

West Dapto Road, Kembla Grange: Historical Heritage Assessment and Statement of Heritage Impact

FINAL REPORT

Prepared for Cardno on behalf of BlueScope Steel

21 April 2020

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Contents

Glossary.....	vii
Summary	viii
1 Introduction	1
1.1 Project background	1
1.2 Location of the study area	1
1.3 Scope of assessment	1
1.4 Limitations	2
2 Statutory framework.....	5
2.1 Environment Protection and Biodiversity Conservation Act 1999.....	5
2.2 NSW Heritage Act 1977.....	5
2.2.1 State Heritage Register	5
2.2.2 Archaeological relics	6
2.2.3 Section 170 Heritage and Conservation Registers.....	7
2.3 Environmental Planning and Assessment Act 1979	7
2.3.1 Wollongong Local Environmental Plan 2009	7
2.3.2 Wollongong Development Control Plan 2009	7
2.4 Summary of heritage listings	8
3 Historical context.....	11
3.1 Topography and resources	11
3.2 Aboriginal past.....	11
3.3 Kembla Grange – historical development.....	12
3.3.1 Early settlement in the Illawarra	12
3.3.2 Early development of Kembla Grange	13
3.3.3 Veterans grants	14
3.3.4 History of the study area	18
3.3.5 Dapto radio telescope.....	25
3.3.6 BlueScope Steel acquisition of the study area.....	26
3.4 Chronology of the study area	54
3.5 Research themes	54
4 Physical inspection.....	56
4.1 Identified heritage items	56
4.2.1 An overview of cultural landscapes	58
4.2.2 The study area as cultural landscape	58
4.2.3 Views to and from the study area	58
4.3.1 “Koondi”	62
4.3.2 Joliffe house and outbuildings.....	62
4.3.3 Billett house and outbuildings	64
4.4.2 Integrity of sub-surface deposits	66

4.4.3	Research potential	66
5	Significance assessment	71
5.1	Levels of heritage significance	72
5.2	Evaluation of significance	72
5.2	Existing statements of significance	76
6	Statement of heritage impact.....	79
6.1	Proposal details	79
6.2	Assessing impact to heritage item(s)	79
6.2.1	Discussion of heritage impact(s)	79
6.2.2	Quantifying heritage impact(s)	81
6.3	Assessment of impacts	82
6.4	Statement of heritage impact	88
7	Conclusions and recommendations	89
7.1	Conclusions	89
7.2	Recommendations	89
	References.....	91
	Appendices	94

Tables

Table 1	Summary of heritage listings within and adjacent to the study area	9
Table 2	Chronological development of the study area	54
Table 3	Identified historical themes for the study area	55
Table 4	Key view points associated with the study area	59
Table 5	Assessment of archaeological potential	67
Table 6	Statements of significance for heritage items within or adjacent to the study area.....	77
Table 7	Assessment of impacts to heritage items either within or adjacent to the study area	84

Figures

Figure 1	Location of the study area	3
Figure 2	Study area detail	4
Figure 3	Location of heritage items within the study area and in the vicinity	10
Figure 4	Assessment of archaeological potential	70
Figure 5	Zoning within the study area.....	83

Plates

Plate 1	Location of early land grants in the Kembla Grange area (Source: McDonald 1976).....	14
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Plate 2	Knapp's 1829 plan of the Veteran Grants in the Illawarra with the study area outlined in orange (Source: NSW Land Registry Services I4.619).....	16
Plate 3	Knapps 1834 survey plan showing the location of veteran huts (marked with blue circles) and location of study area (Source: NSW Land Registry Services, I2-619).....	17
Plate 4	1895 parish map showing the land grants that are located within the study area (Source: NSW Department of Lands)	18
Plate 5	1845 Crown Plan showing a house [1], outbuilding [2] and fenced stockyard [3] on Willam Clarke' portion 187 (Source: NSW Land Registry Services, I118. 672).....	19
Plate 6	1891 crown plan with location of Clarke's portions (Source: NSW Land Registry Services)	20
Plate 7	1891 parish map showing the location of the Roman Catholic Cemetery [4] within Elizabeth Gray's portion 31 (Source: NSW Land Registry Services).....	21
Plate 8	1861 crown plan of West Dapto Road showing location of John McGhee's hut [5] (Source: NSW Land Registry Services, R194.1603)	22
Plate 9	Extract from an 1861 crown plan, showing the location of the Travellers Inn [6], Barrett's house [7] and a cottage with an outbuilding [8] (Source: NSW Land Registry Services, 191.1603)	24
Plate 10	Paul Wild with the rhombic aerial radio telescopes [9] at Dapto (Source: CSIRO).....	26
Plate 11	1960 plan showing BlueScope Steel's Kembla Grange properties shaded in colour (Source: BlueScope Steel records).....	27
Plate 12	1948-51 aerial of the western portion of the study area, marked in red, showing the extensive vegetation clearance (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 14, 15 and 16 are marked with blue squares. The Bunya pines are just visible on the far left of the aerial	28
Plate 13	1948-51 aerial of the eastern portion of the study area, marked in red, showing the extensive vegetation clearance (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 15, 17 and 18 are marked with blue squares.....	29
Plate 14	Detail 1 of the 1948-51 aerial showing "Koondl" [11], Joliffe house and its outbuildings [10], and Booth house [12].....	30
Plate 15	Detail 2 of the 1948-51 aerial showing three unnamed houses [19] east of Dapto Creek along West Dapto Road	30
Plate 16	Detail 3 of the 1948-51 aerial showing Watts house [13] and associated outbuildings	31
Plate 17	Detail 4 of the 1948-51 aerial showing Billett house and associated outbuildings [16]	31
Plate 18	Detail 5 of the 1948-51 aerial showing Wright house [14] and Cotter house [15].....	32
Plate 19	1961 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 21, 22, 23, 24 and 25 are marked with blue squares	33
Plate 20	1961 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 24, 26 and 27 are marked with blue squares	34
Plate 21	Detail 6 of the 1961 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]; however, Clarke house [1] and outbuilding [2] are not present	35
Plate 22	Detail 7 of the 1961 aerial showing the Dapto radio telescopes and associated building [9]	35

Plate 23	Detail 8 of the 1961 aerial showing “Koondi” [11], Joliffe house and outbuildings [10], and Booth house [12]. The rear section of Joliffe house has been removed and a large shed constructed west of the house.....	36
Plate 24	Detail 9 of the 1961 aerial showing one of the three houses [19] has been demolished	36
Plate 25	Detail 10 of the 1961 aerial showing Watts house [13] and associated outbuildings. The two outbuildings to the north of the house have been demolished	37
Plate 26	Detail 11 of the 1961 aerial showing Billett house [16] and outbuildings remain relatively unchanged since the 1948/51 aerial	37
Plate 27	Detail 12 of the 1961 aerial showing Wright house [14] and Cotter house [15] remain relatively unchanged since the 1948/51 aerial	38
Plate 28	1977 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 30, 31, 32, 33 and 34 are marked with blue squares	39
Plate 29	1961 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 34, 35 and 36 are marked with blue squares	40
Plate 30	Detail 13 of the 1977 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]. Since the 1961 aerial, there appears to be some small animal shelters present	41
Plate 31	Detail 14 of the 1977 aerial showing the Dapto radio telescope building is still present, although the radio towers have been removed	41
Plate 32	Detail 15 of the 1977 aerial showing “Koondi” [11], Joliffe house and outbuildings [10], and Booth house [12]. Joliffe house appears to still be occupied at this time	42
Plate 33	Detail 16 of the 1977 aerial showing Watts house [13] and associated outbuildings. Since the 1961 aerial, all of the sheds have been removed and the railway line now passes to the north of the property. A new shed has been constructed to the south of the house	42
Plate 34	Detail 17 of the 1977 aerial showing the all of the houses [19] have been demolished	43
Plate 35	Detail 18 of the 1977 aerial showing Billett house [16] and outbuildings. Since the 1961 aerial, a number of sheds have been removed or are in a dilapidated state	43
Plate 36	Detail 19 of the 1977 aerial showing that Wright house [14] and Cotter house [15] have been demolished	44
Plate 37	1993 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 39, 40, 41 and 42 are marked with blue squares.....	45
Plate 38	1993 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plate 43 is marked with ablue square.....	46
Plate 39	Detail 20 of the 1993 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]. Since the 1977 aerial, the small animal shelters have been demolished	47
Plate 40	Detail 21 of the 1993 aerial showing the Dapto radio telescopes and associated building [9] have been removed.....	47
Plate 41	Detail 22 of the 1993 aerial showing “Koondi” [11], Joliffe house and outbuildings [10]; however, Booth house [12] has been demolished. Joliffe house appears to still be occupied at this time and a number of outbuildings have been constructed at “Koondi”	48

Plate 42	Detail 23 of the 1993 aerial showing Watts house [13] and sheds to the south have remained relatively unchanged	48
Plate 43	Detail 24 of the 1993 aerial showing Billett house [16] and outbuildings. Since the 1977 aerial, more sheds have been removed	49
Plate 44	2018 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 46, 47 and 48 are marked with blue squares	50
Plate 45	2018 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plate 49 is marked with a blue square	51
Plate 46	Detail 25 of the 2018 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17] have remained largely the same since the 1993 aerial	52
Plate 47	Detail 26 of the 2018 aerial showing “Koondi” [11] and Joliffe house and outbuildings [10]. Since the 1993 aerial, Joliffe house has been unoccupied and fallen into a state of disrepair. Lantana and weeds have grown over the sheds and parts of the house. “Koondi” has remained relatively unchanged	52
Plate 48	Detail 27 of the 2018 aerial showing Watts house [13] has been demolished and additional sheds and storage containers to the south have been added	53
Plate 49	Detail 28 of the 2018 aerial showing Billett house [15] and outbuildings are unoccupied and fallen into a state of disrepair	53
Plate 50	Listed heritage item I6329, Moreton Bay Fig	56
Plate 51	Listed heritage item I6326, Group of Bunya Pines, Moreton Bay Figs and Hills Figs	57
Plate 52	Historical items located near heritage item I6326	57
Plate 53	East facing façade of the house, facing east	62
Plate 54	East facing façade of the house, facing west, showing the overgrown and dilapidated state of the building.....	63
Plate 55	North facing view of the interior of the house	63
Plate 56	West facing view of one of the outbuildings showing the overgrown and dilapidated state of the structure.....	64
Plate 57	West facing view of Billett house showing the collapsed building and lantana growth	64
Plate 58	North east facing view of one of the outbuildings showing the overgrown and dilapidated state of the structure.....	65

Glossary

ACHA	Aboriginal cultural heritage assessment
c.	Circa
CBD	Central Business District
CHL	Commonwealth Heritage List
DA	Development Application
DEE	Department of Environment and Energy
DP	Deposited Plan
DPC	Department of Premier and Cabinet (formerly OEH)
ESS	Department of Environment, Energy and Science
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
Heritage Act	<i>Heritage Act 1977</i>
LEP	Local Environmental Plan
LGA	Local Government Area
m	Metre
mm	Millimetre
NHL	National Heritage List
NSW	New South Wales
OEH	NSW Office of Environment and Heritage (now DPC)
SoHI	Statement of Heritage Impact
SHR	State Heritage Register
Study area	The area of impact for the proposed works

Summary

Biosis Pty Ltd was commissioned by Cardno on behalf of BlueScope Steel to undertake an historical heritage assessment and Statement of Heritage Impact (SoHI) for Lot 1 DP 588139, Lot 1002 DP 1192327, Lot 1 DP650528, Lot 1 DP588140, and Lot 2 DP230137, West Dapto Road, Kembla Grange New South Wales (NSW) (study area). The purpose of the SoHI is to inform a Neighbourhood Plan for the study area and to support future Development Applications (DA) to Wollongong City Council. The study area is located within the suburb of Kembla Grange and approximately is 15 kilometres south east of the Wollongong central business district (CBD).

Heritage values

Significant heritage values identified within the study area include:

- Two heritage items, including Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. 6326) and Moreton Bay Fig (Item no. 6329).
- Five areas of archaeological potential pertaining to Clarke's huts and stockyard, McGhee's hut, the Travellers Inn on the West Dapto Road, Barrett's house including an outbuilding and circular driveway, and a cottage and outbuilding in close proximity to the locally listed Moreton Bay Fig.

Impact to heritage values

Historical research indicates that the study area contains known structures and archaeological features associated with farming, commercial and domestic activities that took place from the mid-19th century until the present. The archaeological assessment presented in this report has assessed the potential within the majority of the study area as being low, with the exception of those areas considered to possess high and moderate potential.

The exact nature of future development within the study area is unknown but is expected to have the potential to impact on historical items or archaeological resources within areas of archaeological potential. If present, archaeological remains may consist of Clarke's hut [1], Clarke's outbuilding [2], Clarke's stockyard [3], McGhee's hut [5], the Travellers Inn and outbuildings [6], and Barrett's house and outbuildings [7] dating from c. 1845 to 1861. If present, these archaeological remains would be locally significant and would comprise some of the earliest archaeological remains within Kembla Grange area. Development in the vicinity of these items would result in the removal of the majority of the potential archaeological resource.

Furthermore, any proposed development within the study area will have impact upon two listed heritage items within the study area – Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. 6326) and the Moreton Bay Fig (Item no. 6329). The Group of Bunya Pines, Moreton Bay Figs and Hills Figs are typical of many early plantings introduced throughout the Illawarra and have representative value. The group of trees are located within the R2 (Low Density Residential) zoning; therefore, the establishment of a curtilage for the heritage item is recommended to ensure the heritage values are retained. However, if future development of the site requires the removal of the trees, this will have significant and irreversible impact on the heritage item. The Moreton Bay Fig is located on the east side of Dapto Creek within the E3 (Environmental Management) zoning; therefore, it is assumed that this heritage item will remain and not impacted upon.

Impacts upon the study area through the proposed development can be mitigated through a program of archaeological monitoring in areas assessed as moderate or high potential. This precautionary approach would mitigate any delays in development should any unrecorded archaeological remains that relate to the occupation of the study area be encountered. The proposed development has been assessed as being

acceptable from a historical heritage perspective if the recommendations included within this report are implemented.

Recommendations

Recommendation 1 Archaeological investigation required prior to works for areas of high potential

The analysis for this report has determined that some parts of the study area have a high potential for the survival of archaeological resources of local significance. In NSW, archaeological sites of State or local significance are considered "relics", which are protected by the *Heritage Act 1977*. In NSW, impacts to relics are only permitted with a section 140 approval (excavation permit). Given the potential for local significant archaeological remains to be present within the study area a section 140 approval is required.

An application should be made to the Heritage Council for a section 140 approval (excavation permit) supported by this SoHI. An archaeological research design and methodology will also need to be prepared to support the application.

It is likely that archaeological works will consist of monitoring during demolition works (i.e. removal of floor surfaces, foundations etc.) and any additional ground disturbance works within the study area until an archaeologically sterile layer is encountered. Deeper archaeological excavation may be required depending on the nature of remains encountered. The works described must be supervised by and guided by an appropriately qualified archaeologist to ensure that any archaeological remains are identified and recorded. Should substantial archaeological remains be identified it may be required to undertake archaeological excavation using open area techniques.

Recommendation 2 s139 exemption for Aboriginal test excavations to occur near the location of Clarke's hut

The crest landform unit that adjacent to the western boundary of the study area, along Paynes Road, contains an area of high Aboriginal archaeological potential and moderate historical potential. If impacts to this area, including Aboriginal test excavations, are proposed it is recommended that Cardno and BlueScope Steel apply for an excavation exception in accordance with s139 of the *Heritage Act 1977*. Part 1(a) of this exception would cover *"the excavation or disturbance of land will have a minor impact on archaeological relics including the testing of land to verify the existence of relics without destroying or removing them"*.

This exemption would allow for Aboriginal test excavations to be conducted in this area and if, during these excavations, historical relics are identified, the Aboriginal test pit would cease and the test pit relocated. This procedure would not destroy or remove relics; however, if substantial intact archaeological relics are discovered during Aboriginal test excavations, work must cease in the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the *Heritage Act*. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area.

Recommendation 3 Heritage interpretation strategy

Any development within the study area should incorporate heritage interpretation in the form of signs and other interpretive media, which detail the history of the study area and adjacent heritage values. The interpretation strategy should draw upon the historical context within this report and the results of any archaeological investigations completed as part of Recommendation 2.

Recommendation 4 Unexpected finds procedure

An unexpected finds procedure should be incorporated into a construction heritage management plan in the event that demolition works encounter unexpected historical structural or depositional remains, or any Aboriginal objects or places.

In both these instances all works should cease. A determination should then be made by an appropriately qualified archaeologist of whether the remains identified are likely to be 'relics' under the NSW *Heritage Act 1977* or an Aboriginal object or place.

Where the remains are identified as being 'relics', the Heritage Council of NSW must be notified in accordance with section 146 of the NSW *Heritage Act 1977*. Failure to notify the Heritage Council is considered an offence under the act, with penalties including fines and imprisonment. After contacting the Heritage Council, a permit or exemption should be sought under the relevant section of the act to allow works to recommence.

All Aboriginal objects and places are protected under the NSW *National Parks and Wildlife Act 1974*. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the DPC and Aboriginal stakeholders.

1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Cardno on behalf of BlueScope Steel to undertake an historical heritage assessment and SoHI for Lot 1 DP 588139, Lot 1002 DP 1192327, Lot 1 DP650528, Lot 1 DP588140, and Lot 2 DP230137, West Dapto Road, Kembla Grange NSW (Figure 1 and Figure 2), referred to as the study area herein. Biosis originally provided a Letter of Advice regarding the non-Aboriginal heritage of Lot 1 DP 588139, which recommended that a detailed historical heritage assessment and SoHI be undertaken. The purpose of the SoHI is to inform a Neighbourhood Plan for the study area and to support future DAs to Wollongong City Council.

1.2 Location of the study area

The study area is located within the suburb of Kembla Grange and approximately 15 kilometres south east of the Wollongong CBD. It encompasses 106.9 hectares of private land and is currently zoned E2 (Environmental Conservation), E3 (Environmental Management), IN2 (Light Industrial), IN3 (Heavy Industrial) and R2 (Low Density Residential). The study area is within the:

- Wollongong Local Government Area (LGA).
- Parish of Kembla.
- County of Camden.

The study area is bounded by Dapto Road to the east, Sheaffes Road to the south, Paynes Road and Farm Road to the west, and industrial land to the north.

1.3 Scope of assessment

This report was prepared in accordance with current heritage guidelines including *Assessing Heritage Significance*, *Assessing Significance for Historical Archaeological Sites and 'Relics'* and the *Burra Charter*¹². This report provides a heritage assessment to identify if any heritage items or relics exist within or in the vicinity of the study area. The heritage significance of these heritage items has been investigated and assessed in order to determine the most appropriate management strategy.

The following is a summary of the major objectives of the assessment:

- Identify and assess the heritage values associated with the study area. The assessment aims to achieve this objective through providing a brief summary of the principle historical influences that have contributed to creating the present – day built environment of the study area using resources already available and some limited new research.
- Assess the impact of the proposed works on the cultural heritage significance of the study area.
- Identifying sites and features within the study area which are already recognised for their heritage value through statutory and non – statutory heritage listings.

