 2 or 3

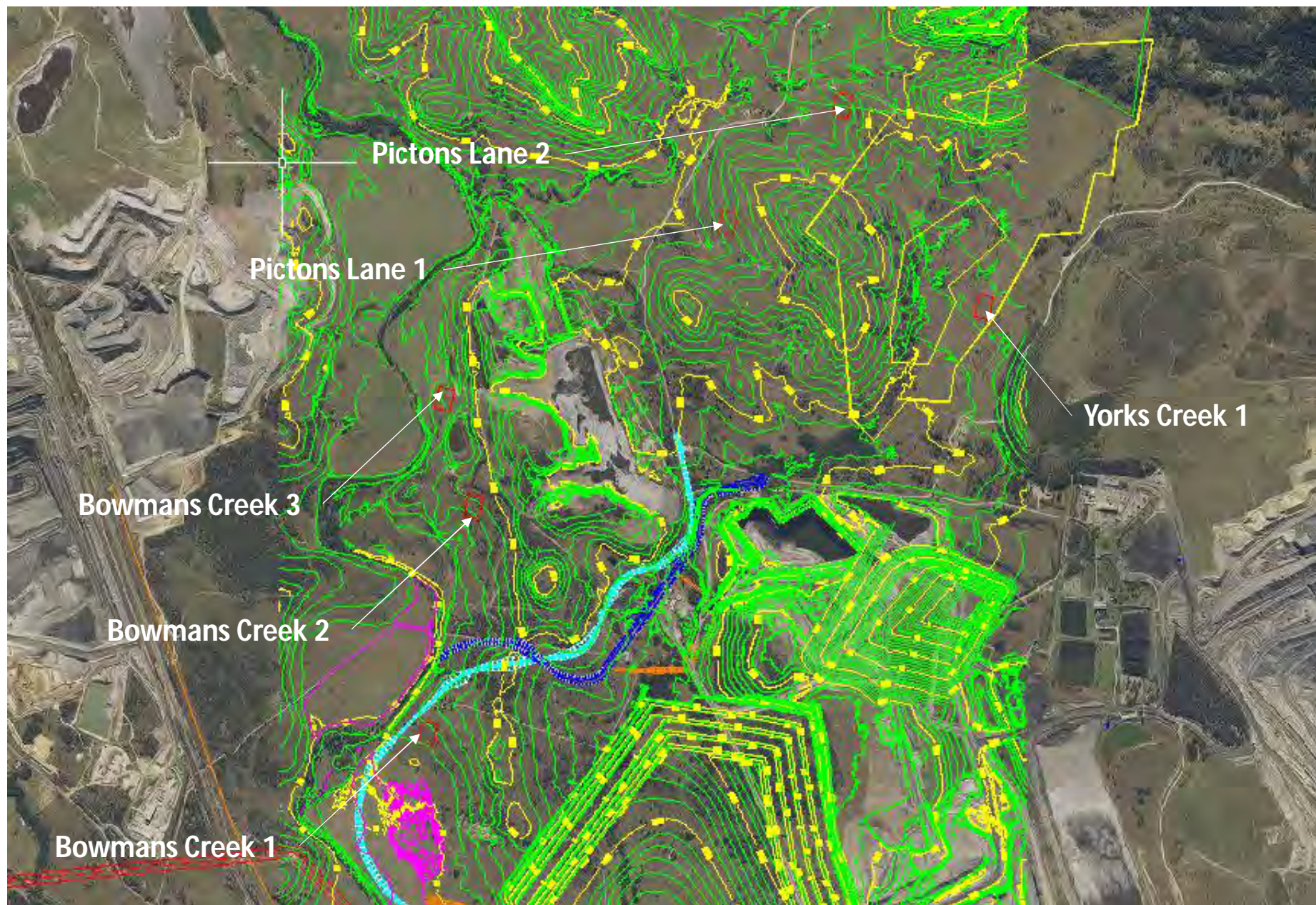
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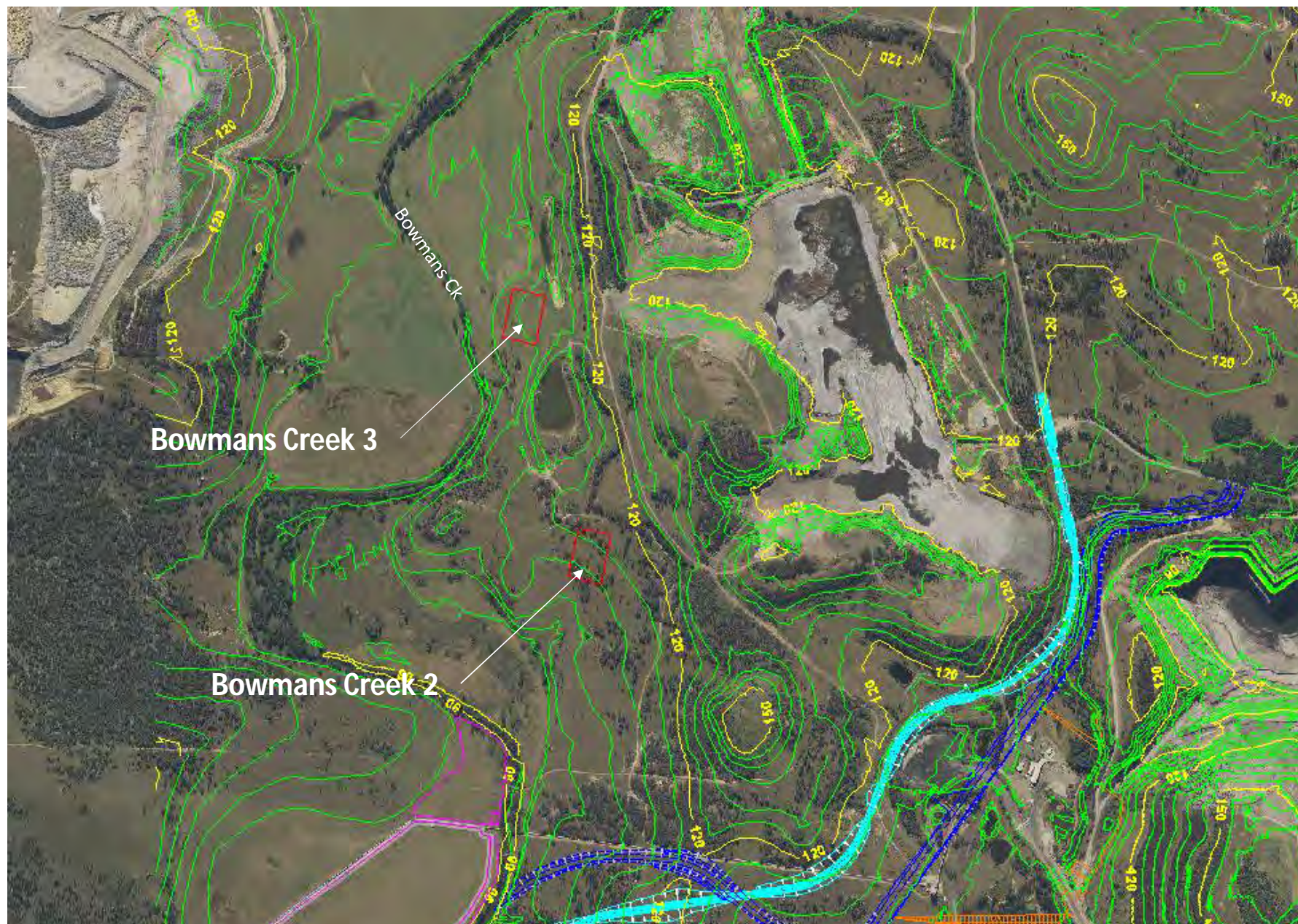
**Glencore Sites**

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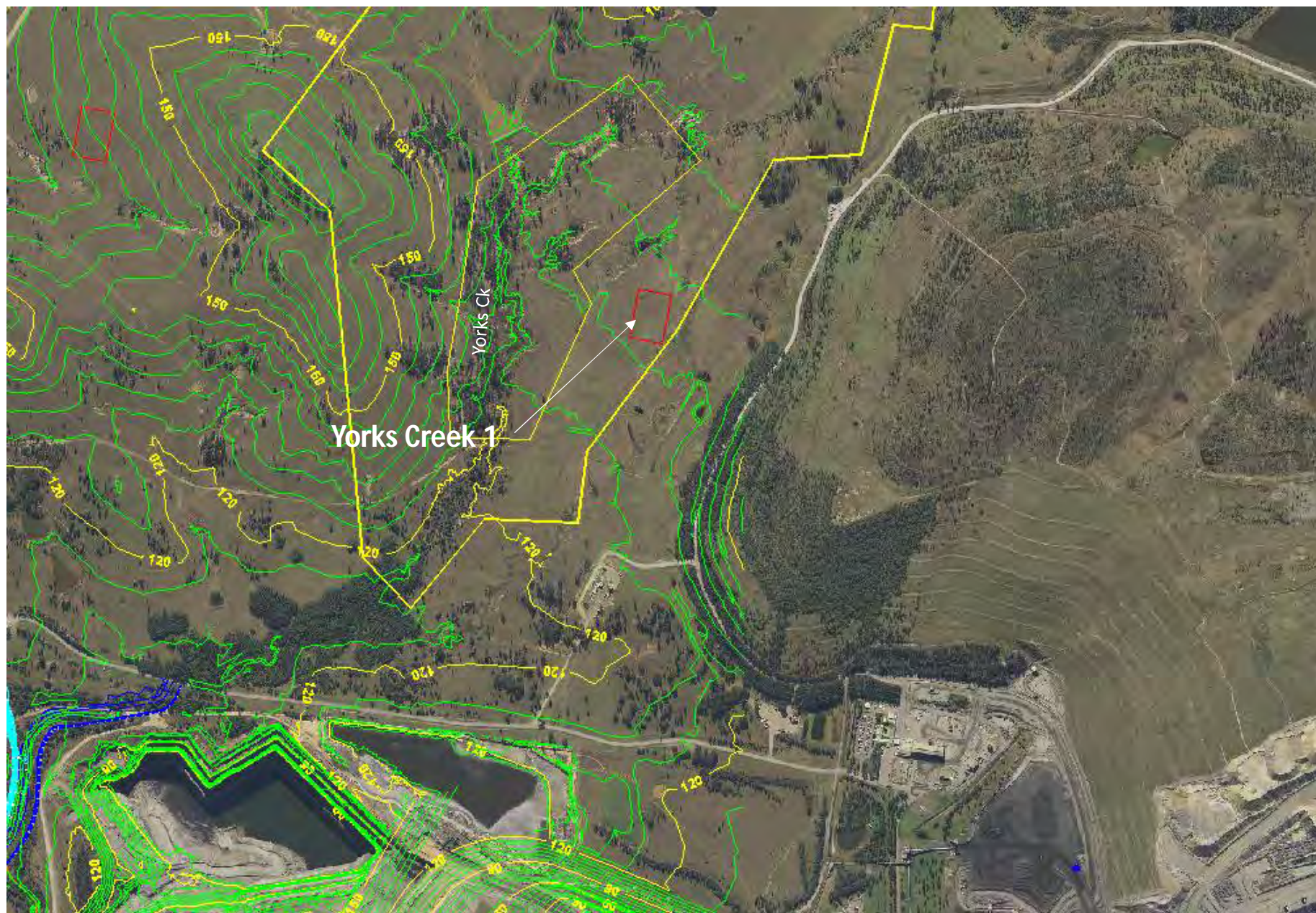




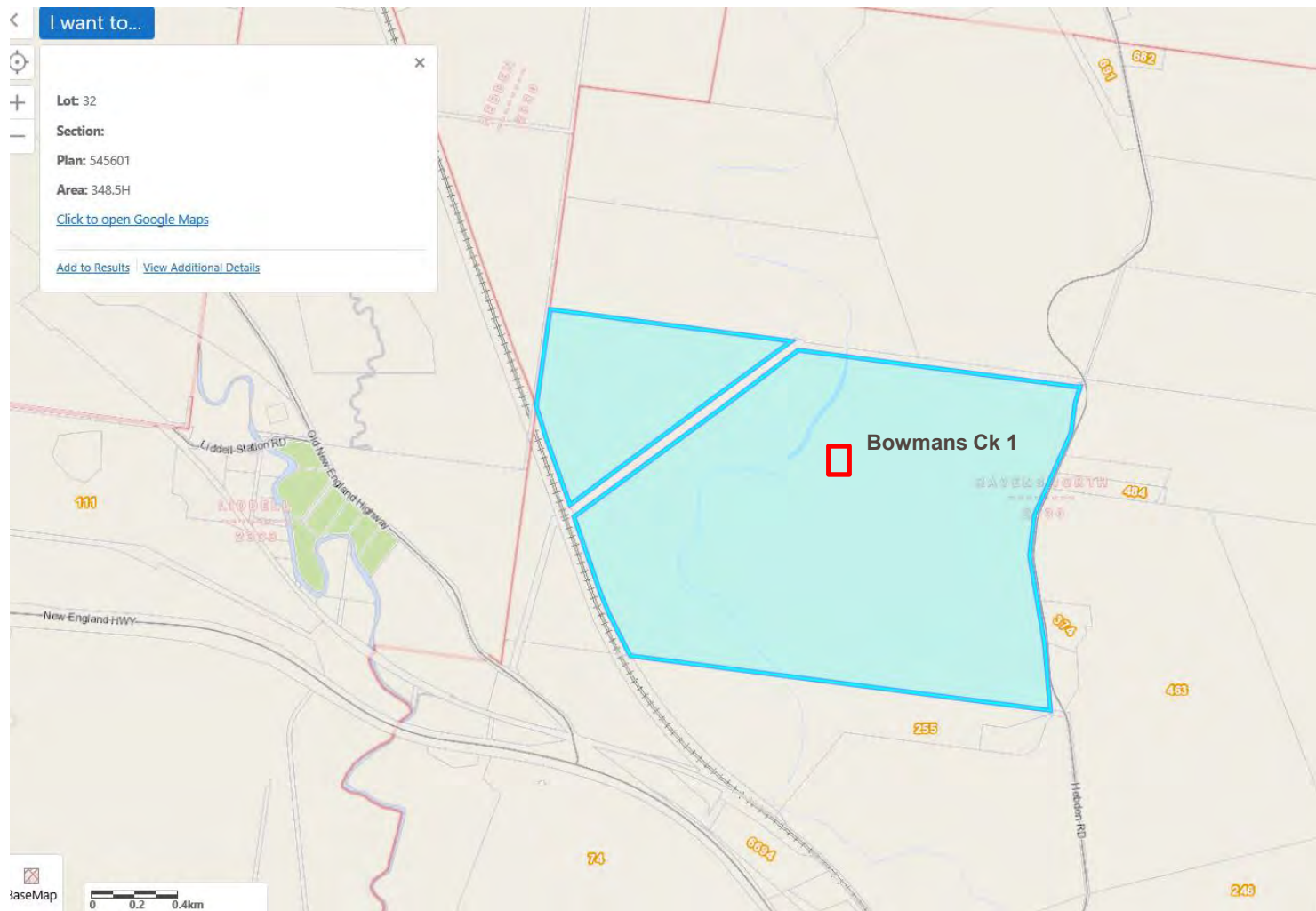


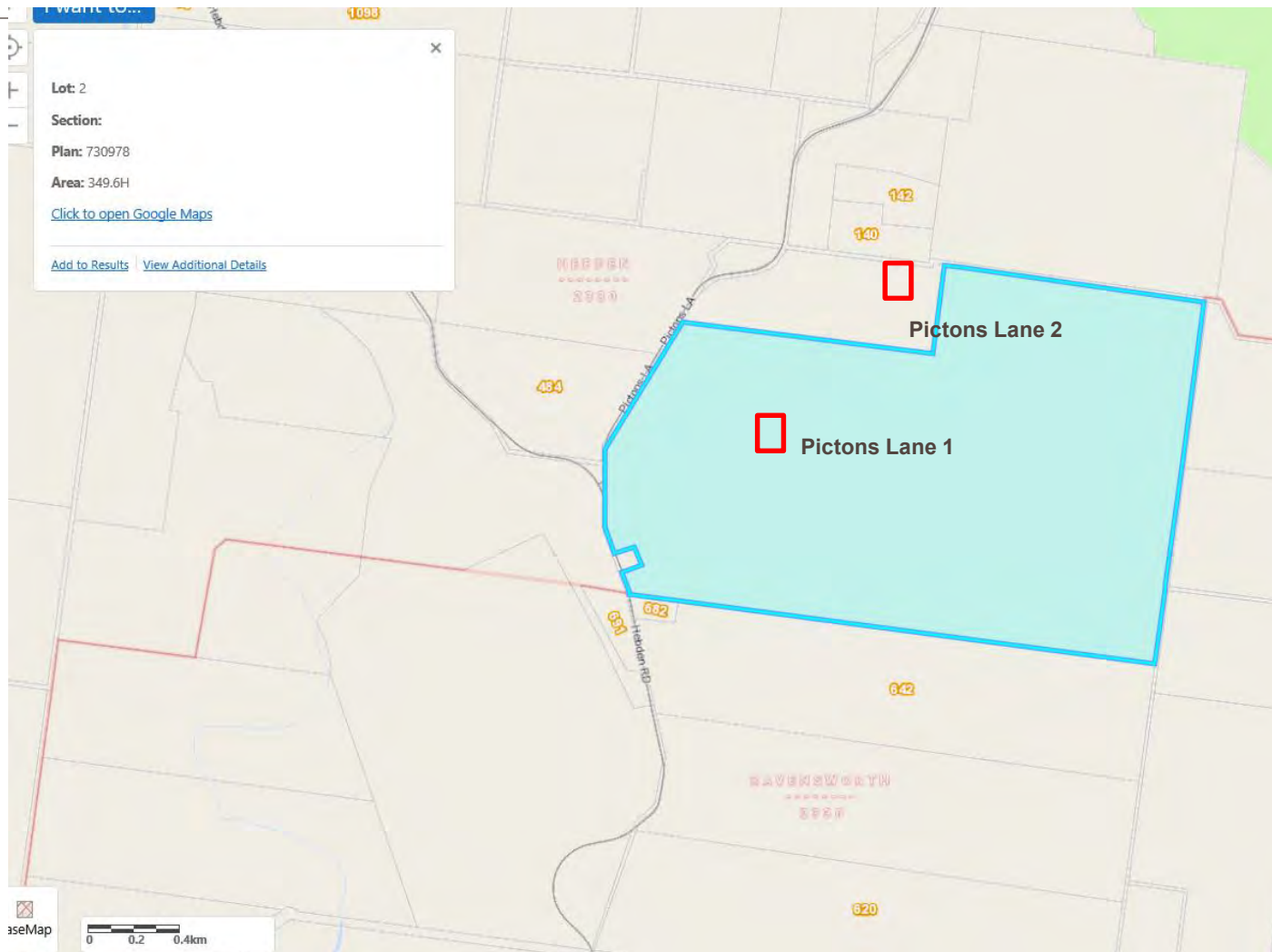


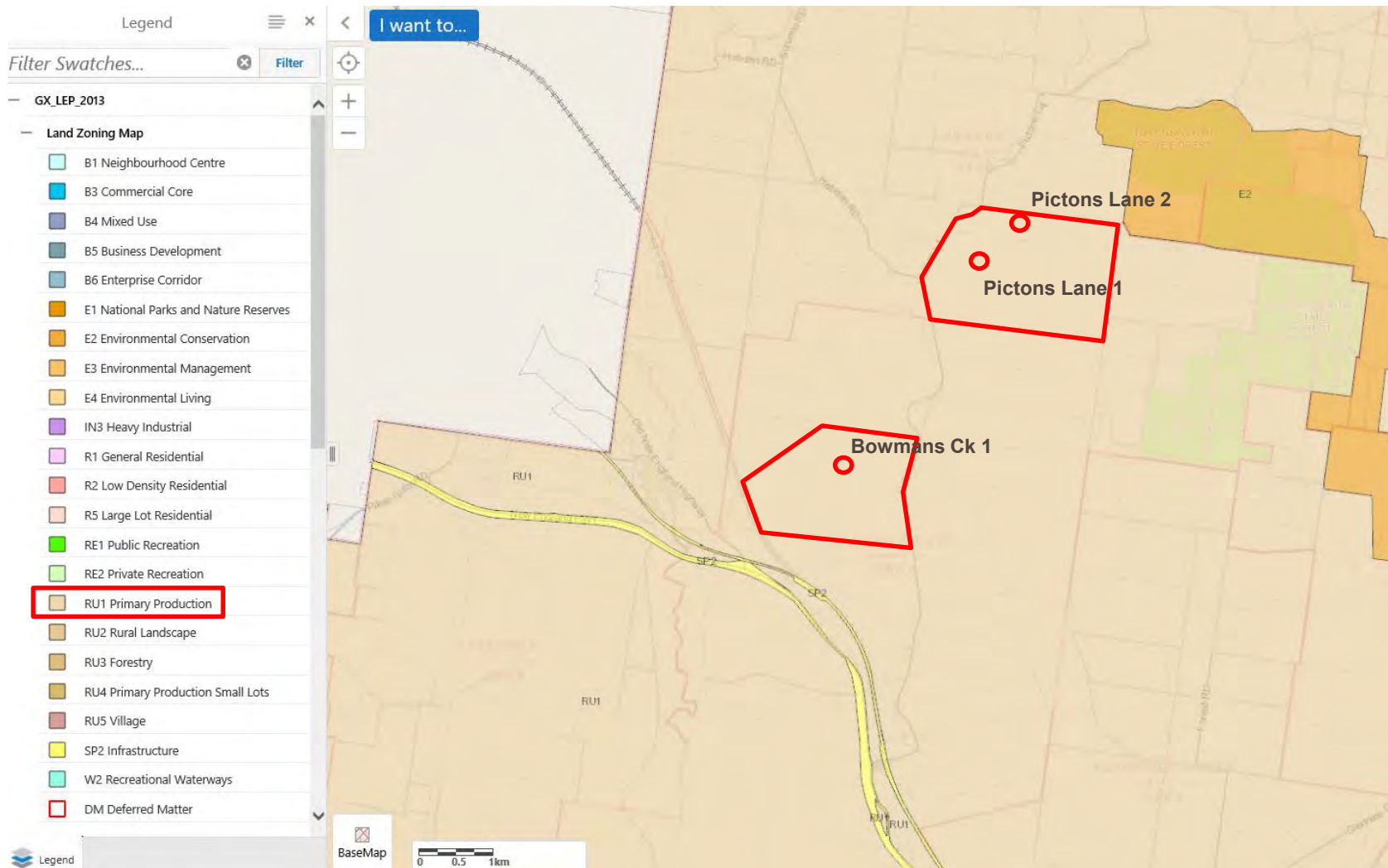












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# Singleton Local Environmental Plan 2013

Current version for 31 August 2018 to date (accessed 25 October 2018 at 16:18)

[Land Use Table](#) > [Zone RU1](#)



## Zone RU1 Primary Production

### 1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

### 2 Permitted without consent

Extensive agriculture; Forestry; Home occupations; Intensive plant agriculture

### 3 Permitted with consent

Agriculture; Airstrips; Animal boarding or training establishments; **Bed and breakfast accommodation**; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; **Cellar door premises**; Cemeteries; Community facilities; Crematoria; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Extractive industries; **Farm buildings**; **Farm stay accommodation**; Flood mitigation works; Hazardous industries; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; **Information and education facilities**; **Intensive livestock agriculture**; Jetties; Moorings; Offensive industries; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Service stations; Sewerage systems; Truck depots; Turf farming; Veterinary hospitals; Water supply systems

### 4 Prohibited

Any development not specified in item 2 or 3



GLENCORE



**Ben Ean – Pokolbin**

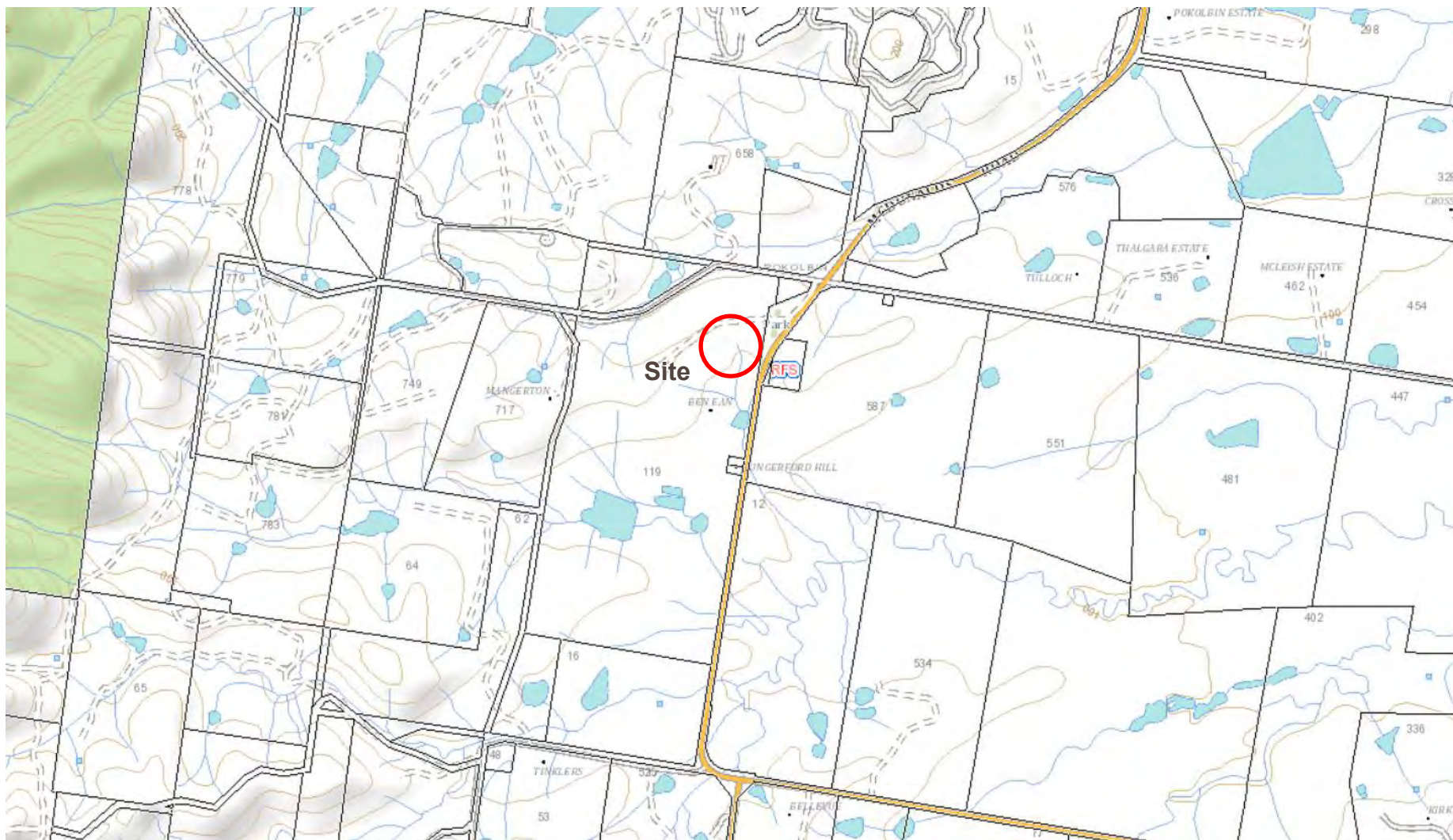
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## Ben Ean - Pokolbin







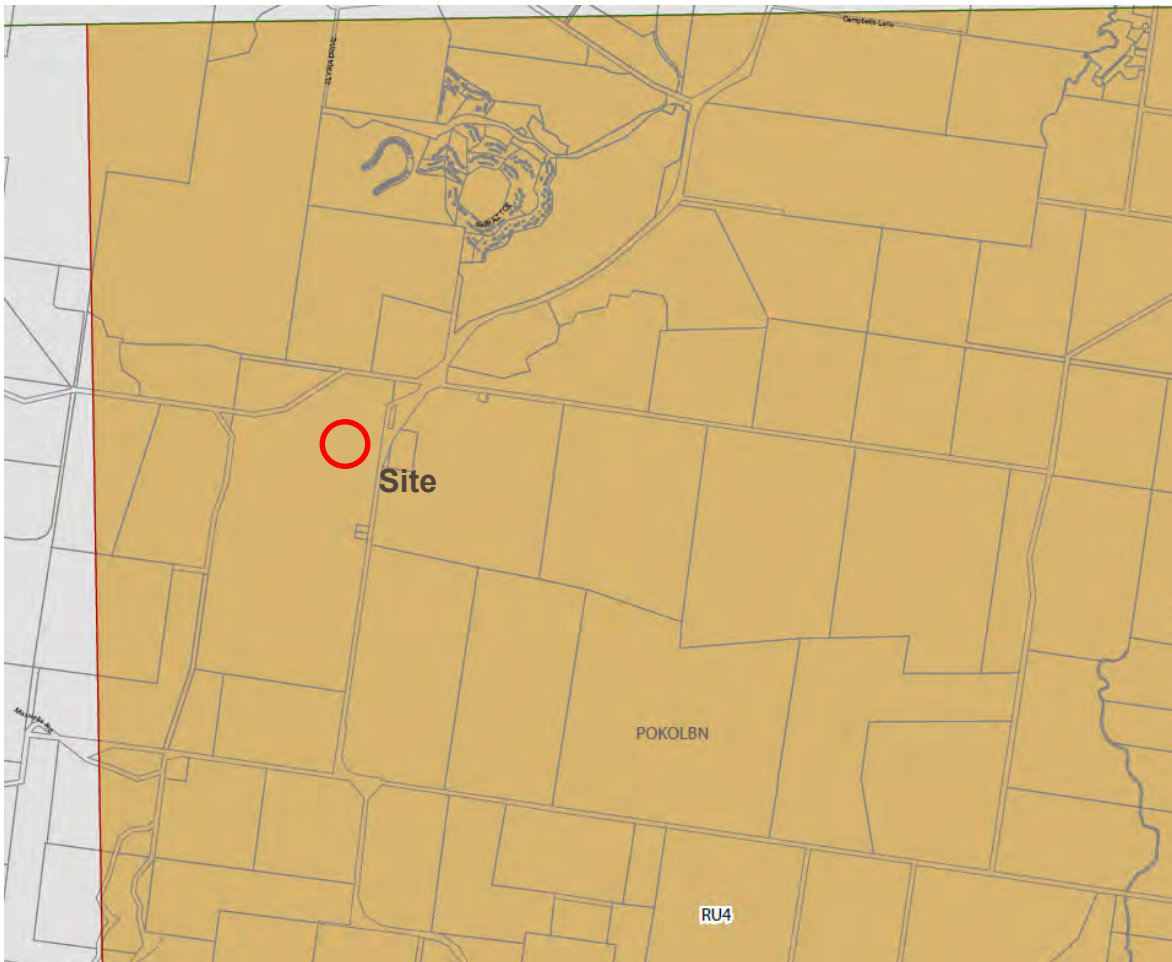


## Cessnock Local Environmental Plan 2011

### Land Zoning Map - Sheet LZN\_006C

#### Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B7 Business Park
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- IN3 Heavy Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU2 Rural Landscape
- RU3 Forestry
- RU4 Primary Production Small Lots
- RU5 Village
- SP2 Infrastructure
- SP3 Tourist



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# Cessnock Local Environmental Plan 2011

Current version for 31 August 2018 to date (accessed 29 October 2018 at 11:24)

[Land Use Table](#) > [Zone RU4](#)



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## Zone RU4 Primary Production Small Lots

### 1 Objectives of zone

- To enable sustainable primary industry and other compatible land uses.
- To encourage and promote diversity and employment opportunities in relation to primary industry enterprises, particularly those that require smaller lots or that are more intensive in nature.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To maintain prime viticultural land and enhance the economic and ecological sustainability of the vineyards district.
- To encourage appropriate tourist development (including tourist-related retail) that is consistent with the rural and viticultural character of the vineyards district.
- To enable the continued rural use of land that is complementary to the viticultural character of the land.

### 2 Permitted without consent

Extensive agriculture; Home occupations

### 3 Permitted with consent

Agricultural produce industries; Animal boarding or training establishments; **Cellar door premises**; Centre-based child care facilities; Community facilities; Dwelling houses; Environmental facilities; Environmental protection works; **Farm buildings**; **Function centres**; Home businesses; Home industries; **Information and education facilities**; Intensive plant agriculture; Neighbourhood shops; Plant nurseries; Respite day care centres; **Restaurants or cafes**; Roads; Roadside stalls; Rural supplies; Rural workers' dwellings; Secondary dwellings; Signage; **Tourist and visitor accommodation**; Waste or resource management facilities

### 4 Prohibited

Hotel or motel accommodation; Any other development not specified in item 2 or 3



## ATTACHMENT 2



## **SUMMARY OF PROPOSALS MADE FOR RECIPIENT SITES**

The following provides a summary of the proposed homestead relocation options along with a description of end use as proposed in the proponent's submission.

### **Scrumlo Road, Hebden**

The proposed recipient site in Hebden is situated off Scrumlo Road in Hebden, which is approximately 10km north of Ravensworth. The site is located within Muswellbrook LGA.

The site offering is situated in relatively steep terrain to the west of Bowmans Creek and overlooks semi-rural development. The buildings would have mixed usage and would transfer into private ownership following relocation.

Other potential recipient sites in the Hebden locality were also inspected.

### **Ben Ean, McDonalds Road, Pokolbin**

The proposed recipient site at Pokolbin is located immediately adjacent to the Ben Ean winery, off McDonalds Road. The site is situated within the Cessnock LGA.

The site offering is a vine covered parcel of land situated immediately to the north of Ben Ean winery. The site has good visibility from McDonalds Road and has access to power and water.

The buildings would have mixed usage including restaurant, retail, administration and exhibition space. The facility would be owned and managed by a Trust.

### **Hunter Valley Resort, Hermitage Road, Belford**

Hunter Valley Resort is situated off Hermitage Road in Belford and provides accommodation and leisure activities. Hunter Valley Resort is situated within Singleton LGA.

The site offering provides good visibility from Hermitage Road and would be accessible to the public throughout the year. The site is close to services (power, gas, water) and other facilities such as accommodation and tourist activities. The relocated buildings would transfer to private ownership and be integrated into the existing resort and used for the resort reception area, restaurant, cellar door and gift shop, wedding chapel and indigenous heritage exhibition space.

### **Corunna Station, Hermitage Road, Belford**

Corunna Station is situated off Hermitage Road in Belford and offers short-stay accommodation. Corunna Station is located within Singleton LGA.

The site offering has good exposure along Hermitage Road, and is situated approximately 300m from the intersection with the New England Highway. The site offering also contains a dam.

The buildings would have mixed usage such as guest house, restaurant, conference centre, tourism accommodation, cellar door, wedding venue, tea rooms, riding school or private home.

The broader Corunna Station property is 200 acres in area and contains a number of original buildings from its previous use as a sheep station.

### **Broke Village**

Broke is a village located approximately 24km from Singleton which lies close to the boundary of the Hunter Valley mining and vineyard districts. The proposal by members of the Broke-Fordwich community is to relocate the Ravensworth Homestead to a site within Broke to become the village square.

A number of site offerings were mooted with the majority on Crown Land. The buildings would be repurposed for mixed usage including office administration, exhibition space, café, tourist office, restaurant, cellar door and market square. The facility would be transferred into community ownership following relocation.

### **Glencore-owned land, Ravensworth**

Glencore owns substantial land holdings around its open cut mining operations in the Ravensworth area. A number of sites within approximately 5km of the existing Ravensworth Homestead site were mooted as potential recipient sites. These sites are situated within Singleton LGA and within Bowman's original '10,000 acre' land grant.

All sites have access to power with some sites also with access to a water source (either dam or pipeline).

Possible end use options for the relocated homestead group onto a Glencore-owned site included short stay accommodation, use as a farm house and administration facilities (during mining operation).

## ATTACHMENT 3



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## Ravensthorpe Homestead, Ravensthorpe, NSW

### SUGGESTED ATTRIBUTES FOR RECIPIENT SITE- Version 4

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> November 2018

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#### Introduction

When considering recipient sites for the proposed relocation of the Ravensthorpe homestead group it is appropriate that consideration be given to the desirable attributes that the recipient site should possess.

#### Draft List of Recipient Site Attributes

The following is a list of proposed attributes that became apparent during visits to potential sites made on 13<sup>th</sup> September 2018 and in further discussions on 18<sup>th</sup> September and 9<sup>th</sup> October 2018. It is open to delete, add or alter these after further discussion/investigations/consideration. No attempt has been made to order the items below as yet or consider the weighting each attribute might be given.

#### 1. **Aesthetics**

Whether or not the site has aesthetic appeal. This is relevant if the objective is to, at some stage, sell or lease the property.

#### 2. **Historic Veracity** (verisimilitude to existing configuration and character)

- 2.1. A **visual curtilage** of agricultural/pastoral land – this being within the control of the proprietor with no prospect of future mining except at a very long distance.
- 2.2. Location with a **pastoral outlook** similar to the present site – e.g. one not cluttered with recent semi-rural or other development.
- 2.3. **Similar land form** generally – to provide a similar setting for relocated group similar to existing; i.e. land to rise to the north behind Homestead Complex, scattered native vegetation, waterbody etc.
- 2.4. **Immediate land form**- similar to current- to provide foundations similar to the existing homestead to allow reuse of building footings and simulate floor level to ground level relationships to existing and to provide area of garden settings similar to existing.
- 2.5. **Pastoral Use**- already established/or historic use of the land.
- 2.6. **Viability of land**- capable of supporting reconstructed homestead complex gardens/plantings and landscape elements in the setting.
- 2.7. Certainty that evidence of mining activity within the visual catchment will be **remediated** – remediated so that to a normal visitor the land would not appear to have been mined (nominated time frame? i.e. in the medium term?)
- 2.8. **Minimise damage/loss of significance** to buildings caused by relocation. One piece better than 3 pieces etc.

3. Avoid another **heritage place** (including indigenous place)- the moving of the homestead group should not be detrimental to another heritage property. Is capable of incorporating other significant/historic outbuildings/agricultural features. Should not be located on another colonial estate/property- results in mixed messages and degrades significance.
4. **Interpretation Requirements/Opportunities**
  - 4.1. Located **within the boundaries of the Ravensworth Place or extended Ravensworth estate lands** (other James Bowman lands) – to satisfy historical attributes and minimise the allegation that buildings are being “taken away” from the locality. To retain a “sense of place” for the local community/Hebden and past residents of Ravensworth village. To retain links to the history of Ravensworth.
  - 4.2. Retain within the **Singleton LGA**- part of the history of the Upper Hunter region and colonial settlement of Patrick’s Plains.
  - 4.3. **Vehicle approach** from the west and front (south) driveway? – to simulate the current and historic approach to homestead.
  - 4.4. **Orientation** of the homestead complex to be maintained as south-north orientation.
  - 4.5. Existence of **waterbody** (creekline) and **dam on axis** to the house. Capable of supporting the construction of a dam on axis- interpretation of a deliberate design feature of homestead complex. Creekline preferred on the west of the homestead, but not essential.
5. **Future Use/Viability: Pastoral/Agricultural or other commercial viability**
  - 5.1. Demonstrated **absence of coal deposits** under the proposed footprint? Under the immediate vicinity of the footprint? Under a wider part of visual catchment? Within a broader defined area? It can be argued that this is an essential attribute for the long-term survival of the place.
  - 5.2. Acceptable land **fertility** – Certainty that land is capable of supporting new pastoral/agricultural or other use for the long term- fertility to provide rural setting for homestead group and economic viability to suit a rural-themed end use.
  - 5.3. **Access to water**- land size able to support a dam, natural watercourse required, water for stock use
  - 5.4. Located near **established known tourist destination** – close/reasonable proximity to accommodation and hospitality to provide greatest potential for revenue generation
  - 5.5. Location near **major transport routes** – to facilitate ease of access
  - 5.6. **Access to support infrastructure (car parking, bus parking,)/utilities (power, water, sewer)** – to suit proposed end use
  - 5.7. Location reasonably **available to public visitation**. Both physically and contractually.
  - 5.8. **Resources available** – to allow full implementation of best practise (subject, of course, to approvals). Availability of future resourcing for ongoing care and conservation.
  - 5.9. Acceptable in **local public opinion**. What are the general sentiments? Satisfying identified social issues- social impact assessment.
  - 5.10. **Planning requirements**-likelihood of permissibility of zoning and permissibility of proposed end uses.
  - 5.11. **Social, health and perception impacts of moving the buildings onto a new site:** environmental, cultural and social impacts on the new site. If close to area of mining (or future mining) then need to consider zone of affectation in relation to air quality, noise and blast vibration and its impact on the proposed end use.



**6. Logistics of Relocation**

- 6.1. **Destructive impacts of relocating-** the need to move buildings broken into separate parts or able to be moved as whole.
- 6.2. Acceptable **travel path preparation costs** in relation to road widening requirements, bridge crossings, tree clearing and power line raising/lowering.
- 6.3. **Transport risk** – recipient sites located further afield pose a greater risk in relation to building damage
- 6.4. **Other logistical considerations** - relating to moving the structures (related to geography) and secondary approvals (road closures, Council etc).
- 6.5. **Approval process-** one or two stage approval needed?

Ian Stapleton/Kate Denny  
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LSJ Heritage Planning & Architecture

# Appendix D – Planning Constraints Assessment

Our Ref: 4166C/BJ/CB/06062019

06 June 2019

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Coal Assets Australia, Glencore  
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Dear Shane

## Re: Review of Ravensworth Homestead Recipient Sites

### 1.0 Introduction

Umwelt is currently preparing an EIS and associated impact assessment for Glencore's proposed Glendell Continued Operations Project (GCOP). A component of the (GCOP) involves mining through the area occupied by the Ravensworth Homestead, consisting of a precinct of significant colonial homestead buildings and remnant gardens dating back to the 1820s.

Glencore is considering options for the relocation of the homestead building complex and some features of the garden, occupying an area of approximately 105 x 65 m. Glencore has identified eight preliminary potential recipient sites for the relocation of the Homestead building complex including three potential locations within the township of Singleton and five within or adjacent to the village of Broke. All locations are within the Singleton Council Local Government Area, covered by the Singleton Local Environment Plan 2013 (Singleton LEP).

Umwelt has been engaged to undertake a desktop review of planning constraints and features of each of the eight preliminary sites.

This report provides a review of the following aspects of each site determined through desktop studies involving searching of government data and GIS mapping covering the following:

- A title search to determine Land Ownership/tenure status
- Review of Singleton LEP to determine Land Zoning and permissible development types
- Review of mapped BSAL areas for Strategic Regional Planning
- Review of potential flood risk mapped in the Singleton LEP using the 1 in 100 ARI flood planning level and specialist Wollombi Brook flood study (Wollombi Brook Flood Study Final Report, BMT WBM 2016)
- A search of the NSW AHIMS register to identify known Cultural Heritage sites
- Review of vegetation types sourced from the Upper Hunter Plant Community Types (OEH 2018)

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GIS mapping of constraints has involved overlaying a graphic of the existing Ravensworth Homestead building complex to scale on each preliminary site location along with mapping data from available sources.

In addition, a visual site inspection was undertaken on 23 January 2019 to identify visible issues such as existing built features, terrain, vegetation and site access.

## 1.1 Future Land Use Assumption

In reviewing planning constraints and permissible development types for each preliminary recipient site it has been assumed that the relocated Ravensworth Homestead will be used for yet to be confirmed community services in Singleton which could include a base for the Singleton community groups such as the historical society or other community. The potential future uses in Broke are assumed to be a community centre, visitors centre, tourist information, showcase for local produce e.g. wines and olives, rural history centre etc.

The suitability of the relocated buildings for these potential future uses and whether they meet other requirements such as building codes and standards, or issues associated with power, water and communication services etc. have not been considered in this report.

## 1.2 Report Structure

Outcomes of the desktop study for each preliminary recipient site in Singleton are provided in **Section 2.0**, and the analysis of the Broke village site locations are provided in **Section 3.0**.

Within each site review are photographs of each site and three figures showing the following results of the GIS mapping analysis exercise for each proposed location.

A summary of results is provided in **Section 4.0**.

## 2.0 Singleton Recipient Sites

### 2.1 Option 1 – Singleton Site 1 – Civic Avenue

#### 2.1.1 Land Ownership

Lot/Section/Plan No	Proprietor
100/-/DP737187	The Council of the Shire of Singleton

#### 2.1.2 Flood Impacts

The entire site is located within the flood planning area as defined by the Flood Planning Map in the Singleton LEP (**Figure 1.1**). The flood planning level refers to the level of a 1:100 average recurrent interval (ARI) flood event plus 0.5 metre freeboard.

Clause 7.2 of the LEP regarding 'Flood Planning' has been reproduced below:

- 1) The objectives of this clause are as follows:
  - a) to minimise the flood risk to life and property associated with the use of land,
  - b) to allow development on land that is compatible with the land's flood hazard,
  - c) to avoid significant adverse impacts on flood behaviour and the environment.

- 2) This clause applies to:
  - a) land identified as “Flood planning area” on the Flood Planning Map, and
  - b) other land at or below the flood planning level.
- 3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:
  - a) is compatible with the flood hazard of the land, and
  - b) will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
  - c) incorporates appropriate measures to manage risk to life from flood, and
  - d) will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and
  - e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.
- 4) A word or expression used in this clause and clause 7.3 has the same meaning as it has in the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005, unless it is otherwise defined in this clause.

#### **Interpretation:**

The relocation of Ravensworth Homestead to the R5 zoned area within Lot 100/-/DP737187 falls within the Singleton LEP Flood Planning Area which will require the consent authority to ensure the development satisfies key aspects 3) a) to e) above. Given the nature of other development on this Lot owned by Council, it is anticipated that use of the homestead for community services would satisfy the requirements. One possible exception is the risk associated with relocating a significant heritage resource in an area with flood risk and therefore potential damage to the relocated homestead. This aspect may not satisfy the flood planning area aspect 3) a) above.

#### **2.1.3 Land Zoning**

Refer to **Figure 1.2**, the proposed relocation site is located on land zoned B5.

#### **Zone B5 – Business Development**

##### **1) Objectives of zone**

To enable a mix of business and warehouse uses, and bulky goods premises that require a large floor area, in locations that are close to, and that support the viability of, centres.

##### **2) Permitted without consent**

Nil

##### **3) Relevant developments permitted with consent**

Centre-based child care facilities; Office premises; Take away food and drink premises; Any other development not specified in item 2 or 4.



#### 4) Relevant prohibited uses

Commercial premises; Information and education facilities; Tourist and visitor accommodation.

#### Interpretation:

The current zoning (B5) does not permit all of the assumed end-use for the Homestead given that information and education facilities are prohibited. Singleton Council approval would be required for a takeaway food and drink use. The site would most likely require rezoning, depending on confirmation of the actual end use.

#### 2.1.4 Cultural Heritage

##### AHIMS

A search of the Office of the Environment and Heritage Aboriginal Heritage Information Management System (AHIMS) Web Services was undertaken for Lot/DP 100/DP737187, with a 50 metre (m) buffer. The search returned the following result:

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

#### 2.1.5 Planning Considerations

The site is located within Biophysical Strategic Agricultural Land (BSAL) (**Figure 1.1**) however this should not constrain the project as it only affects State Significant Mining Developments.

Civic Park is located north of the site and is a valued recreational space in the community (ROSS Planning, 2013). The park should remain unaffected by the proposed site.

The proposed site is identified as non-native vegetation, as such the proposed homestead relocation is not anticipated to disturb any native vegetation (**Figure 1.3**).

#### 2.1.6 Site Inspection

##### Notes:

- Air quality monitoring station located at the rear of site. These monitors have restrictions on their proximity to other landuses and may need to be relocated with agreement from EPA/OEH to facilitate the homestead relocation.
- Power supply box located at the front right-hand side of the site
- Site is easily accessible via Civic Avenue
- Site is surrounded by business including childcare, swimming pool, gym, council and motel
- Terrain is flat and the area appears to be just of adequate size to fit the relocated homestead complex in its original layout, however without much space for a recreated circular driveway or other contextual features from the historical homestead layout.

**Plate 1      Option 1 – Singleton Site 1 – Civic Avenue**







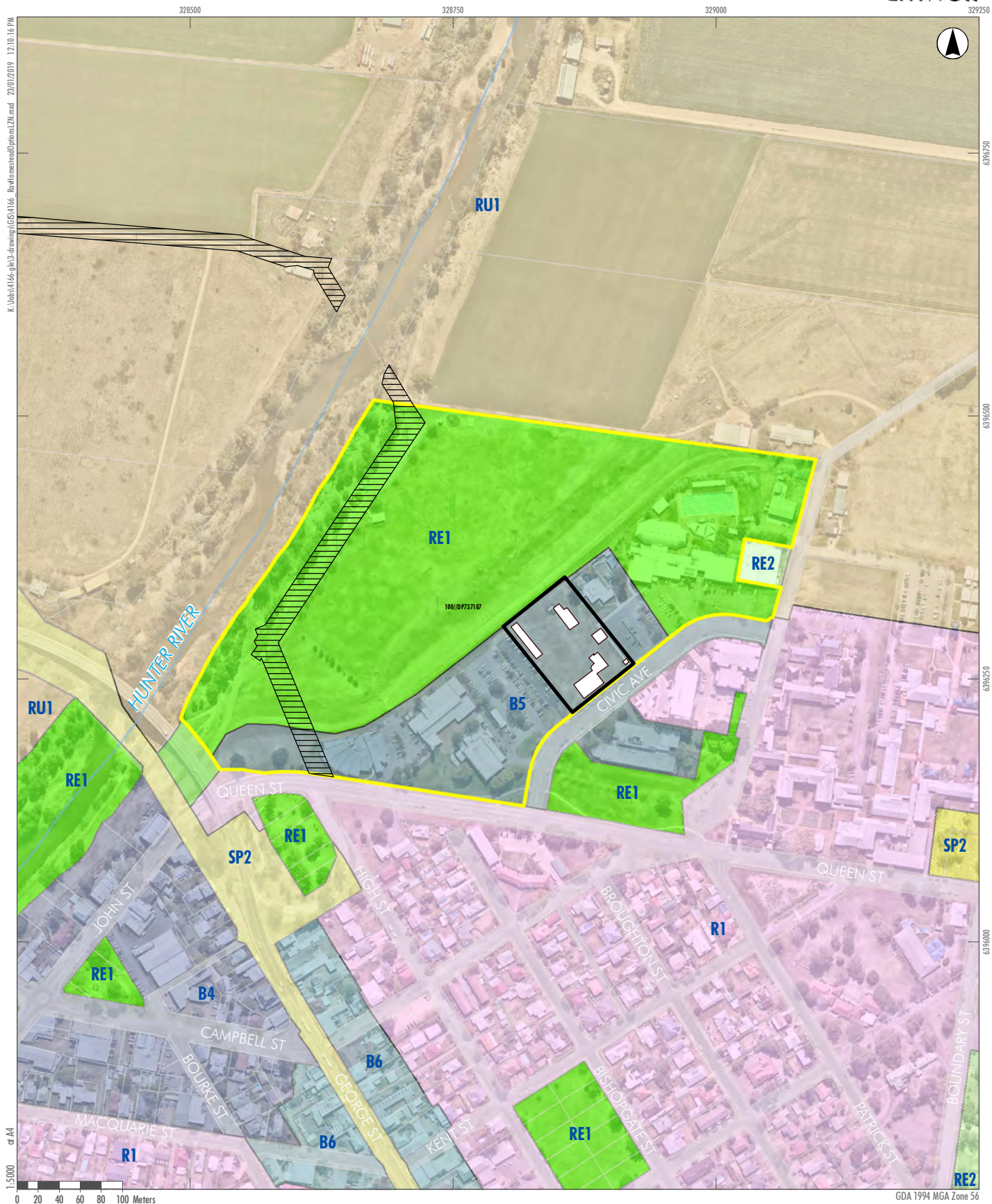
Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Strategic Regional Landuse Policy**
- Biophysical Strategic Agricultural Land
- Heritage**
- Conservation Area - General
- Item - General
- Flood Planning Area (Singleton LEP 2013)

FIGURE 1.1

Option 1 - Singleton Site 1 – Civic Avenue Overview





### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Easement

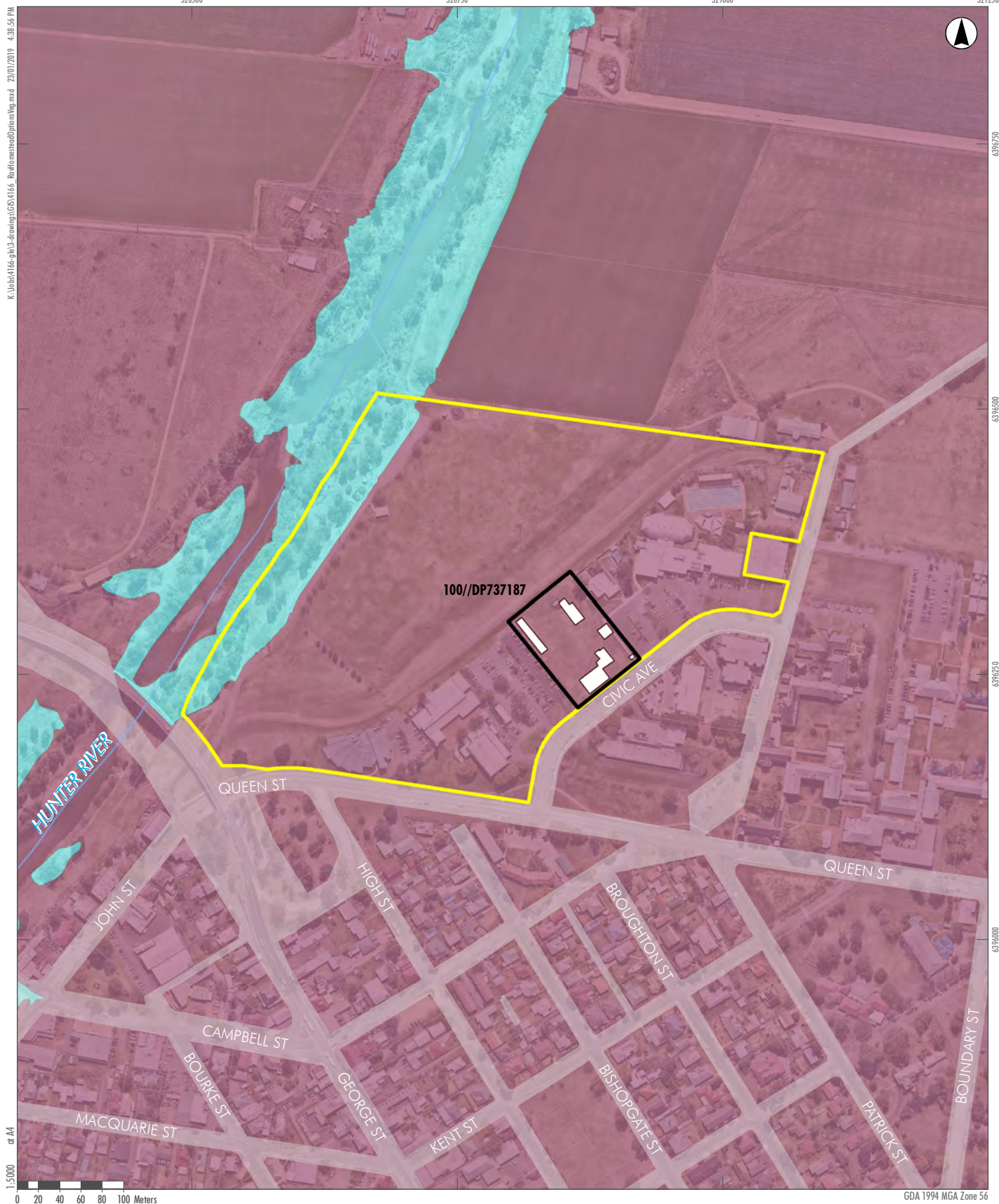
### Land Zoning (Singleton LEP 2013)

- B4 Mixed Use
- B5 Business Development
- B6 Enterprise Corridor
- R1 General Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- SP2 Infrastructure

FIGURE 1.2

Option 1 - Singleton Site 1 – Civic Avenue  
Land Zoning (Singleton LEP 2013)





#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894)**

- Non-native
- River Red Gum / River Oak riparian woodland wetland in the Hunter Valley

FIGURE 1.3

**Option 1 - Singleton Site 1 – Civic Avenue**  
**Upper Hunter Plant Community Types (OEH**  
**December 2018)**



## 2.2 Option 2 – Singleton Site 2 – Howe Street

### 2.2.1 Land Ownership

Lot/Section/Plan no	Proprietor
1/7/DP3347*	Singleton District Hospital
2/7/DP3347*	Singleton District Hospital
3/7/DP3347	The Dangar Cottage Hospital Singleton
10/7/DP3347	The Dangar Cottage Hospital Singleton
11/7/DP3347*	Singleton District Hospital
12/7/DP3347*	Singleton District Hospital
27/7/DP3630	Health Administration Corporation
14/7/DP3347	Hunter New England Local Health District
15/7/DP3347	Hunter New England Local Health District
13/7/DP3347	Hunter New England Local Health District

\* relocation site

### 2.2.2 Flood Impacts

The site is partially located within the flood planning area as defined by the Flood Planning Map in the Singleton LEP (**Figure 2.1**). The flood planning level refers to the level of a 1:100 ARI flood event plus 0.5 m freeboard. The site may require filling to mitigate potential flood risks.

### 2.2.3 Land Zoning

Refer to **Figure 2.2**, the proposed relocation site Option 2 is located on land zoned SP2.

#### Zone SP2 – Infrastructure: Health Services Facilities

##### 1) Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

##### 2) Permitted without consent

Extensive agriculture

##### 3) Permitted with consent

Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

##### 4) Prohibited

Any development not specified in item 2 or 3

## Interpretation:

Special Purposes of this block and adjoining land parcels is for health purposes consistent with the adjacent land use being a Hospital and associated buildings. The proposed uses of the homestead are not related to the zoning objective being for “Health Services Facilities”. Rezoning would be required for other uses such as the assumed land uses which would require further consultation with Council.

### 2.2.4 Cultural Heritage

#### NSW Planning Portal

The following heritage items are located within the Lots that were identified for consideration as however they occur in the northern part of the area in question, as shown on **Figure 2.1** and do not affect the site area required for relocation of the homestead.

- Conservation Area – General: Singleton Heritage Conservation
- State Heritage Act: Singleton District Hospital
- Item – General: Singleton District Hospital.

The presence of these items adjacent to the proposed relocation site do not appear to affect the area required for relocation.

#### AHIMs

A search of the OEH AHIMS Web Services was undertaken for each of the site’s Lot/DP’s, with a 50 m buffer. The searches returned the following result:

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

### 2.2.5 Planning Considerations

Vegetation on the site is mapped as non-native (**Figure 2.3**), the relocation of the homestead to this location will require some tree removal depending on exact layout of proposed relocation. This should be approvable.

### 2.2.6 Site Inspection

#### Notes:

- Cattle yards are located at rear, left-hand side of site
- Powerlines run along Boonal Street (on the left-hand side of the site)
- Site is easily accessible via Boonal Street or Howe Street
- Terrain is flat with a gentle downward slope away from Howe Street towards the rear of the site
- Appears to be adequate space for the relocated homestead complex, although historical contextual features such as the circular drive would not fit if the original building layout was maintained.

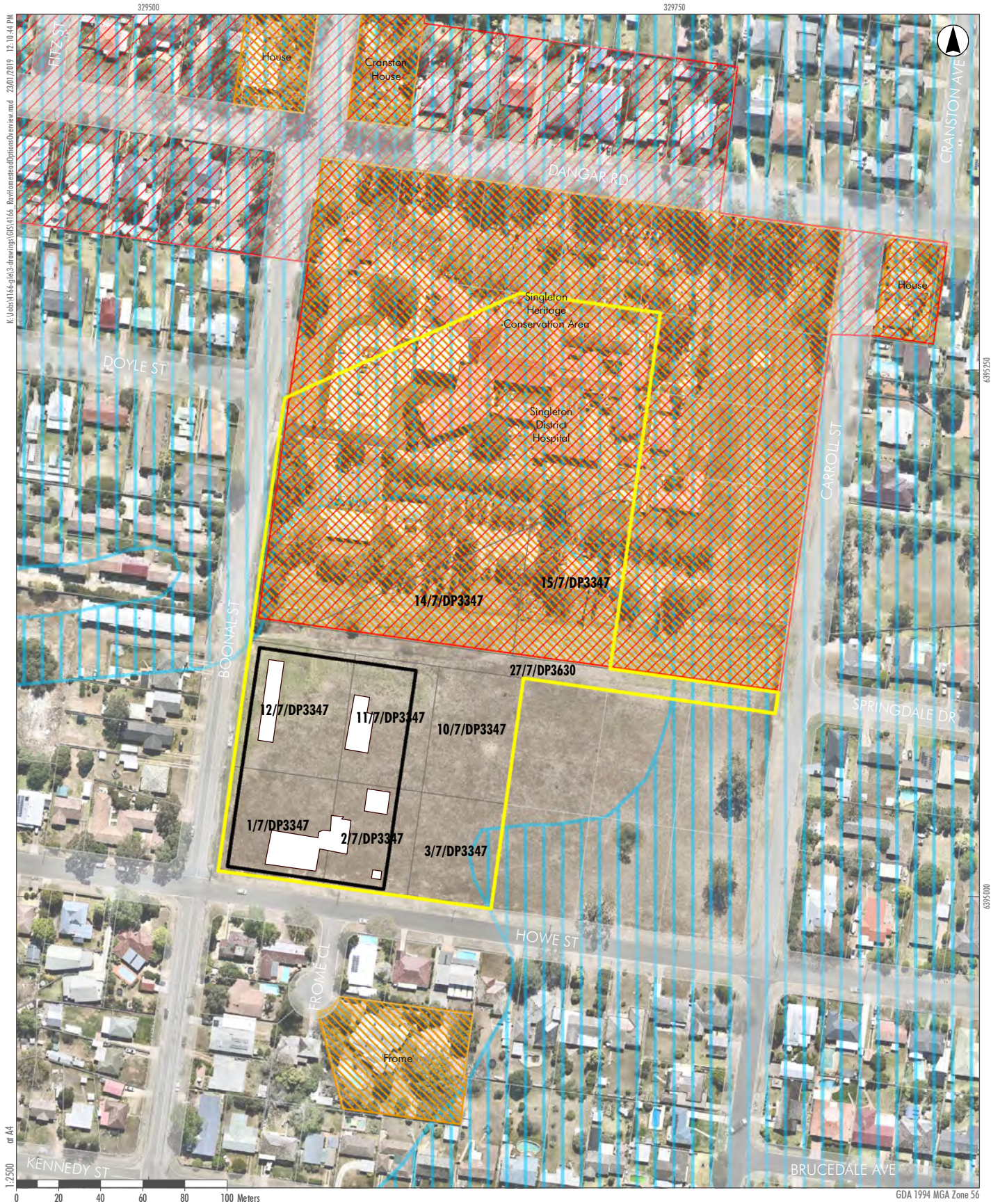
**Plate 2      Option 2 – Singleton Site 2 – Howe Street**



**Plate 3      Option 2 – Singleton Site 2 – Howe Street**





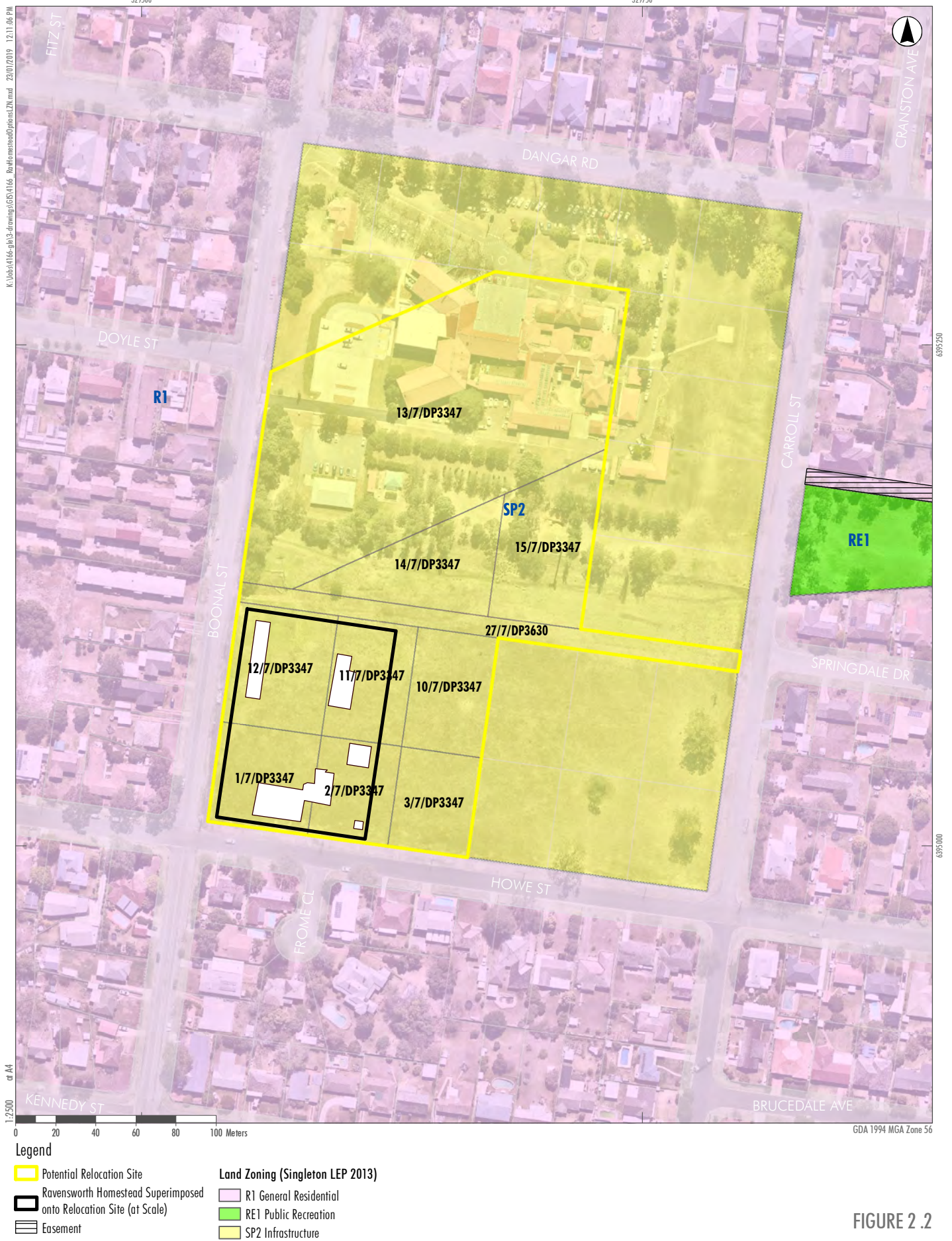


- Legend**
- Potential Relocation Site
  - Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
  - Heritage**
  - Conservation Area - General
  - Item - General
  - Flood Planning Area (Singleton LEP 2013)

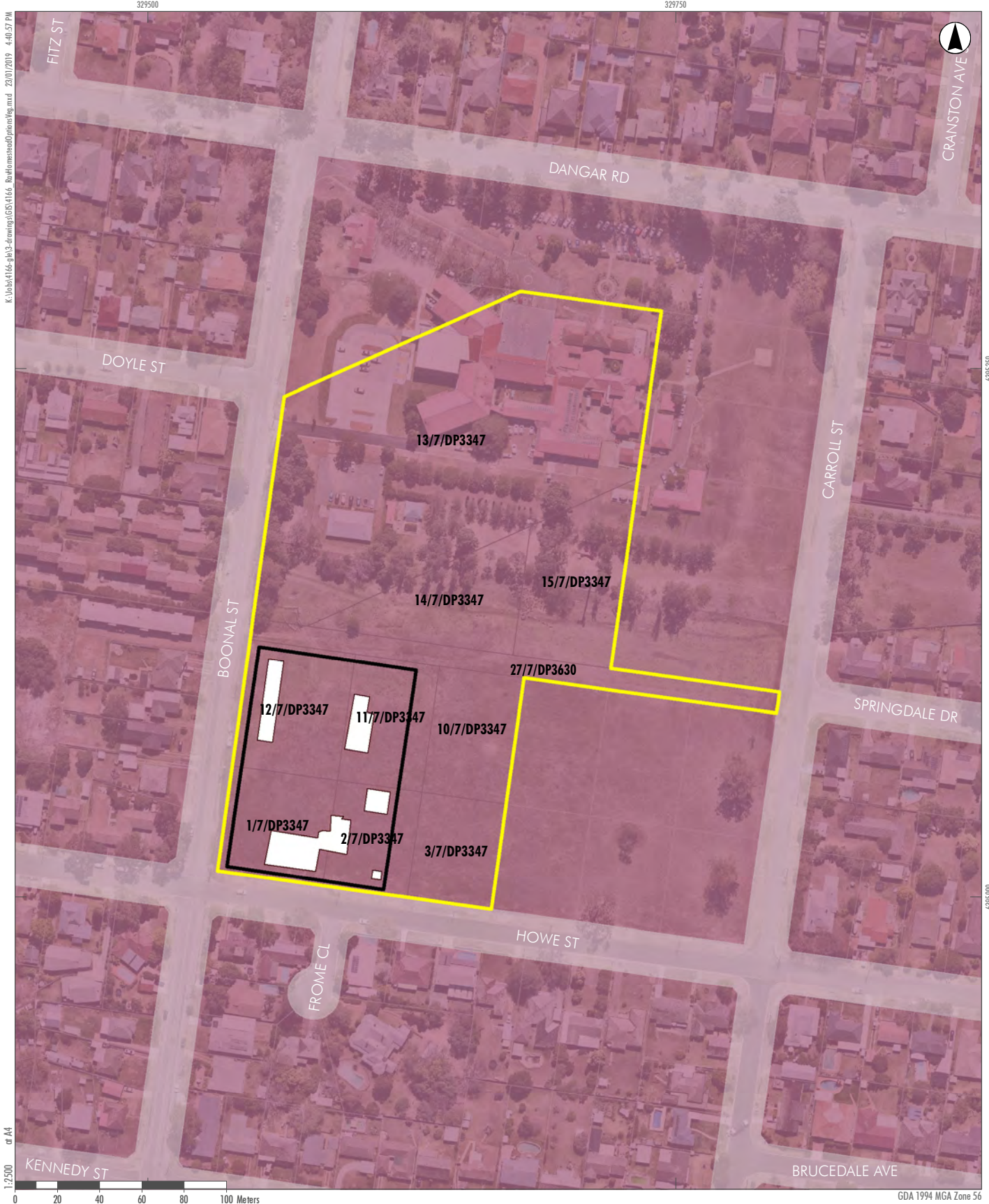
FIGURE 2.1

Option 2 - Singleton Site 2 – Howe Street Overview









# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894
- Non-native

FIGURE 2.3

Option 2 - Singleton Site 2 – Howe Street  
Upper Hunter Plant Community Types (OEH  
December 2018)

## 2.3 Option 3 – Singleton Site 3 – Albion Park

### 2.3.1 Land Ownership

Lot/Section/Plan no	Proprietor
1/-/DP918149	The Minister for Lands (Crown Land)

Glencore will confirm if Native Title rights have been extinguished on this land.

### 2.3.2 Flood Impacts

The entire site is located within the flood planning area as defined by the Flood Planning Map in the LEP (**Figure 3.1**). The flood planning level refers to the level of a 1:100 ARI flood event plus 0.5 m freeboard. May require mitigation of flood risks by some filling and raising of the site, requires further detailed investigation.

### 2.3.3 Land Zoning

Refer to **Figure 3.2**.

#### Zone RE1 – Public Recreation

##### 1) Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

##### 2) Permitted without consent

Environmental protection works

##### 3) Relevant purposes permitted with consent

Centre-based child care facilities; Community facilities; Information and education facilities; Restaurants or cafes; Roads; Signage

##### 4) Prohibited

Any development not specified in item 2 or 3

#### Interpretation:

Current zoning permits community facilities and café/restaurants, Information and education facilities. Rezoning may be required for commercial purposes.

### 2.3.4 Cultural Heritage

A search of the OEH AHIMS Web Services was undertaken for Lot/DP 1/DP918149, with a 50 m buffer. The search returned the following result:

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

### 2.3.5 Planning Considerations

The Singleton Council Open Space and Recreation Needs Study 2012 states that Albion Park provides significant value to the community due to a deficiency of local sportsgrounds and courts. The study also mentions the development of a community garden at Albion Park to provide an alternate, passive recreation space for local residents to interact and learn new skills, incorporating both space for the general community and Aboriginal groups.

Use of the site for established recreational purposes including cricket may lead to objections from current users, and may require mitigation through the provision of replacement facilities elsewhere.

The proposed site would not disrupt any native vegetation (**Figure 3.3**).

### 2.3.6 Site Inspection

#### Notes:

- Cricket pitch in centre of site
- Large trees run along Bathurst Street and Wynyard Street
- Three picnic tables and shelters as well as two taps run along Wynyard Street
- Site is easily accessible via Bathurst or Wynyard Streets
- Terrain is flat, site appears to provide adequate space for the relocated homestead complex.



**Plate 4      Option 3 – Singleton Site 3 – Albion Park from Bathurst Street**



**Plate 5      Option 3 – Singleton Site 3 – Albion Park from Wynyard Street**





**Plate 6      Option 3 – Singleton Site 3 – Albion Park from Wynyard Street**







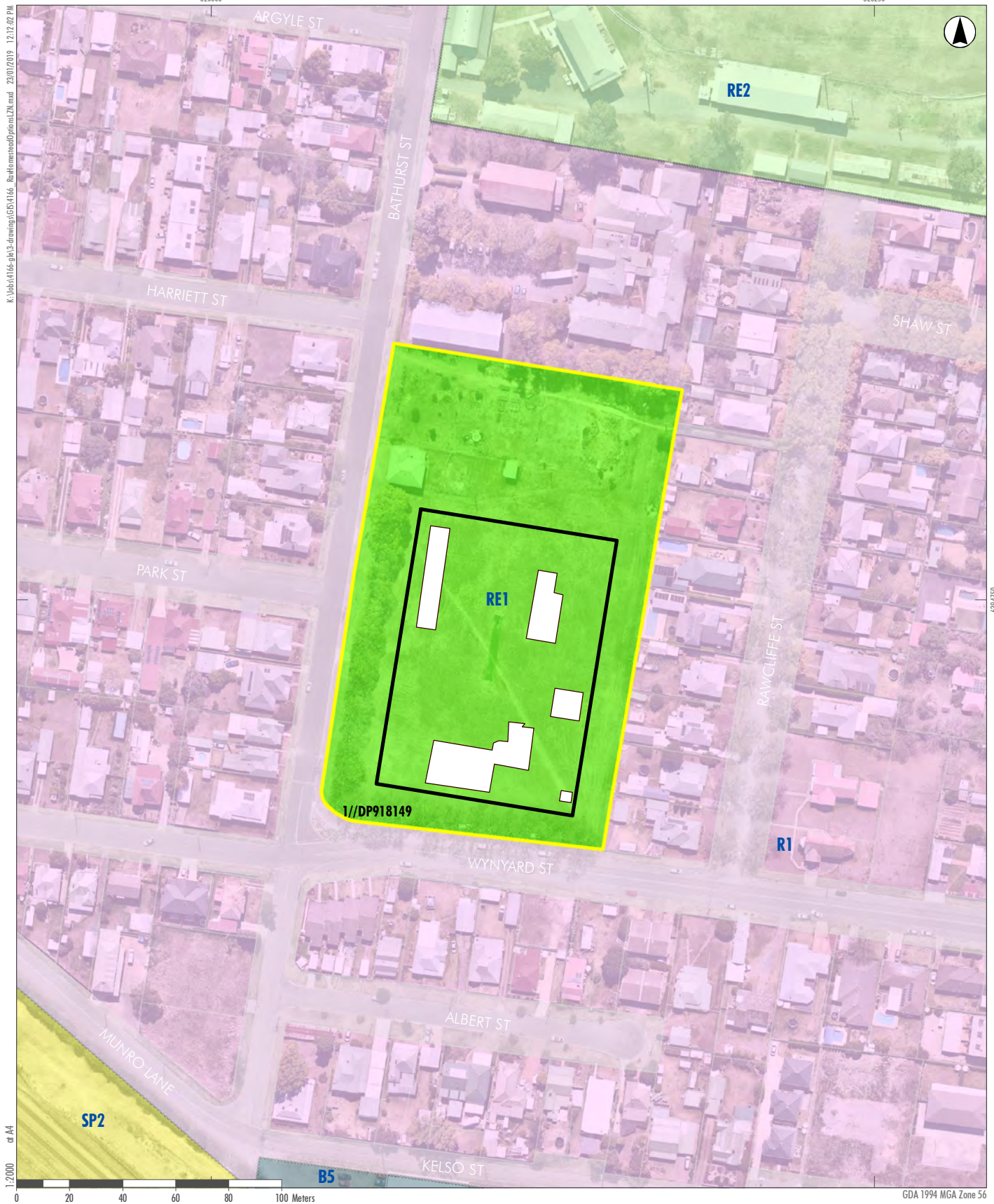
#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Flood Planning Area (Singleton LEP 2013)
- Strategic Regional Landuse Policy**
- Biophysical Strategic Agricultural Land
- Heritage**
- Conservation Area - General
- Item - General

FIGURE 3.1

### Option 3 - Singleton Site 3 – Bathurst Street Overview





Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

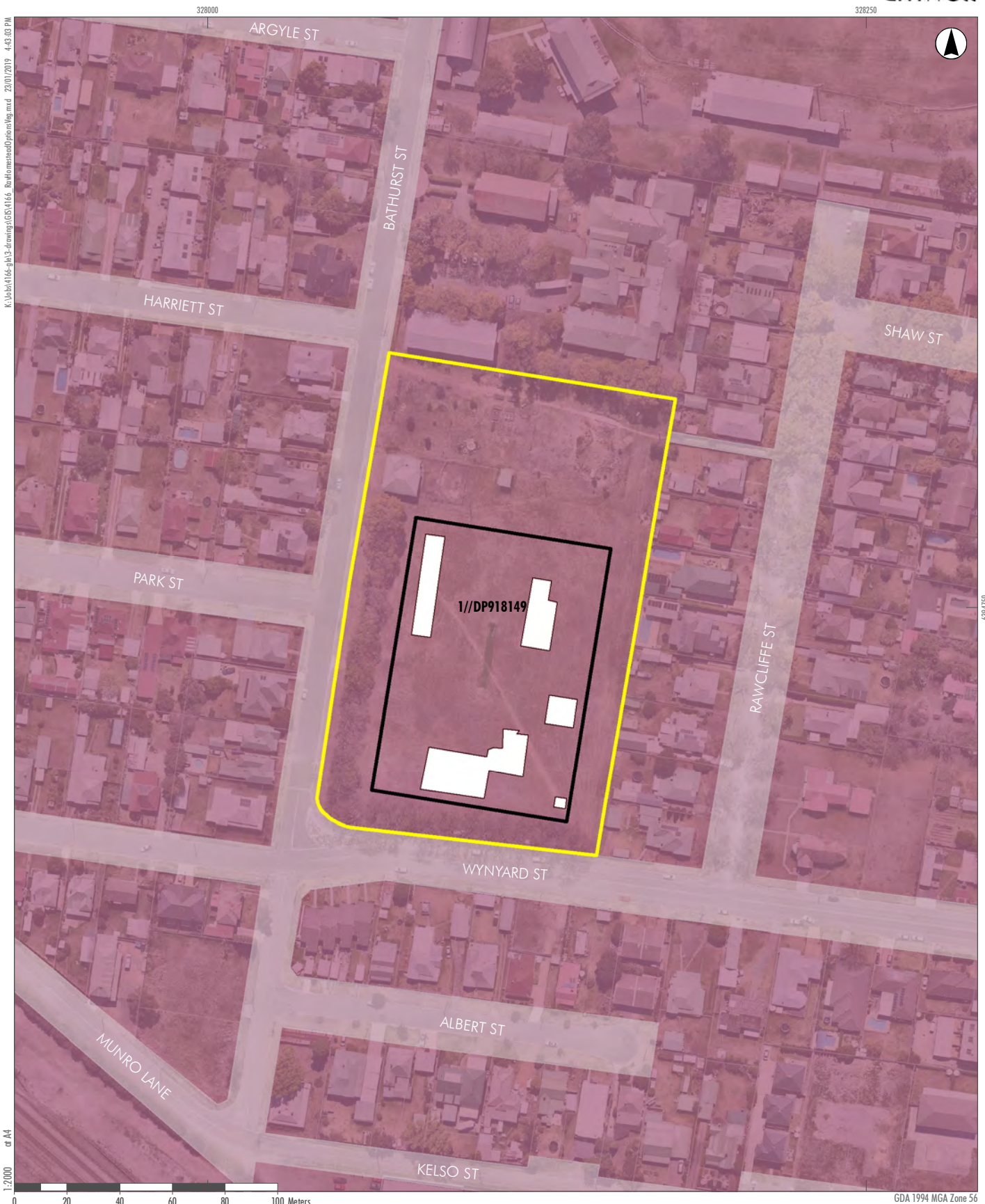
Land Zoning (Singleton LEP 2013)

- B5 Business Development
- R1 General Residential
- RE1 Public Recreation
- RE2 Private Recreation
- SP2 Infrastructure

FIGURE 3.2

Option 3 - Singleton Site 3 – Bathurst Street Land Zoning (Singleton LEP 2013)





1:2000 at A4

**Legend**

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894
- Non-native

**FIGURE 3.3**

**Option 3 - Singleton Site 3 – Bathurst Street  
Upper Hunter Plant Community Types (OEH  
December 2018)**

### 3.0 Broke Recipient Sites

All potential relocation sites in Broke village have been assessed for potential flood impacts by reference to the 2016 Wollombi Brook Flood Study (BMT WBM, 2016) shown in **Figure 8.4**.

#### 3.1 Option 4 – Broke Site 1 – Wollombi Street (South)

##### 3.1.1 Land Ownership

Lot/Section/Plan no	Proprietor
7001/-/DP93462	The State of New South Wales (Crown Land)

Glencore will confirm if Native Title rights have been extinguished on this land.

##### 3.1.2 Flood Impacts

The site is not included within the Flood Planning Map in the LEP (**Figure 4.1**), however given the site is located between the watercourse Wollombi Brook and the flood planning area, it can be assumed that the site would be potentially effected during a 1:100 ARI flood event.

This assumption is supported by the 2016 Wollombi Brook Flood Study (BMT WBM, 2016) (**Figure 8.4**) which indicates that the site would be partially inundated in a 1:100 ARI flood event.

Part of the site is likely to require filling to mitigate the flood impacts.

##### 3.1.3 Land Zoning

Refer to **Figure 4.2**. The proposed relocation site is located on land zoned RE1.

##### Zone RE1 – Public Recreation

###### 1) Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

###### 2) Permitted without consent

Environmental protection works

###### 3) Relevant land uses permitted with consent

Centre-based child care facilities; Community facilities; Information and education facilities; Restaurants or cafes; Roads; Signage

###### 4) Prohibited

Any development not specified in item 2 or 3.

## Interpretation:

Current zoning permits community facilities, information and education facilities, markets and café/restaurants consistent with the assumed use of the relocated homestead. Rezoning may be required for other commercial purposes.

### 3.1.4 Cultural Heritage

#### NSW Planning Portal

Item – General: War memorial (refer to **Figure 4.1**).

#### AHIMS

A search of the OEH AHIMS Web Services was undertaken for Lot/DP 7001/DP93462, with a 50 m buffer. The search returned the following result:

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following results for the identified Aboriginal site:

**Table 3.1 – Extensive AHIMS search for Lot/DP 7001/DP93462**

Site ID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-6-2730	Broke Bridge PAD2	GDA	56	322150	6374850	Open site	Valid	Potential Archaeological Deposit (PAD)

Whilst the known Aboriginal heritage site would remain unaffected as it is outside of the proposed site (**Figure 4.1**), given the proximity of the relocation area to permanent water (Wollombi Brook) and the presence of a known Aboriginal site nearby, it is reasonable to assume that further Aboriginal heritage sites are likely to be present and appropriate surveys and investigations and potentially additional permits would be required prior to development.

### 3.1.5 Planning Considerations

The Broke Community Hub Detailed Master Plan 2017 identifies Stewart McTaggart Park as being located within the 'Community Hub' which is to be developed to provide an overall landscape theme for the community. Stewart McTaggart Park is to be the location for an all age's playground including skate park, picnic facilities and play equipment. The plan states that the Park will provide nature-based, contextually appropriate recreation and play opportunities for both the local community and future visitors.

The site is located within Critical Industry Cluster Land (Viticulture) however this should not affect the proposed relocation of the homestead as it does not involve mining. However it may be necessary to separate the relocation site from the Glendell Continued Operations Project application project area to maintain this separation when considering CIC matters. In this case a separate Singleton Council Development Consent may be required for the relocation. (**Figure 4.1**).



Vegetation mapping indicates the site contains non-native vegetation (**Figure 4.3**) however this was not confirmed during the site visit, and a further detailed study of plant community types would be required prior to lodging development consent for the relocation.

### **3.1.6 Site Inspection**

#### **Notes:**

- Playground and picnic tables are located within the site – would need relocating
- Gravel road and carpark are located within the site
- War memorial is located within the site – may need relocation and would be subject to community stakeholder consultation
- Adjacent to NSW Rural Fire Station
- An absorption trench is located within the left-hand side of the site
- Site is easily accessible via Wollombi Street
- It should be possible to re-establish a circular drive to the front of the relocated homestead to enhance heritage aspects if required.
- Terrain undulates by approximately one metre across the site
- Vegetation mapping shown as non-native is not confirmed at inspection. This will require further investigation to determine species present. See **Plates 7** and **Plate 8**.

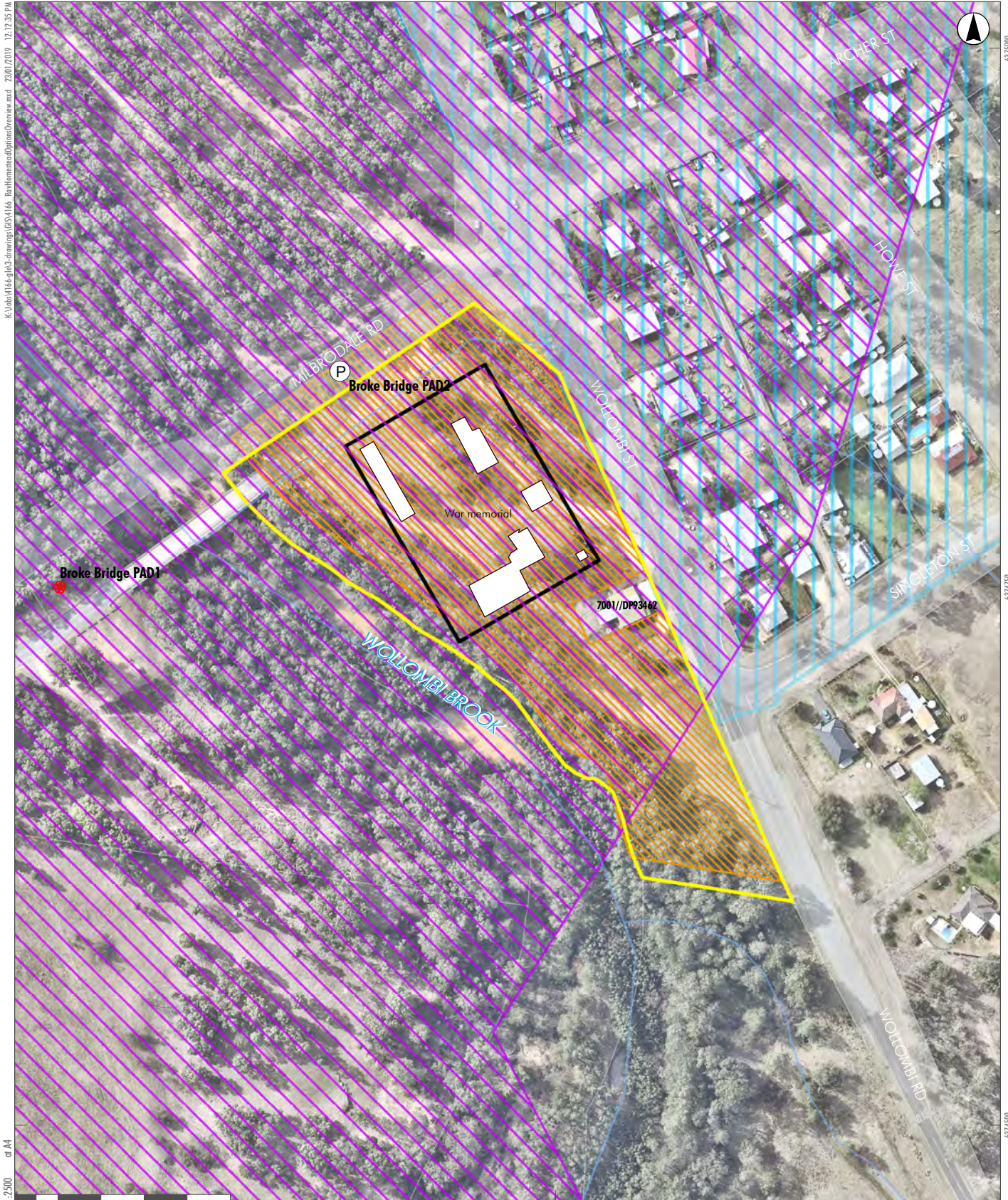
**Plate 7      Option 4 – Broke Site 1 – Wollombi Street (South)**



**Plate 8      Option 4 – Broke Site 1 – Wollombi Street (South)**







1:2500 at A4 GDA 1994 MGA Zone 56

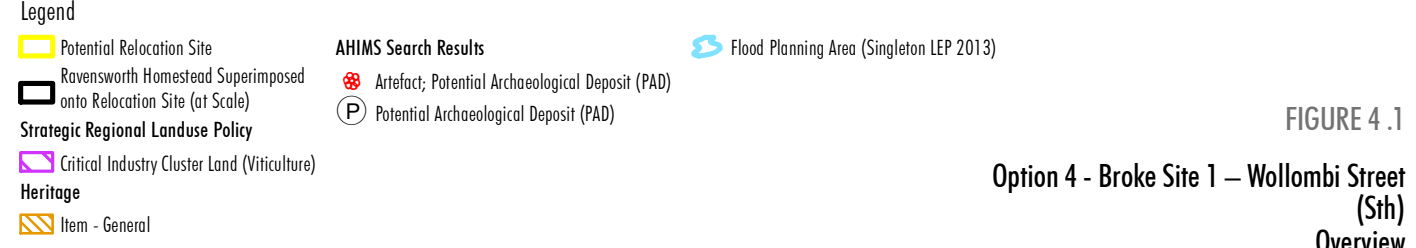
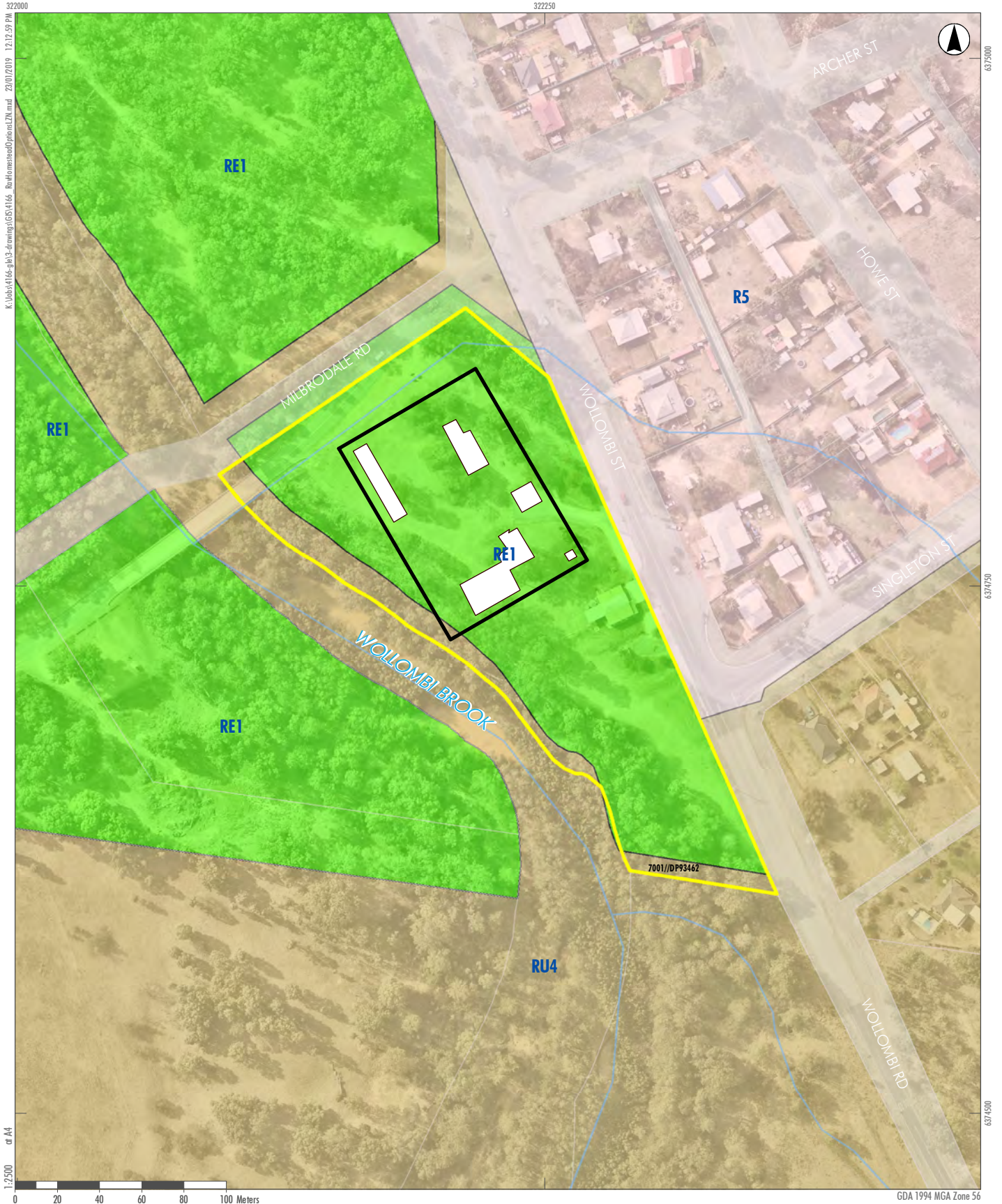


FIGURE 4.1

Option 4 - Broke Site 1 – Wollombi Street (Sth) Overview





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

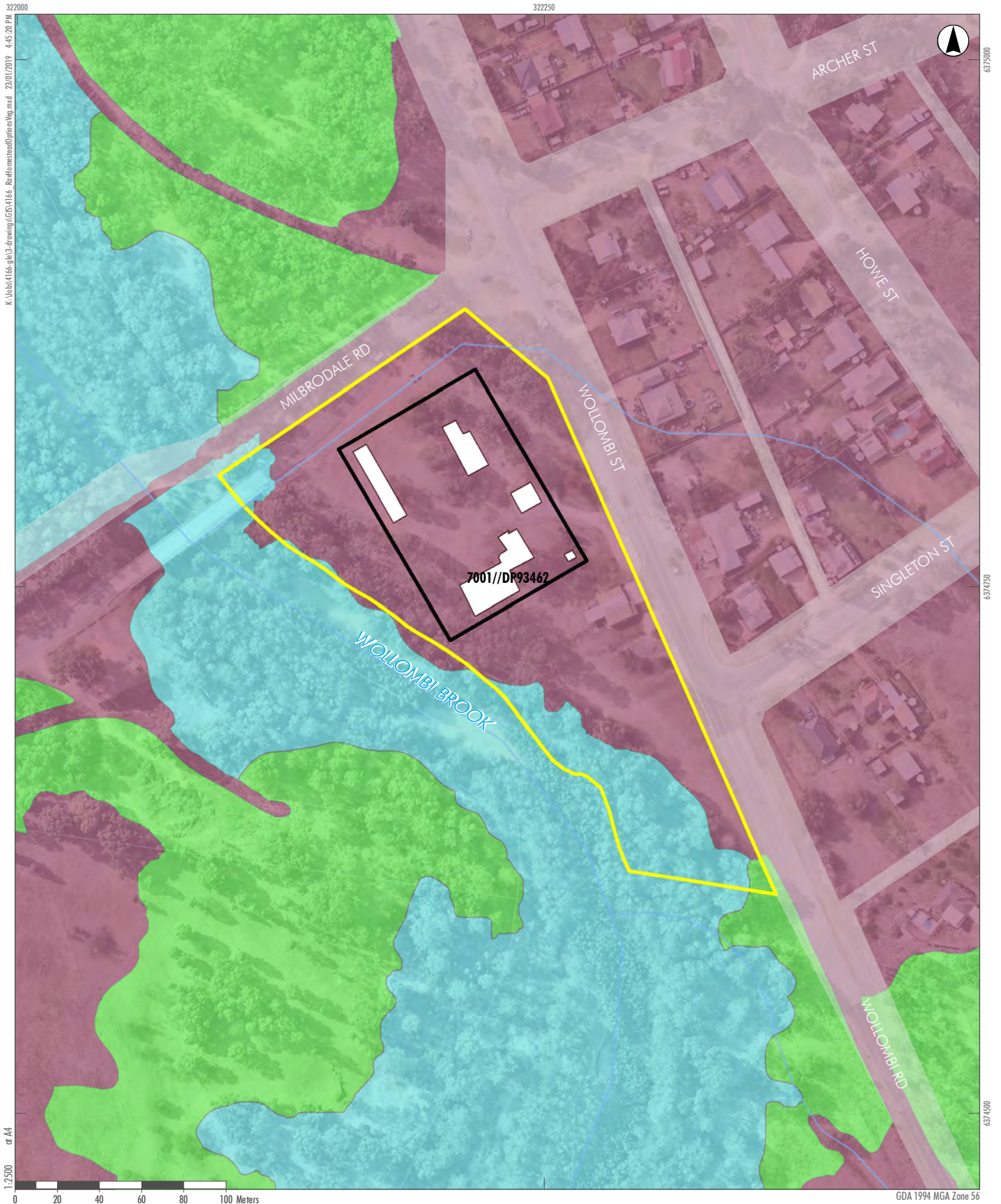
## Land Zoning (Singleton LEP 2013)

- R5 Large Lot Residential
- RE1 Public Recreation
- RU4 Primary Production Small Lots

FIGURE 4.2

Option 4 - Broke Site 1 – Wollombi Street (Sth)  
Land Zoning (Singleton LEP 2013)





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

## Upper Hunter Plant Community Types VIS\_ID 4894)

- Non-native
- River Red Gum / River Oak riparian woodland wetland in the Hunter Valley
- Sydney Blue Gum - Silvertop Stringybark grassy open forest on ranges of the lower North Coast

FIGURE 4.3

Option 4 - Broke Site 1 – Wollombi Street (Stn)  
Upper Hunter Plant Community Types (OEH)



### 3.2 Option 5 – Broke Site 2 – Wollombi Street (North)

#### 3.2.1 Land Ownership

Lot/Section/Plan no	Proprietor
701/-/DP93631	The State of New South Wales (Crown Land)

Glencore will confirm if Native Title rights have been extinguished on this land.

#### 3.2.2 Flood Impacts

The site is not included within the Flood Planning Map in the LEP (**Figure 5.1**), however given the site is located between the watercourse Wollombi Brook and the flood planning area, it can be assumed that the site would be potentially effected during a 1:100 ARI flood event.

This assumption is supported by the 2016 Wollombi Brook Flood Study (BMT WBM, 2016) (**Figure 8.4**) which indicates that the site would be partially inundated in a 1:100 ARI flood event.

#### 3.2.3 Land Zoning

Refer to **Figure 5.2**. The proposed relocation site is located on land zoned RE1.

##### Zone RE1 – Public Recreation

##### 1) Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

##### 2) Permitted without consent

Environmental protection works

##### 3) Relevant uses permitted with consent

Centre-based child care facilities; Community facilities; Information and education facilities; Restaurants or cafes; Roads; Signage

##### 4) Prohibited

Any development not specified in item 2 or 3

##### Interpretation:

Current zoning permits community facilities, information and education facilities, markets and café/restaurants consistent with the assumed use of the relocated homestead. Rezoning may be required for other commercial purposes.

### 3.2.4 Cultural Heritage

#### AHIMS

A search of the OEH AHIMS Web Services was undertaken for Lot/DP 701/DP93631, with a 50 m buffer. The search returned the following result:

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following results for the identified Aboriginal site:

**Table 3.2 – Extensive AHIMS search for Lot/DP 701/DP93631**

SiteID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-6-2730	Broke Bridge PAD2	GDA	56	322150	6374850	Open site	Valid	Potential Archaeological Deposit (PAD)

Whilst the known Aboriginal heritage site would remain unaffected as it is outside of the proposed site (**Figure 5.1**), given the proximity of the relocation area to permanent water (Wollombi Brook) and the presence of a known Aboriginal site nearby, it is reasonable to assume that further Aboriginal heritage sites are likely to be present and appropriate surveys and investigations and potentially additional permits would be required prior to development.

### 3.2.5 Planning Considerations

The proposed site would impact on McNamara Park (**Figure 5.1**). The local community provided feedback during the Our Villages Our Vision 2012 study which states that McNamara Park is well utilized by tourists and brings visitors to the area for low key holidays. The need to protect and expand the area as a gateway to the National Park was also noted by the community.

The Singleton Council Open Space and Recreation Needs Study 2013 identified McNamara Park as a potential project which could enhance Broke Village. It was also noted as a key part of the tourist route within the Hunter Valley wine region. A medium priority action in the plan was to develop a community corroboree ground at the park.

The Broke Community Hub Detailed Master Plan 2017 identifies that the site is planned to become an active precinct within McNamara Park accommodating a BMX freestyle track. Further north, the plan notes that there will be a festival precinct, to accommodate festivals held at McNamara Park throughout the year, and a camping precinct including RV dump point. The site is located within Critical Industry Cluster Land (Viticulture) however this should not affect the project. In order to maintain separation from the mining purposes of the Glendell Continued Operations Project, it may be necessary to obtain separate Singleton Council Development Consent for the homestead relocation, to avoid any issues with the CIC. (**Figure 5.1**).

The entire site is located within the plant community type 'Sydney Blue Gum – Silvertop Stringybark grassy open forest on ranges of the lower north coast' (**Figure 5.3**). This plant community type would therefore be affected by the proposed site and offsetting is likely to be required.

### 3.2.6 Site Inspection

#### Notes:

- Site contains established vegetation (trees) but has pockets of open space
- Public toilets and camping areas located to the North of the site
- Site is accessible via Milbrodale Road or Wollombi Street
- Terrain is relatively flat with one main depression through the centre of the site that is likely to require filling to mitigate flood risks.

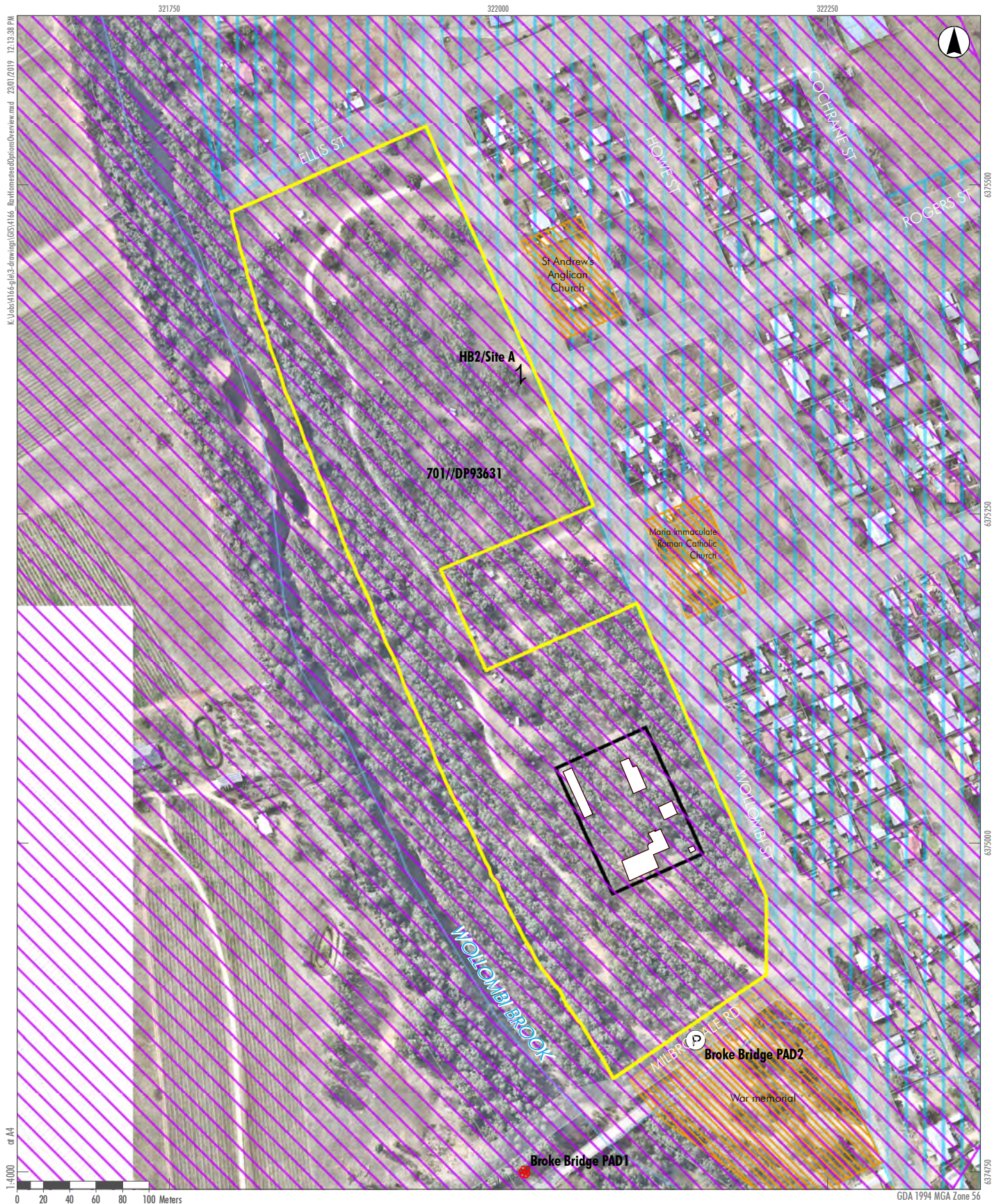
**Plate 9      Option 5 – Broke Site 2 – Wollombi Street (North)**



**Plate 10    Option 5 – Broke Site 2 – Wollombi Street (North)**







# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Strategic Regional Landuse Policy
- Critical Industry Cluster Land (Viticulture)
- Heritage
- Item - General

## AHIMS Search Results

- ⊗ Artefact; Potential Archaeological Deposit (PAD)
- ↓ Partially Destroyed Artefact
- P Potential Archaeological Deposit (PAD)

- ⬡ Flood Planning Area (Singleton LEP 2013)

FIGURE 5.1

Option 5 - Broke Site 2 - Wollombi Street (Nth) Overview





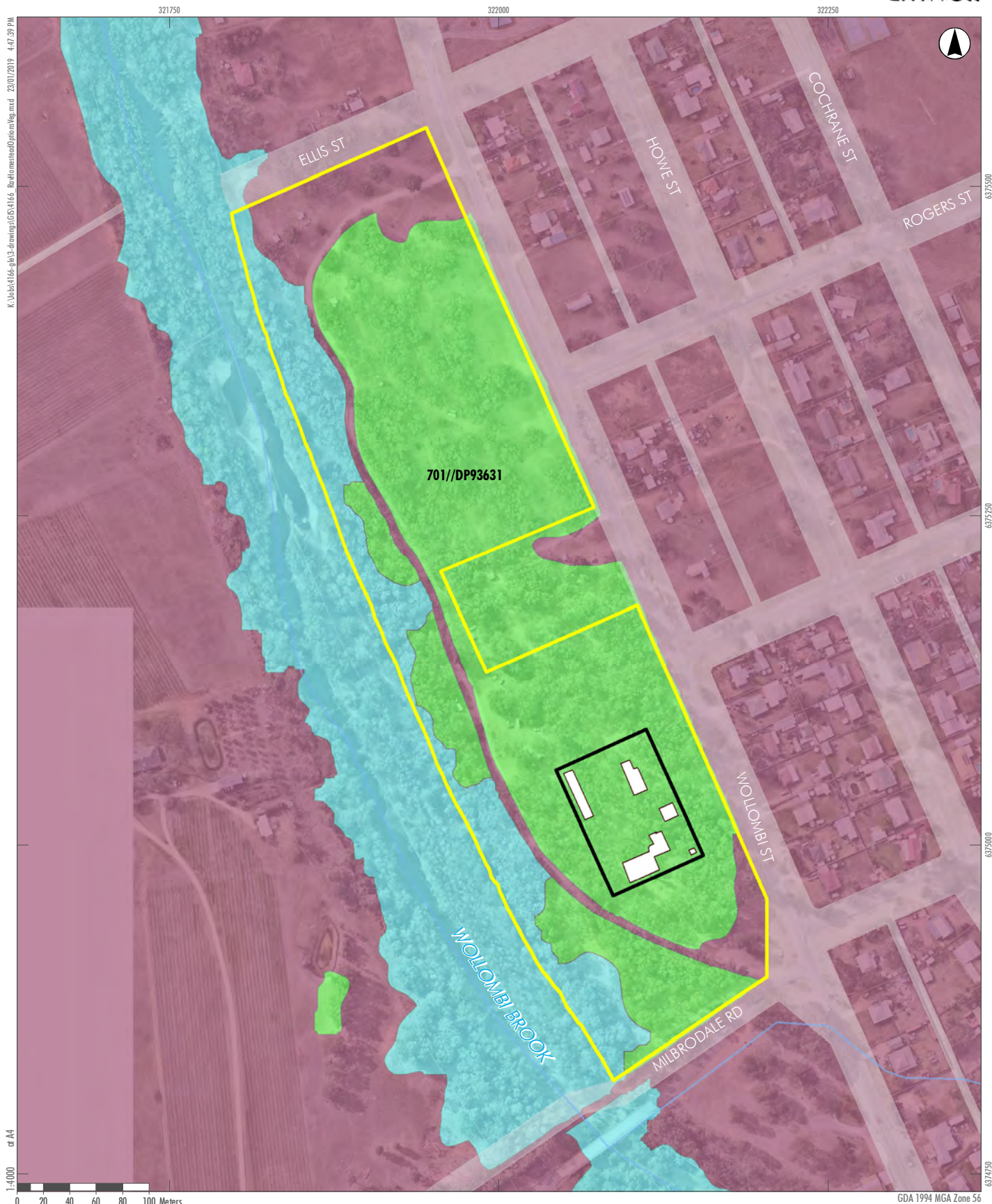
# Legend

- |   |   |
|---|---|
| <span style="border: 2px solid yellow; display: inline-block; width: 20px; height: 10px;"></span> Potential Relocation Site   | <b>Land Zoning (Singleton LEP 2013)</b>   |
| <span style="border: 2px solid black; display: inline-block; width: 20px; height: 10px;"></span> Ravensworth Homestead Superimposed onto Relocation Site (at Scale) | <span style="background-color: #f8d7da; border: 1px solid #f5c6cb; display: inline-block; width: 20px; height: 10px;"></span> R5 Large Lot Residential          |
|   | <span style="background-color: #d4edda; border: 1px solid #c3e6cb; display: inline-block; width: 20px; height: 10px;"></span> RE1 Public Recreation             |
|   | <span style="background-color: #fff3cd; border: 1px solid #ffeeba; display: inline-block; width: 20px; height: 10px;"></span> RU4 Primary Production Small Lots |

FIGURE 5.2

Option 5 - Broke Site 2 - Wollombi Street (Nth)  
Land Zoning (Singleton LEP 2013)





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894)

- Non-native
- River Red Gum / River Oak riparian woodland wetland in the Hunter Valley
- Sydney Blue Gum - Silvertop Stringybark grassy open forest on ranges of the lower North Coast

FIGURE 5.3

Option 5 - Broke Site 2 - Wollombi Street (Nth)  
Upper Hunter Plant Community Types (OEH)

### 3.3 Option 6 – Broke Site 3 – Milbrodale Road

#### 3.3.1 Land Ownership

Lot/Section/Plan no	Proprietor
7002/-/DP1051393	The State of New South Wales (Crown Land)
7300/-/DP1146419	The State of New South Wales (Crown Land)

Glencore will confirm if Native Title rights have been extinguished on this land.

#### 3.3.2 Flood Impacts

The site is not included within the Flood Planning Map in the LEP (**Figure 6.1**), however given the site is located directly adjacent to the watercourse of Wollombi Brook, it can be assumed that the site would be potentially effected during a 1:100 ARI flood event.

This assumption is supported by the 2016 Wollombi Brook Flood Study (BMT WBM, 2016) (**Figure 8.4**) which indicates that the site would be inundated in a 1:100 ARI flood event. Extensive mitigation works and flood impact studies would be required.

#### 3.3.3 Land Zoning

Refer to **Figure 6.2**. The proposed relocation site is located on land zoned RE1.

##### Zone RE1 – Public Recreation

##### 1) Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

##### 2) Permitted without consent

Environmental protection works

##### 3) Relevant uses permitted with consent

Centre-based child care facilities; Community facilities; Information and education facilities; Restaurants or cafes; Roads; Signage

##### 4) Prohibited

Any development not specified in item 2 or 3

##### Interpretation:

Current zoning permits community facilities, information and education facilities, markets and café/restaurants consistent with the assumed use of the relocated homestead. Rezoning may be required for other commercial purposes.

### 3.3.4 Cultural Heritage

#### AHIMS

A search of the OEH AHIMS Web Services was undertaken for both of the site's Lot/DP's, with a 50 m buffer. The search for both Lot/DP's returned the same result shown below:

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following result for the identified Aboriginal site:

**Table 3.3 – Extensive AHIMS search for Lot/DP 7002 DP1051393**

SiteID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-6-2729	Broke Bridge PAD1	GDA	56	322020	6374750	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD)

Whilst the known Aboriginal heritage site would remain unaffected as it is outside of the proposed site (**Figure 6.1**), given the proximity of the relocation area to permanent water and the presence of a known Aboriginal site nearby, it is reasonable to assume that further Aboriginal heritage sites are likely to be present and appropriate surveys and investigations and potentially additional permits would be required prior to development.

### 3.3.5 Planning Considerations

The Singleton Council Open Space and Recreation Needs Study 2013 notes that Herbert Park (location of the proposed site) adjoins the river corridor of Wollombi Brook on the back of McNamara Park. It can be assumed that Herbert Park is held with lower significance than McNamara Park due to its lack of facilities and future development plans.

The site is located within Critical Industry Cluster Land (Viticulture) however this should not affect the project (**Figure 6.1**).

The site is partially located within the plant community types 'Sydney Blue Gum – Silvertop Stringybark grassy open forest on ranges of the lower north coast' and 'River Red Gum/River Oak riparian woodland wetland in the hunter Valley' (**Figure 6.3**). These plant community types would therefore be affected by the proposed site and offsetting may be required.

### 3.3.6 Site Inspection

#### Notes:

- One picnic table located on the site which is accessed via a gravel road/carpark
- Logs and mulch/woodchip currently in a pile located within the site
- Site is easily accessible via Milbrodale Road
- Terrain is mostly flat however on the right-hand side of the current entrance there is a steep depression where water is likely to flow
- Extensive vegetation to be cleared and potentially offset



**Plate 11 Option 6 – Broke Site 3 – Milbrodale Road**



**Plate 12 Option 6 – Broke Site 3 – Milbrodale Road**







Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Strategic Regional Landuse Policy**
- Critical Industry Cluster Land (Viticulture)
- Heritage**
- Item - General

**AHIMS Search Results**

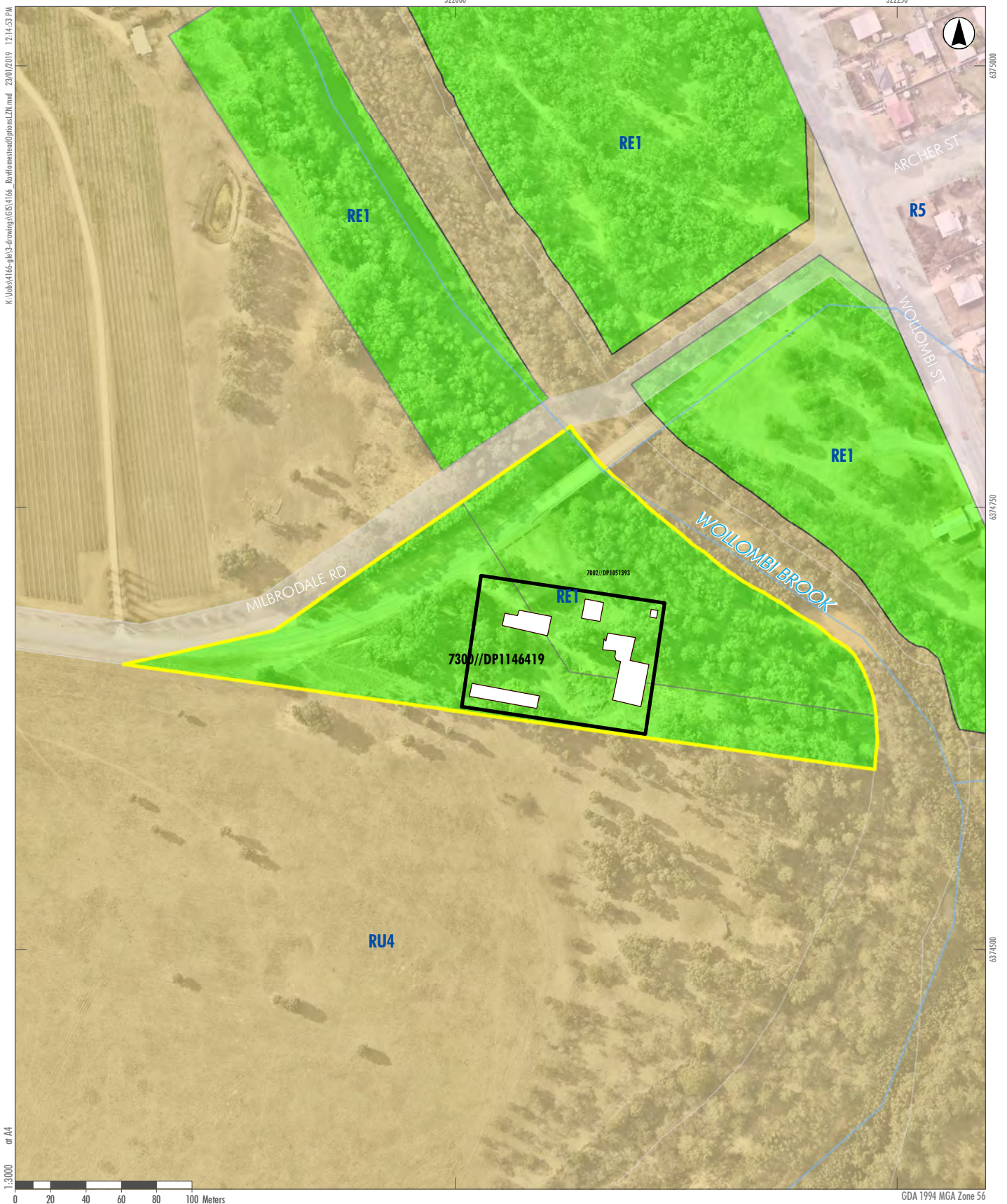
- Artefact; Potential Archaeological Deposit (PAD)
- ⊙ Potential Archaeological Deposit (PAD)

⬡ Flood Planning Area (Singleton LEP 2013)

FIGURE 6.1

Option 6 - Broke Site 3 – Milbrodale Road Overview





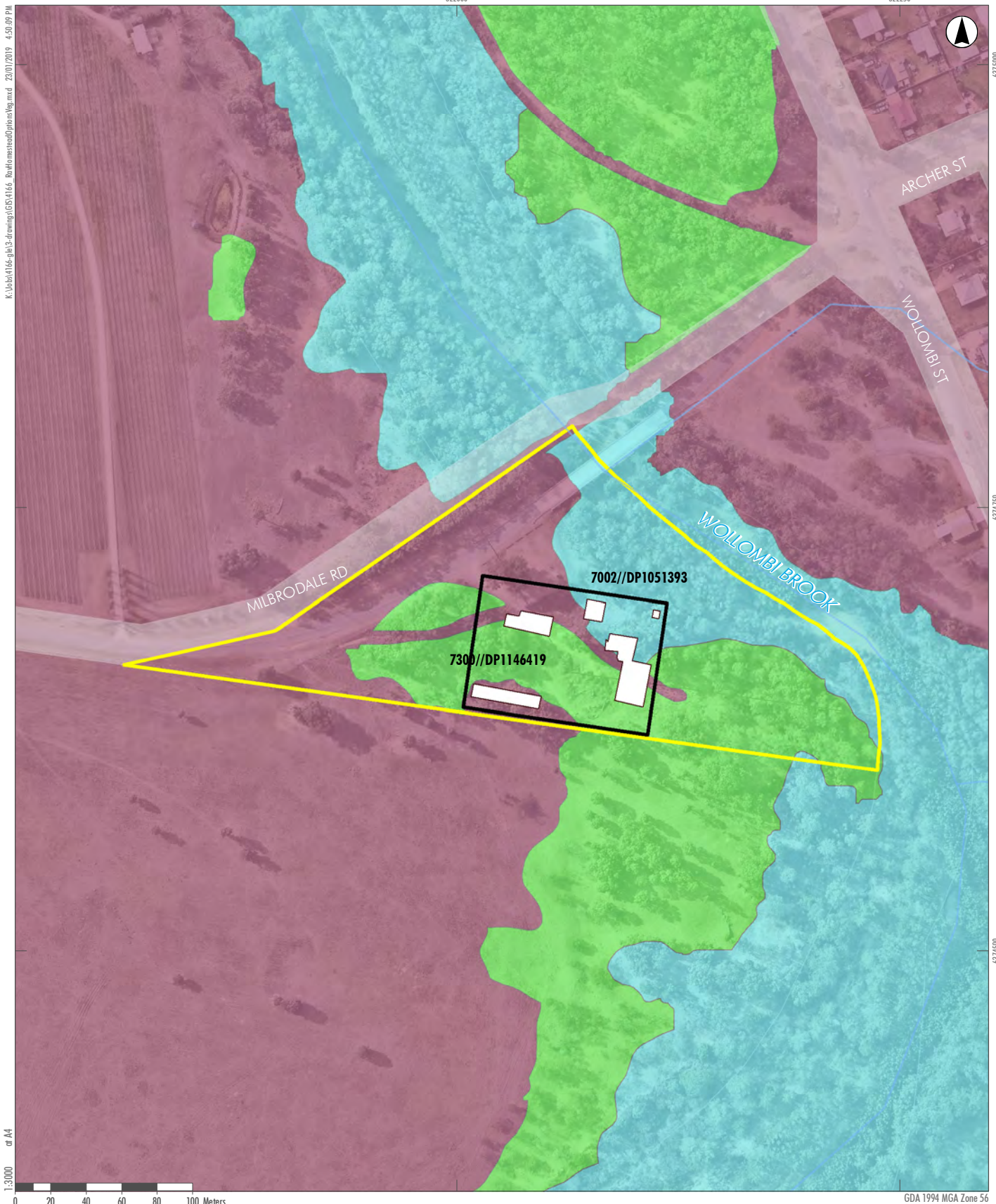
# Legend

- |   |   |
|---|---|
| <span style="border: 2px solid yellow; display: inline-block; width: 20px; height: 10px;"></span> Potential Relocation Site   | <b>Land Zoning (Singleton LEP 2013)</b>   |
| <span style="border: 2px solid black; display: inline-block; width: 20px; height: 10px;"></span> Ravensworth Homestead Superimposed onto Relocation Site (at Scale) | <span style="background-color: #f8d7da; border: 1px solid #f5c6cb; display: inline-block; width: 20px; height: 10px;"></span> R5 Large Lot Residential          |
|   | <span style="background-color: #d4edda; border: 1px solid #c3e6cb; display: inline-block; width: 20px; height: 10px;"></span> RE1 Public Recreation             |
|   | <span style="background-color: #fff3cd; border: 1px solid #ffeeba; display: inline-block; width: 20px; height: 10px;"></span> RU4 Primary Production Small Lots |

FIGURE 6.2

Option 6 - Broke Site 3 – Milbrodale Road  
Land Zoning (Singleton LEP 2013)





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

## Upper Hunter Plant Community Types VIS\_ID 4894

- Non-native
- River Red Gum / River Oak riparian woodland wetland in the Hunter Valley
- Sydney Blue Gum - Silvertop Stringybark grassy open forest on ranges of the lower North Coast

FIGURE 6.3

Option 6 - Broke Site 3 - Milbrodale Road  
Upper Hunter Plant Community Types (OEH  
December 2018)



### 3.4 Option 7 – Broke Site 4 – Adair Street

#### 3.4.1 Land Ownership

Lot/Section/Plan no	Proprietor
1/17/DP758164*	The Trustees of the Roman Catholic Church for the Diocese of Maitland
10/17/DP758164*	The State of New South Wales (Crown Land)
2/17/DP758164*	The Trustees of the Roman Catholic Church for the Diocese of Maitland
9/17/DP758164*	The Trustees of the Roman Catholic Church for the Diocese of Maitland
3/17/DP758164*	Kevin James Taggart
173/-/DP1151662*	Kevin James Taggart
7/17/DP758164	Kevin James Taggart
4/17/DP758164	Kevin James Taggart
171/-/DP1151662	Kevin James Taggart
172/-/DP1151662	Kevin James Taggart

\* Indicates minimum are required. Encroaches on 2 blocks of private land owned by K Taggart.

Glencore will confirm if Native Title rights have been extinguished on Crown land.

#### 3.4.2 Flood Impacts

The site is located entirely within the flood planning area as defined by the Flood Planning Map in the LEP (**Figure 7.1**). The flood planning level refers to the level of a 1:100 ARI flood event plus 0.5 m freeboard. Potential flood risks would require further detailed investigation to determine if filing is required to achieve contingency elevation levels.

#### 3.4.3 Land Zoning

Refer to **Figure 7.2**.

##### Zone R5 – Large Lot Residential

##### 1) Objectives of zone

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

2) Permitted without consent

Home occupations

3) Relevant uses permitted with consent

Bed and breakfast accommodation; Food and drink premises; Group homes; Neighbourhood shops; Roads; Any other development not specified in item 2 or 4

4) Relevant prohibited uses

Commercial premises; Entertainment facilities; Exhibition homes; Farm buildings; Function centres; Signage; Tourist and visitor accommodation;

**Interpretation:**

The assumed final land use does not appear to be compatible with zoning objectives of providing rural residential housing. Commercial premises, function centres and tourist / visitor accommodation are specifically prohibited and would require rezoning prior to lodgement and processing of a Singleton Council development application.

### 3.4.4 Cultural Heritage

**NSW Planning Portal**

Item – General: Maria Immaculate Roman Catholic Church which opened in 1860 (see **Figure 7.1** and legislation information in **Appendix A**) Listed on Singleton LEP as locally significant.

**AHIMS**

A search of the OEH AHIMS Web Services was undertaken for each of the site's Lot/DP's, with a 50 m buffer. Each search returned the following result:

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

### 3.4.5 Planning Considerations

The site is located within Critical Industry Cluster Land (Viticulture) however this should not affect the project (**Figure 7.1**).

The site perimeter encroaches on the Maria Immaculate Roman Catholic Church and private land (**Figure 7.1**). The Singleton LEP lists the Maria Immaculate Roman Catholic Church as locally significant. The homestead would not fit at this location unless the Church was relocated. Additionally, the Homestead does not appear to be compatible with zoning.

The proposed site would not impact on any native vegetation (**Figure 7.3**).

### 3.4.6 Site Inspection

#### Notes:

- Electric fence surrounds the site (contained two horses)
- A number of grave sites are located at the rear and right-hand side of the Church
- Site is easily accessible via Adair Street or Howe Street
- Terrain is flat

**Plate 13    Option 7 – Broke Site 4 – Adair Street**





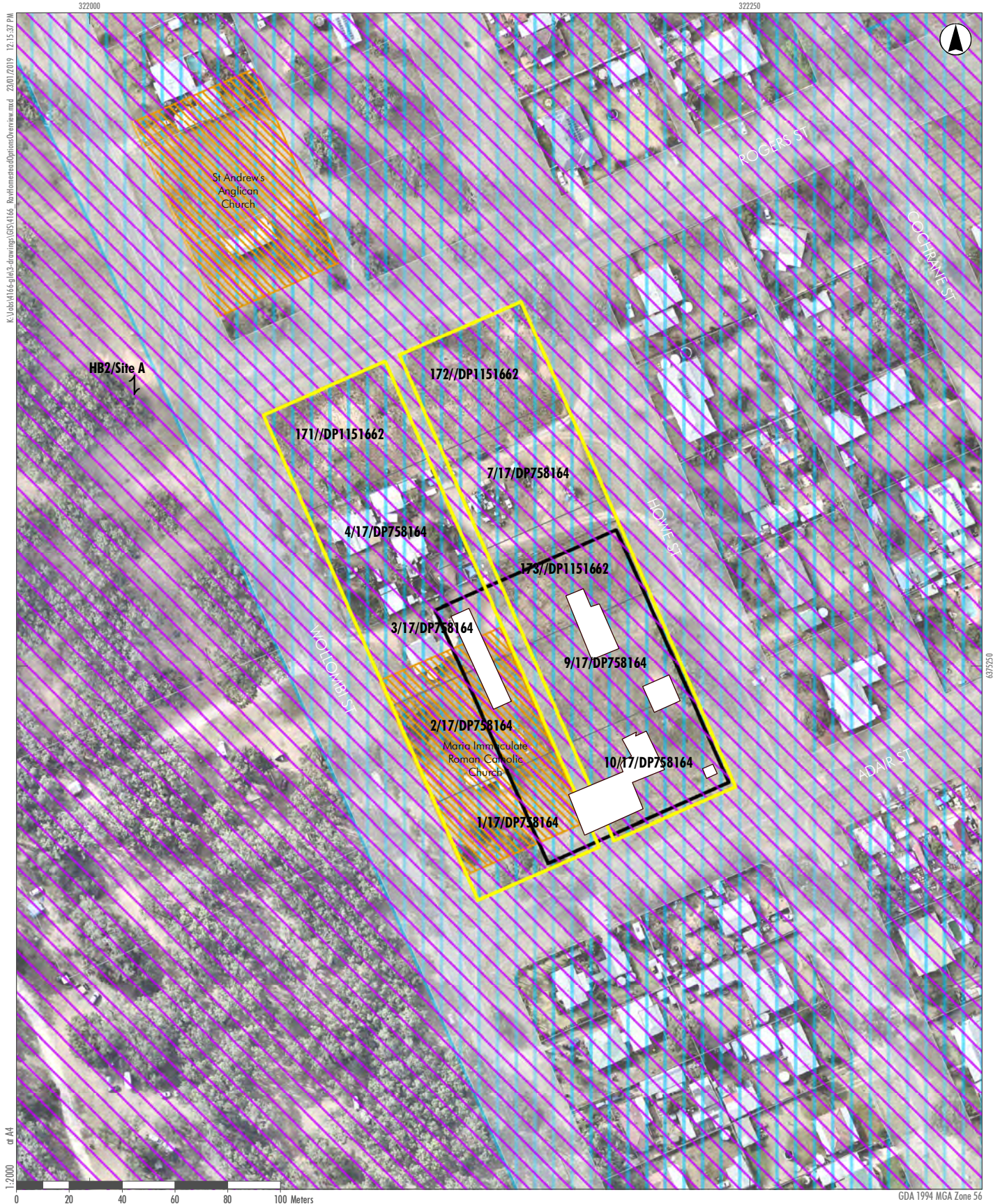
**Plate 14    Option 7 – Broke Site 4 – Adair Street**



**Plate 15    Option 7 – Broke Site 4 – Adair Street**







Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Strategic Regional Landuse Policy
- Heritage
- Item - General

AHIMS Search Results

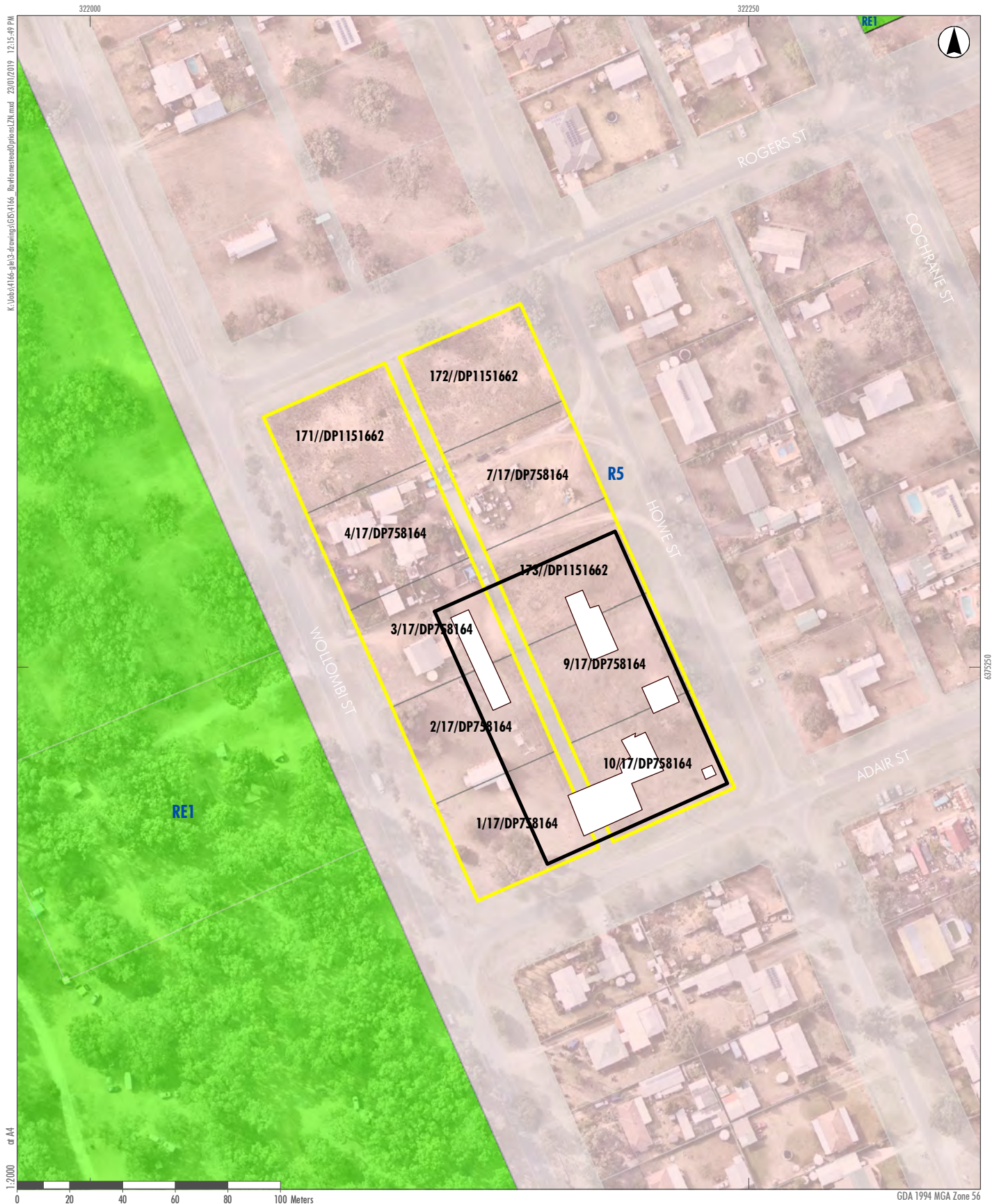
- Partially Destroyed Artefact

- Flood Planning Area (Singleton LEP 2013)

FIGURE 7.1

Option 7 - Broke Site 4 – Adair Street Overview





#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

#### Land Zoning (Singleton LEP 2013)

- R5 Large Lot Residential
- RE1 Public Recreation

FIGURE 7.2

Option 7 - Broke Site 4 – Adair Street  
Land Zoning (Singleton LEP 2013)





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894)

- Non-native
- Sydney Blue Gum - Silvertop Stringybark grassy open forest on ranges of the lower North Coast

FIGURE 7.3

Option 7 - Broke Site 4 – Adair Street  
Upper Hunter Plant Community Types (OEH  
December 2018)

### 3.5 Option 8 – Broke Site 5 – Rogers Street

#### 3.5.1 Land Ownership

Lot/Section/Plan no	Proprietor
1/25/DP758164*	Trustees of Church Property for the Diocese of Newcastle
10/25/DP758164*	Trustees of Church Property for the Diocese of Newcastle
2/25/DP758164*	Trustees of Church Property for the Diocese of Newcastle
9/25/DP758164*	Trustees of Church Property for the Diocese of Newcastle
3/25/DP758164*	Phillip John Watson Lesley Terease Watsons As joint tenants
8/25/DP758164*	Phillip James Heagney
4/25/DP758164	Peter Gordon Jones Christel Gay Jones As joint tenants
7/25/DP758164	Jennifer Lee Moulds
5/25/DP758164	Shannon Jade Blank Daniel Charles McLellan As joint tenants
6/25/DP758164	Charles William Walters

\* Area required for site encroaches on private land

#### 3.5.2 Flood Impacts

The site is located entirely within the flood planning area as defined by the Flood Planning Map in the LEP (**Figure 8.1**). The flood planning level refers to the level of a 1:100 ARI flood event plus 0.5 m freeboard. Potential flood risks would require further detailed investigation to determine if filling is required to achieve contingency elevation levels.

#### 3.5.3 Land Zoning

Refer to **Figure 8.2**.

##### Zone R5 – Large Lot Residential

##### 1) Objectives of zone

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.



## 2) Permitted without consent

Home occupations

## 3) Relevant uses permitted with consent

Bed and breakfast accommodation; Food and drink premises; Neighbourhood shops; Roads; Any other development not specified in item 2 or 4.

## 4) Prohibited

Commercial premises; Entertainment facilities; Exhibition homes; Farm buildings; Function centres; Signage; Tourist and visitor accommodation.

### Interpretation:

The assumed final land use does not appear to be compatible with zoning objectives of providing rural residential housing. Commercial premises, function centres and tourist / visitor accommodation are specifically prohibited and would require rezoning prior to lodgement and processing of a Singleton Council development application.

### 3.5.4 Cultural Heritage

#### NSW Planning Portal

Item – General: St Andrew’s Anglican Church completed in 1889 (see **Figure 8.1** and legislation information in **Appendix A**) Listed on Singleton LEP as locally significant.

#### AHIMS

A search of the OEH AHIMS Web Services was undertaken for each Lot/DP within the site, with a 50 m buffer. The following Lot/DP’s all displayed the same result shown below:

- 1/25/DP758164
- 10/25/DP758164
- 2/25/DP758164
- 3/25/DP758164
- 4/25/DP758164
- 5/25/DP758164

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

The remaining Lot/DP’s, listed below, displayed results indicating that an Aboriginal site has been recorded in or near the site:

- 9/25/DP758164
- 8/25/DP758164
- 7/25/DP758164
- 6/25/DP758164

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following result for the identified Aboriginal site:

**Table 3.4 – Extensive AHIMS search for Lot/Sect/DP 9/25/DP758164**

SiteID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-6-1225	HB2/ Site A	AGD	56	322016	6375344	Open site	Partially Destroyed	Artefact

The Aboriginal site is would remain unaffected as it is outside of the proposed site (**Figure 8.1**).

### 3.5.5 Planning Considerations

The site is located within Critical Industry Cluster Land (Viticulture) however this should not affect the project (**Figure 8.1**).

The site perimeter overlaps with the St Andrew's Anglican Church and encroaches on private land (two households) (**Figure 8.1**). The St Andrew's Anglican Church is listed in the Singleton LEP as locally significant. The Church would need to be relocated to accommodate the Homestead.

Importantly, site does not appear to be large enough to relocate the Homestead complex in a layout that preserves its current layout and the proposed land use does not appear to be compatible with zoning.

The proposed site would not impact on any native vegetation (**Figure 8.3**).

### 3.5.6 Site Inspection

#### Notes:

- An outhouse and shipping container are located within the site
- Site is easily accessible via Rogers Street or Howe Street
- Terrain is flat

**Plate 16    Option 8 – Broke Site 5 – Rogers Street**



**Plate 17    Option 8 – Broke Site 5 – Rogers Street**







1:2000 at A4

0 20 40 60 80 100 Meters

GDA 1994 MGA Zone 56

# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Strategic Regional Landuse Policy**
- Critical Industry Cluster Land (Viticulture)
- Heritage**
- Item - General

## AHIMS Search Results

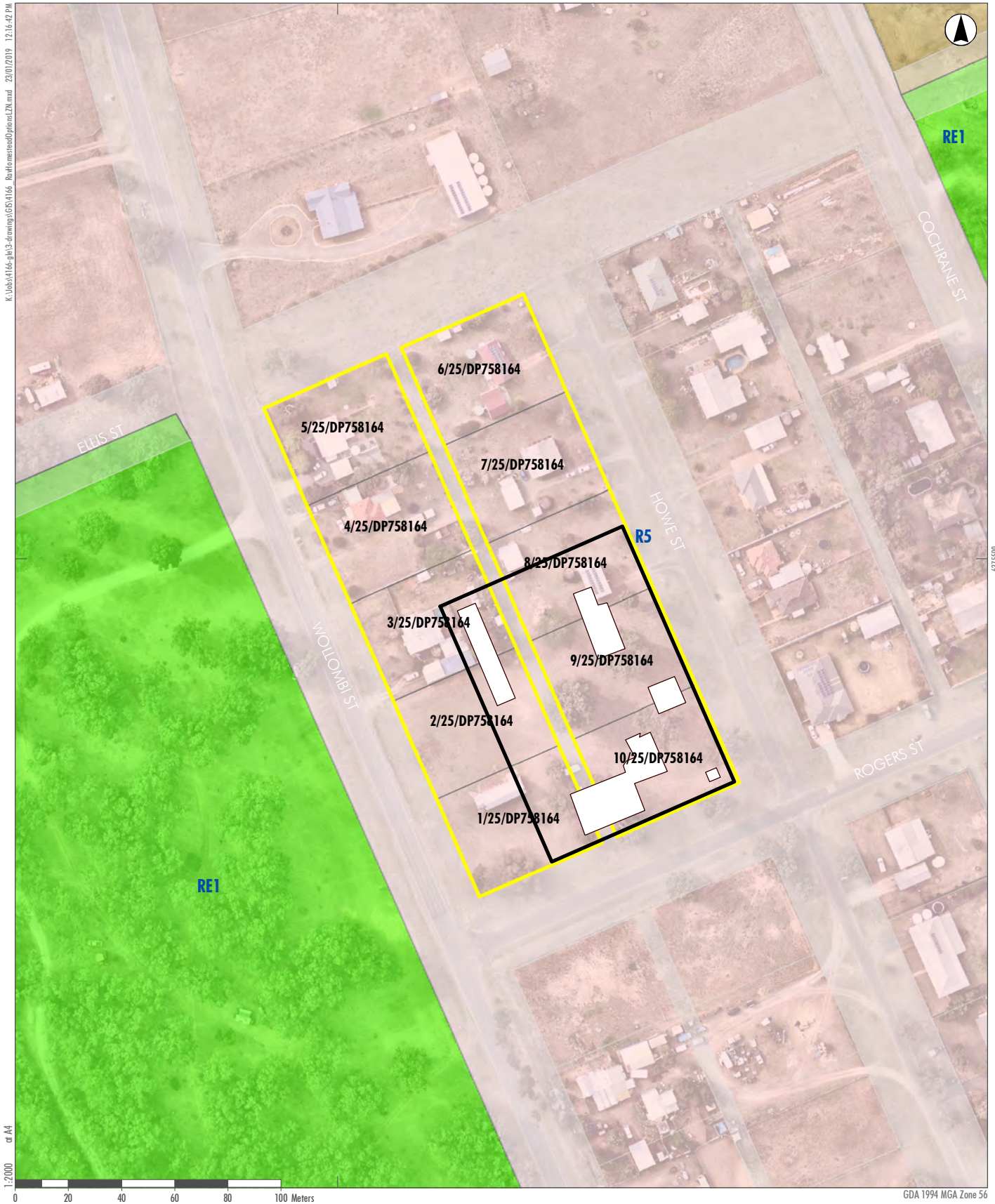
- ↑ Partially Destroyed Artefact

- Flood Planning Area (Singleton LEP 2013)

FIGURE 8.1

Option 8 - Broke Site 5 – Rogers Street Overview





Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

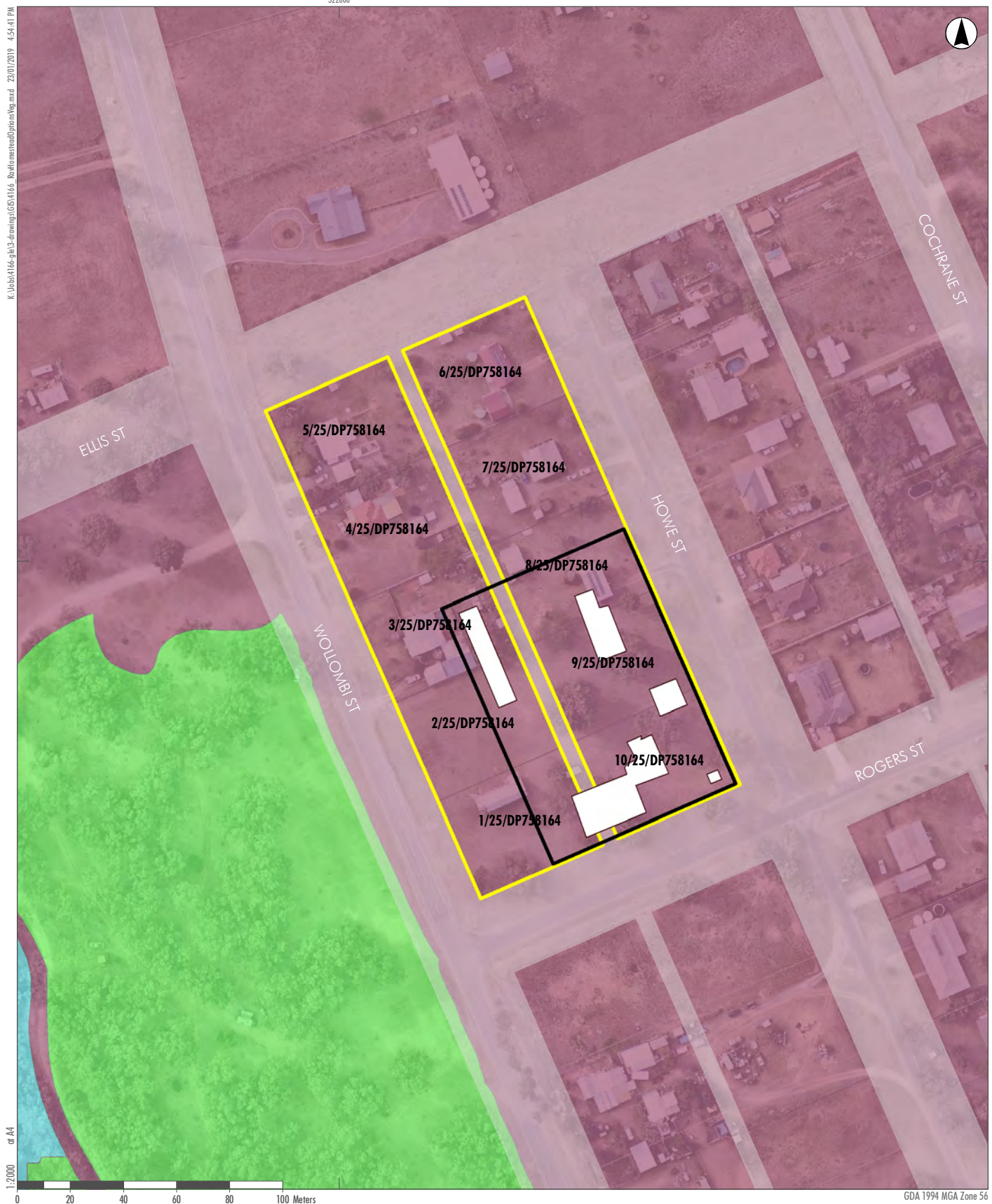
Land Zoning (Singleton LEP 2013)

- R5 Large Lot Residential
- RE1 Public Recreation
- RU4 Primary Production Small Lots

FIGURE 8.2

Option 8 - Broke Site 5 – Rogers Street  
Land Zoning (Singleton LEP 2013)





# Legend

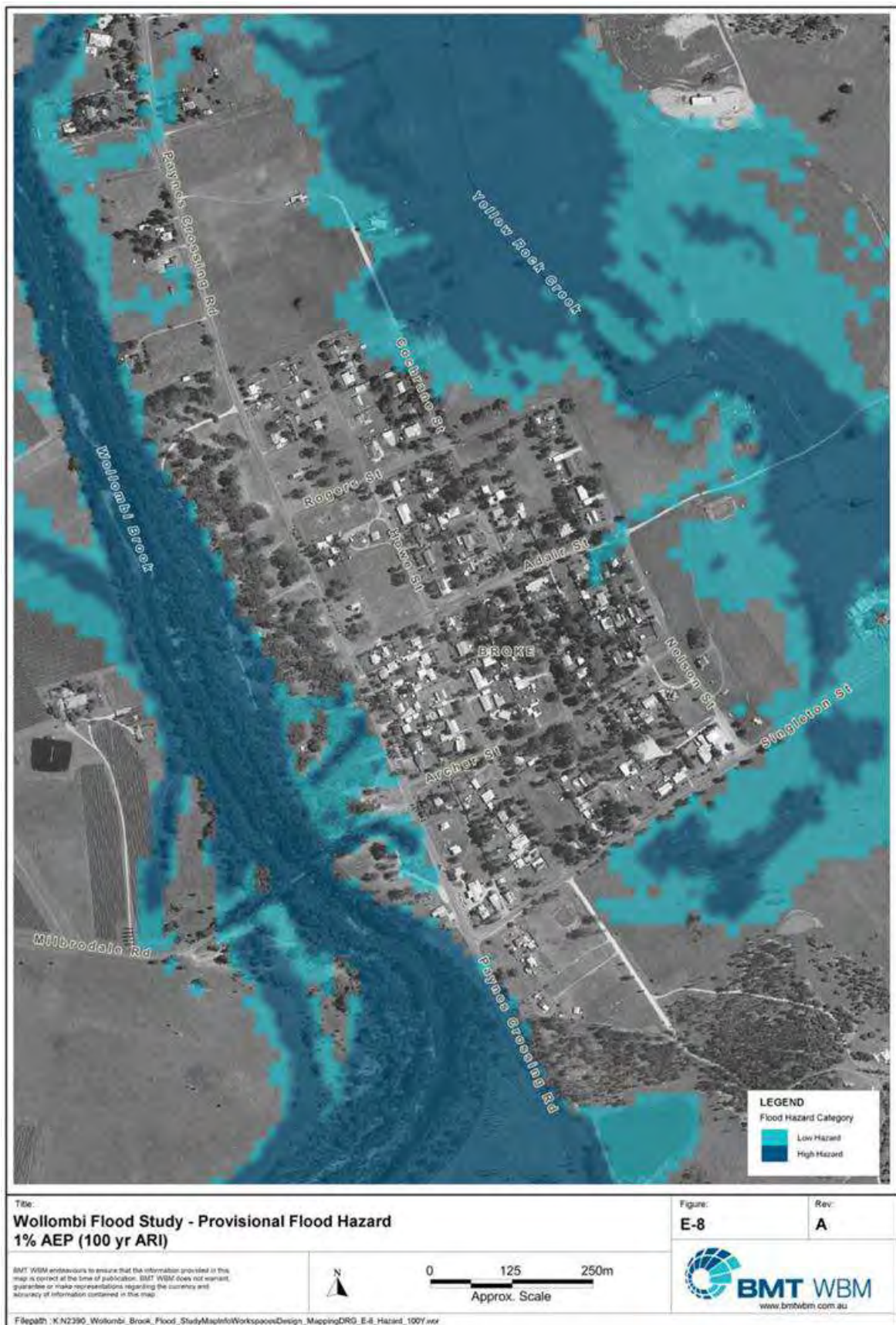
- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894

- Non-native
- River Red Gum / River Oak riparian woodland wetland in the Hunter Valley
- Sydney Blue Gum - Silvertop Stringybark grassy open forest on ranges of the lower North Coast

FIGURE 8.3

Option 8 - Broke Site 5 – Rogers Street  
Upper Hunter Plant Community Types (OEH  
December 2018)





**Figure 8.4 - 2016 Wollombi Brook Flood Study**

### 3.6 Option 9 – Lake St Clair Site 2

#### 3.6.1 Land Ownership

Lot/Section/Plan no	Proprietor
2/-/1243568	Water Administration Ministerial Corporation on behalf of Water NSW

#### 3.6.2 Flood Impacts

The site is not included within the Flood Planning Map in the LEP (**Figure 9.1**). It is assumed that the zoning boundaries for Singleton LEP zones W7 and SP2 shown on **Figure 9.2** were determined using Lake St Claire maximum storage levels which indicates that the proposed site is above the maximum storage level. Lake St Clair maximum storage levels should be checked to confirm this.

#### 3.6.3 Land Zoning

Refer to **Figure 9.2**.

##### Zone RU2 – Rural Landscape

##### 1) Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.

##### 2) Permitted without consent

Extensive agriculture; Home occupations; Intensive plant agriculture

##### 3) Relevant uses permitted with consent

Building identification signs; Business identification signs; Community facilities; Farm buildings; Information and education facilities; Restaurants or cafes; Roads;

##### 4) Prohibited

Backpackers' accommodation; Hotel or motel accommodation; Intensive livestock agriculture; Livestock processing industries; Serviced apartments; Stock and sale yards; Any other development not specified in item 2 or 3

Airstrips; Animal boarding or training establishments; Aquaculture; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Community facilities; Dual occupancies; Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Farm buildings; Flood mitigation works; Forestry; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Marinas; Mooring pens; Moorings; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Restaurants or cafes; Roads; Roadside stalls; Rural industries; Service stations; Sewerage systems; Tourist and visitor accommodation; Turf farming; Veterinary hospitals; Viticulture; Water supply systems



### Interpretation:

Relocation of the homestead complex to this proposed location would be consistent with the objectives of the ozone which includes “To maintain the rural landscape character of the land”. The current zoning permits café/restaurants, community facilities and information and education facilities. Rezoning may be required for commercial purposes.

### 3.6.4 Cultural Heritage

A search of the OEH AHIMS Web Services was undertaken for the site’s Lot/DP, with a 50 m buffer. The search for both Lot/DP’s returned the same result shown below:

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following result for the identified Aboriginal site:

**Table 3.4 – Extensive AHIMS search for Lot/DP 2 DP1243568 (formerly 2 DP717573)**

Site ID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-3-0105	SGCD16	AGD	56	334900	6417900	Open site	Valid	Artefact : -

The Aboriginal site is would remain unaffected as it is outside of the proposed site (**Figure 9.1**).

### 3.6.5 Planning Considerations

The Lake St Clair Draft Plan of Management 2018 relates to the land within Lot 1 DP1243568, also known as the Lake St Clair Recreation Park. The park is located on the eastern side of Lake St Clair and to the north-east of the proposed site (approximately 7 km away via Carrowbrook Road). The park is popular for camping (powered and un-powered), boating, fishing, water-skiing, swimming, sailing, picnicking, day-tripping and sight-seeing with users ranging from individuals to large groups (such as fishing clubs, school groups, scouts and guides). A number of park upgrades are due to occur over the next five years, or possibly longer, including refurbishment to existing amenities and improvements to park and visitor management.

According to the Singleton LEP the site falls within a mapped “Drinking Water Catchment”. This means that Council would have to consider whether or not the Homestead is likely to have any adverse impact on the quality and quantity of water entering the drinking water storage when considering the development application. Specific considerations would include stricter waste water management controls and limits on storage of chemicals or hazardous substances at the site.



FIGURE 9.1

Option 9 - Lake St Clair Site 2 Overview





# Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

## Land Zoning (Singleton LEP 2013)

- RU2 Rural Landscape
- SP2 Infrastructure

FIGURE 9.2

Option 9 - Lake St Clair Site 2  
Land Zoning (Singleton LEP 2013)





#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894
- Non-native

FIGURE 9.3

Option 9 - Lake St Clair Site 2  
Upper Hunter Plant Community Types (OEH  
December 2018)



### 3.7 Option 10 – Lake St Clair Site 1

#### 3.7.1 Land Ownership

Lot/Section/Plan no	Proprietor
4/-/1021899	Boondandilla Pastoral Company Pty Limited

#### 3.7.2 Flood Impacts

The site is not included within the Flood Planning Map in the LEP (**Figure 10.1**), no information is available on whether the site would be potentially affected by dam level rise during a significant flood event, however whilst this needs further clarification, initial indications are that this is unlikely to be an issue.

#### 3.7.3 Land Zoning

Refer to **Figure 10.2**.

##### Zone RU1 – Primary Production

##### 1) Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

##### 2) Permitted without consent

Extensive agriculture; Forestry; Home occupations; Intensive plant agriculture

##### 3) Relevant uses permitted with consent include

Building identification signs; Bed and breakfast accommodation; Community facilities; Environmental facilities; Farm buildings; Farm stay accommodation; Information and education facilities; Recreation areas; Recreation facilities (outdoor); Roads; Rural industries.

##### 4) Prohibited

Any development not specified in item 2 or 3

##### Interpretation:

Current zoning permits the assumed landuse with Development Consent. Rezoning may be required for café/restaurants and commercial purposes.

The Singleton Local Flood Plan 2006 states that if the Glennies Creek Dam were to experience failure, a huge flood would develop in Glennies Creek and the valley of the Hunter River. A flood large enough to cause this failure is only likely to occur once in 60,000 years at the site of the dam.

### 3.7.4 Cultural Heritage

A search of the OEH AHIMS Web Services was undertaken for the site's Lot/DP, with a 50 m buffer. The search for both Lot/DP's returned the same result shown below:

1	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

An extensive search of the AHIMS database displayed the following result for the identified Aboriginal site:

**Table 3.5 – Extensive AHIMS search for Lot/DP 4/1021899**

SiteID	Site Name	Datum	Zone	Easting	Northing	Context	Site Status	Site Features
37-3-0106	SGCD15	AGD	56	334150	6417040	Open site	Valid	Artefact : -

The Aboriginal site is would remain unaffected as it is outside of the proposed site (**Figure 10.1**).

### 3.7.5 Planning Considerations

Planning considerations regarding the Lake St Clair Recreation Park, as discussed in **Section 3.6.5**, are also applicable to this site.



- Legend**
- Potential Relocation Site
  - Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

FIGURE 10.1

Option 10 - Lake St Clair Site 1  
Overview





#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

#### Land Zoning (Singleton LEP 2013)

- RU1 Primary Production
- RU2 Rural Landscape

FIGURE 10.2

Option 10 - Lake St Clair Site 1  
Land Zoning (Singleton LEP 2013)





#### Legend

- Potential Relocation Site
- Ravensworth Homestead Superimposed onto Relocation Site (at Scale)

#### Upper Hunter Plant Community Types VIS\_ID 4894)

- Non-native
- Narrow-leaved Ironbark - Grey Box - Spotted Gum shrub - grass woodland of the central and lower Hunter

FIGURE 10.3

Option 10 - Lake St Clair Site 1  
Upper Hunter Plant Community Types (OEH  
December 2018)

## 4.0 Singleton Recipient Sites (2)

### 4.1 Option 11 – Singleton Site 4 – Singleton Showground

#### 4.1.1 Land Ownership

Lot/Section/Plan no	Proprietor
1/-/DP933470	Northern Agricultural Association Inc
1/-/DP1140337	Northern Agricultural Association Inc
1/-/DP708779	Louise Anne Christensen
1/-/DP999550	Ian Keith Smith
1/-/DP1140404	Northern Agricultural Association Inc
2/-/DP151195	Northern Agricultural Association Inc
1/-/DP1139953	Northern Agricultural Association Inc
1/-/DP596956	Malcom Wilfred Monckton Janice Dorothy Monckton As joint tenants
1/-/DP798843	Julie Maree Walker
3/-/DP1140421	Northern Agricultural Association Inc
89/-/DP1140129	Leonard Joseph Boyce Patricia Monica Boyce As joint tenants
2/-/DP1140421	Northern Agricultural Association Inc
1/-/DP1140421	Northern Agricultural Association Inc
1/-/DP560545	Stephen Andrew Hagan
2/-/DP560545	Eduardo Fernandez Maria Soledad Arias As joint tenants
1/-/DP196695	Nattalie Susanne Downes
1/-/DP797069	Michele Jayne Hayes
1/-/DP196839	John Henley King
1/-/DP735464	Timothy James Davis

Refer to **Figure 11.1** for extent of land owned by the Northern Agricultural Association Inc.

#### 4.1.2 Flood Impacts

All of the above-mentioned lot/DPs are wholly located within the flood planning area as defined by the Flood Planning Map in the LEP (refer to **Figure 11.1**). The flood planning level refers to the level of a 1:100 ARI flood event plus 0.5 m freeboard. May require mitigation of flood risks by some filling and raising of the site, requires further detailed investigation.

#### 4.1.3 Land Zoning

Refer to **Figure 11.2**.

##### Zone RE2 – Private Recreation

##### 1) Objectives of zone

- To enable land to be used for private open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

##### 2) Permitted without consent

Nil

##### 3) Relevant uses permitted with consent include

Community facilities; Information and education facilities; Kiosks; Markets; Recreation areas; Registered clubs; Roads; Signage.

##### 4) Prohibited

Any development not specified in item 2 or 3

##### Interpretation

RE2 Public Recreation zoning refers to the land owned by the Northern Agricultural Association Inc, as shown in **Figure 11.2**. Current zoning permits community facilities, information and education facilities and markets, partially consistent with the assumed use of the relocated homestead. Rezoning may be required for commercial purposes.

#### 4.1.4 Cultural Heritage

##### NSW Planning Portal

Item – General: Showground group (refer to **Figure 11.1**).

Conservation Area General: Singleton Heritage Conservation Area (refer to **Figure 11.1**).

For both items, see legislation information in **Appendix A**.

##### AHIMS

A search of the OEH AHIMS Web Services was undertaken for each of the site's Lot/DP's, with a 50 m buffer. Each search returned the following result:

0	Aboriginal sites are recorded in or near the above location
0	Aboriginal places have been declared in or near the above location*

#### **4.1.5 Planning Considerations**

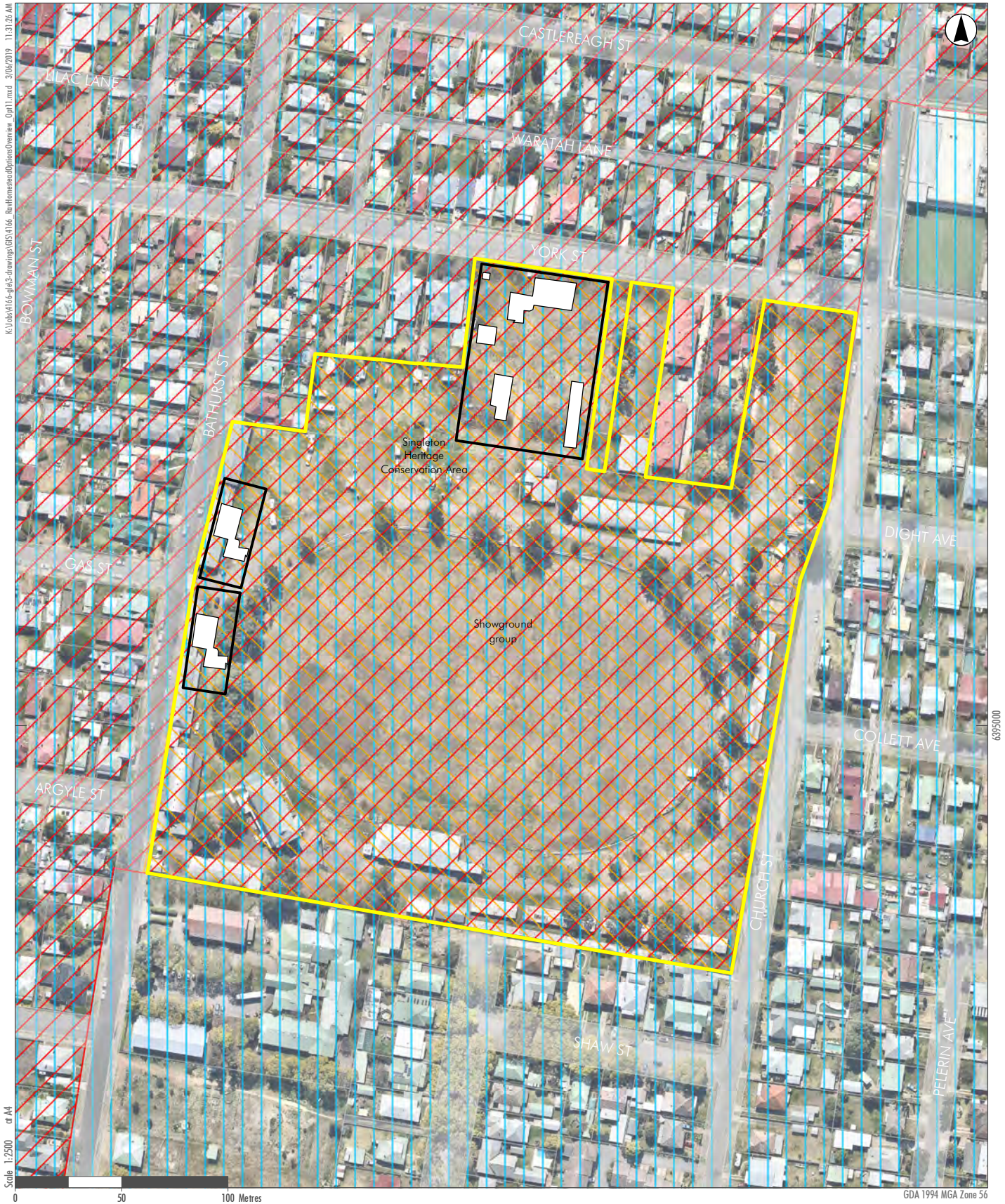
It is proposed in the Singleton Open Space and Recreation Needs Study (ROSS 2013) that York St will act as a key component in the green web concept. The green web is aimed at enhancing the connection of Singleton's open spaces and recreation opportunities as development and major roads have fragmented the landscapes continuity and quality. It is noted that significant enhancements are required for the street to form part of the green web.

The proposed relocation site(s) would not disrupt any native vegetation, as displayed in **Figure 11.3**.

#### **4.1.6 Site Inspection**

Not completed for this site.





# Legend

- Potential Relocation Site (Northern Agricultural Association)
- Ravensworth Homestead Superimposed into Site Relocation Site (at Scale)
- Flood Planning Area (Singleton LEP 2013)

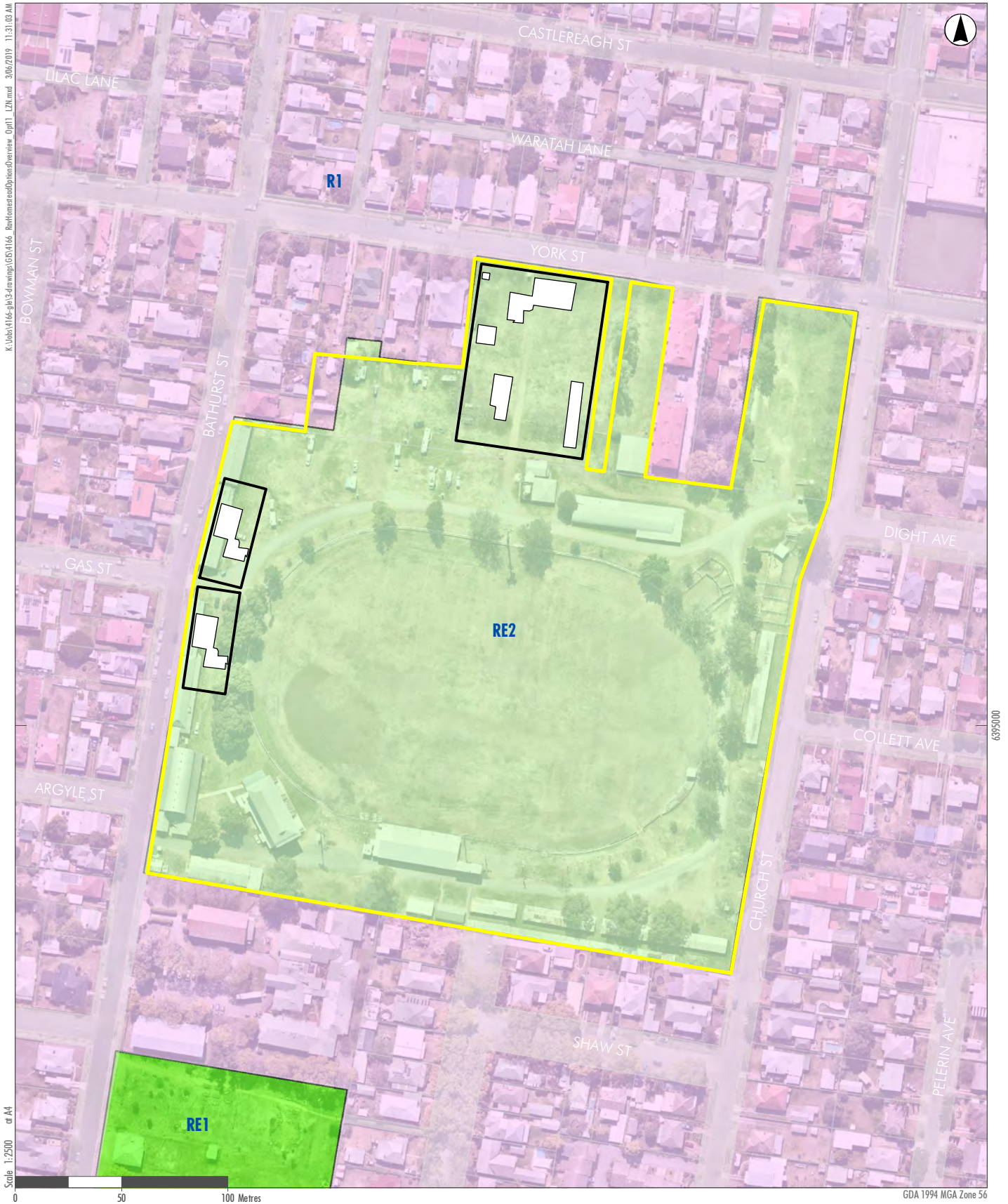
## Heritage

- Conservation Area - General
- Item - General

FIGURE 11.1

Option 11 – Singleton Site 4  
Singleton Showground  
Overview





#### Legend

- Potential Relocation Site (Northern Agricultural Association)
- Ravensworth Homestead Superimposed into Site Relocation Site (at Scale)

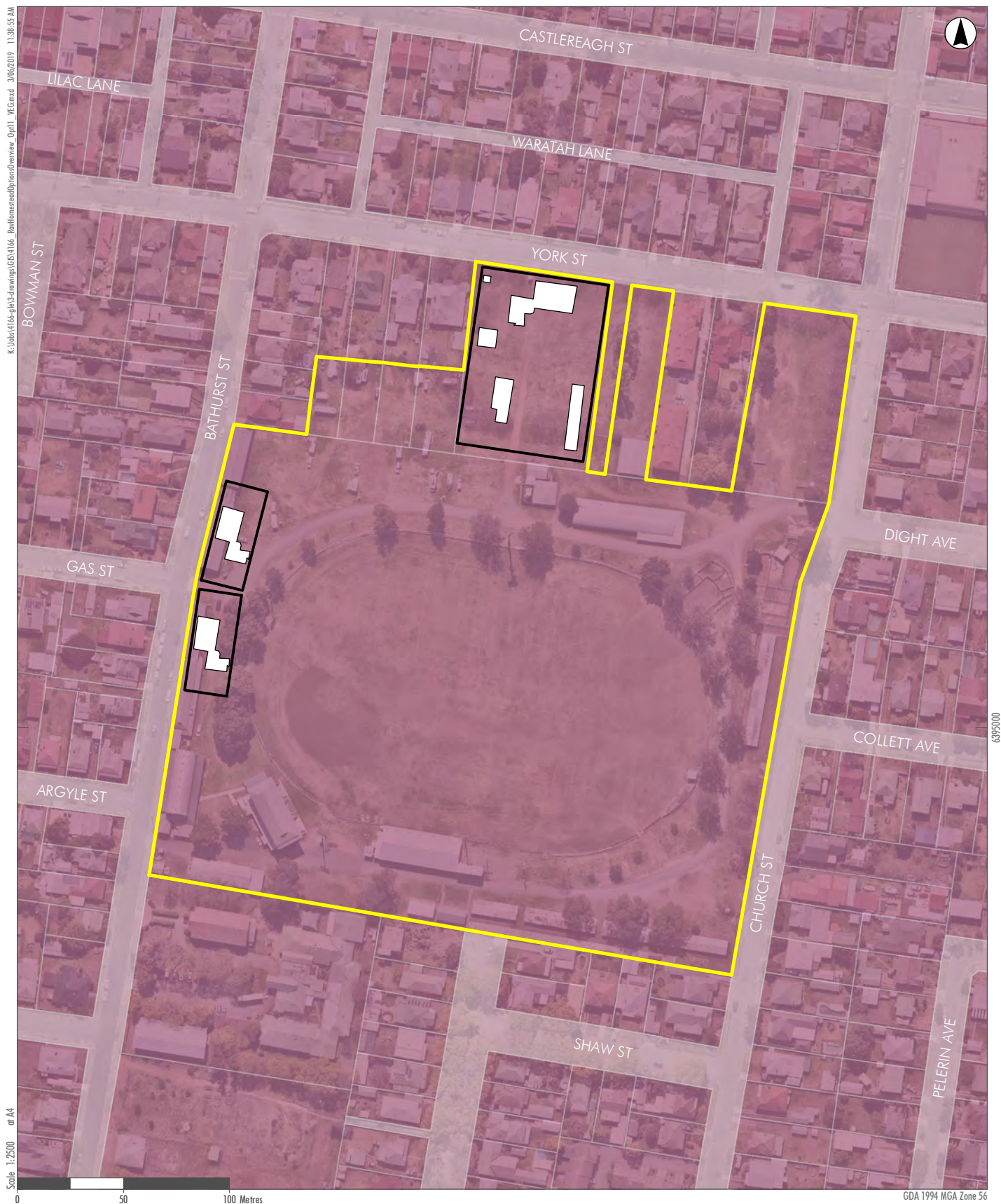
#### Land Zoning (Singleton LEP 2013)

- R1 General Residential
- RE1 Public Recreation
- RE2 Private Recreation

FIGURE 11.2

Option 11 – Singleton Site 4  
Singleton Showground  
Land Zoning (Singleton LEP 2013)





#### Legend

- Potential Relocation Site (Northern Agricultural Association)
- Ravensworth Homestead Superimposed into Site Relocation Site (at Scale)
- Upper Hunter Plant Community Types VIS\_ID 4894
- Non-native

FIGURE 11.3

Option 11 – Singleton Site 4  
Singleton Showground  
Upper Hunter Plant Community Types (OEH)

## 5.0 Summary

**Table 4.0 Summary of Homestead Recipient Site Analysis**

Option	Site ID	Land Ownership	Land Zoning Compatibility	Potentially Flood Impacted	Cultural Heritage Present	Planning Instruments	Comments
Singleton							
1	Site 1 – Civic Ave	Singleton Council	B5 Business Development Appears to be compatible	Yes, in flood planning zone	No	N/A	Existing air quality monitor may need relocation, and is part of the Upper Hunter AQ network.  Flood risk may need mitigation by filling to raise the level of the site.
2	Site 2 – Howe St	Singleton Hospital	SP2 Infrastructure: Health Services Facilities Not compatible	Partially	No	N/A	
3	Site 3 – Bathurst St	Minister for Lands (Crown Land)	RE1 Public Recreation Appears to be compatible	Yes	No	Singleton Open Space and recreation Needs Study 2012 – Albion Park provides significant value to the community and development of a community garden is planned.	Appear to be compatible with zoning.  Existing established cricket pitch, may be used by sporting clubs currently.  Glencore to confirm if Native Title has been extinguished.
11	Site 4 – Singleton Showground	Northern Agricultural Association Inc and 11 individuals and joint tenants (see <b>Section 4.1.1</b> )	Zone RE2 Private Recreation	Yes, in flood planning zone	Yes	Singleton Open Space and recreation Needs Study 2012 – notes that York St is a component of Singletons proposed green web.	Zoning is partially compatible with potential land uses.  The entire site is located within the flood planning area and heritage conservation area.



Option	Site ID	Land Ownership	Land Zoning Compatibility	Potentially Flood Impacted	Cultural Heritage Present	Planning Instruments	Comments
Broke							
4	Site 1 – Wollombi St (Sth)	The State of New South Wales (Crown Land)	RE1 Public Recreation & RU4 Primary Production Small Lots Appears to be compatible	Yes	Yes, however it should remain unaffected	Broke Community Hub Detailed Master Plan 2017 – Stewart McTaggart Park is to be the location for an all age’s playground including skate park, picnic facilities and play equipment. This will partially comprise the Broke Community Hub.	Existing recreational facilities on site and a War Memorial.  Flood impacts will require study to determine if risks can be mitigated by filling and raising some parts of the site.  Glencore to confirm if Native Title has been extinguished.
5	Site 2 – Wollombi St (Nth)	The State of New South Wales (Crown Land)	RE1 Public Recreation Appears to be compatible	Yes, extensive part of the site will be flooded in 1:100 ARI event	Yes, however it should remain unaffected	Our Villages Our Vision 2012 – McNamara Park is well utilized by tourists and brings visitors to the area. It also acts as a gateway to the National Park.  Singleton Council Open Space and Recreation Needs Study 2013 – McNamara Park is a key part of the tourist route within the Hunter Valley wine region. A community corroboree ground was to be developed at the park.  Broke Community Hub Detailed Master Plan 2017 – a BMX track is to be developed in the same location as this site.	Flood impacts rated as high hazard. Likely to require extensive site works to mitigate flood risks.  Glencore to confirm if Native Title has been extinguished.
6	Site 3 – Milbrodale Rd	The State of New South Wales (Crown Land)	RE1 Public Recreation Appears to be compatible	Yes, extensive flood risk across site	Yes, however it should remain unaffected	None of significance.	Native veg (River Red Gum and Sydney Blue Gum) requires clearing and offsetting.  Glencore to confirm if Native Title has been extinguished..

Option	Site ID	Land Ownership	Land Zoning Compatibility	Potentially Flood Impacted	Cultural Heritage Present	Planning Instruments	Comments
7	Site 4 – Adair St	The State of New South Wales (Crown Land), Trustees of the Roman Catholic Church for the Diocese of Maitland and Kevin James Taggart	R5 Large Lot Residential Does not appear to be compatible	Yes	Yes, Maria Immaculate Roman Catholic Church	Singleton LEP 2013 – Maria Immaculate Roman Church is listed as locally significant.	Site may not fit in proposed location.  Encroaches on private land and does not appear to be compatible with zoning.  * May require relocation of Church and grave sites.
8	Site 5 – Rogers St	Trustees of Church Property for the Diocese of Newcastle and Six individuals (see <b>Section 3.5.1</b> )	R5 Large Lot Residential Does not appear to be compatible	Yes	Yes, St Andrew's Anglican Church	Singleton LEP 2013 – St Andrew's Anglican Church is listed as locally significant.	Site may not fit in proposed location.  Encroaches on private land and does not appear to be compatible with zoning.  *May require relocation of Church.
Lake St Clair							
9	Site 2	Water Administration Ministerial Corporation	RU2 Rural Landscape Appears to be compatible	No	Yes, however it should remain unaffected	Singleton LEP 2013 – Site falls within a Drinking Water Catchment.	Existing recreational facilities located close to site.
10	Site 1	Boondandilla Pastoral Company Pty Ltd	RU1 Primary Production Does not appear to be compatible	No	Yes, however it should remain unaffected	N/A	Existing recreational facilities located close to site.

## 6.0 References

BMT WBM 2016. Wollombi Brook Flood Study Final Report 2016

Coakes Consulting 2012. Our Villages Our Vision: A Future Vision for Broke, Bulga and Milbrodale.

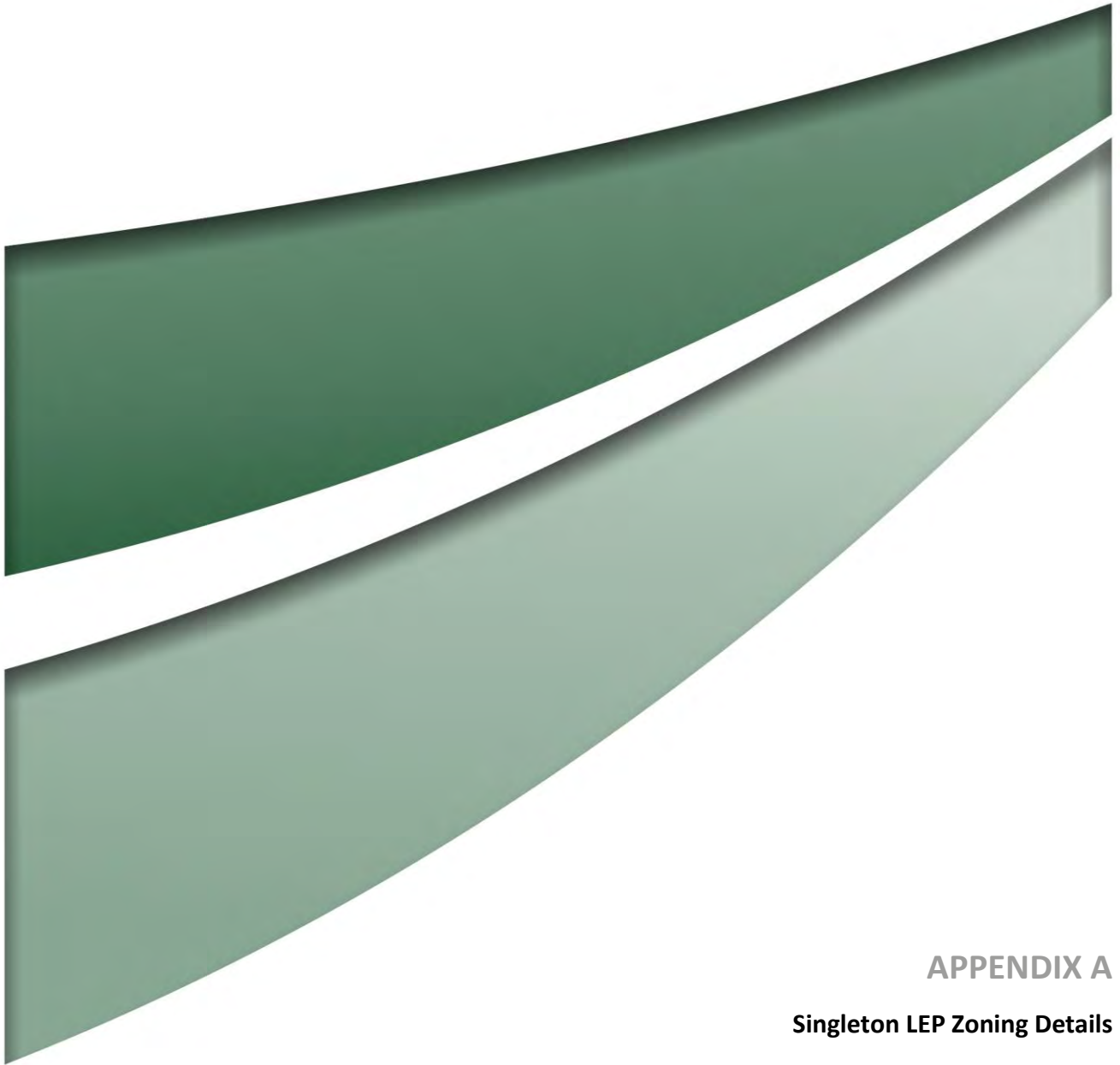
Gondwana Consulting 2018. Draft Plan of Management for the Lake St Clair Recreation Park for Singleton Council.

New South Wales State Emergency Service 2006. Volume 2 of the Singleton Local Flood Plan: Hazard and Risk in Singleton.

ROSS Planning 2012. Singleton Council Open Space and Recreation Needs Study 2013

Singleton Council 2013. *Singleton Local Environmental Plan 2013* (Singleton LEP)

State Government of NSW and Office of Environment and Heritage (OEH) 2019. State Vegetation Map: Upper Hunter v1.0. VIS\_ID 4894. [[https://datasets.seed.nsw.gov.au/dataset/state-vegetation-type-map-upper-hunter-v1-0-vis\\_id-4894](https://datasets.seed.nsw.gov.au/dataset/state-vegetation-type-map-upper-hunter-v1-0-vis_id-4894)]



## APPENDIX A

### Singleton LEP Zoning Details



## Singleton LEP Zoning Details

### Zone B5 – Business Development

#### 1) Objectives of zone

To enable a mix of business and warehouse uses, and bulky goods premises that require a large floor area, in locations that are close to, and that support the viability of, centres.

#### 2) Permitted without consent

Nil

#### 3) Permitted with consent

Bulky goods premises; Centre-based child care facilities; Garden centres; Hardware and building supplies; Kiosks; Landscaping material supplies; Office premises; Passenger transport facilities; Plant nurseries; Respite day care centres; Roads; Rural supplies; Take away food and drink premises; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

#### 4) Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Eco-tourist facilities; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Heavy industries; Helipads; Home-based child care; Home businesses; Home industries; Home occupations; Home occupations (sex services); Information and education facilities; Jetties; Marinas; Mooring pens; Moorings; Open cut mining; Recreation facilities (major); Registered clubs; Residential accommodation; Resource recovery facilities; Rural industries; Tourist and visitor accommodation; Truck depots; Waste disposal facilities; Wharf or boating facilities.

### Zone RE1 – Public Recreation

#### 1) Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

#### 2) Permitted without consent

Environmental protection works

#### 3) Permitted with consent

Boat launching ramps; Boat sheds; Camping grounds; Centre-based child care facilities; Community facilities; Emergency services facilities; Environmental facilities; Flood mitigation works; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Water recreation structures; Water supply systems

4) Prohibited

Any development not specified in item 2 or 3

**Zone SP2 – Infrastructure: Health Services Facilities**

1) Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

2) Permitted without consent

Extensive agriculture

3) Permitted with consent

Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4) Prohibited

Any development not specified in item 2 or 3

**Zone RU4 – Primary Production Small Lots**

1) Objectives of zone

- To enable sustainable primary industry and other compatible land uses.
- To encourage and promote diversity and employment opportunities in relation to primary industry enterprises, particularly those that require smaller lots or that are more intensive in nature.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To recognise Hunter Valley Wine Country and the adjoining environs of Broke-Fordwich as a major viticultural and tourist destination by providing additional opportunities for compatible tourist uses.

2) Permitted without consent

Extensive agriculture; Home occupations; Intensive plant agriculture

3) Permitted with consent

Airstrips; Animal boarding or training establishments; Aquaculture; Building identification signs; Business identification signs; Cellar door premises; Community facilities; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Farm buildings; Flood mitigation works; Forestry; Function centres; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Restaurants or cafes; Roads; Roadside stalls; Rural industries; Sewerage systems; Tourist and visitor accommodation; Turf farming; Viticulture; Water supply systems

#### 4) Prohibited

Backpackers' accommodation; Intensive livestock agriculture; Livestock processing industries; Sawmill or log processing industries; Serviced apartments; Stock and sale yards; Any other development not specified in item 2 or 3.

### **Zone R5 – Large Lot Residential**

#### 1) Objectives of zone

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

#### 2) Permitted without consent

Home occupations

#### 3) Permitted with consent

Bed and breakfast accommodation; Building identification signs; Business identification signs; Dual occupancies; Dwelling houses; Food and drink premises; Group homes; Home industries; Neighbourhood shops; Roads; Any other development not specified in item 2 or 4

#### 4) Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Entertainment facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Residential accommodation; Restricted premises; Rural industries; Sex services premises; Signage; Storage premises; Transport depots; Truck depots; Tourist and visitor accommodation; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Wharf or boating facilities; Wholesale supplies

## **Zone RU1 – Primary Production**

### **1) Objectives of zone**

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

### **2) Permitted without consent**

Extensive agriculture; Forestry; Home occupations; Intensive plant agriculture

### **3) Permitted with consent**

Agriculture; Airstrips; Animal boarding or training establishments; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Community facilities; Crematoria; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Farm stay accommodation; Flood mitigation works; Hazardous industries; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Jetties; Moorings; Offensive industries; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Service stations; Sewerage systems; Truck depots; Turf farming; Veterinary hospitals; Water supply systems

### **4) Prohibited**

Any development not specified in item 2 or 3

## **Zone RU2 – Rural Landscape**

### **1) Objectives of zone**

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.

### **2) Permitted without consent**

Extensive agriculture; Home occupations; Intensive plant agriculture



### 3) Permitted with consent

Airstrips; Animal boarding or training establishments; Aquaculture; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Community facilities; Dual occupancies; Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Farm buildings; Flood mitigation works; Forestry; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Marinas; Mooring pens; Moorings; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Restaurants or cafes; Roads; Roadside stalls; Rural industries; Service stations; Sewerage systems; Tourist and visitor accommodation; Turf farming; Veterinary hospitals; Viticulture; Water supply systems

### 4) Prohibited

Backpackers' accommodation; Hotel or motel accommodation; Intensive livestock agriculture; Livestock processing industries; Serviced apartments; Stock and sale yards; Any other development not specified in item 2 or 3

## **Zone RE2 – Private Recreation**

### 1) Objectives of zone

- To enable land to be used for private open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

### 2) Permitted without consent

Nil

### 3) Permitted with consent

Community facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Information and education facilities; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Registered clubs; Roads; Signage; Water recreation structures; Water supply systems

### 4) Prohibited

Any development not specified in item 2 or 3

## **Zone R1 – General Residential**

### 1) Objectives of zone

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

### 2) Permitted without consent

Home occupations

### 3) Permitted with consent

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dwelling houses; Group homes; Hostels; Multi dwelling housing; Neighbourhood shops; Places of public worship; Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Shop top housing; Any other development not specified in item 2 or 4

### 4) Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Entertainment facilities; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Information and education facilities; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Passenger transport facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Research stations; Restricted premises; Rural industries; Service stations; Sex services premises; Signage; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Wharf or boating facilities; Wholesale supplies

## Heritage Conservation

### (1) Objectives

The objectives of this clause are as follows:

- (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,
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

### (2) Requirement for consent

Development consent is required for any of the following:

- (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):
  - (i) a heritage item,
  - (ii) an Aboriginal object,
  - (iii) a building, work, relic or tree within a heritage conservation area,
- (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

(d) disturbing or excavating an Aboriginal place of heritage significance,

(e) erecting a building on land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

(f) subdividing land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

(3) When consent not required

However, development consent under this clause is not required if:

(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:

(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and

(ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or

(b) the development is in a cemetery or burial ground and the proposed development:

(i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and

(ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or

(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or

(d) the development is exempt development.

(4) Effect of proposed development on heritage significance

The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

#### (5) Heritage assessment

The consent authority may, before granting consent to any development:

- (a) on land on which a heritage item is located, or
- (b) on land that is within a heritage conservation area, or
- (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

#### (6) Heritage conservation management plans

The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

#### (7) Archaeological sites

The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the *Heritage Act 1977* applies):

- (a) notify the Heritage Council of its intention to grant consent, and
- (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

#### (8) Aboriginal places of heritage significance

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

- (a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
- (b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

#### (9) Demolition of nominated State heritage items

The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item:

- (a) notify the Heritage Council about the application, and
- (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.



(10) Conservation incentives

The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that:

- (a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and
- (b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and
- (c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and
- (d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and
- (e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.

# Appendix E – Vegetation and Landscape Feature Relocation Schedule

# **Ravensworth Homestead Complex, Singleton, NSW**

## **Landscape and Site Features Schedules**



Photography courtesy of G. Britton, 2018

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# 1. Introduction

This report forms part of a proposal to extend the existing Glendell Mine, taking in a new area of land located to the north-west of the existing mine (Glendell Pit Extension) and to install associated mining infrastructure adjacent. The Glendell Mine forms part of the Mount Owen Complex located at Ravensworth in the Upper Hunter Valley of New South Wales.

The proposed development, known as “Glendell Continued Operations Project” (SSD 9349) involves (in brief) the extension of open cut coal mining to the north of the existing Glendell Mine until approximately 2044; demolition of the existing Glendell Mine Infrastructure Area (MIA) and construction of a new MIA; realignment of a section of Hebden Road; diversion of a section of Yorks Creek; and the relocation of Ravensworth Homestead (two options).

As part of the proposed relocation of the Ravensworth Homestead Complex, some of the existing plants located adjacent to and within the immediate surrounds of the building group are to be either relocated, first to a temporary nurseery and then planted out at the new relocation site; or, propagated so the genetic stock is not lost.

In addition, site features with historic links to the colonial period of the Ravensworth Homestead Complex are to be salvaged and relocated to the new recipient site.

At one of the proposed recipient sites: Ravensworth Farm, Ravensworth, there are a number of mature plantings that relate to the history of the property and are considered worth retaining and incorporating into the proposed landscape scheme for the site.

Refer below for schedules and location diagrams.

Refer also to *Appendix 23g: Landscape Drawings* and *Appendix 23h: Landscape Drawings*, prepared by Geoffrey Britton Environmental Design and Heritage Consultant.

## Terms

Propagate	cuttings + seed collection/germination/growing on
Relocate	professional preparation and removal of whole plants to appropriate storage/maintenance before replanting at recipient site based on new site plan

## 2. Landscape and Site Features Schedules

### 2.1. Plant Relocation and Propagation Schedules

Existing plantings at Ravensworth Homestead Complex and surrounds proposed to be relocated to the homestead recipient site are noted in the schedule below. However, before relocating to the new homestead grounds the plants will need to be relocated firstly to a separate holding nursery and protected and maintained there until the new homestead complex earthworks, services and building relocation phases are completed.

A number of large, mature plants are proposed to be relocated: the old Oleander from near Yorks Creek and most of the date palms (all to the holding nursery initially) as well as the Moreton Bay fig tree which could be moved directly to its permanent position to the southwest of the homestead grounds as shown on Landscape Drawing no. LP06.

Other large species are not worth relocating but are potentially important as early introductions and should be propagated so the genetic stock is not lost.

**Note:** *Cymbidium canaliculatum* requires special horticultural treatment. This locally indigenous epiphytic orchid species has been reported in remnant woodland trees along the House Dam creek. Before the area is cleared in preparation for mining, if any of these in situ orchids remain, they should be carefully removed (as advised) from their host trees and relocated to suitable places at the new recipient site for the Ravensworth Homestead Complex (or another place that is not likely to be mined in the future).

Table 2.1 provides the Plant Retention Schedule for Ravensworth Farm (Recipient Site Option A).

Table 2.2 provides the Plant Relocation and Propagation Schedule for Ravensworth Homestead Complex.

Table 2.3 provides the Plant Relocation and Propagation Schedule for plants within the Core Estate lands in proximity to the Ravensworth Homestead Complex.

Table 2.4 provides the schedule of Site features to be salvaged from the Ravensworth Homestead Complex for relocation.



Table 2. 1: Plant Retention Schedule for Ravensworth Farm (Recipient Site Option A).

SYMBOL	PLANT SPECIES	COMMON NAME	GRADE OF SIGNIFICANCE	RELOCATE/ PROPAGATE
<b>SITE 27 &amp; 27A RAVENSWORTH FARM (RECIPIENT SITE OPTION A) PLANT SPECIES</b>				
Fm	<i>Ficus macrophylla</i>	Moreton Bay fig	High	Retain
No	<i>Nerium oleander</i>	Oleander	Moderate	Retain
Pa	<i>Plumbago auriculata</i>	Leadwort	Moderate	Retain
Tc	<i>Tecoma capensis</i>	Cape honeysuckle	High	Retain

Table 2. 2: Plant Relocation and Propagation Schedule for Ravensworth Homestead Complex. Refer to Figure 2.1 below for location of nominated species.

SYMBOL	PLANT SPECIES	COMMON NAME	GRADE OF SIGNIFICANCE	RELOCATE/ PROPAGATE
<b>RAVENSWORTH HOMESTEAD COMPLEX PLANT SPECIES</b>				
Ab	<i>Abelia grandiflora</i>		Little	Relocate (2 plants)
Ag	<i>Agapanthus praecox</i>	Common Agapanthus, African lily	Little	Relocate (all)
Aa	<i>Agave americana</i>	Giant century plant	High	Relocate (clump)
Am	<i>Aloe maculata</i>	Soap aloe	Moderate	Relocate (clumps)
Ar	<i>Artemisia absinthium</i>	Common wormwood	Moderate	Relocate (large clump)
Ad	<i>Arundo donax</i>	Giant reed, giant cane	Little	Relocate (clump)
Bg	<i>Bignonia sp.</i>		Little	Relocate (1 at Men's Quarters)
Bn	<i>Bilbergia nutans</i>	Queen's tears	Little	Relocate (1 under fig)
Bp	<i>Brachychiton populneus</i>	Kurragone (recruits)	Little	-
Ca	<i>Callistemon sp.</i>	Bottlebrush	Little	-
Cg	<i>Casuarina glauca</i>	Swamp Oak	Little	-
Cr	<i>Catharanthus roseus</i> cv.	Madagascar periwinkle	Little	-
Ce	<i>Cercis sp.?</i>		Little	-
Ch	<i>Chaenomeles japonica</i>	Japonica (syn. <i>Pyrus japonica</i> flowering quince)	Little	Relocate (1 near water tank)
Cm	<i>Clivea miniata?</i>		Little	Relocate (2 clumps)
Ct	<i>Cotyledon orbiculata</i> var. <i>oblonga</i> ' <i>Macrantha</i> '	Pig's ear, paddle plant	Little	Relocate (clump at homestead)
Co	<i>Crassula ovata</i>	Jade plant	Little	-
Dx	<i>Dolichandra unguis-</i> <i>cati</i>	Cat's claw creeper	Moderate	-
Dc	<i>Dovyalis caffra</i>	Kei apple (line of plants in farm yard)	Moderate	-
Dc	<i>Dovyalis caffra</i>	Kei apple (as weeds)	Little	-

SYMBOL	PLANT SPECIES	COMMON NAME	GRADE OF SIGNIFICANCE	RELOCATE/ PROPAGATE
Ep 1	<i>Epiphyllum sp.</i>		Moderate	Relocate (clump)
Ep 2	<i>Epiphyllum crenatum</i>	Crenate Orchid Cactus	Moderate	Relocate (clump)
Ec	<i>Eucalyptus sp.</i>	Ironbark or Grey Box? Stumps only	Little	-
Eu	<i>Eucomis sp.</i>		Little	Relocate (clump at Men's Quarters)
Fm	<i>Ficus macrophylla</i>	Moreton Bay fig	High	Relocate (1 tree)
Gr	<i>Grevillea robusta</i>	Silky Oak	Little	-
Jm	<i>Jacaranda mimosifolia</i>	Jacaranda	Little	-
Ja	<i>Jasminum sp.</i>	Jasmine	Little	Relocate
Ka	<i>Kalanchoe sp.?</i>		Little	-
Lp	<i>Lagunaria patersonii</i>	Norfolk Island hibiscus	Little	Propagate
Lj	<i>Lonicera japonica</i>	Common honeysuckle	Little	Relocate (1 climber)
Ly	<i>Lycium ferocissimum</i>	African Boxthorn	Little	-
No	<i>Nerium oleander</i>	Oleander	Moderate	Relocate (11 plants)
Oe	<i>Olea europaea subsp. cuspidata</i> (syn. <i>Olea europaea subsp. africana</i> )	African Olive	Moderate	-
Oa	<i>Opuntia aurantiaca</i>	Tiger Pear	Little	-
Pc	<i>Phoenix canariensis</i>	Canary Island date palm	Moderate	Relocate (2 mature and 5 seedlings)
Pa	<i>Plumbago auriculata</i>	Leadwort	Little	Relocate (2 clumps)
Pr	<i>Prunus sp. or cv.</i>		Little	-
Pg	<i>Punica granatum</i>	Pomegranate	Little	Relocate (1)
Ra	<i>Raphiolepis indica</i>	Indian Hawthorn	Little	Relocate (1 under fig)
Ro	<i>Rosa indica</i> ( <i>Rosa chinensis</i> ) cv.	Possibly 'Old Blush' China rose	Little	Relocate (1)
Sa	<i>Schinus areira</i> (syn. <i>S. molle</i> )	Peppercorn tree	Little	
Sp	<i>Spiraea sp.</i>	Maybush	Little	Relocate (1)
Sr	<i>Strelitzia reginae</i>	Bird-of-Paradise	Little	Relocate (1)
Yf	<i>Yucca sp.</i> [possibly <i>Y. flaccida</i> ]		Moderate	Relocate (clumps)

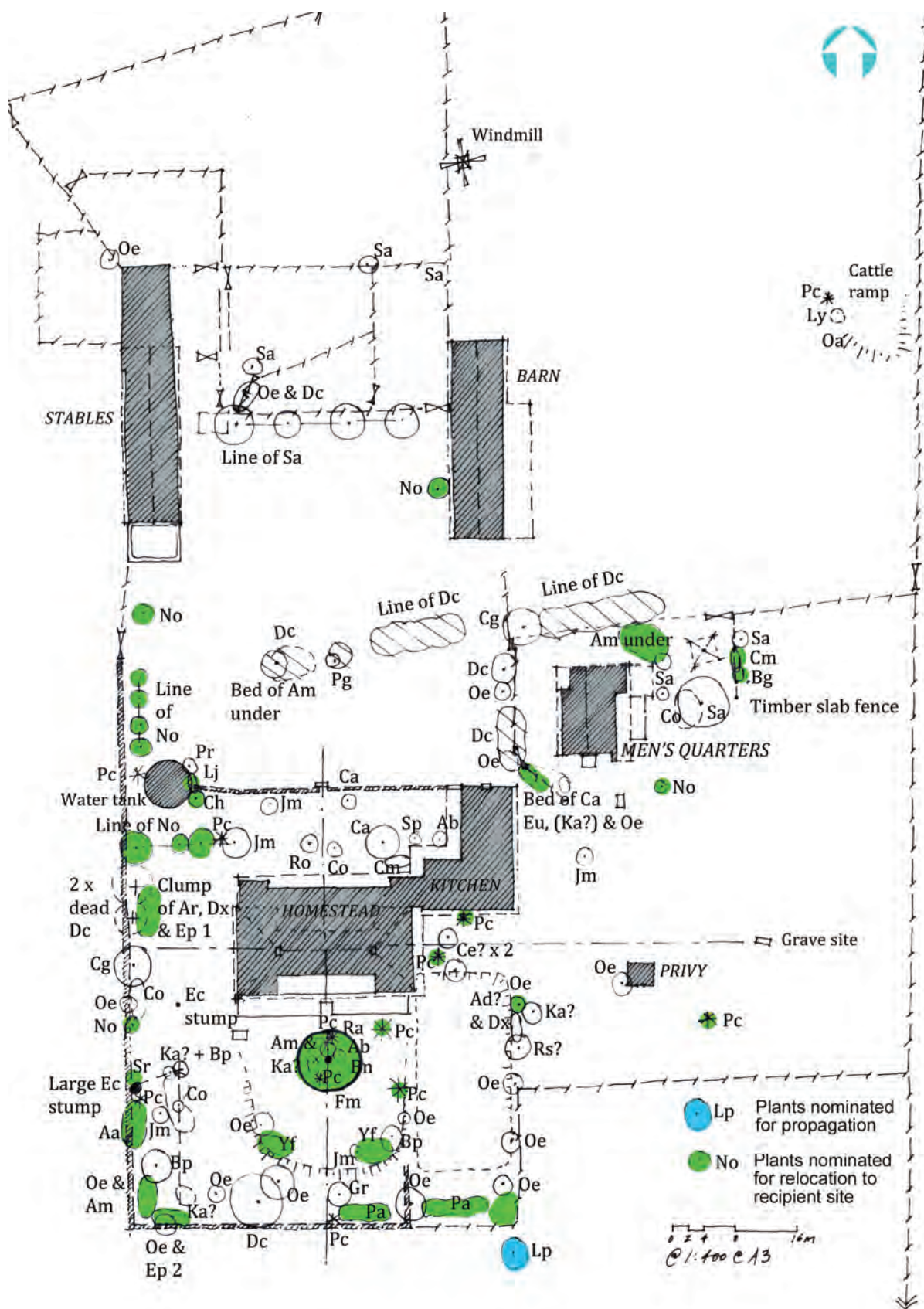


Figure 2. 1: Plant identification diagram at the Ravensworth Homestead Complex showing plants to be propagated or relocated as per Table 2.1 above. See also Landscape Drawing No. LP08.

Table 2. 3: Plant Relocation and Propagation Schedule for plants within the Core Estate lands in proximity to the Ravensworth Homestead Complex. Refer to Figure 2.2 below for location of nominated species.