¹ Heritage Office 2001

² Australia ICOMOS 2013

- Recommend measures to avoid or mitigate any negative impacts on the heritage significance of the study area.

1.4 Limitations

This report is based on historical research and field inspections. It is possible that further historical research or the emergence of new historical sources may support different interpretations of the evidence in this report.

The historical research undertaken for this report is based on primary documents including Crown and deposited plans, Certificates of Title and historical parish maps. This information was supplemented by existing assessments and reports. Together this information was utilised to present a history of the study area. The archaeological survey was constrained by the presence of built fabric and modified ground surface areas in some locations, limiting the observations of ground surface and identification of potential archaeological resources. Although this report was undertaken to best archaeological practice and its conclusions are based on professional opinion, it does not warrant that there is no possibility that additional archaeological material will be located in subsequent works on the site. This is because limitations in historical documentation and archaeological methods make it difficult to accurately predict what is under the ground.

The significance assessment made in this report is a combination of both facts and interpretation of those facts in accordance with a standard set of assessment criteria. It is possible that another professional may interpret the historical facts and physical evidence in a different way.

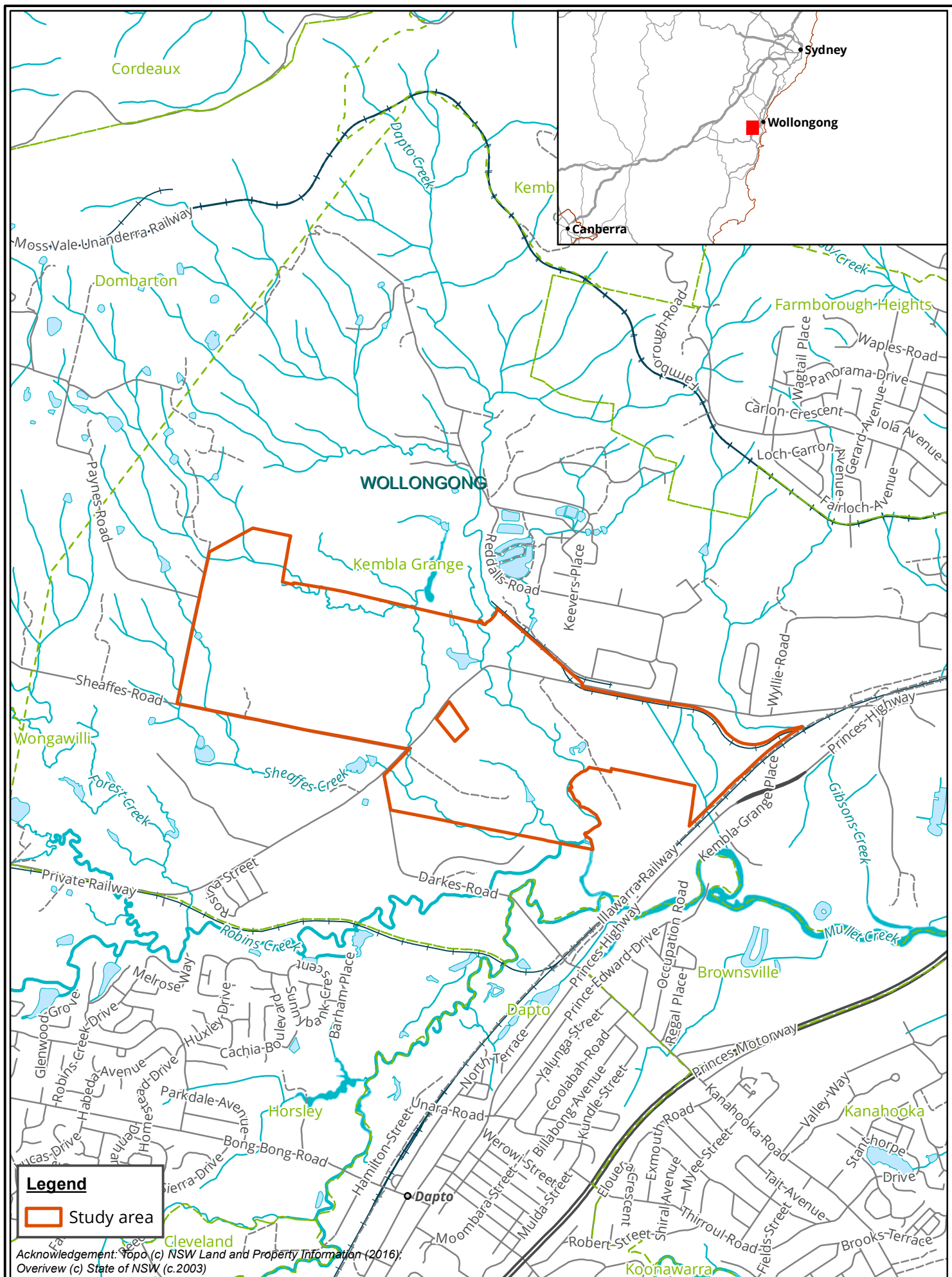
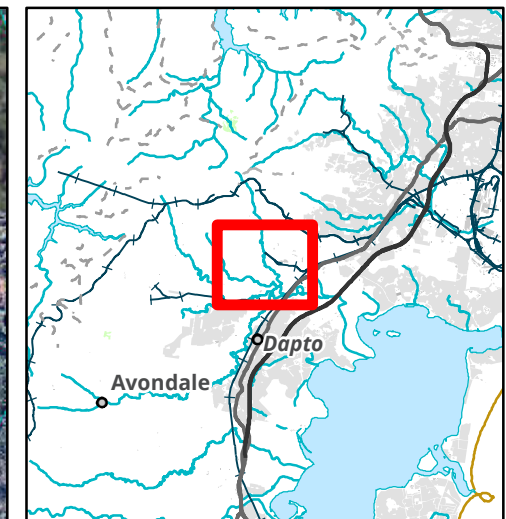
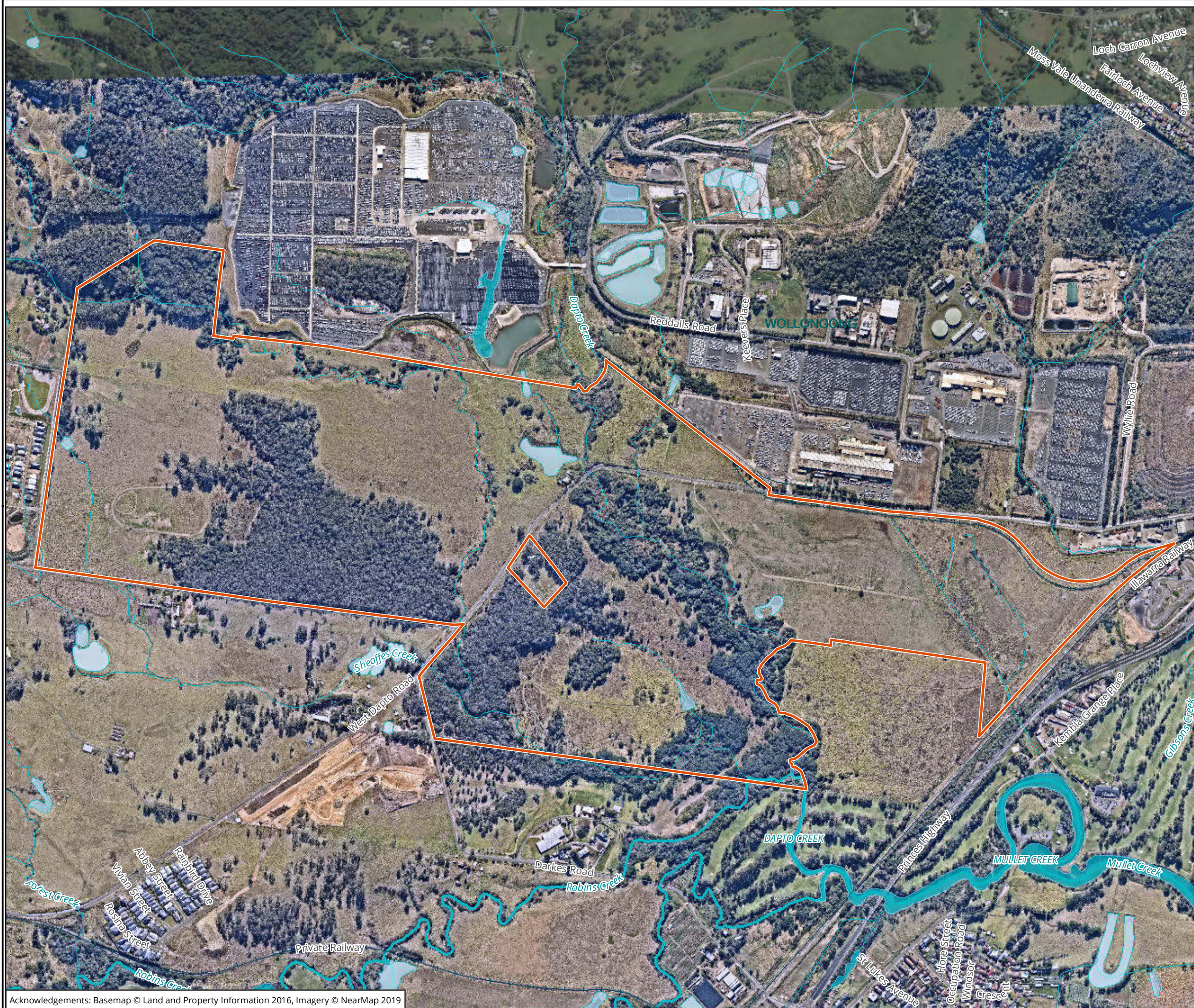


Figure 1 Location of the study area



Legend

Study area

Figure 2 Study area detail

0 100 200 300 400 500
Metres

Scale: 1:10,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 29665
Date: 04 October 2019,
Checked by: SJK, Drawn by: AEDM, Last edited by: amurray
Location: P:\29600s\29665\Mapping\29665_F2_StudyArea

2 Statutory framework

In NSW cultural heritage is managed in a three-tiered system: national, state and local. Certain sites and items may require management under all three systems or only under one or two. The following discussion aims to outline the various levels of protection and approvals required to make changes to cultural heritage in the state.

2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Act 1999* (EPBC Act) is the national Act protecting the natural and cultural environment. The EPBC Act is administered by the Department of the Environment and Energy. The EPBC Act establishes two heritage lists for the management of the natural and cultural environment:

- The National Heritage List (NHL) contains items listed on the NHL have been assessed to be of outstanding significance and define 'critical moments in our development as a nation'.³
- The Commonwealth Heritage List (CHL) contains items listed on the CHL are natural and cultural heritage places that are on Commonwealth land, in Commonwealth waters or are owned or managed by the Commonwealth. A place or item on the CHL has been assessed as possessing 'significant' heritage value.⁴

A search of the NHL and CHL did not yield any results associated with the study area.

2.2 NSW Heritage Act 1977

Heritage in NSW is principally protected by the *Heritage Act 1977* (as amended) which was passed for the purpose of conserving items of environmental heritage of NSW. Environmental heritage is broadly defined under Section 4 of the *Heritage Act 1977* as consisting of the following items: 'those places, buildings, works, relics, moveable objects, and precincts, of State or Local heritage significance'. The Act is administered by the Heritage Council, under delegation by the Heritage Division, Department of Environment, Energy and Science (EES). The *Heritage Act 1977* is designed to protect both known heritage items (such as standing structures) and items that may not be immediately obvious (such as potential archaeological remains or 'relics'). Different parts of the *Heritage Act 1977* deal with different situations and types of heritage and the Act provides a number of mechanisms by which items and places of heritage significance may be protected.

2.2.1 State Heritage Register

Protection of items of State significance is by nomination and listing on the State Heritage Register (SHR) created under Part 3A of the *Heritage Act 1977*. The Register came into effect on 2 April 1999. The Register was established under the *Heritage Amendment Act 1998*. It replaces the earlier system of Permanent Conservation Orders as a means for protecting items with State significance.

A permit under Section 60 of the *Heritage Act 1977* is required for works on a site listed on the SHR, except for that work which complies with the conditions for exemptions to the requirement for obtaining a permit. Details of which minor works are exempted from the requirements to submit a Section 60 Application can be

³ 'About National Heritage' <http://www.environment.gov.au/heritage/about/national/index.html>

⁴ 'Commonwealth Heritage List Criteria' <http://www.environment.gov.au/heritage/about/commonwealth/criteria.html>

found in the Guideline 'Standard Exemptions for Works requiring Heritage Council Approval'. These exemptions came into force on 5 September 2008 and replace all previous exemptions.

There are no items or conservation areas listed on the SHR within the study area.

2.2.2 Archaeological relics

Section 139 of the *Heritage Act 1977* protects archaeological 'relics' from being 'exposed, moved, damaged or destroyed' by the disturbance or excavation of land. This protection extends to the situation where a person has 'reasonable cause to suspect' that archaeological remains may be affected by the disturbance or excavation of the land. This section applies to all land in NSW that is not included on the SHR.

Amendments to the *Heritage Act 1977* made in 2009 changed the definition of an archaeological 'relic' under the Act. A 'relic' is defined by the Heritage Act as:

'Any deposit, object or material evidence:

(a) Which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

(b) Which is of State or Local significance'.

It should be noted that not all remains that would be considered archaeological are relics under the NSW *Heritage Act 1977*. Advice given in the Archaeological Significance Assessment Guidelines is that a 'relic' would be viewed as a chattel and it is stated that,

'In practice, an important historical archaeological site will be likely to contain a range of different elements as vestiges and remnants of the past. Such sites will include 'relics' of significance in the form of deposits, artefacts, objects and usually also other material evidence from demolished buildings, works or former structures which provide evidence of prior occupations but may not be "relics".'⁵

If a relic, including shipwrecks in NSW waters (that is rivers, harbours, lakes and enclosed bays) is located, the discoverer is required to notify the NSW Heritage Council.

Section 139 of the *Heritage Act 1977* requires any person who knows or has reasonable cause to suspect that their proposed works will expose or disturb a 'relic' to first obtain an Excavation Permit from the Heritage Council of NSW (pursuant to Section 140 of the Act), unless there is an applicable exception (pursuant to Section 139(4)). Excavation permits are issued by the Heritage Council of NSW in accordance with sections 60 or 140 of the *Heritage Act 1977*. It is an offence to disturb or excavate land to discover, expose or move a relic without obtaining a permit. Excavation permits are usually issued subject to a range of conditions. These conditions will relate to matters such as reporting requirements and artefact cataloguing, storage and curation.

Exceptions under Section 139(4) to the standard Section 140 process exist for applications that meet the appropriate criterion. An application is still required to be made. The Section 139(4) permit is an exception from the requirement to obtain a Section 140 permit and reflects the nature of the impact and the significance of the relics or potential relics being impacted upon.

If an exception has been granted and, during the course of the development, substantial intact archaeological relics of state or local significance, not identified in the archaeological assessment or statement required by this exception, are unexpectedly discovered during excavation, work must cease in the affected area and the Heritage Office must be notified in writing in accordance with section 146 of the *Heritage Act 1977*. Depending

⁵ NSW Heritage Branch, Department of Planning 2009, p.7

on the nature of the discovery, additional assessment and, possibly, an excavation permit may be required prior to the recommencement of excavation in the affected area.

2.2.3 Section 170 Heritage and Conservation Registers

Section 170 of the *Heritage Act 1977* requires that culturally significant items or places managed or owned by Government agencies are listed on departmental Heritage and Conservation Register. Information on these registers has been prepared in accordance with Heritage Division guidelines.

Statutory obligations for archaeological sites that are listed on a Section 170 Register include notification to the Heritage Council in addition to relic's provision obligations. There are no items within or adjacent to the study area that are entered on a State government instrumentality Section 170 Register.

2.3 Environmental Planning and Assessment Act 1979

2.3.1 Wollongong Local Environmental Plan 2009

The Wollongong LEP contains schedules of heritage items that are managed by the controls in the instrument. As the project is being undertaken under Part 4 of the EP&A Act, council is responsible for approving controlled work via the development application system. Heritage items in the vicinity of the study area are identified in Figure 3.

The study area has two listed items of local significance on the Wollongong LEP 2009 Schedule 5:

- Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. 6326), Sheaffes Road, Lot 1 DP 588139. Locally listed and located on the western boundary of the study area.
- Moreton Bay Fig (Item no. 6329), West Dapto Road, Lot 1 DP 588140. Locally listed and located on the bend of West Dapto Road.

The study area is also situated within the vicinity of heritage items of local significance:

- St John's Catholic Cemetery (Item no. 5974), 231 West Dapto Road, Lot 1 DP 1037747. Locally listed and surrounded by the study area.
- "Barlyn" homestead, gardens and dairy (Item no. 6325), Darkes Road, Lot B DP 161785. Locally listed and located 320 metres south of the study area.
- Cemetery (Item no. 6327), West Dapto Road, Lot 113, DP 771098. Locally listed and located opposite the northern boundary of the study area along West Dapto Road.
- Kembla Grange Racecourse Railway Station (Item no. 61061), corner of West Dapto Road and Princes Highway. Locally listed and located opposite the northern boundary of the study area along West Dapto Road.

2.3.2 Wollongong Development Control Plan 2009

The Wollongong Development Control Plan 2009 (WDCP) outlines built form controls to guide development. The WDCP supplements the provisions of the Wollongong LEP. The following relates specifically to development within the vicinity of a heritage site and the demolition or relocation of a heritage item.

Development on land adjacent to or within the vicinity of a heritage item should not detract from the identified significance or setting of the heritage building or the heritage conservation area. Where development is proposed, the following matters must be taken into consideration:

- The character, siting, bulk, scale, height and external appearance of the development.

- The visual relationship between the proposed development and the heritage item.
- The potential for overshadowing of the adjoining heritage item.
- The colours and textures of materials proposed to be used in the development.
- The landscaping and fencing of the proposed development.
- The location of car parking spaces and access ways into the development.
- The impact of any proposed advertising signs or structures.
- The maintenance of the existing streetscape, where the particular streetscape has significance to the heritage site.
- (The impact the proposed use would have on the amenity of the heritage site.
- The effect the construction phase will have on the wellbeing of a heritage building.

Development in the vicinity of a heritage item should give strong regard to any significant views to and from the heritage item or heritage conservation area and any public domain area. Where subdivision is proposed in the vicinity of a heritage item, the impact of future development of the lots should be considered.

The demolition or relocation of a heritage item is contrary to the intent of heritage listing and hence, will only be considered as a last resort option in circumstances where the building is considered to no longer be of significance or not capable of repair. For any proposal involving demolition of a building due to structural integrity issues, the following matters must be addressed in the heritage impact statement or conservation management plan:

- Comprehensive written and photographic evidence as to the current condition of the building fabric, including the condition of footings, load-bearing walls, building materials, pest infestation, water damage, sub-soil drainage, damage from natural occurrences, and whether it constitutes a danger to the users or occupiers of the building or the public.
- A statement as to the capability of repair, restoration, stabilisation or reconstruction of the heritage building.
- A statement outlining what other options have been examined instead of demolition and reasons why these options are not viable.
- A thorough and accurate financial assessment that considers the costs associated with restoration or conservation of the building, compared to alternative development options.