Item No.	PLANT SPECIES	COMMON NAME	DESCRIPTION/ COMMENTS	GRADE OF SIGNIFICANCE	RELOCATE/ PROPAGATE
<b>CORE ESTATE LANDS CULTURAL PLANTINGS</b>					
<b>GENERALLY</b>					
-	<i>Brachychiton populneus</i>	Kurrajong	Occurring naturally	Moderate	
-	<i>Casuarina glauca</i>	Swamp Oak	Occurring naturally	Moderate	
-	<i>Eucalyptus spp.</i>	Indigenous Eucalypts	Creeks etc.	Moderate	
-	<i>Robinia pseudoacacia</i>	Black Locust	As weeds	Little/Intrusive	
-	<i>Schinus areira</i>	Peppercorn tree	Near Yorks Creek	Little	Propagate
-	<i>Ulmus sp.</i>	Elm	Weeds in creeklines	Little/Intrusive	
-	<i>Yucca sp.</i>	Yucca	West of Yorks Creek	Little/Intrusive	
-	<i>Dovyaklis caffra</i>	Kei Apple	As weeds	Little/Intrusive	
<b>WEST OF YORKS CREEK (in vicinity of Site 11)</b>					
Group 1	Group of old cultural plantings along Yorks Creek including: VG7 <i>Nerium oleander</i> cv. 'Splendens' (Oleander) VG8 <i>Callitris endlicheri</i> (Black Cypress pine) VG9 <i>Ulmus sp.</i> (Elm) This group of plantings appear to relate to the colonial agricultural development known to have occurred in the Northwest Paddock and further north along Yorks Creek. Historical archaeological Site 13 is in the vicinity indicating the possibility of an early stone structure associated with the cultural landscape features.			Exceptional (group) Oleander (Exceptional) Black Cypress pine (High) Elm (High) Site 13 Linear Stone (High)	Relocate Oleander only. Propagate the Elm.
Group 2	Group of features which together form an area of historical and archaeological interest, including: <i>Robinia pseudoacacia</i> (VG5): lines of Black Locust with African boxthorn ( <i>Lycium ferocissimum</i> ) forming windbreaks around a possible area of early cultivation.			Exceptional	Propagate Black Locusts
Group 3	Group of features which together appear to be a continuation of the agricultural development of the alluvial lands along Yorks Creek to the north, including a potential windbreak (Species?) (VG10) for adjacent cultivation area on north bank of Bowmans Creek.			High	
VG1	<i>Eucalyptus crebra</i>	Narrow-leafed Ironbark	Old example	Moderate	
VG2	<i>Brachychiton populneus</i>	Kurrajong	Old example	Moderate	



Item No.	PLANT SPECIES	COMMON NAME	DESCRIPTION/ COMMENTS	GRADE OF SIGNIFICANCE	RELOCATE/ PROPAGATE
<b>CORE ESTATE LANDS CULTURAL PLANTINGS</b>					
VG3	<i>Robinia pseudoacacia</i>	Black Locust	Old example	Moderate	
VG4	<i>Olea europaea</i> subsp. <i>cuspidata</i>	African olive		Little/Intrusive	
<b>EAST OF YORKS CREEK (in vicinity of Site 9 and the Ravensworth Homestead Complex)</b>					
Group 4	<p>The “8 acre Garden” consisting of a group of features associated with the colonial period of agricultural development in the vicinity of Ravensworth Homestead Complex. Features include:</p> <p>Copse of Black Locusts (<i>Robinia pseudoacacia</i>) (VG15)</p> <p>Former cultivation areas with closely spaced furrows still clearly visible on surface with early fencing partly remaining.</p> <p>Brick lined well (Site 6)</p> <p>Historic dams also located along east side of Yorks Creek.</p>			<p>Exceptional (group)</p> <p>Black Locusts (Moderate)</p> <p>Cultivation areas (High)</p> <p>Brick lined well (High)</p>	
VG13	Former orchards between Homestead Complex and House Dam and to the southwest of Homestead Complex (Lidar results confirm location) possibly from early 20 <sup>th</sup> century			Little	
VG17	<i>Cymbidium canaliculatum</i>	Channel leaf Orchid	House dam creek-specific location unknown (as recorded in Umwelt report 2018) footnote it.	Little	Relocate (if located)
VG18	<i>Pinus halepensis</i>	Aleppo Pine	Near entry gates to Homestead Complex	Little	-
VG19	<i>Pinus halepensis</i>	Aleppo Pine	East of Homestead Complex	Moderate	Propagate

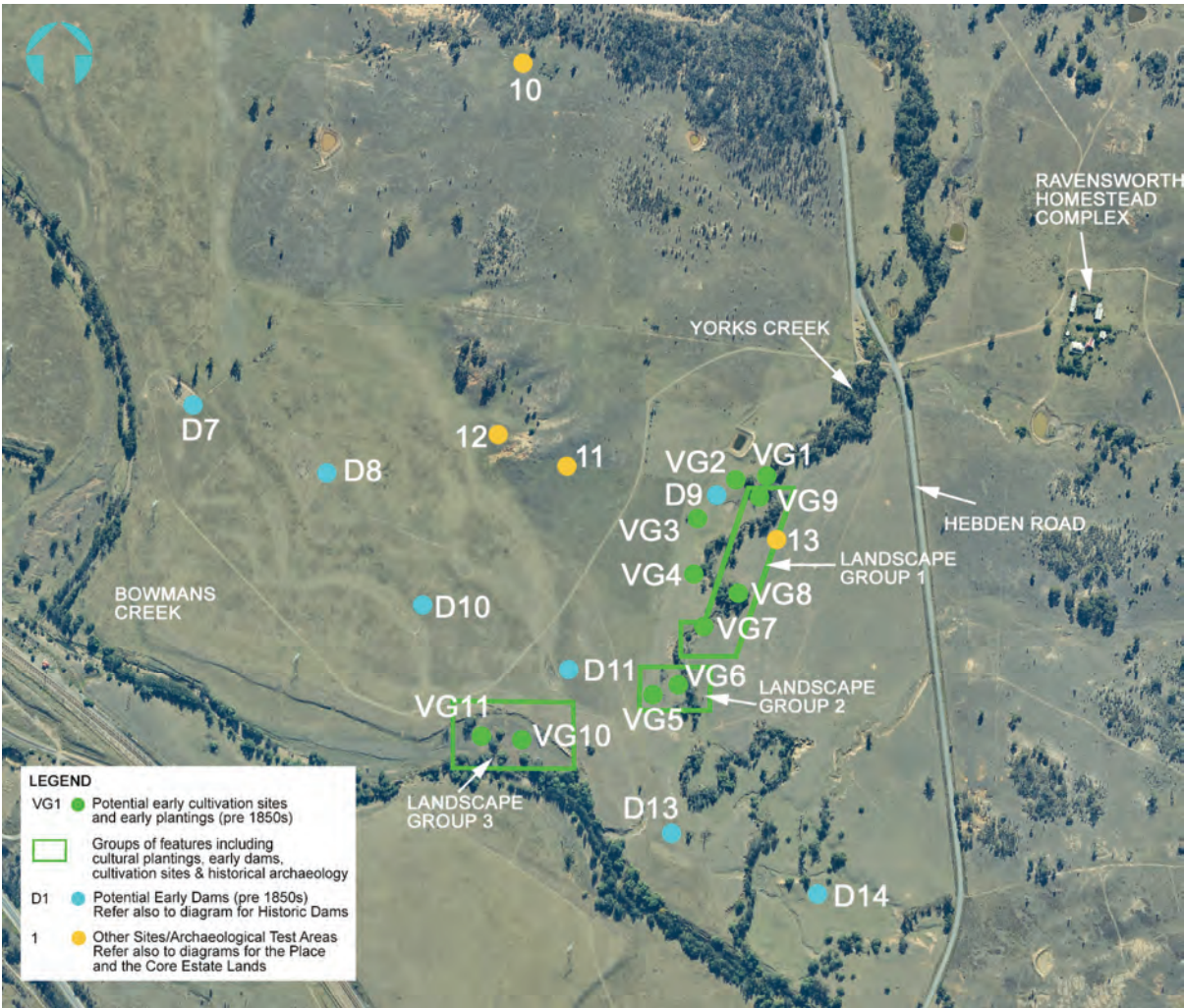


Figure 2. 2: Plant identification diagram for area West of Yorks Creek



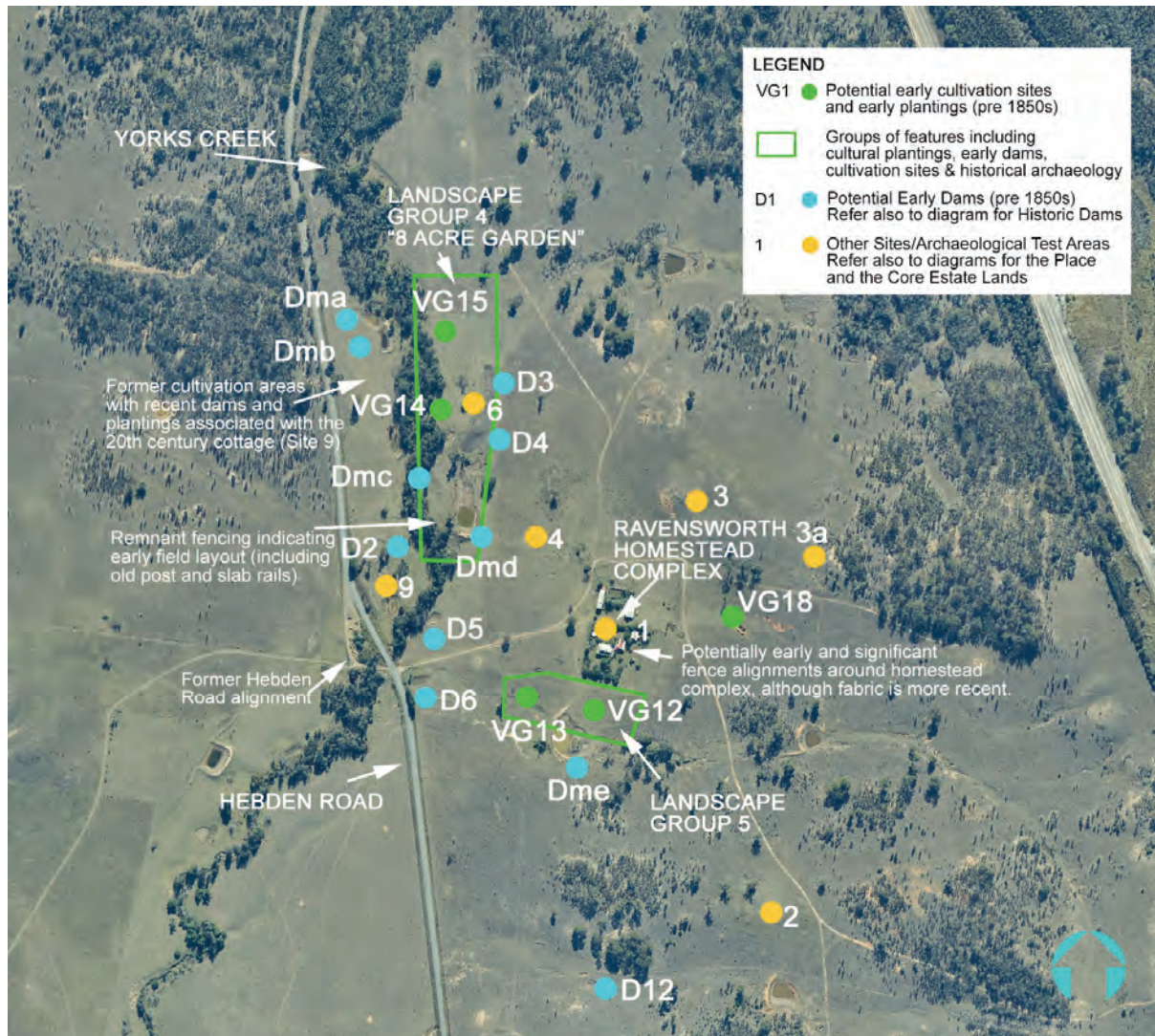


Figure 2. 3: Plant identification diagram for area East of Yorks Creek

## 2.2. Site Features Relocation Schedule

Generally, salvage loose stone for reuse and interpretation at recipient site

Where noted below as “Discretionary” this refers to landscape and site features of little significance but capable of reuse if needed.

**Note:** The stone grave (Miss White’s grave, Site Item. 30) to be relocated in accordance with relevant legislation. Refer to *Appendix 23c: Historic Archaeological Impact Statement of Core Estate Lands*.

### Time Periods:

<b>O</b>	=	Original
<b>EA</b>	=	Early addition
<b>EN</b>	=	Early 19th century (1820-1850)
<b>MN</b>	=	Mid 19th century (1851-1885)
<b>LN</b>	=	Late 19th century (1886-1900)
<b>ET</b>	=	Early 20th century (1901-1940)
<b>MT</b>	=	Mid 20th century (1941-1970)
<b>LT</b>	=	Late 20 <sup>th</sup> century (1971-2000)
<b>MD</b>	=	Modern (2001-date)
<b>?</b>	=	Date unclear

Table 2. 4: Site features to be salvaged from the Ravensworth Homestead Complex. Refer to Figure 2.4 below for location of items.

No.	Description	Date	Significance Ranking	Salvage/Relocate
<b>RAVENSWORTH HOMESTEAD COMPLEX LANDSCAPE/SITE FEATURES</b>				
1	Timber post and star picket with barbed wire or plain wire fencing	MT/LT	Little	Nil
2	Timber post and rail and slab faced fence supported with steel posts and wire	MT/LT	Moderate	Salvage
3	Steel post and wire fencing	MD	Little	Nil
4	Star picket and wire protective fencing	MD	Little	Discretionary
5	Steel pole farm gate with wire mesh	MD	Little	Discretionary
6	Steel pole farm gate with wire or wire mesh	MD	Little	Discretionary
6a	Steel cart wheel gates on timber posts	MT	Little	Nil
7	Yard fencing of timber post with wire mesh, steel girders and steel poles	MT/LT	Little	Discretionary
8	Rubble stone wall supported with timber posts, steel girders, steel poles and wire mesh	MT/LT	Moderate	Salvage stone
9	Sheep run of timber posts with steel rails and wire mesh with stone flagging	MT/LT	Moderate/ Little	Salvage stone
10	Sheep ramp of timber with steel girders and steel poles supported on sandstone blocks	MT/LT	Moderate/ Little	Salvage stone
11	Makeshift shelter of timber with corrugated metal roofing containing two cast iron stoves (Fletcher & Sons, Oxford Street, Sydney-early 20 <sup>th</sup> century)	MT/LT	Moderate/ Little	Nil
12	Sandstone rubble base to fence	MT/LT	Moderate	Salvage
13	Scattered stone (former building materials)	EN/MT	High	Salvage
14	Timber post and rail fence with steel pole	MT/LT	Moderate/	Discretionary



No.	Description	Date	Significance Ranking	Salvage/Relocate
	farm gate with wire mesh		Little	
15	Timber post and rail fence with timber post and rail gate	MT/LT	Little	Discretionary
16	Gravel track	EN/MT	High	Nil
17	Stone flagging wheel tracks	LT	Mod.	Salvage stone
18	Timber entry gate posts	EN	High	Salvage (x 2)
19	Stone seat	EN/MT	High	Salvage
20	Rubble stone garden bed surrounds	MT/LT	Moderate	Nil
21	Stone block garden wall	MT/LT	Moderate	Salvage
22	Stone water trough	EN	High	Salvage
23	Stone water trough	EN	High	Salvage
24	Stone block	EN	High	Salvage
25	Ravensworth trig station stone marker (former)	LT?	Moderate	Salvage
26	Rubble stone garden retaining walls	MT/LT	Little	Nil
27	Former tennis (crochet?) lawn area	LN/ET	Moderate	Nil
28	Former location of inground spa	LT	Little	Nil
29	Timber fence post with Kei Apple	MT	Little	Nil
30	Stone grave (assumed James White's daughter)	EN	Exceptional	Relocate/reintern*
31	Stone block and concrete tank stand	MT	Moderate/ Little	Salvage stone
32	Timber tank stand (collapsed)	ET	Moderate	Nil
33	Concrete laundry trough	MT	Little	Nil
34	Rubble stone garden divider (?)	MT	Little	Nil
35	"Drymaster" rotary clothes hoist (mid-20 <sup>th</sup> century)	MT	Little	Nil
36	Timber post, rail and slab faced fence	LN/ET?	Moderate	Salvage
37	Timber and corrugated metal sheeting chicken shed	ET	Little	Nil
38	Corrugated metal water tank on stone block stand	ET	Moderate/ Little	Salvage stone
39	Stone flagging path	ET/MT	Moderate	Salvage stone
40	Timber picket gate	ET	Moderate	Salvage
41	Stone rubble wall supported with steel posts and wire	ET/MT	Moderate/ Little	Salvage stone
42	Timber picket gate	MT	Moderate	Salvage
43	Timber pole with electricity box	MT	Little	Nil
44	Hearth stone reused	EN/MT	High	Salvage stone
45	Concrete water tank	MT	Little	Nil
46	Stone edging to verandah	MT	Moderate	Salvage stone
47	Stone mantle support reused	EN/MT	High	Salvage stone
48	Stone flagging to rear verandah	ET	High	Salvage stone
49	Timber pole for electricity and telephone	LT	Moderate	Nil
50	Rubble stone and cement render water tank (adjoining south end of Stables)	ET	High	Nil
51	Stone water trough	EN/MN	High	Salvage
52	Stone blocks	EN/MN	High	Salvage stone
53	Timber tank stand	ET?	High	Nil
54	Timber support struts (west elevation of	MD	Little	Nil

No.	Description	Date	Significance Ranking	Salvage/Relocate
	Stables)			
55	Timber slab faced wall (?) with timber and stone rubble building materials	ET/MT	Moderate	Salvage stone
56	Entry drive (gravel) from Hebden Road	EN	Exceptional	Nil
57	Gravel track leading north	ET/MT	Moderate	Nil
58	Gravel track leading west	ET/MT	Moderate	Nil
59	Gravel track leading south (on west side of complex)	ET/MT	Moderate	Nil
60	Gravel track leading west from north-west paddock	ET/MT	Moderate	Nil
61	Skip bin with remnant building materials	MD	Little	Nil
62	Corrugated metal water tank on stone block base (collapsed)	MT	Little/ Moderate	Salvage stone
63	Steel windmill (collapsed)	ET	Moderate	Nil
64	Brick and concrete beehive well with iron oven door reused	EN/MN?	High	Salvage oven door
65	Timber, rubble stone and corrugated metal cattle ramp (collapsed)	LN/ET	Moderate	Nil

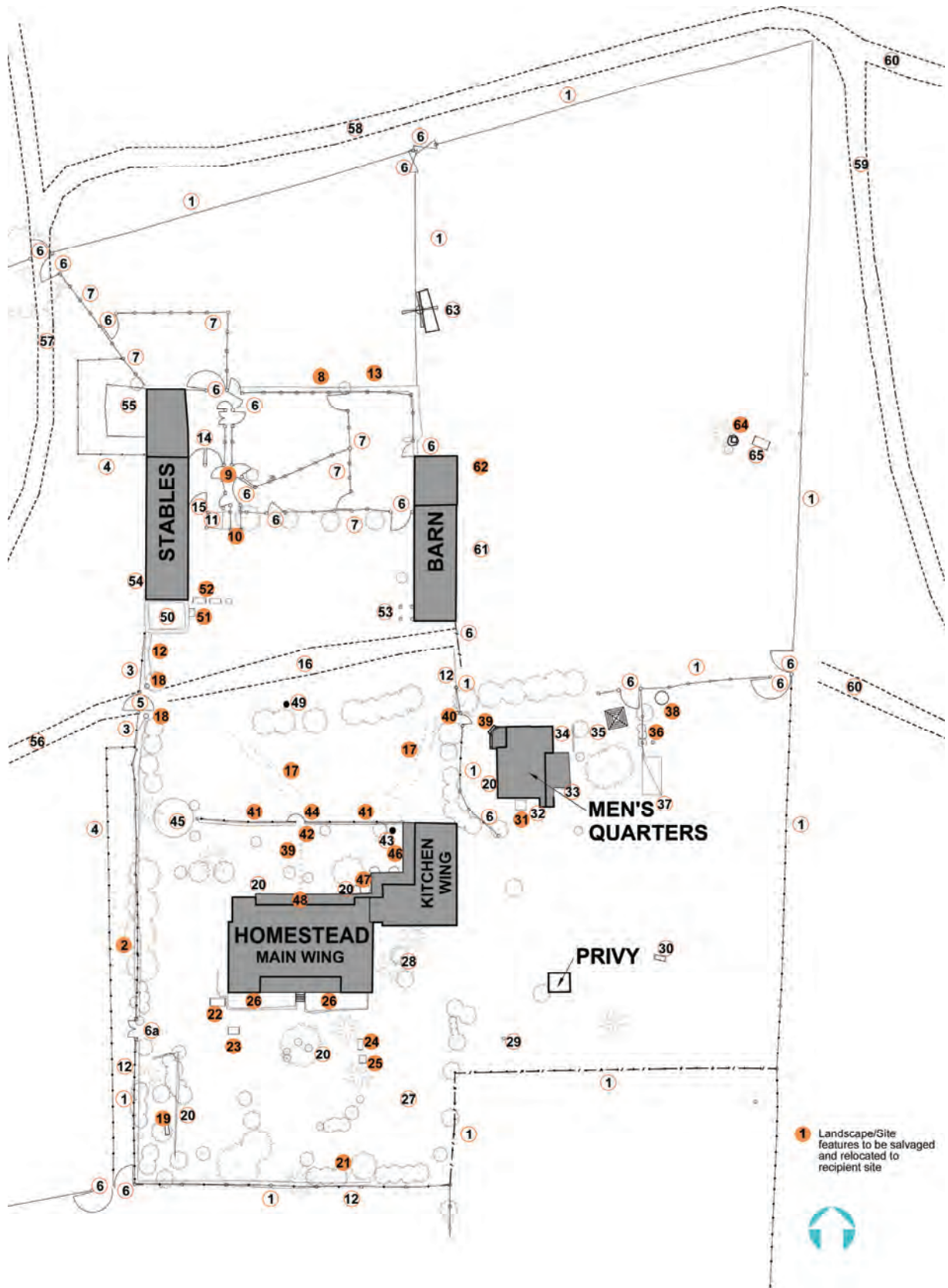


Figure 2. 4: Landscape and Site Features identification diagram showing items to be salvaged and relocated

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## Appendix 23g

### Ravensworth Farm Proposal

## Appendix 23g – Ravensworth Farm Relocation Option

This appendix contains documentation for the **Ravensworth Farm** homestead relocation option and includes the following specialist reports, conceptual drawings and documentation:

- A. Ravensworth Farm, Ravensworth – Heritage Analysis and Statement of Significance (Lucas Stapleton Johnson)  
*A report presenting analysis of the heritage aspects of the recipient site and a statement of their significance.*
- B. Ravensworth Farm Option - Visualisation (Truescape)  
*Visual representation of proposed outlook from the relocated homestead.*
- C. Conceptual adaptation drawings (Lucas Stapleton Johnson)  
*Conceptual adaptation drawings showing the proposed Ravensworth Farm scheme. The set includes two dimensional plans and elevations, and three dimensional perspective drawings.*
- D. Preliminary scope of works (Lucas Stapleton Johnson)  
*Preliminary scope of works for proposed Ravensworth Farms scheme.*
- E. Conceptual landscape plans (Geoffrey Britton)  
*Conceptual landscape sketches showing the proposed layout of gardens within the relocated homestead grounds as well as wider landscaping features such as screening to augment the outlook from the homestead.*
- F. Proposed Homestead Relocation Earthworks Plan and Section (WSP)  
*Preliminary earthworks plan showing proposed regrading of recipient site to match existing homestead site.*
- G. Preliminary Relocation Foundation Design (Mott MacDonald)  
*Preliminary footing design drawings to suit intact relocation of buildings.*
- H. Methodology for the Relocation of Ravensworth Homestead Complex (Mammoth Movers)  
*A report outlining the approach and methodology proposed for relocating the homestead buildings intact.*
- I. Ravensworth Homestead Relocation - Structural Engineers Statement (Mott MacDonald)  
*A structural engineering statement on the feasibility of the intact relocation methodology with respect to structural performance of the building.*

## Appendix A

### Ravensthorpe Farm, Ravensthorpe – Heritage Analysis and Statement of Significance

# **Ravensthorpe Farm, Ravensthorpe, NSW**

## **Heritage Analysis and Statement of Significance**



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# 1. Introduction

## 1.1. Background

This report is a Heritage Analysis and Statement of Significance for the (former) Ravensworth Farm, Ravensworth and has been commissioned by Glencore, Glendell Tenements Pty Ltd.

This report forms part of a Statement of Heritage Impact that provides an analysis of a proposal to extend the existing Glendell Mine, referred to as the Glendell Continued Operations (GCO) Project. The Glendell Mine forms part of the Mount Owen Complex located in the Upper Hunter Valley of New South Wales.

The land into which the open cut coal mine is to be extended forms part of the former Ravensworth Estate, an historic pastoral property located in the Upper Hunter Valley of NSW established in 1824 by Dr. James Bowman, the colony's principal surgeon. The historic focus of the Ravensworth Estate lands is the c1832 homestead, the Ravensworth Homestead Complex. In 1997 Glendell Tenements Pty Ltd acquired the homestead complex and surrounding lands.

As part of the proposed extension to the Glendell Mine it is also proposed to relocate the Ravensworth Homestead Complex located within the former Ravensworth Estate lands to one of two possible recipient sites: Ravensworth Farm, Ravensworth or McNamara Park, Broke.

This report provides an analysis of the documentary and physical evidence of the Ravensworth Farm Recipient Site, leading to a considered assessment of the cultural significance of the place and its individual components.

Ravensworth Farm is not identified as a heritage item and is not located within a recognised heritage conservation area.

### 1.1.1. Methodology

The form and methodology of this report follows the general guidelines for statements of heritage impact outlined in the following documents:

*Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter)*, Australia ICOMOS Inc. 2013

*Assessing Heritage Significance*, NSW Heritage Office, 2001

*Statements of Heritage Impact*, NSW Heritage Office, 2002

*NSW Heritage Manual*, NSW Heritage Office, 1996

### 1.1.2. Exclusions

This report does not include a detailed assessment of the ecological values of the place. Refer to *Appendix 20: Biodiversity Development Assessment Report* accompanying the SSD application.



### 1.1.3. Author Identification

This report has been prepared by Kate Denny and Ian Stapleton of Lucas Stapleton Johnson & Partners Pty Ltd and incorporates material already compiled for the *Heritage Analysis and Statement of Significance* report for the (former) Ravensworth Estate, Ravensworth (Appendix 23a).

Refer to Appendix 23a of the Project Environmental Impact Statement (EIS) for details of all contributors.

### 1.1.4. Acknowledgements

The authors wish to acknowledge the assistance of the following:

- Shane Scott, Bradley Snedden, Catherine Fenton of Glencore
- Bret Jenkins, Bridie McWhirter, Dr. Sheridan Coakes of Umwelt
- Mr. Geoffrey and Mrs. Jenny Marshall
- Tim Duddy, heritage consultant

### 1.1.5. Copyright of Images

This commissioned report is copyright © Glendell Tenements Pty Ltd. Apart from any fair dealing for the purposes of private study, research, criticism or review as permitted under the *Copyright Act 1879*, no part may be reproduced by any process without written permission from Council.

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## 1.2. Description of the Place

Ravensworth Farm, Ravensworth is located within the Upper Hunter Valley, NSW, within the Parish of Vane, the County of Durham, in the local government area of Singleton Council.

The farm site is located to the north of the New England Highway and the Main Northern Railway, approximately 20 kilometres northwest of Singleton, 25 kilometres southeast of Muswellbrook, 6 kilometres north of the village of Camberwell and 7 kilometres east of Lake Liddell (refer to Figure 1.1).

Ravensworth Farm is located within the boundaries of the former Ravensworth Estate, an area of 10,000 acres granted to Dr. James Bowman in the 1820s (refer to Figure 1.2). The allotment containing the subject property was formed as part of the history of later subdivision that occurred in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries and the subsequent sale of portions of the original estate lands.

Access to the farm is via Hebden Road, running northward from the New England Highway through the former Ravensworth Estate lands, now part of the Glendell Mine (refer to Figure 1.3).

The real property definition of the place is part Lot 32 of DP 545601. Only the eastern part of the allotment located between Hebden Road and Bowmans Creek is the subject of this report (refer to Figure 1.2).

Ravensworth Farm consists of a complex of farm buildings dating from the early to mid-20<sup>th</sup> century, including two residences, garage, a hay barn/shearing shed, dairy building and associated yards and enclosures. The farm is located on a ridge of land to the east of Bowmans Creek overlooking the alluvial plains of the creek to the south and southeast (refer to Figure 1.4). The property is currently vacant.

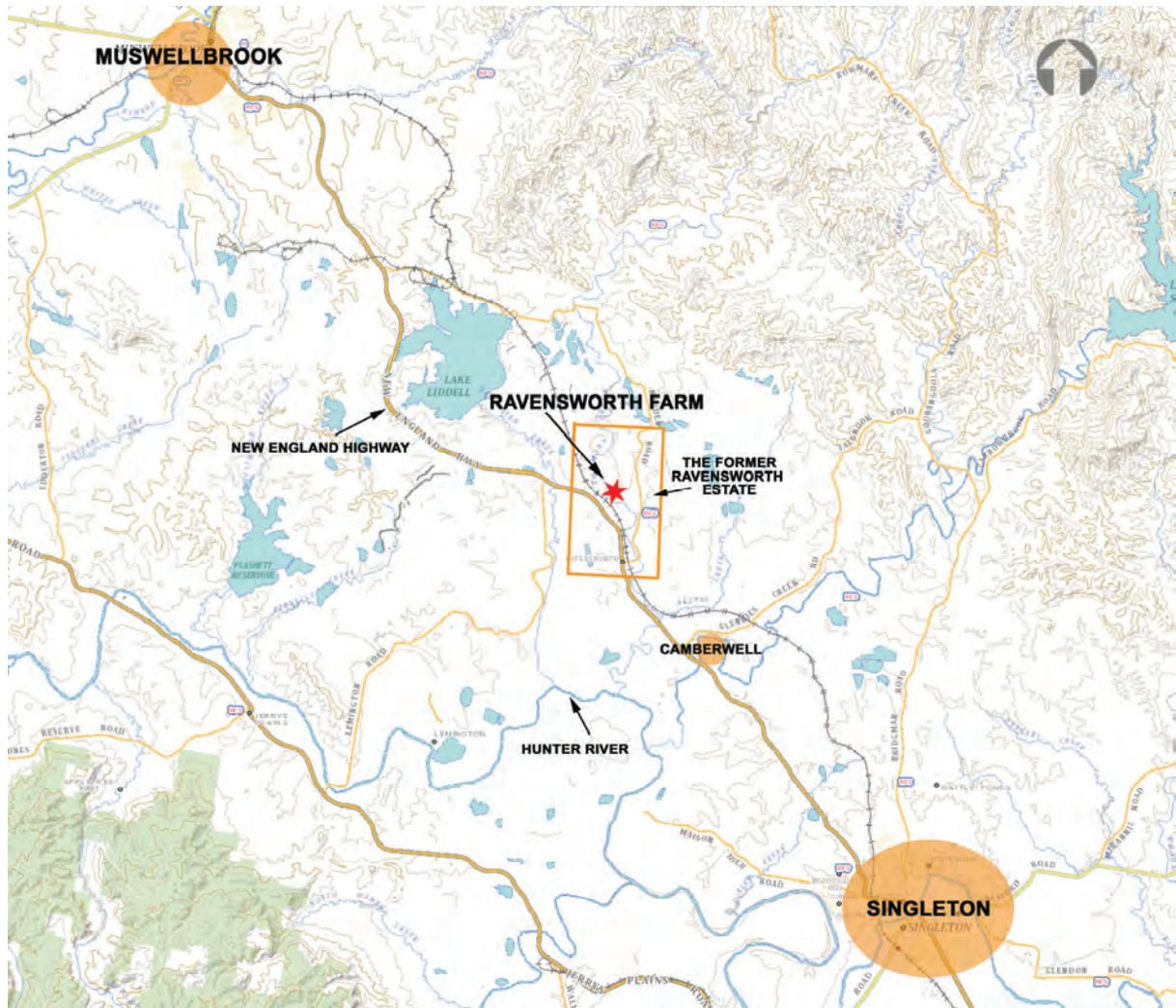


Figure 1. 1: Map of the locality showing the location of the place: the Ravensworth Estate in relation to Singleton and Muswellbrook. Source: NSW Spatial Services, SixMaps, 2018





Figure 1. 2: Aerial view of the former Ravensworth Estate lands (10,000 acres) identifying the location of Ravensworth Farm (Part Lot 35 DP 545601) and the Ravensworth Homestead Complex. Source: base aerial provided by Glencore, 2018





Figure 1. 3: Aerial view of Ravensworth Farm in relationship to main landscape features including creeklines and Ravensworth Homestead Complex. The real property definition of the place is Lot 32 of DP 545601 (outlined in red). Only the eastern portion between Bowmans Creek and Yorks Creek is the subject of this report. Source: NSW Spatial Services, SixMaps, 2019



Figure 1. 4: Aerial view of Ravensworth Farm identifying the principal components of the place. Source: base aerial provided by Glencore, 2018



## 1.3. Terms, Abbreviations & Nomenclature

### Terms

This report adheres to the use of terms as defined in the Australia ICOMOS *Burra Charter* 2013, together with the following definitions:

<b><i>Archaeological potential</i></b>	is here used and defined as a site's potential to contain archaeological relics which fall under the provisions of the <i>Heritage Act</i> 1977 (amended). This potential is identified through historical research and by judging whether current building or other activities have removed all evidence of known previous land use.
<b><i>Archaeological Site/Item</i></b>	A place that contains evidence of past human activity. Below ground sites include building foundations, occupation deposits, features and artefacts. Above-ground archaeological sites include buildings, works, industrial structures and relics that are intact or ruined.
<b><i>Estate</i></b>	A piece of landed property, especially one of large extent.
<b><i>Homestead</i></b>	a parcel of land, originally one considered to be big enough to support a family; the main residence on a sheep or cattle station or large farm; of or relating to a building, settler, etc., on a homestead.
<b><i>Pastoral</i></b>	of or relating to the raising of stock, especially sheep or cattle, on rural properties; used for pasture, as land.
<b><i>Place</i></b>	means a geographically defined area that may include elements, objects, spaces and views. Place may have tangible and intangible dimensions. The term place is defined under the Burra Charter and is used to refer to sites and areas of cultural significance.

### Abbreviations

c	Circa
CMP	Conservation Management Plan
CT	Certificate of Title
DP	Deposited Plan
EIS	Environmental Impact Statement
Fol.	Folio
LEP	Local Environmental Plan
No.	Number
SHR	State Heritage Register
SOHI	Statement of Heritage Impact
Vol.	Volume

### Nomenclature

<b><i>Ravensworth</i></b>	Refers to the general locality that contains the Ravensworth Homestead Complex.
<b><i>Ravensworth Parish/ Parish of Ravensworth</i></b>	Parish of Ravensworth, County of Durham in the state of New South Wales.

***Ravensworth Estate  
The “10,000” acres***

The 10,439 acres applied for by Bowman in 1824, being Portions 149 and 150 of the Parish of Liddell and Portion 1 of the Parish of Vane. Bowman himself referred to the area of land as being of 10,000 acres.

***Ravensworth Homestead  
Complex/ Homestead  
Complex***

Refers to the c1832 complex of buildings including the main house with attached kitchen wing, the stables, the barn, the men’s quarters, the privy, the gardens, farm yard and associated boundary fencing.

***Ravensworth Farm/  
The Place***

Refers to an early 20<sup>th</sup> century farm allotment to the west of the Ravensworth Homestead Complex. The name of the farm was provided by G & J Marshall (former owners of the Ravensworth Homestead Complex) who lived there in the late 1960s- early 1970s.

***Ravensworth village***

The former village site of Ravensworth located at the intersection of the New England Highway and Hebden Road.

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## 2. History of the Place

### 2.1. Introduction

The following is a history of the development Ravensworth Farm, Ravensworth situated between Singleton and Muswellbrook in the Hunter Valley region of NSW. The farm property forms part of the later subdivision of a larger pastoral property, the Ravensworth Estate, established in 1824 by Dr. James Bowman.

For a full history of the colonisation of the Hunter Valley and the establishment and subsequent development of the Ravensworth Estate, refer to Appendix 18a: *Heritage Analysis and Statement of Significance of the Ravensworth Estate*.

### 2.2. History of the Ravensworth Estate

The original holder of Ravensworth was Dr James Bowman (1784-1846), the colonial surgeon in charge of the Sydney infirmary (the Rum Hospital). James Bowman had been appointed an assistant naval surgeon in 1806 and promoted to surgeon in 1807. At the end of the Napoleonic wars in 1814 he was reduced to half pay. He worked for some time as the surgeon on ships bringing convicts to the colony.

In 1819 Bowman arrived in the colony of New South Wales as the successor for D'Arcy Wentworth as colonial surgeon.<sup>1</sup>

On 4 November 1823, Bowman married Mary Isabella Macarthur, the daughter of John and Elizabeth Macarthur. On her marriage to Bowman, Mary's father gave her a dowry of 2,000 sheep and 200 cattle allowing James Bowman to apply for a land grant.<sup>2</sup>

Using that initial gift of stock as his rationale for applying for land, on 4 June 1824 James Bowman received a Land Order for 12,160 acres as three portions. The land he chose was bounded by Foy Brook (Bowmans Creek) and Yorks Creek draining into the Hunter River in the parishes of Liddell (portions 149 and 150) and Vane (portion 1), County Durham (see Figure 2.1).<sup>3</sup>

---

<sup>1</sup> J F Campbell, 'The genesis of Rural Settlement on the Hunter', *JRAHS*, XII, 1926, pp 95-6; CSIL26/4590, in NRS 907, Col Sec, Correspondence re Land, James Bowman file, SANSW 2/7807; D Bairstow, *A Million Pounds, A Million Acres: The Pioneer Settlement of the Australian Agricultural Company*, Author, Cremorne, 2003, p 10

<sup>2</sup> J F Campbell, 'The genesis of Rural Settlement on the Hunter', *JRAHS*, XII, 1926, p 96; N Gray, 'James Bowman (1784-1846)', *ADB*, volume 1, pp 137-8

<sup>3</sup> J F Campbell, 'The genesis of Rural Settlement on the Hunter', *JRAHS*, XII, 1926



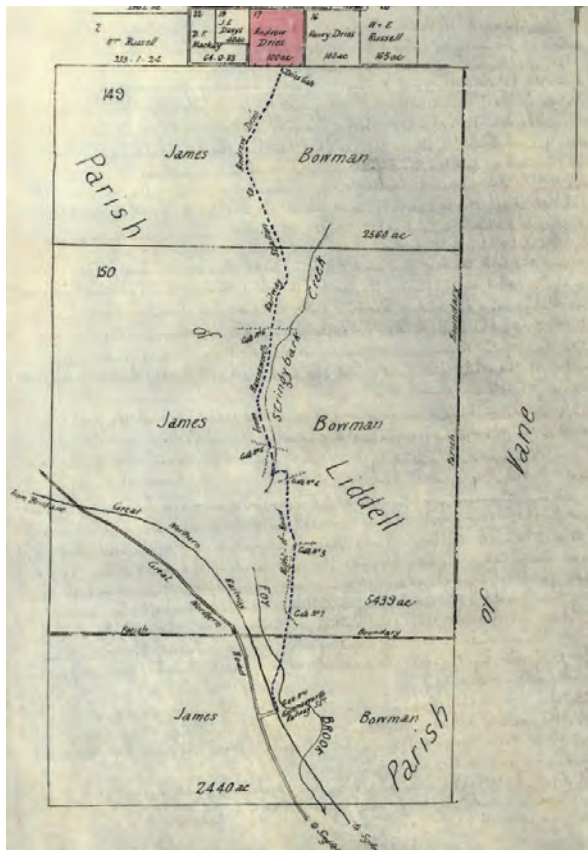


Figure 2. 1: Plan of the three parish portions conveyed to Dr. James Bowman in 1824. This plan was prepared in 1907 in relation to a right of way through the Ravensworth Estate lands that eventually became Hebden Road. Source: OSD, No 133 Bk 828

Although these three initial portions of land were not formally alienated from the Crown until the mid to late 1830s, Bowman was actively improving the land as the centre of his pastoral activity. The main land use for this part of the Hunter was grazing: sheep, cattle or a mixture of both. In the Census of 1828, it was noted that Bowman had 500 acres cleared, 40 under cultivation, 2 horses, 362 cows and 3715 sheep.<sup>4</sup>

The 1833 Post Office Directory recorded that at 140 Miles out from Newcastle the traveller would “Enter the estate of Dr Bowman - a tract of 11,000 acres, used principally as a sheep run. Cross several chains of ponds, branches of Foy Brook; Dr Bowman's farm buildings are to the right of the road.”<sup>5</sup> The farm buildings referred to are the Ravensworth Homestead Complex (refer to Appendix 18a for further detail).

James Bowman died at Ravensworth on 23 August 1846. Following his death, the property passed through a number of subsequent owners who, in the main, continued to manage the land as a pastoral estate. Later owners of the estate were:

- Captain William Russell and Mrs. Eliza Russell (1853-1881)
- Duncan Forbes Mackay (1883-1887)
- Land Company of Australasia (1889-1902)
- William Hooke Mackay (1902-1911)
- Frank Joseph Lappen Measures and Alexander Couchrian Reid (1911-1919)

<sup>4</sup> Sainty, M. R., & K. A. Johnson, *Census of New South Wales: November 1828*, Library of Australian History, Sydney, 1980, A0167, B1862, C1029.

<sup>5</sup> 1833 PO Directory, p 129

- Alexander C. Reid (1920-1927)
- Perpetual Trust Company Ltd. (1927)

### Subdivision of the Ravensworth Estate

In 1911, F.J.L. Measures bought Ravensworth measuring about 29,000 acres from Mackay for £108,000 in cash, in partnership with Alexander C. Reid. F.J.L. Measures submitted his Real Property Application to convert the land to Torrens Title on 22 May 1911. The land had to be subdivided to be put under the *Real Property Act*, however, the land had already been divided up with contracts for sale signed with a number of purchasers, and the process of subdivision was already well advanced.

On 6 January 1912, a sale notice for the Ravensworth Estate by its owner F.J.L. Measures of Niagara Park was issued.<sup>6</sup> Various versions of the subdivision plan of Measures' Ravensworth Estate are held in the Mitchell Library and in files held at State Archives of NSW showing the slow progression of the sale of the individual allotments together with indications of the location of early farm buildings and residences (see Figure 2.2).

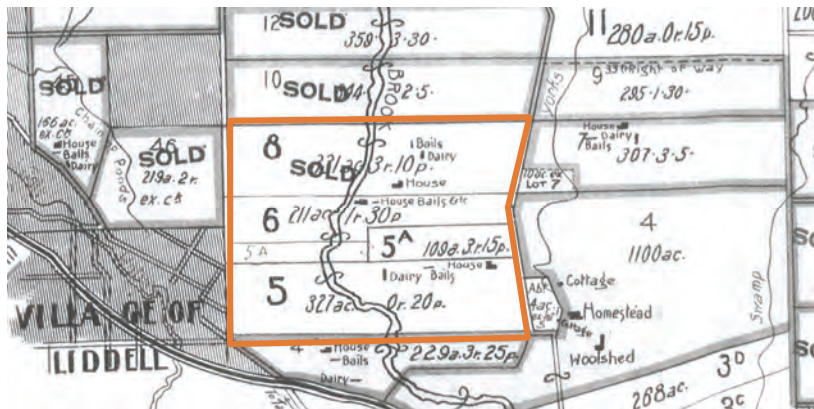


Figure 2. 2: A detail of a version of the sale plan showing buildings on various lots, including houses, cow bails and dairies. The allotments that hold Ravensworth Farm allotments are outlined in orange and show the location of an early house and bails in the approximate location of the farm buildings today. Source: County Durham, Subdivision Plans, ML, ZCP/D6/100

By 1915 Measures was in financial trouble with various mortgages over the estate being taken out during the year.<sup>7</sup> Measures was declared bankrupt on 11 December 1916,<sup>8</sup> and in 1920 a new Certificate of Title was issued to Alexander Couchrian Reid for various lots in the Measures subdivision with a total area of 3,227 acres 1 rood 5 perches, including Allotments 5, 6 and 8 Section B DP 6842 (the future location of Ravensworth Farm).

When A.C. Reid died on 25 October 1925, he still held a number of allotments in the Ravensworth estate. The remainder of Reid's land passed to the Perpetual Trust Company Ltd in 1927, who continued to sell the individual allotments.

<sup>6</sup> *Daily Telegraph*, 6 Jan 1912, p 5

<sup>7</sup> CT 2302 f 109

<sup>8</sup> NRS 13655, Bankruptcy File, F J L Measures, No 21010, SANSW 10/23827

## 2.3. The History of Ravensworth Farm

From c1911 to c1927, during the period of ownership by F.J.L. Measures, A.C Reid and the Perpetual Trust Co., the three initial land grants of Bowman's Ravensworth Estate were subdivided and sold as small farming allotments (typically between 200 and 350 acres in size).

Ravensworth Farm is located in Lots 5, 6 and 8, Section B of DP 6842 of the Measures and Reid subdivision. The following provides a brief outline of the history of land ownership for each of the allotments.<sup>9</sup>

Table 2. 1: History of ownership of the Ravensworth Farm allotments

	Lot 5/Section B/DP 6842	Lot 6/Section B/DP 6842	Lot 8/Section B/DP 6842
Date	Owner/s		
1919	F.J.L. Measures	F.J.L. Measures	R.J. Henwood, grazier
1920	A C Reid	A.C. Reid	A.C. Reid
1923			J H Harrison & F Cook, farmers
1924			T. & M. Purvis, graziers
1925			
1926	T. & M. Purvis, graziers		
1927		T. & M. Purvis, graziers	
1951	E.S & R.M Andrews, graziers	E.S & R.M Andrews, graziers	E.S & R.M Andrews, graziers
1967	Electricity Commission	Electricity Commission	Electricity Commission

As indicated above, Lots 5 and 8 passed quickly from Measures and Reid between the years 1923 and 25 to small scale farmers Harrison and Cook (Lot 8) and Spendley (Lot 5) who appear not to have succeeded in their endeavours, as they sold their allotments within a year of initial purchase to T & M Purvis, graziers. Lot 6 was not sold until 1927 when T & M Purvis also purchased this allotment, bringing the three allotments together as a viable working farm of approximately 900 acres.

### Theodore Henry Martin Purvis and Matilda Ann Purvis

The Purvis family held the three allotments containing the Ravensworth Farm from the mid 1920s to 1951.

Theodore Henry Martin Purvis (c1889-1940), son of Mr. and Mrs. T. H. Purvis of Cronulla married Matilda Ann McCalman (1887-1970) in 1919, eldest daughter of John and Augustus McCalman of Curraburrama station in the Young district. John McCalman was a member of Duncan McIntyre's failed expedition in search of the explorer Leichhardt in 1865.<sup>10</sup>

<sup>9</sup> Certificates of Title: Vol. 3144 Fol. 148 and Vol. 3062 Fol. 21

<sup>10</sup> "Family Notices", *The Sydney Morning Herald*, Saturday 15<sup>th</sup> February 1919, p.12 and "Leichhardt Search Expedition", *Western Star and Roma Advertiser*, Wednesday 16<sup>th</sup> November 1927, p. 1

Based on newspaper articles of the time, it appears that Theodore (Theo) Purvis was heavily involved in the social and economic development of the Ravensworth and Hebden locality. Theo Purvis was at one time, the Vice President of the Ravensworth and District Progress Association,<sup>11</sup> a member of the Ravensworth Cricket Club,<sup>12</sup> chairman of the board of the “Co-operative Carrying Society” organised to establish a co-orporative lorry to transport milk between Hebden and Singleton,<sup>13</sup> and was a local Justice of the Peace.<sup>14</sup>

The Purvis’s actually owned two farms in the Hebden/Ravensworth locality,<sup>15</sup> the Ravensworth Farm lands, which were originally known as “TeePee” (Lots 5, 6 and 8, Section B of DP 6842) and a second farm known as “Gleewood” (Lots 2 and 2A, Section B of DP 6842), and they operated their lands as mixed farming with both dairy and wool. In 1925, it was noted that Theo Purvis had introduced stud sheep into the district, acquiring 70 stud merino ewes of pure Peppin blood from the Riverina<sup>16</sup> and shortly thereafter Purvis received one of the highest district sales in wool at the Sydney sales.<sup>17</sup>

It was also noted at this time that Purvis had recently completed a “Comfortable and commodious home, situated near the bank of the creek [Bowmans Creek], and commanding a picturesque outlook” at his “TeePee” property.<sup>18</sup>

By the 1930s however, Theo Purvis was off-loading his dairy cattle and selling his dairy property “Gleewood”, and “TeePee” (Ravensworth Farm) became their main property producing wool.<sup>19</sup>

In 1940, Theodore Purvis died following an operation at the Dangar Cottage Hospital, Singleton. His obituary that appeared in the Singleton Argus noted:

*“For the past 19 years he had resided in the Singleton district where he was well known and highly respected by all who knew him, particularly in the Ravensworth and Hebden districts, where he had both sheep and dairying interests. Besides being a valued member of the Northern Agricultural Association for some years, the late Mr. Purvis took a keen interest in matters associated with graziers’ activities.....His many likeable qualities, coupled with a capacity for retaining the warm friendship of those who knew him closely, will serve to make his untimely death a very real loss of a wide circle of friends.”*<sup>20</sup>

Theodore Purvis was survived by his wife and six children: Margaret (Peggy), Jean, Thomas (Mac), Robert, Wallace and John.<sup>21</sup>

In 1942, the family left Hebden and took up residence in Cronulla, Sydney<sup>22</sup> and in 1948, Mrs M. Purvis placed “TeePee” up for sale in two portions.<sup>23</sup> The real estate advertisements at the time described the property as follows:

<sup>11</sup> “District News: Ravensworth”, *Singleton Argus*, 21<sup>st</sup> February 1924, p. 2

<sup>12</sup> “Ravensworth”, *The Maitland Weekly Mercury*, Saturday 30<sup>th</sup> October 1920, p. 7

<sup>13</sup> “District News: Ravensworth- Cooperative Lorry”, *Singleton Argus*, Saturday 28<sup>th</sup> July 1923, p. 8

<sup>14</sup> “Justices Sworn In”, *The Maitland Daily Mercury*, Saturday 18<sup>th</sup> April 1925, p. 6

<sup>15</sup> Two villages developed within the boundaries of the Ravensworth Estate during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries: Ravensworth, located adjacent to the New England Highway at the intersection of Hebden Road and Hebden, located to the north of the Ravensworth Homestead Complex on Hebden Road.

<sup>16</sup> “Stud Sheep”, *Singleton Argus*, Saturday 24<sup>th</sup> April 1925, p. 5

<sup>17</sup> “Sydney Wool Sales”, *Singleton Argus*, 1<sup>st</sup> November 1925, p. 1

<sup>18</sup> “Stud Sheep”, *Singleton Argus*, Saturday 24<sup>th</sup> April 1925, p. 5

<sup>19</sup> “Advertising: Highly improved Dairy farm at Ravensworth ‘Gleewood’”, *Singleton Argus*, Friday 21<sup>st</sup> April 1933, p. 7 and “Advertising: Weekly Stock Sale”, *Singleton Argus*, Friday 22<sup>nd</sup> February 1935, p. 7

<sup>20</sup> “Death of Mr. Theodore Purvis”, *Singleton Argus*, Wednesday 15<sup>th</sup> May 1940, p. 2

<sup>21</sup> *Ibid.*



“‘TeePee’ of 971 acres (more or less). Is situated at Hebden, 3 miles from Ravensworth Railway Station and fronting the Hebden Road. Is well improved with Nice Residence of 8 rooms and extensive Verandahs, and is connected by telephone. Second Cottage, Wool Shed, Motor Garage, Bails, Dairy and Yards (Milk Board standard), and Various Sheds, Watered by double frontage to Bowmans Creek, also Well and Windmill, with raised tanks supplying water to dairy buildings; also second well.”<sup>24</sup>

The residence described in the advertisement above no longer survives at the property, however it does appear in the 1958 aerial of the place (see Figure 2.3 below).

In 1950, the auctioneers, Edward Higgins, Parkinson & Co. held a clearing out sale of farm machinery, dairy utensils, furniture etc. at “TeePee” on behalf of Mrs. M. Purvis.<sup>25</sup>

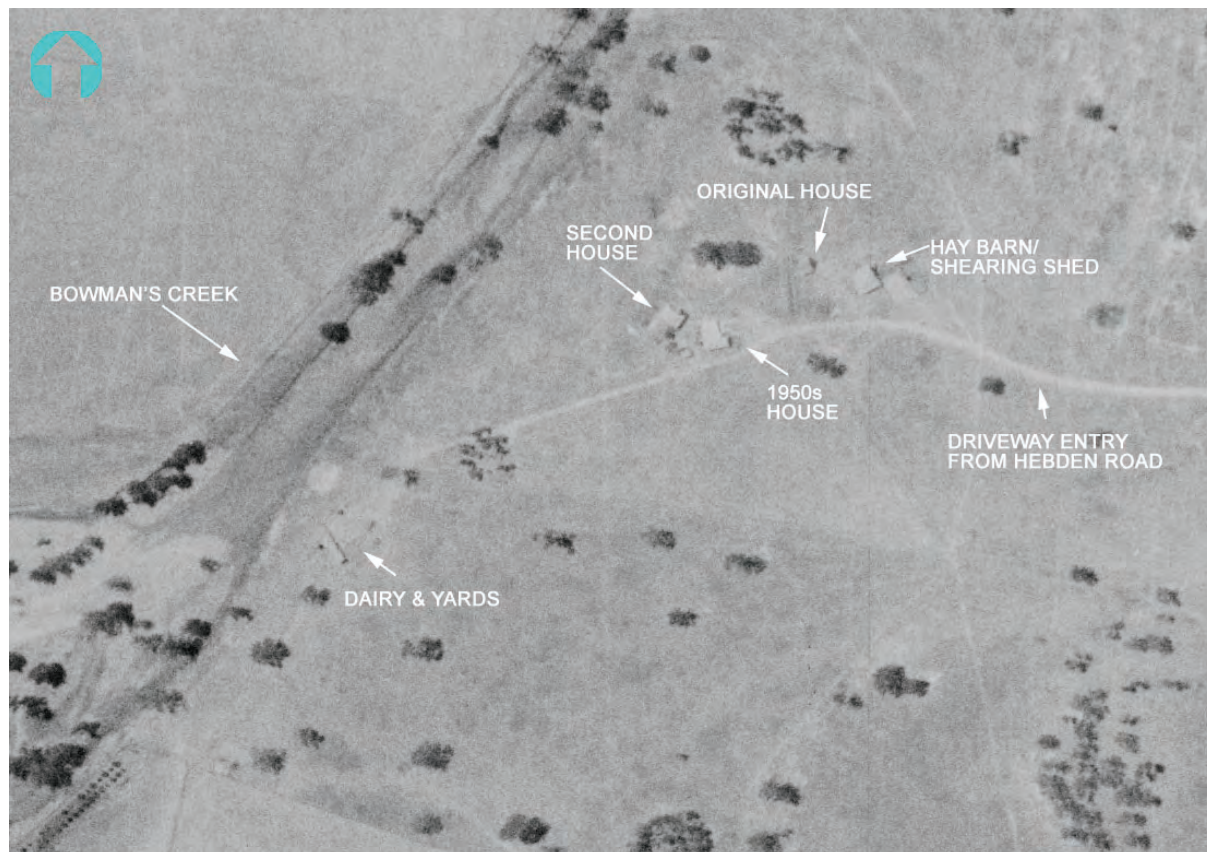


Figure 2. 3: Detail from 1958 aerial of the Ravensworth locality showing the configuration of buildings at the Ravensworth Farm site. Note it appears at this time there were three residences located at the property. Source: courtesy of Glencore, 2018.

<sup>22</sup> “Town and District Topics”, *Singleton Argus*, Wednesday 19<sup>th</sup> August 1942, p. 2

<sup>23</sup> “Advertising”, *Singleton Argus*, Friday 23<sup>rd</sup> January 1948, p. 8

<sup>24</sup> “Advertising”, *Singleton Argus*, Friday 6<sup>th</sup> February 1948, p. 8

<sup>25</sup> “Advertising”, *Singleton Argus*, Wednesday 13<sup>th</sup> December 1951, p. 5

### **Errol Stewart Andrews and Rollo Mason Andrews**

In 1951, the property known as “TeePee” was purchased by twin brothers Errol Stewart and Rollo Mason Andrews.

Errol and Rollo were the sons of William Henry and Alice Jane Andrews, who held property in the Mount Olive and Bridgman districts, east of Ravensworth and Glennies Creek.

The Andrews family, much like the Purvis family, were heavily involved in the social and economic development of their districts of Mount Olive and Bridgman, however, little is known of their time at the Ravensworth property.

The link between the Andrews brothers and the Ravensworth district appears to have come about through the marriage of both brothers to the daughters of a local Ravensworth family, the Lawlers. William and Thomas Lawler held Lots 11, 3B and 3C, Section B of DP 6842 of the Ravensworth Estate.

In 1936, a kitchen tea was held at the Ravensworth Hall as a “pre-nuptial function” to celebrate the engagement of Miss Lola Lawler of Hebden, daughter of William Lawler, and Mr. Errol Andrews of Bridgman.<sup>26</sup> They were married on 28<sup>th</sup> November 1936 and resided initially at Bridgman Park.<sup>27</sup>

In 1939, a similar pre-wedding function was again held at the Ravensworth Hall to celebrate the engagement of Miss Mable Lawler of Hebden, daughter of William Lawler and sister of Lola, and Mr. Rollo Mason Andrews. Mr. A. C. Marshall of the Ravensworth Homestead hosted the occasion.<sup>28</sup> The couple were wed on 12<sup>th</sup> August 1939 and resided at a newly constructed house at Bridgman Park.<sup>29</sup>

By 1951, Errol Andrews is known to be residing in the Hebden/Ravensworth district and it is assumed that he and his family were living at Ravensworth Farm (formerly “TeePee”).<sup>30</sup> In 1951, a mortgage was taken out over the land and it is also assumed that this was for the construction of a new residence at the farm, which still stands today.<sup>31</sup>

In 1967, Lots 5, 6 and 8, Section B of DP 6842, along with a number of other allotments in the Ravensworth Estate lands, were purchased by the Electricity Commission of NSW.

### **Electricity Commission of NSW**

Coal mining and electricity generation became major industries in the Singleton area from the 1950s with the first wave of collieries built to meet export demand at Liddell, Foybrook and Liddell State.

In 1964, the Electricity Commission of NSW commenced construction of the Liddell Power Station (commissioned in 1973), followed shortly thereafter by the Bayswater Power Station (commissioned in 1980). The power stations increased the demand for coal, as did the expanding export market. The purchase of the Ravensworth Estate lands, including Ravensworth Farm, was part of the growing interest and investment in the Ravensworth, Liddell and Bayswater districts for coal mining.

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<sup>26</sup> “Kitchen Tea at Ravensworth”, *Singleton Argus*, Monday 23rd November 1936, p. 2

<sup>27</sup> “Wedding”, *Singleton Argus*, Monday 30<sup>th</sup> November 1936, p. 2

<sup>28</sup> “Pre-Wedding Function at Ravensworth”, *Singleton Argus*, Monday 31<sup>st</sup> July 1939, p. 2

<sup>29</sup> “Wedding”, *Singleton Argus*, Friday 25<sup>th</sup> August 1939, p. 8

<sup>30</sup> “Advertising”, *Singleton Argus*, Wednesday 8<sup>th</sup> August 1951, p. 3

<sup>31</sup> Certificate of Title, Vol. 6348 Fol. 27

In the 1960s, the Swamp Creek Mine began operating, located to the southeast of Ravensworth Farm and renamed Ravensworth East Mine in the late 1990s.<sup>32</sup>

For most of the time from 1967 when purchased by the Electricity Commission up to present day, the Ravensworth Farm property has been vacant, although the land has been managed by subsequent owners including current owners Glencore.

### Geoff and Jenny Marshall

For a period of time, between 1969 and the 1980s, the property was used in association with the adjacent property, the Ravensworth Homestead Complex (Lot 228 DP 752470).

The Ravensworth Homestead Complex was purchased in 1920 by Augustine Campbell Marshall, a Light Horse veteran, who selected portion 228 with the homestead as a Settlement Purchase.

In 1965, Geoffrey Campbell Marshall, the son of A. C. Marshall, married Jennifer Anne Ward of Yackerboon, Denman. Following their marriage, in 1969, Geoff and Jenny relocated to the neighbouring property to the west (Lots 5, 6 and 8, Section B of DP 6842), previously owned by E & R Andrews. The Andrews had built a modern brick residence in the 1950s, and the Marshalls lived in this house until the 1980s. This property became known as the “Ravensworth Farm” by the Marshalls.

Following the departure of the Marshalls back to the Ravensworth Homestead Complex, it appears that the Ravensworth Farm remained vacant, as it is today.

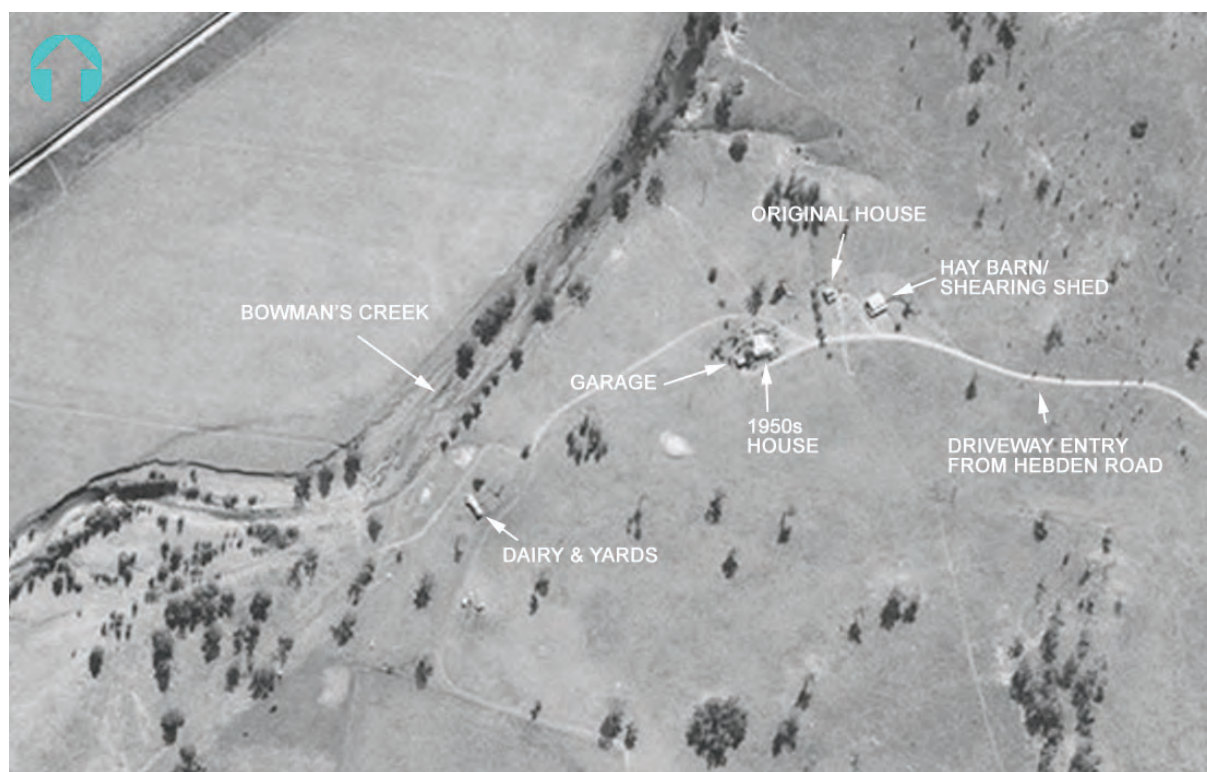


Figure 2. 4: Detail from 1987 aerial of the Ravensworth locality showing the configuration of buildings at the Ravensworth Farm site. Note that the second house has been demolished by this time. Source: courtesy of Glencore, 2018.

<sup>32</sup> Umwelt, 20014; *Historic Heritage Assessment: Mount Owen Continued Operations Project*, p. 3.24



## 3. Physical Evidence

### 3.1. Introduction

The following descriptions of the built fabric, setting, views, landscape and site features aim to summarise the physical composition of the place.

The place and its setting were inspected by Ian Stapleton and Kate Denny of Lucas, Stapleton, Johnson and Partners, on a number of occasions in 2018 and the current configuration of the landscape and buildings noted. Unless otherwise stated, the images used in this chapter have been produced by the authors of this report.

### 3.2. Description of the Place Generally

The subject property, Ravensworth Farm (Lot 32 of DP 545601) is located to the north of the New England Highway and the Main Northern Railway, within a locality known as Ravensworth and also referred to as Hebden. The former village of Ravensworth is located to the south of the property and the former village of Hebden was located to the northeast of the place.

Ravensworth Farm is accessed via Hebden Road which defines the eastern property boundary of the place and is located on higher ground overlooking Bowmans Creek to the south and south-west. The property consists of a collection of farm buildings dating from the early 20<sup>th</sup> to mid 20<sup>th</sup> century similar to other smaller farming enterprises that occurred in the Ravensworth Estate lands throughout the 20<sup>th</sup> century.



Figure 3. 1: Aerial view of Ravensworth Farm noting the principal features of the place. Source: base aerial courtesy Glencore.



### 3.2.1. The Buildings

The former Ravensworth Farm property retains a collection of buildings located on the eastern side of Bowmans Creek. The collection of buildings consists of the following:

#### Hay barn/shearing shed and store building

Farm building of indeterminate age of mixed function with evidence of having been used as a hay barn, shearing shed and a store. Constructed of bush pole support posts and timber clad in corrugated metal sheeting. Several large water tanks are located on its southern side.

The building is in poor condition, with silky oaks growing within the body of the structure.



Figure 3. 2: West elevation of haybarn/shearing shed.



Figure 3. 3: North elevation of haybarn/shearing shed.



Figure 3. 4: South elevation of haybarn/shearing shed.

#### Weatherboard Cottage

Early 20<sup>th</sup> century weatherboard two room farm house with corrugated metal gable roof and brick chimney, an enclosed verandah (north elevation), car port (south elevation) and corrugated metal water tank, timber framed, two or four paned sash or sliding windows and timber four panelled doors. Timber louvred vents are located in both gable ends.

Internally, the dwelling is clad with vee-jointed and beaded boards, with timber flooring and ceilings. The enclosed verandah has been fitted out as a kitchenette at some later time.

Generally, the building is in poor condition.



Figure 3. 5: West and north elevations of the early 20<sup>th</sup> century weatherboard farm house



Figure 3. 6: South and east elevations of the early 20<sup>th</sup> century weatherboard farm house with watertank.



Figure 3. 7: Front (north) elevation with brick chimney and attached car/cart port on east elevation.



Figure 3. 8: Internal view from living area looking into enclosed verandah on the west elevation.



Figure 3. 9: South elevation with adjacent water tank.



Figure 3. 10: Interior view of living room with whitewashed chimney piece.



Figure 3. 11: Later kitchenette fitout to enclosed verandah.



### 1950s Residence

Single storey, face brick with tiled gable roof dwelling with timber framed sliding and steel framed casement windows, timber French doors, timber flush doors and timber single panel glazed doors. Internally, the dwelling retains evidence of its original 1950s fittings and features including carpeting, wall paper, wall tiles, engraved glazing panels and stone clad chimney piece. Generally, the building is in fair condition. The residence is set in a domestic garden with hills hoist, steel post and wire mesh fencing and planned garden beds with cultural plantings including jacaranda, silky oak, roses and bougainvillea.



Figure 3. 12: Southwest elevation of the 1950s farm house with rear garden and hills hoist.



Figure 3. 13: Northeast front garden of the 1950s farmhouse.



Figure 3. 14: Interior view of kitchen with original fitout.



Figure 3. 15: Servery between kitchen and dining/living room area.



Figure 3. 16: Glazed sliding doors into living room.



Figure 3. 17: Engraved glazing panel in bathroom.



Figure 3. 18: Stone clad chimney piece.

### Double garage

Large, fibrous cement sheet clad garage with metal roller doors, painted corrugated metal roofing and cement flooring. Located in the southwestern corner of the domestic garden enclosure of the 1950s residence.



Figure 3. 19: Double garage

### Dairy and Yards

Located to the southwest of the main farm site (Site 27) is the remains of a dairy building of timber with corrugated metal sheeting and weatherboard with attached cattle yards and loading ramp (Site 27a). The building is in very poor condition.



Figure 3. 20: Dairy with cattle yards and peppercorn tree.



Figure 3. 21: Cattle loading ramp with yards.



Figure 3. 22: Northeast elevation of Dairy building



Figure 3. 23: Southwest elevation of Dairy with water tank





Figure 3. 24: Interior view of cattle stalls



Figure 3. 25: Weatherboard store located within Dairy.

### 3.3. Landscape and Other Site Features

As can be found at most farming properties, a selection of dilapidated structures and features are scattered across the immediate setting of the Ravensworth Farm property. These include fence lines, tank stands, cisterns, troughs, pumps, assorted sheds and enclosures and like. Although abandoned and in poor condition, many of these site features provide evidence as to the history of use of the place and past practices in farming at the place.

In addition to the above, there also survive a number of landscape features of note that are related to the establishment period of the property in the early 20<sup>th</sup> century. These include Moreton Bay fig trees, windbreaks of silky oak and melaleucas, and a substantial hawthorn hedge separating the early cottage area from the 1950s residence.

Together, these site and landscape features reinforce the character of the place as a 20<sup>th</sup> century farm, now abandoned.



Figure 3. 26: Old windmill to west of the 1950s residence adjacent to Bowmans Creek.



Figure 3. 27: Medium sized Moreton Bay fig in the western paddock area.



Figure 3. 28: Established hawthorn hedge to the south of the early cottage.



Figure 3. 29: Medium to large Moreton Bay fig in the western paddock.



Figure 3. 30: Water trough and tank to the south of the Dairy.



Figure 3. 31: Windbreak of silky oak and melaleuca with abandoned shed behind, in western paddock area.



Figure 3. 32: Former chicken shed or similar.



Figure 3. 33: Former septic tank to the west of the 1950s residence.



### 3.3.1. Analysis of Views

Ravensworth Farm is located on the western side of a ridge of land running north-south through the centre of the Ravensworth Estate lands. Located as it is above Bowmans Creek to the west and south, Ravensworth Farm benefits from extensive views to the south, southeast, southwest and west. The ridgeline truncates views to the east and north.

Generally, views from Ravensworth Farm consist of the alluvial plains of Bowmans Creek, the tree lined creek with distant views of the Broken Back ranges and mining overburden sites in various stages of rehabilitation beyond Bowmans Creek. Glimpse views only are available of the Great Northern Railway to the south of the property.

Views of Ravensworth Farm are not available from the nearest public road, being Hebden Road to the east. There is no visual connection between Ravensworth Farm and the Ravensworth Homestead Complex to the east.

Table 3. 1: Survey of available views

View No.	Description
V1	Short range views to the north and northeast of farming lands
V2	Short range views to the east and southeast of farming lands
V3	Long range views to the southeast and south over the alluvial plains of Bowmans Creek with glimpse views of the Main Northern Railway.
V4	Long range views to the southwest over the alluvial plains of Bowmans Creek to the Broken Back Range in distance.
V5	Long range views to the west and northwest over the alluvial plains of Bowmans Creek to overburden areas to the west of the New England Highway.



Figure 3. 34: View V1 looking northeast from Ravensworth Farm, with the entry drive from Hebden Road. Note the land rise to the north truncates views.



Figure 3. 35: View V3 looking south from Ravensworth Farm down to alluvial plains with mining overburdens and Broken Back Ranges in the far distance.



Figure 3. 36: View V4 looking northwest over the alluvial plains of Bowmans Creek towards Liddell.



Figure 3. 37: View V5 looking west/northwest to the tree lined Bowmans Creek in the middle distance.

## 3.4. Aboriginal Archaeology

The following information regarding Aboriginal archaeology has been extracted from the *Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project, Glendell Coal Mine, Ravensworth* prepared by OzArk Environmental & Heritage Management Pty Ltd, dated September 2019 (Appendix 22). For detailed information relating to the methodology and results the original report should be referred to in the first instance.

The survey area covered approximately 1011 ha over the former Ravensworth Estate lands, covering only those areas impacted by the proposed Glendell Coal Mine extension (the “Additional Disturbance Area”), and included the Ravensworth Homestead Complex, the Ravensworth Farm site and surrounding lands.

### 3.4.1. Archaeological Investigations

#### Desktop Survey

A desktop search was conducted on the following databases to identify any potential previously-recorded heritage within the area of study:

- Commonwealth heritage listings;
- National Native Titles Claims Search
- Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS)
- Singleton Local Environmental Plan

No declared Aboriginal places (under Section 84 of the *National Parks and Wildlife Act 1974*) were identified in the “Additional Disturbance Area” (including Ravensworth Farm locality).

Stone artefact sites (isolated finds, artefact scatters) are by far the most commonly recorded local site types, together representing 286 (95%) of the 301 sites returned by the AHIMS search area. The majority of these have been recorded in areas of high exposure, with the densest and most complex sites being recorded on distinct landforms in proximity to watercourses.



### Previous Archaeological Investigations

There have been numerous archaeological investigations in the local area with a significant number undertaken in the Additional Disturbance Area (see OzArk report, September 2019 for further details). As a result of these previous assessments, there is 1 valid Aboriginal site (ID 23) recorded within the vicinity of Ravensworth Farm.

### Surface Survey

Fieldwork was undertaken by OzArk, Registered Aboriginal Parties (RAPs) and Wonnarua Knowledge Holders over the course of several weeks in April and September 2018. Field assessment and reporting followed the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011). Standard archaeological field survey and recording methods were employed for the survey (Burke & Smith 2004).

As a result of the surface survey a total of 4 sites were newly recorded (ID 5, 6, 8 and 36) within the vicinity of Ravensworth Farm.

### Test Excavation Program

The test excavation program followed an extensive program of surface survey across areas that will be potentially impacted by the Project. The survey identified 12 areas where test excavation would provide a clearer picture of the subsurface archaeological potential. One area was in the vicinity of Ravensworth Farm (Area 1) and was selected as several artefact scatters were located within the landform.

The test excavation of Area 1 involved 5 x 50 m transects, with each 50 m transect separated by 50 m. Transects were positioned running along the spur, parallel to Bowmans Creek (refer to Figure 3.38).

The results of the test excavation program were sparse with an average of 4.7 artefacts per square metre (or 1.18 artefacts per excavation metre), which is an extremely low density of recovered artefacts. However, two excavation squares recorded artefacts in numbers greater than 15 and both these squares were located at Area 1 (Transect 5).<sup>33</sup>

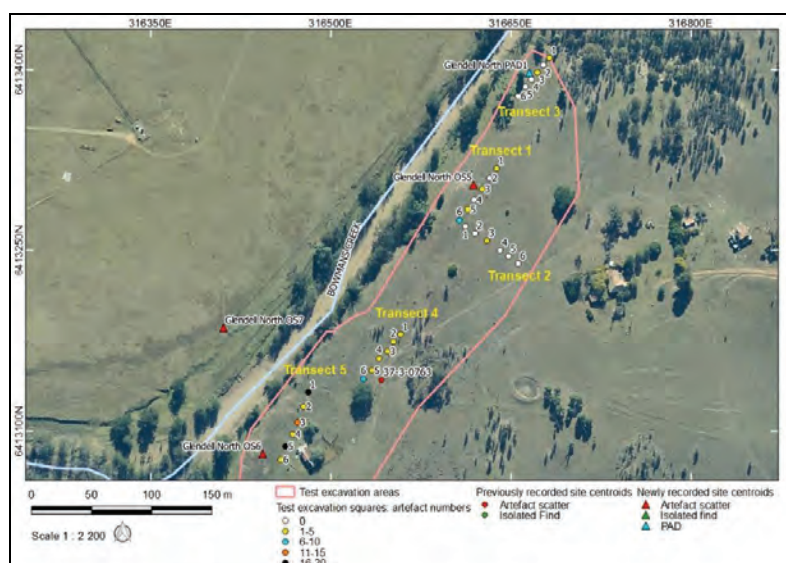


Figure 3.38: Location of transects within Area 1 showing total artefact numbers from each square. Note the proximity to Ravensworth Farm and Ravensworth Dairy sites. Source: OzArk, 2019, Figure 6-3, p. 248

<sup>33</sup> OzArk, 2019; *Aboriginal Archaeology Impact Assessment Glendell Continued Operations Project, Glendell Coal Mine, Ravensworth*, p. 243

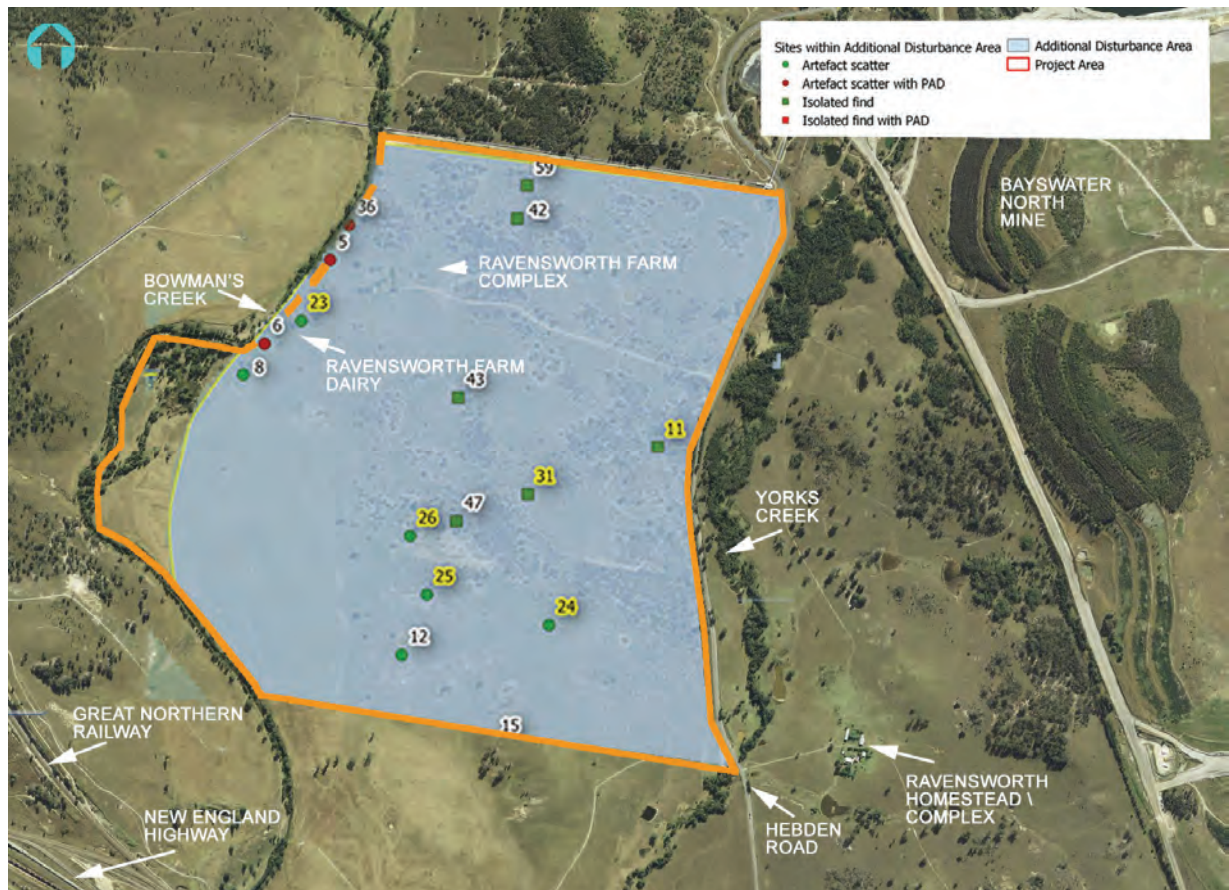


Figure 3. 39: Ravensworth Farm locality plan with overlay of newly recorded (yellow text highlight) and previously recorded sites (white text highlight) within the immediate vicinity. Source: OzArk, 2019, Figure 8-1, p. 349

### 3.4.2. Outcomes

The following is a description of the sites recorded (newly and previously) in close proximity to Ravensworth Farm (Site 27 and 27a):

#### ID 5: Glendell North OS5

Low-density artefact scatter comprising four artefacts, including an end scraper, a core, and two flakes, made of chert and mudstone

- Above the east bank of Bowmans Creek directly to the west of the former 1950s house of Ravensworth Farm (Site 27).

At the time of survey, potential for the presence of subsurface archaeological deposits at Glendell North OS5 was assessed as likely towards the east of the site across the spur landform where A-Horizon soils are present.

#### ID 6: Glendell North OS6

- Low-density artefact scatter comprising 14 artefacts, including flakes, pieces of shatter, flaked pieces, and cores made of silcrete, chert and mudstone

- The site is located eroding out of a spur above the floodplain of Bowmans Creek, approximately 250m south of Glendell North OS5 and directly west of the former dairy building of Ravensworth Farm (Site 27a).

At the time of survey, potential for the presence of subsurface archaeological deposits at Glendell North OS6 was assessed as likely in the north east of the site extent across the spur landform where A-Horizon soils are present.

#### **ID 8: Glendell North OS8**

- Low-density artefact scatter comprising a silcrete flake and a piece of mudstone shatter
- The site is located eroding out of a terrace above Bowmans Creek, approximately 100m south of Glendell North OS6.

Potential for the presence of subsurface archaeological deposits at Glendell North OS8 is assessed as low.

#### **ID 36: Glendell North OS36**

- Glendell North OS36 was identified during survey as a potential archaeological deposit identified on the basis of a flat, secondary terrace with immediate access to permanent water. Local depth of deposit was estimated to be 15+ cm. The 30 by 35 m extent of the site was defined by the results of later sub-surface investigation.
- The site is located on a flat bench above the confluence of Bowmans Creek and an ephemeral tributary in cleared agricultural paddock approximately 100m north of Glendell North OS5 and within the vicinity of the Ravensworth Farm site (Site 27).

At the time of survey, potential for the presence of subsurface archaeological deposits at Glendell North OS36 was assessed as likely.

#### **ID 23: Bowmans Ck 7 (previously recorded)**

- Artefact scatter (number of artefacts not disclosed) with PAD located along a track on a bench above Bowmans Creek. The 8 by 2 m extent was defined by exposure. The primary identified disturbance was land clearance.
- Current condition: Site comprises four mudstone flakes located in the context described. Additional identified disturbance included vehicle damage and the establishment of adjacent ant mounds.

The site is now 'partially destroyed' but has the potential to contain further subsurface artefacts at a low-moderate density within the site extent.

## 4. Assessment of Significance

### 4.1. Introduction

An assessment of the cultural significance of Ravensworth Farm (and Ravensworth Farm Dairy) has been undertaken as follows.

### 4.2. Existing Heritage Listings

Ravensworth Farm and Ravensworth Farm Dairy are located within the local government area of Singleton Council. Ravensworth Farm and Dairy are not identified as heritage items and are not located within a recognised heritage conservation area.

Two local heritage items are located within the vicinity of Ravensworth Farm, within boundaries of the broader Ravensworth Estate lands as identified in Schedule 5 of the *Singleton Local Environmental Plan 2013*:

- Item No. I41 Ravensworth Homestead, 463 Hebden Road, Ravensworth
- Item No. I42 Former [Ravensworth] Public School, Hebden Road, Ravensworth

### 4.3. Heritage Assessment Criteria

The Australia ICOMOS *Burra Charter* (see Appendix 1) defines cultural significance as *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. (*Burra Charter*, Article 1.2).

The assessment of the significance of a place requires an evaluation of the fabric, uses, associations and meanings relating to the place, from which a detailed statement of significance can be formulated.

#### 4.2.2 NSW Heritage Assessment Criteria

The NSW heritage assessment criteria, as set out in the NSW Heritage Office and Planning NSW's publication, *Heritage Assessments* (2002) encompasses the five types of significance expressed in a more detailed form by the following criteria:

- Criterion (a) An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).
- 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 (or the cultural or natural history of the local area).



- Criterion (c) An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or in local area).
- Criterion (d) An item has strong or special association with a particular community or cultural group in NSW (or local area) 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 (or the cultural or natural history of the local area).
- Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).
- Criterion (g) An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or environments (or a class of the local area's cultural or natural places or environments).

The NSW Heritage Division recommends that all criteria be referred to when assessing the significance of an item, even though only complex items will be significant under all criteria.

## 4.4. Heritage Assessment of Ravensworth Farm

The following statement of significance based on the foregoing analysis in this report has been prepared in accordance with the guidelines set out in the NSW Heritage Office and Planning NSW's publication, *Heritage Assessments* (2002).

### 4.4.1 Criterion (a) Historical Significance

**An item is important in the course, or pattern, of NSW's (or the local area's) cultural or natural history.**

Ravensworth Farm is of little historical significance; although forming part of the early (1824) pastoral estate known as Ravensworth in the Upper Hunter region of NSW, the place has only partial connection with this history.

The place is also of some historical significance as surviving physical evidence of the late 19<sup>th</sup> and early 20<sup>th</sup> century period of subdivision of the Ravensworth Estate lands, a pattern of development that is found throughout NSW when large estates underwent speculative subdivision and were sold as smaller allotment mixed-use farms.

### 4.4.2 Criterion (b) Historical Associational Significance

**An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's (or the local area's) cultural or natural history.**

Ravensworth Farm has historical associations with a number of local families from the Ravensworth/Hebden localities, including the Purvis family, the Andrews family and the Marshall family, all who lived and worked at the place and who were strongly involved in the social and economic development of the locality. These families are not, however, particularly well known outside of the Ravensworth/Hebden locale.

Forming part of the larger (former) Ravensworth Estate lands, Ravensworth Farm also has some historical associations with past owners of the Ravensworth Estate, some of whom are important and notable persons in the history of NSW.

Ravensworth Farm, having been lived in by the Marshall family, who owned and managed the Ravensworth Homestead Complex throughout the majority of the 20<sup>th</sup> century, is associated with the homestead complex and this association is reflected in the name of the place as Ravensworth Farm, a name bestowed on the place by the Marshall family in the 1960s.

#### 4.4.3 Criterion (c) Aesthetic Significance

**An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or in local area).**

Located on the spur of a ridgeline overlooking the alluvial plains of Bowmans Creek and benefitting from expansive views of the former Ravensworth Estate lands to the south, south east and south west, the setting of Ravensworth Farm is of some aesthetic significance, although similar settings and views can be found throughout the locality.

The collection of buildings at Ravensworth Farm, including the Dairy building, are typical of many 20<sup>th</sup> century farms found throughout the Upper Hunter region and individually are not of aesthetic significance. However, the collection of buildings as a group, together with the setting and associated site and landscape features (mature trees, wind breaks, hedgerows and abandoned and dilapidated farm structures) do have a strong rural farm character of some appeal.

However, the surviving weatherboard cottage is now a rare survivor from the early 20<sup>th</sup> century subdivision of the estate lands and is of moderate significance.

#### 4.4.4 Criterion (d) Social Significance

**An item has strong or special association with a particular community or cultural group in NSW (or local area) for social, cultural or spiritual reasons.**

Ravensworth Farm has some social significance as forming part of the broader locality of Ravensworth, and for providing tangible evidence of a former distinct community associated with the locality. Ravensworth Farm, together with Ravensworth Public School, Hebden School, Ravensworth Homestead Complex and other scattered remains of 20<sup>th</sup> century farming properties, provide physical markers in the broader landscape of a once thriving and active rural community.

#### 4.4.5 Criterion (e) Research Potential

**An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).**

Ravensworth Farm has some research potential to provide further information into farming practices and living standards in the Ravensworth locality in the early to mid 20<sup>th</sup> century. The place also has some potential for further Aboriginal archaeology of local significance to survive below ground, over and above what has already been identified and recorded within the proximity of the place.

#### 4.4.6 Criterion (f) Rarity

**An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).**

Ravensthorpe Farm, as the physical remains of a 20<sup>th</sup> century mixed farming property in the Upper Hunter region, is not considered rare; however, the weatherboard cottage is now a rare survivor within the former Ravensthorpe Estate lands and is complemented aesthetically by the hay shed/shearing shed (albeit in poor condition).

#### 4.4.7 Criterion (g) Representativeness

**An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or environments (or a class of the local area's cultural or natural places or environments).**

Ravensthorpe Farm is of some significance as being a surviving representative example of a smaller allotment mixed farm property that resulted in the speculative subdivision of the larger Ravensthorpe Estate lands in the early 20<sup>th</sup> century. As the majority of the buildings comprising the farm remain standing (including two houses, a dairy and a hayshed/shearing shed) together with associated site and landscape features, Ravensthorpe Farm is a surviving representative example of the types of farms that were once dotted across the former estate lands.

#### 4.4.8 Summary Statement of Significance

Ravensthorpe Farm is of some significance for its associations with the former Ravensthorpe Estate lands and as a representative example of a smaller allotment mixed farm property developed as a result of the speculative subdivision of the estate lands in the early 20<sup>th</sup> century.

The group of buildings that form the Ravensthorpe Farm (two houses, a dairy and a hayshed/shearing shed) together with cultural plantings and associated agricultural site and landscape features located overlooking the alluvial plains of Bowmans Creek with expansive views to the south, have some aesthetic significance for their setting and rural character. The cottage and hayshed/shearing shed are now relatively rare survivors of the early 20<sup>th</sup> century subdivision of the area.

Ravensthorpe Farm also has some social significance as forming part of the broader locality of Ravensthorpe, and for providing tangible evidence of a former distinct community associated with the locality. The name of the place as Ravensthorpe Farm indicates the strong, past links the place once had with the locality and the adjacent Ravensthorpe Homestead Complex.

## 4.5. Grading of Significance

### 4.5.1. Grades of Significance for Components of the Place

The components of the place can be ranked in accordance with their relative significance as a tool to planning. *Heritage Assessments* (NSW Heritage Branch, 2000) identifies the following grades of significance:

Grade	Justification	Status
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or state listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local or state listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or state listing.
Intrusive	Damaging to the item's heritage significance	Does not fulfil criteria for local or state listing.

### 4.5.2. Grades of Significance for Components of Ravensworth Farm

The principal elements and features of Ravensworth Farm have been grouped together and graded below in relation to their contribution to the place's overall cultural significance. Generally, the grades of significance applied relate to the historical phases of development, contribution to the overall cultural significance of the place and/or their rarity, as per the following:

- |                      |   |
|----------------------|---|
| <b>High (H)</b>      | <ul style="list-style-type: none"> <li>Original and early addition features of historic and aesthetic interest</li> <li>Later features critical to the appreciation of the place</li> </ul> |
| <b>Moderate (M)</b>  | <ul style="list-style-type: none"> <li>Later features important to the appreciation of the place</li> <li>Recent features critical to the appreciation of the place</li> </ul>              |
| <b>Little (L)</b>    | <ul style="list-style-type: none"> <li>Other recent features</li> </ul>   |
| <b>Intrusive (I)</b> | <ul style="list-style-type: none"> <li>Features that detract from the significance or appreciation of the place.</li> </ul>   |

Table 4. 1: Gradings of Significance for component of Ravensworth Farm

Component/Feature	Significance Grading
Weatherboard Cottage	Moderate
1950s House	Little
Hay Shed/ Shearing Shed	Moderate
Dairy	Little
Cultural Plantings: Moreton Bay figs, domestic garden plantings, Hawthorn hedge etc.	Little-Moderate
Associated site and landscape features including windmill, cattle yards and loading ramp, fences, troughs and abandoned structures	Little-Moderate
Ravensworth Farm site	Little



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## Appendix B

### Ravensworth Farm Option - Visualisation

# Ravensworth Farm Option – Visualisation

Note: This document has been created with snapshots from the visualisation animation for the Ravensworth Homestead Complex - Ravensworth Farm relocation option.

All images shown are conceptual in nature and are intended to give an indication of the visual qualities of the Ravensworth Farm relocation option with the final arrangement of infrastructure and surrounding terrain subject to future detailed design and detailed mine closure planning.



Aerial view, indicative relocation route shown





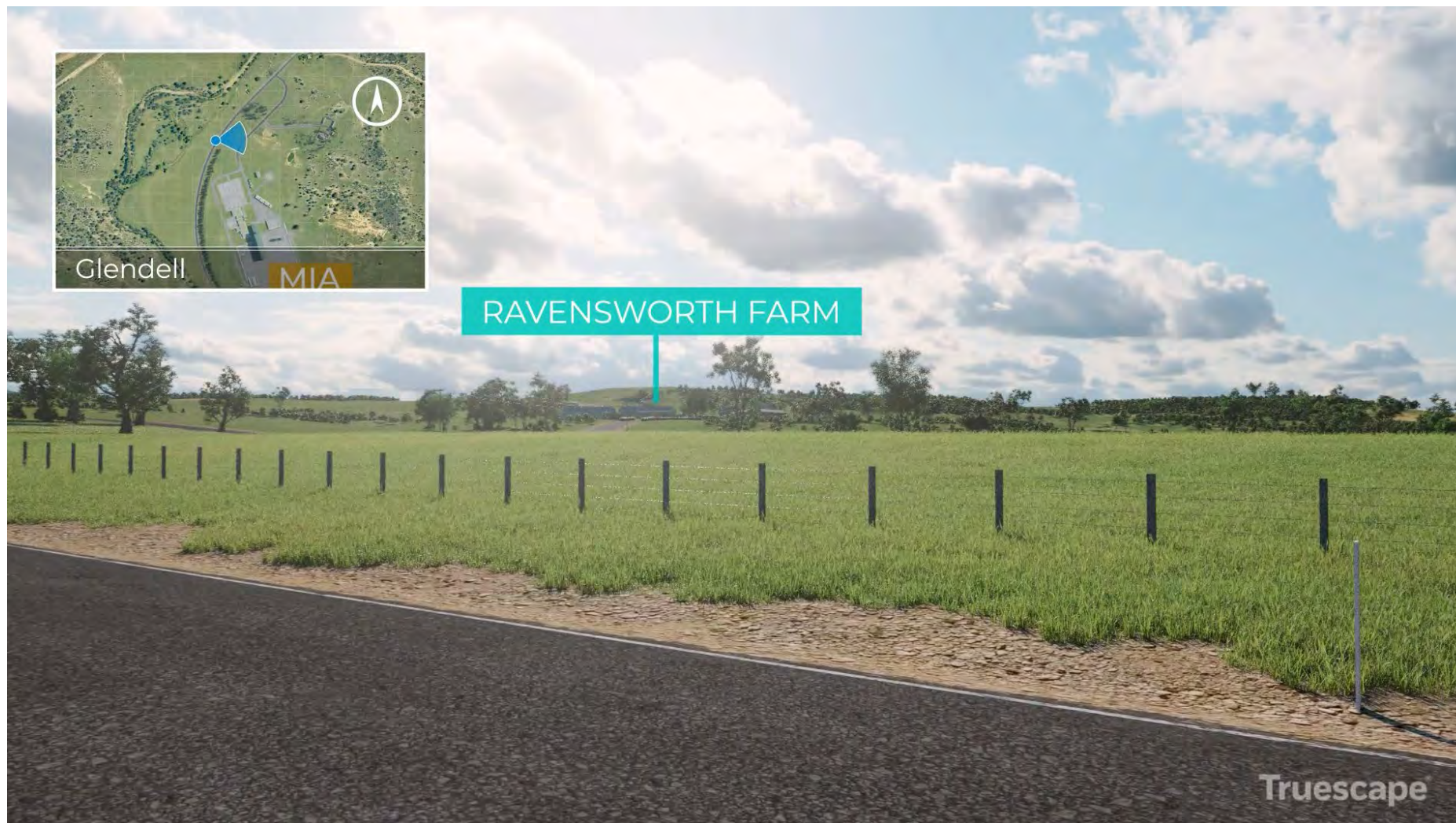
View from Hebden Road during mine operation





View from Hebden Road post mine closure





View from Hebden Road during mine operation



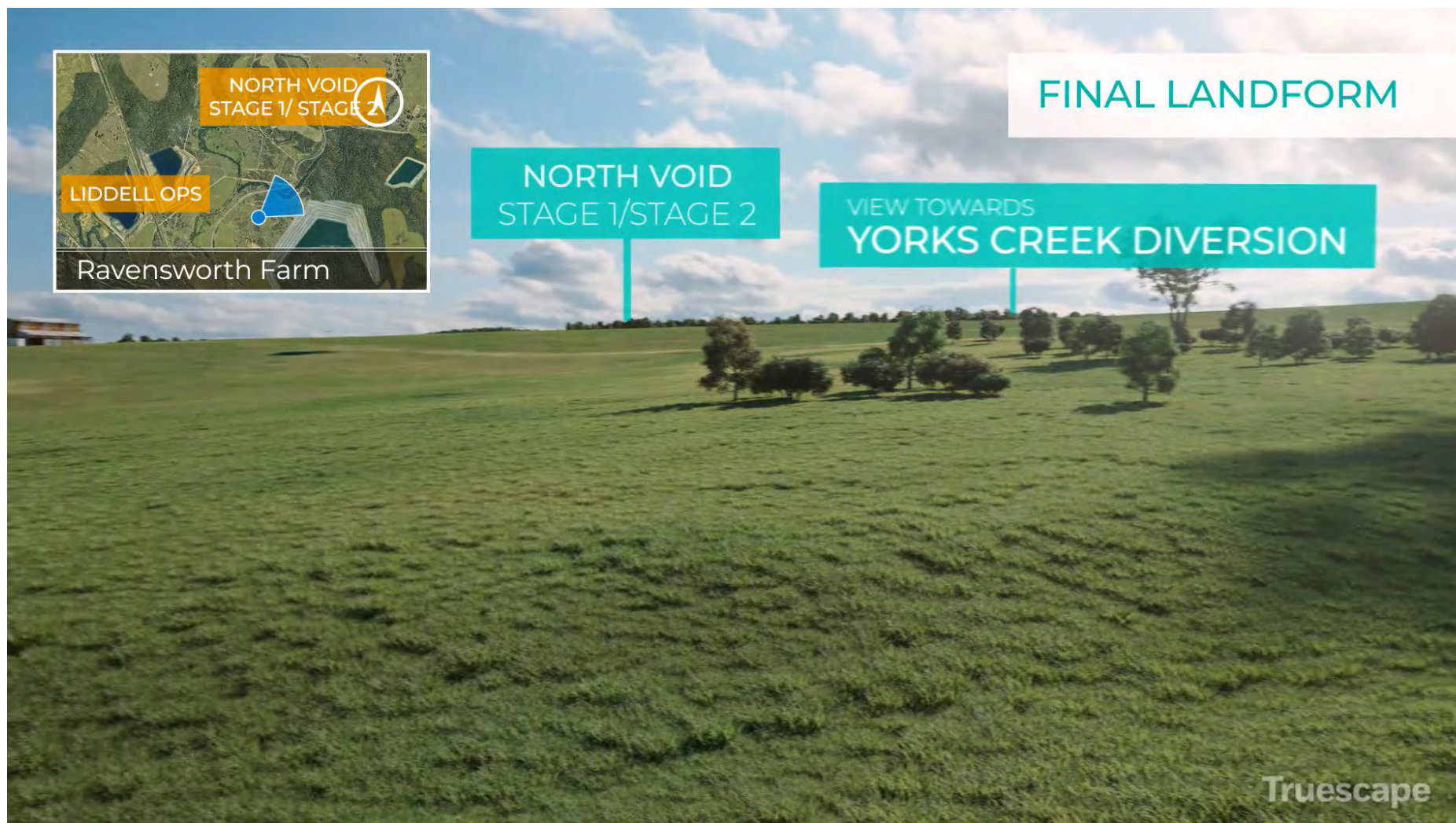
Approach to Ravensworth Homestead from new access road (note same approach angle as existing)





View from north-west corner of site looking east





View from north-west corner of site looking north-east





View from north-west corner of site looking north





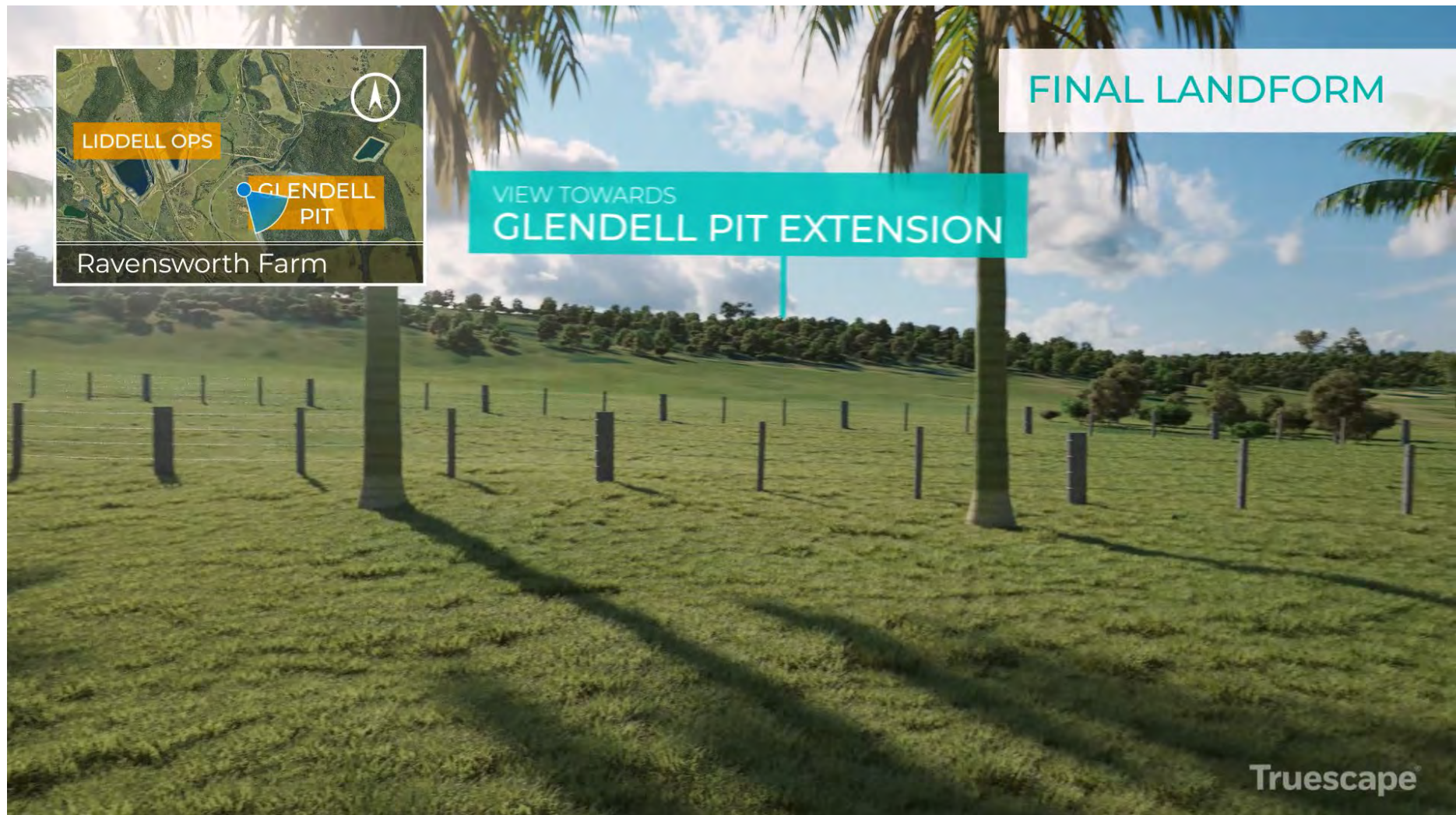
View from internal courtyard looking south





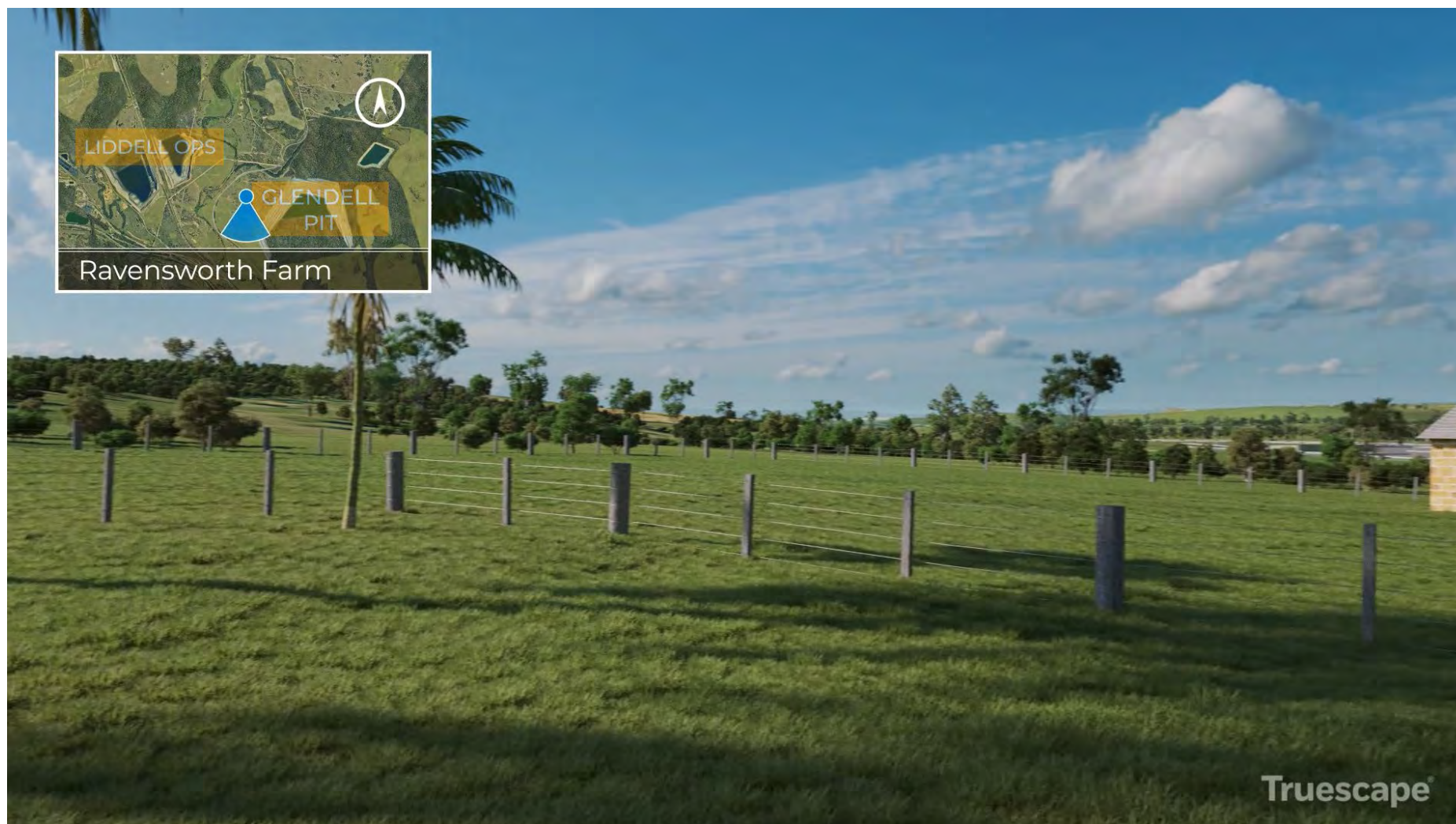
View from men's quarters looking north-east





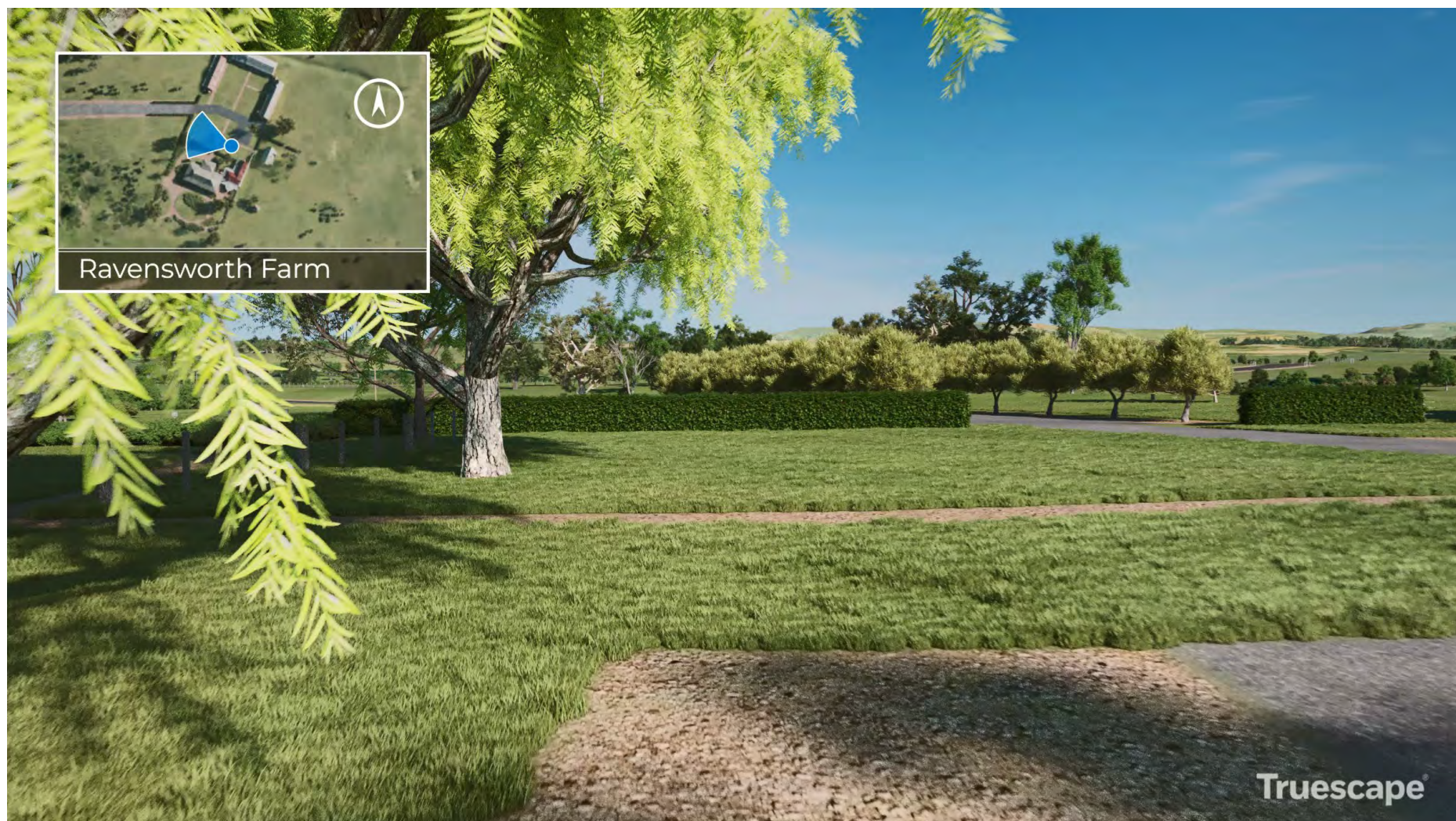
View from men's quarters looking south-east





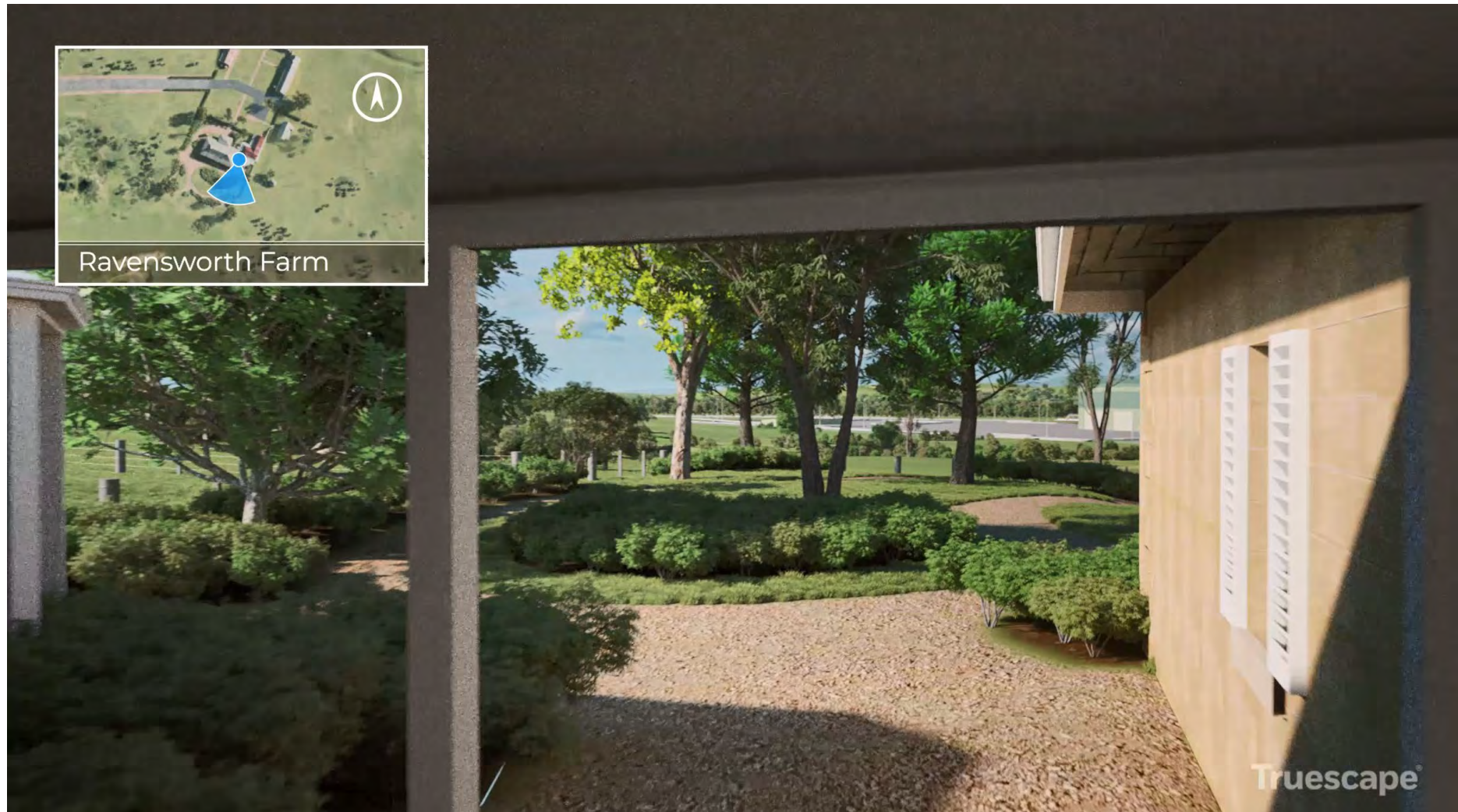
View from men's quarters looking south





View from internal courtyard looking east





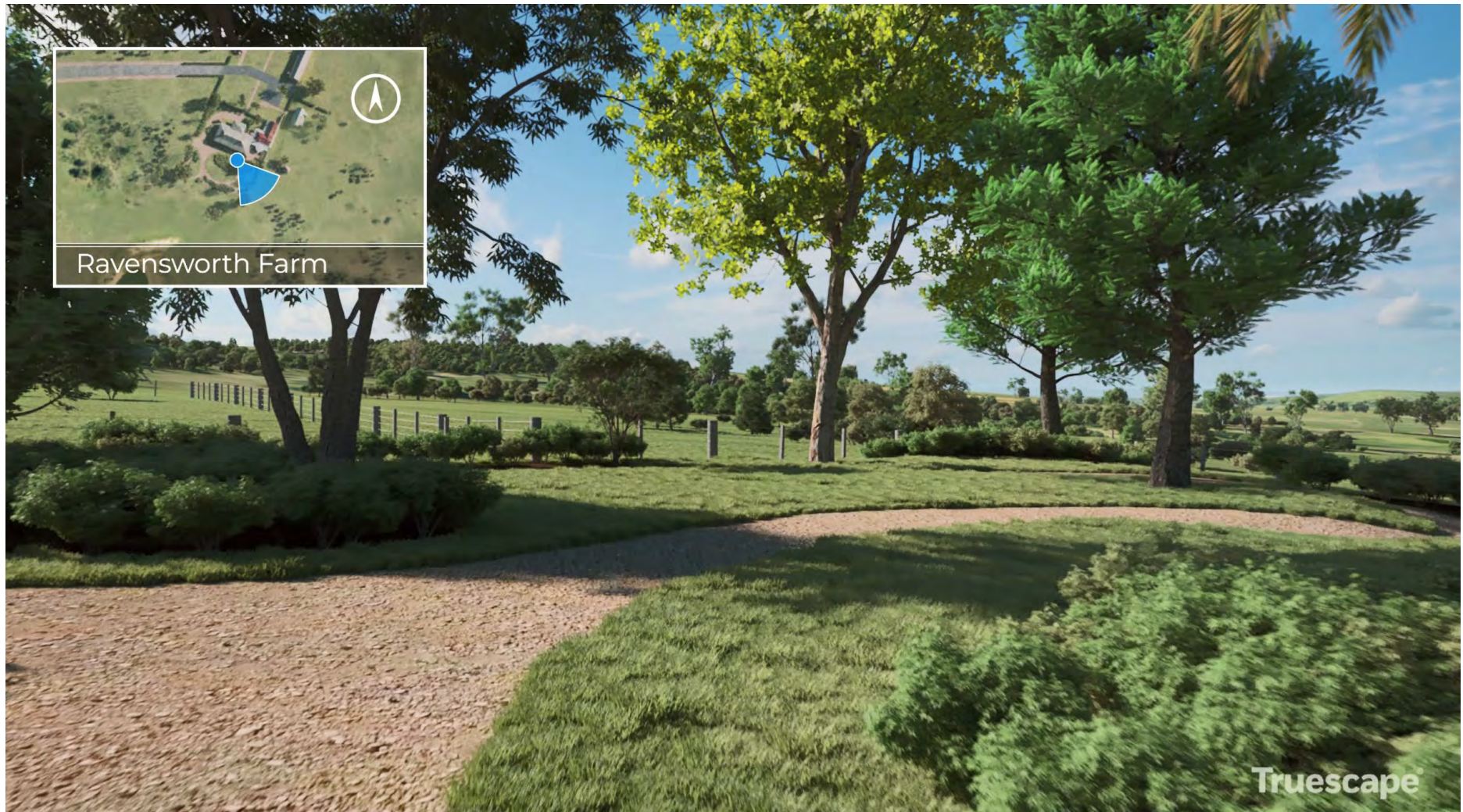
View from breezeway between kitchen wing and homestead looking south





View from homestead south verandah during mine operation looking south (MIA in background)





View from homestead garden path looking south-east





View from south boundary looking south-east





View from south boundary looking south





View from south boundary looking south-west





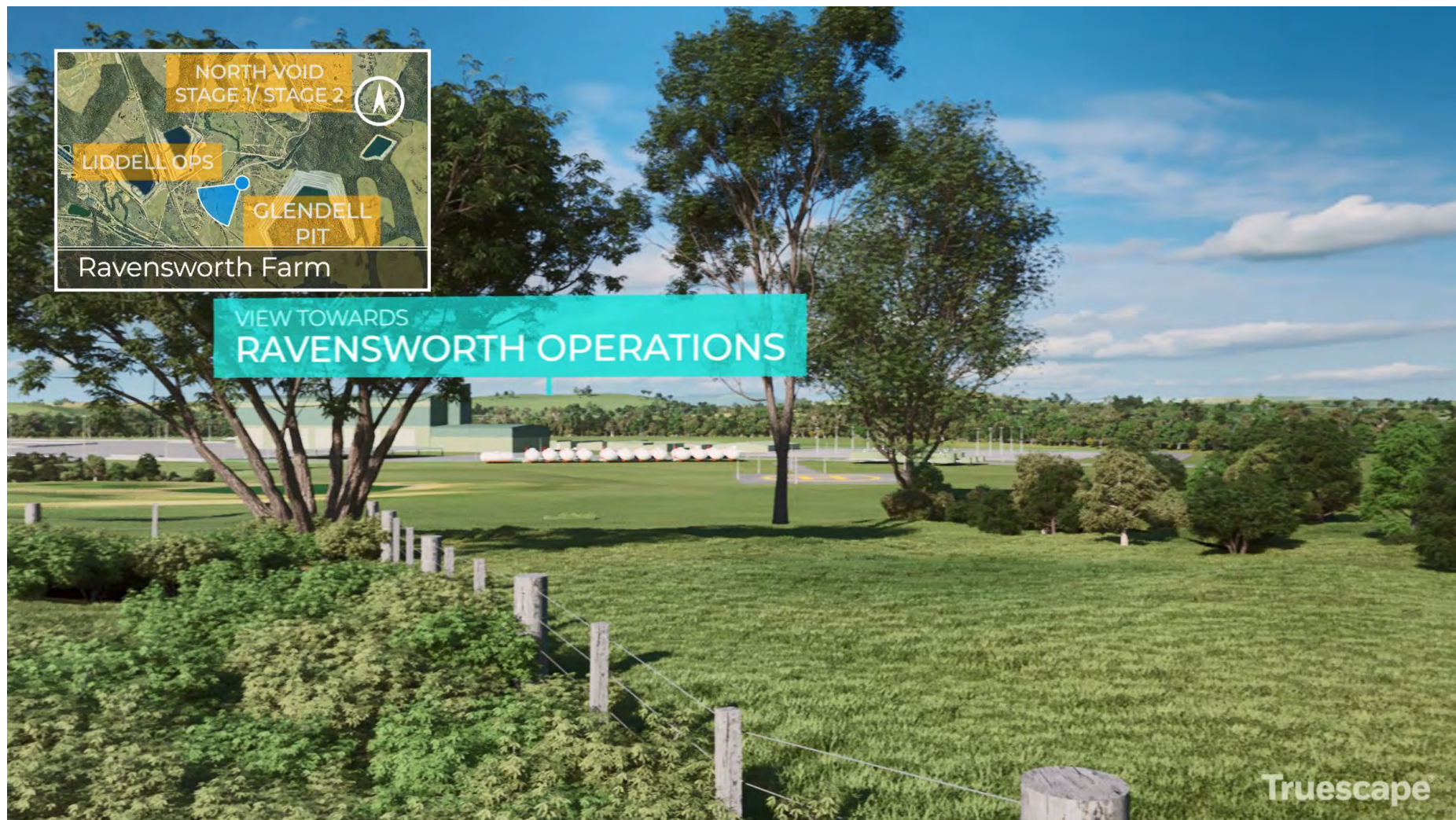
View from south boundary looking west





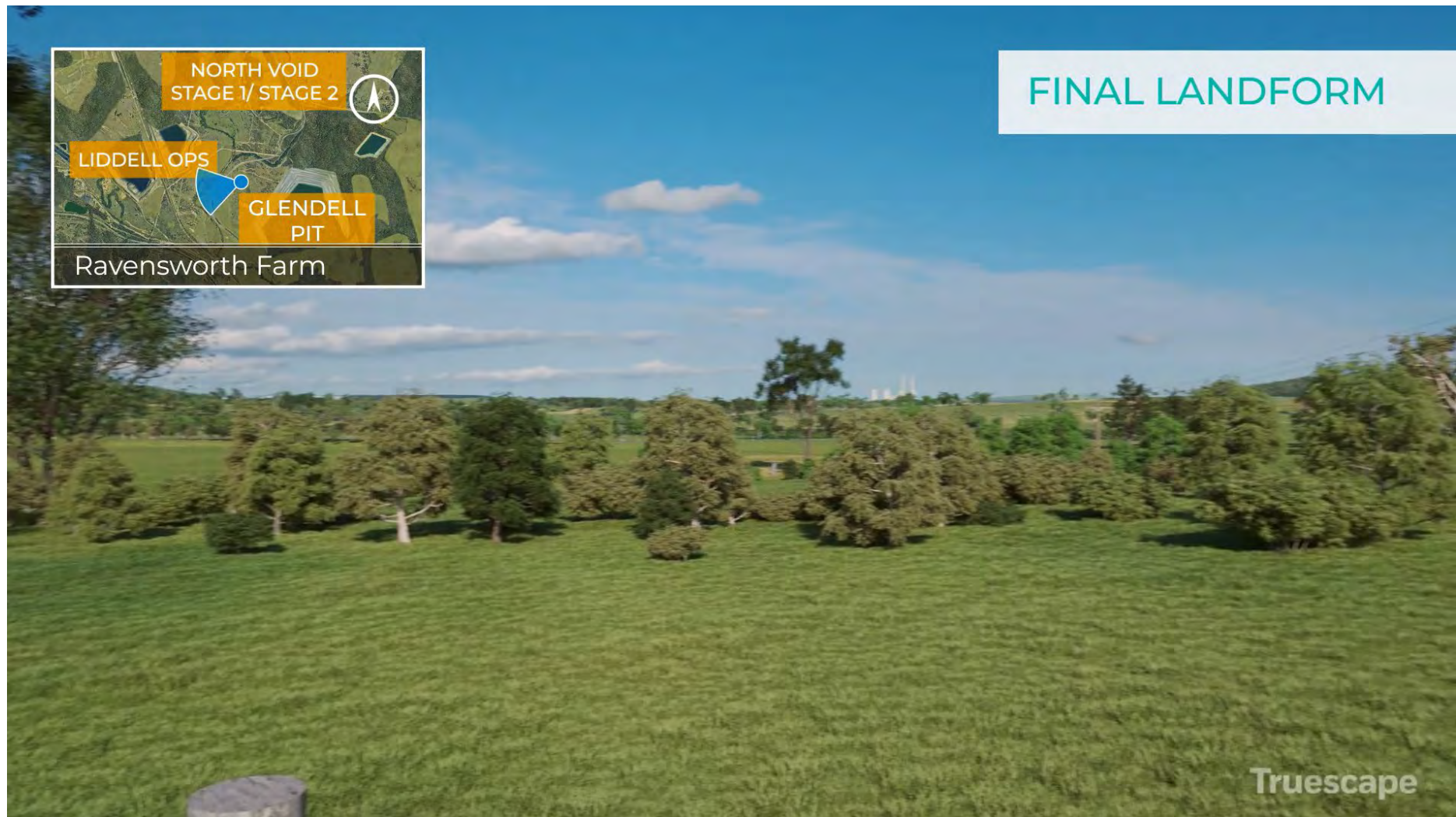
View from homestead garden looking west





View from east boundary looking south-west





View from east boundary looking west



View from east boundary looking north-east





View from east boundary looking north





Perspective view looking north-west





Perspective view looking north-west final landform shown for Liddell Operations





Perspective view looking north-west final landform shown for Liddell Operations and the Project

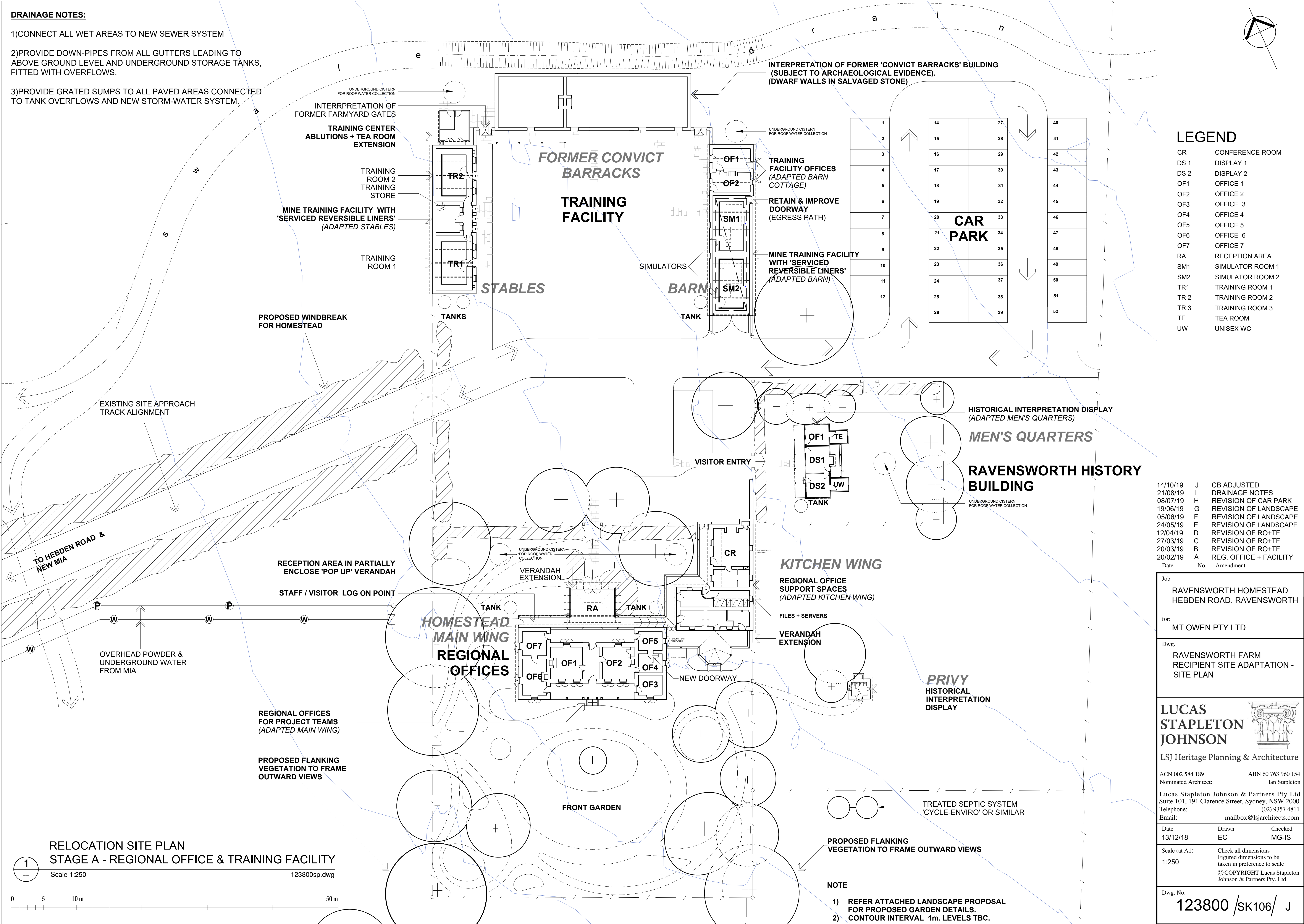
## Appendix C

### Conceptual adaptation drawings



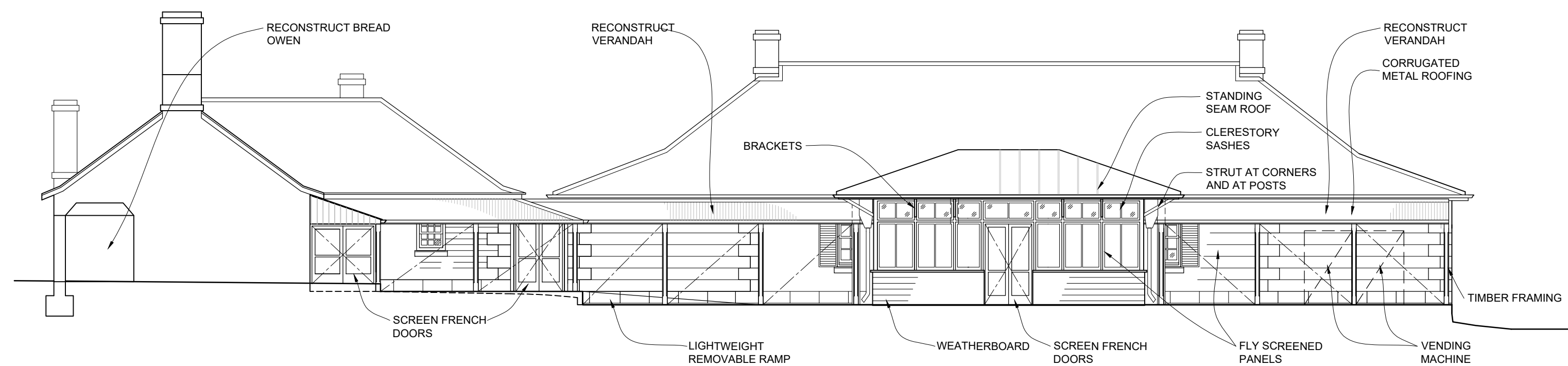
DRAINAGE NOTES:

- 1)CONNECT ALL WET AREAS TO NEW SEWER SYSTEM
- 2)PROVIDE DOWN-PIPES FROM ALL GUTTERS LEADING TO ABOVE GROUND LEVEL AND UNDERGROUND STORAGE TANKS, FITTED WITH OVERFLOWS.
- 3)PROVIDE GRATED SUMPS TO ALL PAVED AREAS CONNECTED TO TANK OVERFLOWS AND NEW STORM-WATER SYSTEM.

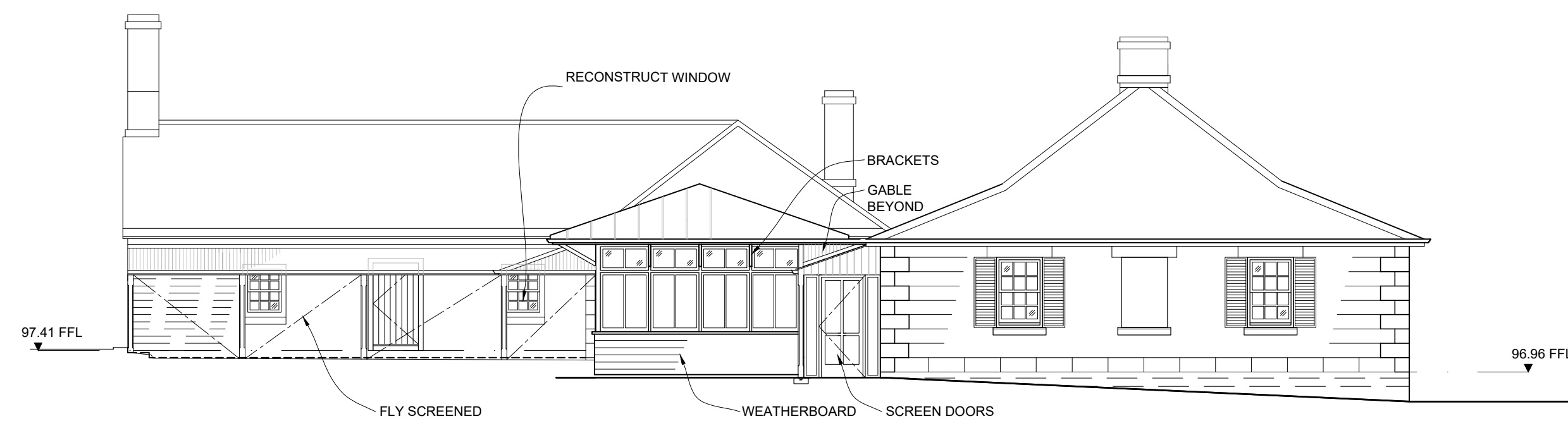


- NOTE**
- 1) REFER ATTACHED LANDSCAPE PROPOSAL FOR PROPOSED GARDEN DETAILS.
- 2) CONTOUR INTERVAL 1m. LEVELS TBC.

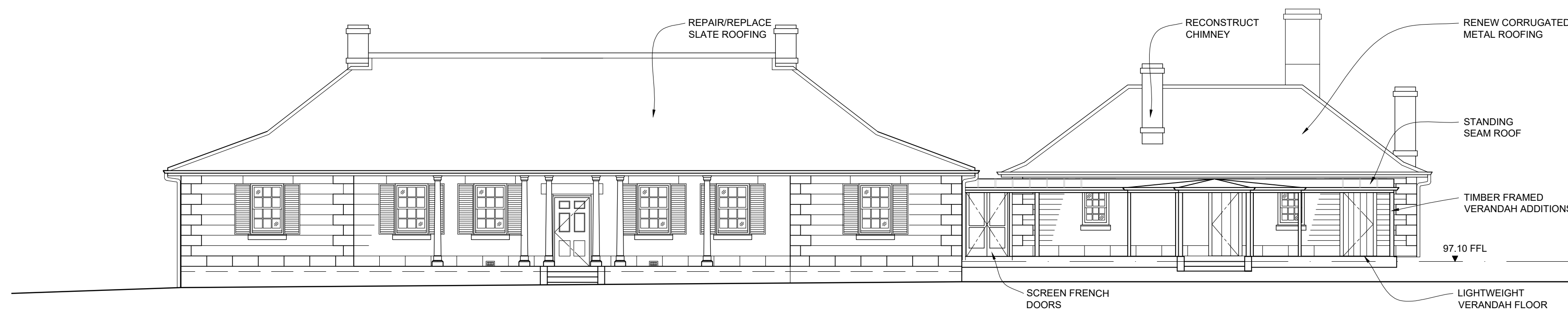




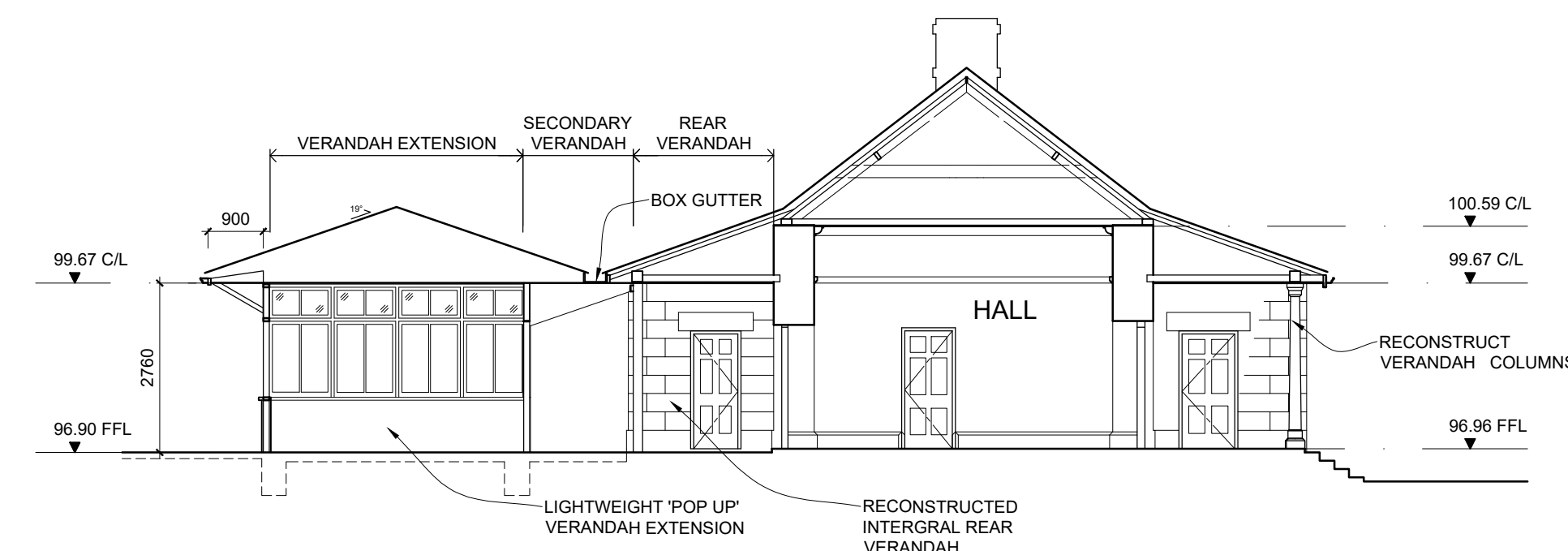
1 SOUTH ELEVATION  
HOMESTEAD MAIN & KIT. WINGS 123800el.dwg



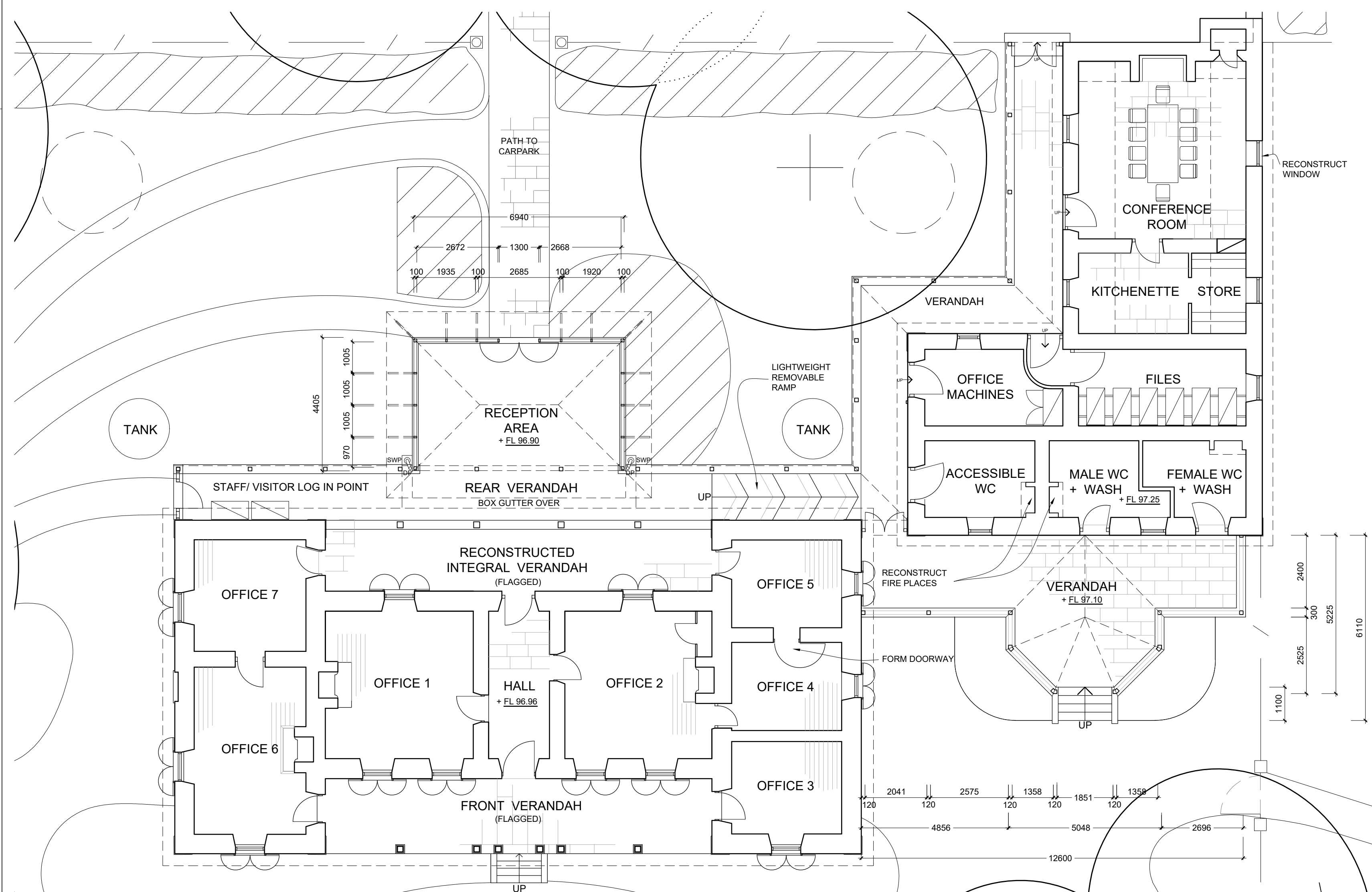
2 WEST ELEVATION  
HOMESTEAD MAIN & KIT. WINGS 123800el.dwg



3 NORTH ELEVATION  
HOMESTEAD MAIN & KIT. WINGS 123800el.dwg



4 SECTION  
HOMESTEAD MAIN & KIT. WINGS 123800sec.dwg



5 MAIN WING & KITCHEN WING STAGE A - MINING OFFICES FLOOR PLAN  
Scale 1:100 123800fp.dwg

19/08/19	E	REVISION
22/07/19	D	REVISION
08/07/19	C	REVISION
19/06/19	B	REVISION
18/06/19	A	REVISION
Date	No.	Amendment

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

for:  
MT OWEN PTY LTD

Dwg.  
ADAPTATION DESIGN FOR  
RAVENSWORTH FARM SITE  
MAIN & KIT. WINGS  
PLAN & ELEVATIONS

**LUCAS STAPLETON JOHNSON**  
LSJ Heritage Planning & Architecture

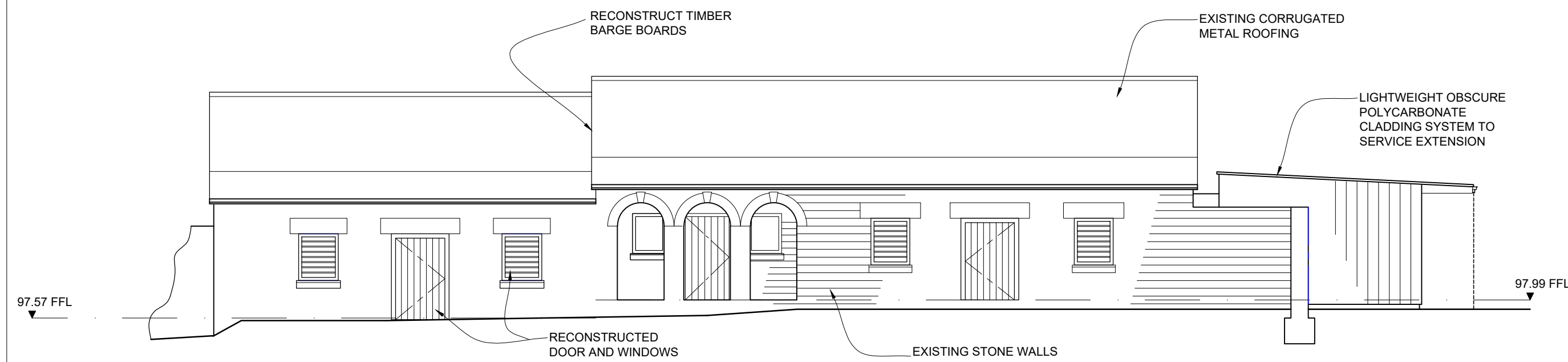
ACN 002 584 189  
Nominated Architect:  
Lucas Stapleton Johnson & Partners Pty Ltd  
Suite 101, 191 Clarence Street, Sydney, NSW 2000  
Telephone:  
Email:

Date  
05/06/18  
Drawn  
YC-EC  
Checked  
MG-IS

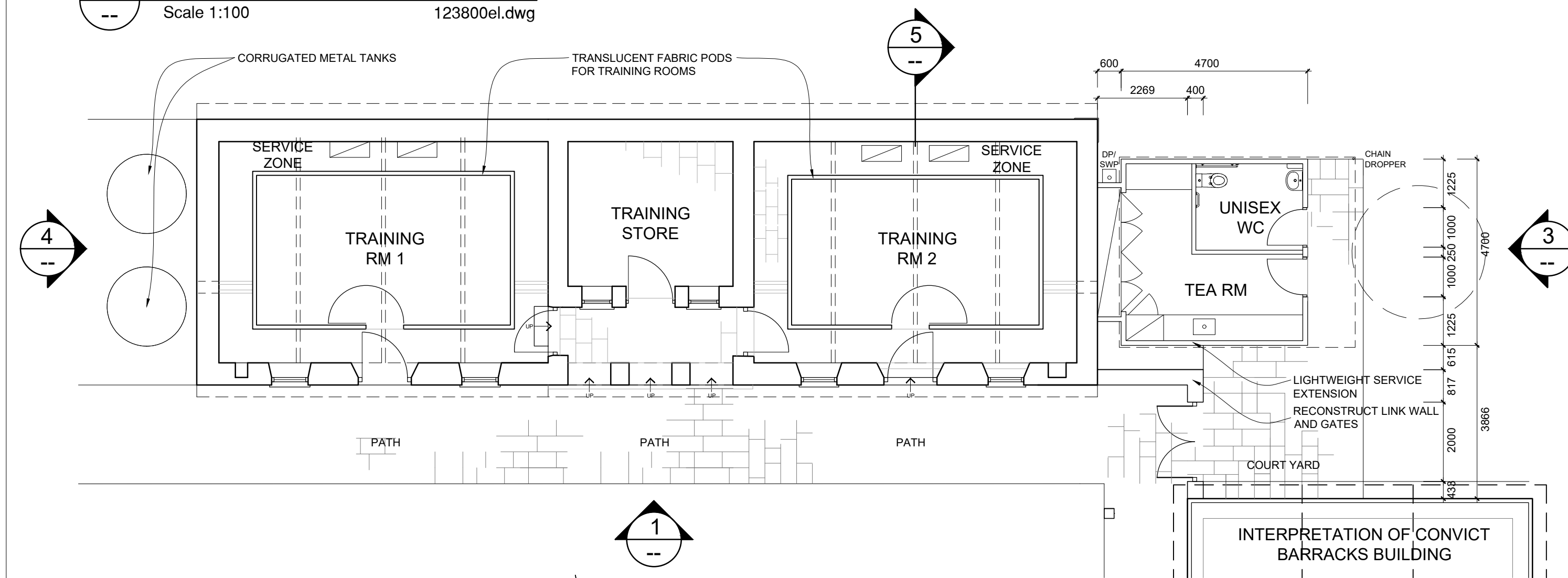
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1:100  
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Figured dimensions to be  
taken in preference to scale  
© COPYRIGHT Lucas Stapleton  
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Dwg. No.  
123800 /SK109/E

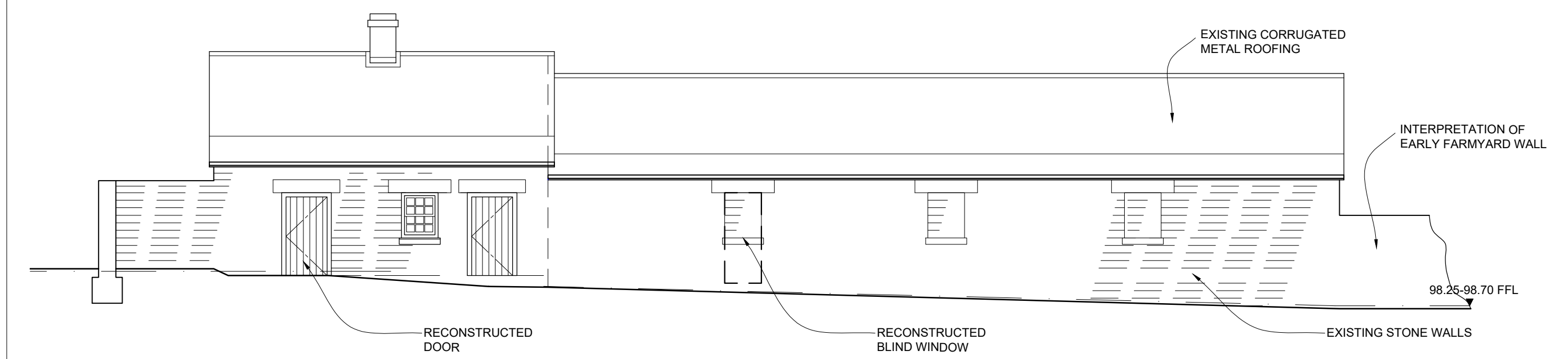
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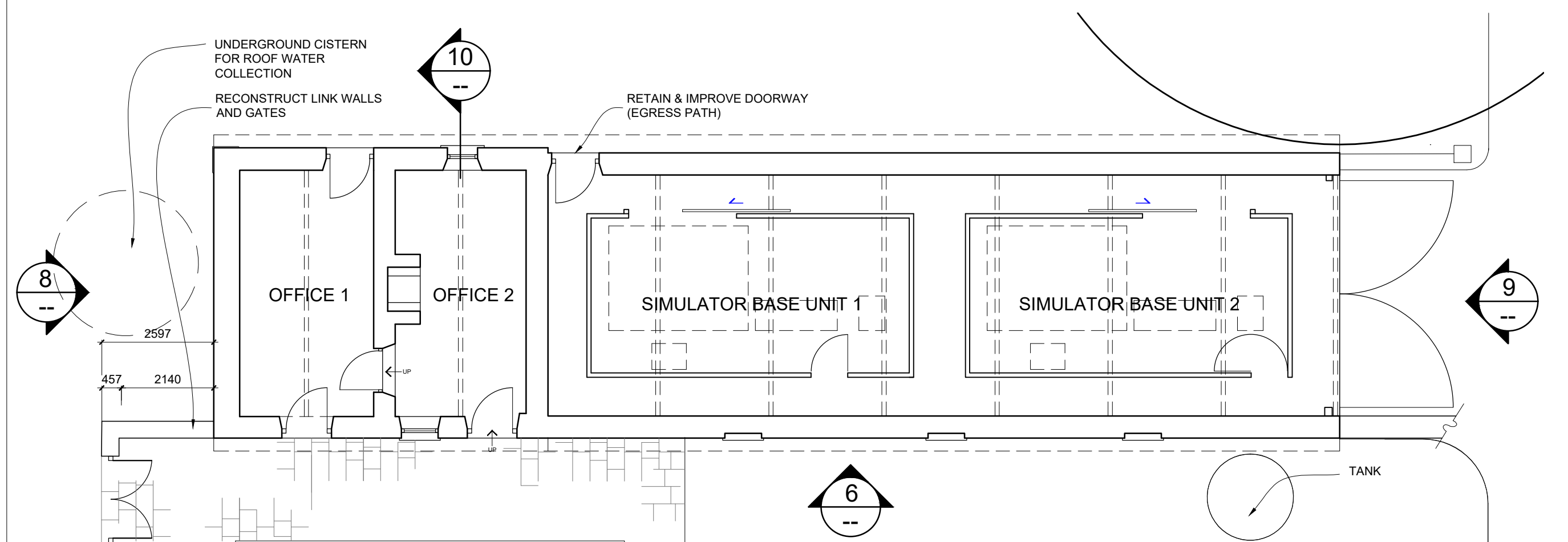
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Scale 1:100 123800el.dwg



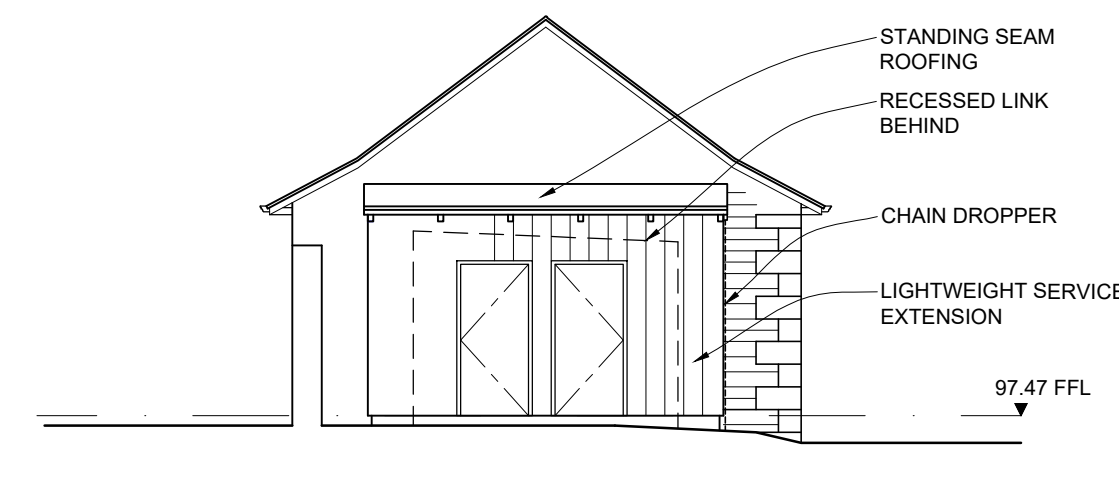
2 STABLES - FLOOR PLAN  
Scale 1:100 123800fp.dwg



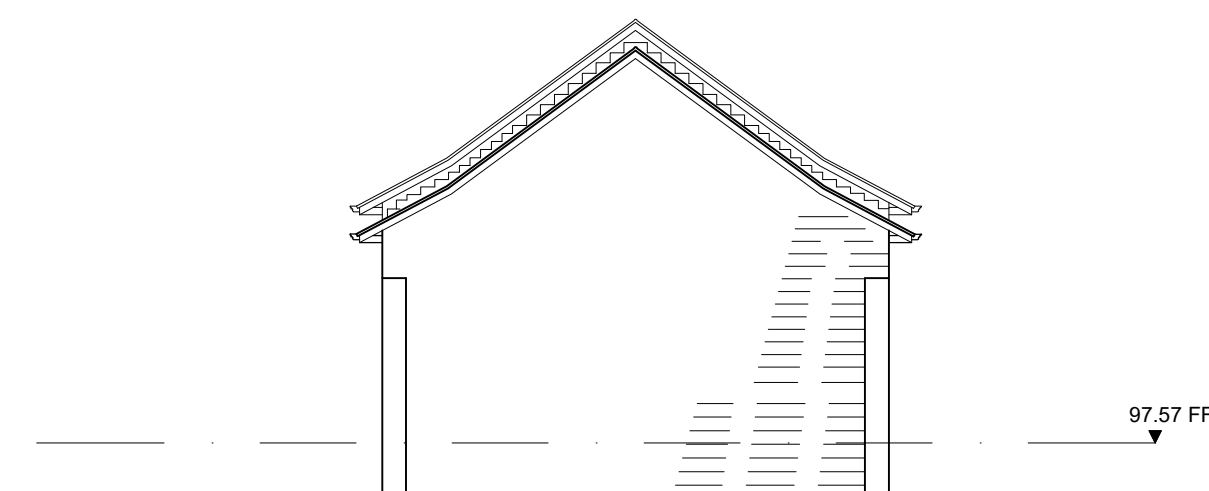
6 BARN - WEST ELEVATION  
Scale 1:100 123800el.dwg



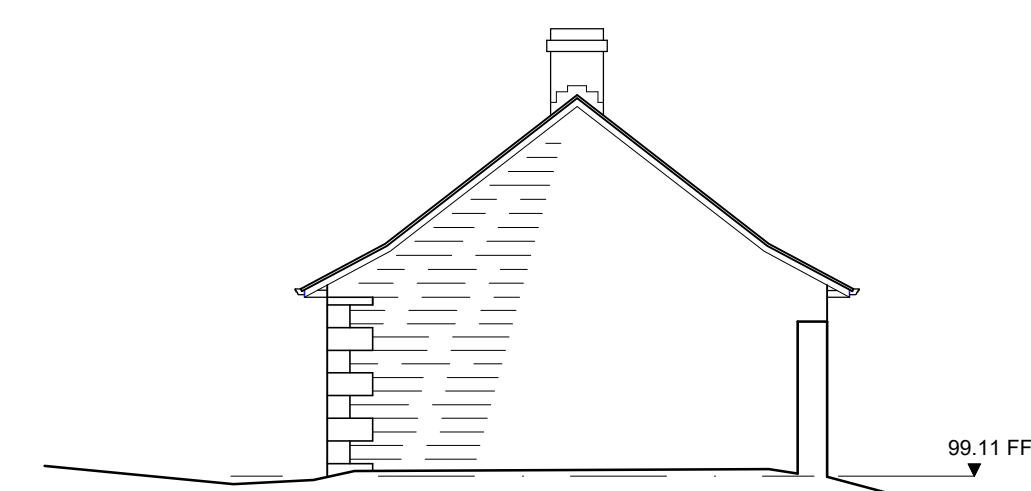
7 BARN - FLOOR PLAN  
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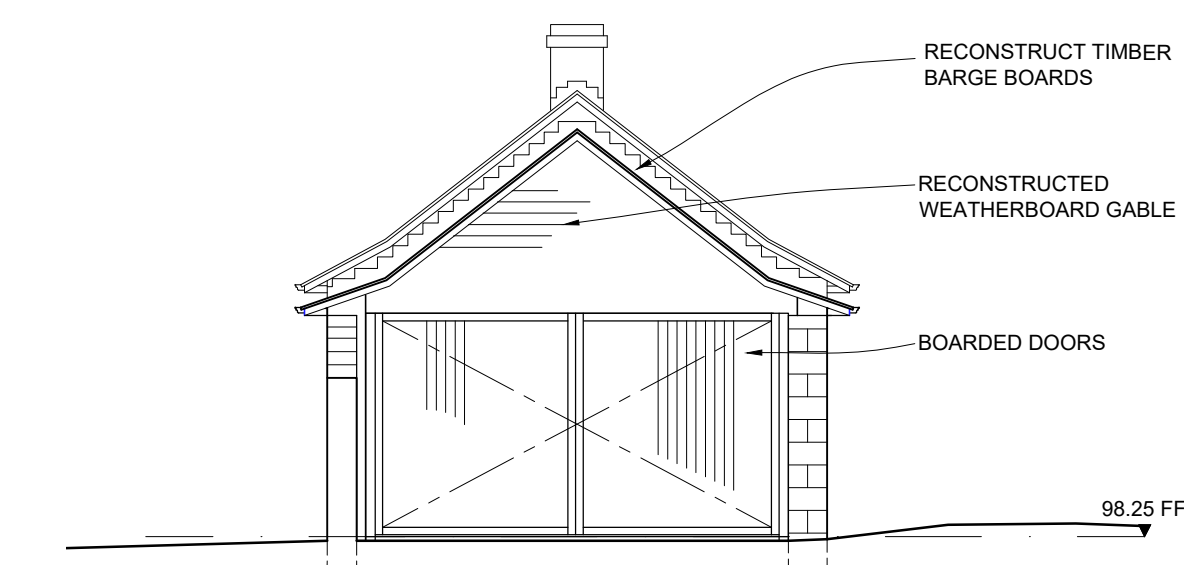
3 STABLES - NORTH ELEVATION  
Scale 1:100 123800el.dwg



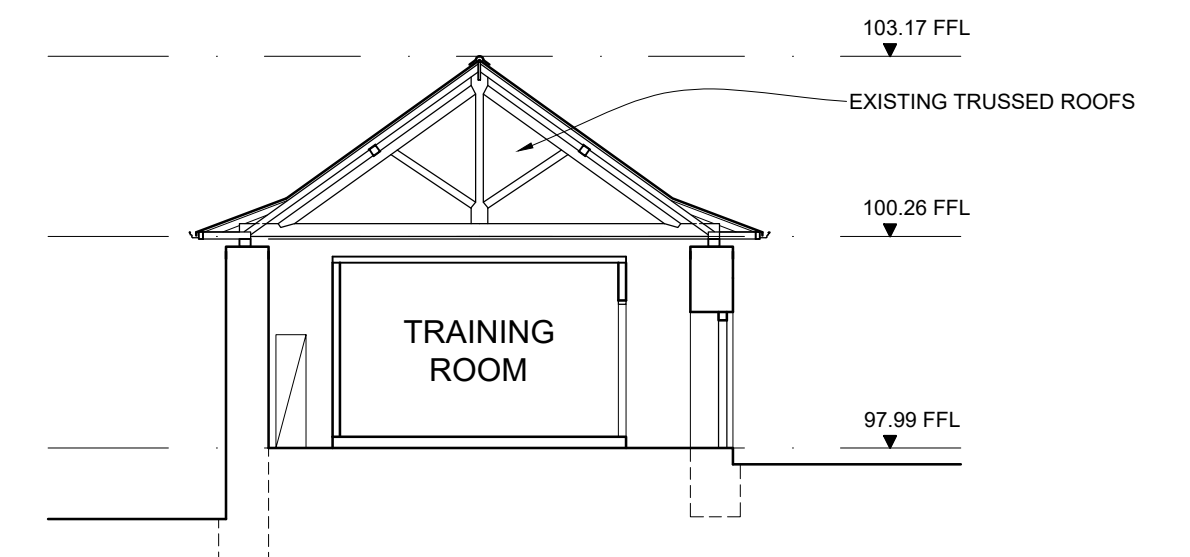
4 STABLES - SOUTH ELEVATION  
Scale 1:100 123800el.dwg



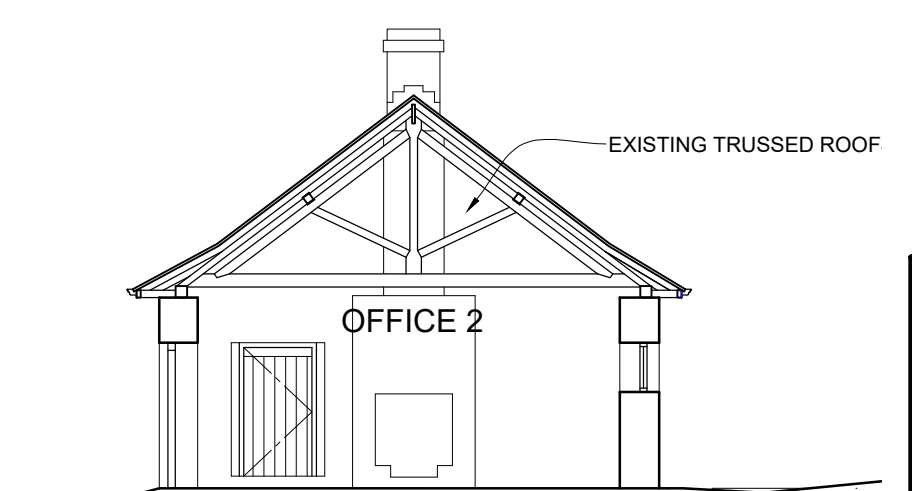
8 BARN - NORTH ELEVATION  
Scale 1:100 123800el.dwg



9 BARN - SOUTH ELEVATION  
Scale 1:100 123800el.dwg



5 STABLES - SECTION  
Scale 1:100 123800sec.dwg



10 BARN - SECTION  
Scale 1:100 123800sec.dwg

15/10/19 D AMENDED  
19/08/19 C AMENDED  
22/07/19 B AMENDED  
08/07/19 A AMENDED  
Date No. Amendment

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

for:  
MT OWEN PTY LTD

Dwg.  
ADAPTATION DESIGN FOR  
RAVENSWORTH FARM SITE.  
STABLES AND BARN -  
PLANS, ELEVATIONS & SECTIONS

**LUCAS  
STAPLETON  
JOHNSON**  
LSJ Heritage Planning & Architecture

ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton

Lucas Stapleton Johnson & Partners Pty Ltd  
Suite 101, 191 Clarence Street, Sydney, NSW 2000  
Telephone: (02) 9357 4811  
Email: mailbox@lsjarchitects.com

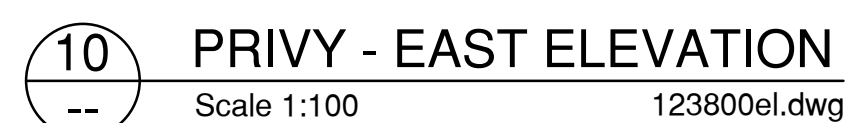
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Johnson & Partners Pty. Ltd.

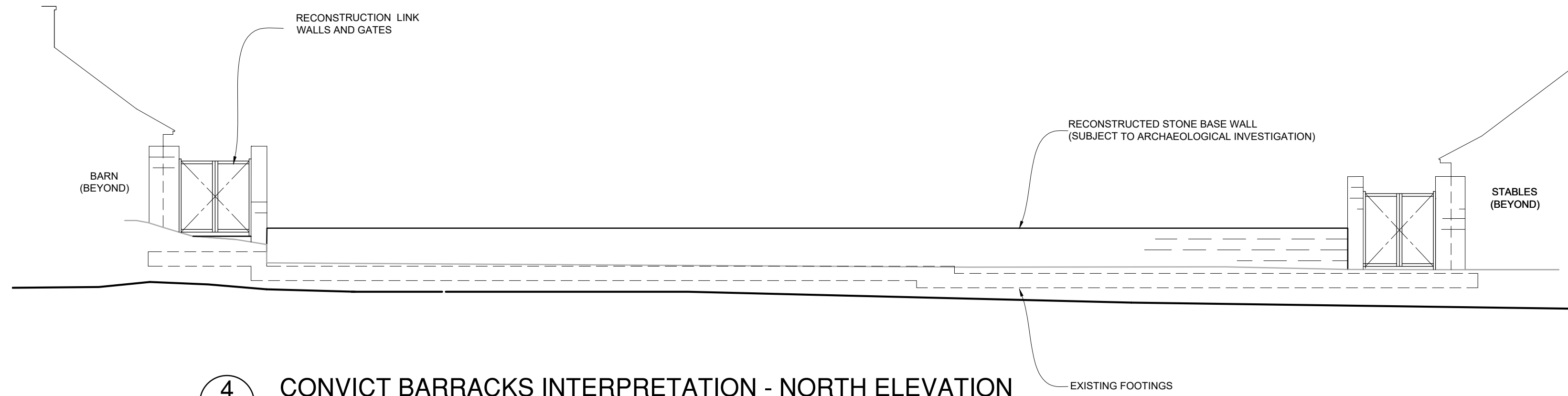
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123800 /SK110/ D

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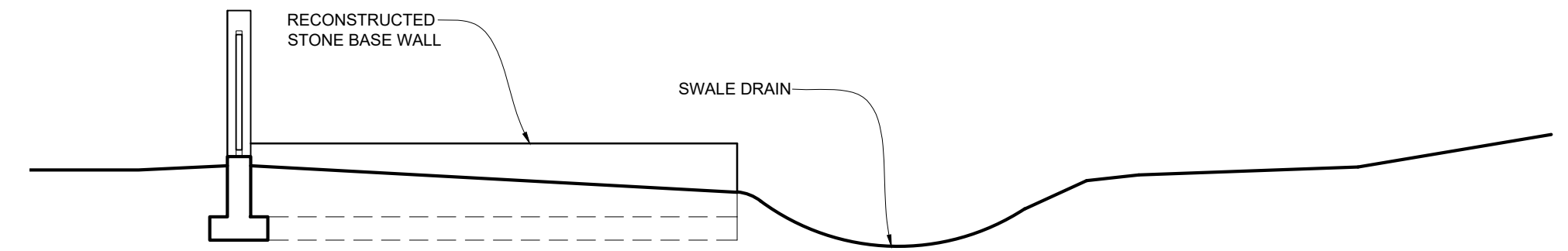




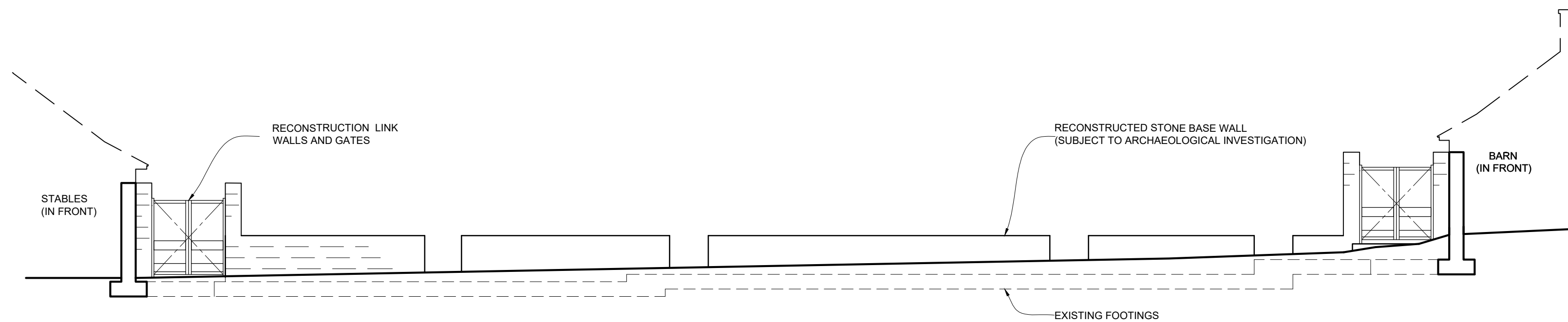




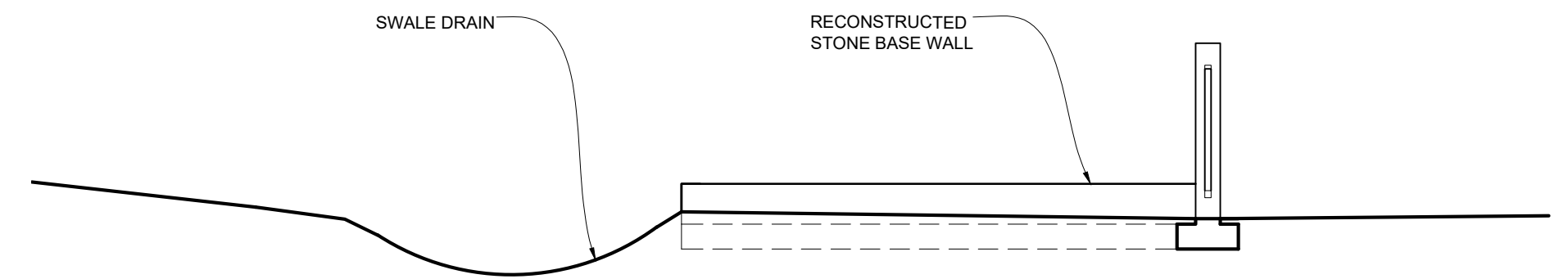
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123800el.dwg



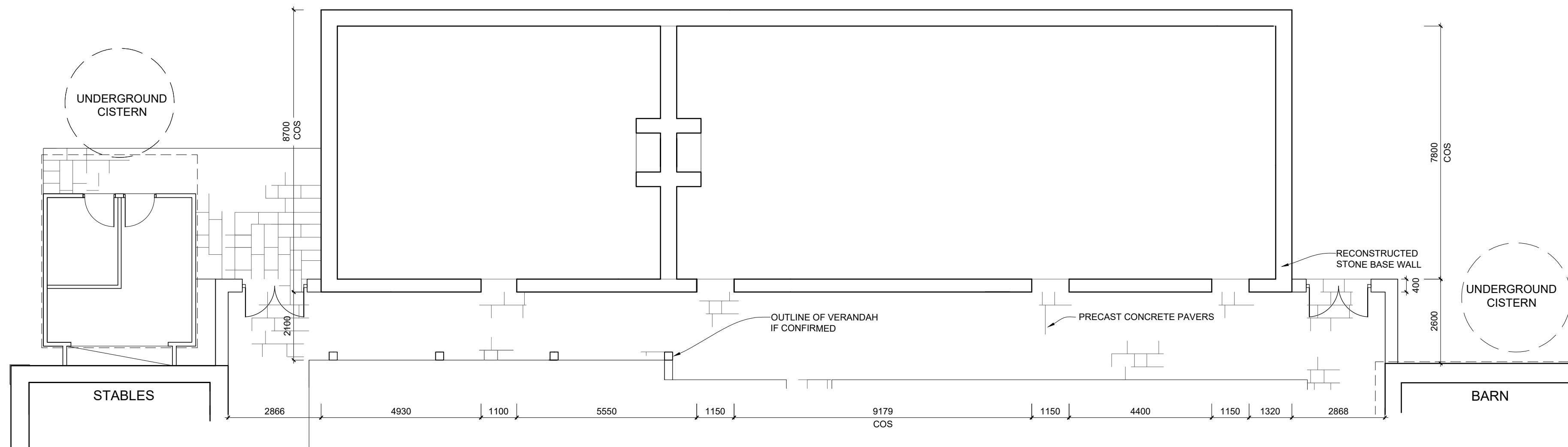
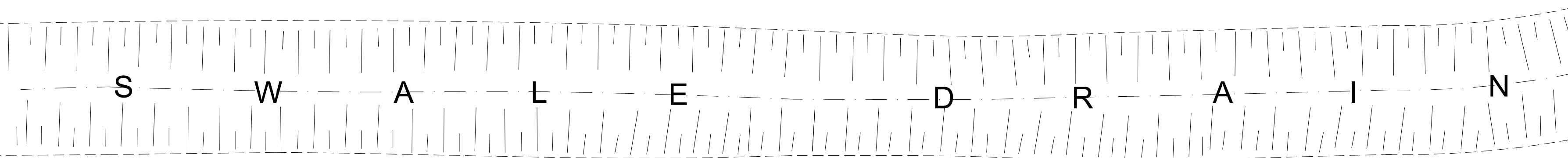
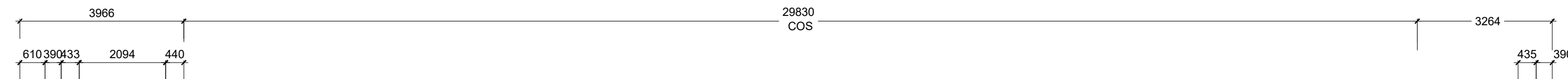
5 CONVICT BARRACKS INTERPRETATION - WEST ELEVATION  
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123800el.dwg



2 CONVICT BARRACKS INTERPRETATION - SOUTH ELEVATION  
Scale 1:100  
123800el.dwg



3 CONVICT BARRACKS INTERPRETATION - EAST ELEVATION  
Scale 1:100  
123800el.dwg



1 CONVICT BARRACKS INTERPRETATION - FLOOR PLAN  
Scale 1:100  
123800fp.dwg

16/10/19	E	AMENDED
09/10/19	D	CB ADJUSTED
21/08/19	C	AMENDED
22/07/19	B	AMENDED
09/07/19	A	AMENDED
Date	No.	Amendment

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

for:  
MT OWEN PTY LTD

Dwg.  
ADAPTATION DESIGN FOR  
RAVENSWORTH FARM SITE -  
INTERPRETATION OF  
CONVICT'S BARRACKS -  
PLAN & ELEVATIONS

**LUCAS  
STAPLETON  
JOHNSON**

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ACN 002 584 189  
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Ian Stapleton

Lucas Stapleton Johnson & Partners Pty Ltd  
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Telephone: (02) 9357 4811  
Email: mailbox@lsjarchitects.com

Date	Drawn	Checked
05/06/19	EC-AJ	YC/ MG

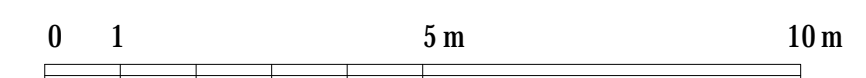
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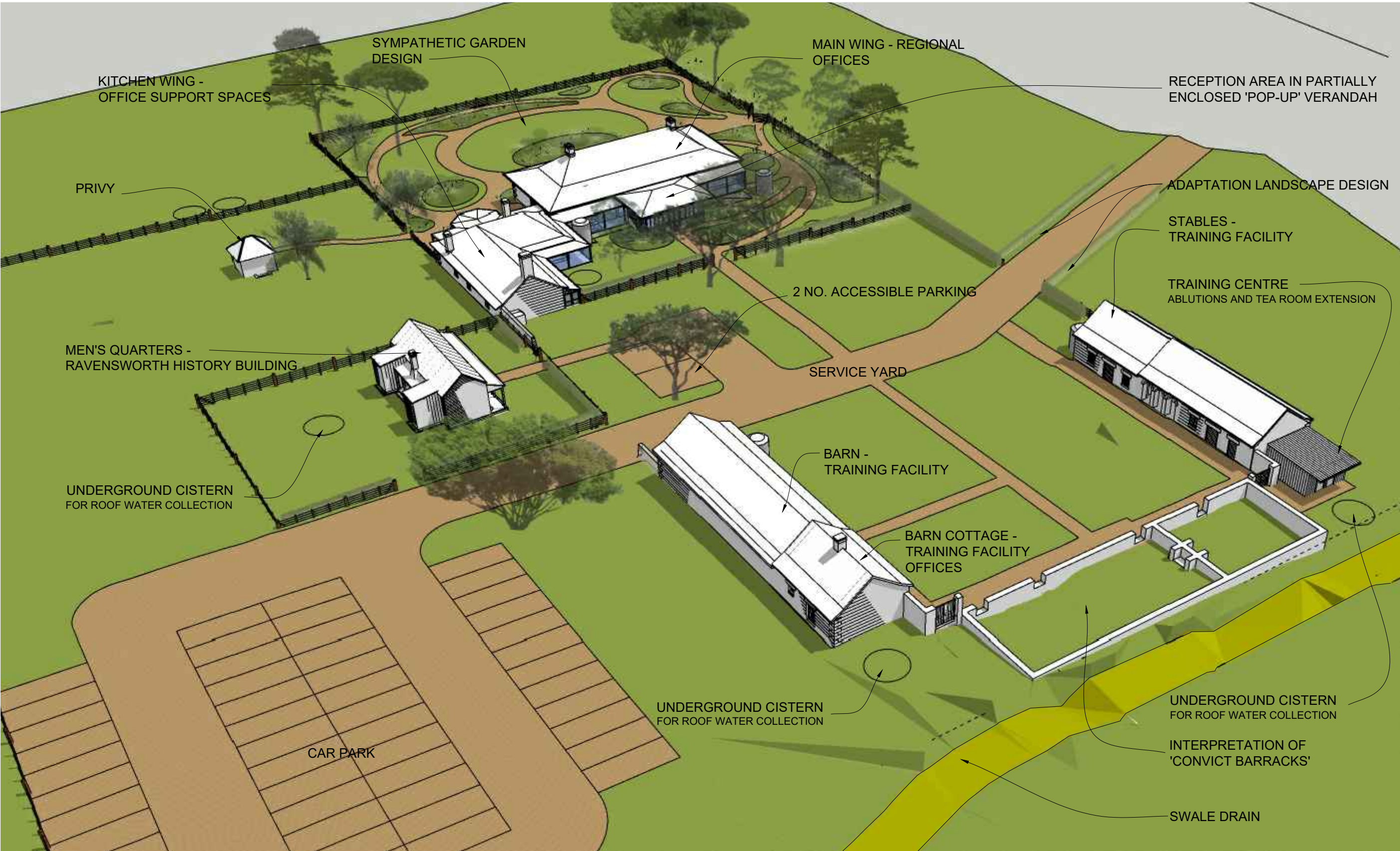
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**123800 /SK112/ E**

LEGEND

COS CHECK ON SITE







1 AERIAL VIEW FROM NORTH EAST  
123800\_SP\_A.SK

18/10/19 C CB ADJUSTED  
16/08/19 B AMENDED  
12/08/19 A AMENDED  
Date No. Amendment

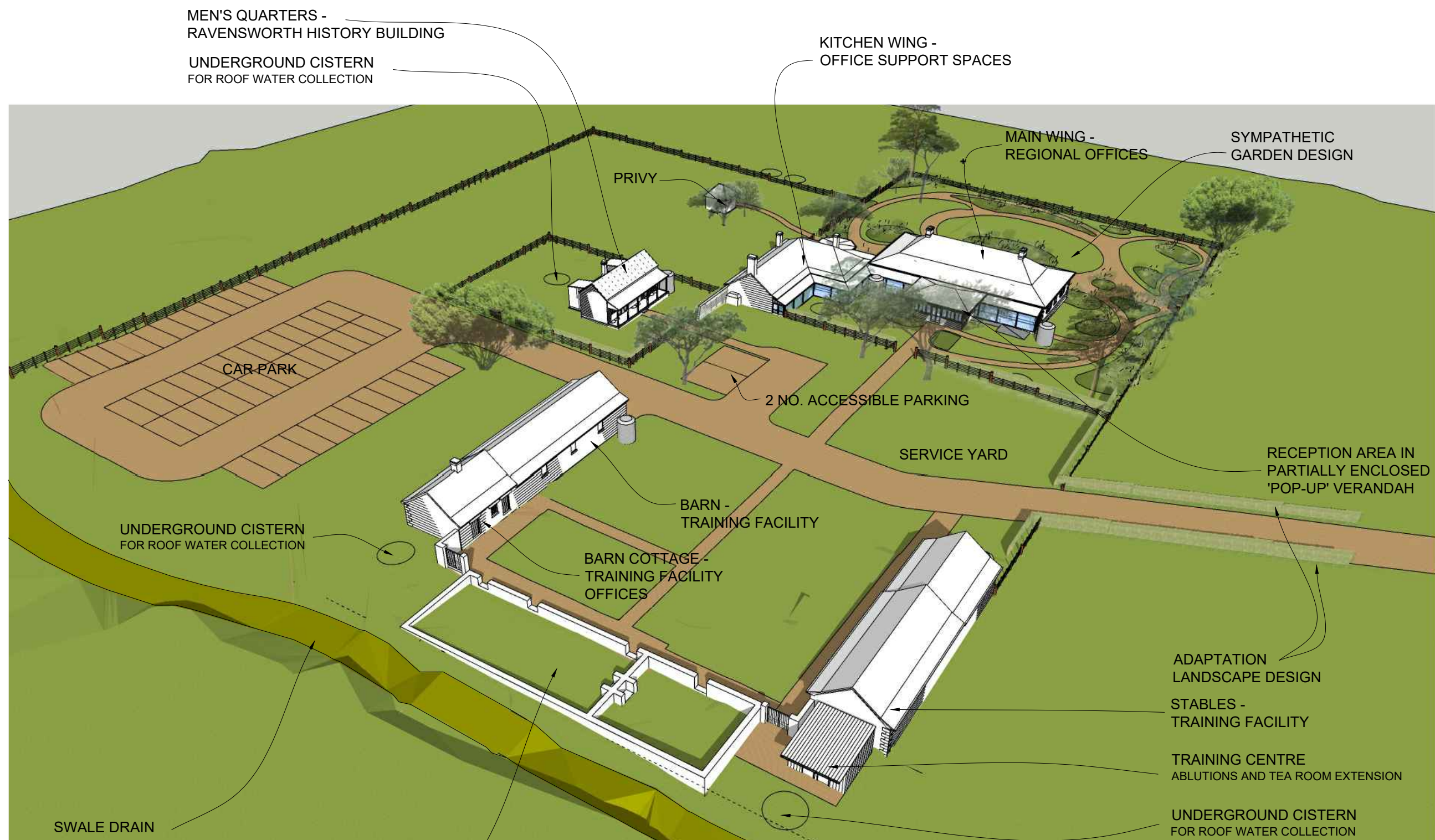
**LUCAS  
STAPLETON  
JOHNSON**

LSJ Heritage Planning & Architecture  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ/EC	Job RAVENSWORTH HOMESTEAD, HEBDEN RD,
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - AERIAL VIEW FROM NE
© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK1113/C

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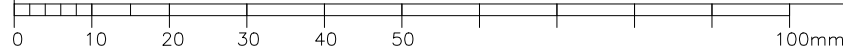




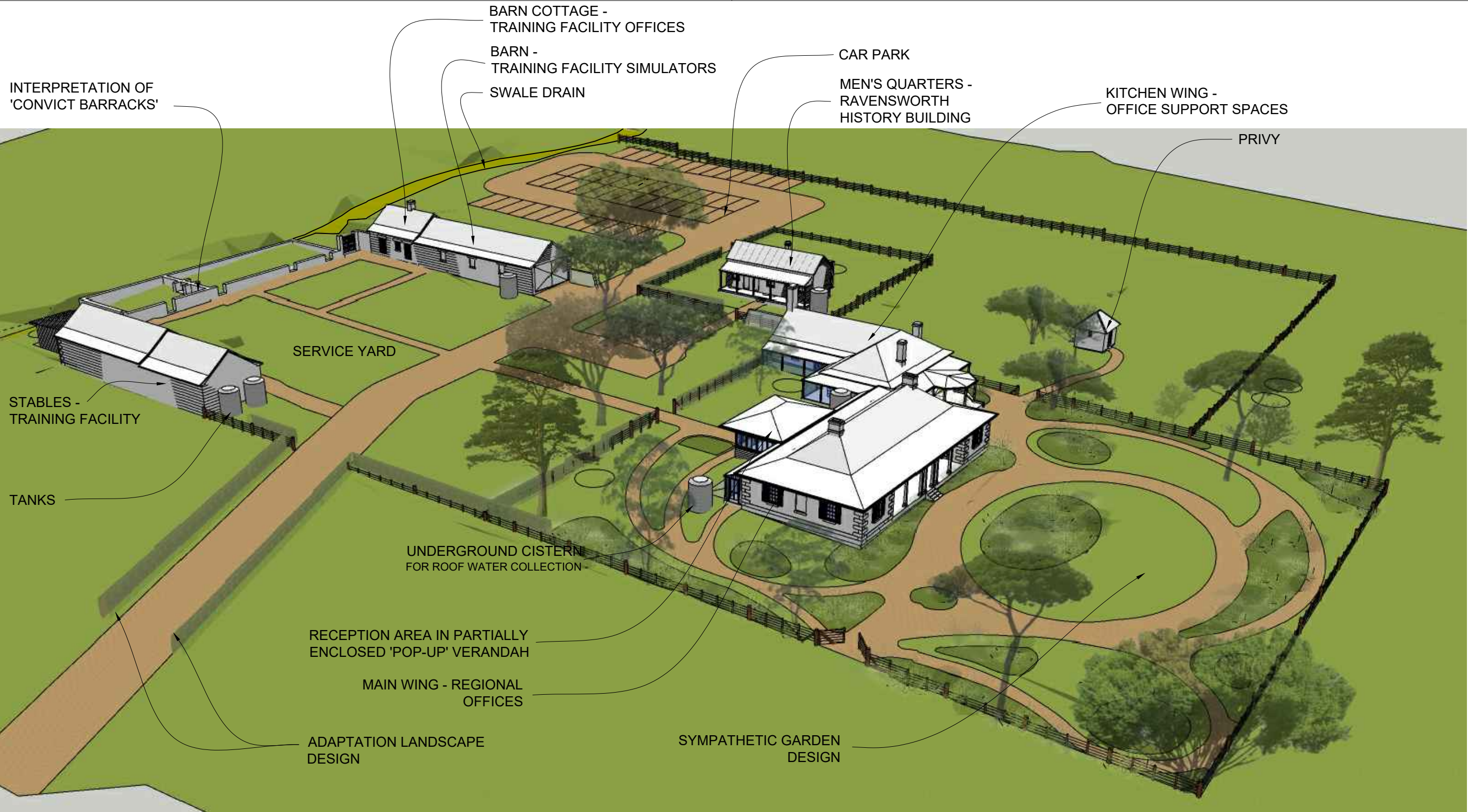
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123800\_SP\_A.SK

18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

<b>LUCAS STAPLETON JOHNSON</b> <b>LSJ Heritage Planning &amp; Architecture</b> ACN 002 584 189 ABN 60 763 960 154 Nominated Architect: Ian Stapleton (reg. 4032) Websites: www.lsjarchitects.com www.traditionalaustralianhouses.com	Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD,
	Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - AERIAL VIEW FROM NORTH
	© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK114 /C







1 AERIAL VIEW FROM WEST  
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18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

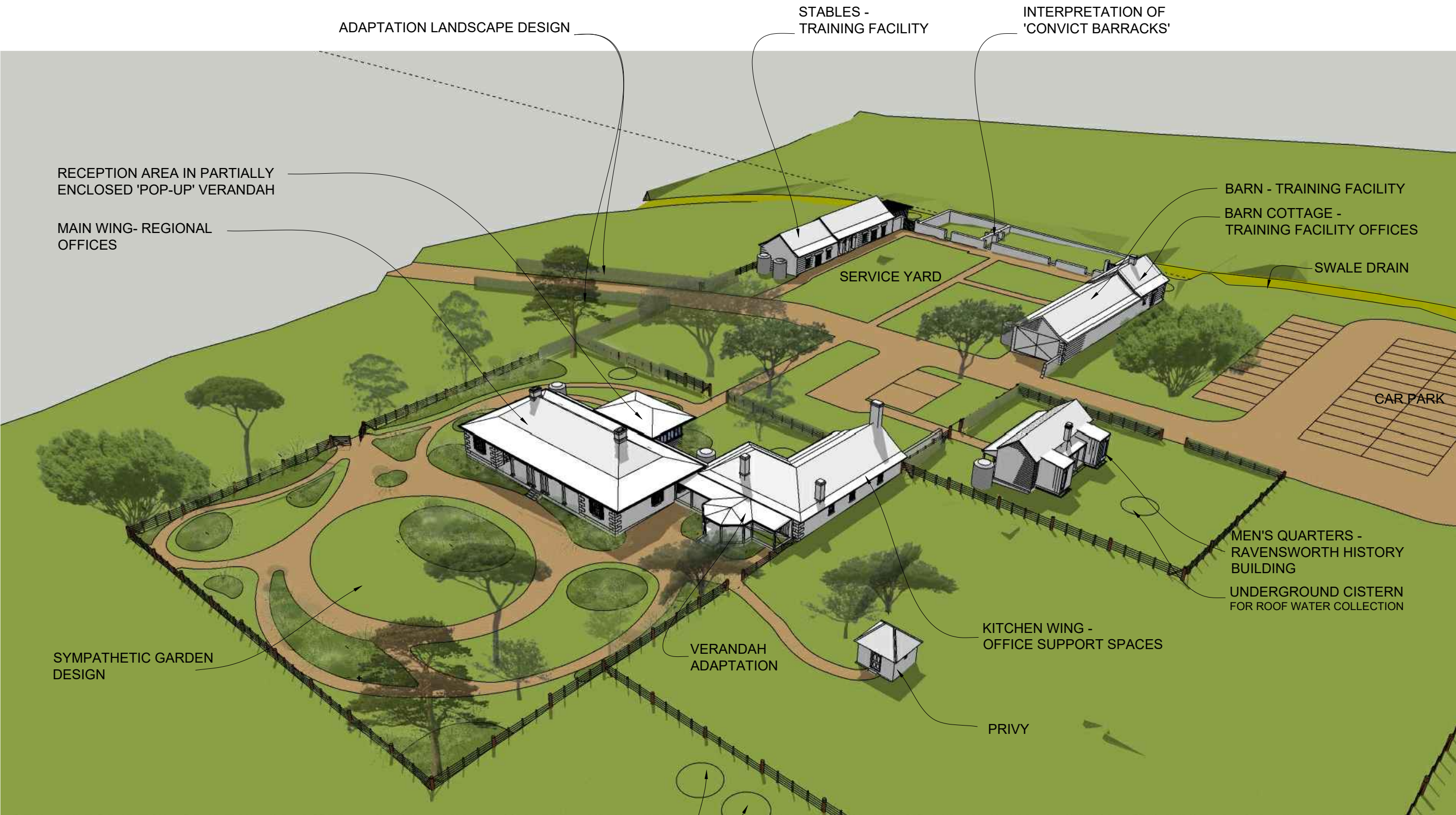
**LUCAS  
STAPLETON  
JOHNSON**

LSJ Heritage Planning & Architecture  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

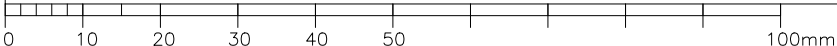
Date 28/05/19	Scale (at A3) NTS	Drawn EC/YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - AERIAL VIEW FROM WEST
© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK115/C

0 10 20 30 40 50 100mm





1 AERIAL VIEW FROM SOUTH  
123800\_SP\_A.SK



18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

TREATED SEPTIC SYSTEM  
'CYCLE-ENVIRO' OR SIMILAR

**LUCAS  
STAPLETON  
JOHNSON**

LSJ Heritage Planning & Architecture  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD,
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - AERIAL VIEW FROM SOUTH
© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK116 /C





VIEW FROM SOUTH WEST - APPROXIMATING  
VIEWPOINT OF 1891 PHOTO (THE BULLETIN)

123800\_SP\_A.SK

18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

**LUCAS  
STAPLETON  
JOHNSON**

LSJ Heritage Planning & Architecture  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - VIEW FROM SW
© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK1117 /C

0 10 20 30 40 50 100mm





VIEW FROM SOUTH EAST - APPROXIMATING  
VIEWPOINT OF 1902 PHOTO (SYDNEY MAIL)

123800\_SP\_A.SK

1  
--

18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

**LUCAS  
STAPLETON  
JOHNSON**

**LSJ Heritage Planning & Architecture**  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: [www.lsjarchitects.com](http://www.lsjarchitects.com)  
[www.traditionalaustralianhouses.com](http://www.traditionalaustralianhouses.com)

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ/EC	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - AERIAL VIEW FROM SE
© Lucas Stapleton Johnson & Partners Pty Ltd Check all dimensions. Figured dimensions to be taken in preference to scale.			Dwg. No. 123800 / SK1118 / C

0 10 20 30 40 50 100mm





1  
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VIEW FROM NORTH-EAST TO KITCHEN WING AND MAIN WING  
123800\_SP\_A.SK

18/10/19	C	CB ADJUSTED
16/08/19	B	AMENDED
12/08/19	A	AMENDED
Date	No.	Amendment

**LUCAS  
STAPLETON  
JOHNSON**

**LSJ Heritage Planning & Architecture**  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - VIEW FROM NE TO KITCHEN WING
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① VIEW FROM NORTH TO RECEPTION AREA, MAIN WING AND KITCHEN WING

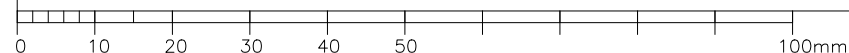
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12/08/19 A AMENDED  
Date No. Amendment

**LUCAS  
STAPLETON  
JOHNSON**

LSJ Heritage Planning & Architecture  
ACN 002 584 189 ABN 60 763 960 154  
Nominated Architect: Ian Stapleton (reg. 4032)  
Websites: www.lsjarchitects.com  
www.traditionalaustralianhouses.com

Date 28/05/19	Scale (at A3) NTS	Drawn YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - VIEW FROM N TO RECEPTION AREA
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CONCEPTUAL VIEW FROM OFFICE RECEPTION / NORTH GARDEN  
TO SERVICE YARD

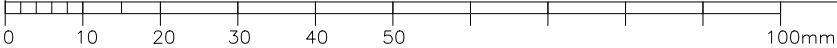
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18/10/19 B CB ADJUSTED  
12/08/19 A AMENDED  
Date No. Amendment

LUCAS  
STAPLETON  
JOHNSON

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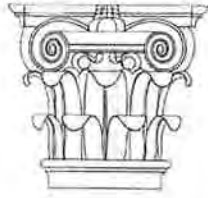
Date 28/05/19	Scale (at A3) NTS	Drawn EC/YC/AJ	Job RAVENSWORTH HOMESTEAD, HEBDEN RD, RAVENSWORTH
Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. ADAPTATION DESIGN FOR RAVENSWORTH FARM SITE - VIEW FROM RECEPTION TO YARD
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## Appendix D

### Preliminary scope of works

# LUCAS STAPLETON JOHNSON



LSJ Heritage Planning & Architecture

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Registered Architect No. 4032 Nominated Architect

Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728

Associates:

Kate Denny, B.A., M.Herit.Cons.

Michael Gunn, B.Des.Stud., B.Arch.  
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## Ravensworth Homestead, Ravensworth, NSW

### SITE 1: HOMESTEAD – MAIN WING – SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

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#### **BEFORE RELOCATION**

- Record and dismantle timber floors and skirting boards for reinstallation.
- Poultrice stone floors and thresholds for six months, record and dismantle for reinstallation.
- Around building, poultrice stone pavings for six months, record and dismantle for reinstallation.
- Record and dismantle elements as scheduled that are supported on floors for reinstallation.
- Prepare structure for relocation including works included on separate engineering schedule.
- Prepare building for relocation in accordance with movers methodology (see separate schedule).
- Record and demolish added structures and spaces to reduce building to configuration shown salvaging for reuse elements listed (see separate schedule). From each room salvage a piece of pressed metal ceiling and cornice to direction of architect. Salvage quoin stones at north-west corner of H2 and north-east corner of H14. Salvage windows and shutters from spaces H2 and H14 for reuse.
- To all ceilings and cornices batten over fixing into ceiling joists and sheet with recessed edge fibreboard minimising ceiling height loss.



## **FOLLOWING RELOCATION**

### **EXTERIORS**

#### **To East, South and West Sides of Roof:**

- Remove skillion vents salvaging slates.
- Restore framing and in conjunction with repairing remainder of slate roofing. Re-slate these areas using salvaged slates.

#### **To South Side of Roof:**

- Remove gable over verandah salvaging slates.
- Restore roof framing and in conjunction with repairing remainder of slate roof. Re-slate this area.

#### **To 2 No. Front Chimneys:**

- Check over and repair render, provide capping.
- Check over lead flashings and repair in lead.

#### **To Northern Slope:**

- (Following removal of Spaces H1A, H2, H3A, H4, H5, H14, H15B and their roofs). Restore roof framing to match that on south side as shown.
- Provide verandah beams and verandah structure to detail.

#### **To Eaves Around House:**

- Remove existing gutters and downpipes.
- Remove sections of fascia board to architect's direction to investigate original fascia board details.
- Allow PC to reconstruct fascia boards as directed.
- Provide new eaves gutters and downpipes as specified at locations as shown.

- Remove existing fibre cement eaves linings.
- Allow to reconstruct 250mm x 19mm beaded T&G soffit boards with storm mould at inner and outer edges.

To West Elevation:

- Repoint joints to ashlar stone walls as specified.
- To base course rake out loose and non-matching cement and lime joints and repoint in material agreed with architect.

To South Elevation:

- Repoint stone ashlar stone work as specified.
- To stone subfloor walls repoint as for west elevation.
- At west end reface no 1 stone where badly decayed using selected salvaged stone.
- At east end carry out plastic repair as specified to several stones where cracked or corners broken.
- At back of verandah replace 2 no. terracotta sub-floor vents with cast iron vents to detail.
- Reinstall front verandah paving, verandah edge margin and verandah sub-floor wall using salvaged material. Allow PC scheduled to make up paving using selected salvaged stone where original stone is too decayed to use.
- Reinstall 4 no. sandstone step treads at centre after repair and stabilisation.
- Reinstall 6 off salvaged verandah column bases after stabilisation and reconstruct tapered timber verandah columns to detail (including timber base and capital mouldings).
- To verandah soffit remove pressed metal lining and battens, check over and repair ceiling framing. Allow PC scheduled to repair same if needed. Provide new lath and plaster finish as specified, set square with walls.
- At Doors D1, D2 and D8 reinstall salvaged thresholds.

To East Elevation:

- To ashlar stone, point up joints as specified.
- Include to repoint non-matching mortar below windows in lime.
- To sub-floor walls at south end and the continuation of the base course at north end repoint as for west elevation.

To North Elevation:

- Following removal of Spaces H1A, H2, H14, experiment with removing paint to south wall of H15B. Allow PC scheduled to carry out same as directed.
- Allow to point up joints as specified.
- As part of roofing work, restore eaves on south side of H15B and H5 to match that at south side of house. In association with removing rear rooms, expose, preserve and clean down quoins at north-west corner of Space H13.
- Following removal of Spaces H1A, H2, H14, remove plaster/render from south walls exposing original face stonework.
- Allow PC scheduled to deal with as directed any sparrow pecking that has been carried out to these walls.
- Allow to reconstruct raised stone base course to these walls to match that on front verandah, as an indent facing to the existing stone walls.
- Install salvaged windows and shutters to recesses in north walls of Spaces H8 and H9.
- At Space H3B, west and south walls are intact to original configuration.
- Following removal of Spaces H1A, H2, H14, reconstruct verandah framing and soffit lining in lath and plaster to detail and to match new ceiling of front verandah.
- Reconstruct 4 off timber verandah columns to detail.
- At Space H3B and Space H5 experiment with removing paint coats as above.
- Allow PC scheduled to remove paint coats if so directed.
- Reinstall original salvaged paving at Space H3B. Repave remainder of reconstructed verandah pavings using salvaged stone.
- Provide stone paving including margin stone to outer verandah reusing salvaged stone including that presently at Space H3A and along rear verandah.

- Allow PC scheduled to supply new stone pavings where salvaged paving is insufficient.
- At Doors D11, D12A, D17, reinstall salvaged thresholds.

## INTERIORS

### To All Spaces (other than spaces demolished)

- Reinstall salvaged floors (timber in all rooms except Space H1B where reinstall salvaged stone paving) including stone thresholds to Doors D9, D10 and D11.
- To all fireplaces reinstall salvaged hearth stones and brickwork. To all fireplaces reinstall salvaged outer hearth stones all supported on new subfloor walls.
- Reinstall salvaged skirting boards making up missing and broken pieces as needed.
- Check over all wall plaster work and make good in three coat lime work.
- Allow PC scheduled to replaster any drummy areas directed by architect.
- Install injected DPC as specified to all old brick and stone walls prior to refixing of skirtings. On outside carefully fill drill holes with plastic stone mix approved by architect.

### To All Ceilings:

- Provide set coat over entire ceilings, set square with walls.
- Provide access holes to roof space in location shown as shown and to detail.

### Other Works:

- In Space H15B reinstall salvaged flagstones including margins to form floor of new verandahs.
- Outside H6 and H13 reconstruct link verandahs to detail.



## **ADAPTATION WORKS**

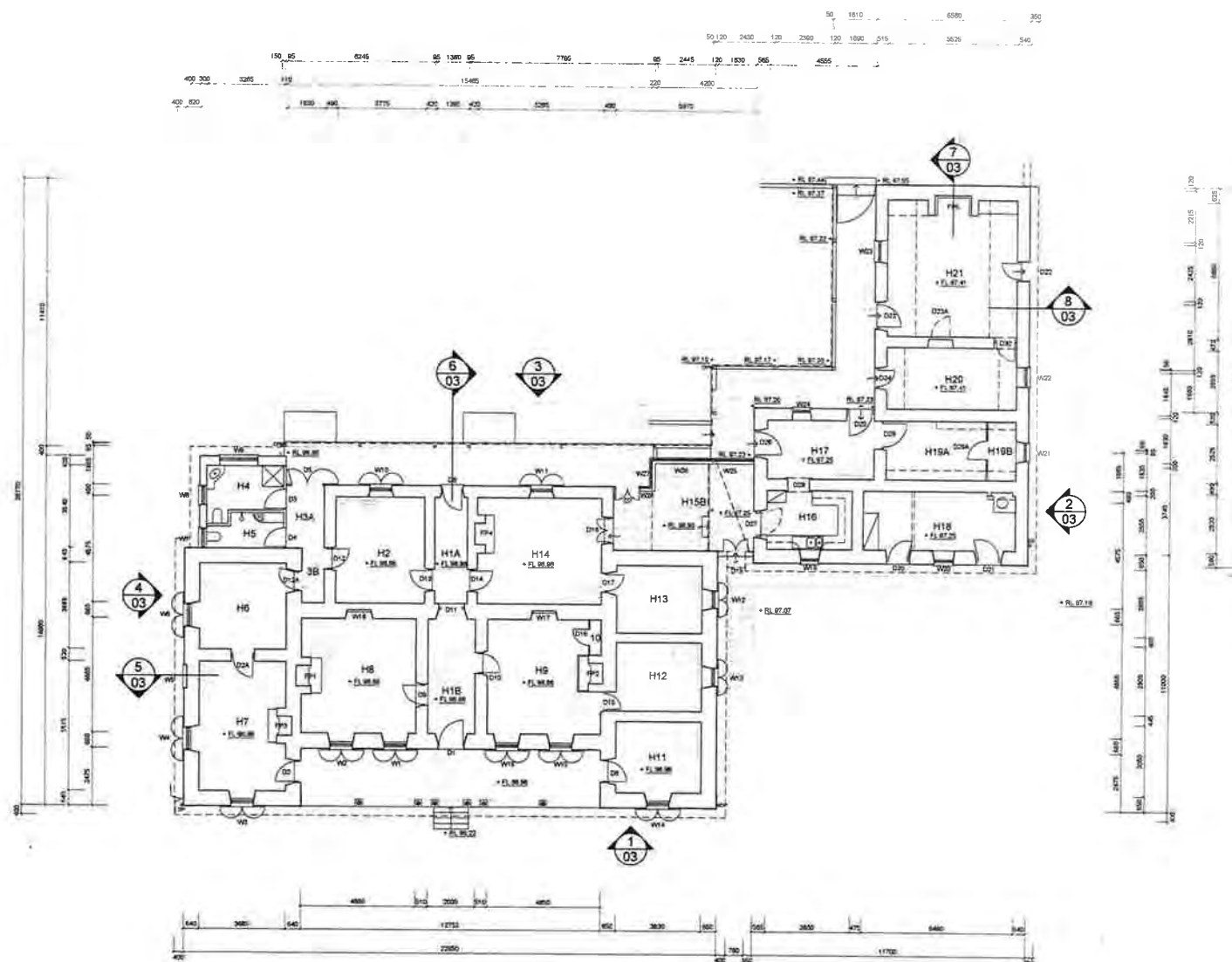
- Provide adaptation works as shown, scheduled and specified separately.

A handwritten signature in black ink, appearing to read 'Ian Stapleton', with a stylized flourish at the end.