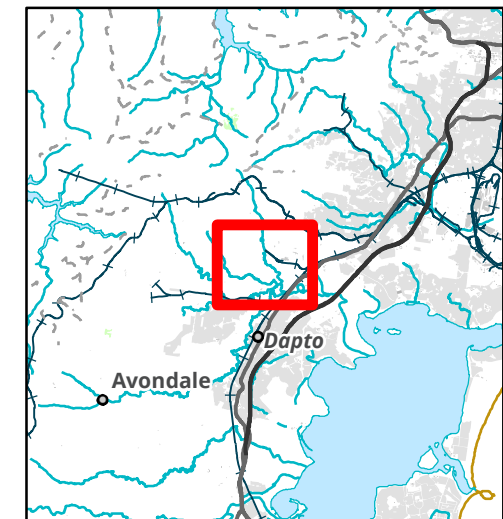
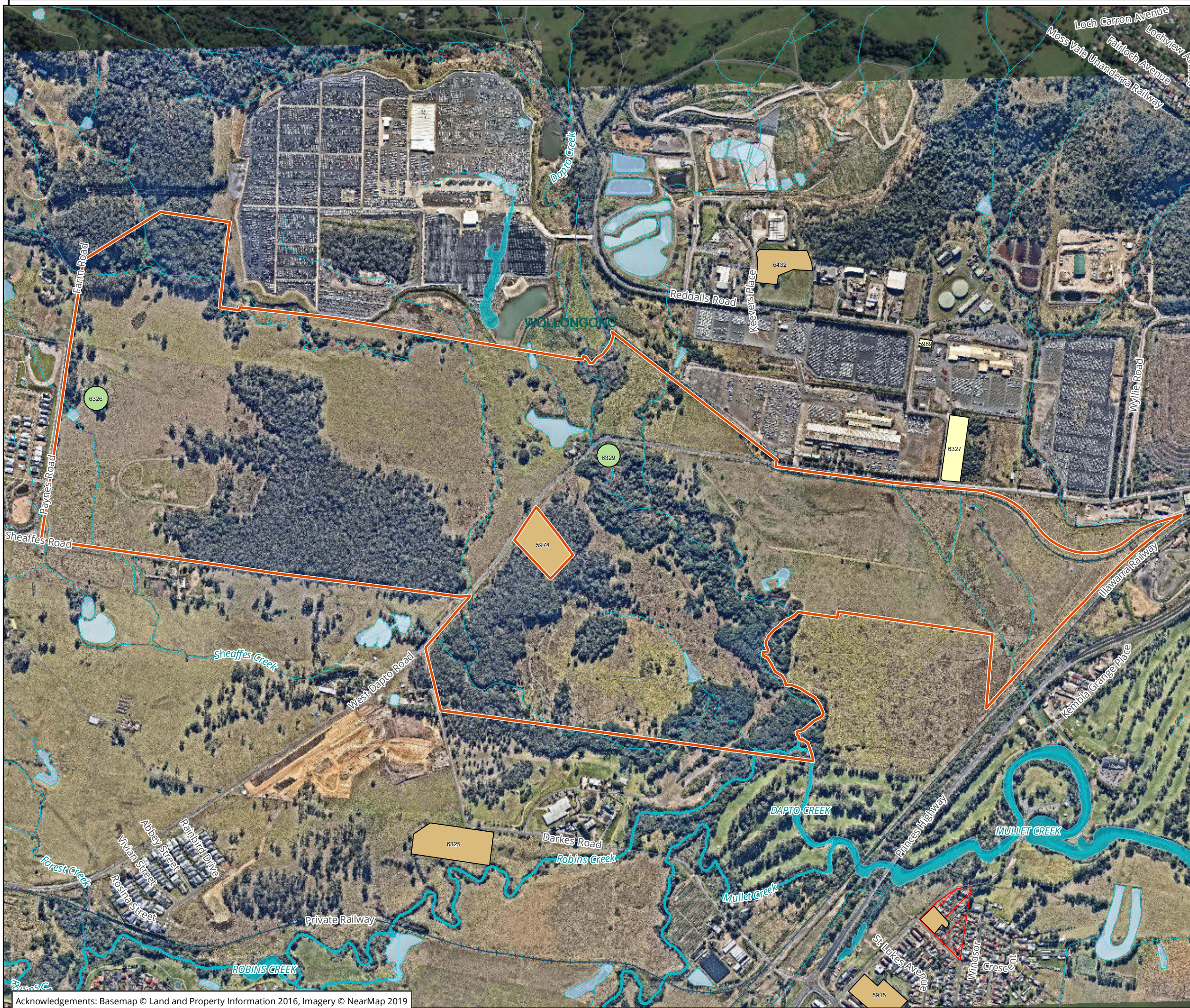
The above statements must be prepared by suitably qualified persons such as a conservation architect or structural engineer. Any proposal involving demolition or relocation of a heritage item will require the submission of comprehensive diagrammatic and photographic archival recording to Council, prior to the commencement of any demolition or removal works to the heritage item. This will be covered by appropriate conditions of development consent.

2.4 Summary of heritage listings

A summary of heritage listings within and in the vicinity of the study area is presented in Table 1 and Figure 3.

Table 1 Summary of heritage listings within and adjacent to the study area

Site number	Site name	Address / Property description	Listings		Significance
			Individual item	As a Conservation Area	
I6326	Group of Bunya Pines, Moreton Bay Figs and Hills Figs	Sheaffes Road, Kembla Grange Lot 1 DP 588139 Located on western boundary of study area	Yes	No	Local
I6329	Moreton Bay Fig	West Dapto Road, Kembla Grange Lot 1 DP 588140 Located on the eastern side of Dapto Creek	Yes	No	Local
I5974	St John's Catholic Cemetery	231 West Dapto Road, Kembla Grange Lot 1 DP 1037747 Surrounded by the study area	Yes	No	Local
I6325	"Barlyn" homestead, gardens and dairy	Darkes Road, Lot B DP 161785\	Yes	No	Local
I6327	Cemetery	West Dapto Road, Kembla Grange Lot 113 DP 771098 Located opposite the northern boundary along West Dapto Road	Yes	No	Local
I61061	Kembla Grange Racecourse Railway Station	Corner of West Dapto Road and Princes Highway, Kembla Grange Located opposite the northern boundary of the study area along West Dapto Road.	Yes	No	Local



Legend

- Study area
- Heritage listed items**
 - Conservation Area - General
 - Item - General
 - Item - Archaeological
 - Item - Landscape

Figure 3 Location of heritage items within the study area and in the vicinity

0 100 200 300 400 500

Metres

Scale: 1:10,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Biosis Pty Ltd
Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 29665
Date: 04 October 2019,
Checked by: SJK, Drawn by: AEDM, Last edited by: amurray
Location: P:\29600s\29665\Mapping\29665_F3_HerItems

3 Historical context

Historical research has been undertaken to identify the land use history of the study area, to isolate key phases in its history and to identify the location of any built heritage or archaeological resources which may be associated with the study area. The historical research places the history of the study area into the broader context of Wollongong.

3.1 Topography and resources

The study area is located within Wollongong (Coastal) Plain physiographic region, which is situated between Lake Illawarra and the Escarpment. This physiographic unit has formed from the gradual westward recession of the Plateau.⁶ The Coastal Plain is characterised as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. The Coastal Plain is dissected by easterly flowing streams at intervals that become more frequent towards the north.⁷ The low lying areas of the Coastal Plain are almost completely cleared of forest and woodland so the presence of modified trees in unlikely unless pockets of remnant vegetation are present.

3.2 Aboriginal past

It is generally accepted that Aboriginal peoples have inhabited Australia for the last 50,000 years.⁸ Despite a proliferation of known Indigenous sites there is considerable ongoing debate about the nature, territory and range of pre-contact Indigenous language groups in the Illawarra region. These debates have arisen largely due to the lack of ethnographic and linguistic information recorded at the time of European contact. By the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Indigenous people in the late 19th Century; pre-European Indigenous groups had been broken up and reconfigured by European settlement activity. The following information relating to Indigenous people on the Illawarra is based on such early detailed records.

Despite conflicting views between historical sources of the exact boundaries of tribal groups in the region, the linguistic evidence does identify distinct language groups at the time of European contact. Based on this information it appears that the study area was situated within the Tharawal (also Dharawal, Darawal, Carawal, Turawal, Thurawal) linguistic groups. The named groups (often referred to as 'clans', 'bands' or 'tribes') belonging to the Tharawal/Dharawal language group included the following: Gweagal, Norongerraga, Illawarra, Threawal, Tagary, Wandandega, Wodi Wodi and Ory-ang-ora. In his overview of Australian Aboriginal tribal boundaries, Tindale,⁹ places the Illawarra area within the territories of the Wodi Wodi tribe (or 'named group'). Tindale describes the Wodi Wodi named group as occupying the area north of the Shoalhaven River to Wollongong. Ethnographic evidence considered by Sefton¹⁰ indicates high population mobility on the Woronora Plateau with frequent contact between the neighbouring Gandangarra, Cobrakall (Liverpool and Cabramatta) and Wodi Wodi (Illawarra).

⁶ Bowman 1971

⁷ Fuller 1982, p.18

⁸ Allen & O'Connell 2003

⁹ Tindale 1974, pp.199–201

¹⁰ Sefton 1988, pp.22–29

The areas inhabited by each of the groups are considered to be indicative only and would have changed through time and may have been dependent on certain circumstances (i.e. availability and distribution of resources). Interactions between different types of social groupings would have varied with seasons and resource availability. Traditional stories tell of the arrival of the Wodi Wodi to Lake Illawarra, bringing with them the Dharawal or cabbage tree palm from which their language is named.¹¹ Analysis of middens in the region has provided dates of occupation dating back 6000 to 7000 years on the coast and at Lake Illawarra, and it is accepted that Aboriginal occupation of the south coast dates to around 20,000 years ago.¹²

After the arrival of European settlers the movement of Aboriginal people began to be increasingly restricted. European expansion was swift following the initial exploration by Bass and Flinders, and soon there had been considerable loss of land to agriculture. This led to violence and conflict between Europeans and Aboriginal people as both groups sought to compete for the same resources. At the same time diseases such as small pox were having a devastating effect on the Aboriginal population. Death, starvation and disease were some of the disrupting factors that led to a reorganisation of the social practices of Aboriginal communities after European contact.

The formation of new social groups and alliances were made as Aboriginal people sought to retain some semblance of their previous lifestyle. In 1820, approximately 3,000 Aboriginal people were living in the Illawarra, but by 1899 their numbers had declined to only 33 people of non-mixed descent.¹³ Today, many Wodi Wodi and Tharawal people continue to live in the Illawarra.

3.3 Kembla Grange – historical development

3.3.1 Early settlement in the Illawarra

The Illawarra district was first noted by Lt James Cook in 1770 when he located the headland of Port Kembla, naming it 'Red Point'. He also identified a large hill which looked like the crown of a hat. This was Mount Kembla, which was known as Hat Hill in the early days of the settlement. The next recorded Europeans to visit the Illawarra district were Bass and Flinders in 1796, who sailed along the south coast from Sydney in their small boat, the Tom Thumb. Following their landing near Tom Thumb Lagoon, they entered Lake Illawarra and made the first recorded contact with the Aboriginal people in the Illawarra.¹⁴

In 1797 the Sydney Cove was wrecked in Bass Strait and survivors made their way through the area to find help, losing several members of their party to 'hostile natives' as they went. Camping overnight at Coal Cliff, the survivors used coal found in a seam to keep warm. The survivors were eventually rescued and taken to Sydney, where their report of the coal led Bass to be sent back to the area to investigate the report. Bass located a coal seam 6 feet thick; however this resource was not utilised for a further 80 years. During this visit Bass also located and named the Shoals-haven and the Shoalhaven River.

The first settlement in the Illawarra region was established by Charles Throsby Smith (C.T. Smith), who cut a cattle track from Glenfield to just behind South Beach, Wollongong, where he constructed a stockman's hut and cattle yard in 1815.¹⁵ Joe Wild was Throsby's stockman, and was also made constable of the district of Five Islands in 1815.¹⁶ The following year, Surveyor-General John Oxley was sent to the Illawarra region to

¹¹ Wesson 2009, p.5

¹² AMBS 2008, p.33

¹³ Organ 1990, p.8

¹⁴ McDonald McPhee Pty Ltd 1991

¹⁵ Osbourne 2000

¹⁶ McDonald 1966

make a general survey of the area and to connect it to the known parts of the colony, as well as identify specific lands for prospective grantees.¹⁷

Although C.T. Smith was the first to pasture cattle in the Illawarra, closely followed by John Oxley, neither received land grants in the Illawarra region. The first five grants in the area were made in 1821 to absentee landlords, who ran cattle on their lands with a few stockmen present. The first five grants of land made in the Illawarra region were:

- Richard Brooks, Exmouth, 1,300 acres.
- George Johnston, Macquarie Gift, 1,500 acres.
- Andrew Allen, Waterloo, 700 acres.
- Robert Jenkins, Berkeley, 1,000 acres.
- David Allen, Illawarra Farm, 2,200 acres.

The Illawarra region was attractive not only for its rich pasture, but also for its Red Cedar, which was exploited by the early timber cutters. Between the cattlemen and the cedar cutters, passage into the Illawarra region was found. Grants continued to be made in the Illawarra region, comprising essentially free grants with easy terms, until August 1831, when land could only be purchased at auction. Following the gazetting of the Crown Lands Act 1861 any un-alienated land was taken up as Conditional Purchase holdings.¹⁸

3.3.2 Early development of Kembla Grange

Settlement of the Parish of Kembla initially began in 1817, with a grant issued to George Molle for 300 acres.¹⁹ W.F. Weston, an army Lieutenant, was granted 500 acres in 1818, and the land is listed as being located on the northern side of Mullet Creek. However, no other land was granted till around 1825 (Plate 1).²⁰ In 1829, a parcel of 2,000 acres (809 hectares) was promised as a grant to John Dunlop Wylie. Wylie stocked his property with Ayrshires, but misfortune overtook him and he was obliged to mortgage his cattle. He became acting manager of Coolangatta estate but his financial difficulties persisted and he was obliged to sell both his cattle and land. His cattle were sold to Alexander Berry and the land to Andrew Lang and Carruth Brothers (the later sold their 1,000 acres to Dr Gerard). This land later became known as Kembla Grange.²¹

¹⁷ Osbourne 2000

¹⁸ Lindsay 1994

¹⁹ Jervis 1942, p.86

²⁰ Jervis 1942, p.87

²¹ Jervis 1942, p.88



Plate 1 Location of early land grants in the Kempls Grange area (Source: McDonald 1976)

3.3.3 Veterans grants

The study area is located within a series of veterans grants made in 1829. The grants relate to three companies of veterans that were raised to service in NSW and Tasmania in 1825. As part of their engagement the veterans were provided with land grants that encouraged them to settle in the colony.²² The veterans predominantly were those who had served in the British Army during the Peninsular War (1807 – 1814), and then at Waterloo in 1815.²³ There was no shortage of recruits; however, the officers had difficulty enforcing discipline.²⁴ The three companies were based in Sydney, Newcastle and Van Diemen's Land (Tasmania). The conditions laid down for issuing land grants to Royal Veterans were similar to those applied to the First Fleet Marines. In addition the following 'indulgencies' were to be provided:

- 1) *Each man will be allowed from forty to one hundred acres of land, according to the quality of the soil or the situation in which he may be required to settle, on his entering into a bond that he will reside on and cultivate his land for a period of seven years on pain of forfeiture.*
- 2) *He will be furnished with the necessary implements of husbandry. If married, he will receive a cow from the Government Herds on taking possession of his land, and a second cow at any time within three years, when he shall have cleared and stumped ten acres.*

²² Montague 1982, p.240

²³ Wright 2014

²⁴ Montague 1982, p.240

- 3) *Each man will be allowed the usual ration (spirits excepted) for himself and his family for twelve months from the date of his discharge, to be issued at or in the neighbourhood of his farm: the ration to be forfeited, if he or his family absent himself or themselves from the farm.*
- 4) *A log hut will be put up for the accommodation of such men as are married. It is intended that these men should be located in different parts of the colony in small bodies of about six in number, as soon as eligible situations have been determined on; and it is desirable that the individuals should be of different trades, as being more likely to prove generally useful to the colony and to afford them an opportunity of providing comfortably for themselves and families.*²⁵

The rations referred to as 'indulgences' were the usual British Army issue; however, the Secretary for War felt that these were too liberal and would be the undoing of the scheme. In Upper Canada and Coastal Africa the provision of supplies without a requirement for labour in return had led to idleness in the settlers. It was hoped that the veterans would prove useful settlers. This was true to a large degree with many veterans contributing to the development and operation of the colony through taking up positions in the police and other institutions. However, the system failed due to a perception by Darling of the men lacking effectiveness and discipline. Indeed, Darling found them to be *'the most drunken, disorderly, worthless set of fellows that ever existed'*.²⁶ The three veterans companies were disbanded in 1829 and land was granted to the men who remained. However, once discharged, most of the veterans failed to take up their allotments, forfeited through non-residence or failed to make a success of farming the land.²⁷ By 1847, the question was raised in NSW Parliament about the number of veterans who had either not taken up their grants, or abandoned them. As a result, a return was provided of all orders for grants of land made to discharge soldiers in the years 1829, 1830 and 1831, and the status of these grants at that date. From a total of 103 grants of land, there were only 27 families still on their land, or about one-quarter.²⁸

In 1829 Surveyor Knapp was assigned to survey ten 100 acre grants for veterans along Dapto Creek, and was also instructed to select dry locations for huts for the veterans to be built on each grant by working parties (Plate 2).²⁹ Knapp's survey plan identifies the configuration of these grants, the location of the proposed hut locations within the grants and the alignment of the Kiama to Wollongong road (Plate 3). However, it is unclear if the huts were actually constructed and the survey plan has a tear through the middle section where the majority of the study area is located.