Ian Stapleton

Lucas Stapleton Johnson & Partners Pty Ltd

LSJ Heritage Planning & Architecture



1 HOMESTEAD MAIN & KIT. WINGS FLOOR PLAN  
Scale 1:100 123800tp.dwg

PRELIMINARY

25-10-18 8 Revision  
Date No. Revision  
Amendment

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

for  
MT OWEN PTY LTD

Dwg  
HOMESTEAD MAIN & KIT. WINGS  
DIMENSIONED FLOOR PLAN

LUCAS  
STAPLETON  
JOHNSON

LSJ Heritage Planning & Architecture

ACN 002 584 189 ABN 60 763 960 15-  
Name: Ian Stapleton

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Suite 101, 191 Clarence Street, Sydney NSW 2000

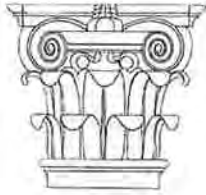
Telephone: (02) 9357 4811  
Email: mail@lsjarchitecture.com.au

Date 05/09/18 Drawn YC Checked MG

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Figured dimensions to be  
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1:100  
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Johnson & Partners Pty Ltd

Dwg No  
123800 /02 /B

# LUCAS STAPLETON JOHNSON



Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law. F.R.A.I.A.  
Registered Architect No. 4032 Nominated Architect  
Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728

**Associates:**  
Kate Denny, B.A., M.Herit.Cons.  
Michael Gunn, B.Des.Stud., B.Arch.  
Registered Architect No.9913

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### Ravensthorpe Homestead, Ravensthorpe, NSW

#### SITE 1: HOMESTEAD - KITCHEN WING - SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

---

#### **BEFORE RELOCATION**

- To western verandah, carefully record and dismantle for reuse retaining 3 no. original verandah posts, verandah roof plate, rafters. Poulitice for 6 months, record and take up verandah flagstones.
- To doors poulitice for 6 months and carefully salvage sandstone thresholds for reuse.
- Within building to each room remove sheet flooring, toppings etc in discussion with architect to determine which rooms retain sandstone flagging.
- Poulitice for six months, carefully record and take up flagstone for reuse.
- In Space H20 take up timber flooring. Following the ok from architect, remove timber floor framing, salvaging any sound, original joisting.
- In Space H21 take up flooring in sheets carefully so that flooring can be reused. Following ok from architect, remove timber floor joists, salvaging any sound original joisting.
- Along the north side H21, poulitice for six months and salvage stone flagging on either side of chimney breast for reuse. Remove section of topping to determine if any flagging exists beneath, if so poulitice for 6 months, record and salvage flagging for reuse.
- To fireplaces record configuration of hearths then carefully dismantle materials ready for reuse.
- In Space H18 carefully salvage cupboard for reuse.
- In Space H19B record and dismantle meat safe enclosure ready for reuse.
- In Space H19A and H19B retain pantry shelving in-situ (supported from walls).
- In Spaces H18 record and dismantle old brickwork laundry copper base, salvage materials ready for reuse.
- In Space H16 carefully demolish existing kitchen fit-out (not to be reused), looking for evidence of former chimney breast on east wall.

- To interiors provide ceilings as follows:
  - ° To Spaces H17, H18, H20, H21, take down existing linings and fix new ceilings as for MAIN WING.
  - ° To Spaces H16 and H19 retain existing (recent) ceiling linings.
- Remove existing roofing to main roof and verandahs including accessories.
- Retain lead flashings (if any) at chimneys.
- Work over roof framing and battening, repairing as needed, including works documented by structural engineer.
- Provide new corrugated galvanised steel roofing with screw fixings including traditional hip and ridge flashings. Repair/replace flashings in lead at chimneys.
- Provide new barge board and barge flashing along northern side to detail.
- Record and take down 2 no. chimneys, salvaging materials for reuse.
- Prepare structure for relocation including works included on separate engineering schedule.
- Prepare building for relocation in accordance with movers methodology (see separate schedule).

## **FOLLOW RELOCATION**

### **EXTERIOR**

- Reconstruct 2 no. chimneys to original design in new stonework. Allow PC to further repair and repair flashings as directed. Provide additional chimney and flashings over Space H16 to detail.
- At eaves remove existing quadrant gutter, remove sections of fascia boards for architect's inspection to determine original fascia board details, allow to refix existing fascia boards, repairing as needed.
- Allow PC as scheduled to replace fascia boards as directed.
- To eave soffit on east, south and west side, provide 200mm x 19mm beaded T&G lining boards, pack down as needed to be level. Provide storm mould at wall and behind lip of fascia.
- Work over all external walls and repoint as specified.
- To subfloor walls extending above ground level, rake out and repoint non-matching and cement joints to approve sample. To raised base course on south side prepare and repair in artificial stone as specified to sample approved by architect.
- To base course on west side and north side H17, prepare and coat with lime poultice. Remove after 6 months.



- To wall panel on west side H16 and H17, presently inside, experiment with removing paint. Allow PC scheduled to remove paint if so directed. Prepare and poultrice base course.
- Along west side and north side H17, reconstruct verandah structure using salvaged materials and making up in new materials to match existing to detail. Provide new roofing battens and new galvanised corrugated steel roofing and traditional accessories.
- At north end provide barge board to detail. Relay salvaged verandah paving as specified. At northern end provide 2 no. broad sandstone steps approximately 450mm wide x 180mm high using salvaged materials.
- Allow PC scheduled to provide new stone if salvaged is insufficient.
- At north-east corner H21 construct stone bread oven to detail.

## INTERIOR

To all floors, relay salvaged stone paving as scheduled below. Allow PC to provide additional paving if so directed.

### Space H16

Ceiling	As for Space H19A. Provide access hole <u>to detail</u> .
Cornice	-
Walls	Work over walls and point up open joints as needed (minimal). From floor to 600mm above allow to remove cement coatings and lime poultrice render patch if so directed. Install injected DPC <u>as spec</u> to all walls.
Floor	Allow to lay salvaged stone flagging <u>as specified</u> .
Other	Allow to reconstruct chimney piece and mantel shelf on east wall similar to that in Space H18 <u>to detail</u> after evidence of original has been assessed.

### Space H19

#### A & B

Ceiling	Take down existing sheeting, provide new battens fixed into ceiling joists and fibre cement linings and set over whole ceiling, set square at walls. Provide access hole <u>to detail</u> .
Cornice	-
Walls	Generally as for Space H21. On north side provide additional shelf to match existing details of existing where supports have been cut off about 1100mm from ground.
Skirting	-
Floor	Reinstate salvaged stone floor
Other	Preserve existing built-in pantry shelving in discussion with architect Reinstate meat safe room partition and linings repairing missing and broken members as needed to match existing.

### Space H17

Ceiling	Set over whole ceiling, set square with walls. Provide access hole <u>to detail</u> .
Cornice	As for Space H19
Walls	As for Space H21
Skirting	-

Floor Reinstall salvaged stone flagging.  
At (recent) Door D28 allow PC scheduled to finish floor as directed.

### **Space H18**

Ceiling As for H17, set square with walls. Provide access hole to detail.  
Cornice -  
Walls Generally as for Space H21.  
Skirting -  
Floor Reinstall stone paving as specified.  
Other Provide mantel shelf to detail.  
Provide 2 no. hardwood framed partitions running north to south in location shown with lath and plaster wall finishes on both sides – provide 170mm x 25mm beaded skirting boards to these walls.

### **Space H20**

Ceiling As for Space H17. Provide access hole to detail.  
Cornice -  
Walls As for Space H21.  
Skirting As for Space H21.  
Floor Allow to provide new stone flagged floor to detail.  
Reinstall threshold at Door D24.

### **Space H21**

#### **Kitchen**

Ceiling As for H17. Provide access hole to detail.  
Cornice -  
Walls Adjust openings as shown.  
Remove shelving either side of fire place and make good at fixings.  
At north-east corner restore bread oven opening to detail. Provide and fix pair of salvaged grudgeons.  
Hang bread oven door TBS.  
Check over existing painted face stone walls.  
Point up any openings or cracks ready for paint finish. Remove cement render to lower walls. Install injected DPC to all walls. Poulitice lower walls in lime plaster with 200mm high raised skirting.  
Floor Reinstall salvaged flagging to floor making up new flagging as shown (80% of area to be new stone).  
Other Reinstall salvaged inner hearth and hob materials from fireplace.  
Point up inside of fireplace to architect's direction and limewash out,  
At Door D23 provide new stone threshold at level of underside of door frame similar in detail to that at Door D24.

## **SCHEDULE OF WINDOWS & DOORS**

To all doors and windows make minor repairs, get moving parts working and fit new hardware as scheduled.

**Window W19** Retain frame.  
Reconstruct sashes to detail.

<b>Window W20</b>	Existing frame. New window sashes <u>to detail</u> .
<b>Window W21</b>	Existing frame. Reconstruct bottom sash <u>to detail</u> .
<b>Window W23</b>	Existing frame repaired. New sashes <u>to detail</u> .
<b>Window W24</b>	Existing frame. Existing sashes.
<b>Door D20</b>	Existing frame. Existing door leaf.
<b>Door D21</b>	Existing frame. Existing door leaf.
<b>Door D22</b>	Block up existing door opening to restore window. Reconstruct window, new frame, new sashes all <u>to detail</u> .
<b>Door D23</b>	Existing frame. Existing door leaf.
<b>Door D23A</b>	Reconstruct doorway, new door frame and new door leaf similar to details of D30.
<b>Door D24</b>	Salvage existing frame and door leaf. Reconstruct window opening <u>to detail</u> . New window frame and sashes <u>to detail</u> .
<b>Door D25</b>	Existing frame. Existing door leaf.
<b>Door D26</b>	Existing frame. Existing door leaf.
<b>Door D27</b>	Retain frame. Reconstruct door leaf to match <u>details of</u> Door D26.
<b>Door D29</b>	New frame <u>to detail</u> . Reconstruct door leaf <u>to detail</u> .
<b>Door D30</b>	Dismantle, repair and refix existing frame. Existing door leaf reused.

## **ADAPTATION WORKS**

Provide adaptation works as shown, scheduled and specified separately.

A handwritten signature in black ink, appearing to read 'Ian', followed by a long, sweeping diagonal stroke.

Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture





# LUCAS STAPLETON JOHNSON



Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law. F.R.A.I.A.  
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## Ravensthorpe Homestead, Ravensthorpe, NSW

### SITE 1: HOMESTEAD – BARN – SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

#### **BEFORE RELOCATION**

- Record and dismantle partitions and posts supported on floors for possible reuse.
- Poulitice stone floors and thresholds for six months. Record and dismantle for reinstallation.
- Prepare structure for relocation including works noted on separate engineering schedule. Work to include stabilizing badly deformed walls at north elevation and walls adjacent WB2 and DB6 on west side.
- Record and dismantle 1 no. chimney, salvaging materials for reuse.
- Prepare building for relocation in accordance with movers methodology (see separate schedule).
- Record and demolish added structures (including lean-to Space S4) to reduce building to configuration shown.
- Record and dismantle remains of water tank stand for possible reuse/interpretation.

#### **FOLLOWING RELOCATION**

##### **EXTERIOR**

##### **To Roof**

- Retain surviving shingle battens and shingles presently under roofing.
- Check over roofing and upgrade fixings with galvanised screws to match existing. Replace recent long length Zincalume roof patching with short length traditional profile second hand galvanised sheeting to match existing to architect's approval.

- Replace any deformed or heavily corroded galvanised sheets with matching galvanised material. Allow for 30% replacement.
- Replace corrugated fibreglass skylights with new skylight assemblies to detail.
- Remove recent folded Zincalume barge flashing and oversized barge boards. Reinstall barge boards to detail.
- Replace unscribed rolltop ridge capping with scribed galvanised ridge cap to detail.
- Make good and repair loose chimney flashing.
- Allow PC as scheduled to make good stepped apron flashing between higher and lower roofs. Retain existing flashing where sound.
- Remove recent Zincalume quad gutters and fascia brackets.
- Inspect fascia trimmer for deformities, wet rot, etc. Allow PC at scheduled to repair and replace as directed, reinstating through-tenon fixing to outriggers.
- Allow PC as scheduled to provide replacement galvanised gutters and spike fixings, droppers and dps, etc as directed.
- Following detailed investigation of eaves, provide eaves soffit boarding. Allow for single timber planking with storm mould at inner and outer edges.

#### To All Walls:

- Work over all walls and repoint as needed as specified.
- Remove pointing of non-matching colour and all cement mortar and repoint in matching mortar as specified.
- Install injected DPC to base of all external and internal walls that will be below ground level in finished work. Poultice all walls in lime plaster in bottom 600mm and remove after six months.

#### To South Wall

- Remove plaster/render from end of west wall. Make good stonework behind.
- Check galvanised corrugated gable cladding. Replace any deformed or heavily corroded galvanised sheets with matching second-hand galvanised material approved by architect. Allow for 10% replacement.

To East Wall (stabilised before building relocated)

- Reconstruct wall at door opening DB3. Make good adjoining stonework in matching material as shown.
- Reface split stone lintel to window WB1 in matching material.

To North Wall (stabilised before building relocation)

- Remove concrete infill in wall and reface in stone matching best adjacent work.
- Reconstruct missing infill stonework where wall plate is housed at external corners.

To West Wall (part stabilised adjacent WB2 and DB6 before building relocation)

- Reconstruct early door opening at door DB5 with lintel to match door DB6.
- Reconstruct blind window at door DB2 to match others. Window sill and recessed infill stonework details to match adjoining blind windows.

**INTERIOR**To All Spaces

- Work all over stone walls and repoint as needed as specified in lime mortar.
- Poultice all walls at lower level and remove after six months.
- Reinstall salvaged flagstones and thresholds.

Space B1Space B1: East Wall

- Allow to relay loose stones in lime mortar. Allow for 12 no.
- Remove stone steps and threshold a doorway DB3 and reconstruct stone wall to match adjoining material. Key-in and lay in lime mortar.

Space B1: North Wall

- Allow to realign 6 no. courses at east end where movement has occurred.

Space B1: West Wall

- Reconstruct wall at door opening DB2 (blind window externally/wall internally).



### Space B1: Door B1

- Repair deformed galvanised steel frame and cladding, reinstate galvanised steel compatible cladding fixings.
- Timber support posts for gates to be refounded in galvanised steel T-Blade stirrups set in below ground footings and set clear of ground for drainage to detail.

### Space B2

#### Space B2: Generally

- Allow to remove limewash and paint from all walls.
- Make good infill stonework at junction to roof framing.

#### Space B2: East Wall

- Make good reveal to WB1.

#### Space B2: Window WB1

- Existing frame.
- Remove existing two light gauze casement sash.
- Provide 6-pane in-swinging casement sash and hardware to detail.

#### Space B2: North Wall

- Allow to reconstruct chimney piece and mantel shelf to detail after evidence of original has been assessed.

#### Space B2: West Wall

- Make good reveals to door DB6 and window WB2.

#### Space B2: Door DB6

- Existing frame.
- Reinstall beaded ledged door to match Stables door DS2. Provide 'T' hinges and bolt to detail.

#### Space B2: Window WB2

- Existing frame.
- As for window WB1.

Space B3Space B3: Generally

- As for Space B2.

Space B3: East Wall

- Make good reveal to door DB4.

Space B3: Door DB4

- Provide new solid frame to match details of DB6 to detail.
- Remove weatherboard door. Reinstall beaded T&G ledged door to match Stables door DS2. Provide 'T' hinges and bolt to detail.

Space B3: North Wall

- Stabilise as called up on separate engineering schedule.

Space B3: West Wall

- Remove gate DB5. Reconstruct stone wall along this side to match best adjacent including door threshold and lintel to form early door opening to match details of door DB6.
- Provide door frame and ledged door and hardware to match details of that scheduled for DB6.

**GENERALLY**

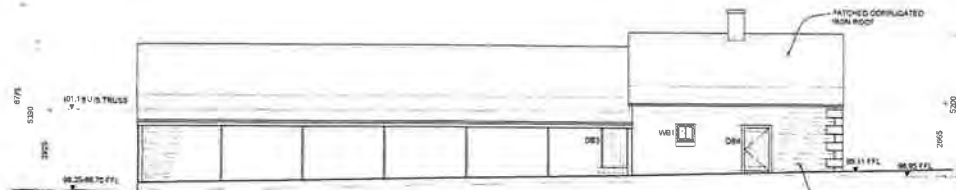
- Allow to prepare and paint all previously painted external surfaces and all external surfaces normally painted.
- Install termite treatment system agreed with architect.
- Provide electrical and hydraulic services to separate schedule.

**ADAPTATION WORK**

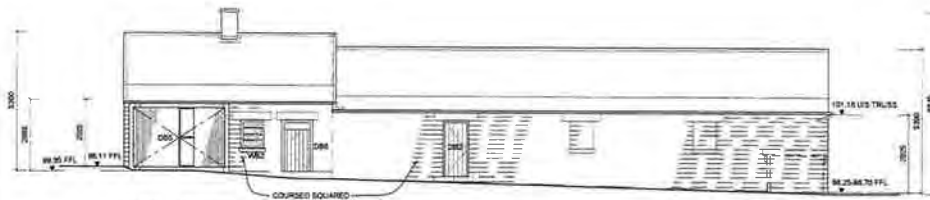
- Provide alterations and additions to separate schedule of works, specification and drawings.



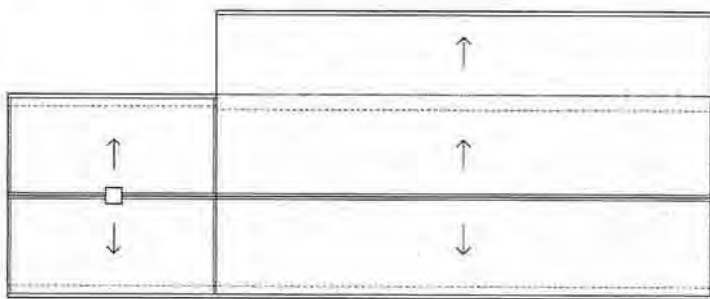
Ian Stapleton & Michael Gunn  
 Lucas Stapleton Johnson & Partners Pty Ltd  
 LSJ Heritage Planning & Architecture



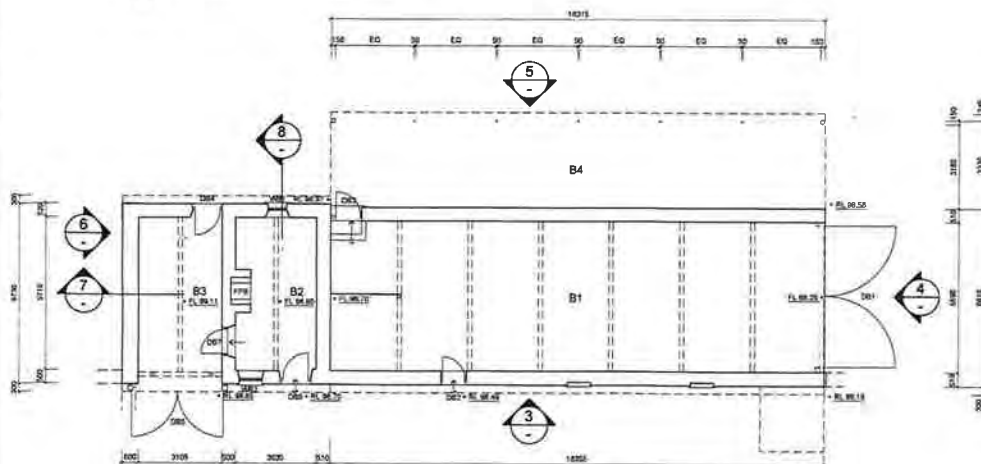
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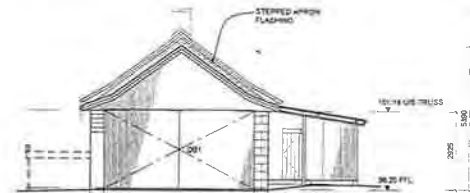
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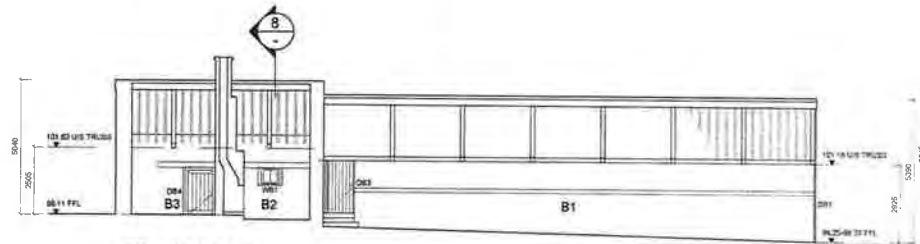
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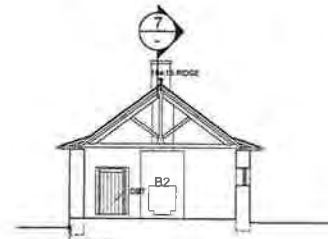
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4 SOUTH ELEVATION  
Scale 1:100 123800el.dwg



7 SECTION  
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8 SECTION  
Scale 1:100 123800sec.dwg

PRELIMINARY

26/03/18 18/03/18  
Date Revision  
A No Amendment

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

By  
MT OWEN PTY LTD

Dwg  
BARN -  
FLOOR & ROOF PLANS,  
ELEVATIONS & SECTIONS

LUCAS  
STAPLETON  
JOHNSON

LSJ Heritage Planning & Architecture

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Nominated Architect Ian Stapleton

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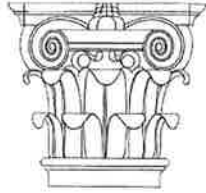
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Date Drawn Checked  
05/09/18 YC MG

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Figured dimensions to be  
taken in preference to scale  
1:100  
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Johnson & Partners Pty Ltd

Dwg No  
123800 / 05 / B

# LUCAS STAPLETON JOHNSON



LSJ Heritage Planning & Architecture

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Registered Architect No. 4032 Nominated Architect

Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728

*Associates:*  
Kate Denny, B.A., M.Herit.Cons.  
Michael Gunn, B.Des.Stud., B.Arch.  
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## Ravensworth Homestead, Ravensworth, NSW

### SITE 1: HOMESTEAD - MEN'S QUARTERS – SCOPE OF WORK

DRAFT

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

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#### **BEFORE RELOCATION**

- Demolish added structures (including rear lean-tos and infilled front verandah) to reduce building to configuration shown salvaging for reuse elements listed (see separate schedule).
- Prepare building for relocation in accordance with movers methodology (see separate schedule).
- Record and dismantle 1 no. chimney, salvaging materials for reuse.
- Prepare structure for relocation including works included on separate engineering schedule.

#### **FOLLOWING RELOCATION**

Note: See sketch plans for new configuration.

#### **EXTERIOR**

##### To Roof

- Reconstruct 1 no. brick chimney to original design. Allow PC scheduled to repair flashings in lead as directed.
- Retain existing galvanised steel roofing including to west verandah including integral barge rolls and roll top ridge flashing. Check over and upgrade fixings with galvanised screws.
- Provide galvanised gutter to main and verandah roofs to detail with galvanised d.p. and spreaders to verandah roof and galvanised dps to east wall turned out at base to discharge roof water clear of sub-floor.



To West Wall

- Reconstruct wall openings as shown and reinstate timber cladding to match existing profile.
- Provide new west verandah floor framing in hardwood and T&G boarding to detail.
- Reconstruct 5 no. 100mm x 100mm chamfered hardwood verandah posts.
- Check over verandah roof framing including verandah beams and rafters.
- Allow PC to repair/replace same as directed.

To South Wall

- Allow PC to repair wet rot in timber gable cladding as directed to match existing.
- Reconstruct verandah end infill panel to match north end in T&G vertical beaded boarding.

To East Wall

- Reconstruct wall at door DQ8 and elsewhere where timber cladding has been removed in matching profile. Allow for stop trims at external corners to match north-west corner.

To Sub-Floor

- Check over floor framing for defects. Allow to take up and relay flooring as needed to do this.
- Allow PC scheduled for framing repairs if so directed.
- Provide 2 no. sets of stonework front steps using salvaged material to detail.

**INTERIOR****Space 2A**

Ceiling	Retain existing varnished beaded T&G boarding.
Cornice	Existing 50mm scotia (painted).
Walls	Remove existing plasterboard linings and replace with 175mm x 19mm beaded T&G boarding painted finish. Preserve 2 no. wall vents on east wall.
Skirting	New 175mm moulded timber <u>to detail</u> .
Floor	Existing 150mm x 25mm shot boards.
Other	Reinstate walls and openings <u>as shown</u> .

**Space 2B**

Ceiling	As for Space 2A
Cornice	As for Space 2A
Walls	As for Space 2A

Skirting	As for Space 2A
Floor	As for Space 2A
Other	Reconstruct walls <u>as shown</u> .
Fireplace	Investigate fixing vertical position of existing chimneypiece. Allow PC schedule to refix and reconstruct bases to chimney piece pilasters if so directed. Salvage iron and brass fender for reuse in house. Demolish section of paving to hearth to establish that original hearth is at floor level. Allow to complete demolition of brick work hearth if so directed. Clean off and prepare hearth for paint finish. To fireplace remove inner hearth, construct new brick inner hearth <u>to detail</u> . To inside of fireplace check over, point up cracks in lime mortar and limewash out.

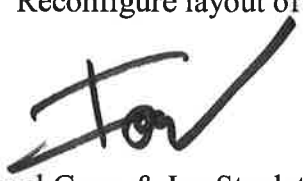
<b>Space 3</b>	Generally as for Space 2A.
<b>Window WQ8</b>	
Sashes	Existing sashes
Frame	Remove shutters and make good

## GENERALLY

- Allow to prepare and paint all previously painted external surfaces and all new surfaces normally painted.
- Install termite treatment system agreed with architect.
- Provide electrical and hydraulic services to separate schedule.

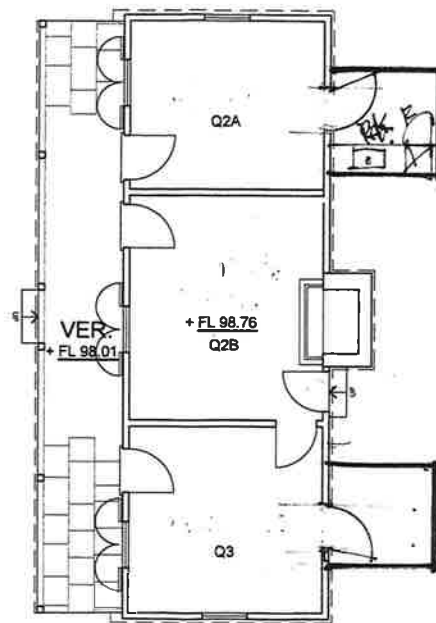
## ADAPTATION WORK

- Provide alterations and additions to separate schedule of works, specification and drawings.
- Reconfigure layout of building and as shown.



Michael Gunn & Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture

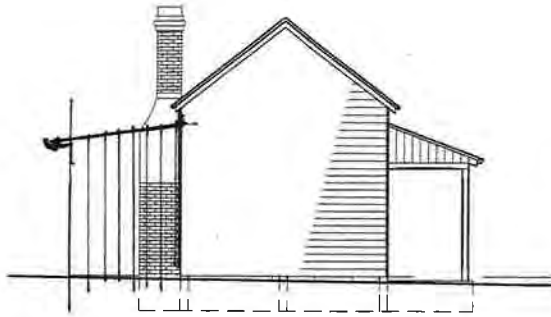




tea room

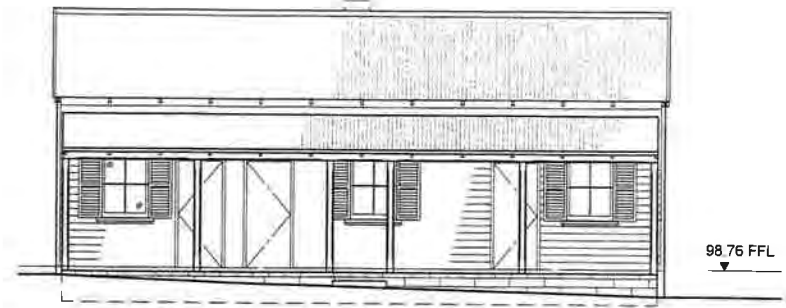
unisex  
WC





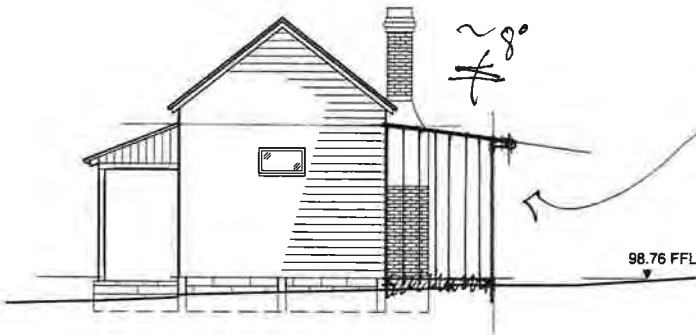
98.76 FFL

2 MEN'S QUARTERS - NORTH ELEVATION  
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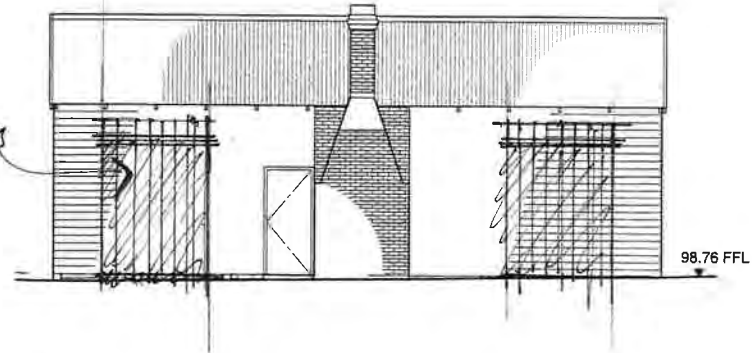
98.76 FFL

3 MEN'S QUARTERS - WEST ELEVATION  
Scale 1:100 123800el.dwg



98.76 FFL

4 MEN'S QUARTERS - SOUTH ELEVATION  
Scale 1:100 123800el.dwg



98.76 FFL

5 MEN'S QUARTERS - EAST ELEVATION  
Scale 1:100 123800el.dwg

# LUCAS STAPLETON JOHNSON



Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law. F.R.A.I.A.  
Registered Architect No. 4032 Nominated Architect

Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728

**Associates:**

Kate Denny, B.A., M.Herit.Cons.

Michael Gunn, B.Des.Stud., B.Arch.  
Registered Architect No.9913

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ACN: 002 584 189 ABN: 60 763 960 154 Websites: www.lsjarchitects.com www.traditionalaustralianhouses.com

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## Ravensworth Homestead, Ravensworth, NSW

### SITE 1: HOMESTEAD - PRIVY BUILDING - SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

#### **BEFORE RELOCATION**

- Carefully take up stone floor paving, threshold and timber platform. To thunder box, carefully record and dismantle for reuse.
- Inspect lintel below in north wall and report. Allow PC scheduled to replace if so directed.
- Prepare structure for relocation including works included on separate engineering schedule.
- Prepare building for relocation in accordance with movers methodology (see separate schedule).

#### **FOLLOWING RELOCATION**

##### **EXTERIOR**

- Remove existing roof sheeting. Check over framing and battening.
- Provide new galvanised corrugated steel roofing fixed with screws including traditional hip and ridge flashings. Project roofing well beyond walls to throw off water.
- To walls, check over walls and point up joints, cracks and openings as specified. Carefully remove non-matching coloured mortar and point up with mortar colour approved by architect.
- To windows, preserve existing frames and louvred sashes.
- To door, preserve existing frame. Allow to provide new door leaf and hardware to detail.

**INTERIOR**

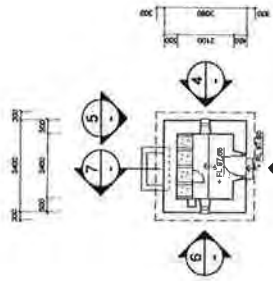
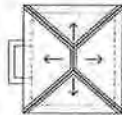
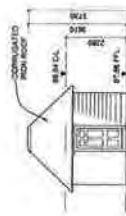
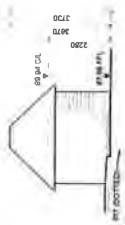
- Following relocation of building, reinstall paving, flooring and thunderbox using salvaged material.
- To walls, retain existing lime plaster. Preserve plastering to reveals of 2 no. window openings. Allow PC scheduled to replaster as directed.
- To ceiling, retain existing lime plaster finish. Allow PC scheduled to replaster as directed.

**ADAPTATION WORKS**

- Provide adaptation works as shown, scheduled and specified separately.



Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture



**PRELIMINARY**

Date	No	Amendment
<b>File</b>	<b>RAVENSWORTH HOMESTEAD</b> <b>HEDDEN ROAD, RAVENSWORTH</b>	
for	<b>MIT OWEN PTY LTD</b>	
<b>Dwg</b>	<b>PRIVY -</b> <b>FLOOR &amp; ROOF PLANS,</b> <b>ELEVATIONS &amp; SECTIONS</b>	
		
<b>LUCAS</b> <b>STAPLETON</b> <b>JOHNSON</b>		
<b>LST Heritage Planning &amp; Architecture</b>		
<b>ACN 061 544 118</b>		
<b>ABN 66 761 591 154</b>		
<b>Notified Architect</b>		
<b>Lucas Stapleton Johnson &amp; Partners Pty Ltd</b>		
<b>Suite 101, 191 Clarence Street, Sydney NSW 2000</b>		
<b>Telephone (02) 9557 4811</b>		
<b>Email: <a href="mailto:info@lshpa.com.au">info@lshpa.com.au</a></b>		
<b>Date</b>	<b>Drawn</b>	<b>Checked</b>
28/01/2018	YC	MG
<b>Scale (as A1)</b>		<b>Check all dimensions</b>
1:100		Indicated dimensions to be taken in preference to scale unless otherwise indicated. © Lucas Stapleton Johnson & Partners Pty Ltd
<b>Dwg No</b>	<b>123800 / 07 /</b>	



# LUCAS STAPLETON JOHNSON



LSJ Heritage Planning & Architecture

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ACN: 002 584 189 ABN: 60 763 960 154 Websites: www.lsjarchitects.com www.traditionalaustralianhouses.com

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## Ravensworth Homestead, Ravensworth, NSW

### SITE 1: HOMESTEAD – STABLES – SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

#### **BEFORE RELOCATION**

- Record and dismantle walls and roof to Space S1 for transportation and rebuilding at new site.
- Record and dismantle timber partitioning in Space S4 that is supported by stone floors for possible reuse or interpretation.
- Poultrice stone floors, drain and thresholds for six months. Record and dismantle for reinstallation.
- Prepare structure (Spaces S2, S3 and S4) for relocation including works noted on separate engineering schedule.
- Prepare building (Spaces S2, S3 and S4) for relocation in accordance with movers methodology (see separate schedule).
- Record and demolish added structures (including lean-to Space S5 and stone water tank at south end.

#### **FOLLOWING RELOCATION**

##### **EXTERIOR**

##### **To Roof of S2-S4**

- Work over roofing, replace any deformed or heavily corroded galvanised sheets with second hand material approved by the architect and refixing roofing as needed to match existing.
- Allow to retain shingles and shingle battens beneath roofing (if any).
- Replace corrugated fiberglass skylight with skylight assembly to detail.

- Remove recent folded Zincalume barge flashings and oversized barge boards. Allow for extend shingle battens and roofing at all gables. Reinstate early barge board to detail.
- Replace unscribed roll top ridge capping with scribed metal ridge cap to detail.
- Allow PC as scheduled to make good stepped apron flashing between higher and lower roofs. Retain existing flashing where sound.
- Remove recent Zincalume quad gutters and fascia brackets. Retain galvanised gutters and spike fixings.
- Inspect fascia trimmer for deformities, wet rot, etc. Allow PC as scheduled to replace as directed, reinstating through-tenon fixing to outriggers.
- Allow for upgraded roof bracing to detail concealing strap bracing above timber.
- Following detailed investigation of eaves, provide eaves soffit boarding. Allow for single timber planking with storm mould at inner and outer edges.

#### To All Walls

- Work over all walls and repoint as specified in lime mortar.
- Work over walls and remove existing pointing of non-matching colour and repoint in mix approved by architect.
- Install injected DPC to base of all old walls that are below ground level as directed. Allow to poultice all walls up to 600mm and remove after six months.

#### To East Wall

- Stabilise/repair stone arches to scheduled.
- Reconstruct early window opening at door DS6, as shown.

#### To North Wall

- Make good stonework where shearing shed lean-to is removed as directed.
- Reconstruct wall opening at door DS7 in matching stonework.
- Reconstruct missing infill stonework where wall-plate is housed at external corners.

## INTERIOR

### To All Spaces (S2-S4)

- Work all over stone walls and repoint as specified.
- Reinstall salvaged flagstones and thresholds. Allow PC as scheduled to provide missing flagstones in Space S3.

### **Space S1**

#### At Southern End

- Rebuild walls and roof to S1 using salvaged material to detailed schedule, specifications and drawings.

### **Space S2**

#### Space S2: East Wall

- Repoint rear door jamb of door DS2. Remove drummy thin plaster at north end. Repair stone arches as scheduled.

#### Space S2: West Wall

- Repair cracked render at reveals to door DS3 at window WS2.

#### Space S2: Ceiling

- Remove wasp nests and make good.
- Check for drummy render. Allow PC sum to replace in 3 coat lime render as directed.

#### Space S2: Door DS2

- Allow to patch bottom right beaded board in matching material.
- Allow PC for hardware to replace corroded pressed steel strap hinges with cast hinges and provide missing bolt as directed.

#### Space S2: Door DS3

- Replace with beaded door to match details of door DS2.

#### Space S2: Door DS4

- Allow PC scheduled to replace door leaf if so directed.

Space S2: Window WS2

- Remove gauze and allow PC scheduled to provide timber louvres as per WS1 if so directed.

Space S2: Windows WS3

- As per window WS2.

**Space S3**Space S3: All Walls & Ceilings

- Check for drummy render. Allow PC to replace in 3 coat lime render if so directed.

**Space S4**Space S4: East Wall

- Reconstruct stone window sill and wall below DS6 to original configuration as shown. Allow for stone sill to match WS4.
- Repair reveals at door DS6 to recover original profile.
- Repoint loose stone rubble above door DS5.

Space S4: North Wall

- Reconstruct wall at door opening DS7 using matching salvaged stones.

Space S4: West Wall

- Repair minor cracking – refer engineer's schedule.

Space S4: South Wall

- Replace missing stone in matching material.

Space S4: Door DS5

- Existing frame.
- Reinstall in-swinging T&G beaded hardwood door with T-hinges to match details of Door DS2.

Space S4: Door DS6

- Reinstall hardwood window frame to match window WS4. Provide hardwood adjustable timber louvres to detail as for window WS1.



Space S4: Window WS4

- Remove existing beaded shutter. Make good existing frame. Provide hardwood adjustable timber louvres as for WS1.

**GENERALLY**

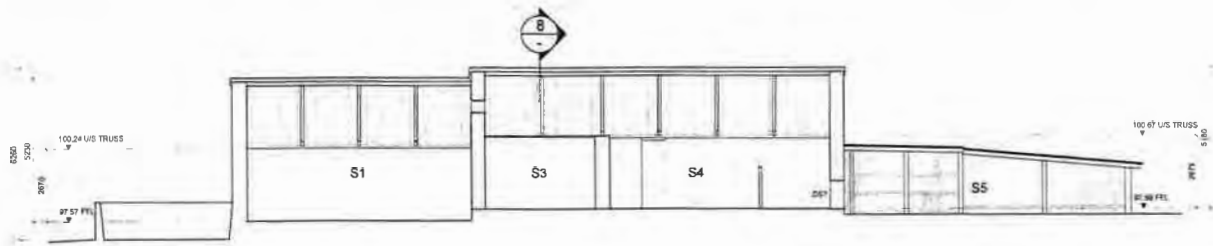
- Allow to prepare and paint all previously painted external surfaces and all external surfaces normally painted.
- Install termite treatment system agreed with architect.
- Provide electrical and hydraulic services to separate schedule.

**ADAPTATION WORK**

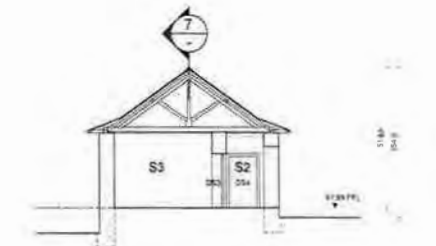
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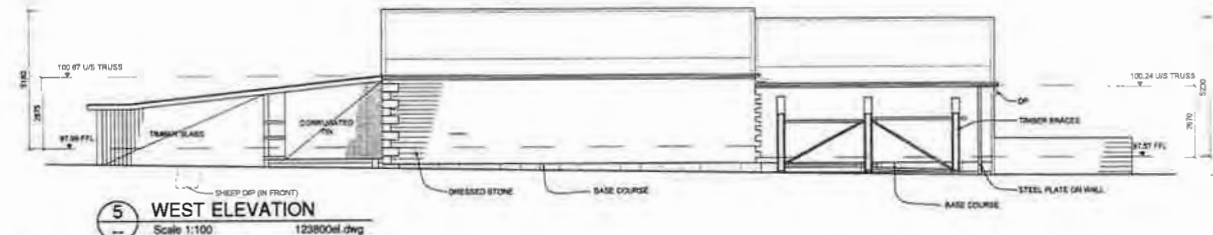
Michael Gunn & Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture



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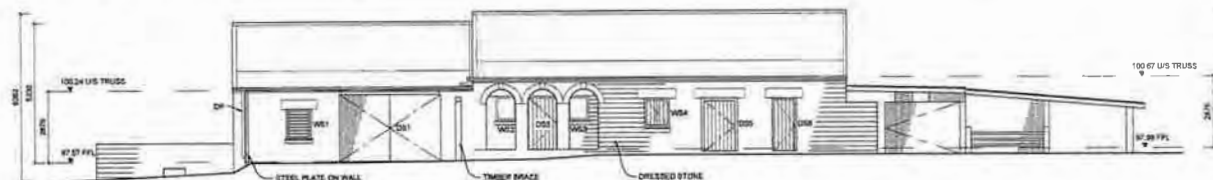
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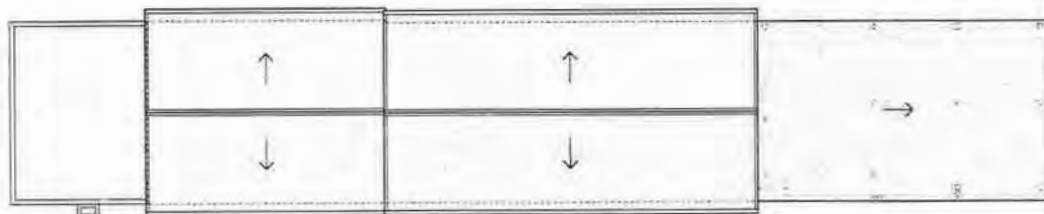
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3 EAST ELEVATION  
Scale 1:100 123800el.dwg



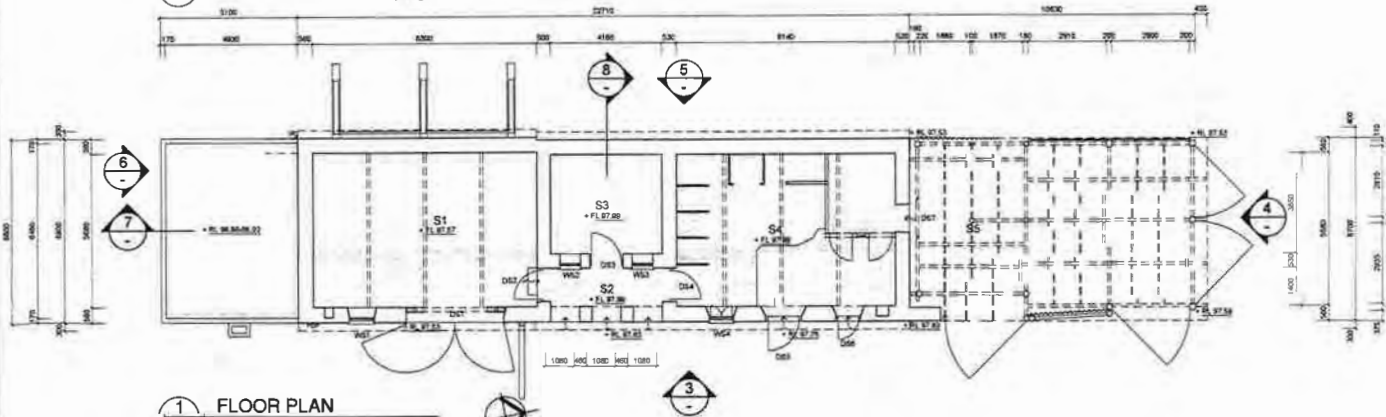
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2 ROOF PLAN  
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9 S2 - WEST WALL  
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1 FLOOR PLAN  
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PRELIMINARY

Job  
RAVENSWORTH HOMESTEAD  
HEBDEN ROAD, RAVENSWORTH

Client  
MT OWEN PTY LTD

Dwg  
STABLES -  
FLOOR & ROOF PLANS,  
ELEVATIONS & SECTIONS

LUCAS  
STAPLETON  
JOHNSON

LSJ Heritage Planning & Architecture

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Registered Architect Ian Stapleton

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Date	Drawn	Checked
05/09/18	YC	MG

Scale (as A1)  
1:100  
Check all dimensions  
Figural dimensions to be  
taken in preference to scale  
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Dwg No  
123800 /04 /C

## Appendix E

### Conceptual landscape plans

Proposals for the Site, Grounds & Prospects of the  
**RAVENSWORTH HOMESTEAD GROUP**,  
 Ravensworth, NSW

In conjunction with LSJ & Partners P/L and Umwelt  
 (Australia) P/L

**FOR GLENCORE**

## LANDSCAPE DRAWING SCHEDULE

SHEET LP/01 VIEW ANALYSIS  
 SHEET LP/02 IMPLICATIONS ARISING FROM VIEW ANALYSIS  
 SHEET LP/03 NEW HEBDEN ROAD SCREENING PROPOSAL  
 SHEET LP/04 SOUTHERN VIEW PROSPECTS SCREENING PROPOSAL  
 SHEET LP/05 PROPOSED HOMESTEAD GROUP RECIPIENT SITE TREATMENT  
 SHEET LP/06 PROPOSED HOMESTEAD RECIPIENT SITE GROUNDS TREATMENT  
 SHEET LP/07 PROPOSED HOMESTEAD GROUNDS ITEMS RELOCATION/SALVAGE LIST

*NOTE: DRAWING SET SHOULD ALSO BE READ IN CONJUNCTION WITH LUCAS, STAPLETON,  
 JOHNSON & PARTNERS DOCUMENTATION FOR THE RAVENSWORTH HOMESTEAD GROUP*

## COVER SHEET

Original Sheet @ A3  
 © GB 2019



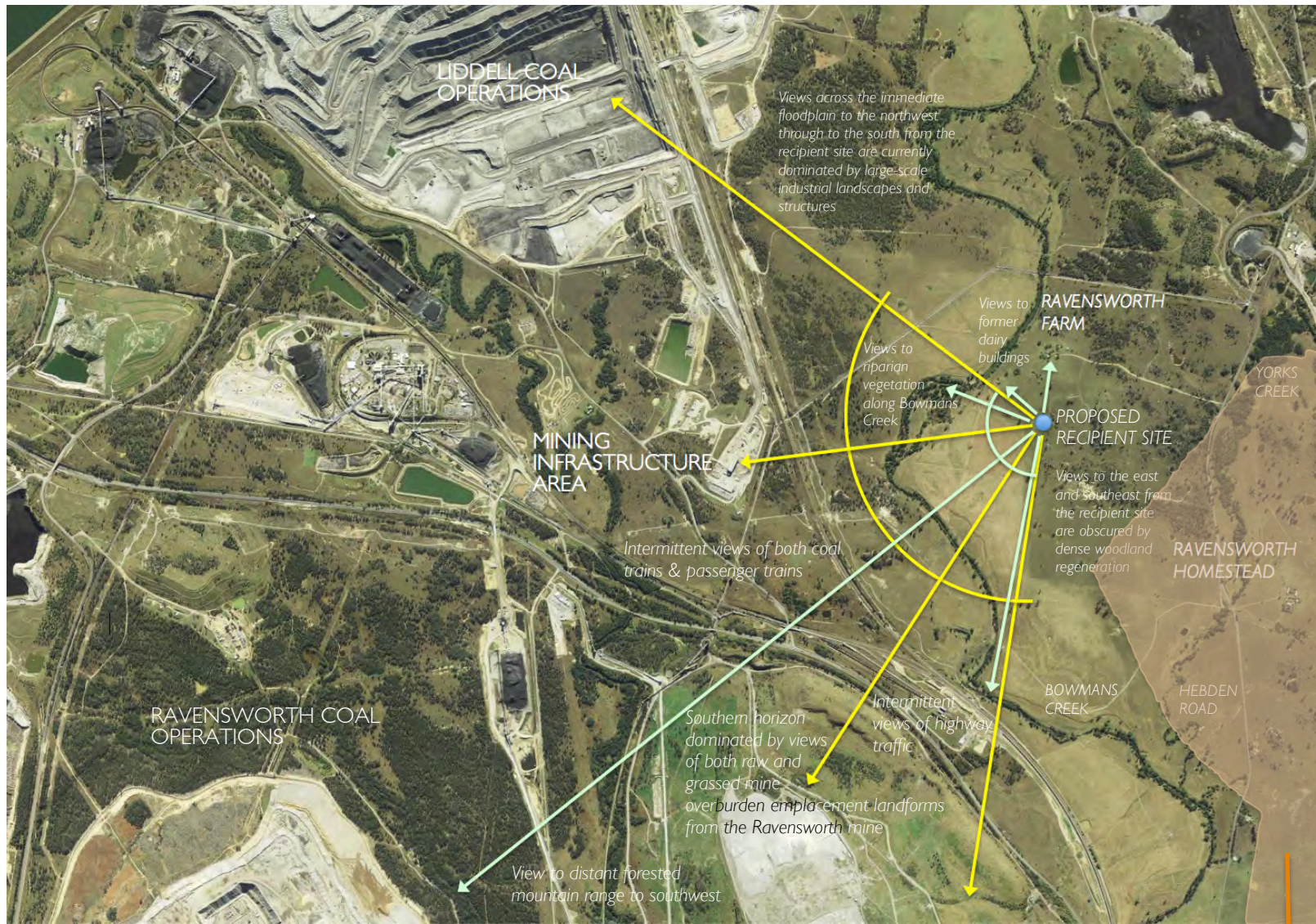
Geoffrey Britton  
 Environmental Design & Heritage Consultant  
 ABN 75 869 266 782



Proposals for the Site, Grounds & Prospects of the  
**RAVENSWORTH HOMESTEAD GROUP**,  
 Ravensworth, NSW

In conjunction with LSJ & Partners P/L and Umwelt  
 (Australia) P/L

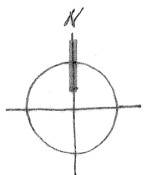
**FOR GLENCORE**



Glendell Continued Operations  
 approximate area of proposed  
 mine pit

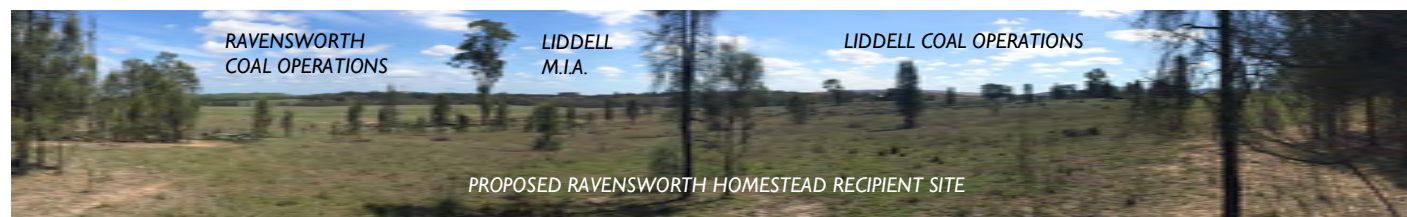
## SHEET LP/01 VIEW ANALYSIS

Original Sheet @ A3  
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NOT TO SCALE

View from proposed homestead recipient site looking south (left) to west



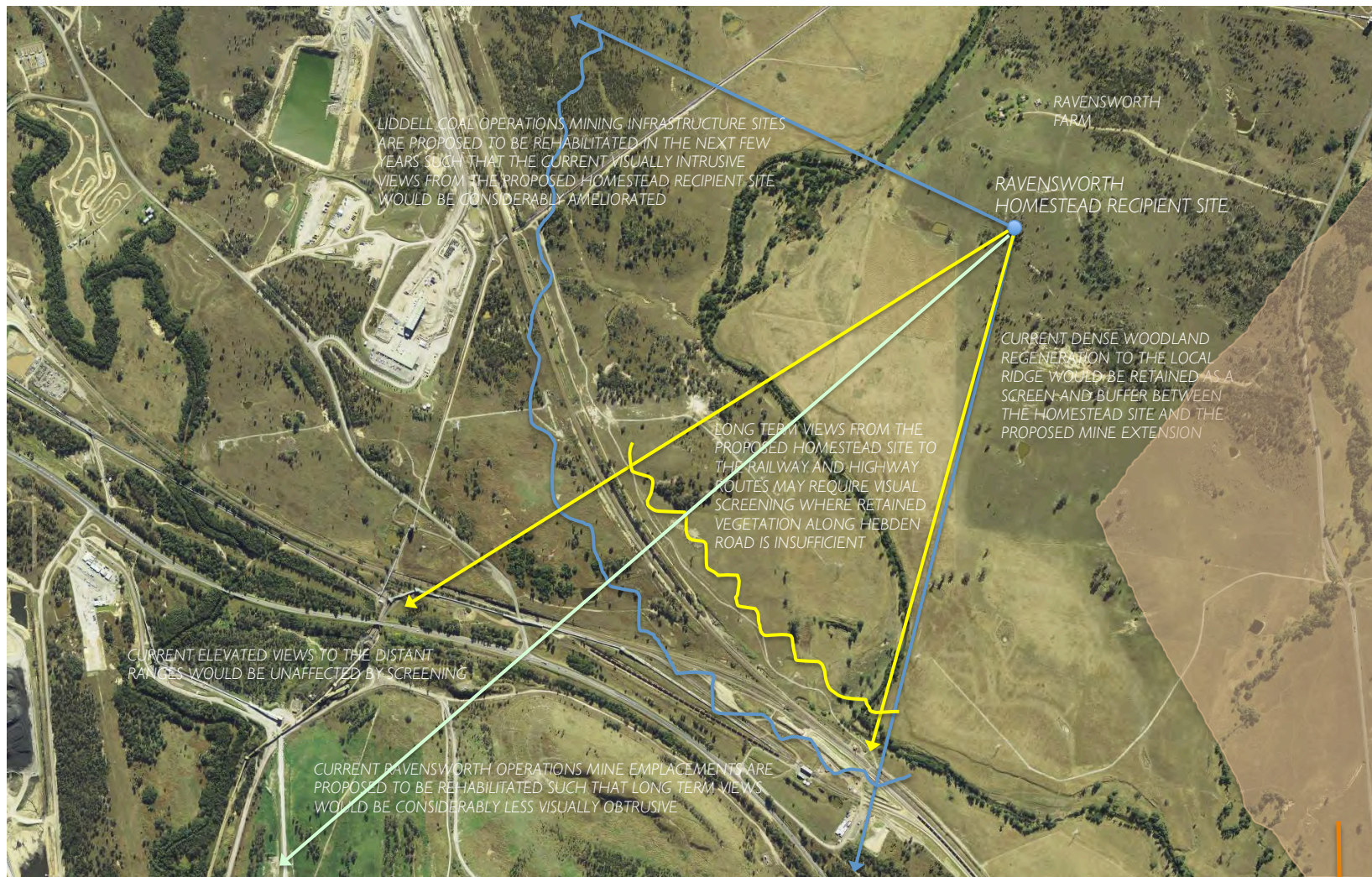
Geoffrey Britton  
 Environmental Design & Heritage Consultant  
 ABN 75 869 266 782



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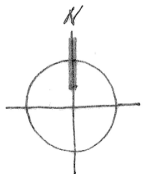
Glendell Continued Operations  
 approximate area of proposed  
 mine pit

**SHEET LP/02 IMPLICATIONS ARISING  
 FROM VIEW ANALYSIS**

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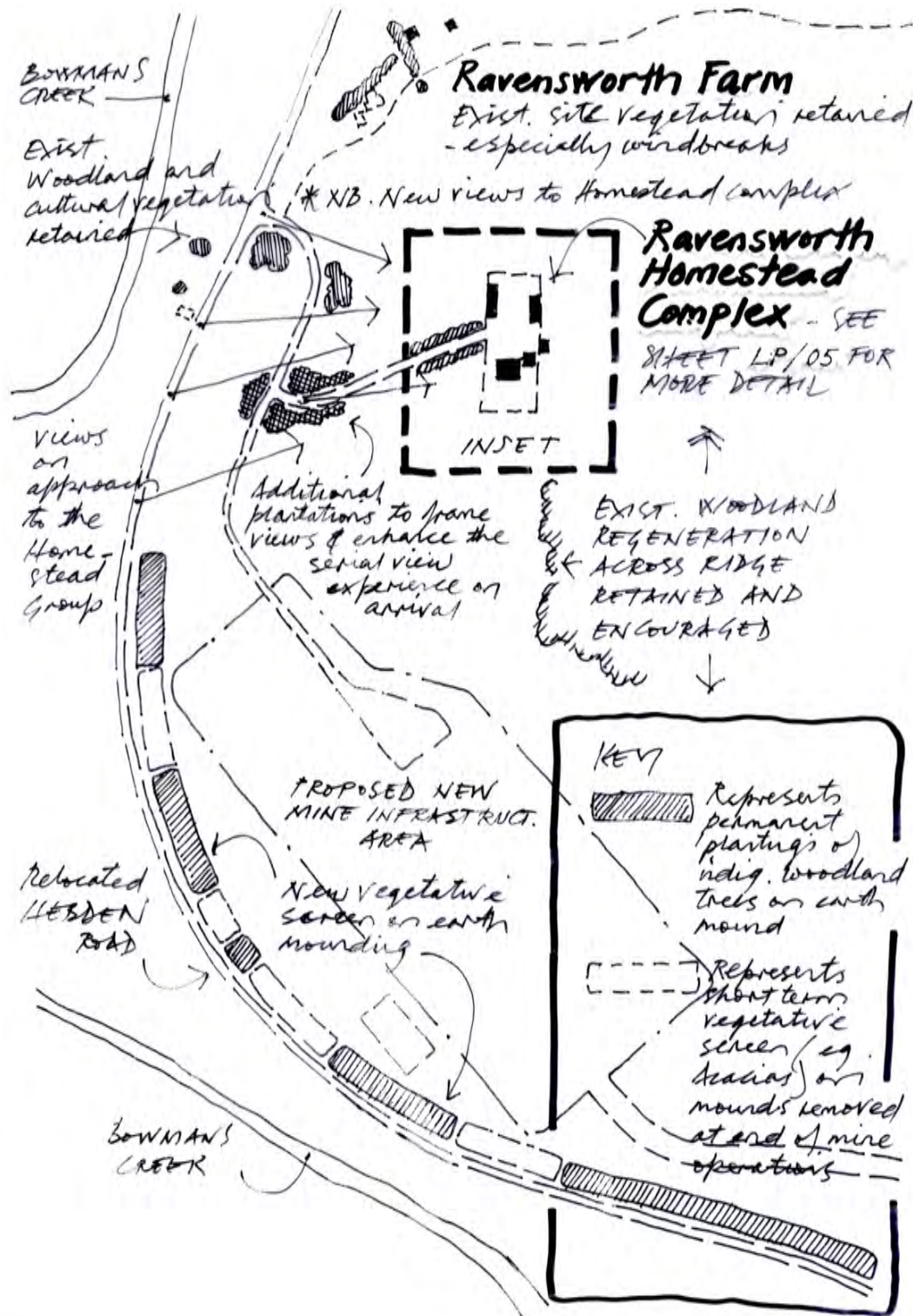


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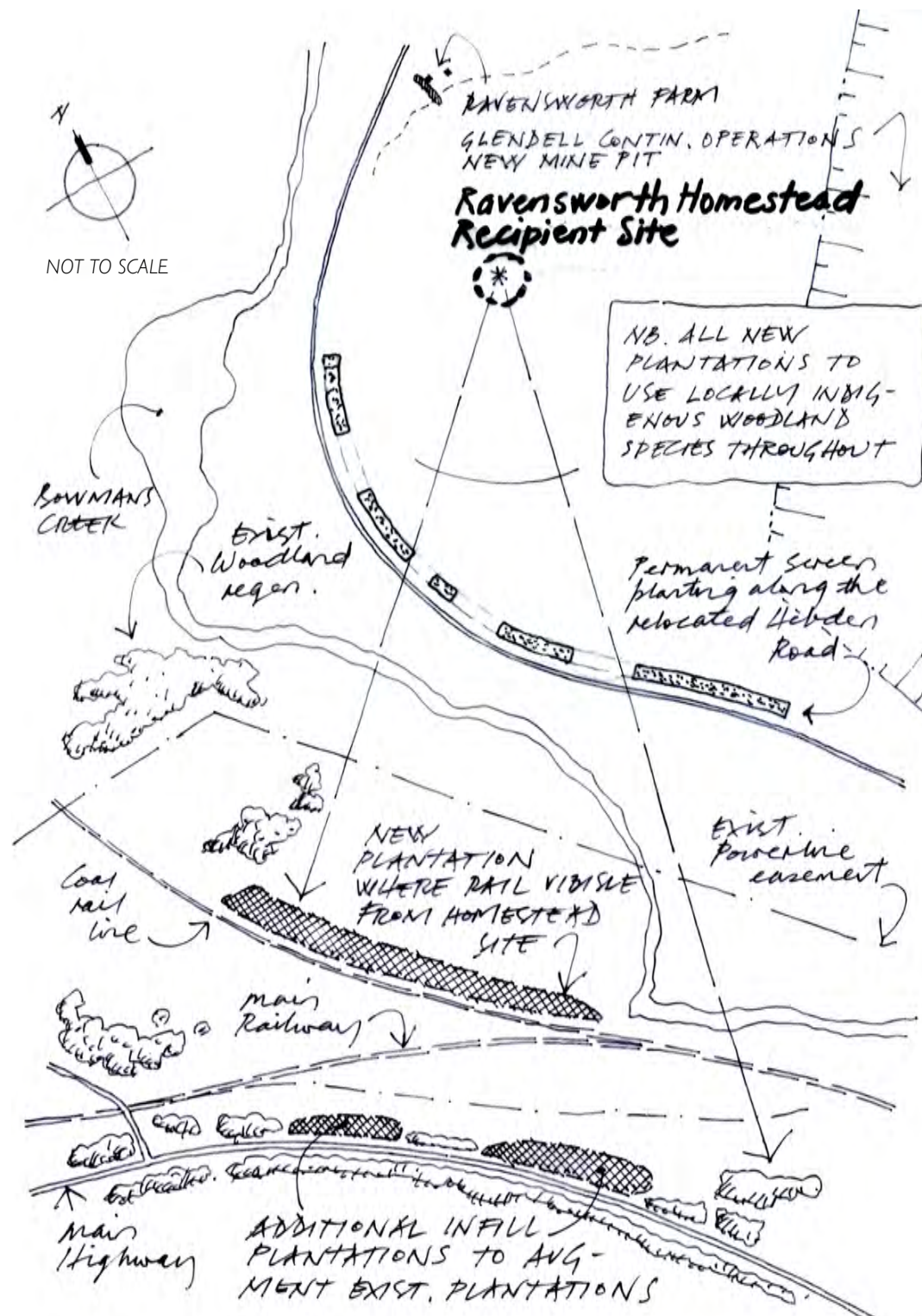
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## SHEET 3 NEW HEBDEN ROAD SCREENING PROPOSAL

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Issue	Date	Description

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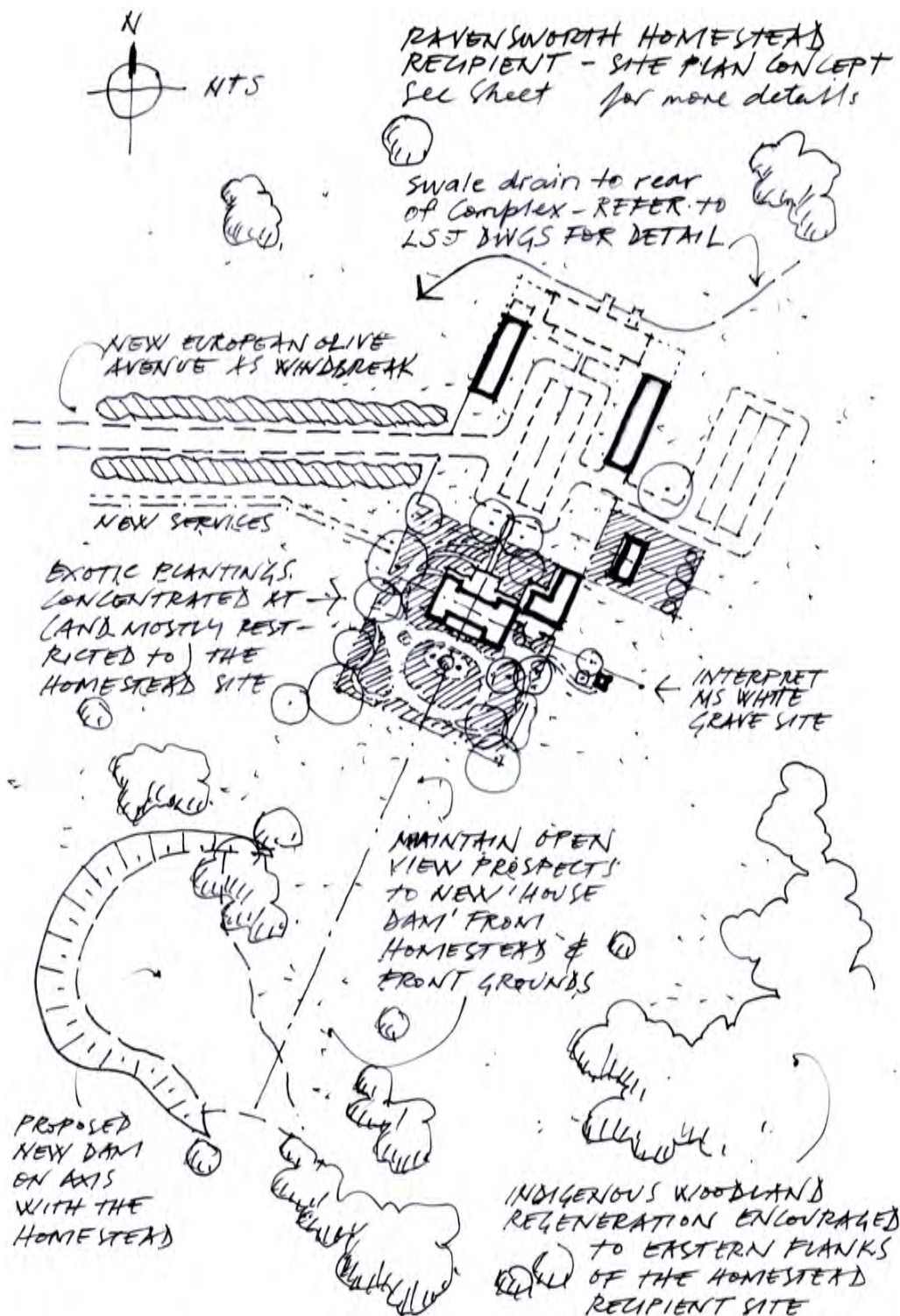
## SHEET 4 SOUTHERN VIEW PROSPECTS SCREENING PROPOSAL

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## SHEET 5 PROPOSED HOMESTEAD GROUP RECIPIENT SITE TREATMENT

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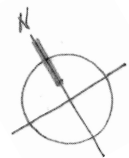
Proposals for the Site, Grounds & Prospects of the  
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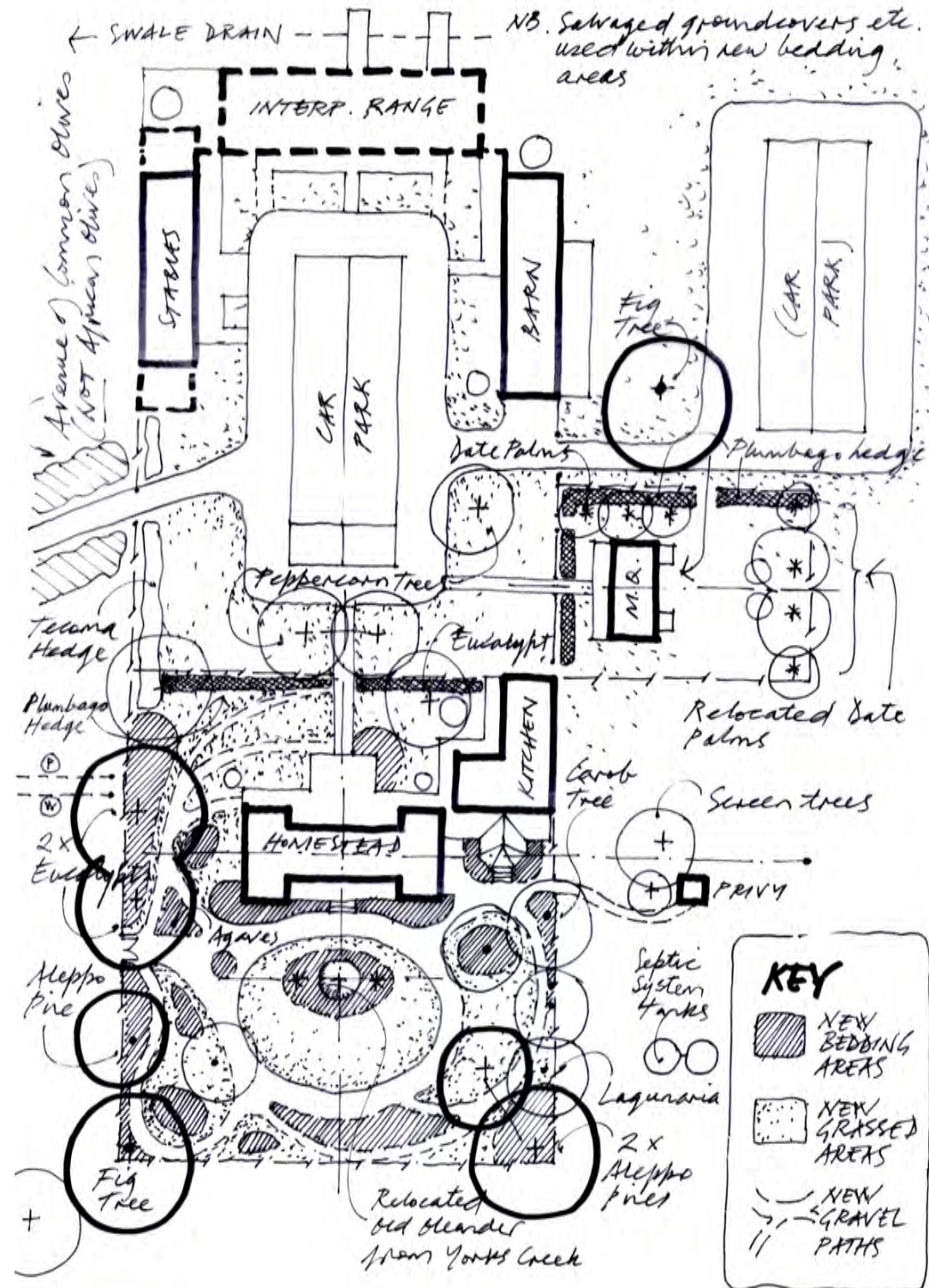
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NB. Refer to LSJ Architects drawing set for details of buildings, paths, services and other structures as well as layout for car parking and access roads.

Note also the drainage swale to the northeast of the Convicts' Barracks interpretive range is detailed by others.



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## SHEET 6 PROPOSED HOMESTEAD RECIPIENT SITE GROUNDS TREATMENT

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*Gymbidium canaliculatum* requires special horticultural treatment. This locally indigenous epiphytic orchid species has been reported in remnant woodland trees along the House Dam creek. Before the area is cleared in preparation for mining, if any of these *in situ* orchids remain, they should be carefully removed (as advised) from their host trees and relocated to suitable places at the new recipient site for Ravensworth homestead (or another place that is not likely to be mined in the future).

Sym.	Plant species	Common Name	Notes	Relocation	Salvage/ Propagate
Ab	<i>Abelia grandiflora</i>			Yes	-
Ag	<i>Agapanthus praecox</i>	African lily		Yes	-
Aa	<i>Agave americana</i>	Giant century plant		Yes	-
Am	<i>Aloe maculata</i>	Soap aloe		Yes	-
Ar	<i>Artemesia absinthium</i>	Common wormwood		Yes	-
Ad	<i>Arundo donax</i>	Giant reed		Yes	-
Bg	<i>Bignonia sp.</i>		MQ cottage	Yes	-
Bn	<i>Bilbergia nutans</i>	Queen's tears		Yes	-
Bp	<i>Brachychiton populneus</i>	Kurrajong		No	No
Ca	<i>Callistemon</i> sp.	Bottlebrush		No	No
Cg	<i>Casuarina glauca</i>	Swamp Oak		No	No
Cr	<i>Catharanthus roseus</i>	Madagascar periwinkle	white cv.	No	No
Ce	<i>Cercis</i> sp.?		S. Kitch. Wg.	No	No
Ch	<i>Chaenomeles japonica</i>	japonica		Yes	-
Cm	<i>Clivia miniata</i> ?			Yes	-
Ct	<i>Cotyledon orbiculata</i> var. <i>oblonga</i> 'Macrantha.'	Pig's ear		Yes	-
Co	<i>Crassula ovata</i>	Jade plant	small leaf cv.	No	No
	<i>Crassula ovata</i>	Jade plant	normal sp.	No	No
Dc	<i>Dovyalis caffra</i>	Kei apple		No	No
Ep 1	<i>Epiphyllum</i> sp.		West of homestead	Yes	-
Ep 2	<i>Epiphyllum crenatum</i>	Crenate Orchid Cactus	SW corner	Yes	-
Eu	<i>Eucomis</i> sp.		MQ cottage	Yes	-
Fm	<i>Ficus macrophylla</i>	Moreton Bay fig		Yes (if poss.)	-
Gr	<i>Grevillea robusta</i>	Silky Oak		No	No
Jm	<i>Jacaranda mimosifolia</i>	Jacaranda		No	No
Ja	<i>Jasminum</i> sp.	Jasmine		Yes	-
Ka	<i>Kalanchoe</i> sp.?			-	-
Lp	<i>Lagunaria patersonii</i>	Norfolk Island hibiscus		No	Propagate
Lj	<i>Loniceria japonica</i>	Common honeysuckle		Yes	-
No	<i>Nerium oleander</i>	Oleander		Yes	-
NoS	<i>Nerium oleander</i> cv. 'Splendens'	Oleander	nr Yorks Ck.	Yes	Propagate
Pc	<i>Phoenix canariensis</i>	Canary Is. date palm		Yes	-
Ph	<i>Pinus halepensis</i>	Aleppo Pine	Hebden Rd/ Silo site	No	Propagate
Pa	<i>Plumbago auriculata</i>	Leadwort		Yes	-
Pr	<i>Prunus</i> sp. or cv.			No	-
Pg	<i>Punica granatum</i>	Pomegranate		Yes	-
Ra	<i>Raphiolepis indica</i>	Indian Hawthorn		Yes	-
Rs	<i>Robinia pseudoacacia</i>	Black Locust	W of Yorks	No	Propagate
Ro	<i>Rosa</i> cv.		North of homestead	Yes	-
Sa	<i>Schinus areira</i>	Peppercorn tree	Nr Yorks ck	No	No
Sp	<i>Spiraea</i> sp.	Maybush	Nth homest.	Yes	-
Sr	<i>Strelitzia reginae</i>	Bird-of-Paradise	SW homest.	Yes	-
Ul	<i>Ulmus</i> sp.	Elm	Yorks Creek	No	Propagate
Yf	<i>Yucca</i> sp. ( <i>Y. flaccida</i> )		Sth homest.	Yes	-
Ysp.	<i>Yucca</i> sp.		W of Yorks	Yes	-
*	<i>Cymbidium canaliculatum</i>	Channel leaf Orchid	House dam creek	Yes	See note

## NOTES

Existing plantings at Ravensworth homestead proposed to be relocated to the homestead recipient site are noted in the schedule above. However, before relocating to the new homestead grounds the plants will need to be relocated firstly to a separate holding nursery and protected and maintained there until the new homestead complex earthworks, services and building relocation phases are completed.

A number of large, mature plants are proposed to be relocated: the old Oleander from near Yorks Creek and most of the date palms (all to the holding nursery initially) as well as the Moreton Bay fig tree which could be moved directly to its permanent position to the southwest of the homestead grounds as shown on Sheet 6.

Other large species are not worth relocating but are potentially important as early introductions and should be propagated so the genetic stock is not lost.

A 13 June 2019

DA Submission

Issue	Date
-------	------

### Description

Proposals for the Site, Grounds & Prospects of the  
**RAVENSWORTH HOMESTEAD GROUP,**  
Ravensworth, NSW

In conjunction with LSJ & Partners P/L and Umwelt  
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SHEET 7  
PROPOSED HOMESTEAD GROUNDS  
ITEMS RELOCATION/SALVAGE LIST

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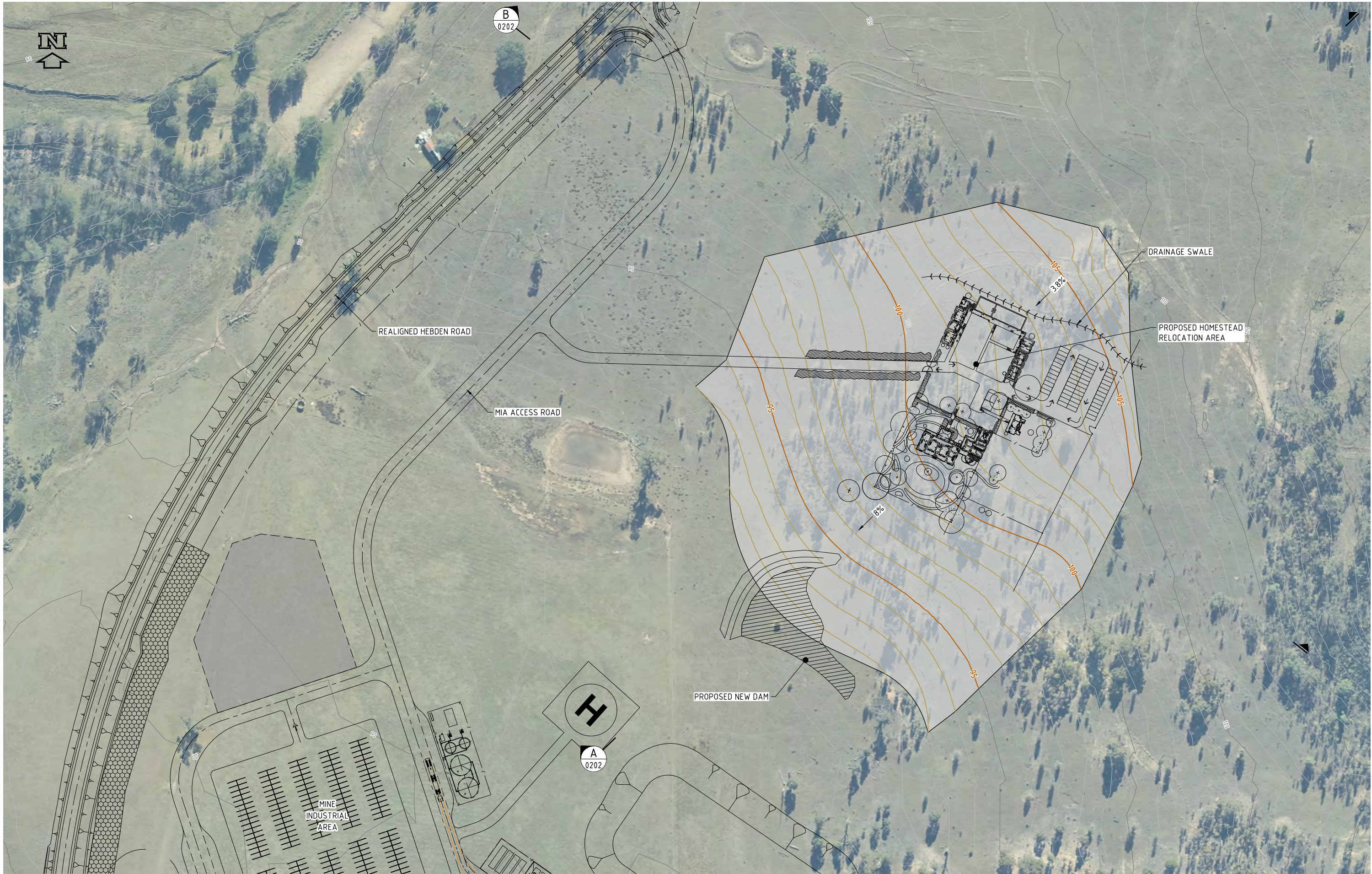


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Environmental Design & Heritage Consultant  
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## Appendix F

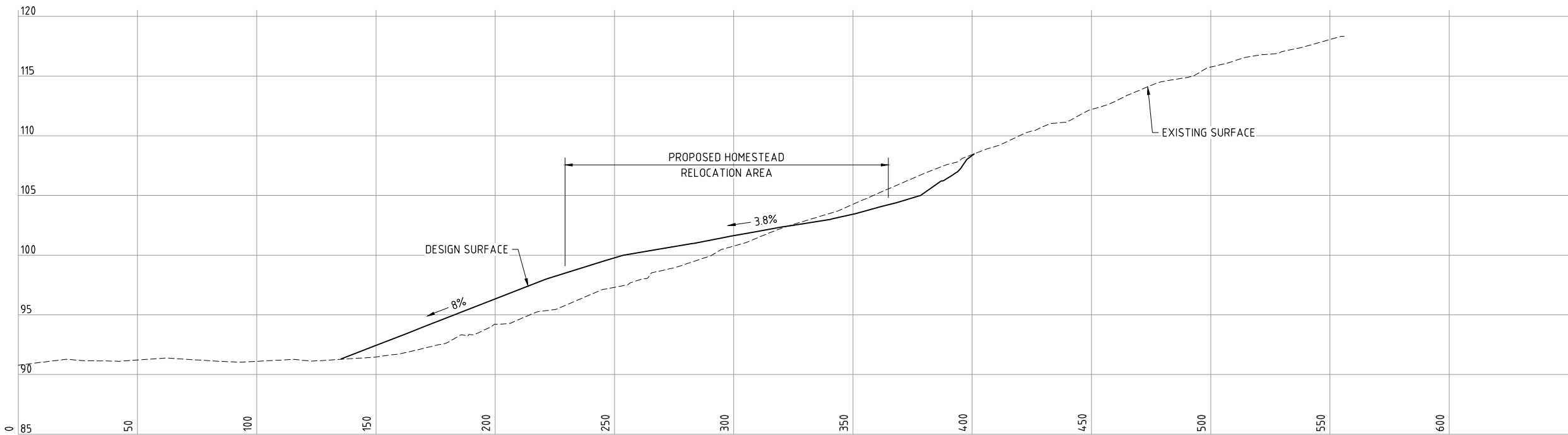
### Proposed Homestead Relocation Earthworks Plan and Section



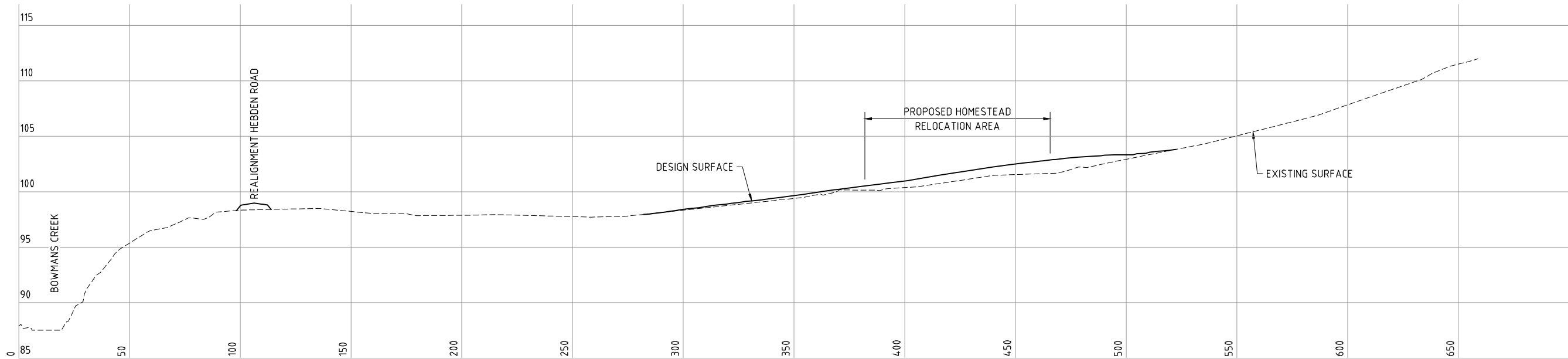


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						PROJECT No: PS111884		DRAWN: M. HAMILL			DATE: 22.10.19							
						PROPOSED HOMESTEAD RELOCATION EARTHWORKS PLAN					DRAWING No: GCOP-WSP-20.01.00.00-CV-0201				REV: D			
						DATE		BY			DESCRIPTION				CHK		APPD	
						HORIZONTAL DATUM:		VERTICAL DATUM:										





SECTION A  
SCALE 1:1000 H  
1:200 V



SECTION B  
SCALE 1:1000 H  
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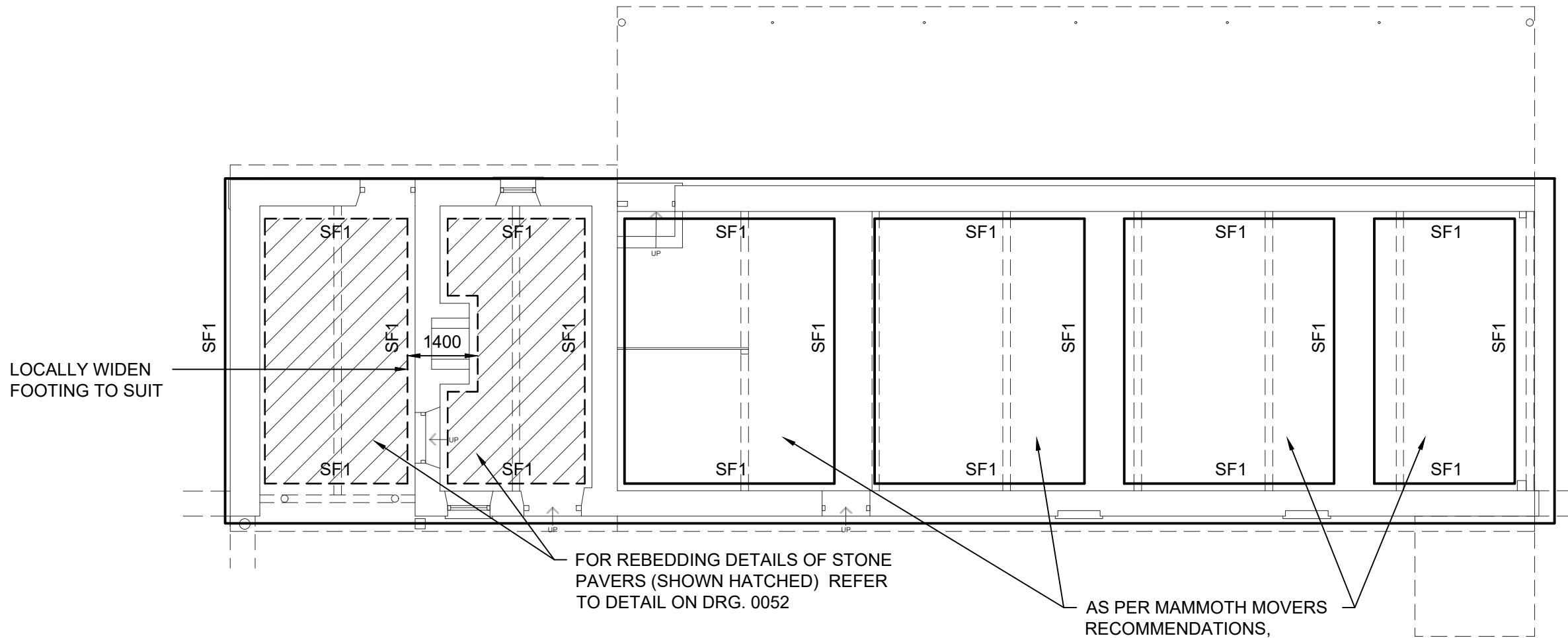
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GLENDELL CONTINUED OPERATIONS PROJECT MIA FEASIBILITY STUDY	
TITLE:	
PROPOSED HOMESTEAD RELOCATION TYPICAL SECTIONS	

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PROJECT No:	DRAWN:	DATE:
PS111884	M. HAMILL	02.07.19
DRAWING No:	REV:	
GCOP-WSP-20.01.00.00-CV-0202	C	

## Appendix G

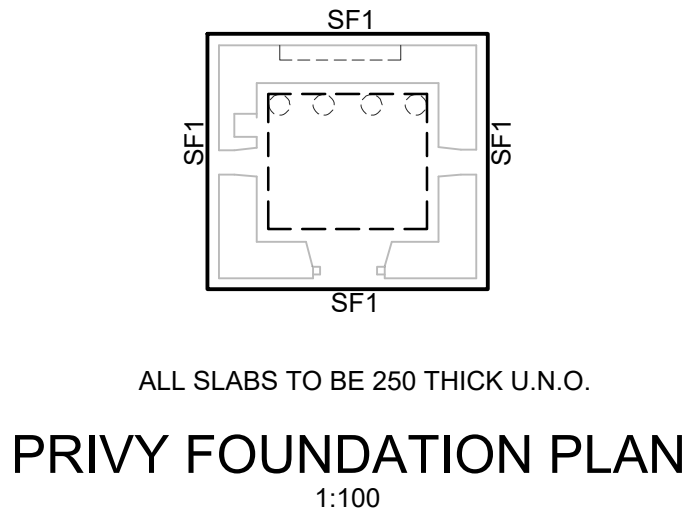
### Relocation Foundation Design



ALL SLABS TO BE 250 THICK U.N.O.

**BARN FOUNDATION PLAN**

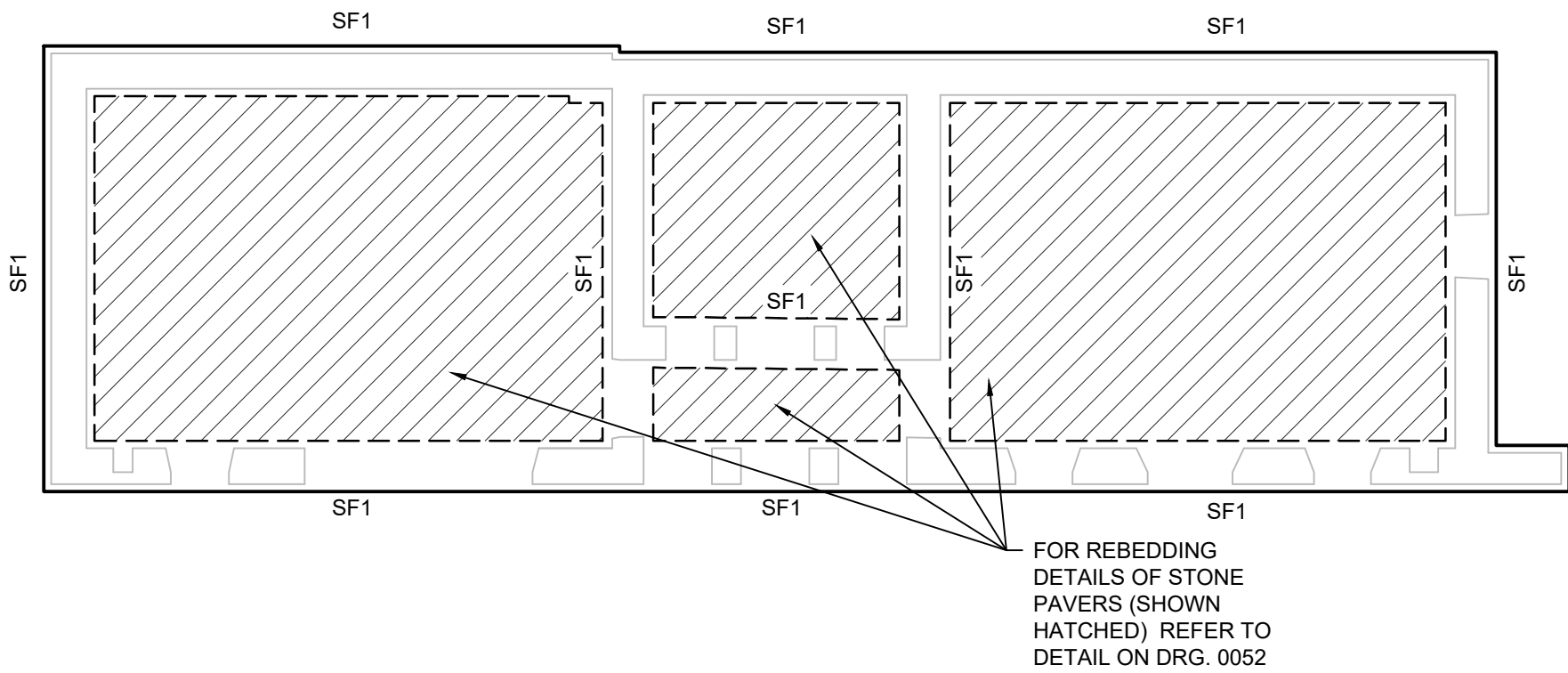
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**PRIVY FOUNDATION PLAN**

1:100

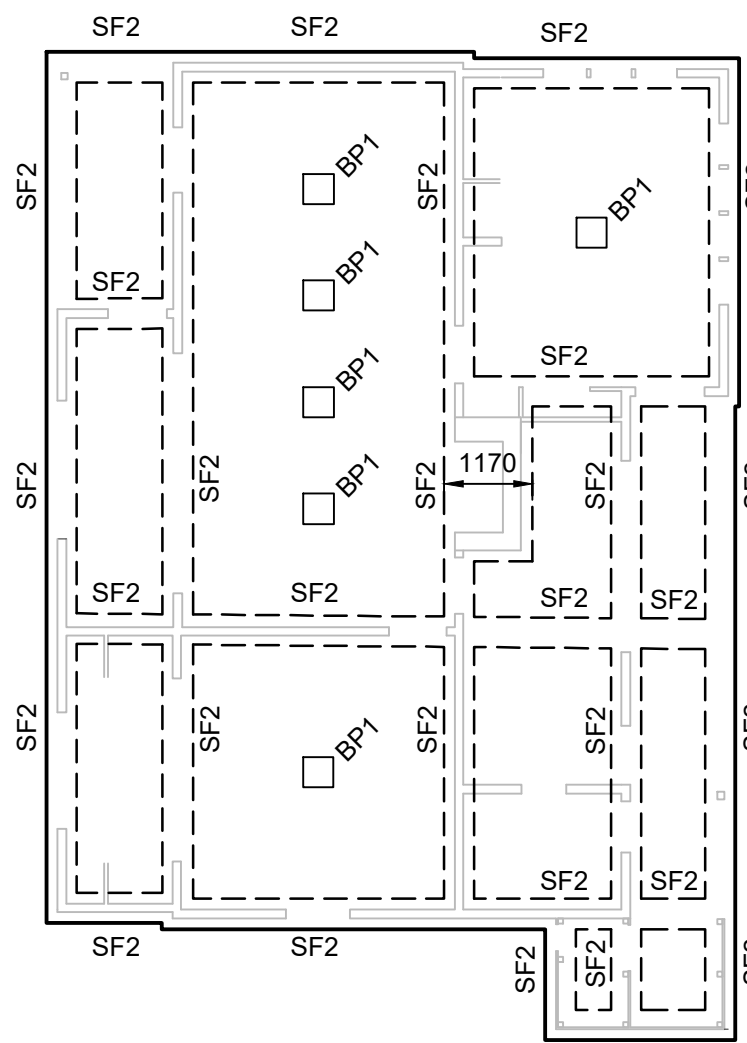
FOOTING SCHEDULE		
MARK	SIZE	COMMENT
SF1	800W x 600D	STRIP FOOTING
SF2	400W x 350D	STRIP FOOTING
IP	400x400x200	INTERNAL PAD



ALL SLABS TO BE 250 THICK U.N.O.

**STABLES FOUNDATION PLAN**

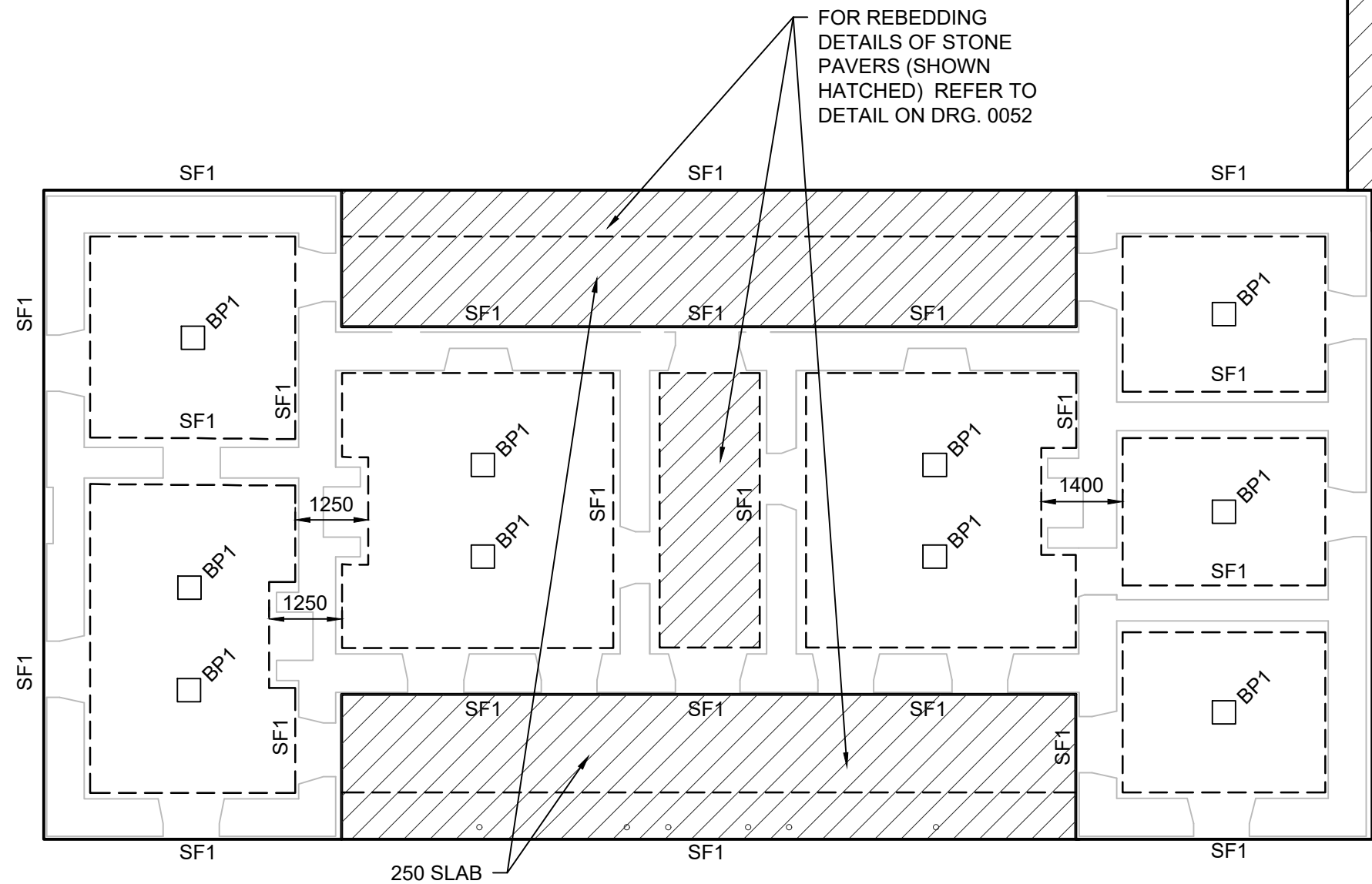
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ALL SLABS TO BE 250 THICK U.N.O.

**MEN'S QUARTER FOUNDATION PLAN**

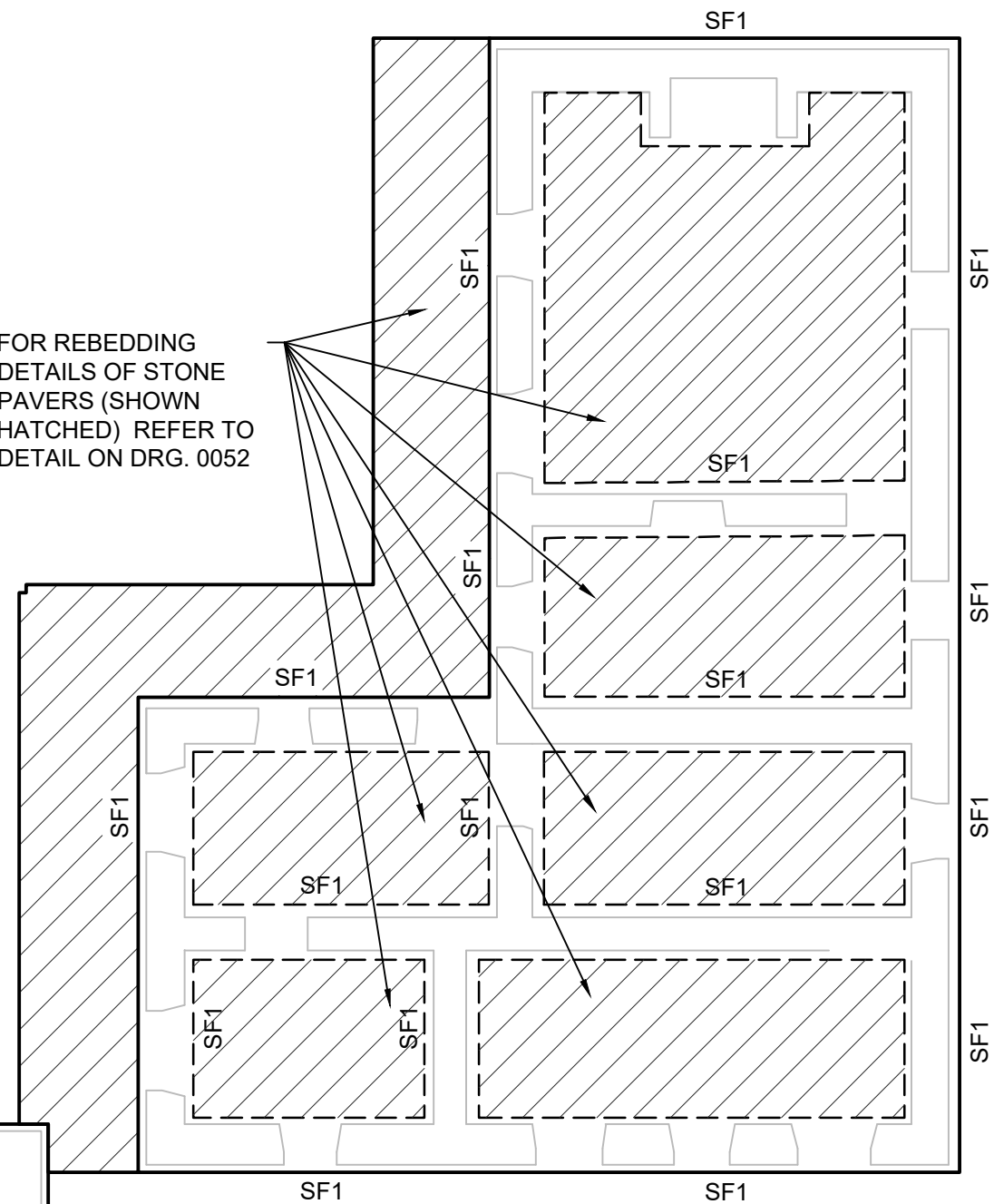
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ALL SLABS TO BE 250 THICK U.N.O.