The huts were described as *'...Each house had two rooms, and I think the front of the house was weatherboard, the back being slab. The houses had glass windows in them. The veterans were really comfortably housed.'*³⁰ Alexander Stewart states that the ten veterans were *'John M'Kelly, Daniel M'Coy, John Robins, Charles Clayton, Thomas O'Brien, William Millan, James (Sergeant) Mitchell, Ben Bundett, Christopher Ecklin, and, I think, William Keevors.'*³¹ Benjamin Lindsay in his Early Illawarra notes that the names provided by Stewart are correct with the exception of William Keevors (also spelt Keevers) who was not a veteran who is included instead of John Burnett. The grants were promised by Governor Darling in 1829 and possession was given in 1830, the grants were described as 'Disbanded Soldiers grants'.³²

The veterans were some of the first settlers in the Illawarra with Stewart noting that at the time of their arrival *'...Not much interest was taken...for, in fact, there were not many people about Wollongong in those days to take an*

²⁵ Watson 1922, p.614

²⁶ Watson 1922b, p.87

²⁷ Wright 2014

²⁸ *ibid*

²⁹ 'REMINISCENCES OF ILLAWARRA.' 1894, 'EARLY ILLAWARRA' 1934, Jervis 1942, p.87

³⁰ 'REMINISCENCES OF ILLAWARRA.' 1894

³¹ *ibid*

³² 'GRANTS OF LAND.' 1839

interest in any unusual event. Besides the soldiers and the police, there were then in Wollongong only Mr. Smith and myself...'.³³ Stewart notes that 'As soon as the veterans arrived at Wollongong they went straight to their places at Dapto.... But none of them remained very long upon their land. They were all pretty old men when they came - almost too old to do much work. And then not having been accustomed to farming they did not seem to take to the land.'³⁴

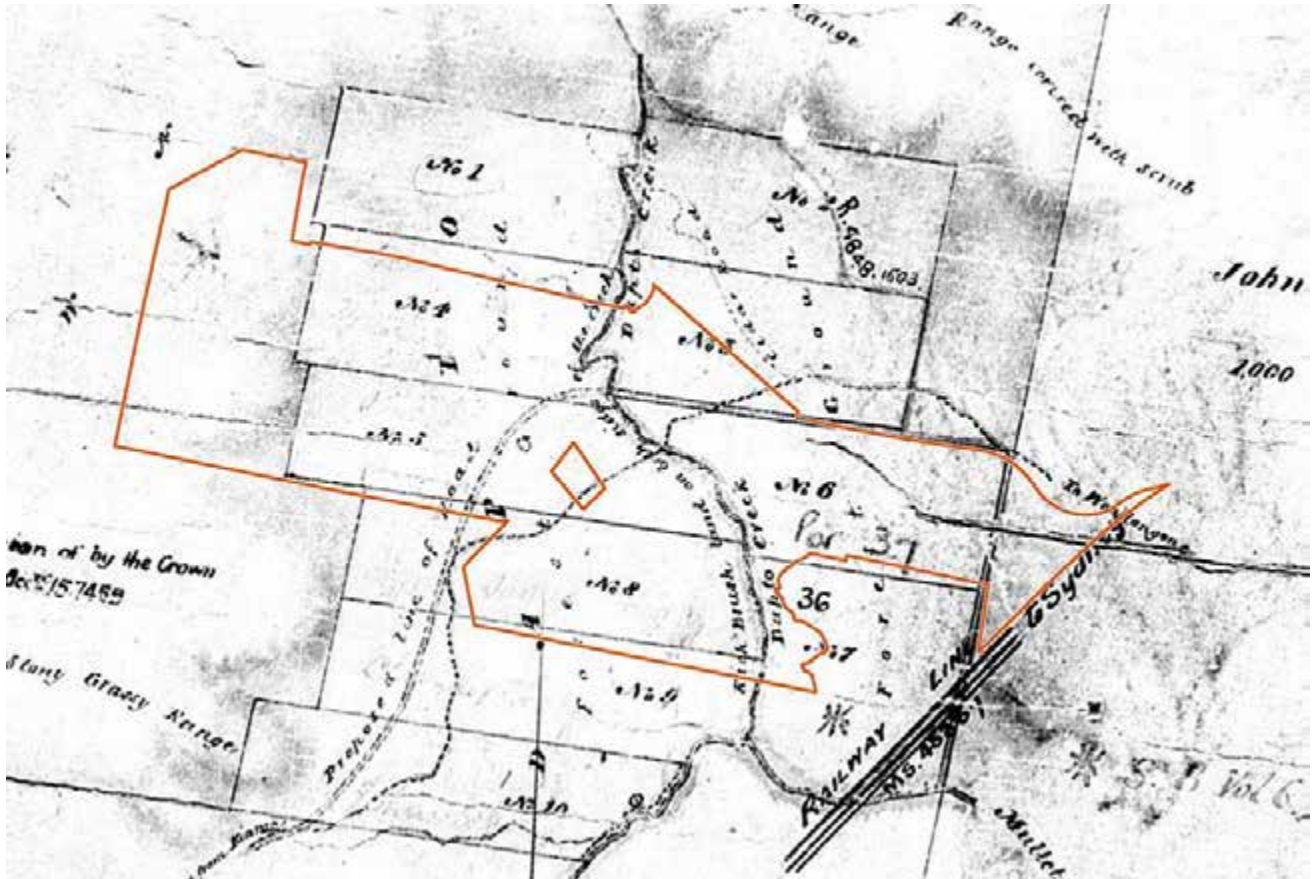


Plate 2 Knapp's 1829 plan of the Veteran Grants in the Illawarra with the study area outlined in orange (Source: NSW Land Registry Services I4.619)

³³ 'REMINISCENCES OF ILLAWARRA.' 1894

³⁴ 'REMINISCENCES OF ILLAWARRA.' 1894

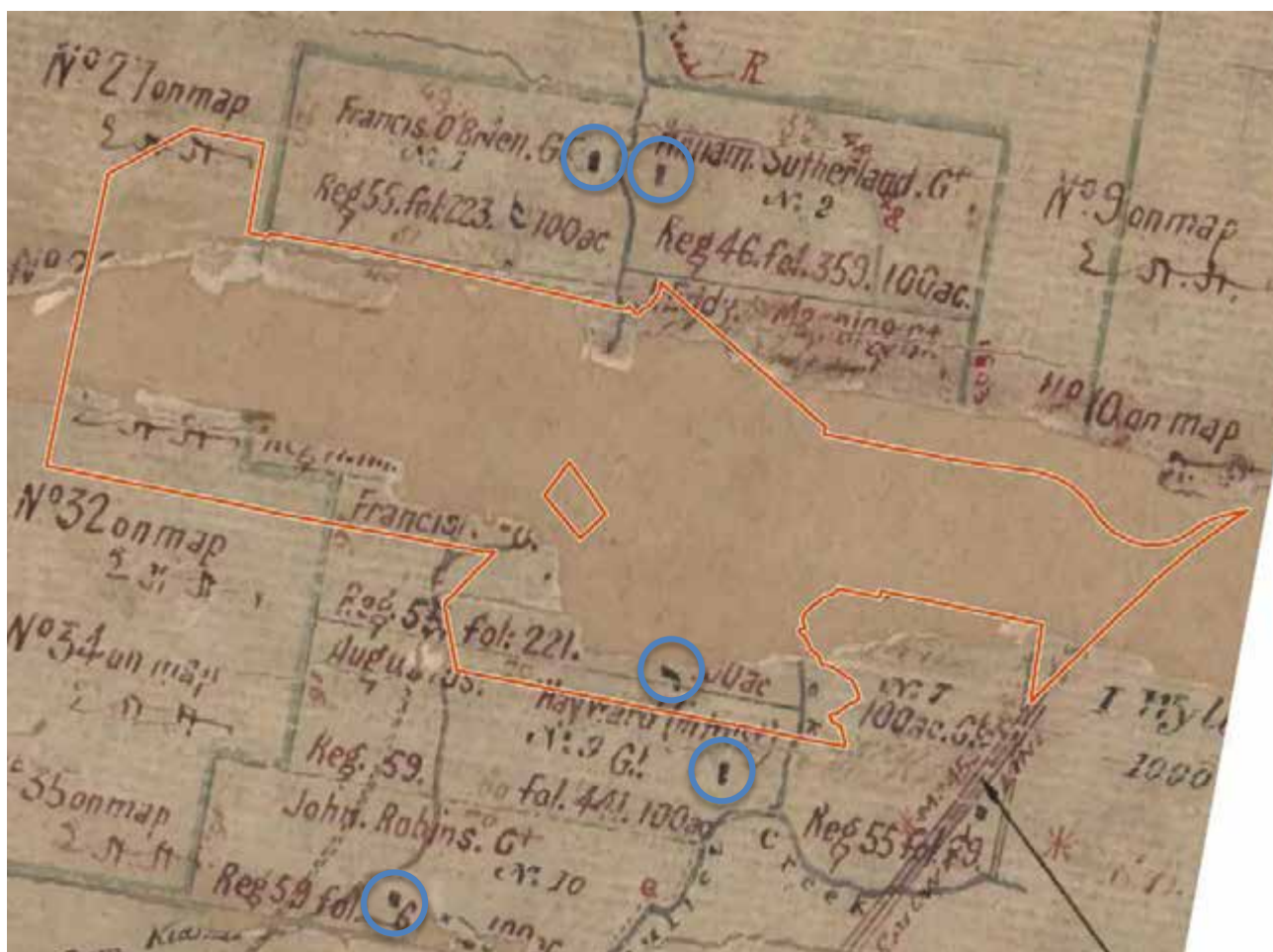


Plate 3 Knapps 1834 survey plan showing the location of veteran huts (marked with blue circles) and location of study area (Source: NSW Land Registry Services, 12-619)

The veterans were also to be supplied with a years' supply of rations. These were delivered every Saturday to Sergeant Mitchell's house, with Mitchell being the only sergeant amongst the veterans.³⁵ Convicts to assist the veterans were brought down from Hyde Park Barracks.³⁶ In 1832, wildfires damaged properties associated with the veteran's grants and Mitchell and Eccleston (likely Echlin) lost houses, barns, and a large quantity of standing wheat.³⁷ This indicates that the veteran's homesteads are likely to have included a range of structures including outbuildings. Confirmatory grants were only issued to three veterans who retained the property these were John Robbins, James Mitchell, and John McKelly; however, it is unclear how many of the veterans settled on the land only to then abandon them later.³⁸

In 1840, the transportation of convicts ceased and landholders no longer had access to a supply of cheap labor to clear their properties. Thus from the 1840s onwards large grants were subdivided for sale to smaller farmers.³⁹ On 26 May 1840, Lang subdivided part of the Kembla Grange grant into 34 farms of 10 to 20

³⁵ 'EARLY ILLAWARRA' 1934

³⁶ Stewart 1894, p.10

³⁷ 'ADVANCE AUSTRALIA Sydney Gazette.' 1832

³⁸ 'EARLY ILLAWARRA' 1934

³⁹ Jervis 1942, p.248

acres.⁴⁰ By 1841 some of these lots were occupied and while there appears to be no descriptions made of the dwellings on them at the time, the 1841 census records indicate that the sub-divisions contained dwellings primarily built of wood houses⁴¹ and also bark huts.⁴² Allotments around Kembla Grange appear to have predominantly been used for dairying, which increased in its importance from the 1840s onwards.⁴³

3.3.4 History of the study area

As mentioned above, the study area is located within veteran grants initially awarded to James Mitchell, Richard Mallon (incorrectly stated by Stewart as William Millan), Thomas O'Brien, John McKelly and Ben Bundett; and also to William Clarke who purchased land adjacent to the veteran grants (Plate 4).

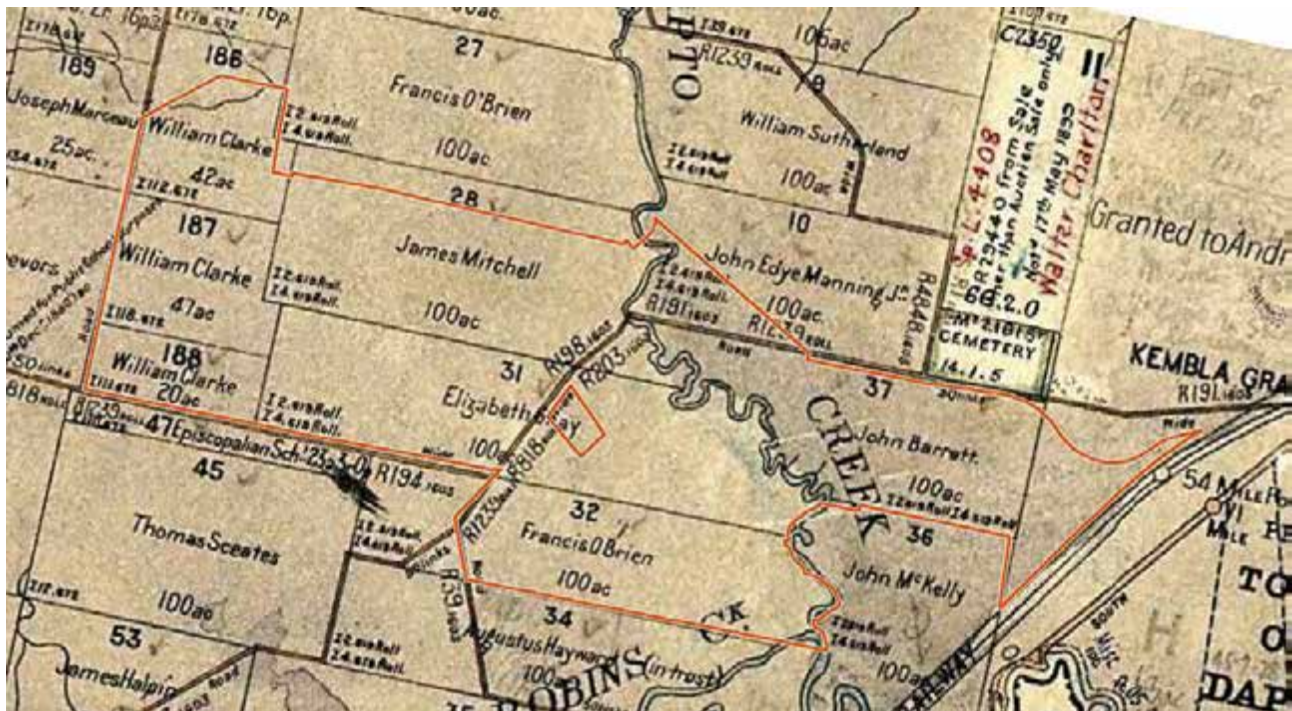


Plate 4 1895 parish map showing the land grants that are located within the study area
(Source: NSW Department of Lands)

Sergeant James Mitchell was awarded his grant (Portion 28) in 1838, although it is possible that Mitchell had already taken up residence on his allotment by 1832, as newspaper reports note a bush fire destroyed houses, barns and a wheat crop on his land.⁴⁴ Soon after, Mitchell sold his property to a man named Connolly who died after a fall from his horse when returning from Wollongong. A 1850s and 1861 road plan lists Mrs McGrury as the owner of Mitchell's original allotment, with an orchard and causeway present in the eastern corner of this allotment.⁴⁵ Portion 28 went through a number of owners before George McPhail purchased the land in 1883.

McPhail had already been granted land in 1855, which lay directly on the north side of Keevers land to the west of the study area. When Keevers sold his land to move to Jamberoo, McPhail bought it off him. George's

⁴⁰ Jervis 1942, p.88, Cousins 1948, pp.52-53

⁴¹ AncestryLibrary.com.au - 1841 New South Wales, Australia, Census

⁴² Jervis 1942, p.88, Cousins 1948, pp.52-53

⁴³ Jervis 1942, p.88, Cousins 1948, pp.52-53

⁴⁴ 'ADVANCE AUSTRALIA Sydney Gazette.' 1832b

⁴⁵ NSW Department of Lands, R203.1603

father John McPhail was the schoolmaster at Charcoal (now Unanderra), before settling in the Dapto area where he was the tenant of various farms. George married Elizabeth Smith, daughter of Corporal James Smith.⁴⁶ The property stayed within the McPhail family until it was purchased by the Australia Iron & Steel Proprietary Limited in 1958.

In 1845, William Clarke purchased three portions of land directly west of Mitchell's grant (Plate 5).⁴⁷ Each land purchase by William Clarke had a value of £1 per acre, with portion 186 having 10 acres of land cleared and fenced, with the remaining 37 acres left as forest. Water was also listed as being scarce.⁴⁸ Portion 187 comprised of 47 acres and the crown plan describes this portion as containing 'about 10 acres of this portion are cleared and fenced in – there are two good huts [1] [2] and stockyard [3] occupied by Keevors – the remainder is good forest land, water is adjacent, value 1 pound per acre'.⁴⁹ Even though this description notes two huts, the 1845 crown plan and 1891 parish map describe the structure as a house.

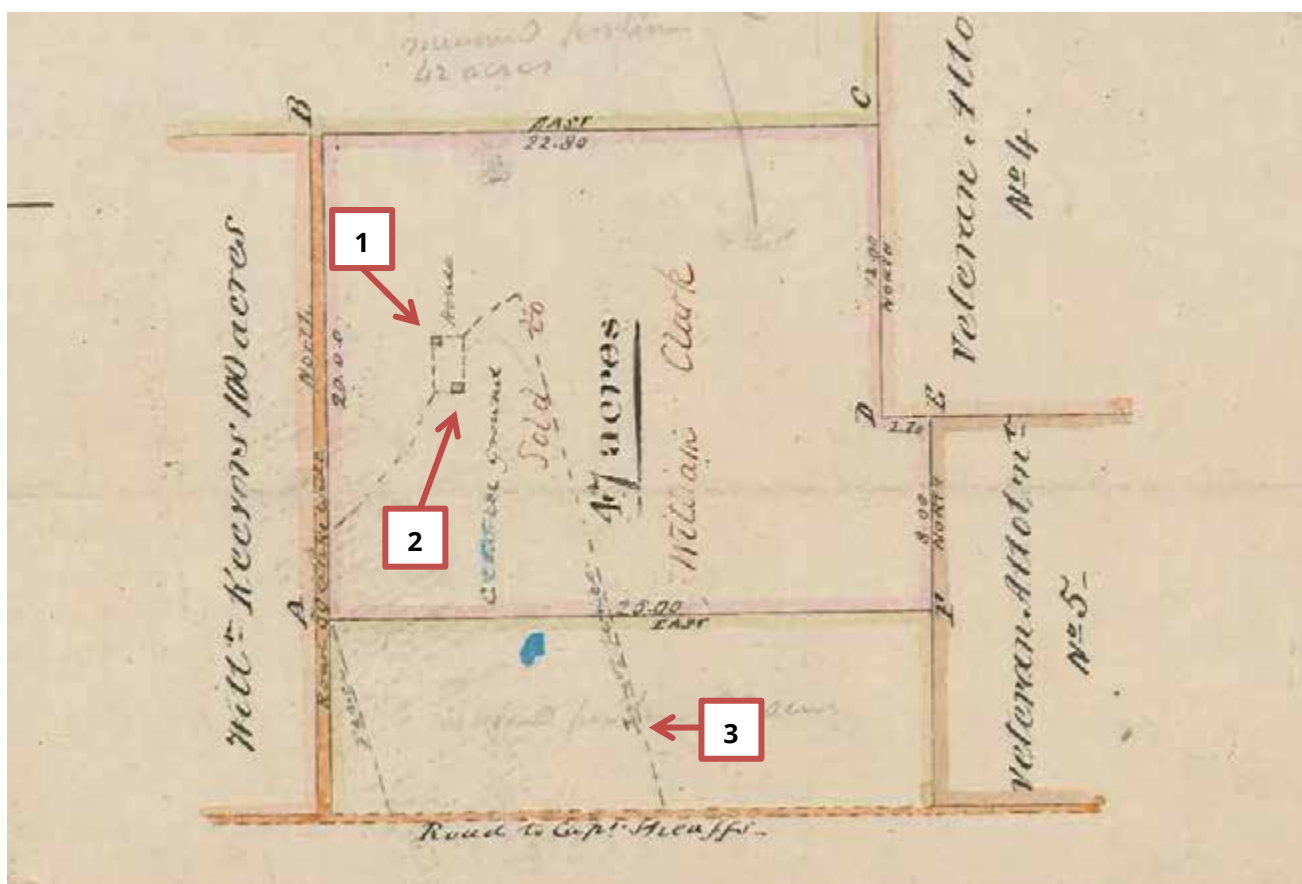


Plate 5 1845 Crown Plan showing a house [1], outbuilding [2] and fenced stockyard [3] on Willam Clarke' portion 187 (Source: NSW Land Registry Services, I118. 672)

Clarke's remaining portion 188, consisted of 20 acres of rich brush with abundant water. Portion 186 was resumed for a nightsoil depot and gazetted in 1851 (Plate 6). The house [1], outbuilding [2] and stock yard [3] are located within close proximity to Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]; therefore, it is possible the plantings are associated with the huts within Clarke's property. These trees are typical of many

⁴⁶ McDonald 1976

⁴⁷ NSW Department of Lands, Vol. 13448 Fol. 80, 'Government Gazette.' 1845, p.4

⁴⁸ NSW Department of Lands, I111.672

⁴⁹ NSW Department of Lands, I118.672

early plantings throughout the West Dapto region and were used for ornamental purposes and as windbreaks to protect nearby homesteads and associated buildings.

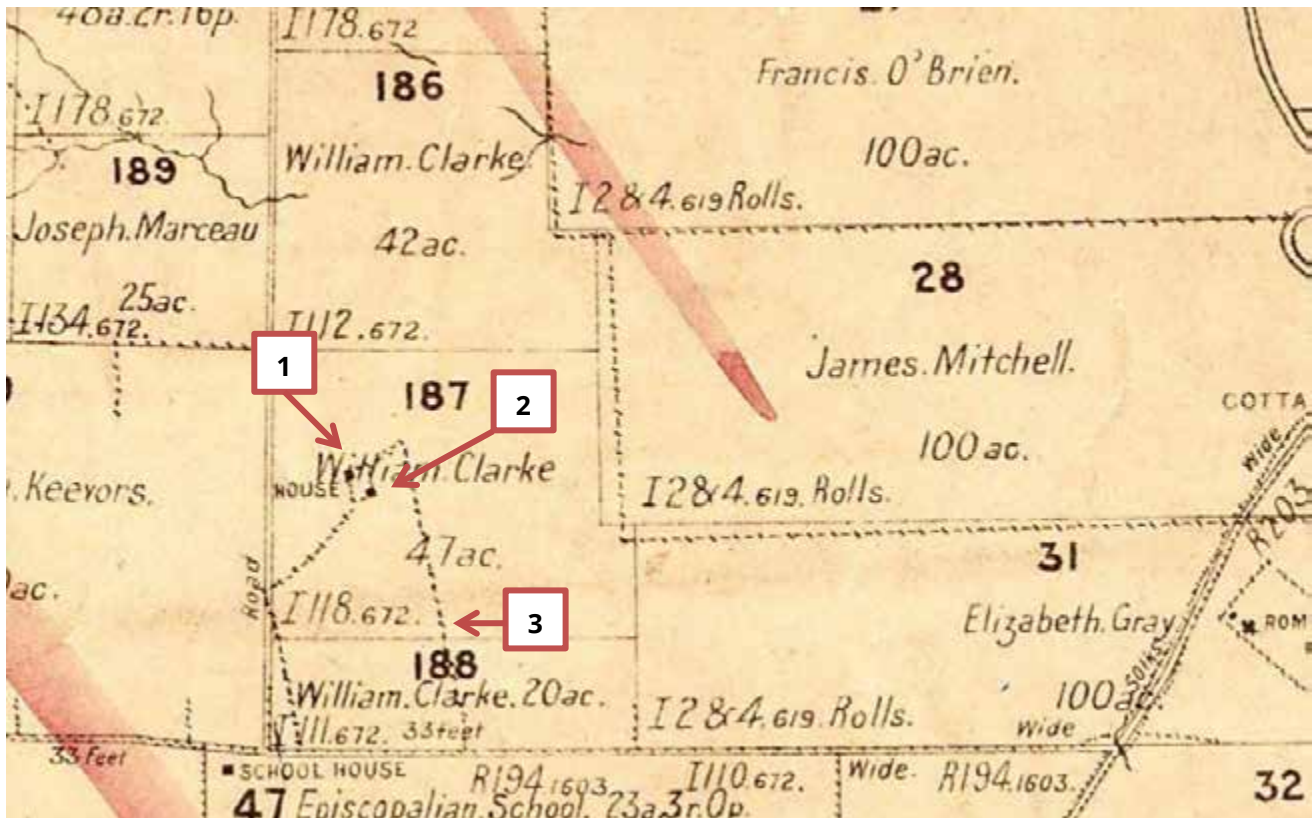


Plate 6 1891 crown plan with location of Clarke's portions (Source: NSW Land Registry Services)

Upon the death of Richard Mallon in 1843, Portion 31 passed to his wife Elizabeth. She remarried W.F. Gray, and took her husband's surname (also recorded as Cray). In 1848, Elizabeth Gray gave four acres for a Roman Catholic Church and a cemetery (Plate 7).⁵⁰ The burial land was retained; however, the land assigned for the church was not deemed sufficient and was later given back to the Gray family.⁵¹ This cemetery is known as St Johns Roman Catholic Cemetery [4] and is still in use today. Elizabeth Gray died in 1855.

⁵⁰ Cousins 1948, p.211

⁵¹ 'Reminiscences of Illawarra' 1934, p.11

An 1861 crown plan of West Dapto Road, lists 'Manton now Mrs Haslams' as the owner of Mallan's original allotment, with John McGee as an occupier (Plate 8).⁵² There is also a cockatoo fence planned in as well as the location of McGhee's hut [5]. In 1871, Mrs Haslam listed an advertisement to sell her farm at Dapto, with the listing including '60 acres, all fenced in, slab house, and a few acres cleared'.⁵³ It is likely that McGhee's hut is the house described in the advertisement.

⁵³ 'Advertising' 1871, p.3

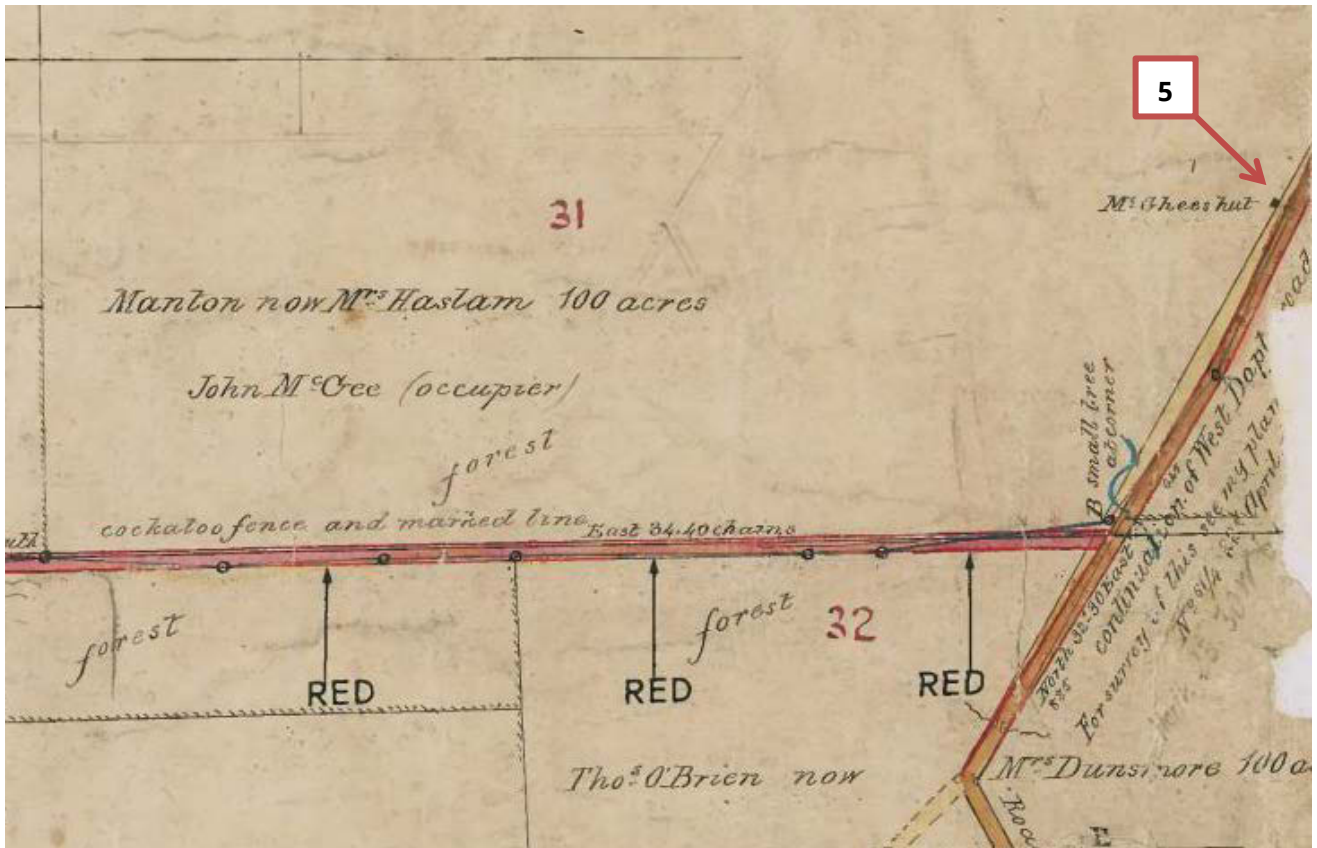


Plate 8 1861 crown plan of West Dapto Road showing location of John McGhee's hut [5] (Source: NSW Land Registry Services, R194.1603)

John Barrett was granted his land in 1839, even though it had been promised to another veteran Daniel McCoy. In 1827, Barrett arrived in Australia on the Guildford as a convict. He had been sentenced to seven years transportation for receiving stolen goods from his wife Elle, who was also transported to Australia.⁵⁴ He received his Ticket of Leave in 1831. Following the granting of his 100 acres at Kembla Grange, Barrett established an inn on the West Dapto Wollongong Road in 1848.⁵⁵ The Travellers Inn [6] was described as:

situated in the most picturesque part of that most picturesque district, Illawarra; it is about seven miles from Wollongong, with a good road to it, it is in the centre of a large and populous district, and a never-failing creek of the purest water running within twenty yards of the door; the house is built of brick, two stories high, and a verandah running round the front and one side, under-ground cellarage, good stabling, and every other convenience; it is now in full trade, and the license will be renewed to any person wishing to carry on the trade, it can remain at the option of the party to rent two or three good clover paddocks with the house, the well-known proprietor and his wife being now advanced in years, and their children being all settled away from them, they find the toil attending such a house as this too much for them, and having laid by a competency for their future support, they wish to retire from business.⁵⁶

The 1861 crown plan of West Dapto Road shows the location of the inn [6], which consists of the inn and two outbuildings, and Barrett's house [7] including an outbuilding and what appears to be a circular driveway (Plate 9). There is also a cottage and outbuilding [8] located on the bend of West Dapto Road, which may be associated with the locally listed Moreton Bay Fig [18].

⁵⁴ *Convict Records: John Barrett* n.d.

⁵⁵ 1907 'Jubilee of Dapto Show', Australian Town and Country Journal (Sydney NSW: 1870-1907), 9 January, p. 24, viewed 27 August 2019, <http://nla.gov.au/nla.news-article71588383>

⁵⁶ 1849 'To be let', The Sydney Morning Herald (NSW: 1842-1954), 11 May, p. 4, viewed 27 August 2019, <http://nla.gov.au/nla.news-article12905384>



Plate 9 Extract from an 1861 crown plan, showing the location of the Travellers Inn [6], Barrett's house [7] and a cottage with an outbuilding [8] (Source: NSW Land Registry Services, 191.1603)

It is uncertain what year Barrett's house was constructed; however, in 1858 the Illawarra Mercury describes a social ball being held by Barrett 'at the large house now occupied by him'.⁵⁷ In 1870, the house [7] was advertised to let or for sale and was described as:

*a substantial family residence, at Illawarra, West Dapto, about 6 miles from Wollongong, containing 10 rooms, verandah, detached kitchen and laundry, suitable for a respectable family, medical man, or boarding school, with 8 acres of good land and a never-failing creek of pure water running through the ground. Parties wishing to purchase will find the terms moderate.*⁵⁸

It appears that the home was never let or sold, as three years later, the Illawarra Mercury reported on Barrett's death at his home at 84 years old.⁵⁹ In 1875, Ellen Barret also passed away at home, which was

⁵⁷ 1858 'Social Ball', Illawarra Mercury (NSW: 1856-1950), 20 December, p. 3, viewed 27 August 2019, <http://nla.gov.au/nla.news-article136439700>

⁵⁸ 1870 'To let or for sale', The Sydney Morning Herald (NSW: 1842-1954), 19 February, p. 12, viewed 27 August 2019, <http://nla.gov.au/nla.news-article13200890>

⁵⁹ 1873 'Death', Illawarra Mercury (NSW: 1856-1950), 14 January, p. 2, viewed 27 August 2019, <http://nla.gov.au/nla.news-article135878985>

referred to as the 'residence of her son-in-law Mr Marceaux'.⁶⁰ Joseph Marceau was a French Canadian patriot sent to Australia as a convict in 1840 following a rebellion of British rule in Quebec, Canada. He was pardoned in 1844, and due to lack of funds remained in Australia working as a cook and servant at Longbottom, on the banks of the Parramatta River. Here, he met Mary Barrett, daughter of John Barrett and in 1850 received a land grant of 50 acres for £50. Following her father's death, Mary inherited the 97 acres at West Dapto. Joseph died in 1883 and Mary in 1909 and both are buried in the West Dapto Catholic Cemetery.⁶¹

According to Organ⁶², the Travellers Inn is known to have operated from 1848 to 1864; however, it is unclear when the building and associated structures were demolished and the 1891 crown plan shows the buildings still present (Plate 7). In addition, historical records do not indicate when the Barrett's home and the cottage at the bend in West Dapto Road were demolished. In the same crown plan, there is also a cottage and outbuilding [8] located closer to the causeway over Dapto Creek; however, the historical research could not find any additional references to the cottage. None of these buildings are present on the aerial imagery from 1948/51 (Plate 12).

Thomas O'Brien arrived in Australia in 1826 as a private with the Royal Veteran's Corp.⁶³ Accompanying him where his wife Jane and three young sons Francis, George and Edward. Following his discharge in 1829, O'Brien was given his veterans grant of 100 acres (Section 32) and employed two government and other servants on his grant. The grant was transferred to his son Francis in 1839, along with 50 acres transferred by Francis' brother Edward. Francis requested to the Colonial Secretary that the name he intended for his property would be "Clontarf". The farmhouse for this allotment stood where the Golf Club house now stands, which was the highest point on the farm. The farm was sold by Francis' two unmarried daughters to BHP.⁶⁴

3.3.5 Dapto radio telescope

In 1949, from a makeshift observatory at the foot of the Blue Mountains, Paul Wild, a scientist at the Commonwealth Scientific and Industrial Research Organisation's (CSIRO) Division of Radiophysics, used the world's first radio-spectrograph. He identified, classified and interpreted the different types of bursts of radio emission received from the sun and his classifications became the internationally accepted standards.⁶⁵ Over the next decade, Paul Wild and his colleagues revolutionised our understanding of the sun by making discoveries about magnetic storms and space weather, with the fastest particles in the Solar System being revealed. At the time, the world's best solar science was done at a Dapto dairy.

The site for a spectrograph observatory was chosen beneath Mount Kembla.⁶⁶ The key feature of the site was that it was nestled under the cliffs of the Illawarra escarpment, directly to the south of Mt Kembla, a 534 metre outcrop of solid rock. The mountain shielded radio interference from Sydney's transmitters, and a more sophisticated dynamic radio spectrograph, with three times the frequency range, was built.⁶⁷ It consisted of an improved radio spectrograph attached to three odd-looking antennas [9], an instrument that was unique in the world (Plate 10). For the next thirteen years it was at the very forefront of solar science.

⁶⁰ 1875 'Death', Illawarra Mercury (NSW: 1856-1950), 6 April, p. 2, viewed 28 August 2019, <http://nla.gov.au/nla.news-article135869069>

⁶¹ Laba 2012, p.10

⁶² Fleming et al. n.d.

⁶³ Illawarra Historical Society 1982, p.6)

⁶⁴ *Ibid.*

⁶⁵ CSIROpedia 2013

⁶⁶ Stewart 2009, p.59

⁶⁷ CSIROpedia 2013



Plate 10 Paul Wild with the rhombic aerial radio telescopes [9] at Dapto (Source: CSIRO)

By the early 1960s, solar science had moved on, radio interference from nearby heavy industry was increasing and the Division of Radiophysics had plans for a bigger and better observatory. On March 1, 1965 the Dapto solar observatory was officially handed over to the then Wollongong University College and the University moved Wild's equipment to another site where it was used for teaching until vandalism and neglect rendered it useless. After years of brilliant science, the world's first solar spectrographic observatory was broken apart and sold for scrap.

3.3.6 BlueScope Steel acquisition of the study area

From the late 1950s, BlueScope Steel began purchasing portions of the study area. In 1958, the Australia Iron & Steel Proprietary Limited purchased the eastern half and south-western portion of Lot 1 DP 588139. Another small portion of land on the eastern portion of the same lot was purchased by the company in 1959, and by 1967 the entirety of Lot 1 DP 588139 had been purchased.

Lot 1002 DP 1192327, Lot 1 DP650528, Lot 1 DP588140, and Lot 2 DP230137 were all acquired by the agricultural brokers Goldsborough Mort and Company Ltd between 1951 and 1962 before being purchased by Australia Iron & Steel Proprietary Limited, BHP Steel (AIS) Pty Ltd and BlueScope Steel (AIS) Pty Ltd in the early 1960s. The owners of each portion prior to the BlueScope Steel acquisition is shown in Plate 11. From the acquisition of the study area by BlueScope Steel, various allotments, portions and houses have been rented.