**HOMESTEAD FOUNDATION PLAN**

1:100



Notes

Key to symbols

Reference drawings

P3	16.04.19	HSW	ISSUED FOR COST PLANNING	TSB	SAW
P2	22.03.19	HSW	ISSUED FOR REVIEW	TSB	SAW
P1	01.03.19	HSW	ISSUED FOR REVIEW	TSB	SAW
Rev	Date	Drawn	Description	Ch'k'd	App'd

M

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Client

MT. OWEN PTY. LTD.

Title

RAVENSWORTH  
SCHEMATIC DESIGN

RELOCATION FOUNDATION  
PLANS

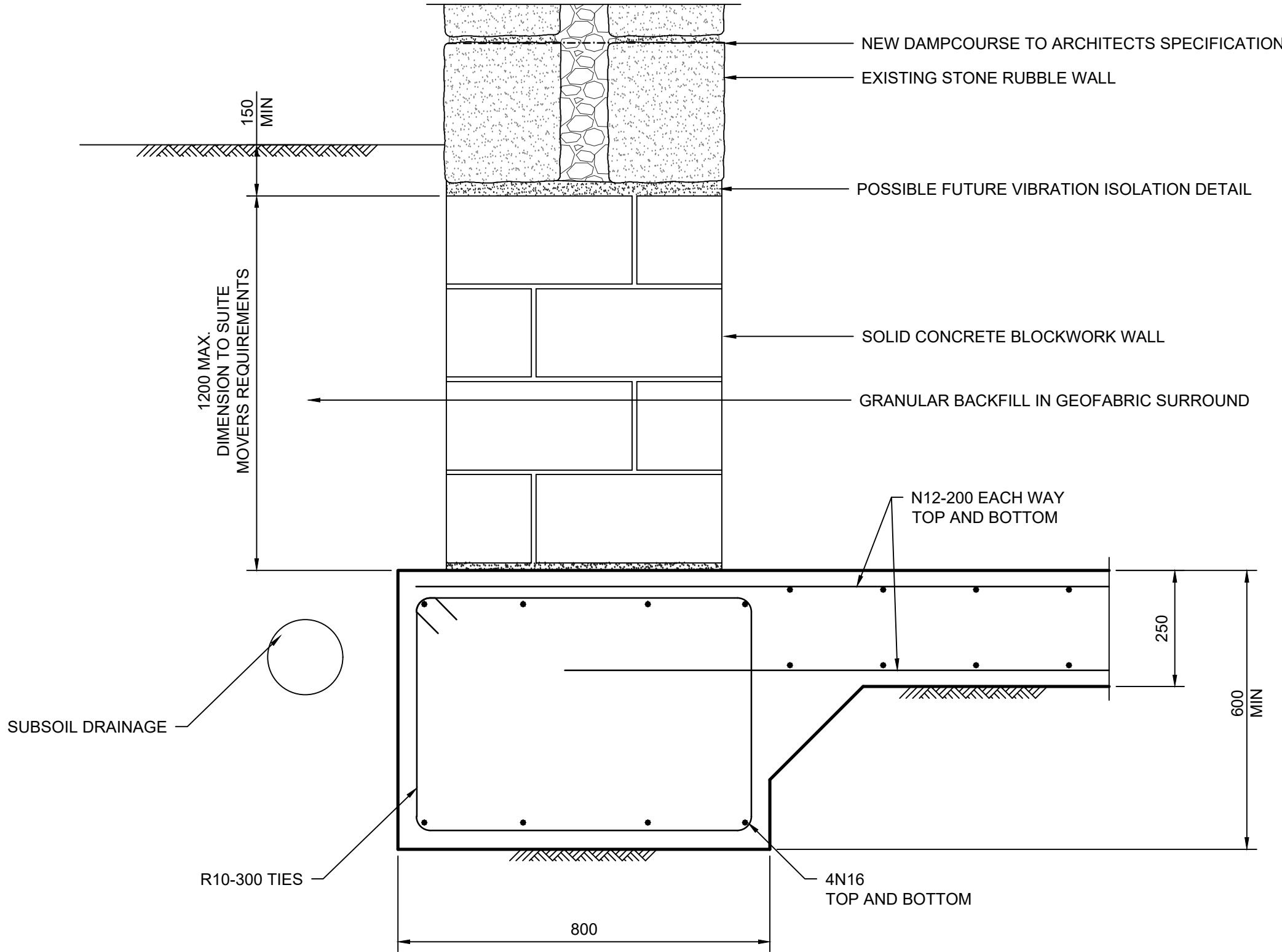
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Drawn	HSW		Coordination	TSB	
Dwg check	TSB		Approved	SAW	
Scale at A1	NTS	Status	PRE	Rev	P3
		Security			

Drawing Number

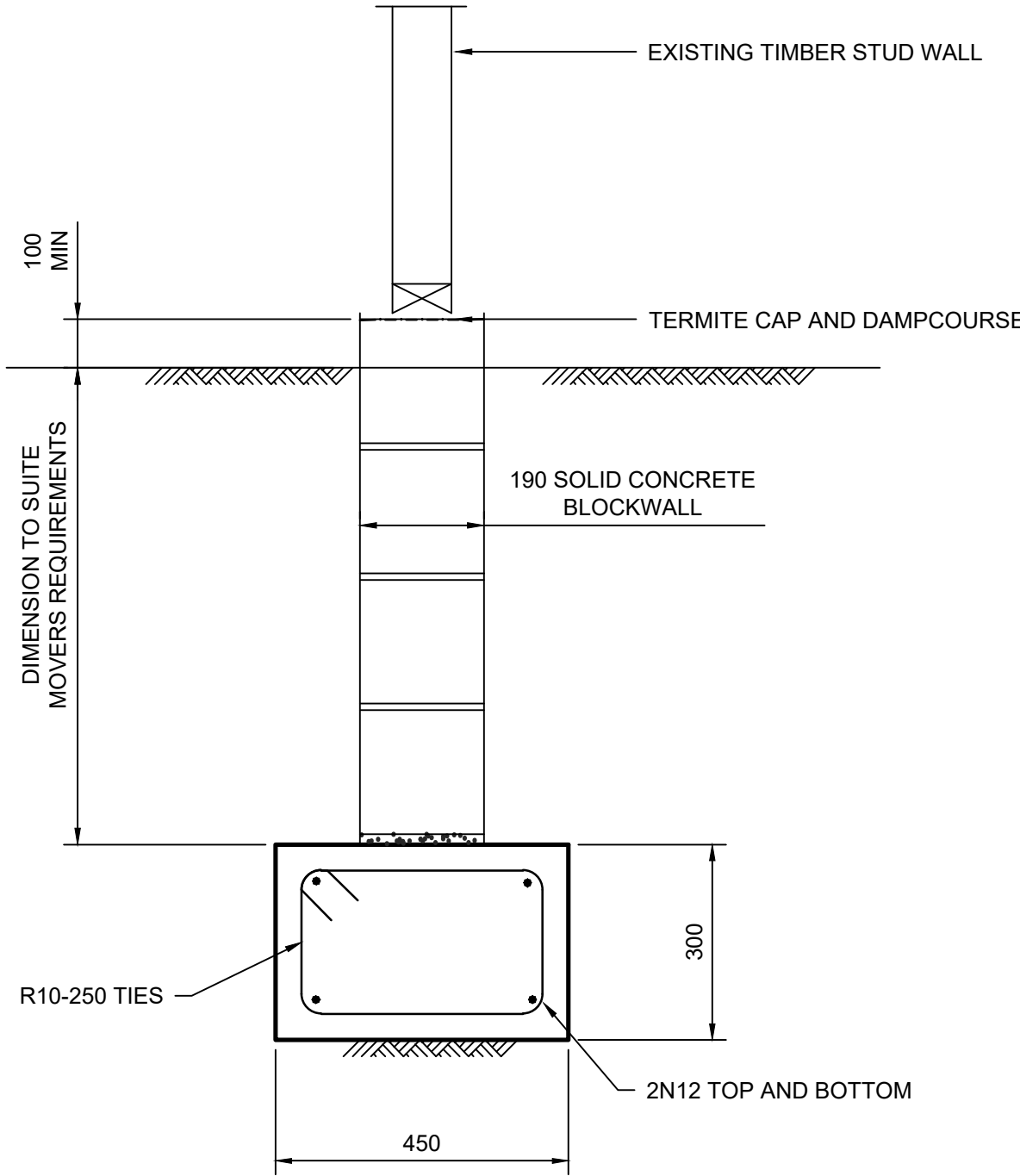
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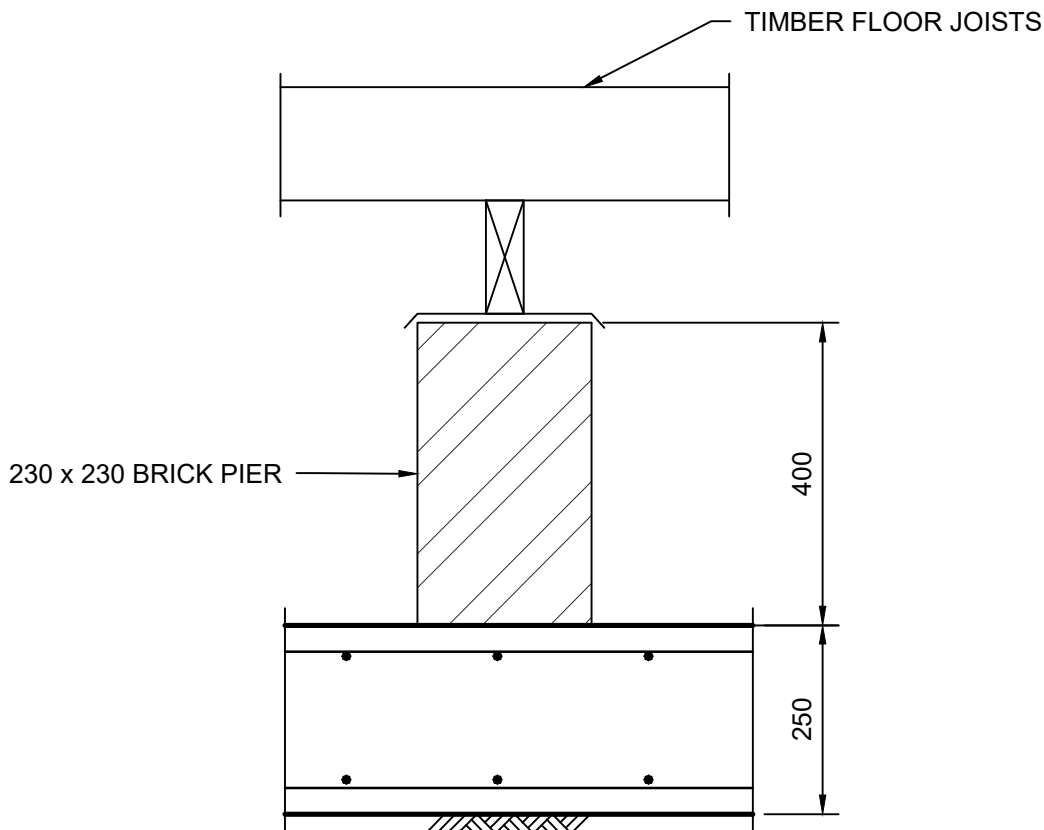




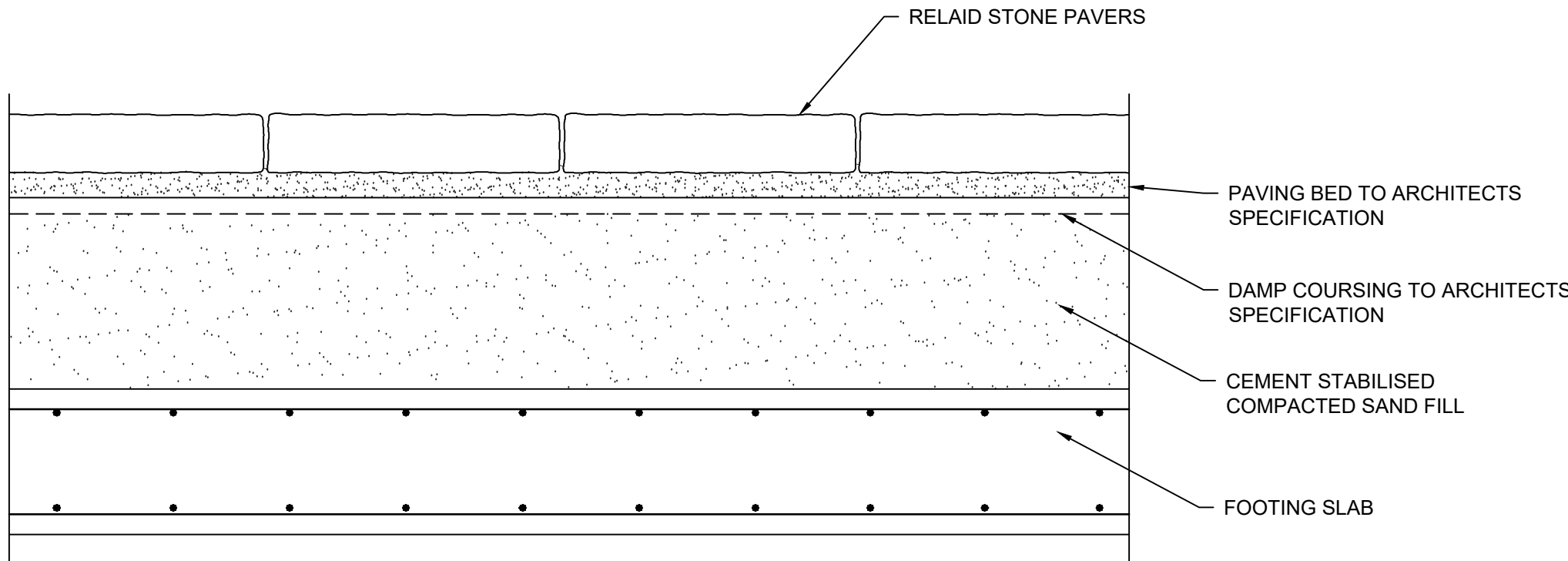
SF1 - STONE WALL FOOTING DETAIL  
1:10



SF2 - TIMBER STUD WALL FOOTING DETAIL  
1:10  
TO MENS QUARTERS



BP1 - BRICK PIER DETAIL  
1:10



STONE FLOOR REBEDDING DETAIL  
1:10

Notes

Key to symbols

Reference drawings

P2	16.04.19	HSW	ISSUED FOR COST PLANNING	TSB	SAW
P1	22.03.19	HSW	ISSUED FOR REVIEW	TSB	SAW
Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client  
MT. OWEN PTY. LTD.

Title  
RAVENSWORTH HOMESTEAD  
SCHEMATIC DESIGN  
REMEDIAL WORKS  
  
FOUNDATION DETAILS

Designed	TSB	Eng check	SAW	
Drawn	HSW	Coordination	TSB	
Dwg check	TSB	Approved	SAW	
Scale at A1 1:10	Status PRE	Rev P2	Security	

Drawing Number  
403264-MMD-S-DR-FD-XX-0052

## Appendix H

### Methodology for the Relocation of the Ravensworth Homestead Complex

# METHODOLOGY FOR THE RELOCATION OF RAVENSWORTH HOMESTEAD COMPLEX RAVENSWORTH, HUNTER VALLEY



Prepared by

**Mammoth Movers – Structural Moving Company**  
Engineers and Structural Movers

16 Bingfield Lane  
Meadows SA 5201

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**14 October 2019**

**MM-REP-RAVT-00012 rev 2**

**Unrestricted**





## Limitations Statement

The sole purpose of this report and the associated services performed by Mammoth Movers Pty Ltd (Mammoth) is to provide an overview summary of the proposed methodology for the one piece relocation of the Ravensworth Homestead Precinct, located at Ravensworth NSW. This report has been made on behalf of Glencore ('the Client'). The scope of services was defined by the requests of the Client.

Mammoth derived this report primarily from visual inspections, site inspections, Client personnel supplied data, drawings and phone conversations with the Client's personnel. The passage of time, manifestation of latent conditions or impacts of future events may require further exploration at the site and subsequent data analysis, and re-evaluation of the findings and observations expressed in this document.

In preparing this report, Mammoth has relied upon and presumed accurate certain information (or absence thereof) relative to drawings and surveys of the existing site and buildings provided by the Client and others. With the exception of random cross checking against site measurements taken during inspection, Mammoth has not attempted to verify the accuracy or completeness of any such information and would recommend further work be undertaken (as indicated in the report) to mitigate associated project risks should the Client wish to proceed to the next stage.

No warranty or guarantee, whether express or implied, is made with respect to this report as it is based on the findings, observations and conclusions drawn from site inspections and information provided by the Client in existence at the time of the investigation.

This report has been prepared on behalf of and for the exclusive use of the Client. Mammoth accepts no liability whatsoever for or in respect of any use of or reliance upon this report by any third party.

## Revision History

Revision	Date	Comment	Signatures		
			Originated by	Checked by	Authorised by
0	26 April 2019	Issue to Client	MJM	LC	MJM
1	8 May 2019	Incorporate Client comments	MJM	LC	MJM
2	14 Oct 2019	Incorporate minor Client comments	MJM	-	MJM





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## 1. Introduction

This document has been prepared by Mammoth Movers [**Mammoth**] to articulate the methodology to be adopted for the relocation of the Ravensworth Homestead Complex from its current site to the east of Hebden Rd ( to a new recipient site located in proximity to Bowmans Creek (approximately 1.5 km to the north-west). A temporary purpose built road will be constructed by Glencore (on Glencore land) for the transportation of the buildings to the proposed recipient site.

The methodology contained in this report has been developed based on information and investigations completed to date and is subject to change as additional information is gathered during relocation preparations.

The relocation of each of the buildings is proposed to be undertaken in one piece with exception of the Stables.



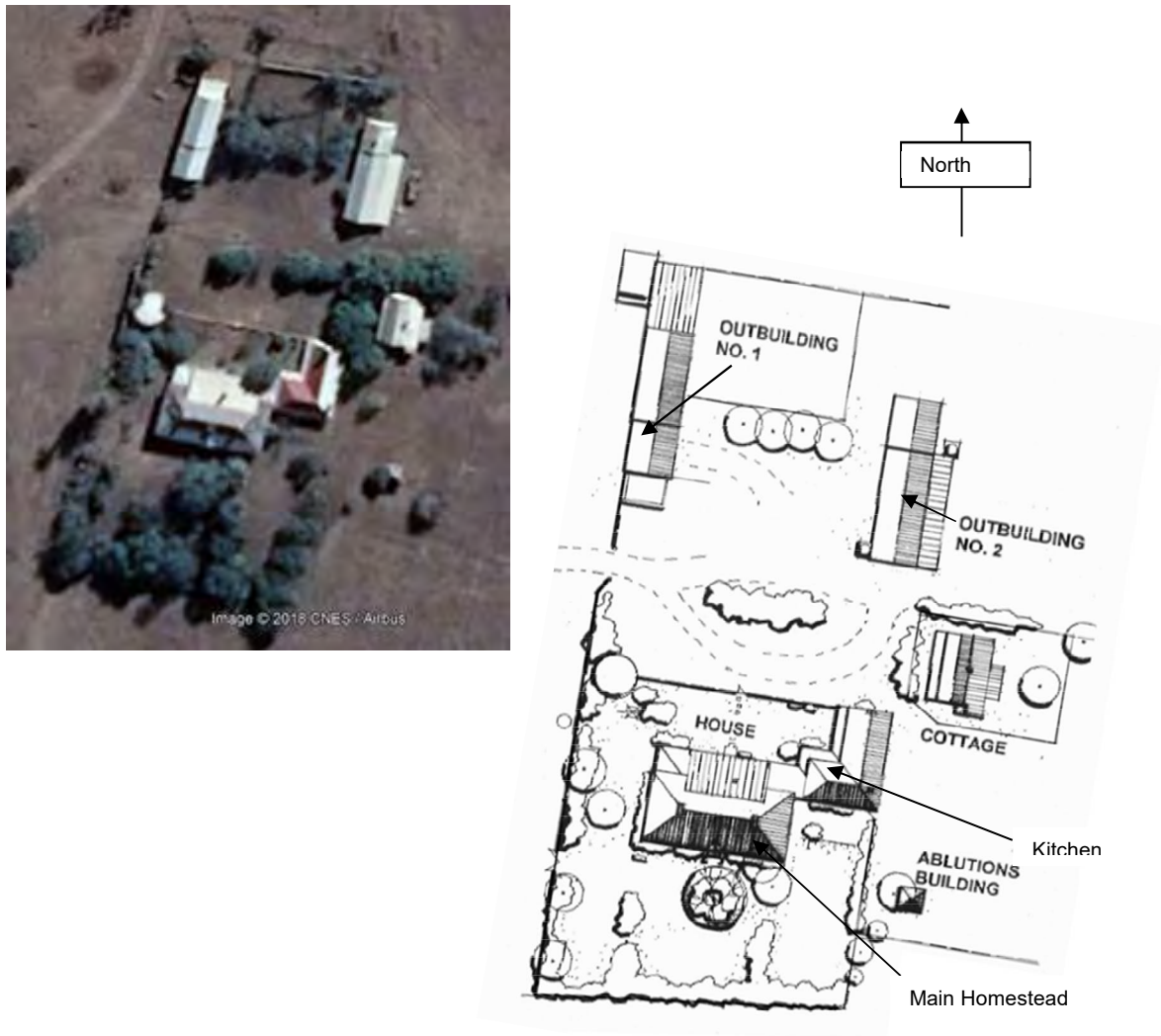


## 2. Background

Mammoth has previously undertaken extensive investigation work for Glencore to assess the feasibility of relocating the Ravensworth Complex buildings intact, with this work being completed in close consultation with the heritage architect.

The Ravensworth Homestead Complex consists of 6 buildings still in existence and arranged in the formal layout shown in Figure 1. The buildings are all constructed of sandstone materials apart from the Cottage, which is of timber construction with a substantial brick fireplace and chimney sited in its approximate centre.

Figure 1 – Complex layout (plan view)





### 3. Building Breakdown to Facilitate Move

The significance of each building has been assessed in consultation with the heritage architect who has provided guidance on those parts of the existing buildings that are of less significance and can be dismantled (or demolished), and those that are of high significance and should be moved intact. The heritage architect has recommended the demolition of later additions to all buildings.

The configuration of the building “segments” proposed for the relocation of the Complex is provided in Figure 2. The figure shows those elements to be demolished prior to relocation with the balance to be moved in one piece.

The southern section of the Stable building (Outbuilding no.1, Figure 1) is confirmed as structurally unsound by structural engineers and requires rebuilding to ensure the structural integrity and longevity at the new site. As a result, this section will be sensitively dismantled and rebuilt at the recipient site. The relocation methodology within this document reflects this. The dismantle and rebuild of the southern section of the Stables is not discussed in this methodology document as this work will be undertaken by other specialist heritage contractors.

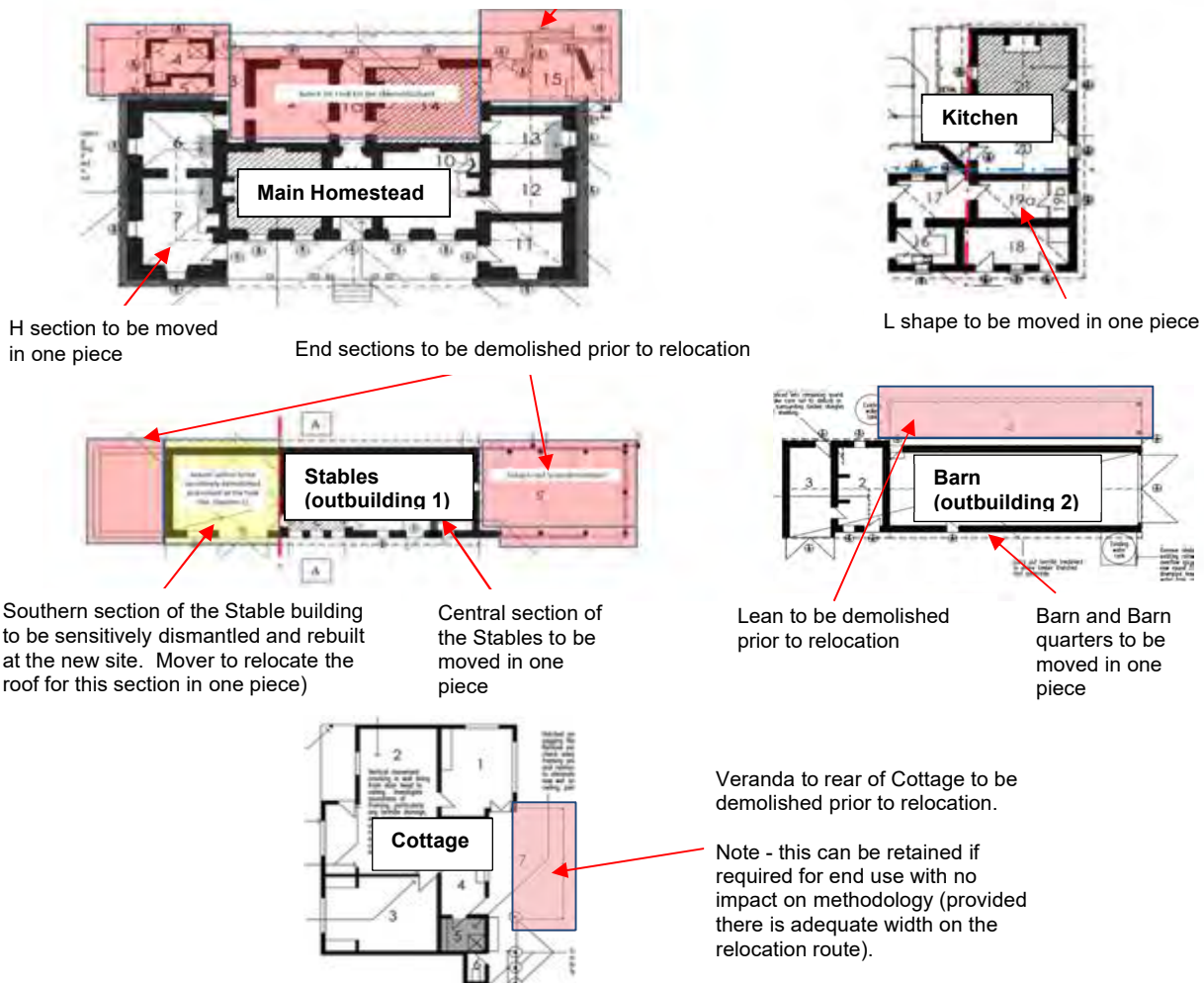
The Kitchen is to be severed from the Main Homestead through the connecting breezeway, (which is a later addition).

The later addition to the Main Homestead will be demolished to allow the original ‘H’ plan to be moved intact. It is not intended to reinstate the later addition at the recipient site.

*Figure 2 – Plan view of proposed relocation “segments”*

Note – the orientation of buildings has been altered for presentation convenience

Newer additions to be demolished prior to relocation





The segments to be relocated intact utilising Mammoth's methodology are nominated in Table 1.

*Table 1 – No. of segments/elements to be relocated*

Building	No. of Sections/elements	Comments
Main Homestead	1	Later addition to be demolished with the original 'H' plan moved intact
Servant Kitchen	1	Later breezeway addition between the Homestead and Kitchen to be removed prior to relocation to enable the move of the kitchen separate from the Homestead
Outbuilding 1 - Stable	2	Central section to be relocated in one piece. Roof of southern section of the Stable to be relocated in one piece. Walls of southern section to be sensitively dismantled and relocated and rebuilt at the new site
Outbuilding 2 - Barn	1	Barn and Barn quarters to be relocated together and in one piece.
Privy	1	
Cottage	1	Methodology assumes Cottage will be relocated in one piece. (i.e. no elements demolished with the exception of the rear veranda). The fireplace and chimney will be retained and moved together with the Cottage
<b>total</b>	<b>7</b>	



## 4. Horizontal Building Cutlines

The following horizontal cut or separation lines have been adopted for each building in line with direction provided by the heritage architect. The cutline is the horizontal plane where the relocated section of the building is to be parted from the existing support structure (i.e. original foundations).

The presence of rock adjacent to or under the buildings may impact these cutlines in the detailed design stage.

*Table 2 – Assumed horizontal cutlines on buildings*

Building	Cutline
Homestead	450 mm below the building basecourse.
Kitchen	At the base of the building basecourse as a minimum – Dependent on presence and strength of bedrock.
Barn	70 mm above grade at the south western corner of the Barn extending to the northern end of the Barn section. Cutline of the Barn quarters to be determined but as a minimum to be below the basecourse at the lowest corner relative to grade.
Stables	At the bottom of the building basecourse on the western wall.
Privy	At the bottom of the building basecourse as a minimum – dependent on presence of bedrock.





## 5. Relocation Process Summary

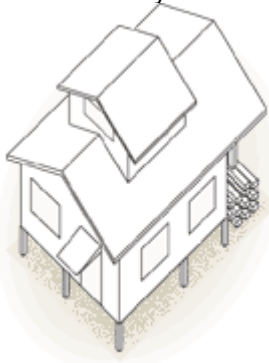
The following summary outlines how a typical masonry building is relocated. A more detailed description of the steps, (tailored to the Ravensworth buildings) follows in Sections 6 to 8:

Step 1 – Organise all administration details prior to relocation of structure

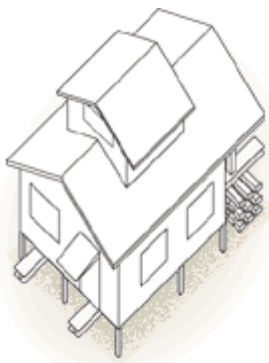


[Times art: Michael G. Cothran]

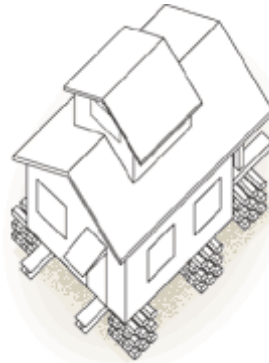
Step 2 – The house is dug out and supported on temporary shoring to allow for the installation of beams to carry the structure.



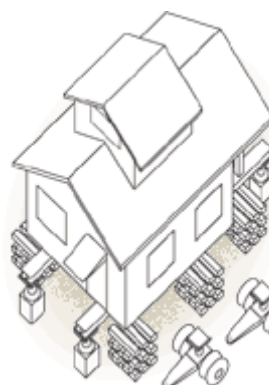
Step 3 – Steel main beams and traverse beams are installed under the house to create a grid like platform that will allow the structure to be moved without being damaged.



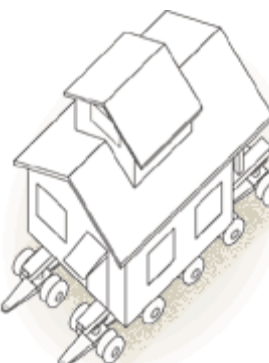
Step 4 – Cribbing columns and jacks are installed to enable the building to be raised.



Step 5 – Hydraulic jacks raise the house to allow dollies to be placed under the main beams using a unified jacking system.



Step 6 – The house is lowered onto the dollies which are connected hydraulically so the building “floats” on oil whilst being transported, through connecting hydraulic circuits.





## 6. Relocation Process – In detail

The relocation of the Ravensworth Complex can be broken into two technical stages:

Stage A – Pre-site works prior to Mammoth coming to site including:

- Inspection of building, project site and surrounding infrastructure;
- Design engineering – structural relocation and support;
- Foundation engineering;
- Logistics planning.

Stage B - Site project works including:

- Phase 0 – Premobilisation works;
- Phase 1 – Excavation and underpinning of the Ravensworth Complex buildings;
- Phase 2 – Jacking of the building(s);
- Phase 3 – Transfer the building(s) onto dollies;
- Phase 4 – Relocate each building to its new location;
- Phase 5 – Install new support under each building;
- Phases 6 – Remove Mammoth's equipment from under the building
- Phase 7 – Mammoth's demobilisation;
- Phases 8 – Finalise foundations and backfill site.

The detail associated with each step is described in the subsequent pages.



## 7. Stage A - Pre-site works

### 7.1 Inspection of building, project site and surrounding infrastructure

Inspection of the Ravensworth Complex buildings has been undertaken to determine the materials and method of construction and the overall layout of the buildings.

Critical dimensions of each building were taken as well as the location of surrounding infrastructure with reference to each building. A visual inspection was made to determine structural integrity and any restrictions or difficulties associated with the relocation of the buildings and access to the site where they are currently located.

Complementary scoping work was also initiated including geotechnical investigations to establish the existence and depth of rock which may impact the methodology.

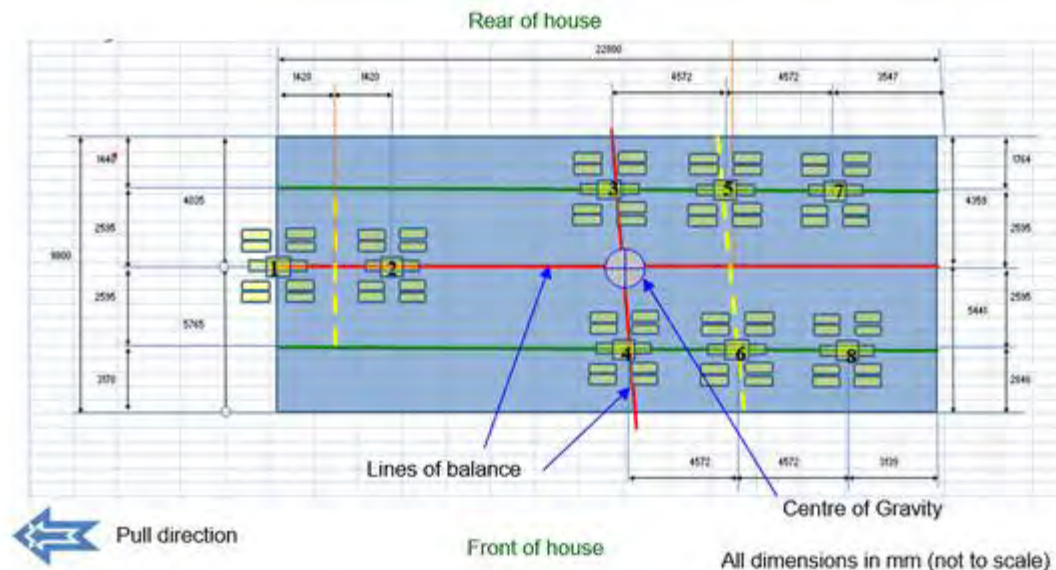
### 7.2 Design engineering – structural relocation and support

The following engineering tasks were undertaken as part of the preliminary phase for the relocation of the Ravensworth Complex. These tasks will be reviewed and developed in further detail as part of the detailed design phase.

- *Weight and distribution* - Calculations were performed to determine the weight of the buildings and their mass distribution. This feeds into the support and relocation engineering tasks;
- *Support engineering* - Beam layout and jacking points were determined to accommodate the calculated weight distribution, establish the necessary equipment and ensure sufficient space for the equipment installation and removal;
- *Bracing and blockwork* – review of each of the building's construction, materials and condition was undertaken to determine their level of structural integrity. Additional temporary structural support or bracing will be adopted where necessary to maintain the buildings in their existing condition during the move. This additional support will be removed post move.
- *Relocation engineering* – The support engineering and relocation engineering processes occur in parallel and is an iterative process. The relocation engineering considers the effect of the route on the load plan for each of the buildings and may change the load plan and therefore require reassessment of the associated support engineering.
- *Route engineering* – In the case of the Ravensworth Complex relocation, the route will be via internal roads which will be constructed to meet Mammoths load plan requirements. These roads will be designed to meet load bearing, rolling resistance, slope and crossfall requirements. Preliminary route constraints imposed by the proposed load plan were developed and will feed into the detailed route engineering work.



Figure 3 – Example load plan for a masonry building



The Ravensworth Complex buildings will be raised on a lattice work of beams. Engineering calculations are undertaken to size the beams in terms of acceptable strength and deflection.

Each building is jacked using purpose designed “crib jacks” in conjunction with cribbing (a temporary support grid of wooden beams). The number of jacks employed, and their location is dependent on the weight of the building, the layout of the steel work and the building weight distribution. Enough jacks will be employed to ensure that the hydraulic pressure is maintained within the allowable operating pressures.

In parallel with assessing equipment requirements in terms of strength, the equipment layout will consider accessibility and operation of Mammoth’s equipment once installed, its performance during the relocation itself, as well as how to extract it once each building is relocated. A review has been undertaken of the surroundings of each building to understand any existing constraints or obstacles.

### 7.3 Foundation Engineering

As part of the overall engineering design the new foundation will be designed to support the existing structure and to enable the installation and removal of jacking equipment.

Typically a new foundation (slab or footers) is installed below grade and block work installed between the underside of the existing building and the top of the new foundation. Sufficient space and access for the removal of equipment prior to the completion of the foundation is achieved by installing windows in the block work to accommodate the support beams (refer to section 8.3). This allows removal of the beams once the weight of the building is taken by the blockwork and transferred into the foundations.

### 7.4 Logistics planning

Scheduling and planning of project activities will be undertaken to maximise efficiencies and to avoid introducing project constraints and delays.

The relocation scope is just one element of numerous activities which will be staged to minimise impact of contractors and subcontractors on each other’s activities throughout the project.

Timing requirements and interdependency of activities will be further developed and presented on an overall Project Schedule. A detailed breakdown of responsibilities associated with the project activities will be developed and incorporated in a single project interface list.





## 8. Stage B - Site works

### 8.1 Phase 0 - Premobilisation works

Phase 0 works broadly involve:

1. The removal of obstacles, building elements and services both around and within the buildings, together with their prior documentation;
2. Bracing/stabilisation works to support unstable elements of the buildings during the relocation; and
3. The digging of access ramping to the Ravensworth Complex buildings perimeter foundations.

A preliminary list of the premobilisation activities expected on site prior to Mammoth mobilisation is provided below. Further details of some elements are presented post the premobilisation activity list.

- Archaeological works – Indigenous (where appropriate);
- Archaeological works including investigation, surveying and documenting/cataloguing of the Ravensworth Complex at its present site – covering buildings, sub-floors, fixtures and fittings, other infrastructure, landscaping and plants;
- Pre-project hazardous substance assessment and removal – e.g. pesticides, contaminated soils, asbestos);
- Documenting of those building elements to be disassembled and rebuilt prior to removal;
- Demolition works (permanent removal) – buildings and infrastructure;
- Relocation of trees which are to be retained at the new site (if necessary);
- Removal of trees from around the buildings that are not to be relocated;
- Pre-digging around buildings, (refer to details below);
- Relocation of the existing grave site;
- Removal of chimneys to ridge line on the Main Homestead and Kitchen buildings<sup>1</sup>;
- Stabilisation/premove renovation works for existing buildings to be relocated, (refer to details below);
- Removal of items within buildings which are not to be relocated or to facilitate the move, (refer to details below);
- Removal of floors within the buildings, (refer to details below);
- Install bracing (refer to details below);
- Identification of extent of underground rock;
- Identification and termination of underground services;
- Preparation of route.

#### Pre-digging around the buildings

The approximate extent of excavation required around each building is shown in Figure 4.

Excavation around the buildings will be required to an average depth of around 1.2 m below the cutline tapering up to grade. This will provide access to the building's foundations. Excavation within a metre of the building and under the building footprint will be undertaken by Mammoth after the pre-digging is finalised.

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<sup>1</sup> The chimney on the Barn quarters building can be retained in its current state without bracing



Figure 4 – Required excavation around buildings – plan view



Note 1 – Excavation is not required around the Cottage.

Note 2 – If financially equivalent it may be better to excavate the entire region between the buildings to a lower flat level. This has the advantage of providing a flat work area and reduces the pooling of water under the buildings in a rain event – reducing potential project delay.

Note 3 – Rock has been identified around the kitchen, privy and eastern end of the main homestead. The digging in these areas will be tailored to minimise the need to excavate rock. Alternatively the cutline may be modified subject to further investigation.

## Stabilisation/premove renovation works for existing buildings prior to relocation

Renovation/stabilisation works will include:

- Crack stitching with remedial stainless-steel bed joint reinforcement. Only required for major structural cracks – i.e. > 10 mm in width;
- Stone replacement or indents where structurally compromised;
- Local reconstruction (as opposed to substantial reconstruction) including the rebuild of the western face of the Barn quarters to return it to its original configuration;
- Repair or replace termite damaged/decayed timber;
- Fitting of missing hanging beams to augment strut supports (refer to Figure 5);



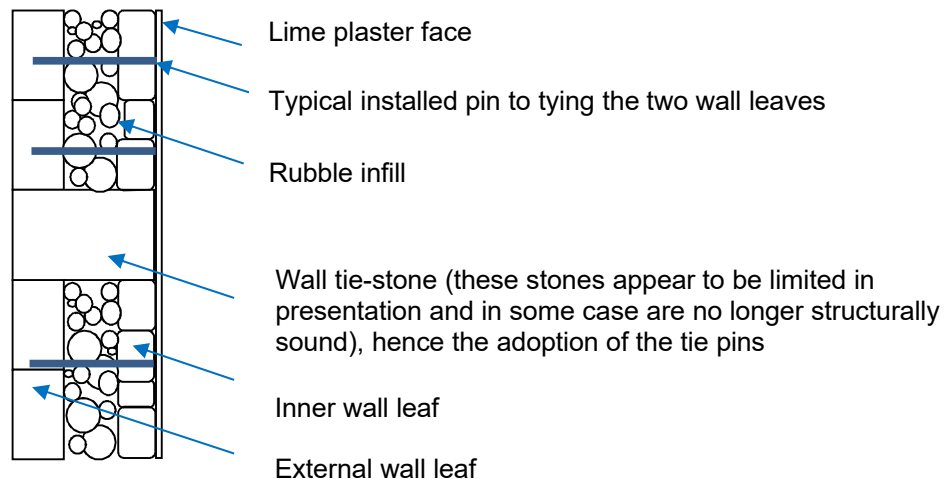
- Localised pinning of walls (installation of through ties) where the integrity is compromised and *the inner and outer leaf of the walls are separating*. Through ties would be installed by drilling through the inner leaf into the outer leaf and installing epoxy grouted pins to tie both leaves together (refer to Figure 6).<sup>2</sup>

Figure 5 – Missing bracing in the Barn



Figure 6 – Pinning of the inner and outer walls where walls are separating or delaminating

Typical Wall in cross-section



<sup>2</sup> Given the double leafed nature of the walls, sections which are structurally compromised will need to be pinned (e.g. the northeastern section of the Stable wall is delaminating – the outside wall leaf is moving outwards whilst the internal leaf is leaning inwards). Pinning will be limited to those sections which are compromised, with general pinning of the wall not required.



The following items will also be considered for the longevity of the building but *are not necessary for the move*:

- Structural integrity check and bolt where necessary collar ties, struts, king rafters, cross purlins and other relevant roof framing components;
- Filling and pointing of open joints;
- Tie down top wall plates;
- Connect ceiling joists to wall plates;
- Connect rafters to wall plates.

Removal of items within buildings which are not to be relocated (or as necessary to facilitate the move).

The following objects will be removed prior to installing support bracing.

*Table 3 – Objects to be removed prior to move*

Object Description	Location	Comments
All doors	All buildings	remove at hinges and leave architraves. reinstall at final location
Shelf	Servants kitchen	remove and reinstall at final location
End panel	Servants kitchen	remove and reinstall at final location
“New” kitchen	Servants kitchen	demolish
Skirting boards	Homestead	remove and reinstall at final location
Woolshed fitout	Stables (Outbuilding 1)	remove and reinstall at final location if desired
Toilet boxes	Privy	remove and reinstall at final location
Cupboard	Servants kitchen	remove and reinstall at final location if desired
Timber upright	Barn (Outbuilding 2)	remove and reinstall at final location
Timber partition and loose items	Barn (Outbuilding 2)	remove and reinstall at final location
Cobblestones/Flagstones	All buildings	remove and reinstall at final location

The removal of items to be reinstated will be documented and catalogued as part of the removal and reinstatement process.

Removal of floors within the buildings.

Prior to the installation of the bracing, the wooden floors in the Main Homestead and Kitchen and the flagstones within all buildings and in the Main Homestead and Kitchen verandas will be documented and removed (to be reinstated post move).

The removal of the floors enables clear access for the installation of the temporary bracing and access for archaeologists to investigate under the floors prior to Mammoth commencing work on site. It also enables the identification of the extent of the homestead footings.

A void currently exists in some of the internal leaves of the homestead walls to accommodate the floor joists (refer to Figure 7). Where this method of construction is used, the internal wall leaf is built on top of the integrated joist, resulting in the internal wall leaf above being supported directly by the floor joist.

The removal of the floor provides access to the floor joist and appropriate treatment of the void to ensure the internal wall leaf is supported appropriately during the relocation.





*Figure 7 – Void in the internal leaf wall due to integrated floor joist*



### Install bracing

The building has an existing diaphragm in the roof support structure to prevent the parallelogramming of the top of the walls, however the absence of a cohesive floor in any of the buildings requires the installation of a temporary bracing system to provide a plenum or diaphragm at floor level; preserving the building structural integrity throughout the move. Similarly, temporary bracing will be installed in window and door openings as these represent areas of weakness within the building walls.

## 8.2 Phase 1 – Excavation and underpinning of the Ravensworth Complex buildings

At the commencement of works on site, Mammoth will mobilise to site bringing a significant volume of specialised equipment, cribbing blocks and support steel. Mobilisation will be achieved using a procession of semitrailers, with articulated loaders to unload and place the equipment into designated storage points. It is proposed to utilise the land adjacent to the buildings for equipment laydown and storage. Given the size of the site and spread of buildings, there may be more than one area designated for this task.

In parallel with the mobilisation of equipment, work will commence on the preparation of the buildings for relocation. The first part of this work is the excavation and supporting of the buildings on temporary steel.

### Excavation

The buildings will be excavated using purpose built (specialized) equipment which removes the dirt in sections. As dirt is removed, jacking posts and wall support is employed to take the weight of the building and prevent any deflection and stress transfer to the building.



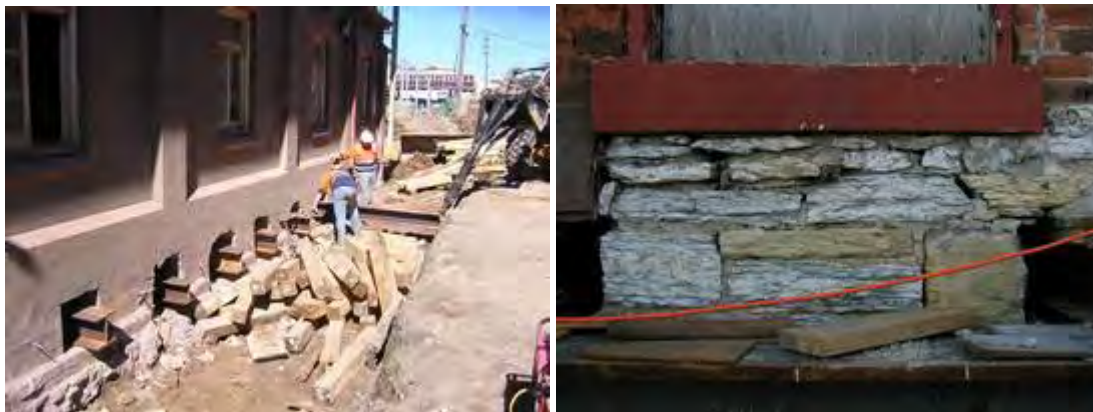
Figure 8 – Jacking posts



a) Heavy duty jacking posts installed under a building perimeter wall with lighter weight posts under the remaining floor structure. b) View through to the building's partially demolished footer supporting the far perimeter wall with the building floor supported above.

Traditionally the building would be fully excavated prior to installation of cross steel. However, for the Ravensworth Complex support steel will be installed early to enable a gradual transfer of load onto the steel support system. Windows will be cut or knocked through the footers to provide access for the installation of the steel whilst retaining some of the original support. Over time the building mass or “weight load” is gradually transferred from the old foundations to the temporary steel support latticework.

Figure 9 – Examples of footers being retained with support steel inserted through “windows” in the footers



### Building footings

The construction of the Ravensworth Complex buildings is fragile with double leafed internal and external walling and rubble filled gap between. This configuration requires care when removing the supporting footings as the rubble between the leaves may fall out of the bottom of the walls as the footings are removed. (refer to Figure 6)

Mammoth has an array of local support techniques which can be utilized as required to ensure positive support of the walls and retention of rubble during the excavation and accommodating the:

- Potential variance in the cutline across each of the buildings;
- Potential for degradation of the existing footings; and
- Unknown construction of the building footings

It is proposed to utilise adjacent land to stockpile soil and rubble removed from under the buildings during the excavation process.



## Steelwork and jacks

Layers of steel will be installed in a grid arrangement under each building to provide support during the move. Beams are maneuvered under the building using a loader. Rollers or slide plates are employed to enable the beams to slide into position.

*Figure 10 – Main beam being maneuvered into position*



Wooden wedges are used between the beams and the bottom of the building to ensure that the weight of the building is being taken on all beams. These wedges are knocked into position until firm and pre-stress the beams to accommodate elastic deflection in the beams.

## 8.1 Phase 2 – Jacking of the Building(s)

Cribbing is built up under the beams to ensure a stable base for jacking. As the building is raised, the cribbing is built up in successive layers to minimize the gap between the wood and the beams at all times. This safety procedure ensures that the beams remain supported if a jack or hose was to fail.

*Figure 11 – Buildings supported on cribbing*



Each building is raised using a unified jacking machine which ensures all parts of the building are raised as one. The unified jacking system enables the pressure on jacks to be monitored – critical to confirming that everything is progressing correctly and to accurately determine the actual weight of the building (plus support steel) and the associated weight distribution across the load plan.

Each building will be jacked high enough to allow dollies to be placed in the positions determined by the weight and distribution calculations adjusted where necessary to accommodate any discrepancy between the calculated and actual weights.





## 8.1 Phase 3 – Transfer the building(s) onto dollies

Once each building is raised it is transferred onto dollies to enable it to be relocated. Dollies are specialised hydraulic “bogies” which enable the building to “float on oil” as it is being moved along a route.

Generally, the dollies are placed under the main beams. The front of each building will either be supported on dollies or a bolster used to transfer the load onto the “third wheel” or turntable on the back of a prime mover.

The number of dollies employed is dependent on the weight of the building and its distribution. The limiting factor is usually the wheel load limit for the roads on route – a lesser problem for the Ravensworth Complex relocation as the move will be confined to prepared internal Glencore routes as opposed to the public road network.

*Figure 12 – A loaded building*



## 8.2 Phase 4 – Relocate each building to its new location

Once the dollies are installed and any obstacles on route removed, the buildings will be relocated to the new site.

The buildings will be pulled to the new location using a pull truck, loader or similar. Self propelled dollies will be utilised to ensure better control of the loaded building and a lesser reliance on the pull or braking force applied by the tow vehicle. The number of power dollies to be employed is determined by the required traction and braking force.

The use of hydraulic dollies also minimises jerk on the buildings.





*Figure 13 – Hydraulic power dollies installed under a building enabling it to be self propelled (i.e. no tow vehicle)*



The Ravensworth buildings will not be moved together, rather a series of convoys used to minimise equipment requirements for the project.

Each move is expected to take less than one day. Steel plate will be utilized where necessary to prevent bogging on the original site and to distribute ground pressures applied by the dollies at the initial and final sites. Plates will also be employed to protect underground cables if required.

*Figure 14 – Laying of steel plate to spread dolly wheel loads over unprepared agricultural land.*



Once the buildings have traversed away from their current siting, they will move onto a purpose built road which will enable the safe and unobstructed transport of the buildings without the need for ongoing leapfrogging of steel plate.

Relocation via the local route limits the interaction with public roads; limiting disruption to local traffic, minimising permitting, police and pilot escorts requirements and overhead service lifting or disconnection.



Once at the new site, the buildings will be sited over their new foundations using plumb bobs to align building datums with the pre-poured foundations.

*Figure 15 – Spotting a building using plumb bobs.*



### 8.3 Phase 5 – Install new support under each building

The set down process is the reverse of the jacking process in order but is essentially the same process.

The engineered foundation for the buildings will be poured before the move. Once the building is sited over the new foundation the dollies are replaced by cribbing and jacks. Blockwork is then built up in sections to support the weight of the building; essentially mimicking the temporary shoring support used when excavating the building.

*Figure 16 – Building of block work above new foundation prior to lowering of a masonry building.*





Each building will be retained in the raised position until the block work is ready to accept the building. The design of the support blockwork will allow for the temporary support equipment to be removed once the weight of the building is transferred to the permanent construction. Conventionally this is achieved via the incorporation of “windows” in the blockwork with clearance to release the load from Mammoth’s steel and to extract the beams.

*Figure 17 – Finished blockwork incorporating windows for steel clearance.*



#### 8.4 Phases 6 & 7 – Remove Mammoth’s equipment from under the building & demobilise

Once the grout has set the weight of the building can be supported on the permanent supports and transferred to the ground via the new foundations. The lattice work of beams is lowered to remove the building weight load from the support steel. Once the load is removed the steel, cribbing, jacks and other equipment is free to be extracted. This is the commencement of the demobilisation process which although technically simple, is intensive due to the large volume of equipment involved.

As the equipment is removed it will be transferred to the laydown area where it will be used to move the other buildings or at the completion of the move, loaded on trucks to remove it from the site.

*Figure 18 – Loading dollies*







## 8.5 Phase 8 – Finalise foundations and backfill site

With the steel removed, a crawl space will remain under each building. At this point the temporary stabilisation works such as the internal bracing and blockwork used to stabilise the door and window openings is removed, providing clear access for the running of new services including any piping (septic or water) or electrical cabling. It also provides opportunity for the easy installation of new facilities such as underfloor heating/airconditioning if desired.

Once the services are connected the support blockwork is finalized; blocking up of the windows retained in the footings until this point. Once the blockwork is finalised, soil will be backfilled to match the topography at the original site. The blockwork/new foundation will be covered as all new work is below grade and no longer visible once this work is completed. For most projects the soil excavated at the new site, as part of the foundation preparation, will be pushed back against the new support.

A benefit of the relocation will be the installation of a completely new foundation for each building in accordance with the current building code. This will improve the stability of the buildings for many years to come.

The reinstatement of the flooring and flagstones requires the returning of fill into those rooms where the flagstones are to be laid or a false floor prepared to support the stones. Either option will need to be engineered, and in the case of the returning of fill, it will be necessary to layer and compact the fill with a vibrating compactor to ensure the flagstones don't settle and are trafficable. Alternatively, the stone could be laid into a concrete slurry to ensure stability. The final methodology will be determined in consultation with the heritage architect and authorities where appropriate.

The wooden floors and doors will be reinstated once the underfloor services are complete. Once the floors are in, any other items considered relevant to the heritage value of the building (and which were removed to facilitate the relocation), will be reinstated.

Any restoration works necessary to bring the buildings into a serviceable condition would commence at this point.

*Figure 19 – A relocated masonry building project complete after backfill, landscaping and restoration*







## **Attachment A**

### **Example Moves**

#### **Significant Masonry Buildings**



*The Kingston Langford Mansion*



*King of Prussia Inn*



*The Clemons House*



*1850s Mansion*



*Czech Museum*



*Catholic Convent*





*Helmsley Mansion*



*1800s Heritage House*



*Hornsby Signal Box*



*Oneida Stake Academy*



*Schubert Theatre*







*Armstrong House*



*Gem Theatre*



*Dunbar Mansion*





# Appendix I

## Ravensworth Homestead Relocation – Structural Engineers Statement

Nathan Donegan,  
Engineering Design Manager,  
Coal Assets Australia,  
Glencore.

E: Nathan.Donegan@glencore.com.au

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## **Ravensworth Homestead Relocation**

18 October 2019

Dear Nathan,

Mott MacDonald has been involved in providing general structural assessment and advice during development of both conservation and relocation options for the Ravensworth Homestead Complex. The aim has been to minimise impact on the heritage fabric of the buildings during relocation.

We provide the following advice with regard to our review of the homestead relocation proposals. This review is guided by our own site inspection and our own recommendations regarding remedial works required to the buildings, as well as the proposals provided by Mammoth Movers.

This review is to assess the feasibility of the relocation with regard to the proposal presented by Mammoth Movers (Ref: Methodology for Relocation of the Ravensworth Complex Rev 1, Mammoth Movers, 8 May 2019).

We have considered the potential impact on the building's fabric and the stabilisation required to accompany the move, as well as the new footing requirements at the proposed recipient site.

We have reviewed Mammoth Movers proposals and have concluded that, with appropriate pre-move stabilisation and remediation works, in conjunction with the proposed temporary bracing, the intact relocation of the buildings will be feasible.

The pre-move stabilisation works recommended by Mott MacDonald are not necessarily specifically required as a result of the move and are recommended for the long-term conservation of the buildings, whether relocated or not. We have however recommended that they take place prior to relocation, to maximise the building's strength for the move.

The pre-move conservation works will include repair to decayed or termite damaged timber, stone work repairs and stabilisation, crack stitching with remedial wall reinforcement, some localised stonework reconstruction, wall through-ties and some remedial works to timber connections.

Provided that detailed design of temporary bracing is completed by Mammoth Movers as per the intent of schematic design, the pre-move conservation and stabilisation works are carried out, and that the proposed movement protocols are adhered to, we would expect that only minimal repair works (e.g. patching of plaster where bracing is installed) will be required at the recipient site.

Mammoth Movers will be responsible for the detailed design of temporary works, the methodology for the move, and executing the move. Mott MacDonald have reviewed their experience with this type of work, and their general protocols for the move, and consider that they have reasonably demonstrated the appropriate skill and experience for the project.

Our findings regarding the feasibility of Mammoth Movers proposals are subject to their completion of detailed design, the subsequent correct execution of the pre-move works and temporary bracing, and the preparation of a suitable haul road, which complies with the requirements of Mammoth Movers.

This assessment is also subject to the staged inspection of the condition of the fabric during the move, and to allow the move to be halted at any point to allow for any necessary changes in process, or additional works to be carried out, to minimise risk to heritage fabric. Since it is understood that the move will not incorporate movement on public roads (with associated time constraints), this appears to be reasonably feasible.

We trust that this assessment is of assistance to the approval authorities in providing approval for the works.

Please contact the undersigned if further input or clarification is required.

Yours sincerely



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## Appendix 23h

### Broke Village Proposal



## Appendix 23h – Broke Village Relocation Option

This appendix contains documentation for the **Broke Village** homestead relocation option and includes the following specialist reports, conceptual drawings and documentation:

- A. McNamara Park, Broke – Heritage Analysis and Statement of Significance (Lucas Stapleton Johnson)  
*A report presenting analysis of the heritage aspects of the recipient site and a statement of their significance.*
- B. Aboriginal Due Diligence Assessment Report – Proposed Relocation Area for Ravensworth Homestead, Lot 701 at Broke (OzArk)  
*A report presenting findings from a site assessment conducted to determine the presence of Aboriginal archaeological artefacts.*
- C. Ecological Constraints Assessment – McNamara Park, Broke (Umwelt)  
*A report presenting findings from a site assessment conducted to determine the presence of protected flora and fauna.*
- D. Masterplan Concept Document – Ravensworth Homestead, Adaptive Re-Use within Broke Town Centre (SHAC Architects)  
*Conceptual adaptation drawings showing the proposed Broke Village scheme. The set includes two dimensional plans and three dimensional perspective drawings.*
- E. Conceptual landscape plan (Geoffrey Britton)  
*Conceptual landscape sketch showing the proposed layout of garden within the relocated homestead grounds.*
- F. Preliminary earthworks plan (Glencore)  
*Preliminary earthworks plan showing proposed regrading of recipient site having regard to Wollombi Brook 100 year ARI flood level. Regrade plan also includes provision of 1m of fall across Kitchen Wing and Main House to match fall at existing homestead site.*
- G. Project Methodology for Dismantle and Rebuild at Broke (HSR (Aust) Group)  
*A report outlining the approach and methodology for full disassembly and rebuild of the homestead buildings in Broke.*
- H. Broke-Fordwich Wine and Tourism Economy (Broke-Fordwich Wine and Tourism Association)  
*A letter highlighting the existing economic environment of the Broke-Fordwich area and the potential benefits and opportunities of the Ravensworth Homestead relocation to Broke.*

## Appendix A

### McNamara Park, Broke – Heritage Analysis and Statement of Significance

# McNamara Park, Broke NSW

## Heritage Analysis and Statement of Significance



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Date: 22<sup>nd</sup> November 2019

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# 1. Introduction

## 1.1. Background

This report is a Heritage Analysis and Statement of Significance for McNamara Park, Broke, NSW and has been commissioned by Glencore, Glendell Tenements Pty Ltd.

This report forms part of a Statement of Heritage Impact that provides an analysis of a proposal to extend the existing Glendell Mine, referred to as the Glendell Continued Operations (GCO) Project. The Glendell Mine forms part of the Mount Owen Complex located in the Upper Hunter Valley of New South Wales.

The land into which the open cut coal mine is to be extended forms part of the former Ravensworth Estate, an historic pastoral property located in the Upper Hunter Valley of NSW established in 1824 by Dr. James Bowman, the colony's principal surgeon. The historic focus of the Ravensworth Estate lands is the c1832 homestead, the Ravensworth Homestead Complex. In 1997 Glendell Tenements Pty Ltd acquired the homestead complex and surrounding lands.

As part of the proposed extension to the Glendell Mine it is also proposed to relocate the Ravensworth Homestead Complex located within the former Ravensworth Estate lands to one of two possible recipient sites: Ravensworth Farm, Ravensworth or McNamara Park, Broke.

This report provides an analysis of the documentary and physical evidence of McNamara Park, Broke Recipient Site, leading to a considered assessment of the cultural significance of the place and its individual components.

McNamara Park, Broke is not identified as a heritage item and is not located within a recognised heritage conservation area.

### 1.1.1. Methodology

The form and methodology of this report follows the general guidelines for statements of heritage impact outlined in the following documents:

*Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter)*, Australia ICOMOS Inc. 2013

*Assessing Heritage Significance*, NSW Heritage Office, 2001

*Statements of Heritage Impact*, NSW Heritage Office, 2002

*NSW Heritage Manual*, NSW Heritage Office, 1996

### 1.1.2. Exclusions

This report does not include a detailed assessment of the ecological values of the place. Refer to *Appendix 20: Biodiversity Development Assessment Report* accompanying the SSD application.

### 1.1.3. Author Identification

This report has been prepared by Kate Denny and Ian Stapleton of Lucas Stapleton Johnson & Partners Pty Ltd. Dr. Terry Kass, historian, prepared the history of the place for the purposes of this report.

### 1.1.4. Acknowledgements

The authors wish to acknowledge the assistance of the following:

- Shane Scott, Bradly Snedden, Catherine Fenton of Glencore
- Bret Jenkins, Bridie McWhirter of Umwelt
- Tim Duddy, heritage consultant

### 1.1.5. Copyright of Images

This commissioned report is copyright © Glendell Tenements Pty Ltd. Apart from any fair dealing for the purposes of private study, research, criticism or review as permitted under the *Copyright Act 1879*, no part may be reproduced by any process without written permission from Council.

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## 1.2. Description of the Place

McNamara Park is located within the village of Broke, NSW, in the parish of Broke, county of Northumberland, within the local government area of Singleton Council. Broke is located within the lower Hunter Valley Region, approximately 157 kms northwest of Sydney, 85 km west of Newcastle and 29 km south of Singleton.

McNamara Park is situated along the southwestern edge of the village on the western side of Wollombi Street (the main street in the village) and at the intersection with Milbrodale Road. The public reserve is approximately 12.5 ha in area. The real property definition of the place is Lot 701 of DP 93631.

McNamara Park is a relatively level area running north-south along the southwestern edge of the village and is bounded by Wollombi Street (the main street) on the east, Milbrodale Road on the south, Wollombi Brook on the west and residential allotments on the north. The southern portion of the park is covered with an open wood of native trees growing in grassland, with some mature, eucalypt trees. The northern portion of the park is open grassed areas. Adjacent to Wollombi Brook, the land falls steeply to the creek bed which is possibly 10 or 15 meters below the general level of the park. At the southern end there is a modern concrete bridge crossing the Brook, on Milbrodale Road.

The public reserve is used as a free camping ground and for occasional markets and festivals. The park is accessed by a gravel track from both the northern and southern ends of the park. Smaller dirt tracks lead off this main access road into the open areas of the reserve where camping occurs. Some facilities are provided throughout the camping grounds including an amenities block, car parking areas, picnic shelters, garbage bins, power outlets and the like.



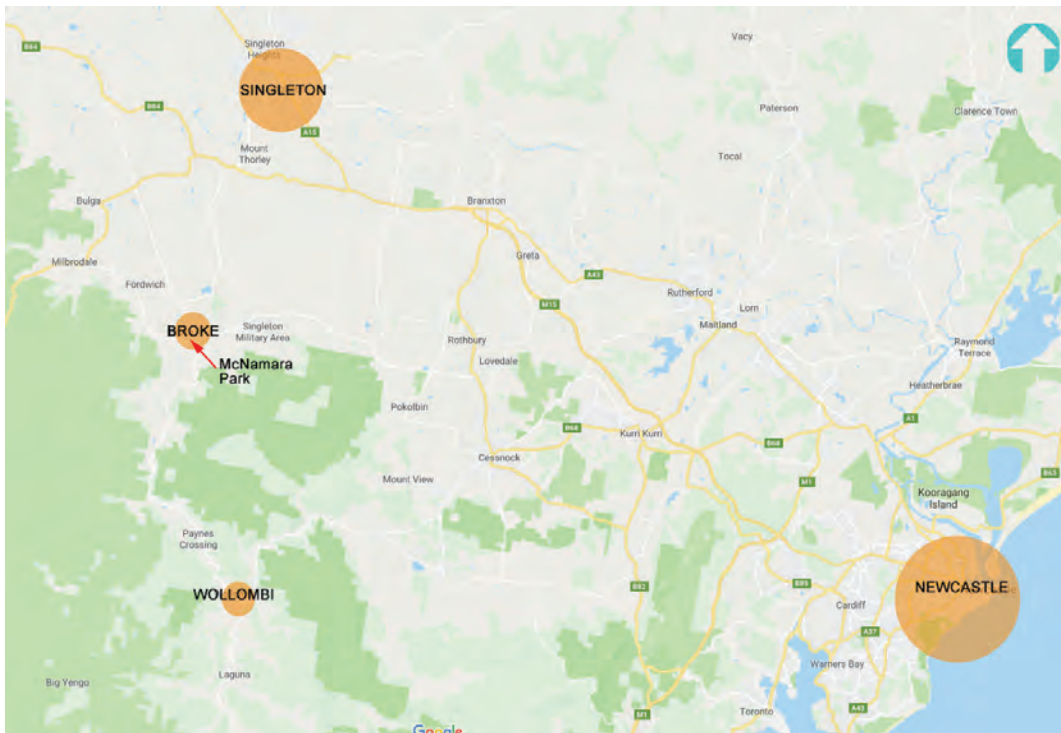


Figure 1. 1: Location plan showing the location of the village of Broke in context of the Lower Hunter Valley region. Source: GoogleMaps, 2019



Figure 1. 2: Aerial view of the village of Broke showing the subject property, McNamara Park (outlined in orange). The real property definition is Lot 701 DP 93631. Source: SixMaps, 2019

## 1.3. Terms, Abbreviations & Nomenclature

### Terms

This report adheres to the use of terms as defined in the Australia ICOMOS *Burra Charter* 2013, together with the following definitions:

<b><i>Archaeological potential</i></b>	is here used and defined as a site's potential to contain archaeological relics which fall under the provisions of the <i>Heritage Act</i> 1977 (amended). This potential is identified through historical research and by judging whether current building or other activities have removed all evidence of known previous land use.
<b><i>Archaeological Site/Item</i></b>	A place that contains evidence of past human activity. Below ground sites include building foundations, occupation deposits, features and artefacts. Above-ground archaeological sites include buildings, works, industrial structures and relics that are intact or ruined.
<b><i>Place</i></b>	means a geographically defined area that may include elements, objects, spaces and views. Place may have tangible and intangible dimensions. The term place is defined under the Burra Charter and is used to refer to sites and areas of cultural significance.

### Abbreviations

c	Circa
CMP	Conservation Management Plan
CT	Certificate of Title
DP	Deposited Plan
EIS	Environmental Impact Statement
Fol.	Folio
LEP	Local Environmental Plan
No.	Number
SHR	State Heritage Register
SOHI	Statement of Heritage Impact
Vol.	Volume

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## 2. History of the Place

### 2.1. Introduction

The following outlines the history of a site in the Village of Broke identified as a possible alternative location for the Ravensworth Homestead Complex. This history has been prepared by Dr. Terry Kass, historian for the purposes of this heritage analysis and statement of significance report.

### 2.2. Aboriginal Occupation of the Broke area

The following information regarding Aboriginal cultural values has been extracted from the *Aboriginal Due Diligence Assessment Report: Proposed Relocation Area for Ravensworth Homestead* prepared by OzArk Environmental & Heritage Management Pty Ltd, dated August 2019 (*Appendix 23h*).

The village of Broke is located in the Wonnarua tribal area of the upper Hunter River Valley. Tocomwall<sup>1</sup> notes that ethnographic accounts and anthropological notes written in the mid-to late-19th century indicate that the traditional territory of the Wonnarua people extended over a two thousand square mile area of land that included the Hunter River and all its tributaries from within ten miles of Maitland to the apex of the Liverpool Ranges. This interpretation is challenged by the Wonnarua Local Aboriginal Land Council<sup>2</sup> who state that there is much debate about the tribal boundaries and that the dividing line between the Wonnarua and the Kamilaroi may have been much further south in the area of 'Jerrys Plains'.

In 2013, Aboriginal community consultation was undertaken for the Bulga Optimisation Project (BOP) assessment resulting in the Bulga Optimisation Project: Aboriginal Cultural Heritage Assessment (ACHAR).<sup>3</sup> This report also included confidential cultural values assessments authored by two Wonnarua Knowledge Holder groups, the Plains Clans of the Wonnarua People (PCWP) and the Wonnarua Nation Aboriginal Corporation (WNAC).

The BOP consultation recorded several cultural values associated with the immediate area surrounding the study area:<sup>4</sup>

- Some Registered Aboriginal Parties (RAPs) stated that they believe the Broke and Bulga area is sacred as it is surrounded by features linked to spiritual Creation stories.
- The interaction between connections to Country and cultural identity is highly important especially as the traces of the past and their memories contributed to maintaining distinctive Wonnarua and other Aboriginal people's culture, spirituality and cultural interaction with the landscape.

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<sup>1</sup> Tocomwall Pty Ltd. 2017; *Hillcrest Aboriginal Cultural Values Assessment Report*. Report to Glencore Coal Assets Australia, p. 49

<sup>2</sup> Ibid. p. 482

<sup>3</sup> Connect for Effect. 2013. *Bulga Optimisation Project: Aboriginal Cultural heritage Assessment*. Report to Bulga Coal Management Pty Ltd.

<sup>4</sup> Connect for Effect 2013; pp.147–149



- The pathways and water systems to and from Creation places and places of ceremony are of high cultural value. All waterways, creek lines and tributaries in the local area were identified as culturally important as they were believed to be part of the essential spiritual meaning of the place and the people. Nine Mile and Loders Creeks, Wollombi Brook, Monkey Place Creek and more broadly the Hunter and Goulburn Rivers are important parts of the pathways to and from ceremony and to and from sacred Creation places and as such have immeasurable cultural values.
- Ethnobotanical knowledge identified indigenous flora and fauna as important cultural resources.
- Most RAPs expressed high levels of emotion regarding landscape transformation and fragmented cultural and archaeological sites.

Key cultural values identified in the cultural values assessment in the local area include the now-relocated Loders Creek grinding grooves, Baime Cave, Lizard Rock (also known as Yellow Rock) and the site of the Bulga Bora Ground.

Of particular relevance to the village of Broke is Lizard Rock (Yellow Rock), as the escarpment located in the Pokolbin State Forest, is the focus of dramatic landscape views from the town to the south.

Lizard Rock is important to the local Aboriginal people. Its outline is suggestive of a lizard and it holds strong spiritual connections for Aboriginal people of the area.<sup>5</sup> The story of Lizard Rock is part of the Wonnarua dreaming and is explained in story and song:

*“A great lizard (or goanna) wended its way across the land from the coast creating valleys and mountains. As it made its way towards the plains country it was met by the warriors there who commanded it to stop. It resisted, and the warriors killed it and smashed its head. It can be seen to this day petrified as Yellow Rock at Broke. To ensure that it stays that way, to the left of the road at Broke lies a line of rock formations which are said to be warriors who stand guard, just in case it chooses to revive itself and continue its journey.”<sup>6</sup>*

There are no known cultural values or Aboriginal sites pertaining directly to the location of the McNamara Park, although during consultation for BOP it was noted that Wollombi Brook, which is adjacent to the park, is believed to be a pathway to creation places.<sup>7</sup>

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<sup>5</sup> OzArk Environment and Heritage Management. 2013. *Aboriginal archaeological values assessment: Bulga Optimisation Project near Broke NSW*. Report to Bulga Coal Management Pty Limited.

<sup>6</sup> Eric Taggart to W.J. Needham (*University of Newcastle Archives*)

<sup>7</sup> Connect for Effect, 2013

## 2.3. Accessing the Hunter Valley

In 1801, Governor King despatched a party to explore the Hunter River, followed later the same year by the Surveyor General Charles Grimes and Francis Barraillier. A settlement as a place of secondary punishment for re-offending convicts was established shortly afterwards at the mouth of the Hunter River, named King's Town (now known as Newcastle).

In the following decades, emancipated convicts and young Australian born men explored northwards from the Hawkesbury River region, finding a trafficable route to the Hunter River. John Howe, the Chief Constable from Windsor, explored north from the Hawkesbury River in October and November 1818, reaching the Hunter River. In March 1820, Howe found a second shorter route with the assistance of Aboriginal guides. Howe was accompanied in the 1820s expedition by Benjamin Singleton, a miller, and together then named the plains they traversed when descending Mount Thorley, the Patrick's Plains (the town of Singleton is named for Benjamin Singleton).

The second route to the Hunter River was known as the Bulga Road and officially opened in 1823 and is now known as the Putty Road. Howe's overland track through Bulga allowed free settlers to enter the Hunter Valley, which had previously been restricted to open settlement due to the site of secondary punishment for convicts at Newcastle.

Figure 2. 1 (right): Detail from 1825 map entitled *A chart of part of the interior of New South Wales* by John Oxley, Surveyor-General showing "Howe's track from Windsor to Paterson River" (the original name for this part of the Hunter River). Source: NLA Map T 940



Surveyor-General Thomas Mitchell envisaged a road system modelled on the 'Great Roads' of England. He developed and systematised convict work-gangs in 1826 and work began on the Great North Road, the first of three 'Great Roads' planned for the colony. It connected Sydney to the fertile rural lands of the Hunter Valley. At Wollombi it followed two branches, one of which ran northwest through the Village Reserve that would become the village of Broke and further north to the Upper Hunter region.<sup>8</sup>

Large area grants were allocated to various individuals near the site of the future village of Broke. John Blaxland senior was authorised in 1825 to purchase 4,280 acres at Patricks Plains.<sup>9</sup> He received a formal grant on 8 March 1831. Other large grants near the village site included 1,200 acres plus an adjoining 560 acres granted to Thomas Walker on 17 May 1838 and 2,560 acres granted to Archibald Mosman on 27 November 1838.

<sup>8</sup> A Dunne, *From Brook to Broke: A History of Broke Fordwich*, Xstrata coal, Singleton, 2012, p 19

<sup>9</sup> A Dunne, *From Brook to Broke*, p 29

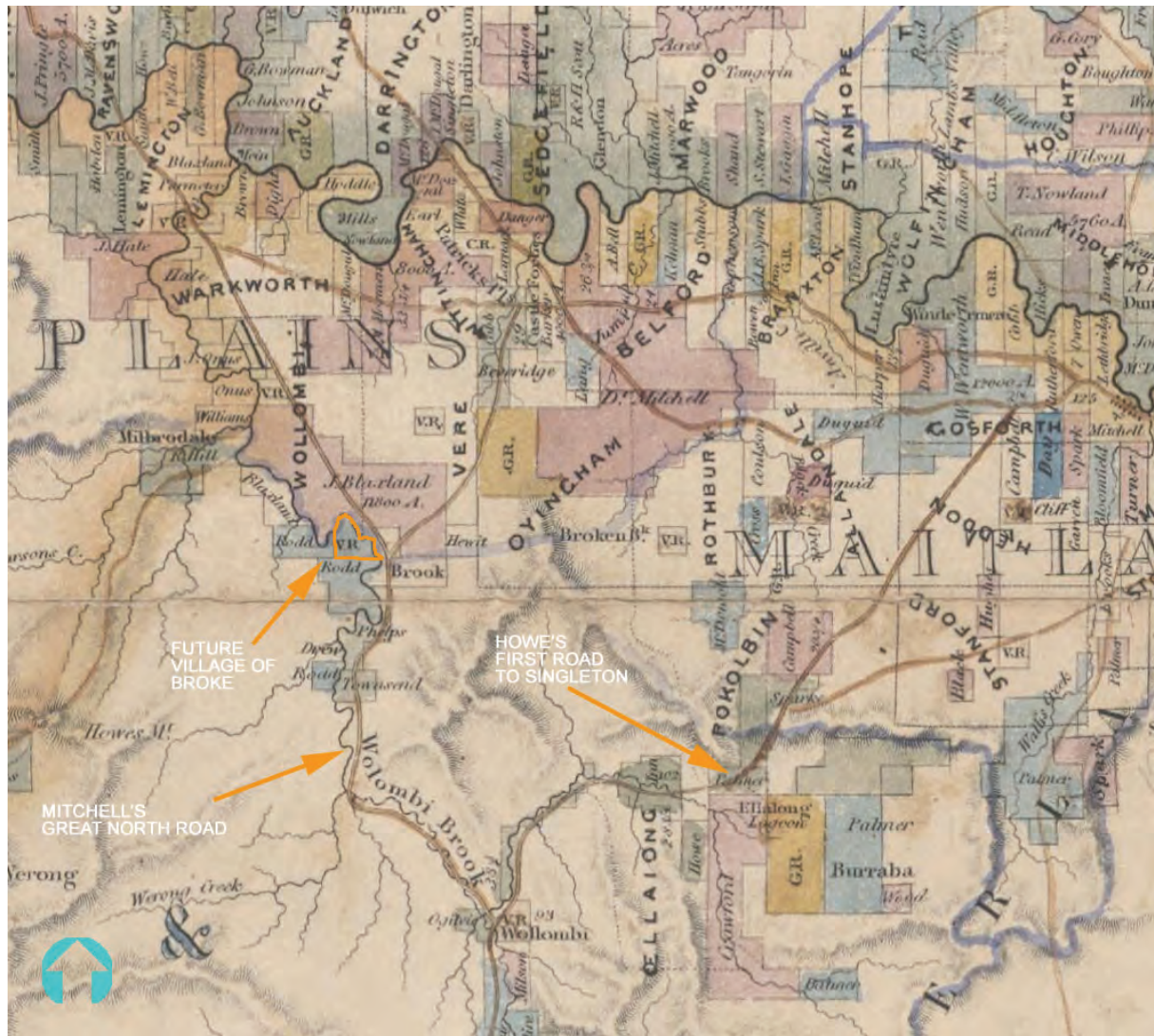


Figure 2. 2: Detail from 1846 map of the colony of NSW by Robert Dixon showing the location of the Village Reserve (outlined in orange on the southern side of the Wollombi Brook) to become the village of Broke.  
Source: NLA Map Rm 831b

## 2.4. The Village of Broke

The village reserve of Broke is located on the traditional land of the Wonnarua people.

In 1828, Assistant Surveyor Henry Dangar set aside land as a Village Reserve. On 27 November 1831, Surveyor General Thomas L Mitchell named it Broke after Major-General Sir Charles Broke Vere, Bart.<sup>10</sup>

The boundaries of the Reserve were laid out by Macleod and Assistant Surveyor Felton Mathew in February 1830. Felton Mathew's journal noted on 9<sup>th</sup> February 1830:

*Left the Station and arrived at the Reserve of Broke on the Wollombi – country similar to that we passed through yesterday. – Shot a large brown eagle measuring upwards of seven feet across the wings.*

<sup>10</sup> A Dunne, *From Brook to Broke*, p 54



On 10<sup>th</sup> February 1830, his journal reported:

*Assisted Mr Macleod in measuring the government Reserve of Broke, on the Wollombi.. country picturesque, but great part of the land very poor & (though flat) abounding in Iron Bark – & in some parts with Apple and Gum –*<sup>11</sup>

By 1839, an inn was operating on Wollombi Road south of the village site.<sup>12</sup> Though agricultural and pastoral settlement proceeded across the district, there was little call for a village. Singleton served most of the needs of the district. On 12 July 1858, R.A. Rodd of Minimbah, Singleton requested that lots in the Village Reserve of Broke be put up for sale. The Executive Council approved that request and orders were issued to formally measure the Village.<sup>13</sup>

Even though an accident had nearly cost Licensed Surveyor John Rogers the use of a finger in his right hand, he was able to send in a plan of the site and letter on 23 December 1858 describing the village site. He reported that the site on either side of the river was “one entire flat, the site for Town Allotments being placed between the two main Roads leading to Singleton and the Upper Hunter respectively”. He also noted that “Any portion it may be considered advisable to leave for recreation or extension should be at the West end.”<sup>14</sup> Rogers’ plan of the Village Reserve dated December 1858 showed no detail of the site.<sup>15</sup>

On 14 November 1859, Surveyor General Alexander Grant McLean minuted that he would call the village ‘Broke’ since the Reserve had been known by that name for some time.<sup>16</sup> A fair copy of the Town Design produced in 1859 by Bennett showed the study area as “Reserve for Recreation and Access to Water”.<sup>17</sup> (Refer to Figure 2.3 below.)

Licensed Surveyor John Rogers plan for the extension of the Reserve dated 14 October 1860 showed similar detail.<sup>18</sup>

The press complained on 14 July 1860 that the Village of Broke had been surveyed by government but was still a ‘waste’ even though people are ready to buy and build.<sup>19</sup> On 2 November 1860, another press article complained that purchasers of lots in the newly sold village of Broke were unable to build due to the lack of a good road.<sup>20</sup> By 1862, the village had progressed.

<sup>11</sup> F Mathew, Diary, transcription by B Jones, <http://www.cafewaratah.info/feltonmathew/journal.htm>, Accessed 26 June 2019

<sup>12</sup> A Dunne, *From Brook to Broke*, p 55

<sup>13</sup> LdsPW59/4752, in NRS 7933, Lands and Public Works, Correspondence, SANSW 5/3605

<sup>14</sup> LdsPW59/4752, in NRS 7933, Lands and Public Works, Correspondence, SANSW 5/3605

<sup>15</sup> Broke, Reserve for Village (Rogers) (B.1715), Dec 1858, SA Map 1553

<sup>16</sup> LdsPW59/4752, in NRS 7933, Lands and Public Works, Correspondence, SANSW 5/3605

<sup>17</sup> Broke, Fair plan of Reserve (Bennett) (B.1715.a), 1859, SA Map 1554

<sup>18</sup> Broke, Reserve and Design for Village (Rogers) (B.1715.b), 14 Oct 1860, SA Map 1555

<sup>19</sup> *Maitland Mercury*, 14 July 1860, p 6

<sup>20</sup> *Empire*, 2 Nov 1860, p 2





Figure 2. 3: Village Design Plan for Village of Broke, 1859. Source: SA Map 1554

In April 1862 the *Maitland Mercury* reported that a hotel, a store and blacksmith's shop were being built.<sup>21</sup> The 'picturesque' village of Broke was showing signs of development on 11 February 1864 with a timber building being erected for the Church of England as a church and school. A house was being built for the schoolmistress. Broke was described as:

*... a charming locality, situated on the banks of the Wollombi, on a lightly timbered flat, and surrounded by the Yellow Rock and other high and precipitous mountains-not a more lovely spot can possibly be found in the whole of the Hunter River district.*<sup>22</sup>

However, Broke's location on Wollombi Brook was not always an advantage. Significant damage and property loss were felt along Wollombi Brook in June 1867 due to flood, especially by Joseph Clark, wheelwright and postmaster at Broke who lost his dwelling, post office, wheelwright's shop, stores, furniture, tools and a large quantity of wheat.<sup>23</sup>

The 1871 Census recorded the village population as 117.<sup>24</sup> A provisional school operated from 1871 to 1872. It was followed by a public school established in 1878. During the nineteenth century, large numbers of livestock passed through Broke on the way south along the Great North Road.<sup>25</sup>

A detailed press report of 29 March 1873 described the settlement:

<sup>21</sup> *Maitland Mercury*, 1 April 1862, p 3

<sup>22</sup> *Maitland Mercury*, 11 February 1864, p 3

<sup>23</sup> *Maitland Mercury*, 27 June 1867, p 2

<sup>24</sup> A Dunne, *From Brook to Broke*, p 59

<sup>25</sup> A Dunne, *From Brook to Broke*, p 63

*The prettily situated village of Broke has recently made several signs of impending progress. There is now a first-class country inn in the township, kept by Mr Francis Dorrington, which we can recommend to all who visit the locality, the host and hostess being civil and obliging, and the accommodation very good. A neat and substantial church is now in course of erection, for our Roman Catholic friends residing in that locality. It is to be built of weatherboards on sleepers, with a shingled roof.*<sup>26</sup>

During the 1870s, the village population increased due to the subdivision of large rural properties in the surrounding area.<sup>27</sup> A police constable was stationed at Broke in 1873 and a courthouse and lock-up were completed by the Department of Public Works by 19 June 1879.<sup>28</sup> In August 1878, T.T. Arndell of Oakley recommended that the name of the Post Office be altered from Fordwich to Broke. Postal officials agreed with the change.<sup>29</sup> The change of name was officially gazetted on 3 September 1878.<sup>30</sup>

Another press report on 17<sup>th</sup> June 1879 provided more details of Broke,

*This thriving and picturesque village is making considerable headway and not having seen it for several months, we were quite surprised the other day in noticing the great improvements that had taken place in the interval. The principal improvement is that the main street of the village (Wollombi-street) has been graveled throughout its entire length, and the work appears to have been done in a very creditable manner, the greater portion of the road being thoroughly consolidated, and as firm as any roadway in Singleton, which is saying a good deal in its praise. Amongst the new buildings the most conspicuous is the new court house and lockup, a neat weatherboard building at the corner of Wollombi and Singleton streets. It is built on rising ground, out of flood reach, on a reserve of some two acres. A substantial stable, with quarters for the resident constable (Mr. Netterfield), who, by the by, is a very efficient police officer, give the building a very complete appearance, the only thing needed being the fencing, which we learn will shortly be proceeded with. The other most noticeable building of a public character which has of late been completed, is the Public School and teacher's residence, a substantial brick building. Broke has also two neat weatherboard churches, belonging to the Protestant and Roman Catholic, Episcopalian denominations; and it can boast of a nice recreation ground, some three acres in extent, surrounded by a neat painted fence, and provided with gates, etc., where we presume the Brokite lovers of the willow display their skill occasionally. Besides the convenient residence, store, post and telegraph office, and wheelwright shops belonging to Mr. Joseph Clark, who may be regarded as the "King of Broke," there are two excellent hostelrys, conducted by Messrs. Francis Dorrington and Isaac Frith, several other stores, blacksmith shops, and numerous neat private residences, several of which have been erected during the last few months.....*<sup>31</sup>

A new brick Anglican Church St Andrew's replacing the original one was dedicated on 9 November 1889.<sup>32</sup> A site for a School of Arts was granted on 1879 though there was no building on the site until 1898 and it was officially opened on 17<sup>th</sup> March 1898.<sup>33</sup>

<sup>26</sup> *Maitland Mercury*, 29 March 1873, p 3

<sup>27</sup> A Dunne, *From Brook to Broke*, p 61

<sup>28</sup> A Dunne, *From Brook to Broke*, p 60

<sup>29</sup> Letter GPO 78/6407, SP32/1 Post Office File, Broke Part 1, 1878-1885 (Barcode 315382), NAA

<sup>30</sup> NSWGG, 3 Sept 1878, p 3521

<sup>31</sup> *Maitland Mercury*, 19 June 1879, p 3

<sup>32</sup> A Dunne, *From Brook to Broke*, p 61

<sup>33</sup> A Dunne, *From Brook to Broke*, p 62

During the 1890s, dairying became a popular activity in farms across the district providing a more secure income than agriculture. A butter factory was set up in Singleton in 1897.<sup>34</sup> In 1892, an attempt to set up a creamery at Broke was unsuccessful though a creamery operated by James Moore and Co. Ltd was later operating there.<sup>35</sup>

Tenders were accepted to build a new brick police station for £685 in November 1898.<sup>36</sup> A new brick Roman Catholic church named Immaculate Conception of Our Blessed Lady was dedicated on 11 September 1904.<sup>37</sup>

The NSW Parliament approved the purchase of 4,080 acres of the Fordwich Estate near Broke for Soldier Settlement in December 1918. It became Soldiers Group Purchase Area No 50 with 12 farms. Even though it was one of the more successful soldier settlement schemes in the Hunter, conditions were still basic on the farms.<sup>38</sup> Some of the soldier settlers planted grapes but lacked the expertise to become successful winemakers.<sup>39</sup>

During the twentieth century, Broke gradually declined. It had lost its hotel, police station and various businesses by 1945.<sup>40</sup> Electricity was switched on in the village on 29 August 1957.<sup>41</sup> In 1959, the Prescott family who operated a local milk run built a small petrol station and a new village store. It gradually grew during the 1960s followed in the late 1980s by further extensions including a take away food service. A 50 seat restaurant (since closed) was added after 1998 so that the complex eventually included a shop, takeaway, newsagency, post office and bottle shop.<sup>42</sup>

During the 1950s, there were still numerous dairy farms around Broke.<sup>43</sup> From the 1960s onwards, the entry of Britain into the European Economic Community deprived dairy farmers of a major market. Coupled with reduced government assistance, that ensured that the number of dairy farms declined markedly. By the 2010s, there was only one dairy farm near Broke.<sup>44</sup>

Other industries grew in importance. From the 1960s onwards, the demand for coal to feed power stations being constructed in the Hunter lead to BHP acquiring a licence to prospect for coal near Broke. Mining rights were granted to a multi-national consortium in 1976 to mine for coal at Warkworth and later Mount Thorley.<sup>45</sup> In 1981 BHP commenced mining coal at Saxonvale near Broke producing 5,000 tonnes daily in June 1982.<sup>46</sup> Underground coal mining commenced near Bulga in 1994.<sup>47</sup>

The expansion of mining in the vicinity of Broke in the 1970s brought an influx of miners resulting in subdivision and building near the village.<sup>48</sup> On 25<sup>th</sup> February 1977, Registered Surveyor Geoffrey Rex Bailey completed the subdivision of land between Wollombi, Archer, Howe and Adair Streets. It

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<sup>34</sup> A Dunne, *From Brook to Broke*, p 75

<sup>35</sup> A Dunne, *From Brook to Broke*, p 75-6

<sup>36</sup> A Dunne, *From Brook to Broke*, p 62

<sup>37</sup> A Dunne, *From Brook to Broke*, p 63

<sup>38</sup> A Dunne, *From Brook to Broke*, p 73-4

<sup>39</sup> A Dunne, *From Brook to Broke*, p 83

<sup>40</sup> A Dunne, *From Brook to Broke*, p 64

<sup>41</sup> A Dunne, *From Brook to Broke*, p 69

<sup>42</sup> A Dunne, *From Brook to Broke*, p 68

<sup>43</sup> A Dunne, *From Brook to Broke*, p 77

<sup>44</sup> A Dunne, *From Brook to Broke*, p 79-81

<sup>45</sup> A Dunne, *From Brook to Broke*, p 87

<sup>46</sup> A Dunne, *From Brook to Broke*, p 87

<sup>47</sup> A Dunne, *From Brook to Broke*, p 88

<sup>48</sup> A Dunne, *From Brook to Broke*, p 70

created 33 building lots in the former reserve for public buildings in the village opposite the Water and Recreation Reserve.<sup>49</sup>

Another industry also emerged on former dairy farms. From the late 1980s onwards, a number of former dairy farms were planted with grapes. Various successful wineries emerged.<sup>50</sup> Today there are at least 10 wineries within the immediate vicinity of Broke including two that claim to be organic or biodynamic.<sup>51</sup>

## 2.5. Section 29 Water Reserve Village of Broke

Section 29 was an integral part of the design of the Village of Broke. As early as 23<sup>rd</sup> December 1858 when Licensed Surveyor John Rogers described the village site, he noted that ‘Any portion it may be considered advisable to leave for recreation or extension should be at the West end.’<sup>52</sup> The 1859 fair copy of the Town Design showed this area as ‘Reserve for Recreation and Access to Water’ (see Figure 2.4 below).<sup>53</sup>

On 24 December 1861, all land in villages and towns laid out by government were reserved from being selected by settlers as Conditional Purchases.<sup>54</sup> These restrictions were re-gazetted on 3 February 1862.<sup>55</sup> The Reserve appears to have lain largely anonymous for decades.

On 11 May 1897, Licensed Surveyor Worters R. Pulver surveyed Section 29. One of his fieldbook sketches showed the Reserve boundaries and his survey marks. The Section was described as having ‘Open apple’ [vegetation] and ‘Sandy soil’ (see Figure 2.5). He also carried out a traverse of Wollombi Brook adjoining the Section on the west. On the sketch of his traverse, he showed a ‘cutting’ on the creek bank plus ‘Watts track’ and another ‘track’ on the Reserve (see Figure 2.6).<sup>56</sup>

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<sup>49</sup> DP 260008, LRS

<sup>50</sup> A Dunne, *From Brook to Broke*, p 85

<sup>51</sup> <http://www.brokefordwich.com.au/hunter-valley-cellar-doors/>. Accessed 1 July 2019

<sup>52</sup> LdsPW59/4752, in NRS 7933, Lands and Public Works, Correspondence, SANSW 5/3605

<sup>53</sup> Broke, Fair plan of Reserve (Bennett) (B.1715.a), 1859, SA Map 1554

<sup>54</sup> NSWGG, 24 Dec 1861, p 2747

<sup>55</sup> NSWGG, 3 Feb 1862, p 251

<sup>56</sup> NRS 13889, Surveyor General, Surveyors Field Book, No 7107, W Pulver, SANSW, p 23-24





Figure 2. 4: Detail of the 1859 Village Design plan showing the Recreation and Water Reserve. Source: SA Map 1554



Figure 2. 5: Licensed Surveyor Worters R Pulver's fieldbook sketch of the Reserve boundaries. Source: NRS 13889, Surveyor General, Surveyors Field Book, No 7107, W Pulver, SANSW, p 23

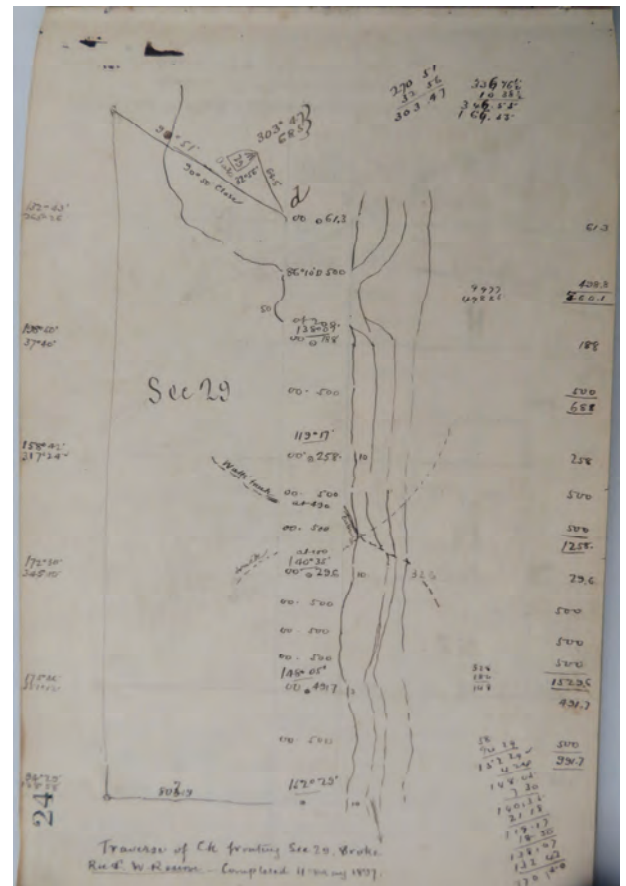
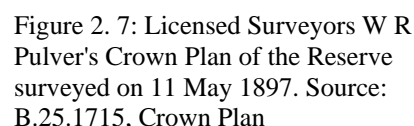


Figure 2. 6: Licensed Surveyor Worters R. Pulver's traverse of Wollombi Brook. Source: NRS 13889, Surveyor General, Surveyors Field Book, No 7107, W Pulver, SANSW, p 24



A.C. Arthur of Glendon Brook wrote to Albert John Gould, Member of the Legislative Assembly for Singleton on 18<sup>th</sup> May 1897 requesting assistance in obtaining a Special Lease over 2 acres of the Water Reserve in Broke as a site for a creamery. Arthur wrote that he had approached the citizens of Broke to see if they objected. Rather than objecting they were very supportive. Gould wrote to the Under Secretary for Lands on 31<sup>st</sup> May asking if the application could be considered favourably. The Miscellaneous Lease Branch of the Department sent an application form for a Special Lease to Arthur on 14<sup>th</sup> June. Arthur did not respond with an application. On 10<sup>th</sup> November 1897, Constable E. Rowe of Broke Police Station reported that Arthur had abandoned the idea of leasing the Water Reserve and had leased private land instead.<sup>58</sup>

<sup>58</sup> MsLs97/14026, NRS 8315, Miscellaneous Lease Branch, Correspondence, SANSW 10/11250



On 13<sup>th</sup> January 1900, the unmeasured Reserve 30305 for recreation and access to water as notified in 1861 and 1862 was revoked.<sup>59</sup> Instead, on the same day, Reserve 30305 for recreation and access to water was proclaimed as measuring 37 acres 2 roods in lieu of unmeasured R 30305.<sup>60</sup> The Shire of Patricks Plains was appointed as trustees of R 30305 on 7<sup>th</sup> July 1910.<sup>61</sup> Thereafter, subsequent groups of trustees were periodically appointed.<sup>62</sup>

Reserve 30305 was revoked on 12<sup>th</sup> February 1926 in lieu of Reserve 58578 for commonage.<sup>63</sup> Reserve 58578 with an area about 29 acres was reserved as commonage the same day. It was described as bounded on the north-east by Wollombi Street, 39 ½ chains, on the south west by a 4-wire fence on the south west by Wollombi Brook and on the north east by Ellis Street.<sup>65</sup>

A later notation on the Crown Plan survey recorded that Sp. L 64.18 [Special Lease 1964 No 18 Singleton Land District] was given to Desmond James Ker-David.<sup>66</sup> No other record of this Special Lease has been found.

A road was surveyed across the southern part of Section 29 by Registered Surveyor Geoffrey Rex Bailey of Muswellbrook on 10<sup>th</sup> November 1968. His plan showed Section 29 as 'Vacant Crown Land'.<sup>67</sup> This recorded a crossing of Wollombi Brook by a low-level timber bridge/causeway. This road (now Milbrodale Road) was shown on topographic maps as early as 1927, when Wollombi Brook was crossed in this location by a ford.<sup>68</sup> In 1931, the ford over Wollombi Brook was supplemented by a flying fox by which a permanent route to Milbrodale was established. In 1965, the ford was replaced by a low-lying timber bridge as noted in the 1968 plan and in 2012, this was replaced by the existing concrete bridge.<sup>69</sup> The southern portion of the public reserve separated from the remainder of the original Section 29 is now Stewart McTaggart Park.

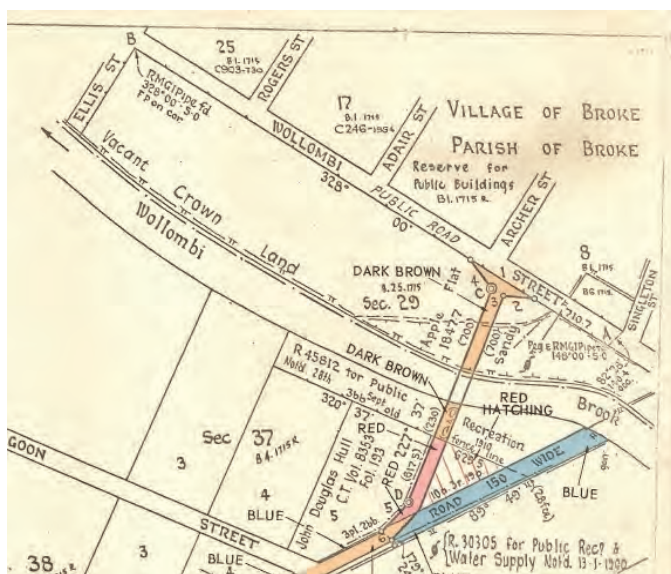


Figure 2. 8: Detail from Registered Surveyor Geoffrey R Bailey's plan of the road that cut off the southern section of the Reserve.  
Source: R.30055.1603, Crown Plan

<sup>59</sup> NSWGG, 13 Jan 1900, p 331

<sup>60</sup> NSWGG, 13 Jan 1900, p 337

<sup>61</sup> NSWGG, 27 July 1910, p 4021

<sup>62</sup> For example, NSWGG, 14 July 1915, p 4131

<sup>63</sup> NSWGG, 12 Feb 1926, p 796

<sup>64</sup> Commonage refers to common land used for the shared pasturing of livestock

<sup>65</sup> NSWGG, 12 Feb 1926, p 799

<sup>66</sup> B.25.1715, Crown Plan

<sup>67</sup> R.30055.1603, Crown Plan

<sup>68</sup> Australia – Army, Topo. Map 1:63360, ML Map M Ser 3 804 3, Cessnock, 1927, Zone 8 Sheet 395

<sup>69</sup> Interpretation sign at Stewart McTaggart Park, "History of Broke Bridge", Singleton Council and Broke Fordwich Wine and Tourism Association.