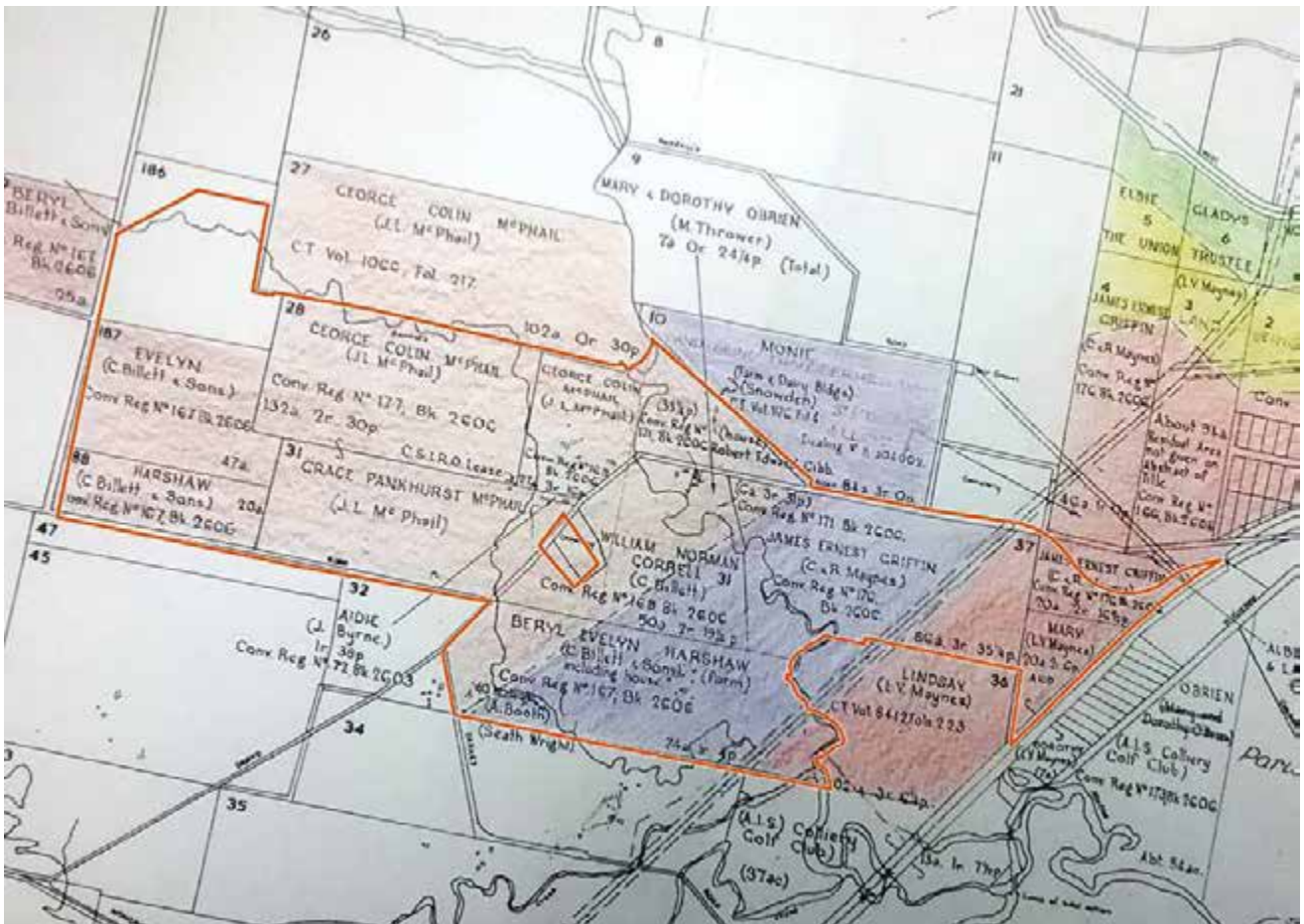


Plate 11 1960 plan showing BlueScope Steel's Kembla Grange properties shaded in colour (Source: BlueScope Steel records)

There is currently one occupied house, "Koondi" [11], and two dilapidated houses within the study area. For the purposes of this report, the two dilapidated houses will be referred to by the names of the last tenants – Joliffe house [10] and Billett house [16]. Furthermore, seven houses are no longer present and were demolished after their acquisition by BlueScope Steel. Four of these houses will also be referred to by the names of the last tenants – Booth house [12], Watts house [13], Wright house [14] and Cotter house [15]. The three remaining houses [19] east of Dapto Creek on West Dapto Road are visible in the aerial imagery from 1948; however, the historical research and BlueScope Steel records make no mention of these buildings.

The following aerial images show the changes within the study area from 1948 onwards.



Plate 12 1948-51 aerial of the western portion of the study area, marked in red, showing the extensive vegetation clearance (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 14, 15 and 16 are marked with blue squares. The Bunya pines are just visible on the far left of the aerial



Plate 13 1948-51 aerial of the eastern portion of the study area, marked in red, showing the extensive vegetation clearance (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 15, 17 and 18 are marked with blue squares

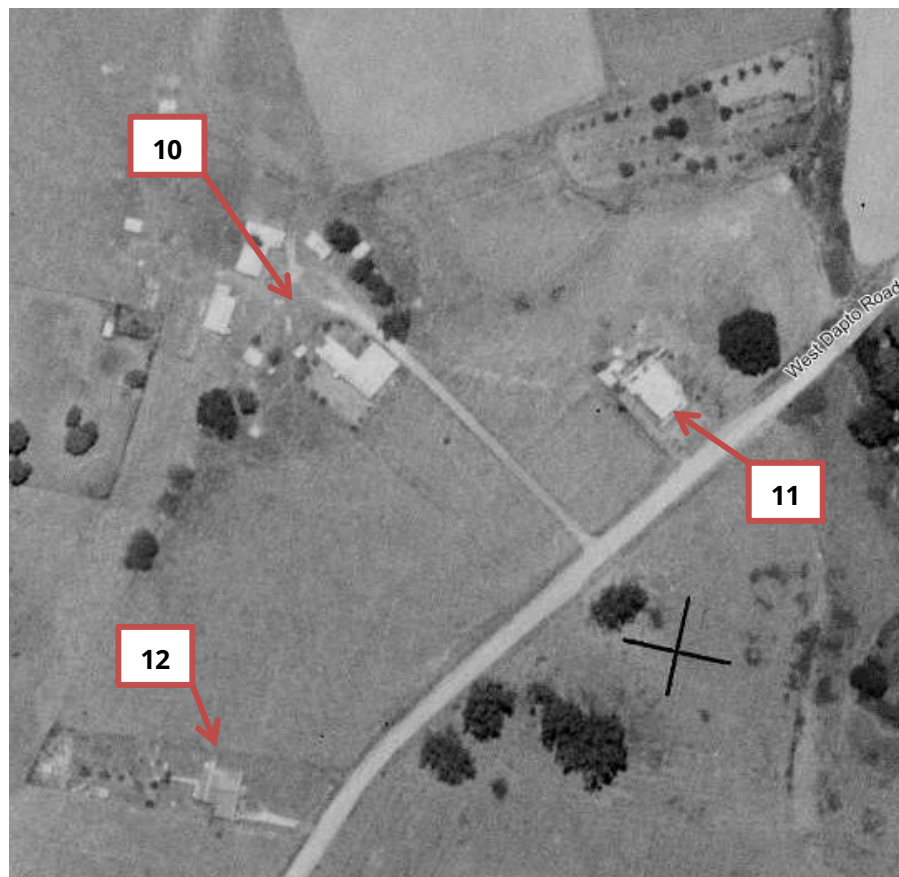


Plate 14 Detail 1 of the 1948-51 aerial showing “Koondi” [11], Joliffe house and its outbuildings [10], and Booth house [12]



Plate 15 Detail 2 of the 1948-51 aerial showing three unnamed houses [19] east of Dapto Creek along West Dapto Road



Plate 16 Detail 3 of the 1948-51 aerial showing Watts house [13] and associated outbuildings



Plate 17 Detail 4 of the 1948-51 aerial showing Billett house and associated outbuildings [16]



Plate 18 Detail 5 of the 1948-51 aerial showing Wright house [14] and Cotter house [15]

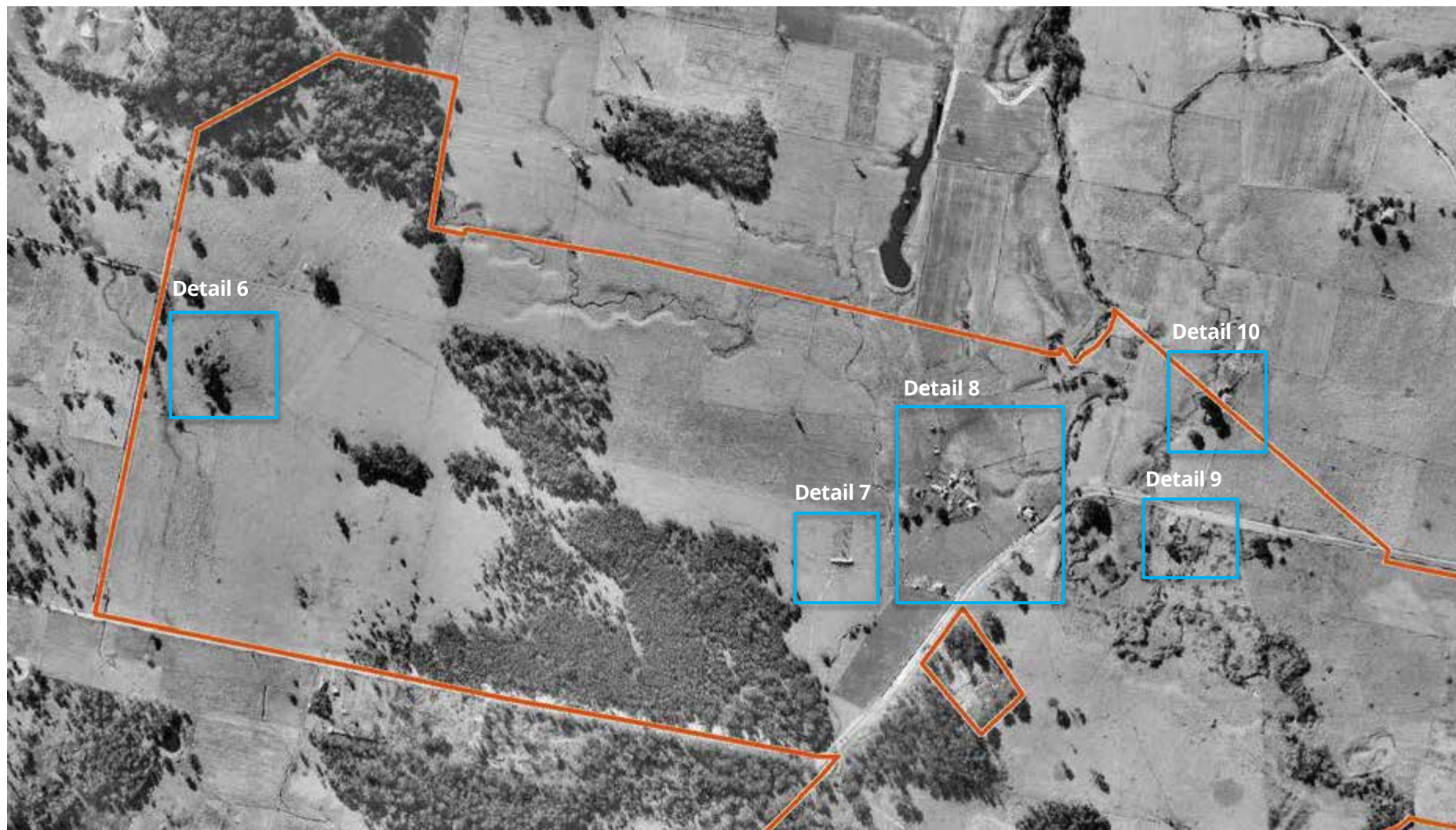


Plate 19 1961 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 21, 22, 23, 24 and 25 are marked with blue squares



Plate 20 1961 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 24, 26 and 27 are marked with blue squares

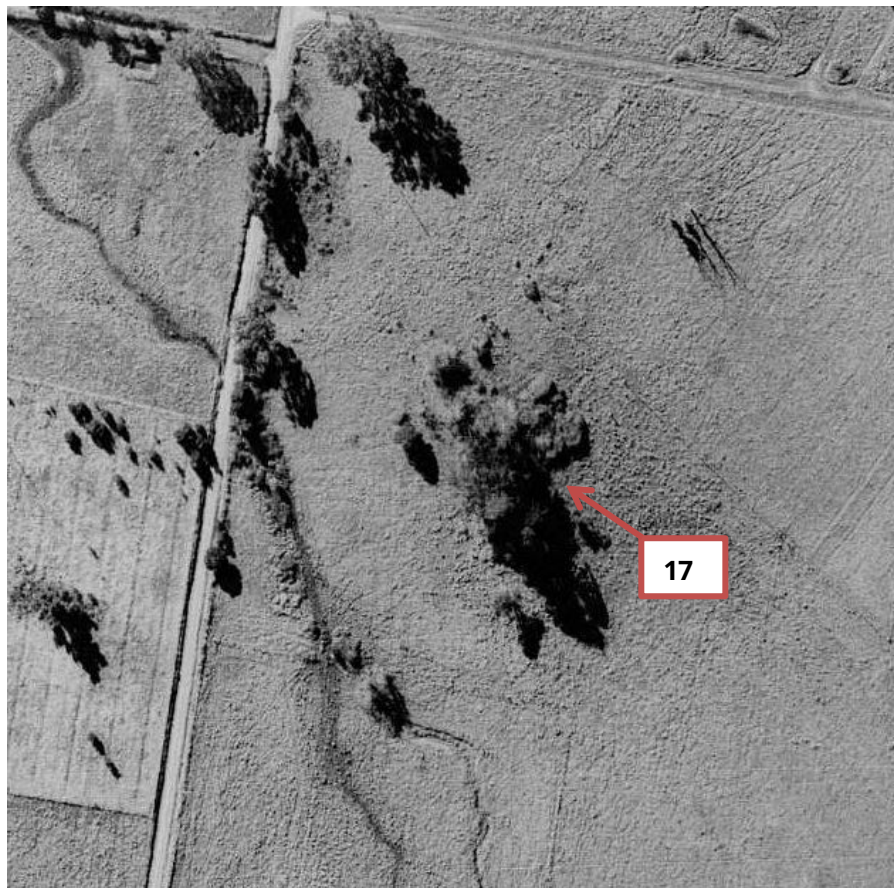


Plate 21 Detail 6 of the 1961 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]; however, Clarke house [1] and outbuilding [2] are not present

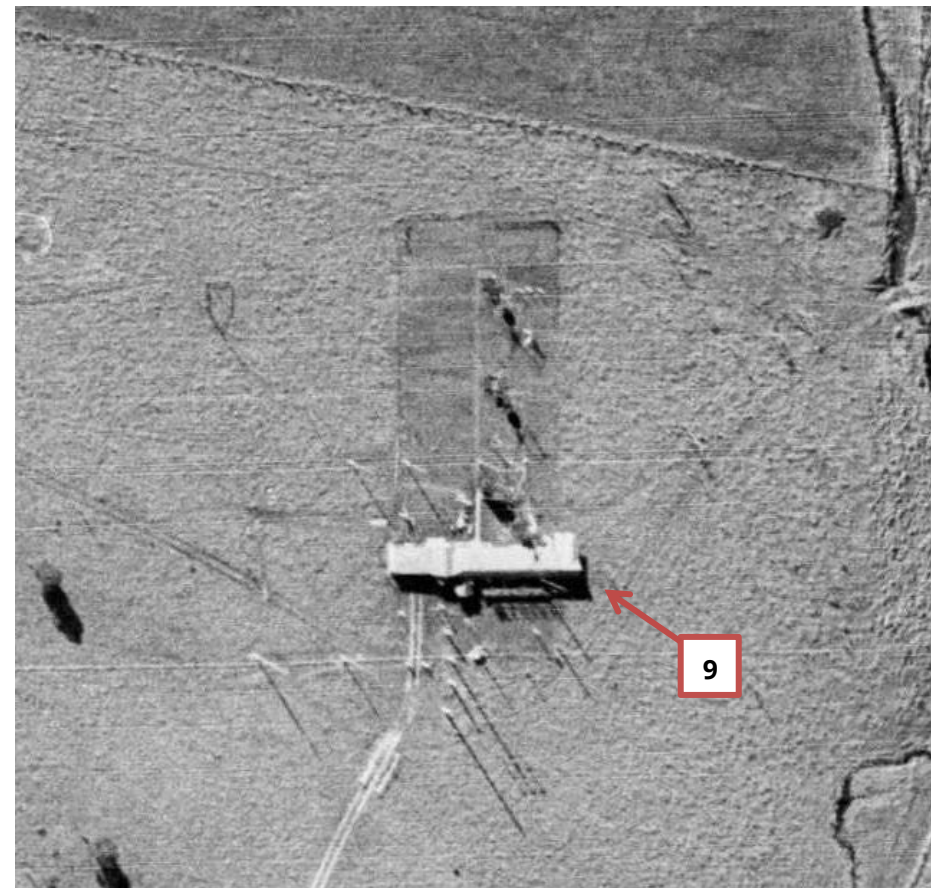


Plate 22 Detail 7 of the 1961 aerial showing the Dapto radio telescopes and associated building [9]



Plate 23 Detail 8 of the 1961 aerial showing “Koondi” [11], Joliffe house and outbuildings [10], and Booth house [12]. The rear section of Joliffe house has been removed and a large shed constructed west of the house



Plate 24 Detail 9 of the 1961 aerial showing one of the three houses [19] has been demolished

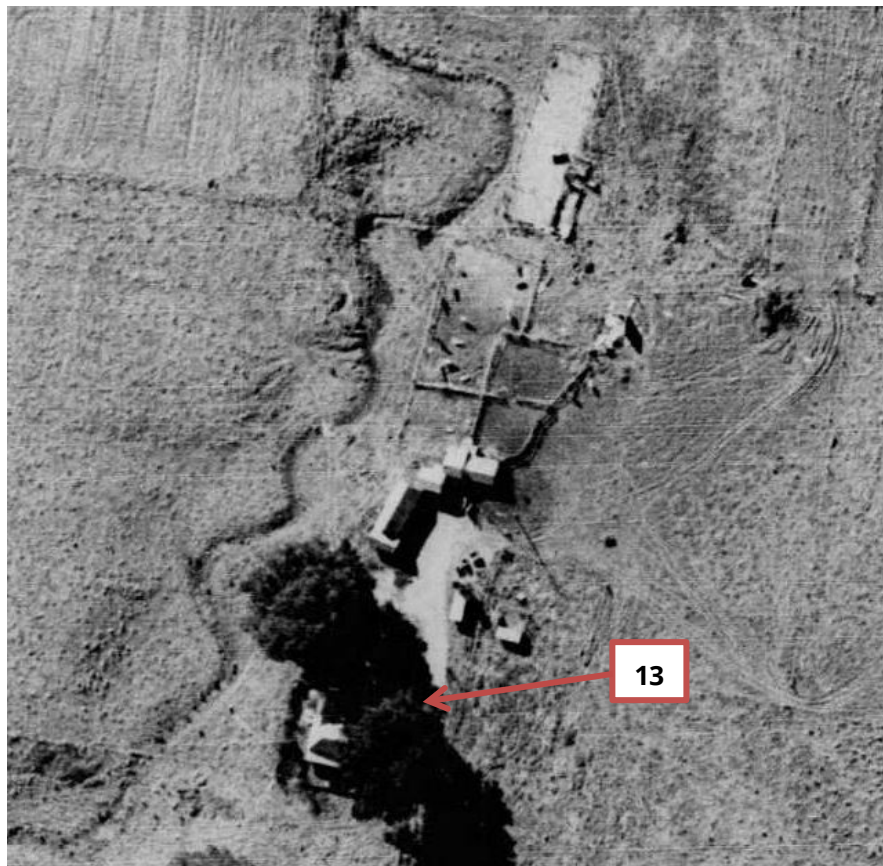


Plate 25 Detail 10 of the 1961 aerial showing Watts house [13] and associated outbuildings. The two outbuildings to the north of the house have been demolished



Plate 26 Detail 11 of the 1961 aerial showing Billett house [16] and outbuildings remain relatively unchanged since the 1948/51 aerial

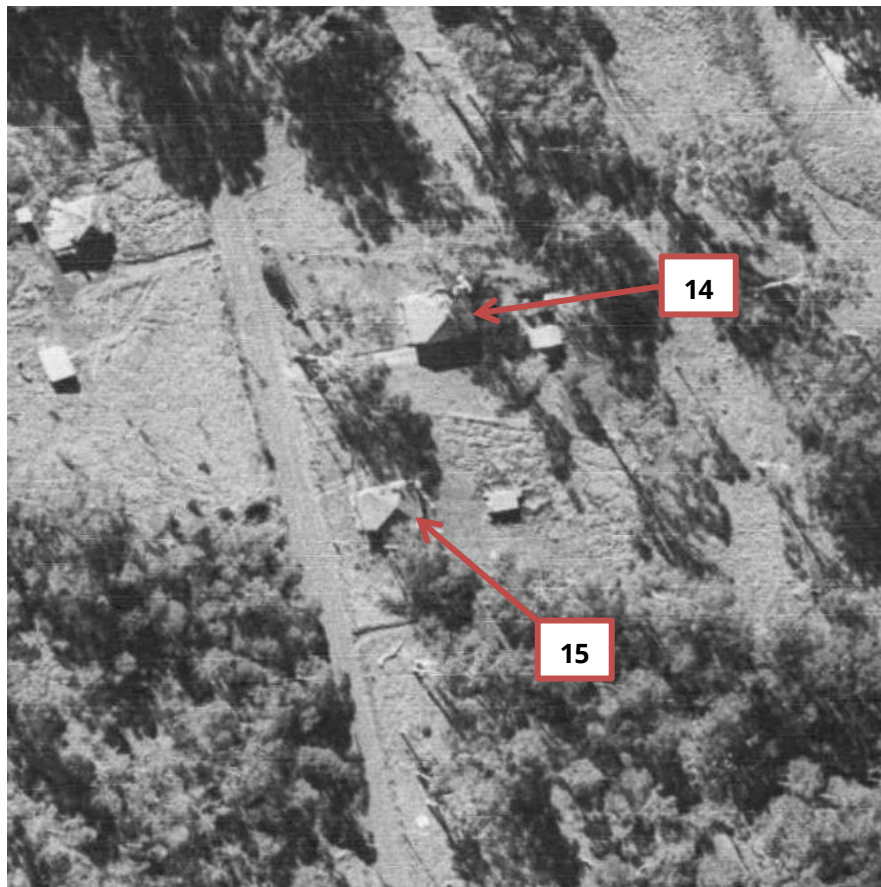


Plate 27 Detail 12 of the 1961 aerial showing Wright house [14] and Cotter house [15] remain relatively unchanged since the 1948/51 aerial



Plate 28 1977 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 30, 31, 32, 33 and 34 are marked with blue squares



Plate 29 1961 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 34, 35 and 36 are marked with blue squares



Plate 30 Detail 13 of the 1977 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]. Since the 1961 aerial, there appears to be some small animal shelters present

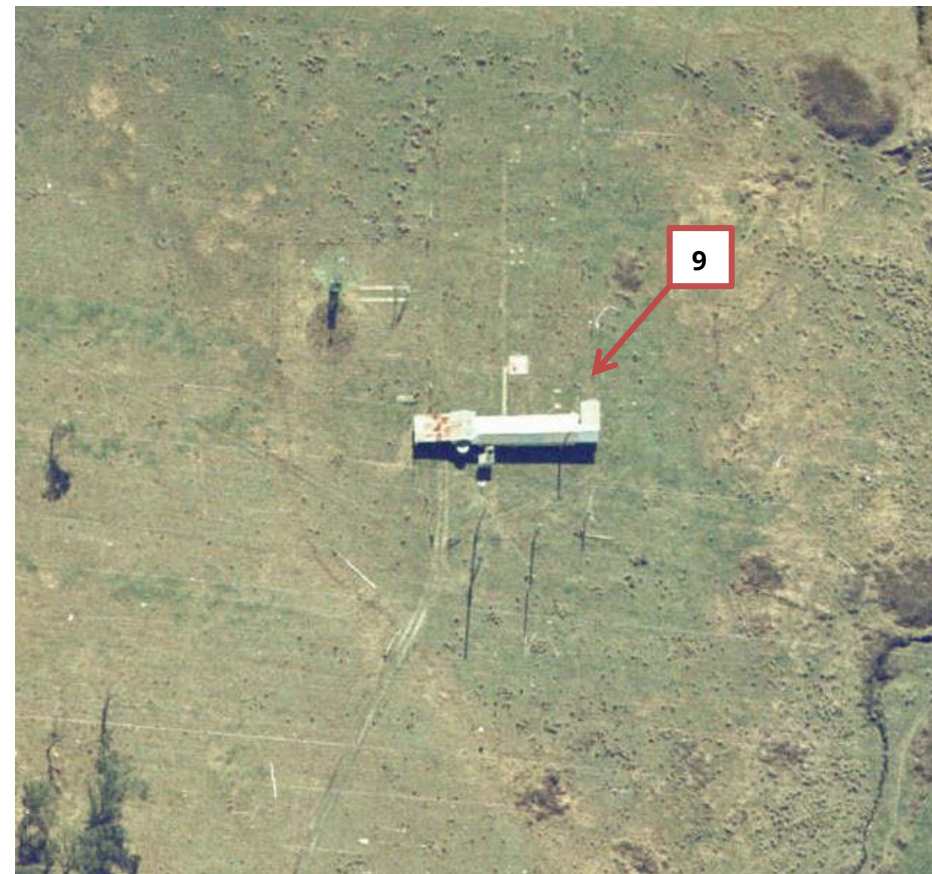


Plate 31 Detail 14 of the 1977 aerial showing the Dapto radio telescope building is still present, although the radio towers have been removed



Plate 32 Detail 15 of the 1977 aerial showing “Koondi” [11], Joliffe house and outbuildings [10], and Booth house [12]. Joliffe house appears to still be occupied at this time



Plate 33 Detail 16 of the 1977 aerial showing Watts house [13] and associated outbuildings. Since the 1961 aerial, all of the sheds have been removed and the railway line now passes to the north of the property. A new shed has been constructed to the south of the house



Plate 34 Detail 17 of the 1977 aerial showing the all of the houses [19] have been demolished



Plate 35 Detail 18 of the 1977 aerial showing Billett house [16] and outbuildings. Since the 1961 aerial, a number of sheds have been removed or are in a dilapidated state



Plate 36 Detail 19 of the 1977 aerial showing that Wright house [14] and Cotter house [15] have been demolished



Plate 37 1993 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 39, 40, 41 and 42 are marked with blue squares



Plate 38 1993 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plate 43 is marked with a blue square



Plate 39 Detail 20 of the 1993 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]. Since the 1977 aerial, the small animal shelters have been demolished



Plate 40 Detail 21 of the 1993 aerial showing the Dapto radio telescopes and associated building [9] have been removed



Plate 41 Detail 22 of the 1993 aerial showing “Koondi” [11], Joliffe house and outbuildings [10]; however, Booth house [12] has been demolished. Joliffe house appears to still be occupied at this time and a number of outbuildings have been constructed at “Koondi”



Plate 42 Detail 23 of the 1993 aerial showing Watts house [13] and sheds to the south have remained relatively unchanged



Plate 43 Detail 24 of the 1993 aerial showing Billett house [16] and outbuildings. Since the 1977 aerial, more sheds have been removed



Plate 44 2018 aerial of the western portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plates 46, 47 and 48 are marked with blue squares



Plate 45 2018 aerial of the eastern portion of the study area, marked in red (Source: Wollongong City Council and Spatial Services Aerial Adastra Aerial Surveys). Detail for Plate 49 is marked with a blue square



Plate 46 Detail 25 of the 2018 aerial showing the heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17] have remained largely the same since the 1993 aerial



Plate 47 Detail 26 of the 2018 aerial showing “Koondi” [11] and Joliffe house and outbuildings [10]. Since the 1993 aerial, Joliffe house has been unoccupied and fallen into a state of disrepair. Lantana and weeds have grown over the sheds and parts of the house. “Koondi” has remained relatively unchanged



Plate 48 Detail 27 of the 2018 aerial showing Watts house [13] has been demolished and additional sheds and storage containers to the south have been added



Plate 49 Detail 28 of the 2018 aerial showing Billett house [15] and outbuildings are unoccupied and fallen into a state of disrepair

3.4 Chronology of the study area

Based upon the historical research presented it is possible to summarise the chronology of the study area, this is presented in Table 2. The location of these items are shown in Figure 4.

Table 2 Chronological development of the study area

No.	Building	Location	Status	Date
1	Clarke house	Lot 1 DP 588139	Demolished	1845 – pre-1948
2	Clarke outbuilding	Lot 1 DP 588139	Demolished	1845 – pre-1948
3	Clarke fenced stockyard	Lot 1 DP 588139	Demolished	1845 – pre-1948
4	St Johns Roman Catholic Cemetery	Lot 1 DP 1037747	Present	1848 – present
5	McGhee's hut	Lot 1 DP 588139	Demolished	1861 – pre-1948
6	Travellers Inn and outbuildings	Lot 1002 DP 1192327	Demolished	1848 – 1891
7	Barrett's house and outbuilding	Lot 1002 DP 1192327	Demolished	1848 – 1891
8	Cottage and outbuilding	Lot 1002 DP 1192327	Demolished	1848 – 1891
9	Radio telescopes	Lot 1 DP 588139	Demolished	1952 – 1965
10	Joliffe house and outbuildings	Lot 1 DP 588139	Present (dilapidated)	Early 20th century – present
11	"Koondi" house	Lot 1 DP 588139	Present (occupied)	Early 20th century – present
12	Booth house	Lot 1 DP 588139	Demolished	Early 20th century – pre-1993
13	Watts house	Lot 2 DP 230137	Demolished	Early 20th century – pre-1993
14	Wright house	Lot 1 DP 588140	Demolished	Early 20th century – pre-1977
15	Cotter house	Lot 1 DP 588140	Demolished	Early 20th century – pre-1977
16	Billett house and outbuildings	Lot 1 DP 588140	Present (dilapidated)	Early 20th century – present
17	Group of Bunya Pines, Moreton Bay Figs and Hills Figs	Lot 1 DP 588139	Present	Pre-1948
18	Moreton Bay Fig	Lot 1 DP 588140	Present	Pre-1948
19	Three unnamed houses	Lot 1002 DP 1192327	Demolished	Unknown

3.5 Research themes

Contextual analysis is undertaken to place the history of a particular site within relevant historical contexts in order to gauge how typical or unique the history of a particular site actually is. This is usually ascertained by gaining an understanding of the history of a site in relation to the broad historical themes characterising

Australia at the time. Such themes have been established by the Australian Heritage Commission and the Heritage Office and are outlined in synoptic form in Historical Themes⁶⁸.

There are 38 State historical themes, which have been developed for NSW, as well as nine National historical themes. These broader themes are usually referred to when developing sub-themes for a local area to ensure they complement the overall thematic framework for the broader region. A review of the contextual history in conjunction with the Illawarra historical thematic history has identified four historical theme which relates to the occupational history of the study area. This is summarised in Table 3.

Table 3 Identified historical themes for the study area

Australian theme	NSW theme	Local theme
Developing local, regional and national economies	Agriculture	Developing a dairy and agricultural industry, working on the land, settling the Illawarra
	Pastoralism	Settling the Illawarra, developing a dairy and agricultural industry
	Science	Contribution to solar science in Australia
Building settlements, towns and cities	Accommodation	Provision of accommodation for farmers in the Kembla Grange area
	Land tenure	Identifying forms of ownership and occupation
Developing Australia's cultural life	Leisure	Establishment of an inn and supplying liquor and accommodation in hotels
Marking the phases of life	Birth and Death	Establishment of a cemetery

⁶⁸ NSW Heritage Council 2001

4 Physical inspection

A physical inspection of the study area was undertaken on 3 September 2019, attended by Samantha Keats (Consultant Archaeologist, Biosis). The principal aims of the survey were to identify heritage values associated with the study area; this included any heritage items (Heritage items can be buildings, structures, places, relics or other works of historical, aesthetic, social, technical/research or natural heritage significance. 'Places' include conservation areas, sites, precincts, gardens, landscapes and areas of archaeological potential).

4.1 Identified heritage items

The identified heritage items within the study area consist of the Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. 6326) and the Moreton Bay Fig (Item no. 6329).

The Moreton Bay Fig [18] is situated in a cleared paddock adjacent to Dapto Creek. The Moreton Bay Fig is typical of many early plantings introduced throughout the West Dapto region used for ornamental purposes and as windbreaks to protect nearby homesteads and associated buildings. The tree is in a stable condition (Plate 50).



**Plate 50 Listed heritage item
I6329, Moreton Bay Fig**

The Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17] are located on a rise adjacent to Paynes Lane on the western boundary of Lot 1 DP 588139 (Plate 51). The trees are listed on the Wollongong LEP 2009 but are no longer accessible on the NSW State heritage register. The trees are typical of many early plantings

throughout the West Dapto region used for ornamental purposes and as windbreaks to protect nearby homesteads and associated buildings. During the field inspection, a number of historical items were noted, which included a steel pot, sandstone flagging, steel strapping and a steel door (Plate 52).



Plate 51 Listed heritage item I6326, Group of Bunya Pines, Moreton Bay Figs and Hills Figs



Plate 52 Historical items located near heritage item I6326

4.2 Landscape character assessment

The purpose of this section is to provide an analysis and description of the study area as part of a cultural landscape. The cultural landscape concept emphasises the landscape-scale of history and the connectivity between people, places and heritage items. It recognises the present landscape is the product of long-term

and complex relationships between people and the environment. For the purposes of this report cultural landscapes are defined as: ‘... those areas which clearly represent or reflect the patterns of settlement or use of the landscape over a long time, as well as the evolution of cultural values, norms and attitudes toward the land’⁶⁹.

4.2.1 An overview of cultural landscapes

In order to fully understand the heritage significance of the study area it is necessary to consider the character of the landscape within which it is situated. The heritage value of a landscape may be related to its aesthetic, archaeological, historical, scientific, social, or architectural values, each or all of these values can - exist at any one time. The identification of these values is important in discussing the study area and its constituent elements heritage significance.

Three general landscape categories have been developed and applied by heritage organisations to assist in understanding different types of landscapes⁷⁰:

- **Designed landscapes:** Those that are created intentionally such as gardens, parks, garden suburbs, city landscapes, ornamental lakes, water storages and campuses.
- **Evolved landscapes:** Those that display an evolved land use in their form and features. They may be 'relict' such as former mining or rural landscapes. They may be 'continuing' such as modern active farms, vineyards, plantations or mines.
- **Associative cultural landscapes:** These are landscape features that represent religious, artistic, sacred or other cultural associations to individuals or communities.

4.2.2 The study area as cultural landscape

The study area can be considered as a cultural landscape, which has been cleared and adapted largely for the purpose of dairying and farming activities, along with domestic occupation. As a result of European settlement in the early 19th century, the cultural landscape of Kembbla Grange is reflective of the modifications made to the natural landscape over time. The study area is also a relict evolved landscape, having developed as multiple rural properties since the veteran land grants were made in 1829. This relict evolved landscape has been heavily modified for dairying and agriculture, with internal and external boundaries formed by a variety of timber and wire fencelines, and by modified and natural vegetation. Within this landscape are multiple complexes of domestic, farming-related structures and occupational areas with views to the Illawarra Escarpment.



4.2.3 Views to and from the study area



It is important to analyse and describe views to and from components within a cultural landscape to help understand how it is experienced and to understand the nature of an evolving landscape. This enables a greater understanding of what aspects of the landscape need to be conserved and protected. Significant views to, from and within the study area are described in this section and shown in Table 4.



⁶⁹ (Context Pty Ltd et al. 2002)

⁷⁰ (UNESCO 2012)

Table 4 Key view points associated with the study area

View	Physical and visual qualities	View
1	South facing view of the Illawarra Escarpment from West Dapto Road adjacent to the northern boundary of Lot 1002 DP 1192327	
2	West facing view the Illawarra Escarpment and locally listed Moreton Bay Fig (Item no. 6329) located on the bend of West Dapto Road.	

View	Physical and visual qualities	View
3	North facing view of the Mount Kembla from West Dapto Road adjacent to the northern boundary of Lot 1002 DP 1192327	
4	East facing view towards the dilapidated remains of a cottage within Lot 1 DP588140	

View	Physical and visual qualities	View
5	North facing view of the Mount Kembla from the locally listed Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. 6326), Sheaffes Road, located on the western boundary of the study area.	
6	West facing view of the Illawarra Escarpment from inside the Catholic Cemetery	

4.3 Built fabric assessment

The study area is located in Kembla Grange between the Illawarra Escarpment and Lake Illawarra. It encompasses pastoral lands and features a number of built items. The identified built items consist of a range of buildings including a residential dwellings, sheds, and outbuildings associated with dairying and farming.

4.3.1 “Koondi”

“Koondi” is located on West Dapto Road on the western side of Dapto Creek. The single story timber framed house is clad in weatherboard with a corrugated iron hip roof and adjoining garage (Plate 53). The house is set on brick foundations and concrete slab foundation with double hung windows and an open verandah at the front of the house. There appears to be more recent extensions constructed of brick, timber and fibro sheeting. A number of small structures are located north of the house but were unable to be accessed during the site investigation. The house yard is enclosed in school metal fencing and there is a curved concrete driveway joining West Dapto Road. The house is in fair condition and is currently occupied by tenants. “Koondi” was constructed during the early to mid-20th century and is unlikely to hold any historical significance.



Plate 53 East facing façade of the house, facing east

4.3.2 Joliffe house and outbuildings

Joliffe house and its outbuildings are located approximately 75 metres west of “Koondi”. The gable-fronted house is constructed of timber and weatherboard paneling and features corrugated iron roofing and a brick chimney with associated fireplace and hearth (Plate 54). The house is set on brick or stone foundations and features a timber-post verandah with a low-pitched skillion roof of corrugated metal which runs along the eastern side. The interior of the house that was accessible showed timber lining boards, timber architraves and skirting and wide timber floorboards (Plate 55). The house is overgrown with lantana and is in a severe state of dilapidation. Historical research was unable to determine the date of construction; however, the architectural style of the house is consistent with Edwardian style homes that date from the early 20th century. Therefore, the house is unlikely to hold any historical significance.