Figure 2. 9: The 1927 Topographical Map showed a ford across Wollombi Brook where a track crossed the Reserve. Source: Australia – Army, Topo Map 1:63360, ML Map M Ser 3 804 3, Cessnock, 1927, Zone 8 Sheet 395

The remainder of R 30305 south of the newly measured road measuring about 6 acres 3 roods was revoked on 10<sup>th</sup> January 1969.<sup>70</sup> On 18<sup>th</sup> August 1978 Reserve from sale Number 91229 measuring about 1 hectare in the Village of Broke was gazetted for a rubbish depot. A plan with the gazettal notice depicted its location and approximate boundaries.<sup>71</sup>

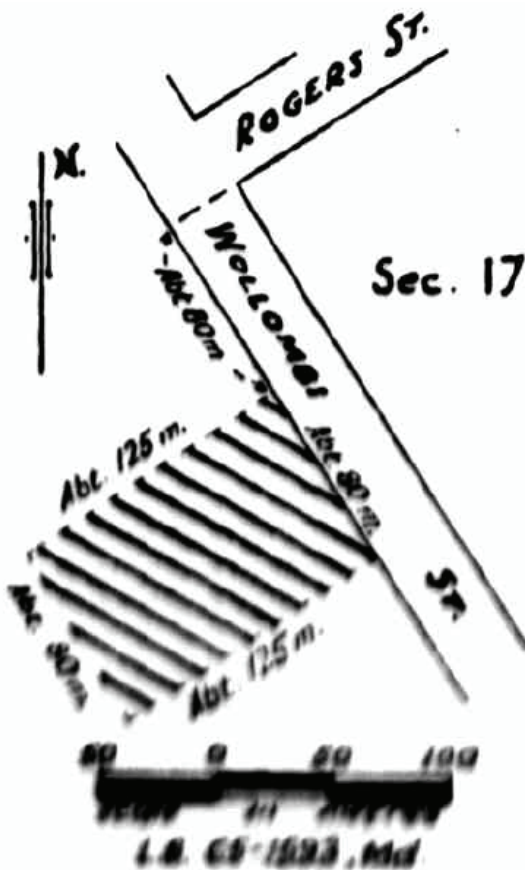


Figure 2. 10: The boundaries of the rubbish depot established on part of the Reserve. Source: NSWGG, 18 Aug 1978, p 3482

<sup>70</sup> NSWGG, 10 Jan 1969, p 75

<sup>71</sup> NSWGG, 18 Aug 1978, p 3482



The Regional Charting Lands Department map of the Village of Broke recorded two Permissive Occupancies over the Reserve. These were PO 69/4 to J.D. Hall and PO 72/2 to J.R. Dempsey. The Permissive Occupancy Tenure Cards were searched for details of the Permissive Occupancies. Only the one for PO 69/4 to J.D. Hall was found. It noted that John D. Hall of Broke had a Permissive Occupancy from 1<sup>st</sup> July 1969 in the Village of Broke. The Occupancy terminated on 27<sup>th</sup> September 1971.<sup>72</sup>



Figure 2. 11: The Lands Department Regional Charting map of the Village of Broke recorded more recent Permissive Occupancies on the Reserve. Source: HLRV, LRS

The Reserve is currently named McNamara Park. That name is not recorded on the Geographical Names Register, however it appears likely that the park is named for former mayor of Singleton Neil McNamara.

Neil McNamara, dairy farmer of Broke started his career being elected to Patrick Plains Shire Council in 1956 and went on to become Patrick Plains Shire president in 1971. McNamara led the way for the amalgamation of Singleton Municipal and Patrick Plains Shire Councils in 1976, for which Singleton Council won the Bluett Memorial award for the most progressive council in the state. Neil retired from public service in 1998.

McNamara also held other several roles including chairman of the Singleton Cooperative Society Store, director of Singleton Dairy Cooperative, a Councillor and chairman of Shortland County Council and chairman of Hunter Region Councils.

His work has been recognised by the awarding of the Order of Australia Medal in 1984 and the title of Freeman of the Singleton Shire in 2000 and he was inducted into the Wambo Hall of Fame in 2014.<sup>73</sup>



Figure 2. 12: Neil McNamara in 2014. Source: *Singleton Argus*, 16<sup>th</sup> December 2014

<sup>72</sup> NRS 20761, Tenure Cards, Permissive Occupancy, Singleton LD, Box 28995, SANSW

<sup>73</sup> "Our heart and soul" by Declan Martin, *Singleton Argus*, 16<sup>th</sup> December 2014

## 3. Physical Evidence

### 3.1. Introduction

The following descriptions of the built fabric, setting, views, landscape and site features aim to summarise the physical composition of the place.

The place and its setting were inspected by Ian Stapleton and Kate Denny of Lucas, Stapleton, Johnson and Partners in August 2019 and the current configuration of the landscape and buildings noted. Unless otherwise stated, the images used in this chapter have been produced by the authors of this report.

### 3.2. Description of the Place Generally

#### 3.2.1. Wollombi Brook Catchment

McNamara Park at Broke, NSW is located within the lower portion of the Wollombi Brook catchment area. Wollombi Brook is one of the eight major tributaries of the Hunter River and its catchment drains an area of approximately 1870 square kilometres. The Wollombi Brook flows in a general south-north direction from its source in the Watagan Ranges to its confluence with the Hunter River near Warkworth, approximately 16 kilometres upstream of Singleton.

Located on the eastern bank of the Wollombi Brook, within the alluvial plains of the river, the village of Broke is surrounded by the Broken Back Range to the south and south-west with a prominent view of Yellow Rock to the south. To the east of the village is Mount Eyre. Located to the southwest is the Yengo National Park and to the south and south east is the Pokolbin State Forest. To the north east is the Singleton Military Base.

The lands surrounding the village of Broke are generally smaller allotment mixed farming with a number of commercial vineyards to the west along Milbrodale Road and to the south along Wollombi Road. In 1873, an article in *The Sydney Mail and New South Wales Advertiser* described the journey between Broke and Wollombi (to the south) as thus:

*“My road now lay along the Wollombi Brook, through a pretty farming county, with homesteads dotted along at every mile or so, and very pretty homesteads some of them are. The road follows the creek, which winds its way through hills. The flats on either side of the stream widen out at parts, and furnish the fine alluvial flats for cultivation. The hills are well timbered; the wattle grows abundantly.”*<sup>74</sup>

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<sup>74</sup> “The Tourist”, *The Sydney Mail and New South Wales Advertiser*, Saturday 24<sup>th</sup> May 1873, p.664

### 3.2.2. Village of Broke

The village of Broke is a small township laid out on a grid to the east of Wollombi Brook. The principal street is Wollombi Street, which runs north-south along the western boundary of the township. Along Wollombi Street is located St Andrew's Anglican Church, the Maria Immaculate Roman Catholic Church and the former Police Station/Policeman's residence (at the intersection of Singleton Street). A public school (dated 1876) is located on the eastern side of the town on Cochrane Street and the town cemetery is to the north of the village, at the corner of Butlers Road and Charleton Road. Although the initial town plan for Broke indicated an area set aside for public buildings between Adair and Archer Street (see Figure 2.8 above), this town block was not developed for this purpose.

McNamara Park is located to the west of the village, between Wollombi Street and Wollombi Brook.

Directly to the south of McNamara Park, across Milbrodale Road is a second public park, Stewart McTaggart Park, which is generally open grassed areas with a children's playground and picnic tables. The Broke Bridge interpretation display is located adjacent to Milbrodale Road. At the southern end of this park is located the Broke War Memorial and the shed for the Broke Rural Fire Brigade.

The remainder of the town consists of large residential allotments with mostly single storey houses dating from the late 20<sup>th</sup> century.



Figure 3. 1: Village store and former Police Station building on Wollombi Street at southern end of the village of Broke.



Figure 3. 2: St. Andrew's Anglican Church, Wollombi Street, Broke



Figure 3. 3: Maria Immaculate Roman Catholic Church, Wollombi Street, Broke.



Figure 3. 4: Broke Public School, Cochrane Street, Broke.





Figure 3. 5: General view of the village of Broke looking west along Adair Street with McNamara Park in the background.



Figure 3. 6: Stewart McTaggart Park, at the intersection of Wollombi Street and Milbrodale Road, Broke.



Figure 3. 7: Interpretation display for the Broke Bridge in Stewart McTaggart Park.



Figure 3. 8: Interpretation sign with history of the Broke Bridge.



Figure 3. 9: Broke Rural Fire Service sheds south of Stewart McTaggart Park.



Figure 3. 10: Broke War Memorial located south of Stewart McTaggart Park.





Figure 3. 11: Anzac Centenary Memorial planting



Figure 3. 12: View looking south down Wollombi Street with McNamara Park on the right.

### 3.2.3. McNamara Park

McNamara Park is located on the eastern bank of the Wollombi Brook, on the western edge of the village, adjacent to Wollombi Street, on a north-south alignment. The public reserve is managed by Singleton Council and is used as free camping ground and occasional location for festivals and fairs (e.g. the Broke Village Fair and vintage car display).

The park covers an area of approximately 11 hectares and is generally lightly forested with open grassed areas and contains a number of mature eucalypt species.

The park is accessed via Milbrodale Road to the south and Wollombi Street to the east via a number of dirt and gravel tracks that traverse the park providing access to camping areas.

The landform of McNamara Park is terraced to the west, leading to the adjacent brook, with a formed terrace at the top of the river bank providing a lower camping area that is relatively open.

Wollombi Brook is located below a steep and high embankment and is well vegetated. Views of the waterway are not readily available from the western edge of McNamara Park.

#### Vegetation of McNamara Park

According to the Department of Planning, Industry and Environment, McNamara Park consists of the Hunter-Macleay Dry Sclerophyll Forest vegetation class, while the vegetation class of Wollombi Brook is identified as Eastern Riverine Forest (see Figure 3.13 below).<sup>75</sup>

The Hunter-Macleay Dry Sclerophyll forest is a dry open eucalypt forest to 30 metres tall with a mixed shrub stratum and semi-continuous grassy ground cover. This forest type is found at foothills and undulating terrain in rain shadow valleys below 400 metres elevation, on well-drained soil and are associated with the major coastal river valleys along the NSW coast.

<sup>75</sup> *Greater Hunter Native Vegetation Mapping* v4.0. VIS ID 3855, State Government of NSW and Department of Planning, Industry and Environment 2012; <https://datasets.seed.nsw.gov.au/dataset/greater-hunter-native-vegetation-mapping-v4-0-vis-id-3855d41f5>

Typical trees include spotted gum (*Corymbia maculata*), narrow-leaved ironbark (*Eucalyptus crebra*), grey box (*E. moluccana*), grey gum (*E. propinqua*), grey ironbark (*E. siderophloia*) and turpentine (*Syncarpia glomulifera*).<sup>76</sup>

The Eastern Riverine Forest is an open casuarina forest, 10 to 40 metres tall, dominated by river oak (*Casuarina cunninghamiana*). The forest is found along riparian corridors in open terrain of coastal hinterland and tablelands up to 700 metres elevation.<sup>77</sup>



Figure 3. 13: Extract from Greater Hunter Native Vegetation Mapping v4.0 showing vegetation classes identified at McNamara Park, Broke. Source NSW Government SEED web map; <https://geo.seed.nsw.gov.au/>; annotated by LSJ, Oct 2019

### Camping Facilities and Site Features of McNamara Park

As discussed above, McNamara Park currently operates as a free camping ground and occasional location for festivals and fetes and is managed by Singleton Council.

The main entry to the park is at the southern end at the intersection of Wollombi Street and Milbrodale Road. A cluster of signs is located at the intersection, including the timber name sign for the park.

Immediately to the rear (north) of the signs is a bicentennial memorial structure consisting of a sandstone sundial and sandstone plinth with plaque. The sundial was unveiled by Cr. Neil W. McNamara OAM, President of Singleton Shire Council on 26<sup>th</sup> January 1988. The plaque notes that the memorial is erected on stone from the original convict-built Blaxland Homestead.

<sup>76</sup> Hunter-Macleay Dry Sclerophyll Forest; NSW Environment Energy and Science; <https://www.environment.nsw.gov.au/threatenedspeciesapp/VegClass.aspx?vegClassName=Hunter-Macleay%20Dry%20Sclerophyll%20Forests>

<sup>77</sup> Eastern Riverine Forest; NSW Environment Energy and Science; <https://www.environment.nsw.gov.au/threatenedspeciesapp/VegClass.aspx?vegClassName=Eastern%20Riverine%20Forests>

The plaque attached to the sandstone plinth reads:

*Broke*

*The village of Broke is on the Great North Road. The area was first discovered by John Blaxland in 1818 and later settled by him, George Blaxland and Robert Rodd on land granted to them in 1824. Major Thomas Mitchell, the Surveyor General, named Broke in honour of his friend Sir Charles Broke Vere of Suffolk, England.*

*In the late 1800s, the main stock route to Sydney via Windsor passed through Broke and the settlement supported a flour mill, several hotels, a public school, police station, two churches, a post office, brick kiln, butcher shop, bakery and blacksmith and was a welcome stopover for travellers and drivers*

A gravel and dirt track runs through the length of the reserve exiting at the northern end onto Wollombi Street and there are other dirt tracks throughout the park providing access to open grassed areas suitable for camping. Other access points from Wollombi Street are located along the eastern edge of the reserve, one of which provides access into the area of land that is set aside as a “rubbish depot”, although it is not used for this purpose.

Located in the centre of the park are the main camping facilities including an amenities block, car parking areas, power outlets and signage. In addition, there is evidence of incidental camping sites scattered throughout the park with stone ringed camp fire sites.

The lower camping area running alongside the Wollombi Brook also has a small number of picnic shelters.

Not all minor features such as service installations, infrastructure, signs, bollards, log barriers, cultural plantings etc, have been recorded.

Features of note are detailed below. Refer to Figure 3.14 for location of the principal components of McNamara Park.



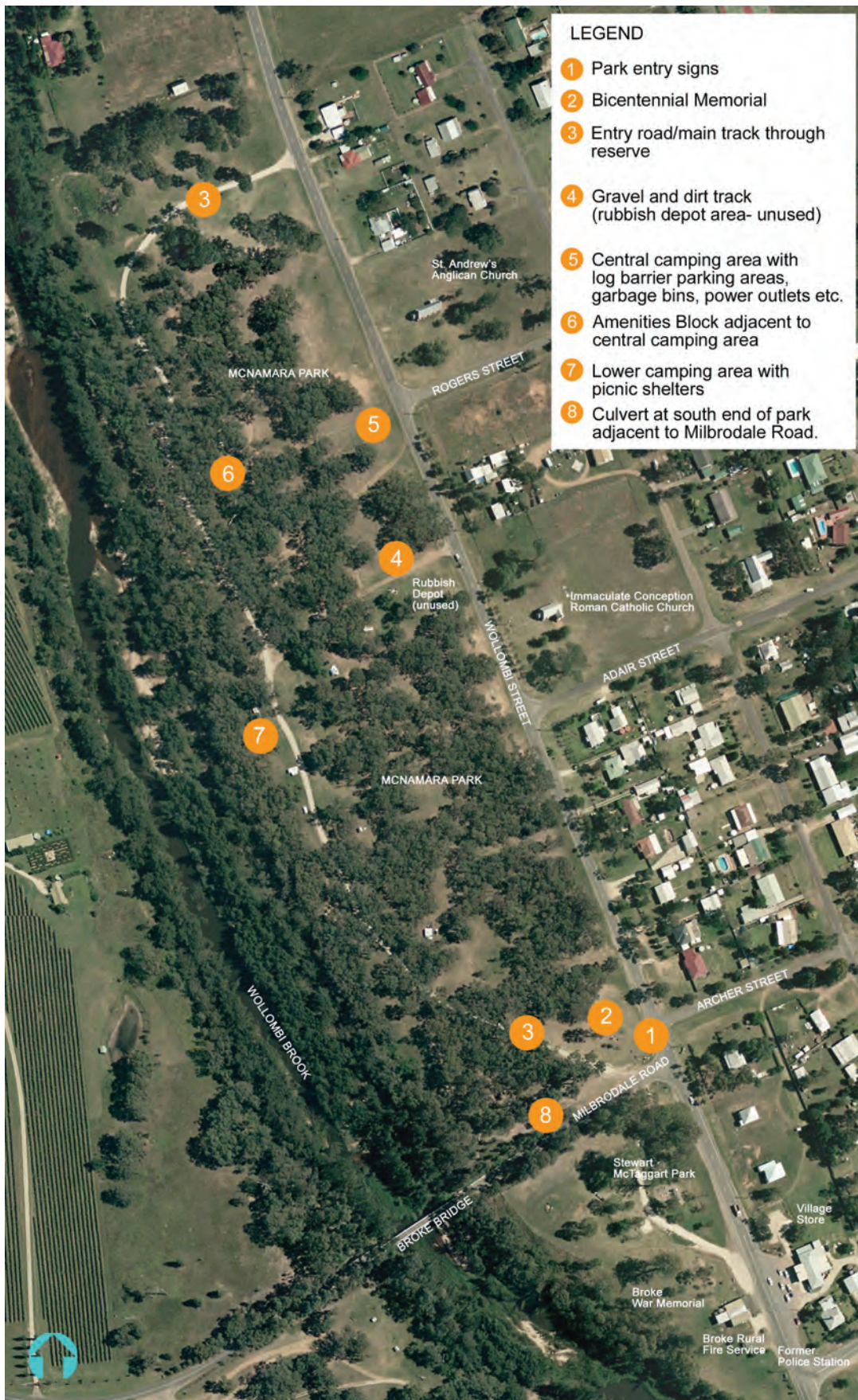


Figure 3. 14: Aerial view of McNamara Park indicating principal components of the public reserve and key features of the village of Broke adjacent.



**Recent Photographs of the Vegetation of McNamara Park**

Figure 3. 15: Open forest with grass understorey in McNamara Park



Figure 3. 16: Open forest with grass understorey in McNamara Park



Figure 3. 17: Typical open grassland with scattered trees and open forest.



Figure 3. 18: Open grassed area (car parking) with open forested land behind.



Figure 3. 19: View looking along internal dirt track through forested area to open grassed area.



Figure 3. 20: View of vegetation and service poles on top of embankment leading down to Wollombi Brook.





Figure 3. 21: One of several mature Eucalypts located throughout the park.



Figure 3. 22: Example of council sign attached to mature trees in the park.

### Recent Photographs of Camping Grounds and Site Features of McNamara Park



Figure 3. 23: Casual camping area in grassed open area with swale.



Figure 3. 24: Formal carparking area with log barriers and signage.



Figure 3. 25: The lower camping grounds running alongside Wollombi Brook.



Figure 3. 26: Incidental camping area with camp fire





Figure 3. 27: **Site Feature 1**- Collection of signs at entry to McNamara Park at the intersection of Milbrodale Road and Wollombi Street, including timber park sign, metal winery directional sign, bush fire warning sign and other council signs.



Figure 3. 28: **Site Feature 2** - Bicentennial memorial of sandstone and metal with sundial and stone plinth on sandstone and concrete base with surrounding native and exotic plantings.



Figure 3. 29: Upright stone plinth (eroded) with plaque.



Figure 3. 30: Sandstone and metal sun dial erected as a memorial to the Australian Bicentenary.



Figure 3. 31: **Site Feature 3** - Gravel entry road into McNamara Park from Milbrodale Road at the southern end of the park.



Figure 3. 32: View of open grassed area and embankment along the western side of Wollombi Street defining the eastern edge of the park.





Figure 3.33: Culvert running under Wollombi Street and exiting into McNamara Park.



Figure 3.34: **Site Feature 4** - Unformed gravel and dirt road leading into the park from Wollombi Street. This area is designated as a rubbish depot although is not used for this purpose.



Figure 3.35: **Site Feature 4** - Dirt entry road leading into the park from Wollombi Street near intersection with Adair Street with council signs.



Figure 3.36: **Site Feature 5** - Mature Eucalypt with log car barriers in central camping area.



Figure 3.37: Continuation of entry road into camping area with telegraph pole and power lines crossing Wollombi Brook.



Figure 3.38: **Site Feature 5**- Camping area with facilities.





Figure 3.39: **Site Feature 6** - Amenities block



Figure 3.40: Garbage bins in central camping area.



Figure 3.41: Line of painted timber and concrete vehicle barriers on bank leading down to lower camping area and picnic sites.



Figure 3.42: **Site Feature 7** - Lower camping area adjacent to Wollombi Brook.



Figure 3.43: **Site Feature 3** - Gravel road leading south towards Milbrodale Road.



Figure 3.44: **Site Feature 8** - View of Broke Bridge from southern end of park with deep culvert leading down to Wollombi Brook.

### 3.2.4. Analysis of Views

McNamara Park is located along the western edge of the village of Broke between Wollombi Street (the main street) and Wollombi Brook. As such views of the public reserve are available from along Wollombi Street and looking west down the cross streets of Archer, Adair and Rogers Streets. The park is also clearly visible from Milbrodale Street at the intersection with Wollombi Street.

However, as McNamara Park is essentially an undeveloped stretch of land with few structures and little infrastructure, the place generally appears as natural woodlands adjacent to the village.

Views from McNamara Park from the periphery of the reserve lands are generally of the village of Broke to the east, northeast and southeast and Stewart McTaggart Park located to the south. From the northern end of the park views of Yellow Rock to the south are also available, but only from the edge of the reserve adjacent to Wollombi Street.

Within the park lands views are limited due to the density of the vegetation, although glimpse views through the trees of buildings on the east side of Wollombi Street are available. Views from the lower camping areas along Wollombi Brook are restricted to the immediate vicinity of the park lands and vegetation lining the river bank.

Table 3. 1: Views to and from McNamara Park, Broke. Refer to Figure 3.45 below for location of views.

View No.	Description
1	View of Stewart McTaggart Park and the Broke Village Store on Wollombi Street from the southern entry of McNamara Park.
2	Glimpse views through trees of the village of Broke and residences on east side of Wollombi Street.
3	Glimpse views through trees of the catholic church on Wollombi Street.
4	Internal park views from lower camping grounds adjacent to Wollombi Brook.
5	Views north and south along Wollombi Street taking in the village of Broke and McNamara Park. Some views to the south from the periphery of McNamara Park take in Yellow Rock (Lizard Rock).
6	Views into McNamara Park from entry track leading from Wollombi Street.
7	Views into central camping area of McNamara Park from entry track leading from Wollombi Street.
8	Views into McNamara Park from main entry road from the intersection of Wollombi Street and Milbrodale Road.
9	Views looking west down cross streets in the village of Broke with McNamara Park in the background.





Figure 3. 45: Aerial view of McNamara Park identifying main views to and from the reserve.

#### Recent Views of Available Views to and from McNamara Park



Figure 3. 46: View looking south down Wollombi Street with Yellow Rock (Lizard Rock) in background. McNamara Park is on the right.



Figure 3. 47: View of McNamara Park from Stewart McTaggart Park located to the south across Milbrodale Road.





Figure 3. 48: View of McNamara Park as seen from grounds of the catholic church, looking northwest.



Figure 3. 49: View from south end of McNamara Park looking south to Stewart McTaggart Park across Milbrodale Road.



Figure 3. 50: View from McNamara Park looking through woodlands to buildings on Wollombi Street in Broke.



Figure 3. 51: View from McNamara Park looking through woodlands to the catholic church on Wollombi Street.

### 3.3. Aboriginal Archaeology

The following information regarding Aboriginal archaeology has been extracted from the *Aboriginal Due Diligence Assessment Report: Proposed Relocation Area for Ravensworth Homestead* prepared by OzArk Environmental & Heritage Management Pty Ltd, dated August 2019 (*Appendix 23h*). For detailed information relating to the methodology, analysis and results, the original report should be referred to in the first instance.

The desktop assessment indicated that the study area (the southern portion of McNamara Park) contains landforms that have the potential to contain Aboriginal objects. Based on this information a visual inspection of the study area was undertaken by OzArk Director and Principal Archaeologist, Dr Jodie Benton, on 8 August 2019.

The desktop and visual inspection component for the study followed the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence; DECCW 2010). The field inspection component followed the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).



### Desktop Assessment

A search of the Department of Premier and Cabinet administered Aboriginal Heritage Information Management System (AHIMS) database returned 82 records for Aboriginal heritage sites within a 10 by 10 kilometre (km) search area that includes McNamara Park, Broke.

The AHIMS results show two sites near the study area, 37-3-2729 and 37-6-2730 (Figure 3.52).

Site 37-3-2729 (Broke Bridge PAD1) is listed as an artefact with potential archaeological deposit (PAD), located 95 metres (m) southwest of the study area. The PAD extent is 70m in length and varies in width from 1m where it joins Milbrodale Road in the west and up to 1m wide adjacent to Wollombi Brook (McCardle Cultural Heritage 2011).

Site 37-6-2730 (Broke Bridge PAD2) is listed as a PAD, 12m south of the study area. This PAD is 50m in length and varies in width from 1m where it joins Milbrodale Road in the east up to 15m adjacent to Wollombi Brook (McCardle Cultural Heritage 2011).

### Visual Inspection

While all areas of archaeological sensitivity were physically inspected, poor ground surface visibility conditions meant that these locations could not be fully assessed. Further, the relatively intact nature of the soil profile indicates the potential for archaeological material to be present at depth, and if present, such deposits may potentially have good integrity.

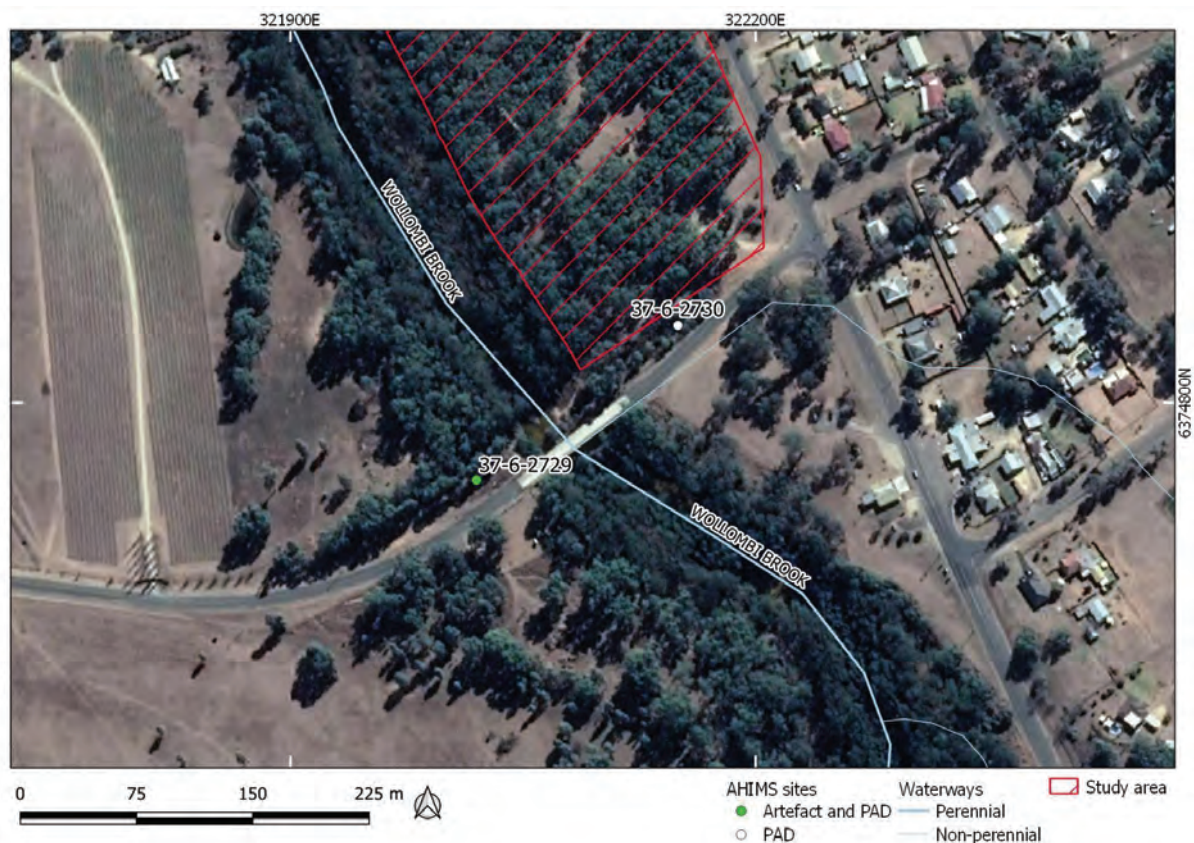


Figure 3. 52: Location of 37-3-2729 and 37-6-2730 in relation to the study area. Source: Figure 2-1 in *Aboriginal Due Diligence Assessment Report: Proposed Relocation Area for Ravensworth Homestead*, OzArk, 2019; p. 5

## 4. Assessment of Significance

### 4.1. Introduction

An assessment of the cultural significance of McNamara Park, Broke has been undertaken as follows.

#### 4.1.1. Existing Heritage Listings

McNamara Park, Broke is located within the local government area of Singleton Council. McNamara Park is not identified as a heritage item and is not located within a recognised heritage conservation area.

Three local heritage items are located within the vicinity of McNamara Park as identified in Schedule 5 of the *Singleton Local Environmental Plan 2013*:

- Item No. I5: War Memorial, Stewart McTaggart Park, Broke
- Item No. I6: Maria Immaculate Roman Catholic Church, 26-28 Wollombi Street, Broke
- Item No. I7: St Andrew's Anglican Church, 36 Wollombi Street, Broke

### 4.2. Heritage Assessment Criteria

The Australia ICOMOS *Burra Charter* (see Appendix 1) defines cultural significance as *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. (*Burra Charter*, Article 1.2).

The assessment of the significance of a place requires an evaluation of the fabric, uses, associations and meanings relating to the place, from which a detailed statement of significance can be formulated.

#### 4.2.1. NSW Heritage Assessment Criteria

The NSW heritage assessment criteria, as set out in the NSW Heritage Office and Planning NSW's publication, *Heritage Assessments* (2002) encompasses the five types of significance expressed in a more detailed form by the following criteria:

- |               |   |
|---------------|---|
| Criterion (a) | An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).  |
| 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 (or the cultural or natural history of the local area). |
| Criterion (c) | An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or in local area).  |

- Criterion (d) An item has strong or special association with a particular community or cultural group in NSW (or local area) 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 (or the cultural or natural history of the local area).
- Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).
- Criterion (g) An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or environments (or a class of the local area's cultural or natural places or environments).

The NSW Heritage Division recommends that all criteria be referred to when assessing the significance of an item, even though only complex items will be significant under all criteria.

### 4.3. Heritage Assessment of McNamara Park, Broke

The following statement of significance based on the foregoing analysis in this report has been prepared in accordance with the guidelines set out in the NSW Heritage Office and Planning NSW's publication, *Heritage Assessments* (2002).

#### 4.4.1 Criterion (a) Historical Significance

**An item is important in the course, or pattern, of NSW's (or the local area's) cultural or natural history.**

The land on which McNamara Park is located is of historical significance as forming part of the land of the Wonnarua, which was vast and stretched over much of the Hunter Valley; and physical evidence of the past lives of the Wonnarua people remains in the vicinity of the park lands.

McNamara Park is of historical significance for being laid out in 1830 as part of the Village Reserve of Broke located on the former Great North Road (now Wollombi Street), initially surveyed by Assistant Survey Henry Dangar in 1828 and formally named Broke by Survey General Thomas Mitchell after Sir Charles Broke Vere, Bart. in 1831. The land has been a public reserve for either recreational purposes or as commonage since its initial laying out.

#### 4.4.2 Criterion (b) Historical Associational Significance

**An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's (or the local area's) cultural or natural history.**

McNamara Park has historical associational significance with former Singleton mayor, Neil McNamara, for whom the park is named after. Neil McNamara OAM was a noted councillor and a prominent business person in the Singleton district and started life as a dairy farmer at Broke.

### 4.4.3 Criterion (c) Aesthetic Significance

**An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or in local area).**

As a relatively undeveloped stretch of land located adjacent to Wollombi Brook, McNamara Park has no more aesthetic significance than other areas of dry sclerophyll woodlands located throughout the Lower Hunter Region.

Available views of Yellow Rock from along the eastern edge of McNamara Park are of high aesthetic significance, as Yellow Rock is a distinctive geological feature in the locality.

### 4.4.4 Criterion (d) Social Significance

**An item has strong or special association with a particular community or cultural group in NSW (or local area) for social, cultural or spiritual reasons.**

McNamara Park would have some social significance for the residents of Broke as the main public reserve on the main street of the village (possibly thought of as the town common), well as for tourists and visitors who use the park as a camping and picnic ground and attend markets and fairs held at the place.

There are no known cultural values or Aboriginal sites pertaining directly to the location of the McNamara Park, although Wollombi Brook, which is adjacent to the park, is believed to be a pathway to creation places and Yellow Rock (Lizard Rock) is important to local Aboriginal people and holds strong spiritual connections for Aboriginal people of the area.

### 4.4.5 Criterion (e) Research Potential

**An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).**

Based on the history of use of McNamara Park as a public reserve since the 1830s, it is unlikely that historical archaeology of significance would be uncovered at the place. However, there is high potential for Aboriginal archaeological relics to survive which may be of good integrity.

### 4.4.6 Criterion (f) Rarity

**An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).**

As a public reserve associated with the colonial settlement of the Lower Hunter region, McNamara Park is one of a number of similar land parcels found throughout NSW and is not considered to be rare.



#### 4.4.7 Criterion (g) Representativeness

**An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or environments (or a class of the local area's cultural or natural places or environments).**

McNamara Park is representative of colonial town planning practices demonstrating the approach to the laying out of regional villages in NSW in the 1830s which included public reserves for recreational uses as part of the formal town plan.

#### 4.4.8 Summary Statement of Significance

McNamara Park, Broke, is of historical significance as forming part of the original town plan for the village of Broke, formally surveyed and laid out in the 1830s and in continuous use as a public reserve (either for recreational purposes or as a commonage) since its establishment. The park also has some significance for its ability to demonstrate colonial town planning practices of providing public reserves for recreation as part of the formal town plan for regional villages.

The place has historical associational significance for being named for former mayor of Singleton Council, Neil McNamara OAM, a noted local councillor and prominent business person of the district.

The place is likely to be held in some regard as the "town common" for the village of Broke and for its usefulness as a camping area and location for regular markets and fairs.

### 4.4. Grading of Significance

#### 4.4.1. Grades of Significance for Components of the Place

The components of the place can be ranked in accordance with their relative significance as a tool to planning. *Heritage Assessments* (NSW Heritage Branch, 2000) identifies the following grades of significance:

Grade	Justification	Status
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfil criteria for local or state listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfil criteria for local or state listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or state listing.
Intrusive	Damaging to the item's heritage significance	Does not fulfil criteria for local or state listing.

#### 4.4.2. Grades of Significance for Components of McNamara Park, Broke

The principal elements and features of McNamara Park have been grouped together and graded below in relation to their contribution to the place's overall cultural significance. Generally, the grades of significance applied relate to the historical phases of development, contribution to the overall cultural significance of the place and/or their rarity, as per the following:

- High (H)**
  - Original and early addition features of historic and aesthetic interest
  - Later features critical to the appreciation of the place
- Moderate (M)**
  - Later features important to the appreciation of the place
  - Recent features critical to the appreciation of the place
- Little (L)**
  - Other recent features
- Intrusive (I)**
  - Features that detract from the significance or appreciation of the place.

Table 4. 1: Gradings of Significance for components of McNamara Park, Broke

Component/Feature	Significance Grading
The public reserve of McNamara Park, located adjacent to the village of Broke on the former Great North Road (Wollombi Street)	Little
Use of McNamara Park as public reserve, town common, camping area and market locale	Moderate
Bicentennial Memorial with cultural plantings	Moderate
Vegetation of the Hunter-Macleay Dry Sclerophyll Forest and the Eastern Riverine Forest including mature trees.	Little
Signage: directional, warning and naming	Little
Camping facilities including amenities block, car parking areas, bollards, signage, power outlets, picnic shelters etc.	Little
Roads and tracks through the reserve	Little
Aboriginal archaeological potential	High <sup>78</sup>

<sup>78</sup> *Aboriginal Due Diligence Assessment Report: Proposed Relocation Area for Ravensworth Homestead*, OzArk, 2019; p. 22

# Appendix

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## Appendix B

Aboriginal Due Diligence Assessment Report  
– Proposed Relocation Area for Ravensworth  
Homestead, Lot 701 at Broke



View of the woodland within the study area.

## **ABORIGINAL DUE DILIGENCE ASSESSMENT REPORT**

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### **PROPOSED RELOCATION AREA FOR RAVENSWORTH HOMESTEAD**

LOT 701 DP9363 AT BROKE, NSW

AUGUST 2019

Report prepared by  
OzArk Environment & Heritage  
for Glendell Tenements Pty Limited

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Client		
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### **Acknowledgement**

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

## EXECUTIVE SUMMARY

---

OzArk Environment & Heritage (OzArk) has been engaged by Glendell Tenements Pty Limited (the proponent) to complete an Aboriginal Due Diligence heritage assessment of Lot 701 DP93631 at Broke, NSW (the study area). The study area has potential to be impacted by the proposed relocation of the Ravensworth Homestead (the proposal). The proposal is in the Singleton Local Government Area.

The desktop assessment indicated that the study area contains landforms that have the potential to contain Aboriginal objects and that these areas cannot be avoided. As such, a visual inspection of the study area was undertaken by OzArk Director and Principal Archaeologist, Dr Jodie Benton, on 8 August 2019.

No Aboriginal sites were recorded as a result of the field assessment. However, the secondary and tertiary terrace landforms which dominate the study area were confirmed to be a sensitive archaeological landform (SAL).

While all areas of archaeological sensitivity were physically inspected, poor ground surface visibility conditions meant that these locations could not be fully assessed. Further, the relatively intact nature of the soil profile indicates the potential for archaeological material to be present at depth, and if present, such deposits may potentially have good integrity. Therefore, further investigation is required.

Further investigation should take the form of test excavation over the area shown on **Figure 2-7** following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* under Part 6 *National Parks and Wildlife Act 1974*. This investigation would confirm whether subsurface archaeological deposits are present, and if present, give an indication of their nature, extent and integrity. Such excavations must be preceded by Aboriginal community consultation as per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs).

An *Aboriginal Cultural Heritage Assessment Report* (ACHAR), as a prerequisite to an application for an Aboriginal Heritage Impact Permit (AHIP), will be required should this investigation indicate that there are Aboriginal objects within the study area that may be harmed. All AHIP applicants must demonstrate adherence to the ACHCRs.

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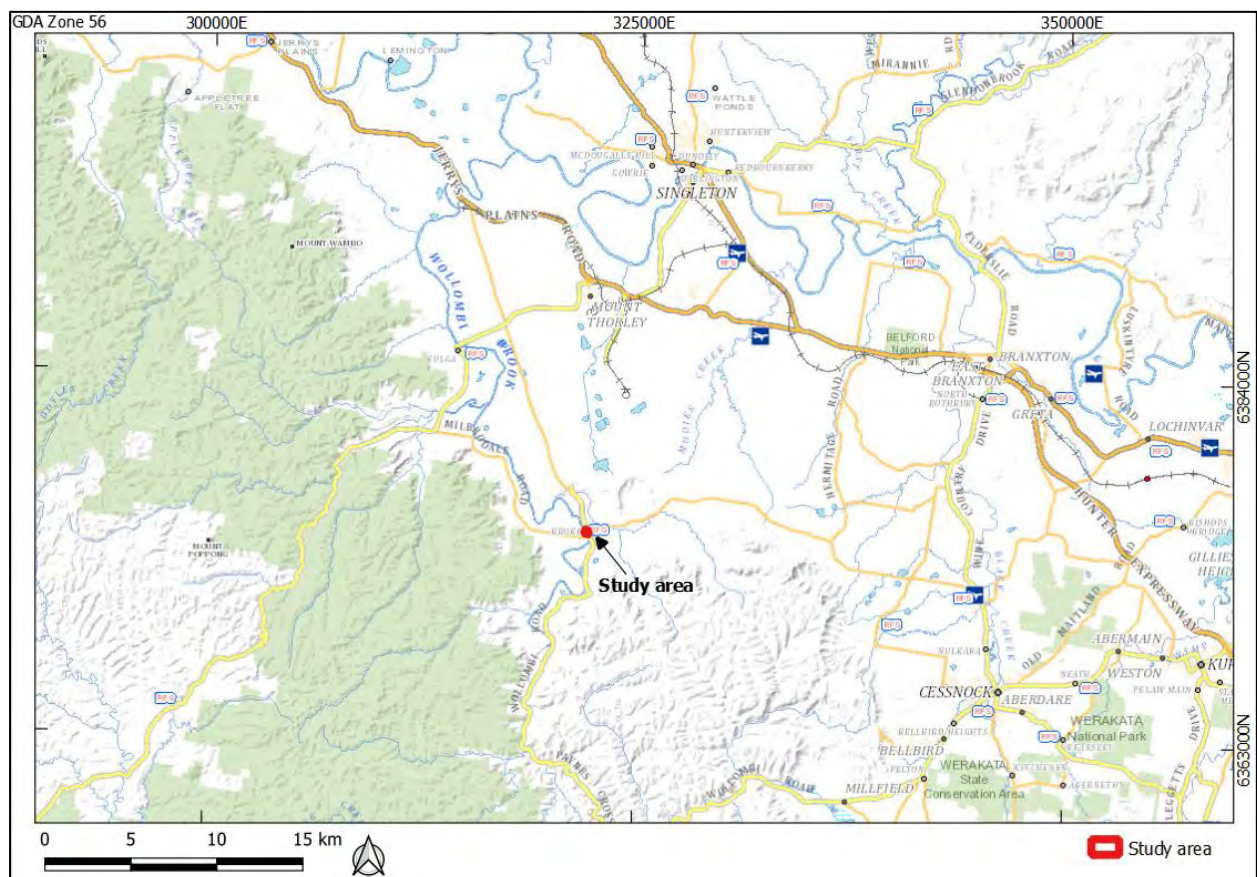


# 1 INTRODUCTION

## 1.1 BRIEF DESCRIPTION OF THE PROPOSAL

OzArk Environment & Heritage (OzArk) has been engaged by Glendell Tenements Pty Limited (the proponent) to complete an Aboriginal Due Diligence heritage assessment of Lot 701 DP93631 at Broke, NSW (the study area). The study area has potential to be impacted by the proposed relocation of the Ravensworth Homestead (the proposal). The proposal is in the Singleton Local Government Area (LGA) (**Figure 1-1**).

**Figure 1-1. Map showing the location of the study area in relation to Singleton.**



## 1.2 BACKGROUND

An Environmental Impact Statement is currently being prepared under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* for the proposed Glendell Continued Operations Project (GCOP). GCOP will include the extension of the Glendell Mine to expand open-cut mining. The Ravensworth Homestead complex<sup>1</sup> is located within the GCOP boundary, and as such, it is proposed the Ravensworth Homestead and associated structures will be relocated.

<sup>1</sup> Ravensworth Homestead is listed as I41 on Schedule 5 of the Singleton Local Environmental Plan.

The current assessment assesses one of the locations being considered as a proposed relocation area.

### 1.3 STUDY AREA

The study area encompasses 5.5 hectares (ha) of land within Lot 701 DP93631 at Broke, NSW (**Figure 1-2**). The study area is part of McNamara Park and is bounded to the east by Wollombi Street; south by Milbrodale Road and west by Wollombi Brook.

### 1.4 ASSESSMENT APPROACH

The desktop and visual inspection component for the study area follows the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence; DECCW 2010). The field inspection followed the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).

**Figure 1-2: Aerial showing the study area.**



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## 2 ABORIGINAL DUE DILIGENCE ASSESSMENT

---

### 2.1 INTRODUCTION

The National Parks and Wildlife Regulation 2009 (NPW Regulation) made under the *National Parks and Wildlife Act 1974* (NPW Act) advocates a Due Diligence process to determining likely impacts on Aboriginal objects. Carrying out Due Diligence provides a defence to the offence of harming Aboriginal objects and is an important step in satisfying Aboriginal heritage obligations in NSW.

### 2.2 DEFENCES UNDER THE NPW REGULATION 2009

#### 2.2.1 Low impact activities

The first step before application of the Due Diligence process itself is to determine whether the proposed activity is a “low impact activity” for which there is a defence in the NPW Regulation. The exemptions are listed in Section 80B (1) of the NPW Regulation (DECCW 2010a: 6).

The activities of the proponent are not considered a ‘low impact activity’. As such, the Due Diligence process must be applied.

#### 2.2.2 Disturbed lands

Relevant to this process is the assessed levels of previous land-use disturbance.

The NPW Regulation Section 80B (4) (DECCW 2010a: 18) define disturbed land as follows:

*Land is disturbed if it has been the subject of a human activity that has changed the land’s surface, being changes that remain clear and observable.*

*Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks.*

No portions of the study area are considered to be “disturbed land” as per the Due Diligence guidelines and therefore the Due Diligence process must be applied. Several vehicle tracks traverse the study area, however, it cannot be determined at a desktop level whether these access tracks has been graded.

In summary, it is determined that the proposal must be assessed under the Due Diligence Code. The reasoning for this determination is set out in **Table 2-1**.

**Table 2-1: Determination of whether Due Diligence Code applies.**

Item	Reasoning	Answer
Is the activity a Part 3A project declared under section 75B of the EP&A Act?	The proposal will be assessed as part of a new development application <sup>2</sup> .	No
Is the activity exempt from the NPW Act or NPW Regulation?	The proposal is not exempt under this Act or Regulation.	No
Will the activity involve harm that is trivial or negligible?	The activity will not involve harm that is trivial or negligible.	No
Do either or both of these apply: Is the activity in an Aboriginal place? Have previous investigations that meet the requirements of this Code identified Aboriginal objects?	The activity will not occur in an Aboriginal place. No previous investigations have been conducted within the study area.	No
Is the activity a low impact one for which there is a defence in the NPW Regulation?	The proposal is not a low impact activity for which there is a defence in the NPW Regulation.	No
Do you want to use an industry-specific code of practice, adopted by the NPW Regulation or other Due Diligence process?	No	No
The Due Diligence Code of Practice applies		

## 2.3 APPLICATION OF THE DUE DILIGENCE CODE OF PRACTICE TO THE PROPOSAL

To follow the generic Due Diligence process, a series of steps in a question/answer flowchart format (DECCW 2010a: 10) are applied to the proposed impacts and the study area, and the responses documented.

### 2.3.1 Step 1

Will the activity disturb the ground surface or any culturally modified trees?

**Yes, the proposal will impact the ground surface and may impact culturally modified trees if present.**

The exact nature of the proposed impacts has not yet been finalised. Impacts associated with the proposal will include vegetation clearing, regrading (including filling) and trenching for footings and services. These impacts could occur anywhere within the study area.

The study area is densely vegetated and therefore the proposal may impact culturally modified trees if they are present.

### 2.3.2 Step 2a

Are there any relevant confirmed site records or other associated landscape feature information on AHIMS?

**No, there are no previously recorded sites within the study area.**

<sup>2</sup> This development application would be separate to GCOP.



A search of the Department of Premier and Cabinet administered Aboriginal Heritage Information Management System (AHIMS) database completed on 19 August 2019 returned 82 records for Aboriginal heritage sites within a 10 by 10 kilometre (km) search area that includes the study area (GDA Zone 56, Eastings: 317000–327000, Northings: 6370000–6380000) (**Appendix 1**).

The AHIMS results show two sites near the study area, 37-3-2729 and 37-6-2730 (**Figure 2-1**). 37-3-2729 (Broke Bridge PAD1) is listed as an artefact with potential archaeological deposit (PAD), located 95 metres (m) southwest of the study area. The PAD extent is 70 m in length and varies in width from 1 m where it joins Milbrodale Road in the west and up to 15 m wide adjacent to Wollombi Brook (McCardle Cultural Heritage 2011). Site 37-6-2730 (Broke Bridge PAD2) is listed as a PAD, 12 m south of the study area. This PAD is 50 m in length and varies in width from 1 m where it joins Milbrodale Road in the east up to 15 m adjacent to Wollombi Brook (McCardle Cultural Heritage 2011). Based on the provided extent of 37-6-2730, the site PAD does not extend into the study area, however, the landform (elevated terrace) assessed as having PAD does. Both sites are listed as ‘valid’ on AHIMS, however, the archaeological assessment which records the sites recommended test excavations be completed prior to the construction of the bridge and road approaches. **Section 2.3.3.4** further outlines the archaeological assessment for these PADs, which was completed for bridge upgrade works over Wollombi Brook on Milbrodale Road.

**Figure 2-1: Location of 37-3-2729 and 37-6-2730 in relation to the study area.**



Isolated finds and artefact scatters together form 82% of recorded AHIMS sites in the search area, suggesting that these are the most likely site types to be encountered in the landscape. A variety of other site types are recorded in the local area, albeit at a low frequency. Such site types include art sites, grinding grooves, shell middens, PADs and a stone arrangement. Artefact sites have been recorded on a variety of landforms including flat ground, slopes, and crests and ridges. However, many of the other site types such as art sites and grinding grooves are located within the surrounding escarpment landforms where geological features such as outcropping sandstone is more dominant.

The concentration of sites to the north of the study area is the result of a large amount of assessment associated with the Bulga Coal Complex. This level of assessment has skewed the evidence of Aboriginal occupation in the region. If the same level of assessment was applied to other portions of the AHIMS search area, it is likely that the concentration of sites in the north would not be so predominant.

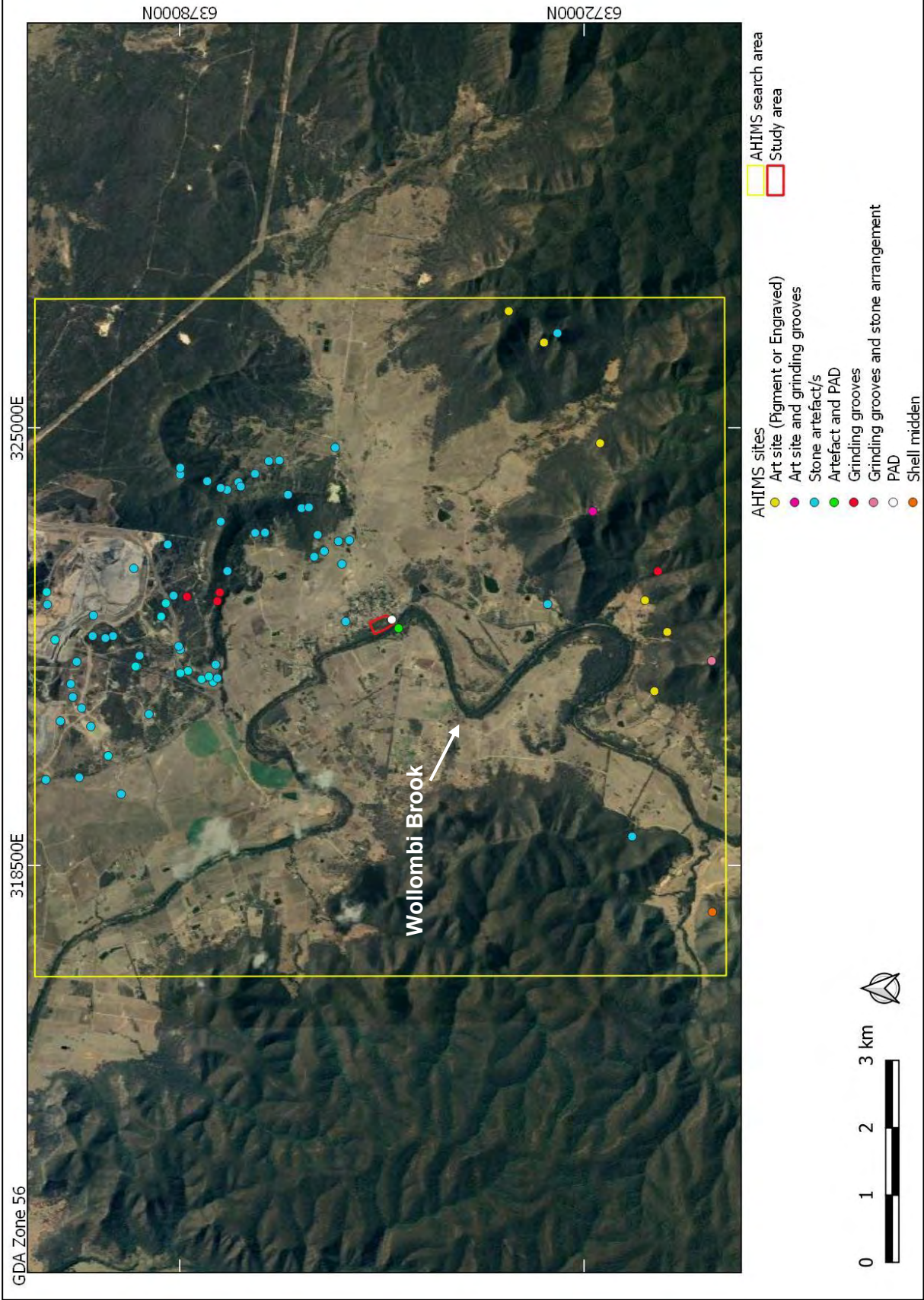
**Figure 2-2** shows all previously recorded sites in relation to the study area and **Table 2-2** shows the types of sites that are close to the study area.

**Table 2-2: Site types and frequencies of AHIMS sites near the study area.**

Site Type	Number	% Frequency
Stone artefact/s	67	82%
Art site (pigment or engraved)	6	7%
Grinding grooves	4	5%
Grinding grooves and stone arrangement	1	1.2%
Shell midden	1	1.2%
Art site and grinding grooves	1	1.2%
Artefact with PAD	1	1.2%
PAD	1	1.2%
<b>Total</b>	<b>82</b>	<b>100%</b>



Figure 2-2: Previously recorded sites in relation to the study area.



### 2.3.3 Step 2b

Are there any other sources of information of which a person is already aware?

**Yes, there are sources of information that would indicate the presence of Aboriginal objects in the study area.**

#### Ethno-historic sources

The study area is located in the Wonnarua tribal area of the upper Hunter River Valley.

Tocomwall (2017: 49) notes that ethnographic accounts and anthropological notes written in the mid-to late-19th century indicate that the traditional territory of the Wonnarua people extended over a two thousand square mile area of land that included the Hunter River and all its tributaries from within ten miles of Maitland to the apex of the Liverpool Ranges. This interpretation is challenged by the Wonnarua Local Aboriginal Land Council (Tocomwall 2017: 482) who state that there is much debate about the tribal boundaries and that the dividing line between the Wonnarua and the Kamilaroi may have been much further south in the area of 'Jerrys Plains'.

The Wonnarua people, and their Kamilaroi neighbours, lived in an environment rich in food resources. Freshwater fish, shellfish, reptiles, mammals, birds and plant food provide a diverse diet (see Brayshaw 1981). Brayshaw (1986: 82) suggests that inland groups visited the coast during the summer when marine resources were plentiful, and coastal groups travelled inland to participate in the winter kangaroo hunts. Trade and/or exchange also occurred between the coastal and inland groups including visiting by coastal and inland groups for initiations and ceremonies seemed to occur. These were conducted within earthen circles. Carved trees were associated with these sites (Brayshaw 1981: 12). Reed spears and shells were traded inland for possum skin rugs and fur cord (Brayshaw 1986: 41).

#### Aboriginal cultural values

Connect for Effect Pty Limited (Connect for Effect) were engaged by Bulga Coal Management (BCM) to undertake Aboriginal community consultation for the Bulga Optimisation Project (BOP) assessment and to author the Aboriginal Cultural Heritage Assessment Report (ACHAR) (Connect for Effect 2013). Also contributing to the ACHAR were confidential cultural values assessments authored by two Wonnarua Knowledge Holder groups, the Plains Clans of the Wonnarua People (PCWP) and the Wonnarua Nation Aboriginal Corporation (WNAC).

The BOP consultation recorded several cultural values associated with the immediate area surrounding the study area (Connect for Effect 2013: 147–149):

- Some Registered Aboriginal Parties (RAPs) stated that they believe the Broke and Bulga area is sacred as it is surrounded by features linked to spiritual Creation stories



- The interaction between connections to Country and cultural identity is highly important especially as the traces of the past and their memories contributed to maintaining distinctive Wonnarua and other Aboriginal people's culture, spirituality and cultural interaction with the landscape
- The pathways and water systems to and from Creation places and places of ceremony are of high cultural value. All waterways, creek lines and tributaries in the local area were identified as culturally important as they were believed to be part of the essential spiritual meaning of the place and the people. Nine Mile and Loders Creeks, Wollombi Brook, Monkey Place Creek and more broadly the Hunter and Goulburn Rivers are important parts of the pathways to and from ceremony and to and from sacred Creation places and as such have immeasurable cultural values
- Ethnobotanical knowledge identified indigenous flora and fauna as important cultural resources
- Most RAPs expressed high levels of emotion regarding landscape transformation and fragmented cultural and archaeological sites.

Key cultural values identified in the cultural values assessment in the local area include the now-relocated Loders Creek grinding grooves, Baiame Cave, Lizard Rock (also known as Yellow Rock) and the site of the Bulga Bora Ground (**Figure 2-3**).

The Loders Creek grinding groove site consists of 49 grooves (Dyall 1981) or 55 grooves (Brayshaw on the 1991 site card for #37-6-0148) located in three groups (Dyall 1981) or four groups (Brayshaw 1991 site card). The site was located on sandstone shelves and broken boulders in the western arm of Loders Creek, located 9 km north of the study area. As part of BOP, the grinding grooves were relocated further north along Loders Creek due to the extension of approved mining activities in this area (OzArk 2017).

Baiame Cave is located approximately 10.8 km northwest of the study area near Milbrodale. It consists of a large sandstone shelter containing the figure of the creator Baiame who is depicted with wide, all-seeing, eyes and outstretched arms. The Wonnarua dreaming holds that the Hunter Valley was created by the great spirit, Baiame, and before this, there was no life (Australian Museum 2012). Wonnarua dreamtime stories explain how the region came into being and identify Creation Places and Dreaming tracks (paths of Ancestor beings, or songlines) within the landscape (Miller 1985). The figure is red and outlined in white ochre. Seven stripes in white ochre are shown beneath the arms (three on one side, four on the other). Below and surrounding the figure are negative stencils of hands, axes and boomerangs executed primarily in white ochre (often indicating 'family caves': Jones 2009). There does not appear to be any over-painting at the site and the art work remains reasonably fresh, although anecdotal evidence suggests that the paint has faded with time<sup>3</sup>. The painting style and form of the art is indicative of other examples

<sup>3</sup> <http://lindseyofoz.blogspot.com.au/2007/10/aboriginal-culture-trip.html>

in the greater Sydney Basin and while no date on the art work has been suggested, similar work in the region suggests it may be up to 1,500 years old<sup>4</sup>. This site is a major feature in the local landscape for present-day Aboriginal people, as it must also have been for past Aboriginal people.

Lizard Rock is also important to the local Aboriginal people. This escarpment (not a rock as such) is located in State Forest adjoining Yengo National Park and it dominates the skyline to the south of Broke. Its outline is suggestive of a lizard and it holds strong spiritual connections for Aboriginal people of the area (OzArk 2013). The story of Lizard Rock is part of the Wonnarua dreaming and is explained in story and song:

*A great lizard (or goanna) wended its way across the land from the coast creating valleys and mountains. As it made its way towards the plains country it was met by the warriors there who commanded it to stop. It resisted, and the warriors killed it and smashed its head. It can be seen to this day petrified as Yellow Rock at Broke. To ensure that it stays that way, to the left of the road at Broke lies a line of rock formations which are said to be warriors who stand guard, just in case it chooses to revive itself and continue its journey.*

Eric Taggart to W.J. Needham (*University of Newcastle Archives*)

In 1852 the people of Broke witnessed the last recorded Bora held in the Hunter Valley. The Bora was an Aboriginal ceremony which amongst other rites included the initiation of young males into manhood. The Bora Ground was located further north on Wollombi Brook. Sadly, nothing remains of this ceremonial ground today.

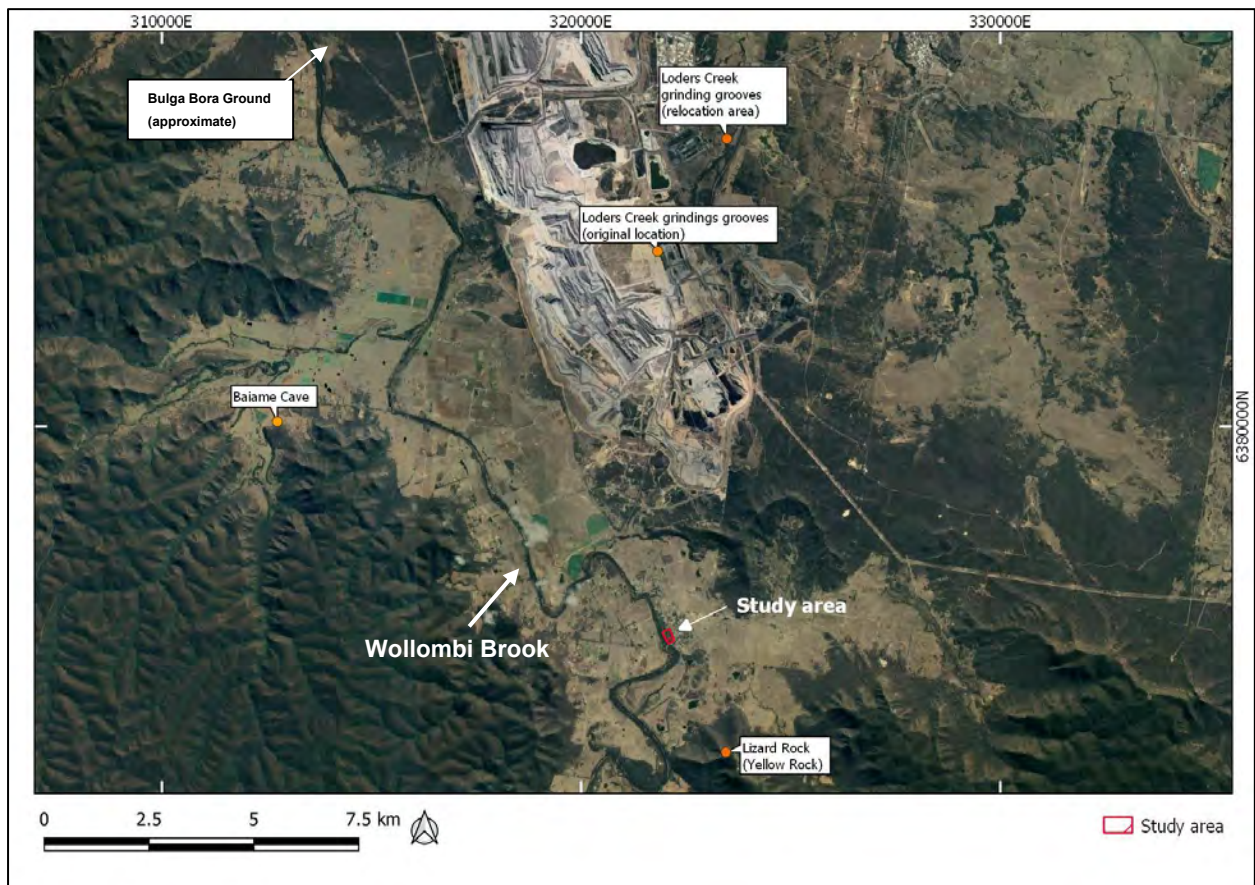
*Here also is to be seen the remains of an ancient Bora ground with its sacred circles still defined by small mounds of earth and a being of carved trees still bearing the curious emblematical devices which marked this strange and mystical ceremony of initiation of the young men of the tribe to tribal rites...*

*This Bora ceremony was held in the year 1852. On reliable authority of residents of the locality it was attended by between 500 and 600 Aboriginal people from the various tribes from as far as Mudgee and Goulburn...*

Alexander Eather of Bulga (1921)

There are no known cultural values or Aboriginal sites pertaining directly to the location of the proposed work, although during consultation for BOP it was noted that Wollombi Brook, which is adjacent to the study area, is believed to be a pathway to creation places (Connect for Effect 2013).

<sup>4</sup> Jillian Huntley, Australian Geographic [October 13, 2011]. Jillian from the University of New England has used an X-ray gun to analyse the chemical makeup of rock art at Biamie Cave, without destroying the sample. This process was to characterise the artwork, not to date the pigment.

**Figure 2-3: Location of sites with high cultural values in relation to the study area.**

### Regional archaeological context

Within the upper Hunter Valley, Aboriginal site types such as isolated finds and artefact scatters are the most common. They are generally identified through erosional processes, which also act to remove the stratified and datable context of archaeological sites. Where datable materials such as charcoal are identified at an archaeological site, the association between the dated sample and cultural materials may not be provable, unless the features comprise an intact feature such as a hearth (Dean-Jones and Mitchell 1993). Although, very few archaeological sites within the Hunter Valley have been directly dated by either radiocarbon or thermoluminescence dating, the erosional nature of many of the open sites means there are limitations in applying this technology.

Stone artefacts exposed on the ground surface may result from a single visit or from discard events from repeated visits. Such visits could span time periods from 10s to 1000s of years. Notable archaeological investigations in the Hunter Valley have provided dates of occupation for a number of sites that contribute to our understanding of the antiquity of Aboriginal occupation of the region, these include:

- Glennies Creek (Falbrook), north of Singleton, where a hearth located on a burial alluvial terrace provided radiocarbon dates between  $13020 \pm 360$  BP (years before present) and  $34580 \pm 650$  BP (Koettig 1986)

- Wollombi Brook, outside of the study area, where artefacts identified on a terrace in a clay Horizon were dated to late Pleistocene (between 18,000 and 30,000 BP) by a geomorphologist (reported in Kuskie and Kamminga 2000: 215).

Several studies and theories have been surmised regarding how Aboriginal people used the landscape in which they lived. These theories attempt to explain or interpret the location and nature of the archaeological record in any region. It is generally assumed that the environment, and implicitly resource distribution, was a major factor influencing patterns of occupation.

#### Previous assessments in the vicinity of the study area

An investigation undertaken in the vicinity of the study area has been summarised below.

#### **2.3.3.1 *Salvage of Aboriginal Sites within Beltana No.1 Mine, near Broke, NSW (Umwelt 2007)***

This project spanned over several years, with several different Aboriginal Heritage Impact Permits (AHIPs). The survey results led Umwelt to a conclusion that traditional Aboriginal people frequented the project area and a salvage of surface artefacts was proposed. The salvage area for this project was 3 km north of the current study area.

A total of 205 artefacts were collected in the first phase of salvage, early 2003, that yielded the following conclusions:

- Majority of the artefacts collected were manufactured from mudstone at 68% with the second most popular material collected being silcrete (23%). Other raw materials included tuff, chert, volcanic rock, quartzite, chalcedony, glass and fine grained siliceous
- The raw material found were in line with expected sources known in the geology of the area
- Majority of the artefacts were made by a knapping technique known as freehand percussion resulting in flakes
- The higher order tributary systems were subject to more intensive occupation than other landforms in the area
- The high portion of heat shattered artefacts from bushfires suggests that the artefacts may have been exposed on the surface for an extended period of time
- The Hunter River was the source of a variety of raw materials found during the collection
- One of the sites (BMU19) was still occupied after European settlement of the area and perhaps as much as 20 years after occupation. This conclusion was made from the finding of a base of a hand-blown glass bottle. This type of bottle was commonly used in 1860s, it also displayed multiple flake scars
- Camping appeared to focus near a tributary of Wollombi Brook



The next surface collection spanned over four days and occurred seven months later in November 2003. A total of 20 areas beside the unnamed tributary of Wollombi Brook (noted as being the northern drainage) were known to have artefacts. A total of 2,223 artefacts were salvaged. The following are the field results and conclusions:

- 39 grinding grooves were located in sandstone on a creek bed of the northern drainage (BMU1)
- It was also noted that many artefacts would have been lost in the area through creek bank instability and flooding events
- Majority of the sites found were located within 200 m of the northern drainage near sandstone outcrops or on the tributary confluence, with isolated finds appearing on other landforms such as ridge crests or gentle slopes within close proximity to a road or gully erosions
- Grader scrapes at BMU2 were used to test areas with low ground surface visibility as results of the finding of surface artefacts was biased towards larger more visible artefacts. The scrapes yielded the following results and conclusions:
  - 47 artefacts were recovered in total, with the majority of the distribution being in the area with the gentlest gradient near the tributary channel
  - Hearths and ovens are almost certain to be present, however, due to geomorphic processes, they would have been destroyed. Other evidences of Aboriginal occupation may have been lost as well due to channel widening.

In total, flakes and broken flakes made up the bulk (78.6%) of the total assemblage. The artefacts were mainly manufactured from mudstone, with silcrete being the next most popular material used. Other raw materials included tuff, chert and quartz. Various types of artefacts found came to several conclusions:

- The recovery and location of bondi points, backed blades, geometric microliths and an elouera indicate that a portion of the assemblage was in the Holocene age. This could date anywhere from 7000 BP
- Grindstones and anvils were located mainly on the main channel of the northern drainage. This suggests food processing and the presence of women
- Raw materials located at the site would have been sourced from the Hunter River. The raw materials found at the site were not uncommon of the previous findings in the Hunter River
- Some artefacts were found to be heat treated, however, due to the lack of evidence to suggest that thermal pre-treatment was occurring on site, the artefacts was probably subject to the heat post-discard.

### **2.3.3.2 South Bulga Colliery South-east Extension (ERM 2000)**

In 2000, ERM completed an archaeological assessment for the South Bulga Colliery South-East Extension project, located at its closest 900 m east of the study area. 31 sites were recorded

during the assessment, including 16 artefact scatters, 13 isolated finds, two rock shelters. Characteristics of the site types recorded are listed below:

- Artefact sites:
  - Sites largely contained <27 artefacts, with most containing <10
  - Largest were SBU 10 (26 artefacts, low spur just beyond flats, distinct concentration, ants' nest & gravels) and SBU 25 (200 artefacts, 20 m from small tributary of Monkey Place Creek, exposed by sheet wash, possibly extends further)
  - Artefact density: generally low (range: 0.02 / sq. m to 1.1 / sq. m. It was noted that SBU30 (1.1 / sq. m) was a very small site with only an ants' nest exposure)
  - Raw materials: Mudstone (51%), Silcrete (39%), Quartz (3%), Chert (4%), Quartzite (2%), Igneous (1%), Unidentified (<1%). Broadly consistent with regional distribution
  - Artefact typology: fragment (n=193, 61%), flake (n=95, 30%), core (n=18, 6%), blade (n=6, 2%), scraper (n=3, 1%), microlith (n=1, <1%). Survey Unit 1 contained all artefact types, Survey Unit 3 was most limited in range (only flakes and fragments), Survey Unit 4 had lowest numbers (eight artefacts only). Survey Unit 1 was largest overall (266 artefacts), followed by Survey Unit 2 (31 artefacts), Survey Unit 3 (11 artefacts)
  - Modified artefacts: most artefacts with no retouch (n=299, 94%). 17 had retouch, all from Unit 1, mostly at SBU25. 55% of retouched pieces were flakes
  - Artefact length: most between 20 mm and 50 mm. Largely consistent across landforms
  - Cortex: Most had no cortex (79%). Mean cortex % across Survey Units ranged from 17.5 to 40.
- Rock shelters:
  - Weathered conglomerate. No rock art, small disturbed artefact scatters. 10 very small overhangs on southern side of Vere<sup>5</sup> (determined to be too small for habitation). SBU 28 & 29 were on eastern side of Vere. Possible depth of deposit. Evidence of recent usage / disturbance. Soot covered ceilings.

### **2.3.3.3 Bulga Optimisation Project**

The assessment area for the BOP covered approximately 3615 ha located at its closest 2 km north of the study area.

### **Archaeological survey (OzArk 2013)**

<sup>5</sup> The Vere is the escarpment north of Monkey Place Creek and Broke.

The survey undertaken for the BOP identified 14 site complexes<sup>6</sup> covering an area of approximately 198 ha, nine open sites and six isolated finds within the BOP disturbance area. The two grinding groove sites at Loders Creek and BMU1 were included within the site complexes.

A further 42 previously recorded sites were located outside these areas but within the BOP disturbance area making, in total, 71 sites that were partially or totally impacted by the BOP. The majority of these sites were low density artefact scatters or isolated finds.

### **Test excavation program (OzArk 2013)**

The test excavation program for the BOP undertaken by OzArk in 2012 included the excavation of 196 0.5 m x 0.5 m excavation squares (or 49 m<sup>2</sup>) resulting in an assemblage of 235 artefacts recovered from BOP SC-1 with PAD, BOP SC-6 with PAD and BOP SC-10 with PAD.

Analysis of the soils and stratigraphy recorded showed that all sites had a very shallow A-Horizon soil profile that was lacking in archaeological stratigraphy. At BOP SC-6 with PAD on Nine Mile Creek, soil profiles indicated that some of the present A-Horizon soils had been redeposited, probably at some time in the modern period. At BOP SC-10 with PAD (on 'Swan Lake'), the A-Horizon soils were very thin in the areas investigated. At BOP SC-1 with PAD, A-Horizon soil loss and riparian erosion had previously affected the area, however, the A-Horizon soil depth was deeper, and evidence of disturbance was less.

The distribution of artefacts showed the following features from each site:

- BOP SC-1 with PAD. In several instances it was seen that exposed artefact scatters on the current erosion edge of the northeast drainage did not extend with any sort of artefact density into the non-eroded portions of the site. However, at several locations, clusters of artefacts were recorded up to 50 m from the erosion edge and so there remained the possibility of further undetected clusters within 50 m of the creek, particularly on the western bank. Some of these clusters, such as at TP23, showed evidence of being *in situ* knapping floors with possibly associated features (a cracked stone feature). No artefacts were recorded in any of the test excavation squares on the eastern bank.
- BOP SC-6 with PAD. Artefacts in the area investigated did not display any observable patterning but were present on both banks of Nine Mile Creek without any evidence of substantial clustering. As noted above, some of the A-Horizon soils at this site had been redeposited and any observed distribution could be entirely coincidental.
- BOP SC-10 with PAD. In several instances it was seen that exposed artefact scatters on the current erosion edge of Swan Lake did not extend with any sort of artefact density into the non-eroded portions of the site (on the eastern bank). Very low artefact densities were recorded in the non-eroded portions of the site on the eastern bank of Swan Lake.

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<sup>6</sup> The approach taken by OzArk to site recording was that individual sites considered to be linked by geographical proximity were grouped into a broader site complex

## BOP salvage program (OzArk 2017)

A total of 6,525 artefacts were recovered from the surface collection across the 59 sites and site complexes salvaged. Characteristics of these artefacts are as follows:

- Unmodified flakes dominated the assemblage (68%) followed by unmodified blades and pieces of shatter (both averaging 10%)
- Materials identified included mudstone (58%) and silcrete (37%). Chert, quartz, quartzite, tuff, petrified wood, basalt, volcanics and other materials including glass made up the remaining assemblage
- Over 75% of the surface assemblage displayed no cortex and were recorded to be at a tertiary stage of reduction
- Most artefacts recorded in the surface assemblage were complete (62%) with the most-common break type being the loss of the proximal end of the flake (distal fragments)
- The most common size category for artefacts in the surface assemblage was Category 2 (20–40 mm) followed by Category 1 artefacts (0–20 mm)
- 168 artefacts displayed some form of retouch (2.57% of the surface assemblage).

6,359 artefacts were recovered from archaeological excavations at 12 sites. These excavations showed that the most-common artefact:

- Is likely to be an unmodified flake
- Is likely to be sourced from silcrete
- Has been struck from a core reduced without rotation (i.e. either a single or an opposed platform core)
- Is 10–20 mm in size
- Has a feather termination
- Has a small (up to c. 3 mm) platform
- Has a simple platform where the artefact has been removed from a core prepared by first removing a flake at right-angles to the flake that has been removed
- At a tertiary stage of reduction.

The most noticeable variation between the surface and excavation assemblages was found in the raw materials used for artefact manufacture. Comparisons of the raw materials shows that within the surface assemblage indurated mudstone is 58.28% of the assemblage and 37.21% is silcrete while the excavation assemblage has silcrete at 50.68% and indurated mudstone at 41.52%. When looking at the three site complexes that recorded the most excavation artefacts (BOP SC-1 with PAD, BOP SC-8 with PAD and BOP SC-9 with PAD), the following statistics can be determined:



- These three complexes recorded a total of 5,712 artefacts or 90% of the total excavation assemblage.
- BOP SC-1 with PAD recorded 223 mudstone artefacts (34.5%) and 306 silcrete artefacts (47%); a 12.5 point difference in favour of silcrete (total artefacts = 646)
- BOP SC-8 with PAD recorded 715 mudstone artefacts (53.5%) and 549 silcrete artefacts (41%); a 12.5 point difference in favour of mudstone (total artefacts = 1,336)
- BOP SC-9 with PAD recorded 1,511 mudstone artefacts (40.5%) and 1,954 silcrete artefacts (52.3%); a 12 point difference in favour of silcrete (total artefacts = 3,730).

#### **2.3.3.4 New Dual Lane Concrete Bridge Over Wollombi Brook at Broke (McCardle Cultural Heritage 2011)**

In 2011, McCardle Cultural Heritage completed an archaeological assessment for a proposed bridge over Wollombi Brook, located directly south of the current study area. Two PADs were identified on either side of Wollombi Brook (37-3-2729 and 37-6-2730) within elevated landforms adjacent to Wollombi Brook (**Section 2.3.2** and **Figure 2-1**). However, there are discrepancies in the site recordings, for example, PAD 1 is described in the report as being located on the eastern side of Wollombi Brook, however, the AHIMS location for PAD 1 is on the western side of Wollombi Brook and vice versa for PAD 2.

The archaeological assessment recommended test excavation be completed on the eastern side of Wollombi Brook only as the western side would not be impacted by the project. Despite efforts by OzArk to gain a copy the test excavation report from the consultant, AHIMS and the Singleton Council, it has not been able to be obtained. As such, the archaeological nature of the PAD is unknown. We will continue to attempt to source this report as it would give an indication as the potential of subsurface deposits extending into the proposed homestead relocation study area at Broke.

#### Aboriginal community involvement

No Aboriginal community members accompanied the current visual inspection. This assessment was completed initially to understand the archaeological and cultural context of the study area.

Aboriginal community consultation is not a formal requirement of the Due Diligence process (DECCW 2010a Section 5).

#### **2.3.4 Step 2c**

##### Are there any landscape features that are likely to indicate presence of Aboriginal objects?

**Yes, the study area contains landforms with identified archaeological sensitivity.**

The Due Diligence Code (DECCW 2010) specifies several landscape features which are most associated with the likely presence of Aboriginal objects and which therefore require further

assessment if present. These are areas that are: within 200 m of waters; located within a sand dune system; located on a ridge top, ridge line or headland; located within 200 m below or above a cliff face; within 20 m of or in a cave, rock shelter, or a cave mouth.

The study area includes primary, secondary and tertiary terrace landforms within 200 m of Wollombi Brook (**Figure 2-4**). Wollombi Brook is a north-flowing, permanent water source which drains directly into the Hunter River. As such, the study area is noted in the Due Diligence Code as having heightened archaeological sensitivity.

The study area consists of both the Saxonvale and Wollombi Soil Landscapes (Kovac and Laurie 1991) (**Figure 2-5**). Wollombi Soil Landscapes are associated with floodplains of Wollombi Brook and consists of alluvial sandy soils which can have a depth greater than 1 m. Soils include brown to brownish-black or yellowish-brown loamy sand and dark reddish-brown loam with fine sand. The Saxonvale Soil Landscape is associated with ridges and upper slopes as well as lower gradient footslopes. Soils generally comprise brownish-black sandy loam.

The study area is comprised of open woodland with mature and regenerating vegetation. Species present include box and gum trees.

Through examination of the landscape features present and previous assessments completed in close proximity to the study area, it is predicted that there is a high potential for Aboriginal sites to be present. This is due to the presence of elevated landforms adjacent to a permanent water source (Wollombi Brook). Based on the landforms present, if new sites are recorded, artefact scatters and isolated finds are expected to be the most likely site types encountered. Artefacts are most likely to have been manufactured from silcrete or mudstone and consist mostly of unmodified flakes. PADs may be present and relatively *in situ*, especially at depth, due to the overall low levels of prior ground surface disturbance and soil type present. Scarred trees are possible as the study area is densely vegetated and its proximity to a permanent watercourse increases the likelihood of such a site being present. While art sites within rock shelters and grinding groove sites are common in the surrounding area, these site types are not expected due to an absence of necessary geological formations.

### 2.3.5 Step 3

Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?

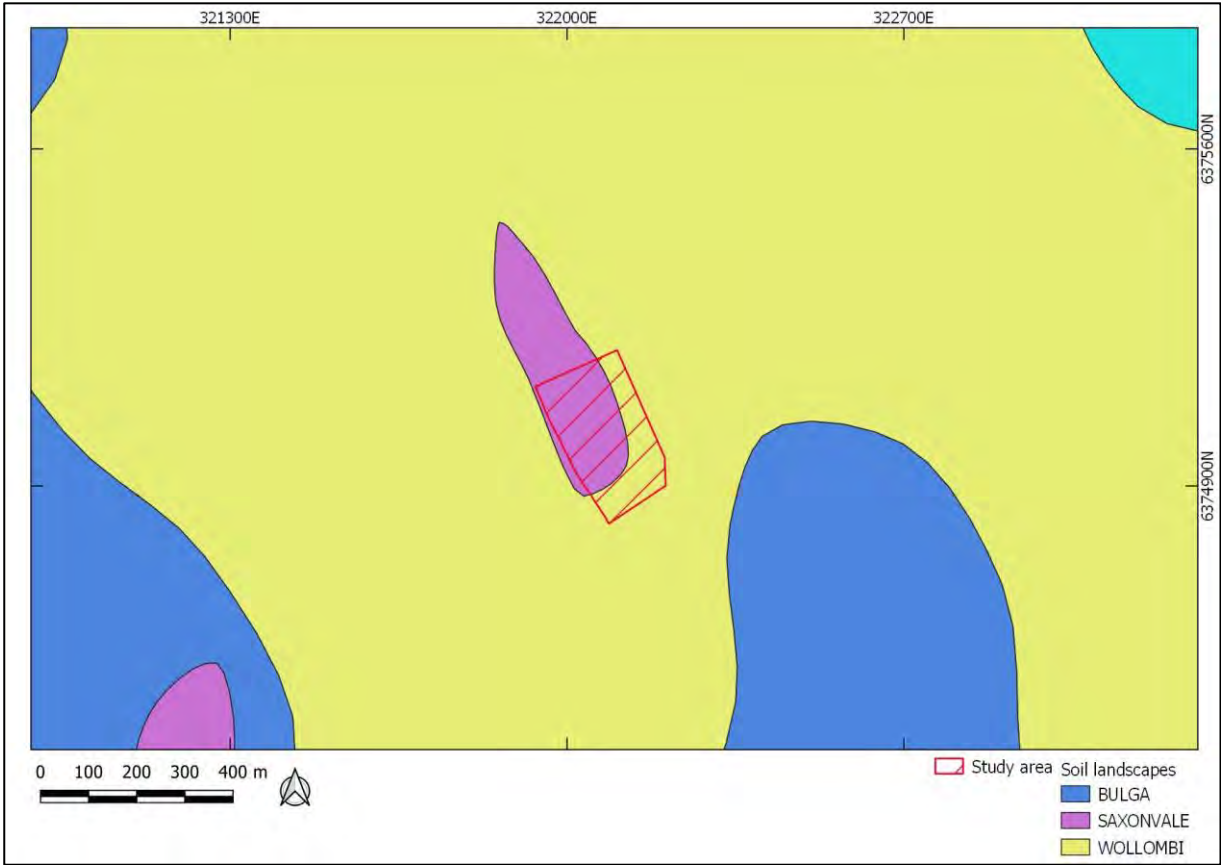
**No. Landforms with identified archaeological sensitivity may be impacted by the proposal.**

As it is not possible to avoid landforms within 200 m of the Wollombi Creek, the Due Diligence process advances to Step 4.

Figure 2-4: The study area in relation to waterways.



Figure 2-5: Soil landscapes of the study area.



### 2.3.6 Step 4

Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?

**Yes, the visual inspection of the study area confirmed that Aboriginal objects are likely to be present.**

The visual inspection of the study area was undertaken by OzArk Director and Principal Archaeologist, Dr Jodie Benton, on 8 August 2019. Standard archaeological field survey and recording methods were employed (Burke and Smith 2004). All landforms within the study area were inspected, however, landforms identified as having greater Aboriginal archaeological sensitivity, i.e. the upper terraces, were inspected in greater detail (**Figure 2-6**). Emphasis was placed upon inspecting any remnant mature trees deemed of sufficient age to contain Aboriginal scarring or carving. **Plates 1 to 9** shows the overall environmental context of the study area.

Ground surface visibility (GSV) across the secondary and tertiary terrace landforms of the study area was generally low due to thick leaf litter and grass cover. Exposures were afforded by natural bare patches, vehicle tracks and erosive features along the edge of the terraces. No GSV was present on the primary terrace due to dense vegetation cover. Disturbances within the study area were identified as being minimal overall and limited to a graded access track with imported fill, picnic tables and foundations from the Blaxland Homestead (**Plates 7 and 8**).

No Aboriginal sites were identified during the visual inspection. Small quartz pebbles and fragments were present mostly across vehicle tracks, however, no pieces of material displayed any flaking characteristics consistent with tool manufacturing. Despite a lack of surface manifestations, the secondary and tertiary terraces which extend across most of the study area were confirmed as being archaeologically sensitive landforms (SAL). These landforms were identified as being a SAL as they comprise flat, elevated, well drained landforms adjacent to Wollombi Brook (**Plate 1 to 4**). The landforms have also been subject to low levels of disturbance and comprise sandy soils which in this context can have a depth greater than 1 m (**Plate 5**). The tertiary terrace has been assessed as having high potential for archaeological subsurface deposits as it is the most elevated landform with less disturbance, while the secondary terrace has been assessed as having moderate to high potential (**Figure 2-7**). Areas of disturbance within these landforms, i.e. the graded access track, building foundations do form part of the SAL. The transition zone between the secondary and tertiary terrace is higher in the north of the study area, approximately 1 to 2 m and gradually becomes lower towards the south (**Plates 3 and 4**). The profile in the transition zone highlights the sandy nature of the soils present.

A 'yes' answer to Step 4 requires that 'further investigation and impact assessment' of the study area be undertaken.



Figure 2-6: Survey coverage within the study area.

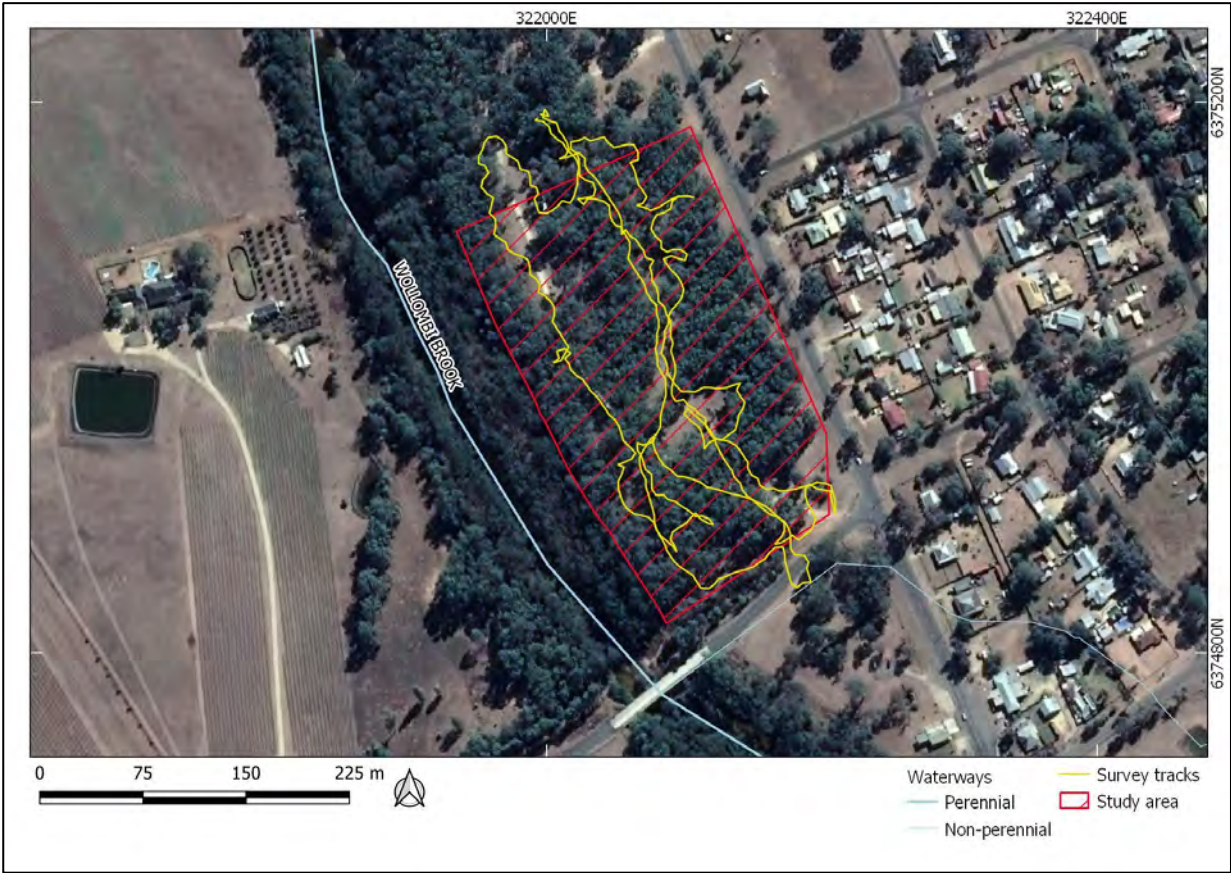
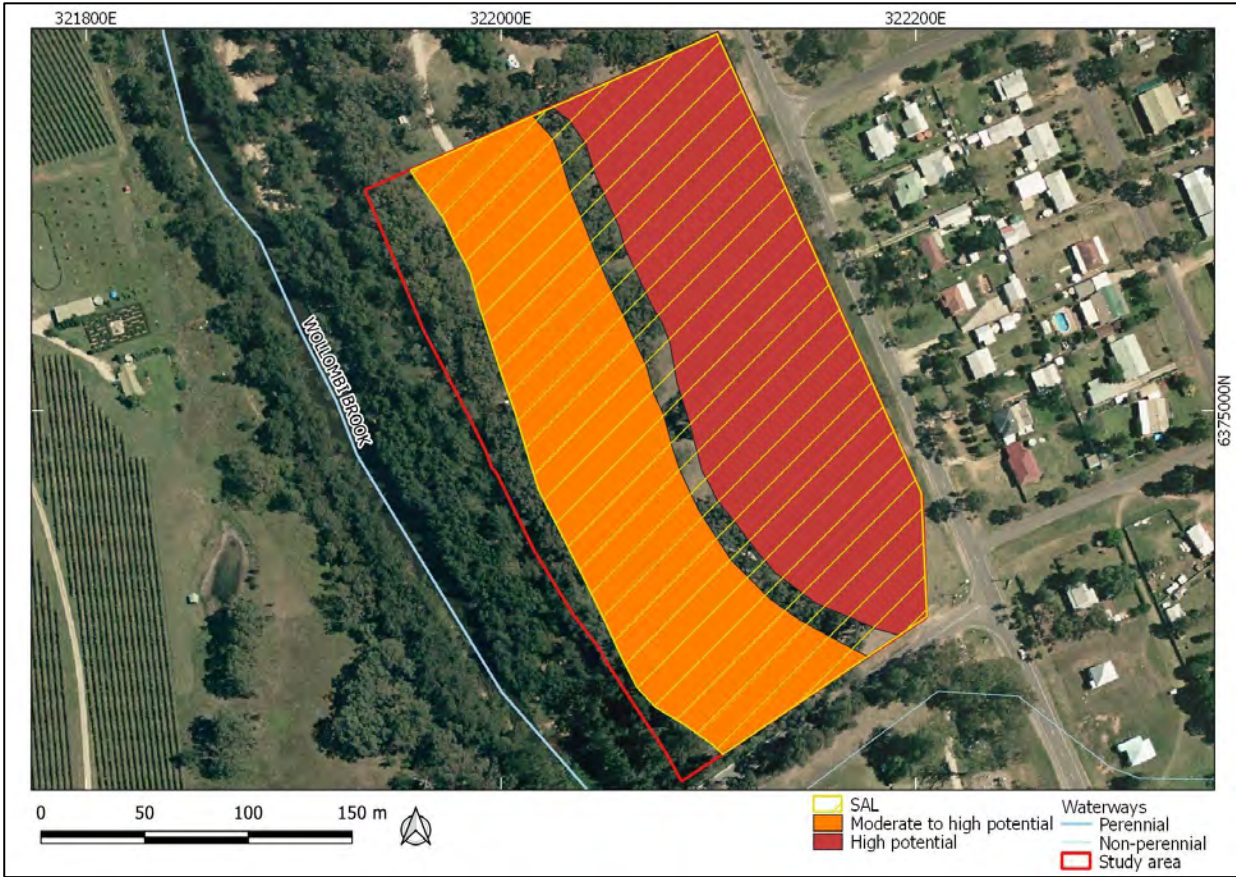


Figure 2-7: Areas of potential within the SAL.



## 2.4 CONCLUSION

The Due Diligence process has resulted in the outcome that further investigation is required. The reasoning behind this determination is discussed below and summarised in **Table 2-3**.

While the upper terrace landforms were physically inspected, poor GSV conditions meant the sensitive landform could not be fully assessed. Further, the relatively intact nature of much of the soil profile indicates potential for archaeological material to be present at depth, and if present, such deposits may have potentially good integrity.

**Table 2-3: Due Diligence Process application.**

Item	Reasoning	Answer
Will the activity disturb the ground surface or any culturally modified trees?	The proposed works would disturb the ground surface through excavation for the construction of foundations. The proposal would involve the disturbance of woodland. No culturally modified trees were identified during the visual inspection within the study area.	Yes
Are there any relevant records of Aboriginal heritage on site (AHIMS or from other sources), or landscape features that are likely to indicate presence of Aboriginal objects?	AHIMS indicated no Aboriginal sites within the study area, however, the visual inspection resulted in a SAL being identified and therefore Aboriginal objects are likely to be present subsurface.	Yes
Can harm to Aboriginal objects or relevant landscape features be avoided?	The study area encompasses an elevated terrace adjacent to Wollombi Brook which is intact. As such, a sensitive landform feature cannot be avoided by the proposal.	No
Does a desktop assessment and visual assessment confirm that there are Aboriginal objects or that they are likely?	Desktop searches and the visual inspection identified a SAL within the study area. It is assessed that there is a high likelihood of there being subsurface archaeological deposits within the study area.	Yes
Further investigation required		

### 3 MANAGEMENT RECOMMENDATIONS

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The undertaking of the Due Diligence process resulted in the conclusion that landforms are present which have potential to contain archaeological subsurface deposits. This moves the proposal to the following outcome:

*Further investigation and impact assessment required.*

It is recommended that this further investigation take the form of test excavation in the areas of proposed impact within the sensitive landform following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) under Part 6 of the NPW Act. This would confirm whether subsurface archaeological deposits are present, and if present, give an indication of their nature, extent and integrity. Such excavations must be preceded by Aboriginal community consultation as per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs; DECCW 2010c).

An ACHAR, as a prerequisite to an application for an AHIP, will be required should this investigation indicate that there are Aboriginal objects within the study area that may be harmed. All AHIP applicants must demonstrate adherence to the ACHCRs.

Conversely, should the test excavation reveal that there are no subsurface Aboriginal objects within areas liable to be impacted by the proposal, an AHIP would not be required for the proposal to proceed. Under such a scenario, an ACHAR would also not be required and this report, in conjunction with the test excavation report, would be considered to be sufficient documentation to assess the likely harm to Aboriginal objects.

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## PLATES

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Plate 1: View south across the tertiary terrace with open woodland.



Plate 2: View north showing the transition between the tertiary and secondary terrace.





Plate 3: View from the secondary terrace to the tertiary in the north of the study area where the transition is more distinct.



Plate 4: View from the secondary terrace to the tertiary in the south of the study area where the transition is less distinct.





Plate 5: Detail of the sandy deposit at the transition of the tertiary and secondary terrace.



Plate 6: View across the tertiary terrace showing the graded access track in the background.





Plate 7: View of the foundations from the Blaxland Homestead.




Plate 8: View along the graded access track with imported fill that traverses the secondary terrace.



Plate 9: View west towards the primary terrace (floodplain).



## APPENDIX 1: AHIMS SEARCH RESULTS



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## Extensive search - Site list report

Your Ref/PO Number : 2394  
Client Service ID : 442662


SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-1047	BC02	GDA	56	320125	6379061	Open site	Valid	Artefact : 3		102076
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-1048	BC03	GDA	56	319558	6378870	Open site	Valid	Artefact : -	3301	102076
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0926	SBU29	AGD	56	324085	6376935	Closed site	Valid	Artefact : -	3301	Shelter with Deposit
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-1740	Broke Pipeline ?	AGD	56	321117	6377311	Open site	Partially Destroyed	Artefact : 19		
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-2229	YK3	GDA	56	321305	6377565	Open site	Valid	Artefact : 5	3301	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0884	Bulga Open Cut IP1 (A1)	GDA	56	321524	6379529	Open site	Destroyed	Artefact : -	Isolated Find	102074, 102075
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0885	Bulga Open Cut IP2 (a1)	GDA	56	321193	6379617	Open site	Destroyed	Artefact : -	Isolated Find	102074, 102075
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0804	Broke Rd 1	GDA	56	321850	6379850	Open site	Valid	Artefact : 3	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-2729	Broke Bridge PAD1	GDA	56	322020	6374750	Open site	Valid	Artefact : - Potential Archaeological Deposit (PAD) : -	3301	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-2730	Broke Bridge PAD2	GDA	56	322150	6374850	Open site	Valid	Potential Archaeological Deposit (PAD) : -	3427	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0917	SBU20	AGD	56	323323	6376541	Open site	Valid	Artefact : -	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0918	SBU18	AGD	56	324085	6376935	Open site	Valid	Artefact : -	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0919	SBU19	AGD	56	324600	6375500	Open site	Valid	Artefact : -	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0920	SBU21	AGD	56	323331	6376688	Open site	Valid	Artefact : -	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0921	SBU22	AGD	56	323972	6377105	Open site	Valid	Artefact : -	Isolated Find	

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37-6-0922	SBU23	AGD	56	324400	6376486	Open site	Valid	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0923	SBU24	GDA	56	324515	6376520	Open site	Valid	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0924	SBU25	AGD	56	323224	6375298	Open site	Valid	Artefact:-	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	1808,1925	
37-6-0925	SBU26	AGD	56	324021	6376902	Closed site	Valid	Artefact:-	Shelter with Deposit	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0927	SBU30	AGD	56	323208	6375452	Open site	Valid	Artefact:-	Open Camp Site	102176
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	1925	
37-6-0928	SBU33	AGD	56	323303	6375760	Open site	Valid	Artefact:-	Isolated Find	102178
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0929	SBU31	AGD	56	323060	6375663	Open site	Valid	Artefact:-	Isolated Find	102178
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0930	SBU32	AGD	56	322978	6375812	Open site	Valid	Artefact:-	Open Camp Site	102178
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0911	SBU14	AGD	56	324200	6377800	Open site	Valid	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0912	SBU13	AGD	56	324100	6377400	Open site	Valid	Artefact:-	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0913	SBU12	AGD	56	324000	6377200	Open site	Valid	Artefact:-	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0914	SBU16	AGD	56	323700	6376000	Open site	Valid	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0915	SBU15	AGD	56	324300	6377800	Open site	Valid	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0916	SBU17	AGD	56	323900	6376200	Open site	Valid	Artefact:-	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>		
37-6-0902	SBU3	AGD	56	321800	6379100	Open site	Valid	Artefact:-	Open Camp Site	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	3301	
37-6-0903	SBU4	GDA	56	321905	6378990	Open site	Destroyed	Artefact:-	Isolated Find	
	<b>Contact</b>	<b>Recorders</b>						<b>Permits</b>	3301	
37-6-0904	SBU5	GDA	56	321705	6377990	Open site	Destroyed	Artefact:-	Open Camp Site	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
37-6-0905	Contact	Recorders	Unknown Author,OzArk Environmental and Heritage Management,Mr.Ben Church	AGD	56 322400	6377900	Open site	Valid	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Unknown Author	AGD	56 322105	6379090	Open site	Destroyed	Artefact :-	Permits	3301
37-6-0906	SBU8	Recorders	Unknown Author,Ms.Morgan Wilcox	AGD	56 322805	6378490	Open site	Destroyed	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Unknown Author,Ms.Morgan Wilcox	AGD	56 322805	6378490	Open site	Destroyed	Artefact :-	Permits	3301
37-6-0907	SBU7	Recorders	Unknown Author,Ms.Morgan Wilcox	AGD	56 321876	6379103	Open site	Valid	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Unknown Author,Ms.Morgan Wilcox	GDA	56 321876	6379103	Open site	Valid	Artefact :-	Permits	3301
37-6-0908	SBU9	Recorders	Unknown Author,OzArk Environmental and Heritage Management,Mr.Ben Church	AGD	56 322765	6377100	Open site	Valid	Artefact :-	Permits	3301
											Open Camp Site
	Contact	Recorders	Unknown Author,OzArk Environmental and Heritage Management,Mr.Ben Church	AGD	56 322765	6377100	Open site	Valid	Artefact :-	Permits	3301
37-6-0909	SBU10	Recorders	Megan Mebberson	AGD	56 322765	6377100	Open site	Valid	Artefact :-	Permits	3301
											Open Camp Site
	Contact	Recorders	Megan Mebberson	AGD	56 322765	6377100	Open site	Valid	Artefact :-	Permits	3301
37-6-0910	SBU11	Recorders	Megan Mebberson	AGD	56 323500	6377200	Open site	Valid	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Megan Mebberson	AGD	56 323500	6377200	Open site	Valid	Artefact :-	Permits	3301
37-6-1224	HB2/ Site B	Recorders	Megan Mebberson	AGD	56 322870	6375400	Open site	Valid	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Megan Mebberson	AGD	56 322870	6375400	Open site	Valid	Artefact :-	Permits	3301
37-6-1225	HB2/Site A	Recorders	Megan Mebberson	AGD	56 322870	6375400	Open site	Valid	Artefact :-	Permits	3301
											Isolated Find
	Contact	Recorders	Megan Mebberson	AGD	56 322870	6375400	Open site	Valid	Artefact :-	Permits	3301
37-6-1394	BC01	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 322016	6375344	Open site	Partially Destroyed	Artefact :-	Permits	1999,3072
											99012,102178
	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 322016	6375344	Open site	Partially Destroyed	Artefact :-	Permits	1999,3072
37-6-1395	BC02	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
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	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
37-6-1396	BC04	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
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37-6-1397	BC05	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
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	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
37-6-1398	BC07	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
											102076
	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
37-6-1399	BC08	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
											102076
	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
37-6-1402	BC06	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
											102076
	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
37-6-1419	BC027	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
											102076
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37-6-1420	BC028	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076
											102076
	Contact	Recorders	MCH - McCordle Cultural Heritage Pty Ltd	AGD	56 320894	6379395	Open site	Destroyed	Artefact :-	Permits	102076

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
37-6-1421	<a href="#">Contact</a>	Recorders	Janice Wilson,Leila McAdam,John Mathews	AGD	56 323336	6376542	Open site	Valid	Artefact: -	Permits	102076
	<a href="#">Contact</a>	Recorders	Janice Wilson,Leila McAdam,John Mathews	AGD	56 319700	6379300	Open site	Valid	Artefact: -	Permits	
37-6-0977	<a href="#">Contact</a>	Recorders	Victor Perry	AGD	56 317700	6369900	Closed site	Valid	Shell : 2	Permits	4742,97831
	<a href="#">Contact</a>	Recorders	Mr.Richard Harris	GDA	56 322196	6378274	Open site	Valid	Artefact: 1	Permits	
37-6-2832	BOP - IFS	Recorders	OzArk Environmental and Heritage Management,Mr.Ben Churcher	GDA	56 322559	6379974	Open site	Destroyed	Artefact: 1	Permits	
37-6-2843	<a href="#">Contact</a>	Recorders	OzArk Environmental and Heritage Management,Mr.Ben Churcher	GDA	56 322393	6378205	Open site	Partially Destroyed	Artefact: 1	Permits	
	<a href="#">Contact</a>	Recorders	OzArk Environmental and Heritage Management,Mr.Ben Churcher	GDA	56 322423	6377441	Open site	Valid	Grinding Groove: -	Permits	
37-6-3222	<a href="#">Contact</a>	Recorders	Ms.Morgan Wilcox	GDA	56 322554	6377406	Open site	Valid	Grinding Groove: -	Permits	
	<a href="#">Contact</a>	Recorders	Ms.Morgan Wilcox	GDA	56 326733	6373114	Closed site	Valid	Art (Pigment or Engraved): -	Permits	
37-6-3879	BEESEST RIDGE TRAIL CHARCOALS SWA	Recorders	Ms.Collette Douchkov	AGD	56 322330	6370900	Closed site	Valid	Art (Pigment or Engraved): -	Permits	
37-6-0563	<a href="#">Contact</a>	Recorders	Warren Bluff	AGD	56 321860	6370570	Closed site	Valid	Art (Pigment or Engraved): -	Permits	1333
	<a href="#">Contact</a>	Recorders	Warren Bluff	AGD	56 320980	6370760	Closed site	Valid	Art (Pigment or Engraved): -	Permits	
37-6-0565	<a href="#">Contact</a>	Recorders	Warren Bluff	GDA	56 320562	6379319	Open site	Destroyed	Artefact: -	Permits	311
	<a href="#">Contact</a>	Recorders	Len Dyal	GDA	56 322373	6379964	Open site	Destroyed	Artefact: -	Permits	
37-6-0141	Saxonvale ;	Recorders	Helen Brayshaw	GDA	56 322491	6377091	Open site	Valid	Grinding Groove: -	Permits	311,1357,1978, 2121,102170
37-6-0149	<a href="#">Contact</a>	Recorders								252	311,1455
	<a href="#">Contact</a>	Recorders									

Report generated by AHIMS Web Service on 19/08/2019 for Stephanie Rusden for the following area at Datum :GDA, Zone : 56, Eastings : 317000 - 327000, Northings : 6370000 - 6380000 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 82  
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# AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 2394  
Client Service ID : 442662


SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-0695	Bees Nest Ridge;	<a href="#">Records</a> AGD	56	326160	6372400	Closed site	Valid	Art (Pigment or Engraved) : - <a href="#">Permits</a>	Shelter with Art	1333
37-6-0001	YELLOW ROCK A	<a href="#">Records</a> GDA	56	323759	6371967	Open site	Valid	Art (Pigment or Engraved) : -, Grinding Groove : - <a href="#">Permits</a>	Rock Engraving	
37-6-0003	Broke;	<a href="#">Records</a> AGD	56	322273	6372345	Open site	Valid	Artefact : - <a href="#">Permits</a>	Open Camp Site	
37-6-0009	Owendale Site 4;	<a href="#">Records</a> AGD	56	318821	6371091	Closed site	Valid	Artefact : - <a href="#">Permits</a>	Shelter with Deposit	
37-6-0096	Yellow Rock;	<a href="#">Records</a> AGD	56	324665	6371567	Closed site	Valid	Art (Pigment or Engraved) : - <a href="#">Permits</a>	Shelter with Art	
37-6-0097	Yellow Rock;	<a href="#">Records</a> AGD	56	322761	6370708	Open site	Valid	Grinding Groove : - <a href="#">Permits</a>	Axe Grinding Groove	
37-6-0691	near Bees Nest Ridge;	<a href="#">Records</a> AGD	56	326300	6372200	Open site	Valid	Artefact : - <a href="#">Permits</a>	Isolated Find	
37-6-0960	BM08	<a href="#">Records</a> GDA	56	319770	6379988	Open site	Destroyed	Artefact : - <a href="#">Permits</a>		98044,100135, 100603,100608 0
37-6-1609	Broken Back	<a href="#">Records</a> AGD	56	321430	6369910	Open site	Valid	Grinding Groove : 1, Stone Arrangement : - <a href="#">Permits</a>	1621,1748	
37-6-1663	BP L2 - duplicate of 37-6-1664	<a href="#">Records</a> AGD	56	321283	6377685	Open site	Valid	Artefact : 26 <a href="#">Permits</a>		100153
37-6-1664	BP L3	<a href="#">Records</a> AGD	56	321283	6377685	Open site	Valid	Artefact : 23 <a href="#">Permits</a>	2575,3301	100153
37-6-1659	BPL5	<a href="#">Records</a> GDA	56	321454	6379634	Open site	Valid	Artefact : 8 <a href="#">Permits</a>	2575,3301	100153
37-6-1660	BPL6	<a href="#">Records</a> GDA	56	321454	6379655	Open site	Valid	Artefact : 6 <a href="#">Permits</a>	2575,3301	100153
37-6-1661	BPL4	<a href="#">Records</a> AGD	56	321158	6377484	Open site	Valid	Artefact : 25 <a href="#">Permits</a>	2575,3301	100153

Report generated by AHIMS Web Service on 19/08/2019 for Stephanie Rusden for the following area at Datum :GDA, Zone : 56, Eastings : 317000 - 327000, Northings : 6370000 - 6380000 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 82

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 2394

Client Service ID : 442662

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-1662	<u>Contact</u>	Searle	<u>Recorders</u>	Mrs.Angela Besant						
	BPL1	GDA	56	321355	6377990	Open site	Destroyed	Artefact : 26	2575,3301	100153
37-6-2957	<u>Contact</u>	Searle	<u>Recorders</u>	Mrs.Angela Besant,OzArk Environmental and Heritage Management,Mr.Ben Church						
	YR1	GDA	56	321280	6377440	Open site	Valid	Artefact : -	2575,3301	
37-6-2959	<u>Contact</u>		<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						
	YR2	GDA	56	321480	6377465	Open site	Valid	Artefact : -		
37-6-3660	<u>Contact</u>		<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd						
	Bulga IF1	GDA	56	323266	6379177	Open site	Valid	Artefact : -		
	<u>Contact</u>		<u>Recorders</u>	OzArk Environmental and Heritage Management,Mr.Ben Churchier						

Report generated by AHIMS Web Service on 19/08/2019 for Stephanie Rusden for the following area at Datum :GDA, Zone : 56, Eastings : 317000 - 327000, Northings : 6370000 - 6380000 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 82

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## Appendix C

### Ecological Constraints Assessment – McNamara Park, Broke

Our Ref: 4166/R14/AR/SC/18062019

18 June 2019

Shane Scott  
Coal Assets Australia  
Glencore

[Shane.Scott@glencore.com.au](mailto:Shane.Scott@glencore.com.au)

Dear Shane

**Re: Ecological Constraints – Stuart McTaggart and McNamara Parks, Broke, NSW.**

Umwelt (Australia) Pty Ltd (Umwelt) was engaged by Glendell to undertake a literature review and broad-scale ecological constraints assessment associated with potential homestead recipient sites at Broke. Stewart McTaggart Park and McNamara Park are Crown Land reserves in Broke and have been touted as potential recipient sites of the Ravensworth Homestead.

This letter documents the ecological literature reviewed and the results of database searches undertaken for the potential recipient sites and provides a summary of the key ecological constraints. The letter also contains commentary around the potential approval requirements and documents the preliminary results of a calculator assessment undertaken in accordance with the BAM assessment which includes the likely credits generated from impacts on biodiversity.

**Literature review and Database Searches**

A search of the Office of Environment and Heritage (OEH) Atlas of NSW Wildlife Database (OEH 2019a) and the Commonwealth Department of the Environment and Energy (DoEE) Protected Matters Search Tool (PMST) (DoEE 2019) was completed for the potential recipient sites, with the search also including areas within a 10 km of the site.

A review of the Bulga Biodiversity Certification Assessment Report prepared for the Upper Hunter Strategic Assessment (Umwelt 2015) was also undertaken. Areas along Wollombi Brook, north of the potential recipient sites, were surveyed as part of that assessment and the data collected has been used for this constraints document.

Inspired People  
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75 York Street  
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[www.umwelt.com.au](http://www.umwelt.com.au)

## Results

### Vegetation

One Plant Community Type (PCT) occurs across the potential recipient sites, being PCT 1594 Cabbage Gum – Rough-barked Apple Grassy Woodland on Alluvial Floodplains of the Lower Hunter. It appears, from aerial photography and satellite imagery, that two condition classes of this PCT occur across the sites, being woodland and derived native grasslands.

PCT 1594, in its woodland state, conforms to the Biodiversity Conservation Act (BC Act) listed endangered ecological community; *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregion*. PCT1594 does not conform to any EPBC Act listed threatened ecological communities.

### Threatened Species

92 threatened flora and fauna species have been recorded within 10 km of the potential recipient sites. In accordance with the BAM (if required), additional surveys would be required for any species-credit species that is considered likely to occur and where habitat for the species occurs within the sites. The species considered to likely require further assessment include:

- Regent honeyeater (potential important habitat area)
- Southern myotis (habitat within 200 m from waterbodies)
- Pale-headed snake (hollow bearing trees)
- Brush-tailed phascogale (hollow bearing trees)
- Green-thighed frog (potential habitat)
- Koala (recorded within the local area)
- Singleton mint bush (recorded within the wider area)
- Illawarra greenhood (recorded within the wider area)
- Broken back ironbark (recorded within the wider area)
- White-flowered wax plant (recorded within the wider area)
- Slaty red gum (recorded within the wider area).

In addition to these species, other threatened species are predicted by the biodiversity assessment calculator used in the BAM which also require additional surveys. These are:

- Green-thighed frog (potential habitat)
- Green and golden bell frog (potential habitat).

### Endangered Populations

Three endangered populations listed under the BC Act are predicted to occur. These are:

- *Acacia pendula* population in the Hunter catchment (recorded within the wider area)
- *Cymbidium canaliculatum* population in the Hunter Catchment (recorded within the local area)
- *Eucalyptus camaldulensis* population in the Hunter catchment (floodplains of watercourses).



## Migratory Species

No migratory species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) are known or predicted to occur.

## **Impacts Requiring Offsetting**

A calculator assessment was undertaken in accordance with the BAM assessment to identify the likely credits generated from impacts on biodiversity and the likely offsetting requirements. Whilst the final development footprint and exact locations are still uncertain (see attached sketch), for the purposes of this document we have assumed a development footprint of one hectare and that complete clearing would be required. For the purpose of calculating the required offsets, the Vegetation Integrity Scores (VIS) entered into the calculator were based on the benchmark data for the PCT. So, it must be noted that these values are the upper limit of a PCT's condition and may not be representative of VIS calculated from on-ground surveys.

Additionally, the species-credit species listed above have assumed to be present on the potential recipient site. The preliminary results of the calculator assessment reveals that one PCT and 14 species-credit species are considered to require offsetting in accordance with the BAM (OEI 2017a). The preliminary results of the calculator assessment are provided in **Table 1** below.

**Table 1 - Credits Required to Offset the Project**

PCT/Species-credit	Estimate Number of Credits
<b>Ecosystem Credits</b>	
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	50
<b>Species Credits</b>	
<i>Acacia pendula</i> population in the Hunter catchment ( <i>Acacia pendula</i> - endangered population)	25
regent honeyeater ( <i>Anthochaera phrygia</i> )	75
<i>Cymbidium canaliculatum</i> population in the Hunter Catchment ( <i>Cymbidium canaliculatum</i> - endangered population)	1
white-flowered wax plant ( <i>Cynanchum elegans</i> )	50
<i>Eucalyptus camaldulensis</i> population in the Hunter catchment ( <i>Eucalyptus camaldulensis</i> – endangered population)	50
broken back ironbark ( <i>Eucalyptus fracta</i> )	75
slaty red gum ( <i>Eucalyptus glaucina</i> )	2
pale-headed snake ( <i>Hoplocephalus bitorquatus</i> )	50
green and golden bell frog ( <i>Litoria aurea</i> )	50
green-thighed frog ( <i>Litoria brevipalmata</i> )	38
southern myotis ( <i>Myotis macropus</i> )	50
brush-tailed phascogale ( <i>Phascogale tapoatafa</i> )	50
koala ( <i>Phascolarctos cinereus</i> )	50
Singleton mint bush ( <i>Prostanthera cineolifera</i> )	50
Illawarra greenhood ( <i>Pterostylis gibbosa</i> )	50

## Constraints and Options

Based on the number of species-credit species likely to require offsetting, we recommend undertaking formal surveys (in accordance with relevant guidelines) to determine presence/absence. Using this method, we can satisfy that candidate species-credit species are unlikely to occur within the proposed recipient site and therefore reduce the total cost of offsetting the required credits. The species that require targeted survey in accordance with the BAM are shown in **Table 2**.

**Table 2 - Species-credit species requiring targeted survey and the survey period requirements**

Species-credit Species	Potential habitat	Required Survey Period											
		J	F	M	A	M	J	J	A	S	O	N	D
<i>Acacia pendula</i> population in the Hunter catchment ( <i>Acacia pendula</i> - endangered population)	Yes												
regent honeyeater ( <i>Anthochaera phrygia</i> )	Yes												
<i>Cymbidium canaliculatum</i> population in the Hunter Catchment ( <i>Cymbidium canaliculatum</i> - endangered population)	Yes												
white-flowered wax plant ( <i>Cynanchum elegans</i> )	Yes												
<i>Eucalyptus camaldulensis</i> population in the Hunter catchment ( <i>Eucalyptus camaldulensis</i> – endangered population)	Yes												
broken back ironbark ( <i>Eucalyptus fracta</i> )	Yes												
slaty red gum ( <i>Eucalyptus glaucina</i> )	Yes												
pale-headed snake ( <i>Hoplocephalus bitorquatus</i> )	Yes												
green and golden bell frog ( <i>Litoria aurea</i> )	Unlikely												
green-thighed frog ( <i>Litoria brevipalmata</i> )	Unlikely												
southern myotis ( <i>Myotis macropus</i> )	Yes												
brush-tailed phascogale ( <i>Phascogale tapoatafa</i> )	Yes												
koala ( <i>Phascolarctos cinereus</i> )	Yes												
Singleton mint bush ( <i>Prostanthera cineolifera</i> )	Yes												
Illawarra greenhood ( <i>Pterostylis gibbosa</i> )	Unlikely												

In addition, VIS plots are required within each PCT of the proposed recipient site (which would be one considering the results of the database searches). Approximately two VIS plots would be required to sample (in accordance with the BAM) the potential recipient site.

The survey results will determine the final credit generation (i.e. if the species isn't recorded then credits will not be generated). Following formal surveys, there are several options available to fulfil the offset requirements of those candidate species-credit species that are recoded or cannot be ruled out as not likely to occur within the proposed recipient site.

### **Offsetting Requirements**

Fulfilling offset requirements under the *BC Act 2016* can be undertaken using one or a combination of the following offset strategies:

- In-perpetuity conservation through the establishment of a Stewardship site achieved and the retirement of credits.
- Securing required credits through the open credit market and/or
- Payments to the Biodiversity Conservation Fund.

### **Summary**

The key ecological constraints identified in this review include one PCT (1594) that conforms to *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregion* EEC, three potential endangered populations and 14 threatened species that have the potential to occur on the proposed recipient site.

We trust this information meets with your current requirements. Please do not hesitate to contact the undersigned on 1300 793 267 should you require clarification or further information.

Yours sincerely

A handwritten signature in black ink, appearing to read 'SC', is positioned above the printed name.

Shaun Corry  
Principal Ecologist / Accredited BAM Accessor

## Appendix D

### Masterplan Concept Document – Ravensworth Homestead, Adaptive Re-Use within Broke Town Centre





## MASTERPLAN CONCEPT DOCUMENT

# Ravensworth Homestead

Relocation of Existing Homestead for Adaptive Re-Use  
within Broke Town Centre

### REVISION D



### SITE

Broke, NSW

### CLIENT & STAKEHOLDERS

Coal Assests Australia, Glencore - Shane Scott

Broke Collaboration - Stewart Ewen

### DATE

03.09.19

### PROJECT NO.

4058

S H A C



Source: Marshall Family photographs

## Executive Summary

SHAC provides this submission to Coal Assets Australia, Glencore, for Concept Masterplanning of a relocated Ravensworth Homestead Complex on two sites in Broke.

A design strategy has been developed which maintains the traditional arrangement of the buildings. Precincts have been assigned to areas of the complex, on the basis of appropriateness and fit-for-purpose objectives. At each site, the open space, created at the centre of the buildings is reinvisaged as a new Market Square destination.

We trust this Concept Masterplan Document will provide clarity and direction for a design led site specific solution to the relocation proposal.



Source: Marshall Family photographs

# Contents



No	Name	Rev
SK0001	Cover	D
SK0002	Executive Summary	C
SK0003	Contents	D
SK2108	Macro Site Strategy	D
SK2202	Concept Plan	D
SK2203	Landscape Plan	A
SK2204	Preliminary Earthworks Plan	D
SK2501	Potential Alterations - Homestead	B
SK2502	Potential Alterations - Kitchen	B
SK2503	Potential Alterations - Men's Quarters	B
SK2504	Potential Alterations - Barn	B
SK2505	Potential Alterations - Stable	B
SK9201	Concept Perspectives 01 - McNamara Park	E
SK9202	Concept Perspectives 02 - McNamara Park	E
SK9203	Concept Perspectives 03 - McNamara Park	C
SK9204	Concept Perspectives 04 - Broke Aerial	B



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Location Plan - Ravensworth to Broke



Ravensworth: Current Location



Broke: Proposed Location

## CONCEPT

1. Dimensions are in millimeters unless otherwise shown.
2. Work to given dimensions. Do not scale from drawing.
3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

No	Drn	Chk	Date	Content
A	TG	JH	24.05.19	Draft Concept
B	TG	JH	17.06.19	Masterplan Concept Document
C	TG	JH	24.06.19	90% Masterplan

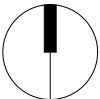
## Key Points

### Ravensworth to Broke:

- Distance 'as the crow flies' 35km
- By road 48km

### Relationship shared between the two sites

- Within Hunter Valley
- Settlements on Hunter River & its tributaries
- Early Settlement History
- Indigenous settlement





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ORIGINAL SETOUT OF STABLES FROM HOMESTEAD

ORIGINAL SETOUT OF BARN FROM HOMESTEAD

DASHED INDICATES EXISTING CANOPY TO BE REMOVED AS PART OF WORKS

DASHED INDICATES EXISTING ROAD TO BE REMOVED.

KNOWN SITE BOUNDARY SHOWN DARK BLACK, SURVEY TO CONFIRM APPROX POSITION.

EXISTING CARPARK

RIPARIAN ZONES FROM BROOK AND GULLY SHOWN DASHED

EXISTING WAR MEMORIAL



CONCEPT

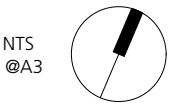
1. Dimensions are in millimeters unless otherwise shown.

2. Work to given dimensions. Do not scale from drawing.

3. Check all dimensions on site prior to construction and fabrication.

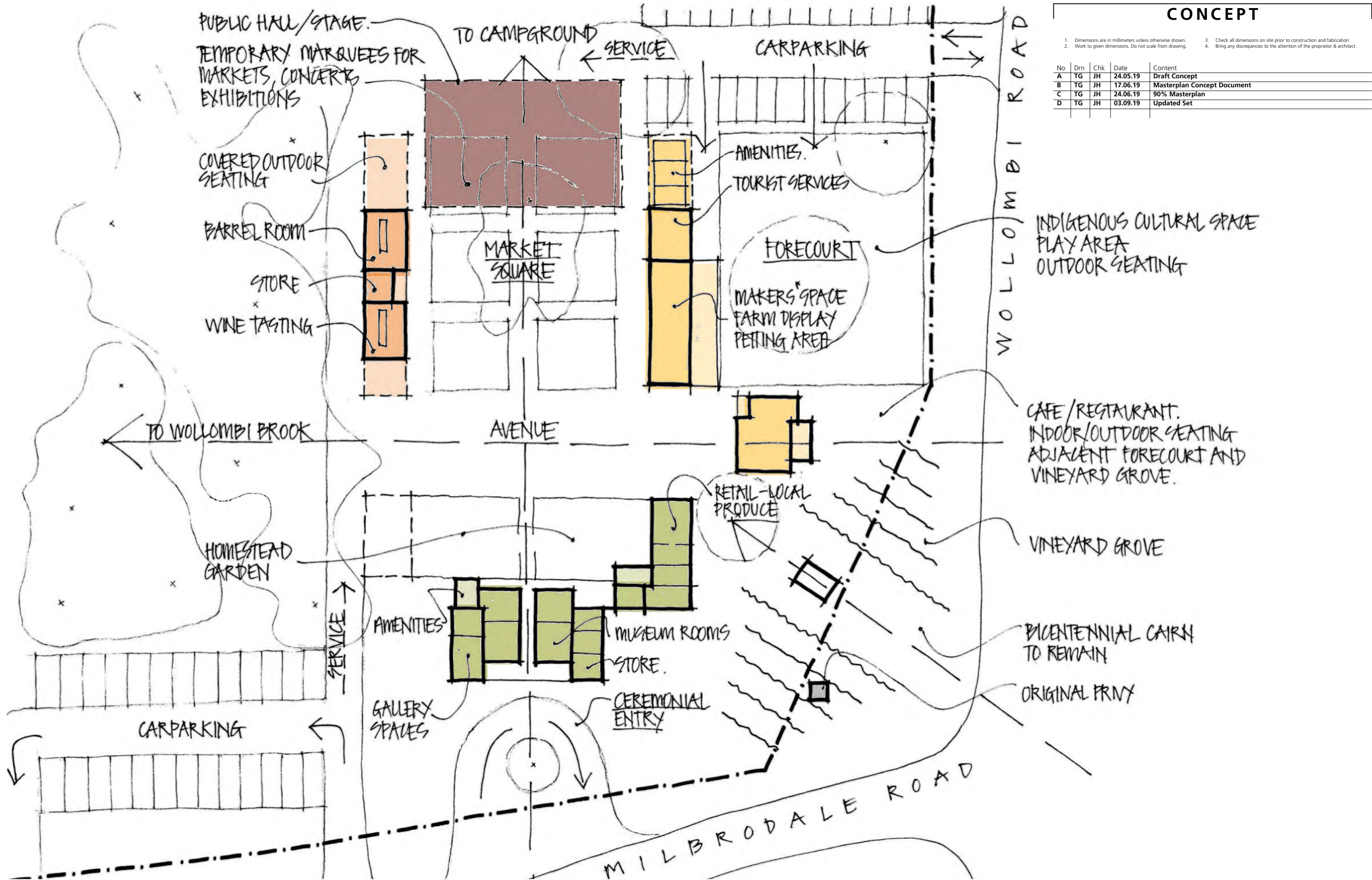
4. Bring any discrepancies to the attention of the proprietor & architect.

No	Drn	Chk	Date	Content
A	TG	JH	24.05.19	Draft Concept
B	TG	JH	17.06.19	Masterplan Concept Document
C	TG	JH	24.06.19	90% Masterplan
D	TG	JH	03.09.19	Updated Set





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## CONCEPT

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3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

No	Drn	Chk	Date	Content
A	TG	JH	24.05.19	Draft Concept
B	TG	JH	17.06.19	Masterplan Concept Document
C	TG	JH	24.06.19	90% Masterplan
D	TG	JH	03.09.19	Updated Set

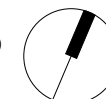
4058  
SK2202

RevD 03.09.19

### Concept Plan

Ravensworth Homestead  
Broke, NSW

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@A3

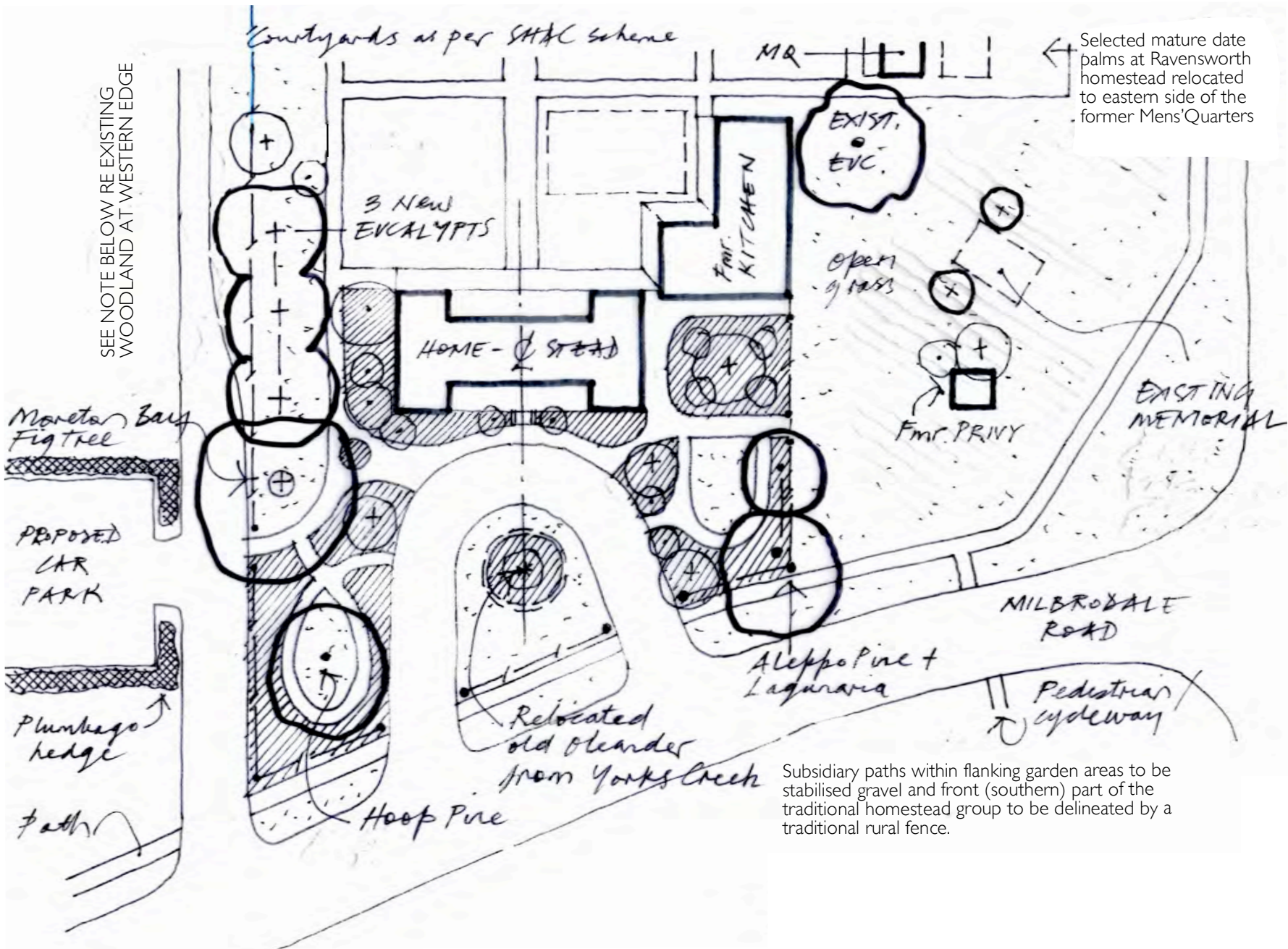


SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



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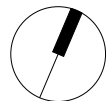


It is desirable for existing woodland vegetation to the western side of the homestead group (beyond service road) to be maintained and, ideally, extended to the south around the proposed car park, however, all future treatments to this area should be primarily consistent with recommendations regarding bushfire asset protection zone (APZ) advice.

NB. Refer to SHAC P/L drawing set for details of buildings, services and other structures as well as layout for car parking and access roads.

NB. Hatched graphic denotes massed planted areas. It is proposed to use most of the existing Ravensworth garden plantings, including many groundcovers, through transplanting to fill out these areas.

0m 5 10 15 20 25 1:500 @A3



## CONCEPT

1. Dimensions are in millimeters unless otherwise shown.
2. Work to given dimensions. Do not scale from drawing.
3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

No	Drn	Chk	Date	Content
A	TG	JH	03.09.19	Updated Set

## CONCEPT LANDSCAPE PLAN

Scale as shown  
© GB 2019



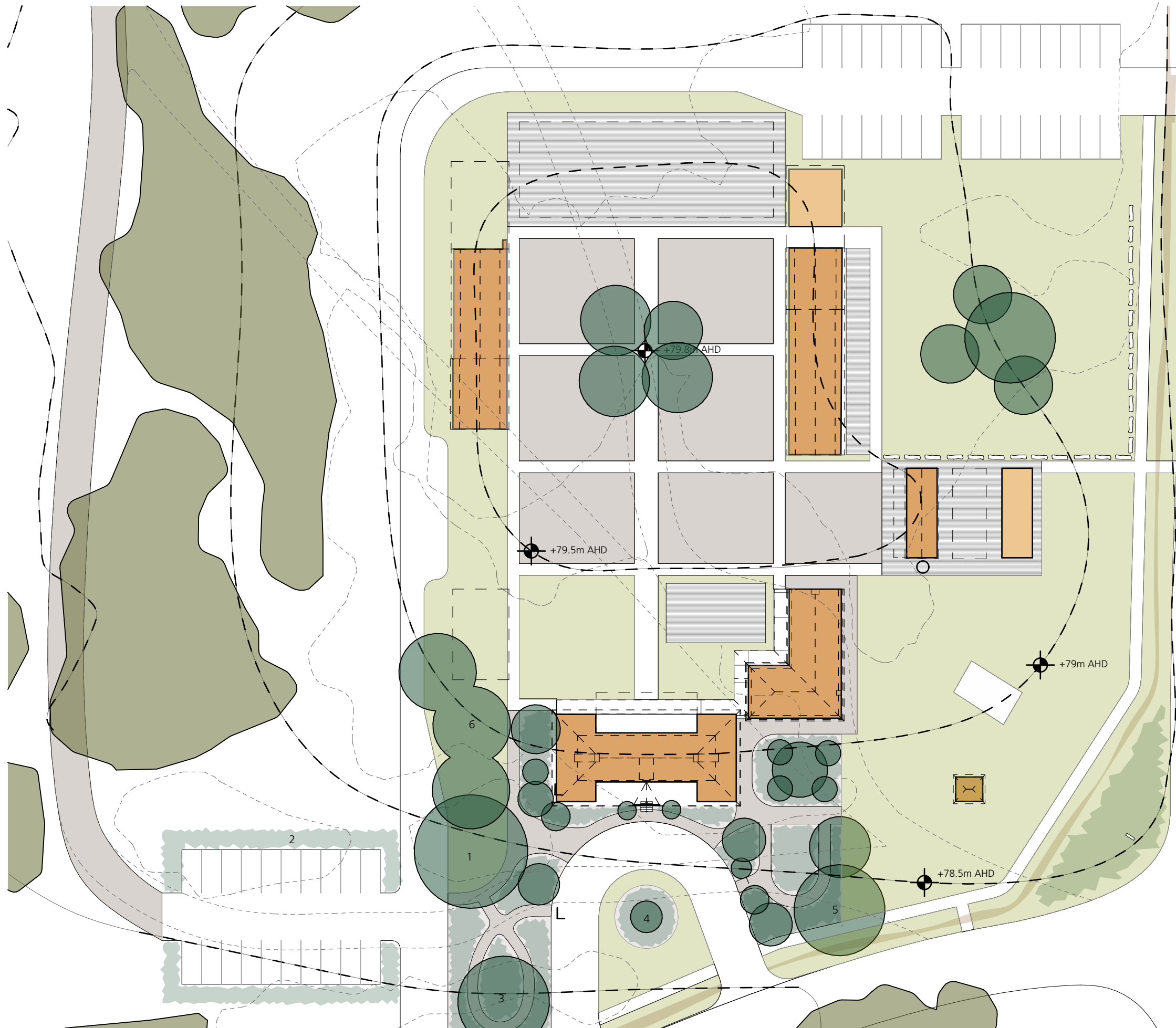
Geoffrey Britton  
Environmental Design & Heritage Consultant  
ABN 75 869 266 782

SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

### Notes:

## Preliminary Selection





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PROPOSED DOORWAY TO PROVIDE INTERNAL  
CONNECTIVITY TO WEST WING OF MAIN HOUSE

POTENTIAL MODERN ADDITION TO PROVIDE  
FURTHER FUNCTIONAL AREA TO SUIT END USE

PROPOSED REMOVAL OF INTERNAL WALLS TO  
ALLOW ADAPTATION AS EXHIBITIONS SPACE

## CONCEPT

1. Dimensions are in millimeters unless otherwise shown.

2. Work to given dimensions. Do not scale from drawing.

3. Check all dimensions on site prior to construction and fabrication.

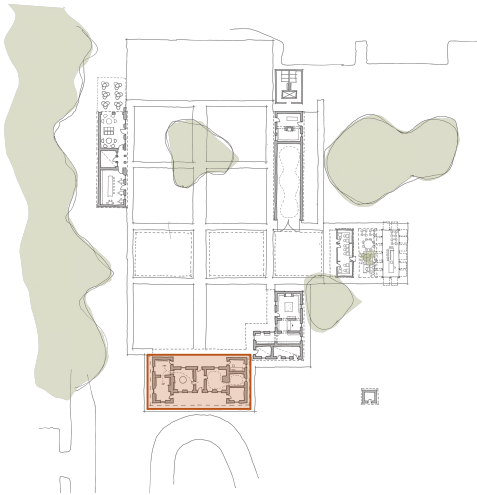
4. Bring any discrepancies to the attention of the proprietor & architect.

No	Drn	Chk	Date	Content
A	EW	JP	03.08.19	Potential Alterations
B	EW	JP	03.09.19	Updated Set

## LEGEND

- POTENTIAL REMOVAL
- POTENTIAL ADDITIONS
- EXISTING

## KEY



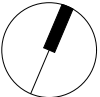
4058  
SK2501

RevB 03.09.19

### Potential Alterations - Homestead

Ravensworth Homestead  
Broke, NSW

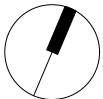
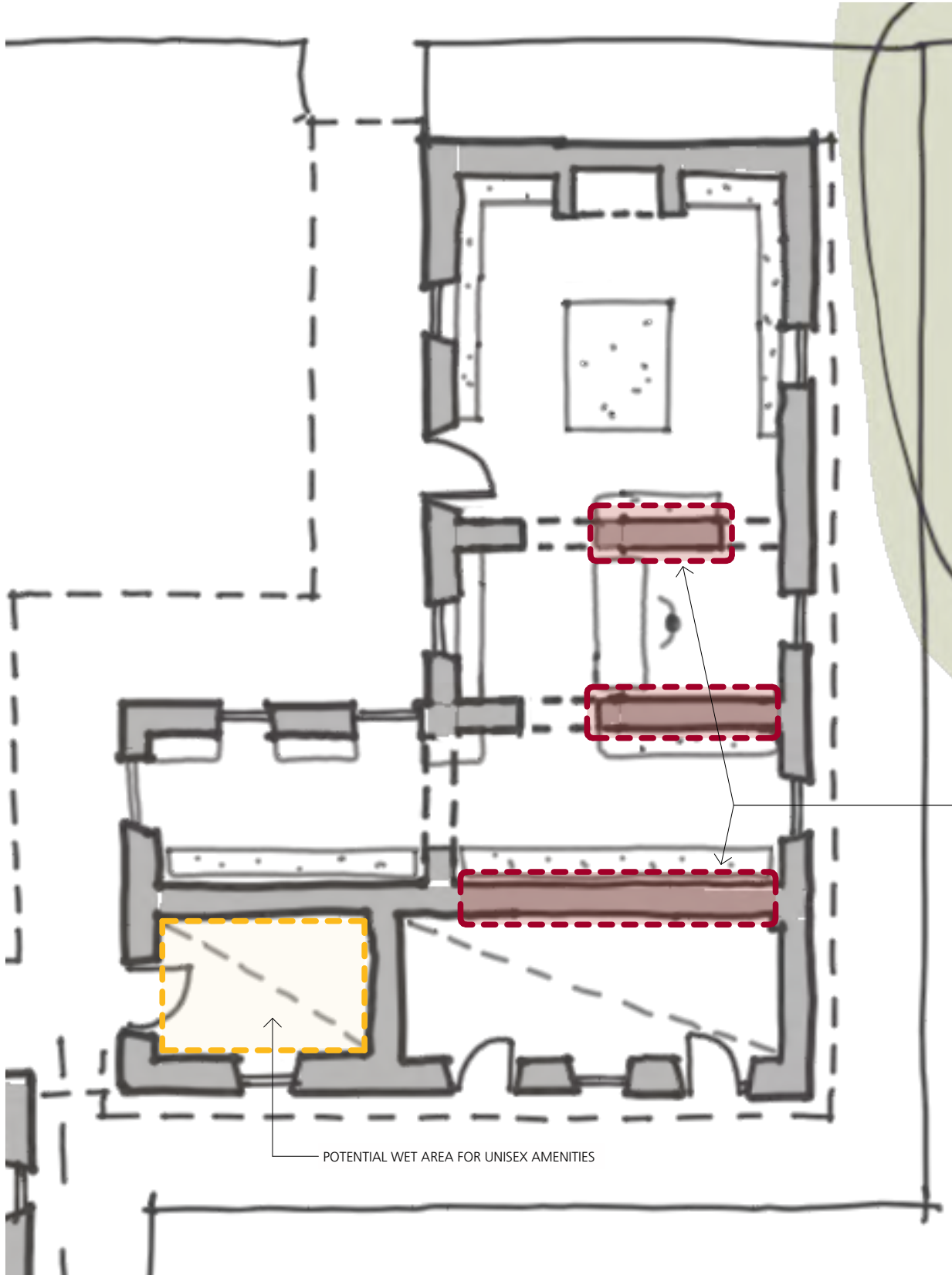
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SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

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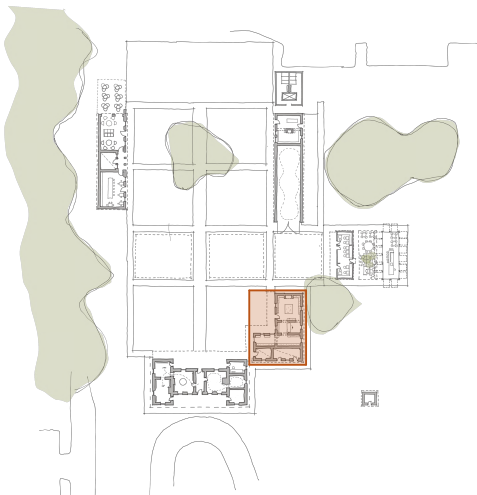
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2. Work to given dimensions. Do not scale from drawing.
3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

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B	EW	JP	03.09.19	Updated Set

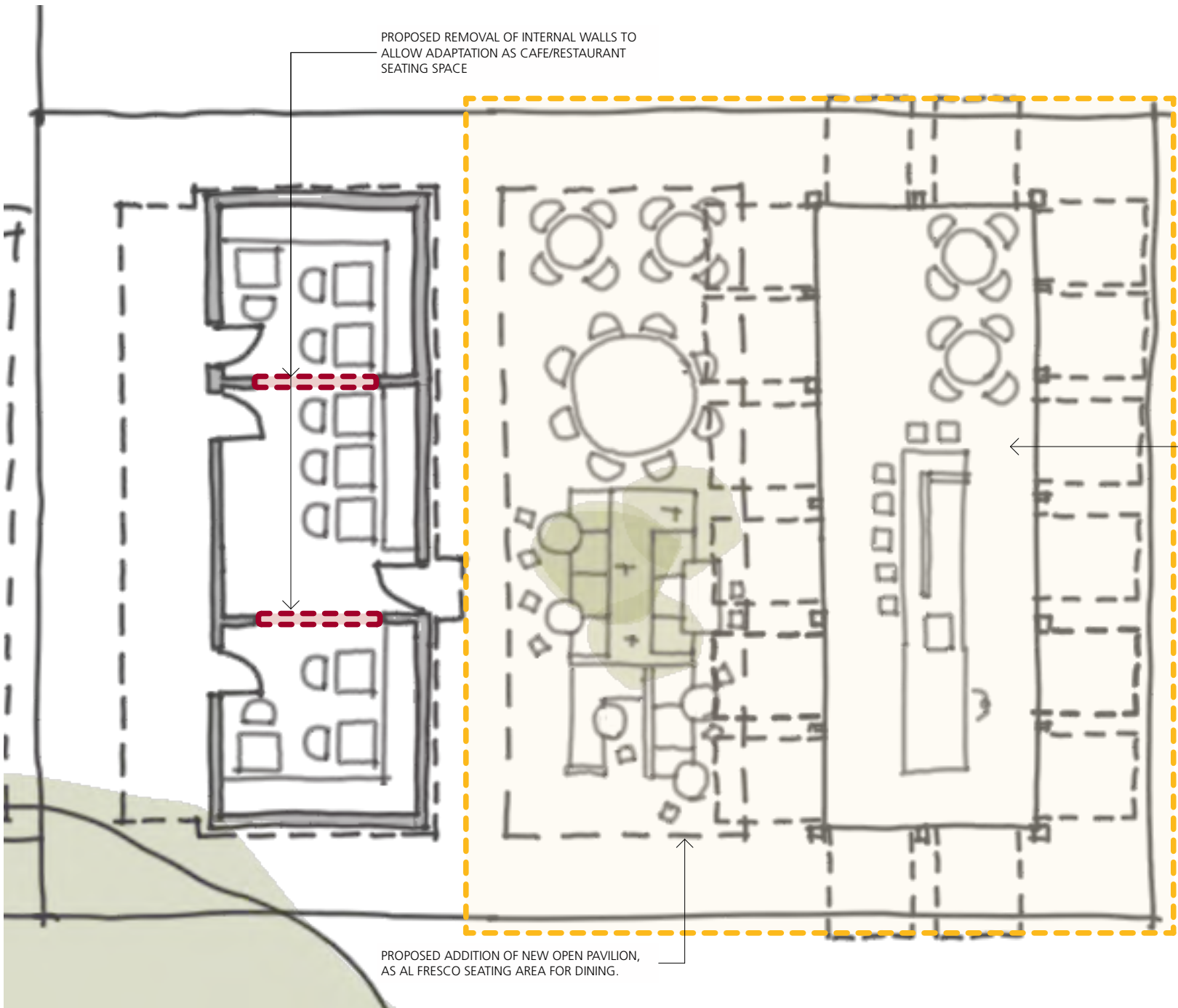
## LEGEND

- POTENTIAL REMOVAL
- POTENTIAL ADDITIONS
- EXISTING

## KEY



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## CONCEPT

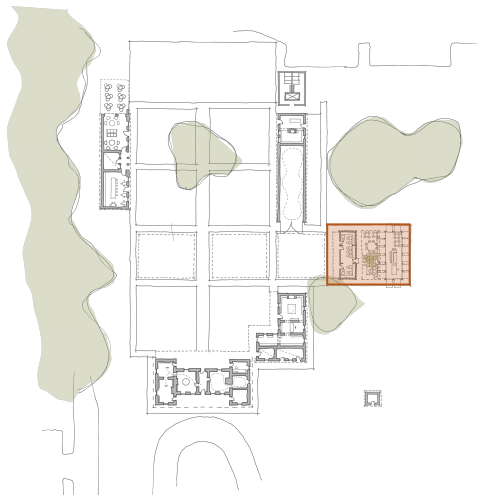
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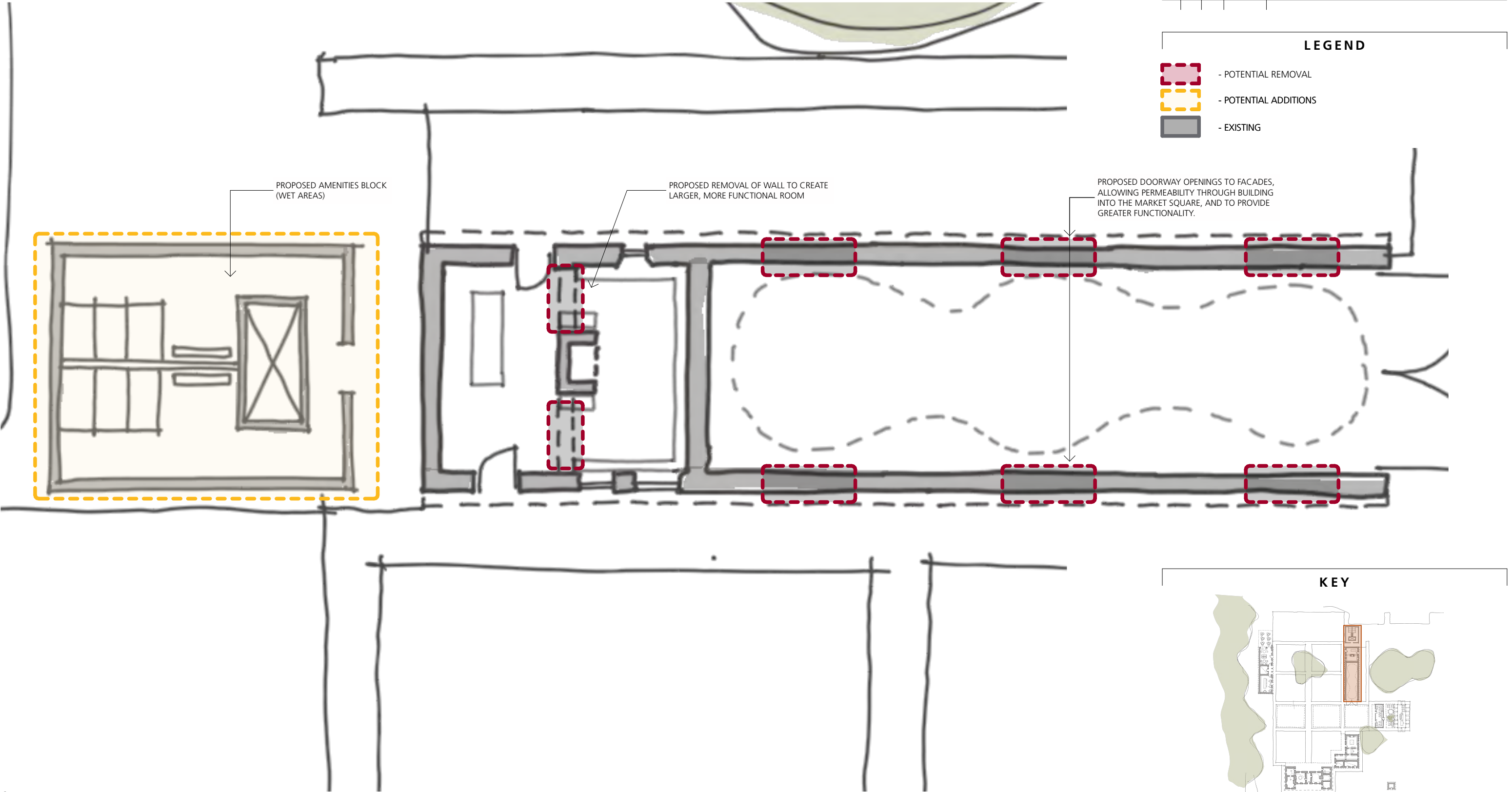
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B	EW	JP	03.09.19	Updated Set

## LEGEND

- POTENTIAL REMOVAL
- POTENTIAL ADDITIONS
- EXISTING

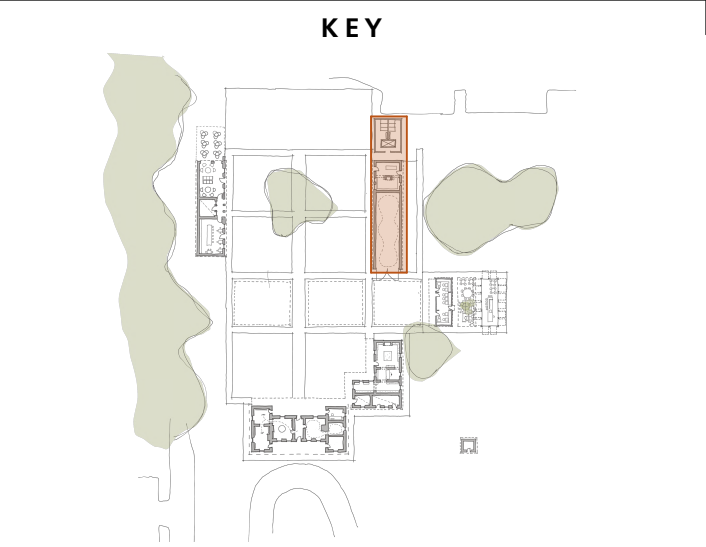
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CONCEPT				
<div>1. Dimensions are in millimeters unless otherwise shown.</div> <div>2. Work to given dimensions. Do not scale from drawing.</div> <div>3. Check all dimensions on site prior to construction and fabrication.</div> <div>4. Bring any discrepancies to the attention of the proprietor &amp; architect.</div>				
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B	EW	JP	03.09.19	Updated Set

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<div></div>	- POTENTIAL ADDITIONS
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4058  
SK2504  
RevB 03.09.19

Potential Alterations - Barn  
Ravensworth Homestead  
Broke, NSW



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Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



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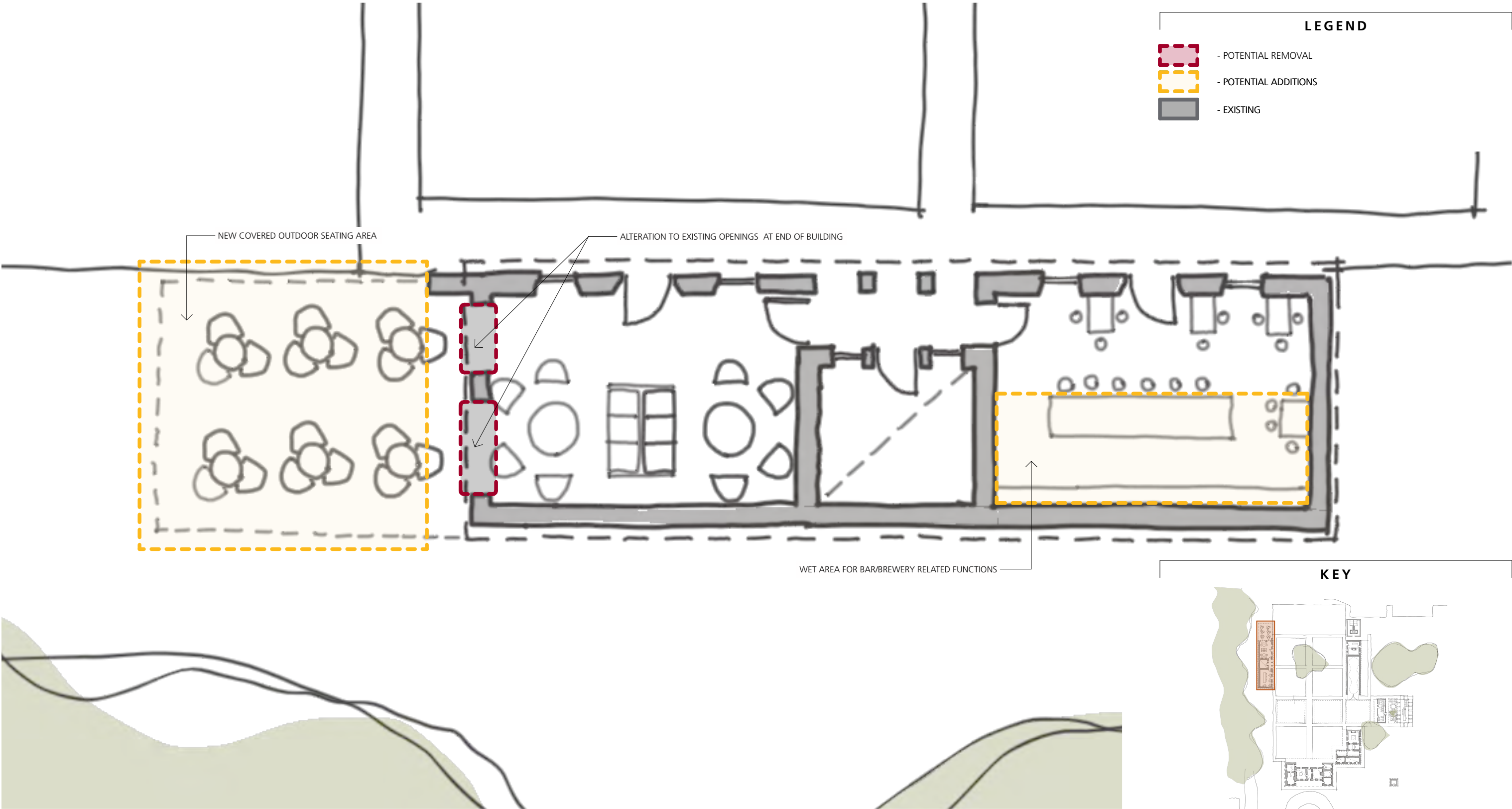
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3. Check all dimensions on site prior to construction and fabrication.

4. Bring any discrepancies to the attention of the proprietor & architect.

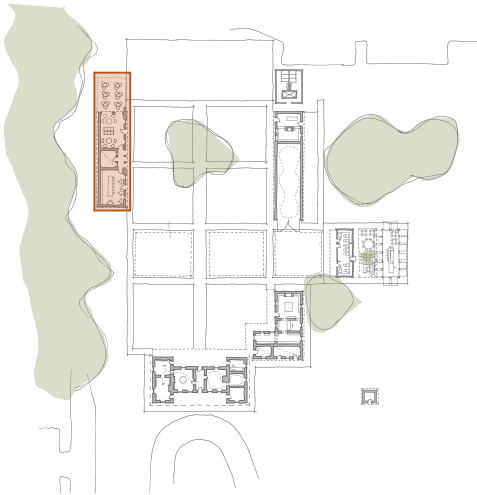
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B	EW	JP	03.09.19	Updated Set

LEGEND

- POTENTIAL REMOVAL
- POTENTIAL ADDITIONS
- EXISTING

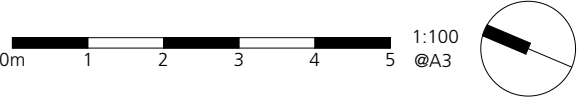


KEY



4058  
SK2505  
RevB 03.09.19

Potential Alterations - Stable  
Ravensworth Homestead  
Broke, NSW



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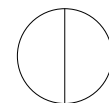
**4058  
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RevE 03.09.19

**Concept Perspectives 01 - McNamara Park**

Ravensworth Homestead  
Broke, NSW

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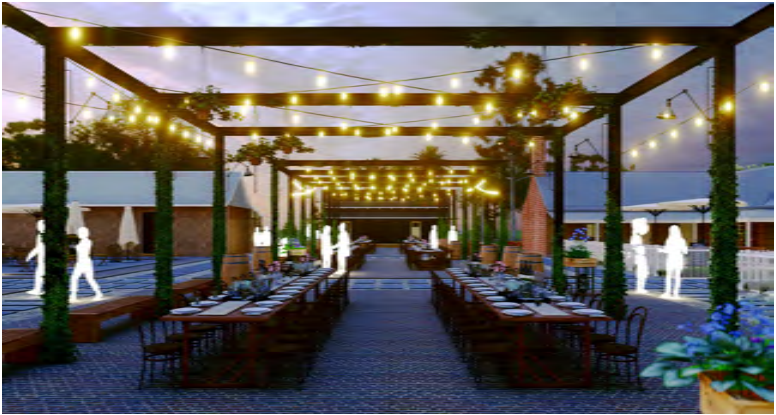


**SHAC**

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



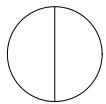
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SK9202**  
RevE 03.09.19

**Concept Perspectives 02 - McNamara Park**  
Ravensworth Homestead  
Broke, NSW

NTS  
@A3



**SHAC**  
Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



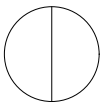
Drawing and design © SHAC Pty Ltd. The signed control copy of this drawing is held by SHAC Pty Ltd. | Ref: Volumes/Projects/4000/4058 Broke House Relocation/500 CAD Graphics and Models/512 Fastbills/4058 512 04 BrokeRelocation.pln date:5/09/2019 time: 1:11 PM



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**SK9203**  
RevC 03.09.19

**Concept Perspectives 03 - McNamara Park**  
Ravensworth Homestead  
Broke, NSW

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**SHAC**  
Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



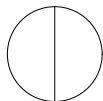
Drawing and design © SHAC Pty Ltd. The signed control copy of this drawing is held by SHAC Pty Ltd. | Ref: Volume/Project/4000/4058 Broke House Relocation/500 CAD Graphics and Models/512 Feasibility/4058 512 04 BrokeRelocation.pln date:5/09/2019 time: 1:11 PM



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SK9204**  
RevB 03.09.19

**Concept Perspectives 04 - Broke Aerial**  
Ravensworth Homestead  
Broke, NSW

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SHAC

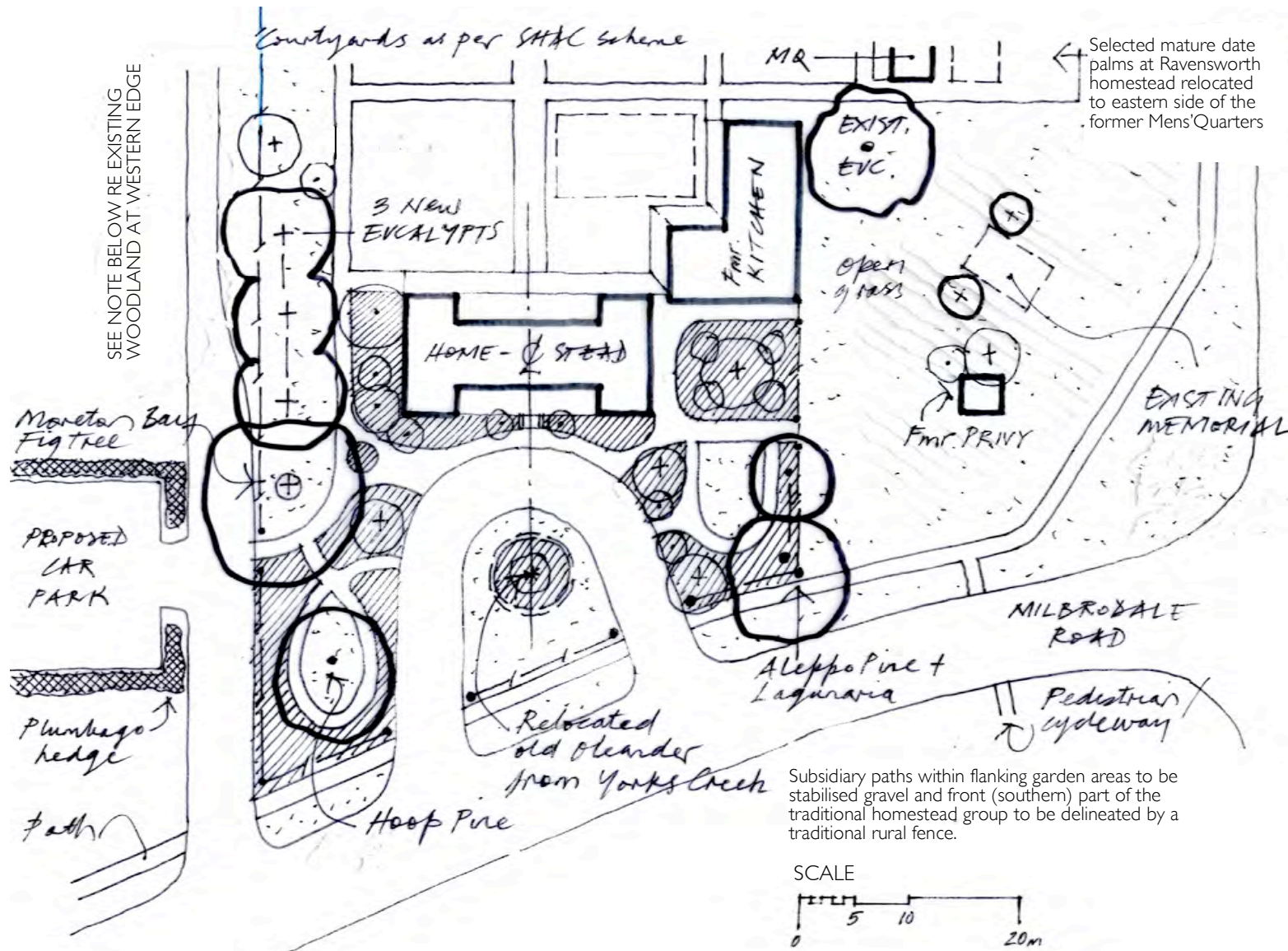
Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846



## Appendix E

### Conceptual landscape plan

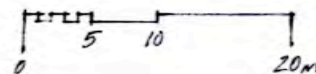
SEE NOTE BELOW RE EXISTING  
WOODLAND AT WESTERN EDGE



It is desirable for existing woodland vegetation to the western side of the homestead group (beyond service road) to be maintained and, ideally, extended to the south around the proposed car park, however, all future treatments to this area should be primarily consistent with recommendations regarding bushfire asset protection zone (APZ) advice.

Subsidiary paths within flanking garden areas to be stabilised gravel and front (southern) part of the traditional homestead group to be delineated by a traditional rural fence.

SCALE



NB. Refer to SHAC P/L drawing set for details of buildings, services and other structures as well as layout for car parking and access roads.

NB. Hatched graphic denotes massed planted areas. It is proposed to use most of the existing Ravensworth garden plantings, including many groundcovers, through transplanting to fill out these areas.

Issue	Date	Description
B	19 July 2019	DA Sub. (rev.)
A	12 July 2019	DA Submission

Issue	Date	Description
Proposals for the main grounds at Broke, NSW for <b>RAVENSWORTH HOMESTEAD GROUP</b> , Ravensworth, NSW		
In conjunction with SHAC P/L architects		
<b>FOR GLENCORE</b>		

Proposals for the main grounds at Broke, NSW for  
**RAVENSWORTH HOMESTEAD GROUP**,  
Ravensworth, NSW

In conjunction with SHAC P/L architects

**FOR GLENCORE**



## CONCEPT LANDSCAPE PLAN

Scale as shown  
© GB 2019



Geoffrey Britton  
Environmental Design & Heritage Consultant  
ABN 75 869 266 782

# Appendix F

## Preliminary Earthworks Plan





Generated: 2019-07-22 15:12:21  
By user: ssmith  
Drawing: L:\08 Engineering\21\_Survey\02 Projects\Broke - Macnamara Park L-08 Engineering\21\_Survey\02 Projects\Broke - Macnamara Park\Broke Site Layout Rev D.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Volume Pad Rev D	Full	1.000	1.000	14167.56	286.89	14721.34	14434.45=Fill-

Totals

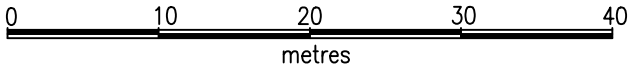
	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Total	14167.56	286.89	14721.34	14434.45=Fill-

\* Value adjusted by cut or fill factor other than 1.0

Summary:  
Total Fill Volume = 14721m³  
Total Cut Volume = 286m³  
Net material required = 14434m³

File: C:\Users\ssmith\AppData\Local\Temp\CutFillReport.xml 22/07/2019

A	20/6/2019	Proposed Homestead buildings add and proposed construction pad design	SS	
B	03/07/2019	Proposed Homestead with replica landform around buildings.	SS	
C	18/07/2019	Proposed Homestead with revised construction pad levels.	SS	
D	22/07/2019	Revised pad size with a 1 in 8 batter	SS	
REV	DATE	REVISIONS	DRN	CHK



GLENCORE PROJECTS		
Unless stated otherwise: - All dimensions are in metres - Coordinates shown are MGA Zone 56 - Levels are in metres on AHD.	SCALE : AS SHOWN DATE : 31/05/2019 DWG No. : Broke site Layout.DWG	DRAWN : S.SMITH CHECKED : REV D-190722

## Appendix G

### Project Methodology for Dismantle and Rebuild at Broke





Project Methodology for Dismantle and  
Rebuild at Broke, NSW

Rev A – 30.08.19

# Ravensthorpe Homestead

## Relocation Works

Adelaide | Melbourne | Sydney |

1300 853 003 | [hsr@hsrsa.com](mailto:hsr@hsrsa.com) | [hsrsa.com](http://hsrsa.com)

# Introduction

The Glendell Continued Operations (GCO) Project is proposing to relocate the Ravensworth Homestead to a new recipient site to make way for the extension of the existing Glendell open cut mine. The methodology outlined in this report is for the dismantling and rebuilding of the homestead building complex at a new site in the village of Broke.

This report includes details on:

- Building surveying and cataloguing
- Pre-Construction Testing
- The Dismantle and Relocation of Heritage Structures



# Project Methodology

The move Methodology will comprise of the following key steps –

- Planning and Preconstruction Works
  - Building surveying and cataloguing, including Building Information Modelling (BIM)
  - Analysis of existing timber (Flooring Timber, Roof Timbers, Door, Skirting & Architrave) to identify suitable replacement species types where necessary due to rot, termite damage and decay
  - Analysis of stone to identify source for suitable replacement stone
  - Analysis of mortar and plaster to determine composition for building rebuild
  - Testing existing Paint for Lead Content
  - Removal of contaminated materials including lead paint and asbestos
- Dismantle
  - Labelling and removal of doors, ceilings and windows with storage on pallets
  - Labelling and dismantle of timber floors and flagstones with storage on pallets
  - Dismantle of non-structural stone walls including plaster with storage on pallets
  - Dismantle of roof including sheeting and trusses with storage on pallets
  - Dismantle of stone walls (both internal and external) with storage on pallets
- Transport
  - Transport of pallets containing building materials to recipient site
- Rebuild
  - Reconstruction of buildings on engineered footings in reverse order
  - Fit out of buildings to suit proposed end use

Prior to any structural relocation works commencing, the area immediately surrounding the buildings and beneath floors would be subjected to an archaeological investigation in accordance with the approved Archaeological Research Design report.

## Planning and Preconstruction works

In a Project that involves the relocation of multiple stone buildings such as this, pre-planning is critical. Our sequencing outlines tasks that must be done preconstruction but also items that, if done during this stage, can mitigate risk on site.

The Heritage approvals process is well underway, however further testing and obtaining licences for the removal of the Hazardous Materials outlined in the document can be carried out during pre-construction.

The major pre construction tasks, aside from archaeological investigation, (once a contractor is appointed) are:

- Building surveying and cataloguing, including Building Information Modelling (BIM)
- Analysis of existing timber (Flooring Timber, Roof Timbers, Door, Skirting & Architrave) to identify suitable replacement species types where necessary due to rot, termite damage and decay
- Analysis of stone to identify source for suitable replacement stone
- Analysis of mortar and plaster to determine composition for building rebuild
- Testing existing Paint for Lead Content
- Removal of contaminated materials including lead paint and asbestos

The methodology behind the sequence of the program is a simple one – keep the building watertight for as long as possible.

The Main House & Kitchen Wing are the largest of the Buildings to be relocated and therefore this is where works start. The dismantle then moves to Barn, Stables and Privy followed by the Men's Quarters.

The sequencing for all buildings is similar, except the Men's Quarters where following investigation and inspections this particular building will be part dismantled in small areas followed by dividing the structure up into significant portions (4) and moving these as part structures.

Timber floors in Main House and Kitchen Wing will be removed early to enable archaeological investigation of underfloor deposits in accordance with the approved Archaeological Research Design.

## Building surveying and cataloguing, including Building Information Modelling (BIM)

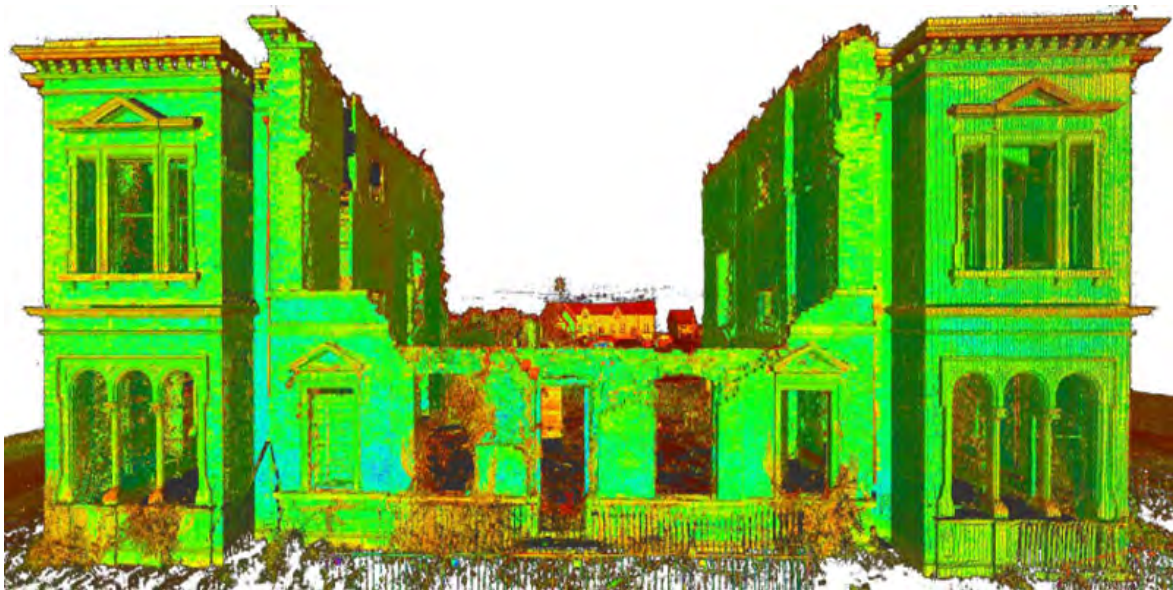
Before work on dismantling the buildings commences, a comprehensive Building Information Model will be developed.

Building Information Modelling (BIM) offers a robust framework for a multi-disciplinary, collaborative process of information production and exchange, resulting in the creation of a reliable, shared-knowledge resource to be used as the basis for decision-making, communication, planning and consultation. BIM processes enable more efficient methods for designing, delivering and maintaining physical built assets throughout their entire life cycle.

Unlike the new-build construction sector, where BIM has been applied widely for a number of years at an international level, BIM for heritage assets (historic buildings and sites) is a new and emerging field of research, and application internationally. Heritage projects typically rely on multi-disciplinary collaboration: a number of experts and specialists contribute, exchange and interpret complex information and data about a heritage asset to inform the understanding of its value and significance. This understanding is crucial for decisions on future interventions, conservation and management.

At present, information about historic buildings and (archaeological) sites is usually represented as a collection of individual documents, reports, drawings, computer-aided design (CAD; 2D or 3D) files and various datasets provided by different professionals, each working with their own tools and to different standards. Information about a single historic asset is held across a number of locations and different contractors. The drive behind introducing a BIM is to aid in project governance and information sharing.

Three-dimensional digital survey techniques are fast, reliable, non-contact methods for obtaining metrically accurate 3D data, and have been used extensively to document historic buildings and sites. Laser scanning, photogrammetry (ground-based or mounted on a drone), lidar, closer range scanning, mobile mapping or a combination of methods can be used to produce 3D datasets of the historic asset.



1: Woodseat Hall in Staffordshire as a 3D Point Cloud model after laser scanning.

By incorporating a series of high-quality digital survey datasets (LiDAR, Point Cloud files, Photogrammetry), BIM not only represents the appearance of the existing historic fabric, but also allows the exploration and complex analysis of proposed interventions in various scenarios. BIM offers a framework for collaborative working processes and sharing of coordinated datasets across a multi-disciplinary team, which makes it ideal for heritage conservation, management and further research. BIM processes can be applied to ensure the creation of a reliable knowledge base about a heritage asset. If maintained, a historic asset information model can be an invaluable decision-making and management tool for the asset throughout its life cycle.



2: Woodseat Hall render output combining Point Cloud data to form the base BIM.

As BIM is capable of incorporating both qualitative and quantitative information about a built asset to represent physical and functional characteristics, it can provide simulations of the appearance, development and performance of an asset. Intangible characteristics, such as heritage values and significance, can be integrated into the 3D model in a structured and consistent way, which allows easy information extraction and the production of deliverables. This will make it an invaluable asset to pass on to the new site owners to assist in monitoring for further conservation works in the future, and in developing interpretive material for public engagement with the site.



3: Projection of Building Information Model using Photogrammetry and Cataloguing Data sets to map the central hallway in the Main House



The method for developing the BIM for the Ravensworth Homestead Complex is as follows

#### **Phase One**

1. Research and Stakeholder Consultation.
2. Conceptual System design.
3. Collaborative Contractor meeting to include Contractor, Building Surveyor, Architect

#### **Phase Two**

1. Laser Scanning of Main House & Kitchen Wing
2. Laser Scanning of Men's Quarters
3. Laser Scanning of Stables
4. Laser Scanning of Barn
5. Laser Scanning of Privy.
6. Laser Scanning and/or point location of extraneous objects – landscape features, cist, stockyards.
7. Creation of a working cloud point file by building surveying contractors.
8. Conversion of all existing digital datasets into one BIM\*.
9. HSR (Aust) Group heritage professionals working with building surveying contractors to create a cataloguing system using the BIM and other reference materials.

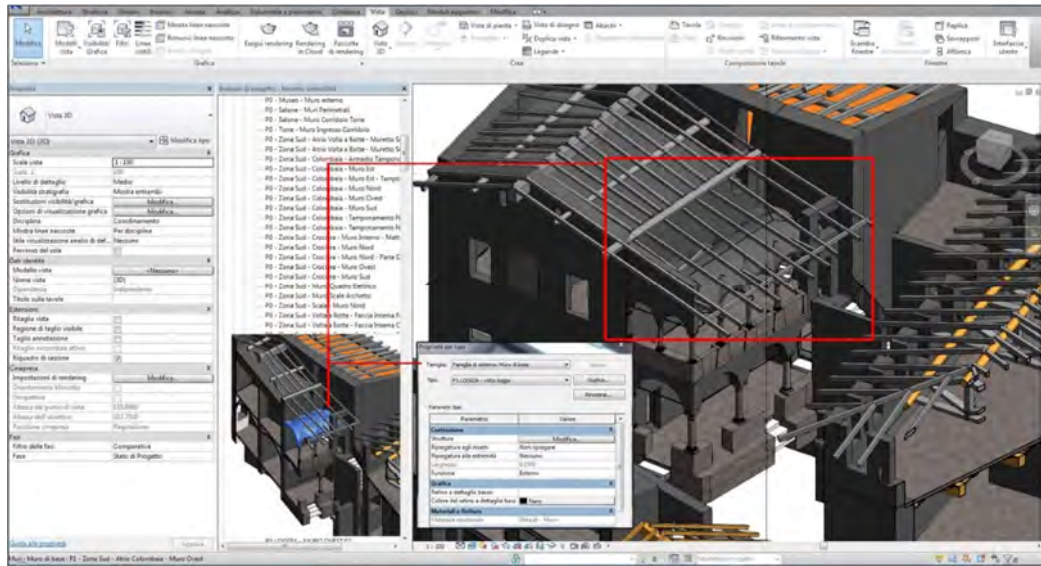
*\*Suggested RIEGL VZ-1000 pulse scanner with a mounted DSLR camera or NCTech LASiris VR scanner for AutoDesk compatibility. To be confirmed with contractor. \* Autodesk is the suggested BIM platform. To be confirmed with contractor.*

#### **Phase Three**

1. BIM is managed onsite by the Contractors Project Coordinator and Quality Assurance officer, ensuring that each material component identified in the BIM is recorded, catalogued, and stored for reassembly

#### **Deliverables**

1. Report on the BIM system design and proposed software base.
2. All datasets produced for the project will be collated and included in a final BIM that will detail all digital systems employed during the project.
3. Final BIM is provided to the client upon project completion for distribution to the new asset owners. The BIM will form the basis for ongoing conservation at the future site, and as an interpretive expression of the project.



4: Example of BIM for heritage property in Italy (Image courtesy R. Brumana, L. Barazzetti and D. Oreni, Politecnico di Milano)

## Analysis of existing timber

A selection of samples will be taken from non-visible areas of flooring, roof, door, skirting and architrave timbers and sent to a heritage timber specialist to identify species and suitable replacement timber stock for the project.

A sample of proposed replacement timber will be prepared for the Heritage Architects approval prior to any dismantling works.

## Analysis of stone

A selection of samples will be taken from areas of stone walls, hard landscaping elements and paving. The size and location of samples will be selected so as to mitigate disturbance to the visual amenity of the buildings and other stone elements. These samples will be used in discussion with stonemasons and quarry operations to determine a source for suitable replacement stone for the project.

A sample of constructed wall using the proposed replacement stone will be prepared for the Heritage Architects approval prior to any dismantling works.

## Analysis of mortar and plaster

A selection of samples will be taken from existing plastered walls and mortared joints. These samples will be chemically analysed to determine a suitable mortar and plaster mix for the project.

A sample of constructed wall using the proposed mortar and plaster mix will be prepared for the Heritage Architects approval prior to any dismantling works.

## Testing existing Paint for Lead Content

Lead can be found in historic paint applications. Testing pre construction will identify levels of contamination and sampling will allow the most effective removal method to be utilised.

## Removal of contaminated materials including lead paint and asbestos

### **Lead Paint**

There are numerous products on the market with one of the best being Dulux Dumond. This is a paste that is applied to the affected area such as timber and left on for a period to be determined throughout the sample procedure. The dwell time is based on the effectiveness of removal and ranges from 24 – 48 hours. The paste is then removed and the timber washed and finally a neutraliser is applied for a final clean. Testing of the material to ascertain that lead is no longer present is then undertaken.

All lead waste is taken away by a certified Lead Waste Management Company and dockets of disposal are issued for future records.

### **Asbestos Removal**

A HAZMAT survey previously completed for the building complex identified areas of Asbestos Containing Materials. Asbestos will be removed by a HAZMAT Specialist and similar to the Lead Paint Removal all waste disposed of by a Waste Management Contractor.

Formal Clearance Certificates will be issued once removal is complete to allow works to continue within the space.

## Dismantle

Once all preconstruction works including development of the BIM and removal of contaminated material is complete then progressive dismantling of the buildings can occur. This phase will generally include:

1. Labelling and dismantle of timber floors and flagstones with storage on pallets followed by sub-floor archaeological investigation
2. Labelling and removal of doors, ceilings and windows with storage on pallets
3. Dismantle of non-structural stone walls including plaster with storage on pallets
4. Dismantle of roof including sheeting and trusses with storage on pallets
5. Dismantle of stone walls (both internal and external) with storage on pallets

The dismantled timber items (including trusses, doors, etc) must be kept dry and free from damage so they will be stored in Steel Storage containers. Other items less sensitive to the elements (external stone walls, slate tiles) may be covered with polyethylene or tarpaulin wrapping as appropriate.

### Labelling and dismantle of timber floors and flagstones

Timber and flagstone floor elements will be labelled in accordance with the BIM prior to removal. Timber floors will be removed through separation of floor boards from the underlying floor structure and stored on within steel containers.

The flagstone floors will be lifted individually and palletised. Dependent on the location these will generally be lifted by hand by two operatives. The mortar that the flagstones are bedded on is likely to be cementitious, therefore when removing the bedding mix should be loosen to prevent flagstones from fracturing. The excess mortar can be cleaned off using a mallet and chisel by the mason outside of the building footprint on a temporary banker (bench).

Immediately following the removal of flooring the underlying exposed areas will be subjected to archaeological investigation in accordance with the approved Archaeological Research Design.

### Labelling and removal of doors, ceilings and windows

Labelling of ceilings, windows, doors, joinery, etc will occur in accordance with labelling in the BIM and will occur prior to removal. Once removed, these items will be stored on pallets within steel containers.

### Dismantle of non-structural stone walls including plaster

Non-structural walls are dismantled by hand following labelling. In the case of walls being of a timber structure then assessment of the current condition when uncovered will be carried out, followed by dismantle should the timber be in a condition that can be re-used.

Following this work, external scaffolding is then erected to the perimeter of each building to allow safe access to the roof line.



## Dismantle of roof including sheeting and trusses

All Chimney's will be inspected, condition recorded and labelled prior to dismantle. They will then be deconstructed down to roof line in preparation for the roof covering to be stripped.

The roof covering is unpicked and whilst doing so the assessment of its condition can continue. Each slate or shingle will be palletised with the Building Identified, stored and covered on site. The roof sheeting dismantle will be undertaken in the same way.

The roof trusses are then numbered in preparation for lifting. Removal of these will be done by crane and stored on racks which will be assembled for storing roof trusses off the ground to prevent any moisture penetrating the timber. The trusses will be wrapped in polythene and then braced when in storage to minimise any possible movement in the timber as they will be prone to twisting.

Where buildings have loose roof members and are of a traditional cut roof, then dismantle sequencing will be reviewed with a structural engineer and a precise methodology collated and reviewed prior to commencement. Storage will be undertaken in the same way as the roof truss members and stored on racks.

Consideration will be given to erecting a temporary storage structure at the recipient site for storing timber roof members.

## Dismantle of stone walls (both internal and external)

The dismantle of the walls will follow next with internal walls being started on in advance of the external perimeter walls. In some areas these will be unpicked in unison as they are acting as a structural support for the external walls. We will utilise temporary supports (shoring or similar design by a Structural Engineer) where necessary which will have been engineered by a consultant.

During the dismantle of existing stonework all existing mortar will be removed using a mallet and chisel to ensure all masonry is clean and ready for reinstallation. The existing mortar will be analysed preconstruction to ascertain mix ratio and sand types.

Once we are down to ground level, excavation around the walls will be done to enable the foundation stones to be removed; these will be palletised and removed to the new site immediately in preparation for fixing.

Palletising is key and each stone removed from the structure will be identified by way of Building/Elevation/Course Number/Position in accordance with labelling within the BIM.

## Transport

Transport of each of the dismantled building elements will be carried out via truck from the current site to the recipient site with an estimated 2,100 loads. A forklift will be utilised for loading and unloading of pallets and a crane will be used for steel containers.

A transport route is available from the current site to the recipient site that doesn't impose restrictions on standard sized truck loads. Building elements will be packaged and arranged in such a way to minimise the number of oversized loads required.

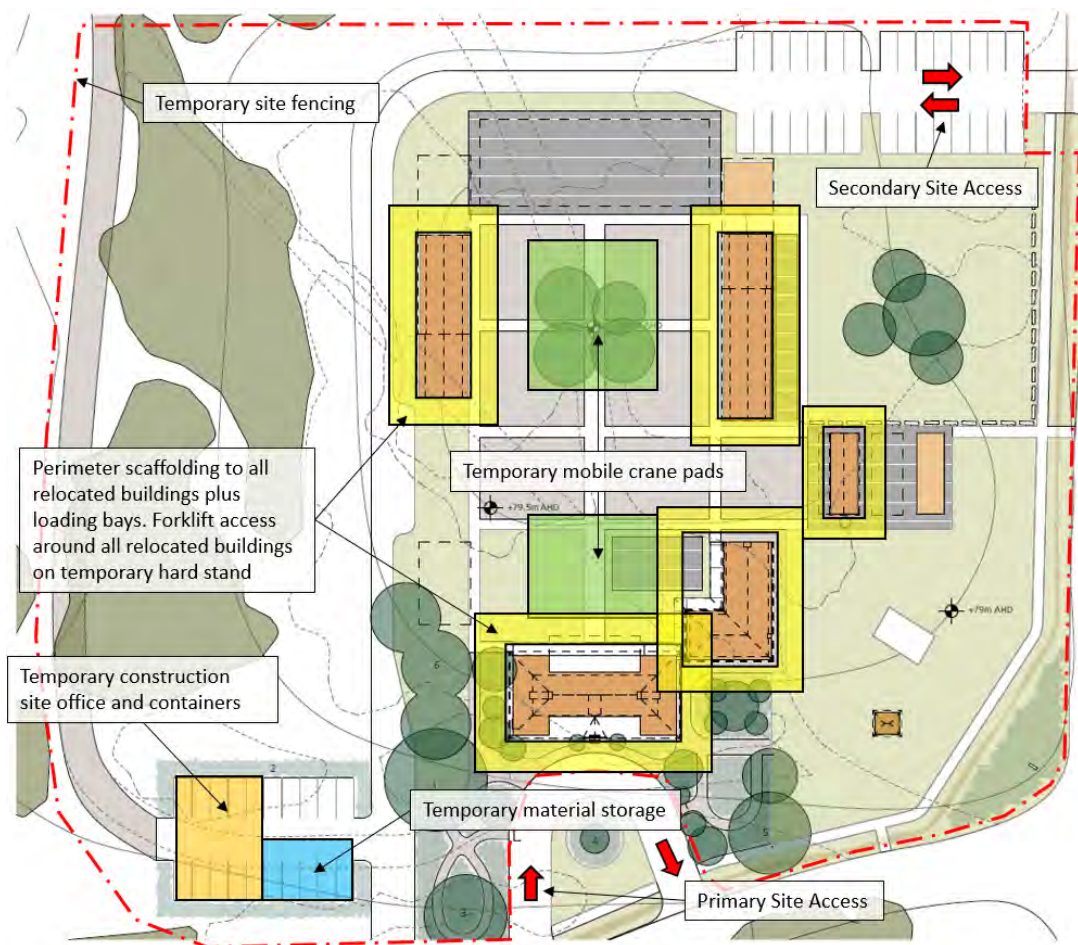
HSR will run a Pallet Tracking Register, allowing information on each pallet to be easily available and tracking between sites.

## Rebuild

The rebuild works at the recipient site can generally be categorised into two packages of work:

- Reconstruction of buildings on engineered footings in reverse order
- Fit out of buildings to suit proposed end use

Construction works would have commenced in ground at the recipient site whilst the existing buildings were being dismantled. The substructure works (engineered footings) would be completed and ready for the structure rebuild to commence. A conceptual arrangement of the site to facilitate the receipt of materials and the construction works is provided below:



Two full site set ups would be in place until the final dismantle is completed. Site Supervision will cover both sites with the Project Management team working from the existing site and carrying out visits weekly at the recipient site until the dismantle works are complete.

The following sections outline, at a high level works to rebuild the homestead complex. Additional detail on construction processes used during this phase are available in the Construction Processes Section that follows.

## Reconstruction of buildings on engineered footings

Once engineered foundations are in place the rebuild can commence. Below ground stonework is currently utilised, however the substructure masonry will be done in block/brickwork subject to detailed engineering design.

During inspection it became clear that a lot of the existing internal leaf of the external walls are loose rubble fill and would not be suitable for the rebuild. Depending on the irregular nature of stones used to construct the internal walls within the Main House, a lot of which are currently covered by plaster, consideration will be given to reconstructing these walls using the original stone or if considered impractical to do so, substituting the stone with block work or clay bricks. This will make no difference aesthetically as the inner wall will be re-plastered in traditional lime plaster.

Where replacement stone is required a full analysis of the existing stone will be carried out prior to commencing the works identifying, porosity, strength and geological type to ensure the best match to the existing is used, being of the same type and characteristics. Any working of the replacement stone will be done by HSR Group skilled Banker Masons on site.

The Roof structure will be lifted back into place using a crane and the roof covered. This allows the building to be watertight which mitigates the risk of weather delays on the Project and the internal piecing back together can begin. Windows are placed back in position, any refurbishment work can be done pre installation, with final alignment taking place when it is installed.

Internal walls are re-erected, with the flagstone flooring next. Service reticulation is then undertaken followed by the ceilings.

## Fit out of buildings to suit proposed end use

At this point of the rebuild process, the wet trades are complete and timber flooring and joinery items can be reinstalled. This is to be undertaken in tandem with installation of any additional cabinetry and joinery required for the end use of the buildings.

Installation of proposed kitchen facilities, amenities, lighting fixtures, tapware will also be completed progressively as part of the fit out process. Once installation of all fixtures is complete, final finishes follow.

External to the buildings, soft and hard landscaping works will be conducted in accordance with the approved landscape scheme.

Once the fit out phase is completed, completion inspections will be undertaken for sign off and acceptance of the works.



# Construction Processes

The following is a description of key processes that will be utilised in the dismantle and rebuild of the complex.

## Lime Mortar Mixes

All-Natural Hydraulic Limes (NHL) will be used on the project in reconstruction of the stone walls and will be mixed at a ratio of 1:3, that is one-part NHL to three parts washed sand. The volume is gauged using a one litre measuring jug to ensure the correct gauge is maintained throughout the life of the project. The correct mix will be achieved through the following steps:

1. Once the correct gauge is put into a clean bucket it will be mixed dry to ensure the lime / sand ratio is blended correctly.
2. Water is applied sparingly and mixed in with an electric hand held paddle type mixer. Extra care is taken not to over saturate the mix as this can lead to shrinkage cracks within the mortar during the curing process.
3. The consistency of the mortar will be creamy and malleable once correctly mixed.
4. The sand and composition that will be used for the project will be identified during the preconstruction stage by analysis of the existing mortar

## Bedding New Stone & Pointing

1. Bedding will be undertaken using the Lime Mortar mix described above. For dressed stone the bed joint typically ranges from 2-5mm and in this case sieving of the sand is undertaken to ensure the granular content of the mortar is small enough. The mortar is applied by trowel and the stone bedded. For larger bed joints (rubble etc.) the mix is made stiff to avoid slumping when the stone is bedded.
2. A fine mist of water is applied to wet the joint in order to allow the mortar to bond to the stone and the bedding mortar. This is achieved using a pump action water spray bottle of the type used to apply garden chemicals. All spray bottles are used for water only, and have contained no other chemicals.
3. The new mortar is applied to the joint using a small trowel with a width not exceeding that of the joint. When applying the new mortar, take care to ensure the mortar completely fills the joint to the full depth. Once the joint is filled, cover the newly pointed areas with dampened hessian, in order to ensure that the lime mortar cures for at least 7-14 days, and does not dry out prematurely.

As mentioned earlier in this report, depending on the irregular nature of stones used to construct the internal walls within the Main House, a lot of which are currently covered by plaster, consideration will be given to reconstructing these walls using the original stone or if considered impractical to do so, substituting the stone with block work or clay bricks.

Stone rubble will be used for areas that are currently exposed. There may be opportunity to use stone from above ceiling height that is in good condition at low level and use brick/block in roof spaces for the inner leaf.

Some of the external stonework will be oversized and either of a thickness that takes up the full width of the wall (e.g. tie-through stones) or partially takes up the wall thickness. If oversized blocks can be incorporated into the full width wall then they will remain, otherwise, where thickness prevents blockwork being installed to the back of the external leaf, then the stonework will be cut to ensure a full inner leaf of blockwork.

The two skins will be tied together using stainless steel fixings, these will be designed pre construction in coordination with a heritage Structural Engineer.

### **Existing Fixings**

All existing fixings (nails, screws, bolts etc) will be removed and not be reused. Some fixings that are also features will be considered following inspection by a Structural Engineer. The principle for replacing fixings is as follows:

- Roofing Members - New Fixings to Structural Engineer Specification
- Roof Covering – New Fixings
- Stone/Masonry – New Stainless-Steel Fixings
- Timber Flooring – new non corrosive fixings

### **Windows & Doors**

All windows and doors will be removed and set aside. The removal process is by way of removing any sash/casement and removing the frame separately. Lead based paint may be present and will be dealt with in one of two ways:

1. Remove flaking paint by a qualified specialist, remove frame off site for remaining lead paint removal
2. Remove all lead-based paint prior to removal, again by qualified specialist.

New fixings will be used for re-fitting the windows. All existing hardware is to be inspected pre removal. Dipping of hardware to remove paint residue may be required.

### **Roof Structure**

All Roof members will be de-nailed and inspected for rot/damage/splitting etc. Any replacement timber will be of a similar species where possible.

### **Existing Services**

All existing services will be stripped out and disposed of except any switches or anything of any Heritage significance which will be set aside.

### **Internal Walls**

All replacement render/plaster will be a traditional lime plaster. To best match the existing a sample analysis of the current render/plaster will be taken and analysed. Synthetic fibre is used to bind the render in lieu of traditional methods of horse hair. Sample renders and plasters will be undertaken to ensure consistency of finish on different types of substructure.

### **Timber Floors**

The timber flooring removal process is carried out by unpicking each board and detailing. The amount that can be saved depends on the method of existing fixing, in these buildings there appears to be two differing methods for two material profiles:

1. Traditional Tongue & Groove Boards
2. Squared Edged Boards.

Each building will have the species of timber sampled prior to removal to ensure suitable replacement timber types can be sourced as lead times can be significant.

### **Hard Landscaping**

Existing hard landscaping features requiring relocation will be catalogued and dismantled prior to relocation to the recipient site.

### **Stone Cleaning**

There is evidence of an existing cement wash coat over some stone on a number of the buildings which will need to be removed. This can be done by taking the face off the stone using traditional techniques, chiselling back to a sound surface beneath the wash, this ensures a greater percentage of re-use of the existing stone. The finish of the new face will be consistent with the existing. Samples will be analysed at the start of the project.

### **Limewashing**

Each area to which limewash is to be applied must be free from any existing paint or friable materials. In addition to this, the surface must be dry and free from any mould or fungal growth. In order to achieve the desired colour-match a series of samples will be provided for the principal to inspect. Varying degrees of colouring will be achieved using only natural pigments.

The limewash will be mixed onsite using a mix of NHL2 lime and clean potable water. This is then mixed in a 20L bucket using an electric paddle mixer.

1. All limewash will be mixed to an exact gauge in order to maintain consistency throughout the task.
2. The limewash will be applied to a dampened surface using a traditional soft bristle lime washing brush in a criss-cross pattern of application.
3. Each coat must be kept damp in order to prevent drying out too quickly and chalking.
4. Once an area is finished, damp hessian will be laid over the painted area to ensure the limewash cures consistently.

### **Lead Dressing to Roofs and Chimneys**

Prior to installation of lead dressing to chimneys or roofs, the installer will ensure the surfaces are free from any ferrous fixings, dirt, debris etc.

Lay out the underlay across the length of the area to be covered.

1. The final design including the lead thickness will match the existing and/or will match current British Standards.
2. All features including Reglet cut sizes, turn up dimensions etc will all be done in accordance with the Engineer's Specification 11.5.2. Any deviations from the specification would be from directions by the engineer.
3. Samples of finished section of lead work will be provided and passed by the engineer prior to installation.
4. All lead work will be carried out in accordance with BSEN 12588:2006.

## Quality Control

Workmanship and Quality would be monitored by our skilled staff on site and our Management Team for the duration of the works.

The Construction Program will have a series of Hold Points outlined for Sampling, Testing, Opening Up, etc. These will allow all stakeholders to agree on techniques for sampling and inspect areas that are opened up to ascertain condition and develop design for the rebuild.

Inspection Testing Plans (ITPs') will be utilised for both the dismantle and rebuild process. A sample is included in Appendix A of this document.



# Conclusion

The task of relocating Heritage Buildings can be seen as a daunting one. However, with meticulous pre planning and the correct amount of time to execute the works with skilled artisan trades persons the results are outstanding.

Being sympathetic to the structures, understanding their components and how they were constructed is key. The numerous reports carried out to understand the nature of construction, mortar types, material compositions, original end of use intent and their intended use in the future is critical.

When collating this outline methodology, site visits were undertaken to obtain a feel for the deconstruction methods that would be employed. The methodologies described will be by no means the final draft, they will be developed as works progress, further investigation is completed and unpicking of the structures progresses. This type of building can sometimes surprise the skilled staff working on them, especially when they have been altered over their life span.

Traditional methods are still used on buildings such as these with the benefit of utilising newer technologies for moving large components. A project of this nature also provides many avenues to improve knowledge of traditional methods within local trades and presents the opportunity to incorporate a formal heritage trades upskilling program.

The emphasis on allowing the correct amount of time to carry out the Project is crucial, and as such, we have set out sequencing that ensures quality workmanship, which allows for adverse weather which affect Lime curing times.

## Appendix H

### Broke-Fordwich Wine and Tourism Economy



**BROKE  
FORDWICH**  
WINE REGION

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2330 Australia  
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[www.brokefordwich.com.au](http://www.brokefordwich.com.au)

*The tranquil side of the Hunter Valley*

ABN: 93 641 992 769

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BROKE FORDWICH WINE AND TOURISM ASSOCIATION INC

Mr Shane Scott  
Project Manager  
Glendell Continued Operations Project

13 November 2019

**Subject: Broke Fordwich Wine and Tourism economy**

Dear Shane,

The Broke-Fordwich Wine and Tourism Association is a collective of local business operators from the Broke Fordwich wine district and we would like to confirm our support for the concept plan to relocate the Ravensworth Homestead to Broke village. We believe that the proposal will boost the visual amenity of the Broke village and provide excellent support to our local wine and tourism industry.

For your information, the Broke Fordwich Wine and Tourism industry currently comprises the following:

- Over 45 vineyards,
- 5 wineries,
- 18 olive groves,
- 13 cellar doors,
- four restaurants/cafes,
- over 65 short-stay accommodation facilities
- various support businesses such as caterers, wedding centres, function management and tour operators and restaurant transfer as well as soap and candle makers.

These businesses currently contribute to the local economy through providing direct employment to around 300 people with an additional 100-200 employed seasonally during grape harvest, with an estimated annual turnover of between \$35-45M. In addition, these businesses support numerous contractors and service providers such as vineyard agricultural contractors, catering businesses, agricultural equipment suppliers (fencing, irrigation, winemaking, machinery, restaurant supplies, linen and laundry services etc.).

Establishing the Broke Village Centre will achieve the following key outcomes:

- attract more visitors,
- promote and boost the sustainability of the existing businesses,
- provide opportunities to grow existing businesses and to establish new businesses along with the growth in associated employment

The proposed village centre will also provide the village of Broke with the following:

- improve the visual amenity of the village,
- add a community space being a centre of focus for the village,
- provide an attractive meeting place for families and community groups,
- provide improved community facilities,
- further support established annual events such as Broke Fair, Smoke in Broke and Little Bit of Italy which currently attract up to 10,000 visitors annually to Broke.

We also believe that the establishment of the Broke Village Centre is consistent with local Singleton Council and regional NSW planning policy which aims to boost economic diversity in this region which is heavily influenced by the mining industry. The strengthening of economic diversity will help to ensure that the Broke Fordwich Wine and Tourism industry has a long and sustainable future.

Kind Regards,



Jody Derrick  
President  
Broke Fordwich Wine Tourism Association



## Appendix 23i

### Hebden Public School Preliminary Scope of Works

# LUCAS STAPLETON JOHNSON



Ian Stapleton, B.Sc.(Arch.), B.Arch., Grad.Dip.Env.Law. F.R.A.I.A.  
Registered Architect No. 4032 Nominated Architect  
Sean Johnson, B.A., Dip.Arch., M.Sc.(Arch.Cons.), R.A.I.A.  
Registered Architect No. 4728

**Associates**  
Kate Denny, B.A., M.Herit.Cons.  
Michael Gunn, B.Des.Stud., B.Arch.  
Registered Architect No.9913

## LSJ Heritage Planning & Architecture

Lucas Stapleton Johnson & Partners Pty Ltd  
Suite 101, 191 Clarence Street, Sydney NSW 2000 Telephone: 02 9357 4811 Email: mailbox@lsjarchitects.com  
ACN: 002 584 189 ABN: 60 763 960 154 Websites: www.lsjarchitects.com www.traditionalaustralianhouses.com

## Ravensworth Homestead, Ravensworth, NSW

### SITE 34A: FORMER HEBDEN PUBLIC SCHOOL – SCOPE OF WORK

Prepared for: Mt Owen Pty Ltd

Issued: 21<sup>st</sup> May 2019

#### EXTERIOR

##### To Sub Floor

- Check over condition of timber stumps supporting building for damage including taking up and relaying floorboards to provide access. Salvage sheet lead termite shields for possible reuse on replacement stumps.
- Replace any defective stumps as directed by architect. Allow PC scheduled for same.
- Check over floor frame for damage especially at weather-exposed north wall opening, including taking up and relaying flooring to provide access, and repair/replace in seasoned, appropriate high durability class hardwood.
- Allow PC scheduled for same.

##### To Walls

- Check over timber cladding and remove damaged/rotten weatherboards.
- Whilst weatherboards are off check condition of wall frames.
- Allow PC scheduled to renew weatherboards and add additional members as directed.

##### To Roof

- Check over roofs. Take off existing corroded corrugated galvanised steel roofing. Salvage ridge vent.
- Check over rafters and ceiling joists.
- Allow PC scheduled to make repairs where damaged as directed.

- Provide new hardwood battens and corrugated galvanised steel roofing, complete with matching traditional profile galvanised ridge cap and barge rolls. Reinstall ridge vent with lead flashing.
- Remove recent Colorbond gutters and dps. Replace with galvanised steel quad profile gutters and galvanised circular dps with shoes leading water away from structure.
- Check over existing barge boards and soffit for damage. Check and treat exposed rafter ends. Allow PC scheduled to replace in matching profile material as directed.

#### Painting

- Prepare and repaint all exterior previously painted surfaces and new surfaces normally painted (exclude interior of the verandah).

#### To Chimney

- Underpin base to stabilise rotation to engineer's details.
- At top of chimney, rebuild missing portion where broken off using bricks salvaged from site. Provide lead capping to flue.
- Repair cracking in middle portion.
- Remove chicken mesh reinforcing. Repoint and repair brickwork as directed.

#### To Windows

- Repair windows to south elevation.
- Replace top sash to W2 to matching existing details adjacent.
- Put windows in working order. Replace broken glass and putty. Check hardware is operational.
- Allow PC scheduled for security hardware as directed.

#### To Gate

- Get G1 gate in working order.
- Prepare and repaint.
- Sheet back of gate prevent ingress of vermin.
- Allow PC scheduled for security hardware as directed.

## INTERIOR

Unless scheduled no work to interior.

## SITE WORK

- Retain substantial trees and treat if needed.
- Clear back overgrowth to expose pathways and ancilliary hidden structures.
- Record and then demolish all projecting features so that grounds are tidy and safe. Retain features that are flush with ground and that can be mown over during maintenance.
- Clear fallen branches debris etc.
- Retain existing recent boundary fence and gate (enclosing former school site, about 30m x 40m).
- Remove inner corroded chain fence and make good.
- Allow PC to remove street fence and provide timber picket fence to detail if so directed.
- Retain existing concrete tank and stabilise as (inoperative) landmark.

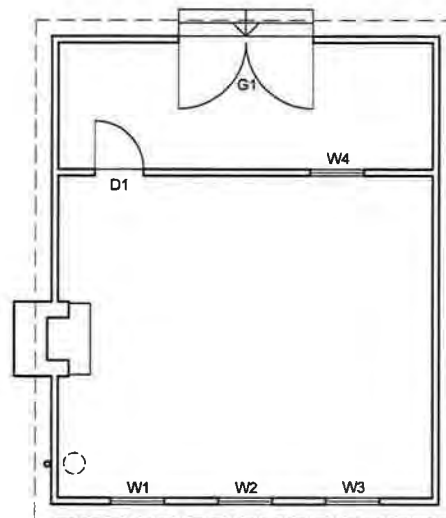
## MOTHBALLING WORKS

- Carry out works to secure the building to separate drawings, schedule and specification.



Michael Gunn & Ian Stapleton  
Lucas Stapleton Johnson & Partners Pty Ltd  
LSJ Heritage Planning & Architecture





1 GROUND FLOOR PLAN NTS  
123800\_school\_fp.dwg



<b>LUCAS STAPLETON JOHNSON</b> LSJ Heritage Planning & Architecture ACN 002 584 189 ABN 60 763 960 154 Nominated Architect: Ian Stapleton (reg. 4032) Websites: www.lsjarchitects.com www.traditionalaustralianhouses.com	Date 15/05/19	Scale (at A3) NTS	Drawn AJ	Job HEBDEN PUBLIC SCHOOL, HEBDEN RD, HEBDEN, NSW
	Lucas Stapleton Johnson & Partners Pty Ltd Suite 101, Level 1, 191 Clarence Street Sydney, NSW, 2000 Australia Telephone: (02) 93574811 Email: mailbox@lsjarchitects.com			Dwg. MEASURED FLOOR PLAN  Dwg. No. 123800 / OS02