Plate 54 East facing façade of the house, facing west, showing the overgrown and dilapidated state of the building



Plate 55 North facing view of the interior of the house

Several outbuildings are also present within the vicinity of Joliffe house and were heavily overgrown with lantana making access during the site investigation difficult. They consist of five sheds or barns constructed of timber frame with weatherboard cladding and corrugated metal roofing (Plate 56). They are all currently in a dilapidated state and overgrown with vegetation. There is also a large Moreton Bay Fig tree located south west of Joliffe house. The 1948/51 aerial imagery show this as a relatively immature tree and is unlikely to hold any historical significance.



Plate 56 West facing view of one of the outbuildings showing the overgrown and dilapidated state of the structure

4.3.3 Billett house and outbuildings

Billett house and its outbuildings are located approximately 560 metres east of West Dapto Road within Lot 1 DP 588140. The house and the four outbuildings are in a severe state of dilapidation and most of them have collapsed making access during the site investigation difficult (Plate 57). However, they appear to be constructed of timber with weatherboard paneling and corrugated iron roofing (Plate 58). Historical research was unable to determine the date of construction; however, the architectural style of the house is consistent with Edwardian style homes that date from the early 20th century. Therefore, the house is unlikely to hold any historical significance.



Plate 57 West facing view of Billett house showing the collapsed building and lantana growth



Plate 58 North east facing view of one of the outbuildings showing the overgrown and dilapidated state of the structure

4.4 Archaeological assessment

The potential archaeological resource relates to the predicted level of preservation of archaeological resources within the study area. Archaeological potential is influenced by the geographical and topographical location, the level of development, subsequent impacts, levels of onsite fill and the factors influencing preservation such as soil type. An assessment of archaeological potential has been derived from the historical analysis undertaken during the preparation of this report.

4.4.1 Archaeological resource

This section discusses the archaeological resource within the study area. The purpose of the analysis is to outline what archaeological deposits or structures are likely to be present within the study area and how these relate to the history of land use associated with the study area. The historical context presented in this report indicates that the study area is likely to contain deposits and features related to the agricultural and domestic occupation. Archaeological resources likely to be present within the study area may consist of structural remains associated with early 19th to early 20th century residential, commercial and farm buildings. For the purposes of this section, archaeological resources will be divided into existing and demolished buildings.

4.4.1.1 Extant buildings

It is likely that archaeological material may be present in the portions of the study area containing Joliffe and Billet house and their associated outbuildings. There is the potential for underfloor deposits to be present within the current footprint of both houses, while compacted floor deposits may also be present within the sheds associated with each house. There is also the potential for secondary deposits, such as rubbish pits, privies and artefact scatters to be present in the vicinity of both of these houses.

4.4.1.2 Demolished buildings

Archaeological remains associated with timber buildings, such as Clarke's hut and McGhee's hut, are likely to be ephemeral in nature (i.e. beam slots, post holes), but more substantial structural remains associated with hearths and footings may be present depending on the construction techniques utilised and the degree of intactness. Sub-floor deposits may be present, but may be truncated through later development or disturbance, while dense archaeological deposits may be present in the form of backfilled features such as wells and privies. There are several brick structures recorded as being within the study area such as Barrett's house and the Travellers Inn and its associated stores and outbuildings, which may contain more substantial structural remains along with similar corresponding deposits. The Travellers Inn in particular is likely to contain deep foundations, potentially a cellar and dense artefactual deposits associated with wells, refuse pits and outbuildings. Other structures such as the outbuildings may contain dense artefactual deposits in the form of refuse pits and occupational deposits.

4.4.2 Integrity of sub-surface deposits

This section discusses how the sequence of land use activities has impacted upon relics which may be present. Sub-surface deposits can be disturbed or damaged by later development or taphonomic processes. Considering the lack of any considerable development throughout the study area, it is likely that sub-surface deposits may be largely intact. The introduction of services and infrastructure such as water and electricity to the study area may have impacted the integrity of any archaeological material through ground disturbance in the areas of installation.

4.4.3 Research potential

Archaeological research potential refers to the ability of archaeological evidence 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. Archaeological research potential differs from archaeological potential in that the presence of an archaeological resource (i.e. archaeological potential) does not mean that it can provide any additional information that increases our understanding of a site or the past (i.e. archaeological research potential).

The research potential of a site is also affected by the integrity of the archaeological resource within a study area. If a site is disturbed, then vital contextual information that links material evidence to a stratigraphic sequence may be missing and it may be impossible to relate material evidence to activities on a site. This is generally held to reduce the ability of an archaeological site to answer research questions.

Assessment of the research potential of a site also relates to the level of existing documentation of a site and of the nature of the research done so far (the research framework), to produce a 'knowledge' pool to which research into archaeological remains can add.

Developing local, regional and national economies – Agriculture, pastoralism, commerce and science

The study area is part of a long-established farming landscape, which has developed since 1829 when the veteran's grants were initially awarded. Should archaeological remains be present, such as the sub-surface remains of any structures relating to the pre-1845 occupation of the study area, they could contribute to research questions relating to the agricultural and pastoral practices of 19th century farmers in Kembla Grange and the wider Dapto district. Evidence from the Travellers Inn could be compared to other hotels in the Illawarra to look at how the hotels developed as a building type and how their structure changed to reflect changing fashions and hotel related technology. This information could then be compared with other similar sites in the local area and wider region to consider how the study area differs from others on a local and regional level.

Building settlements, towns and cities - Land tenure and accommodation

From the initial occupation of the study area by some of the veterans, the landscape has continued to develop and change. Ownership and boundaries have changed multiple times, which could contribute to research questions relating to land tenure and the agricultural use of the landscape during the 19th century. This information could then be compared to later evidence of land configuration to consider how the use of the landscape has changed from the 19th to 20th centuries.

Developing Australia's cultural life - Domestic life and leisure

The study area contained a range of residential premises potentially spanning from the early settlement of Kembla Grange to the mid-20th century. The dwellings consist of a number of wooden and brick cottages and occur in varying sizes and densities indicating that the study area may have contained families of different socio-economic backgrounds. The archaeological remains have the potential to answer research questions relating to the economic status of families who occupied these cottages, their ethnic backgrounds, domestic practices and consumer trends. Specifically, any artefact assemblages would have the potential to provide insights into the lifestyle and economy associated with the owners and community, and have the potential to yield comparisons to other archaeological sites both locally and regionally.

Areas of little archaeological research interest

The archaeological remains relating to un-stratified relics, ephemeral evidence of dairying or cultivation such as former fence lines and holding pens have a limited potential to answer research questions relating to the development and nature of occupation of the study area which would not be better answered by documentary sources.

4.4.4 Summary of archaeological potential

Through an analysis of the above factors a number of assumptions have been made relating to the archaeological potential of the study area, these are presented in Table 5 and Figure 5.

The assessment of archaeological potential has been divided into three categories:

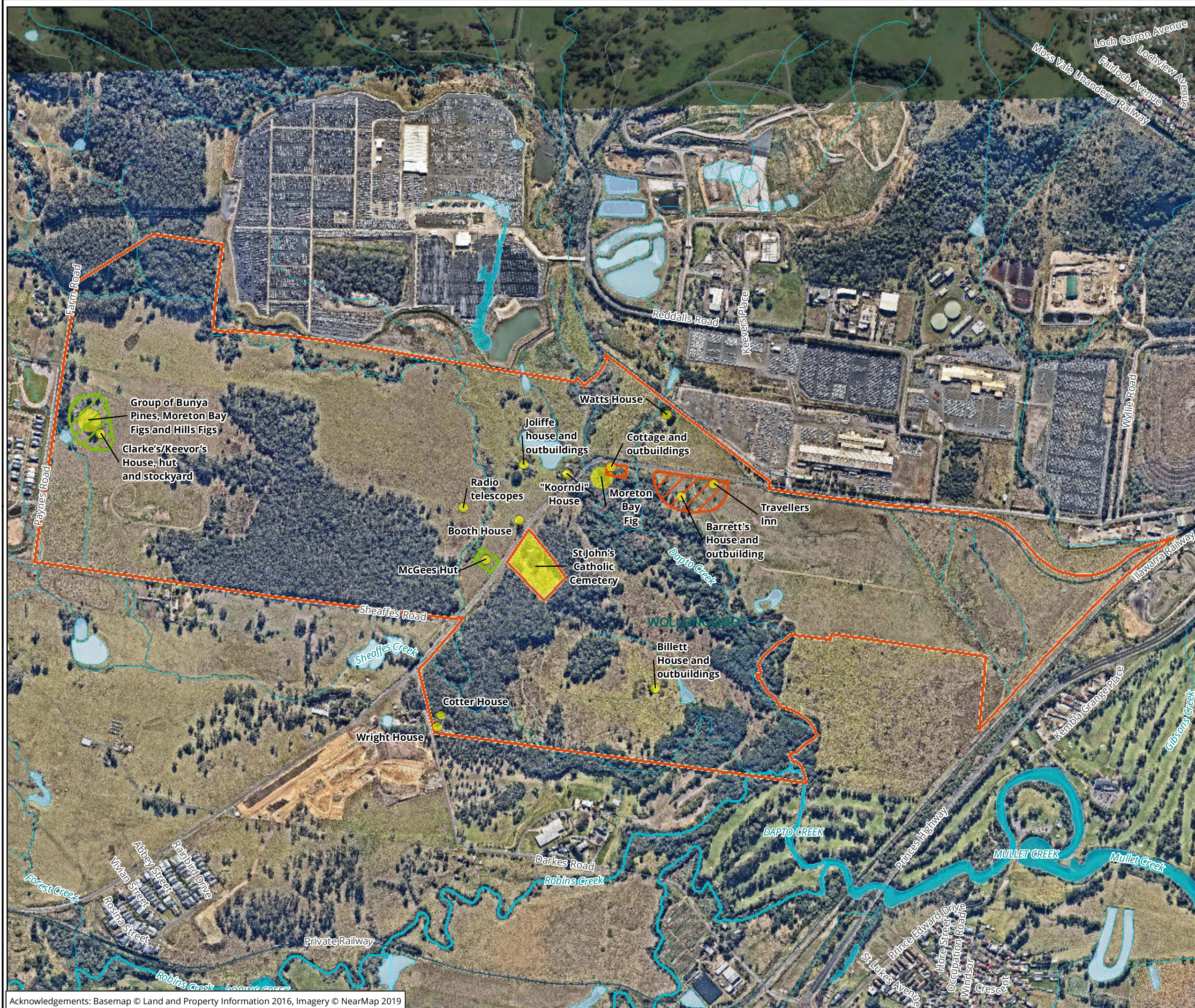
- **High archaeological potential** – based upon the historical context and documentary evidence presented within this report there is a high degree of certainty that archaeologically significant remains relating to this period, theme or event will occur within the study area.
- **Moderate archaeological potential** – based upon the historical context and documentary evidence presented within this assessment it is probable that archaeological significant remains relating to this period, theme or event could be present within the study area.
- **Low archaeological potential** – based upon the historical context and documentary evidence presented within this assessment it is unlikely that archaeological significant remains relating to this period, theme or event will occur within the study area.

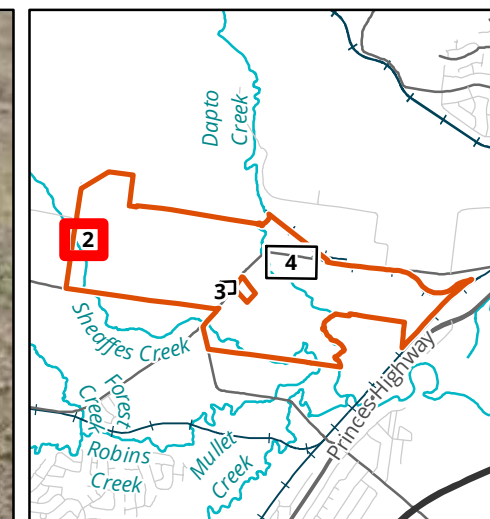
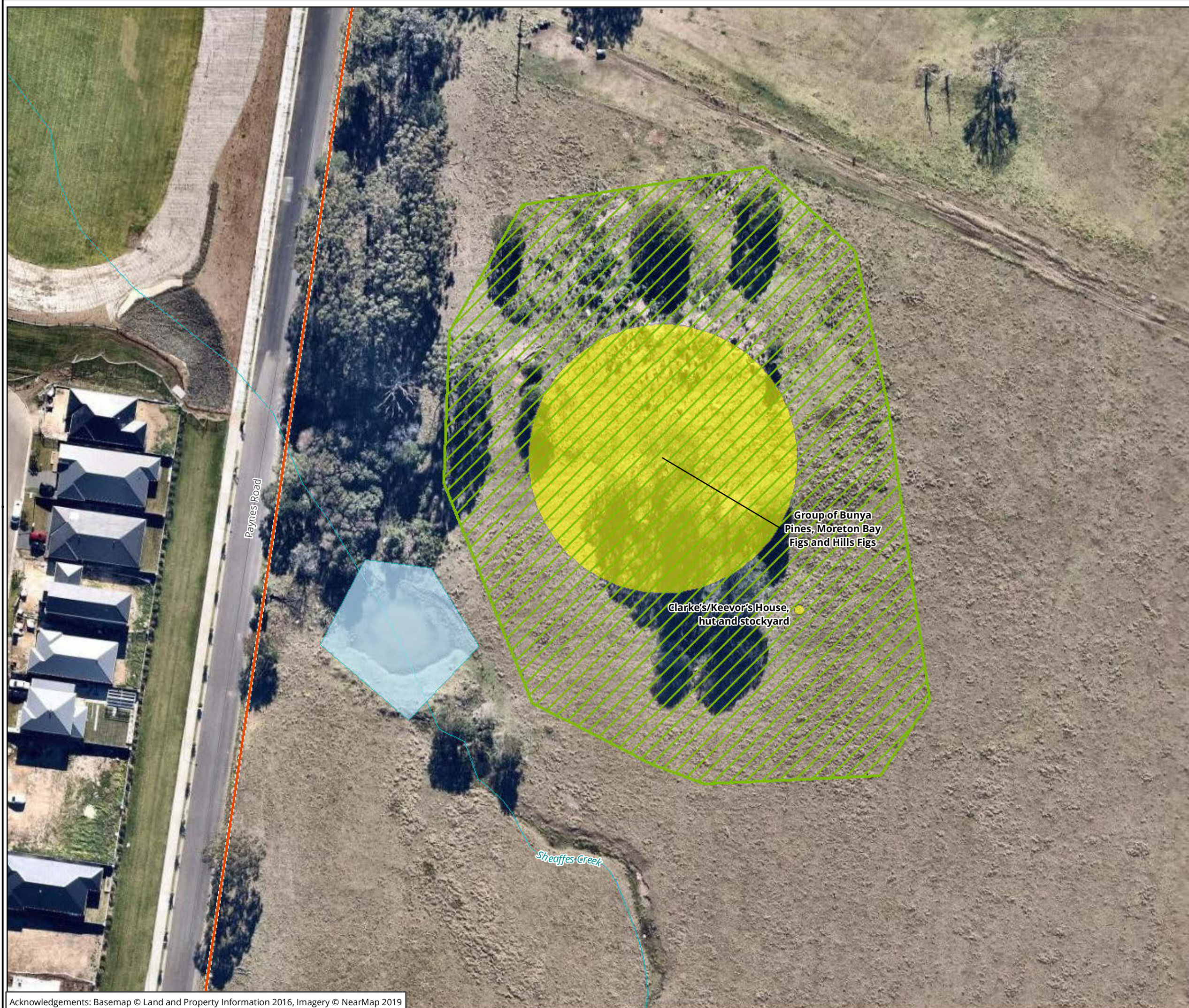
Table 5 Assessment of archaeological potential

No.	Description	Probable archaeological feature(s)	Possible construction date	Archaeological potential
1 2 3	Clarke's hut, outbuilding and fenced stockyard	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. footings, beam slots, post holes). Archaeological deposits are likely to consist of backfill, which may be dense in artefacts, and	1845	Moderate

No.	Description	Probable archaeological feature(s)	Possible construction date	Archaeological potential
		refuse deposits along with associated wells and outhouses.		
4	St John's Catholic Cemetery	Not within the study area; therefore, has not been assessed	N/A	N/A
5	McGhee's hut	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. footings, beam slots, post holes). Archaeological deposits are likely to consist of backfill, which may be dense in artefacts, and refuse deposits along with associated wells and outhouses.	1861	Moderate
6	Travellers Inn	Archaeological features associated with this structure are likely to consist of substantial structural evidence (walls, footings etc.) and possibly a cellar. Archaeological deposits are likely to consist of construction fills, sub-floor deposits, refuse deposits used to backfill associated wells and outhouses. A demolition deposit may also be present. Outbuildings associated with the building are likely to be of wooden construction and may be more ephemeral in nature.	1848	High
7	Barrett's house and outbuilding	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits are likely to consist of construction fills, sub-floor deposits, and refuse deposits along with associated wells and outhouses. A demolition deposit may also be present. Outbuildings associated with the building are likely to be of wooden construction and may be more ephemeral in nature.	1848	High
8	Cottage and outbuilding	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits are likely to consist of construction fills, sub-floor deposits, and refuse deposits along with associated wells and outhouses. A demolition deposit may also be present.	1848	High
9	Radio telescopes	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. footings). Limited potential for dense archaeological deposits beyond construction and demolition fill.	1952	Low
10	Joliffe house and outbuildings	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports).	Early 20th century	Low

No.	Description	Probable archaeological feature(s)	Possible construction date	Archaeological potential
		Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.		
11	"Koondi" house	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.	Early 20th century	Low
12	Booth house	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.	Early 20th century	Low
13	Watts house	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.	Early 20th century	Low
14	Wright house	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.	Early 20th century	Low
15	Billett house and outbuildings	Archaeological features associated with this structure are likely to consist of structural evidence (i.e. stone footings, beam slots, post holes, hearths and chimney supports). Archaeological deposits dating from the early 20th century are likely to consist of construction fills, sub-floor deposits, and refuse deposits.	Early 20th century	Low





Legend

- Study area
- Historical item

Archaeological potential

- Moderate

Figure 4.2 Assessment of archaeological potential

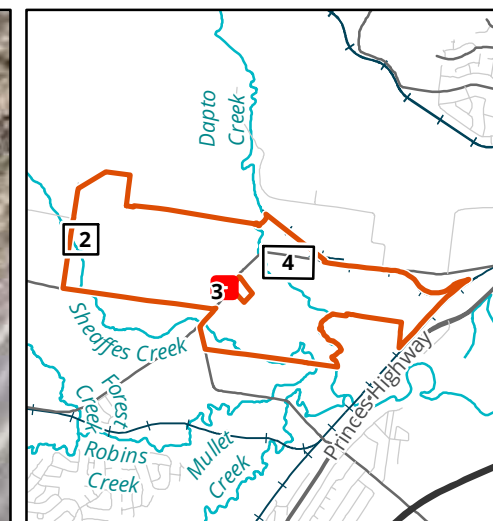
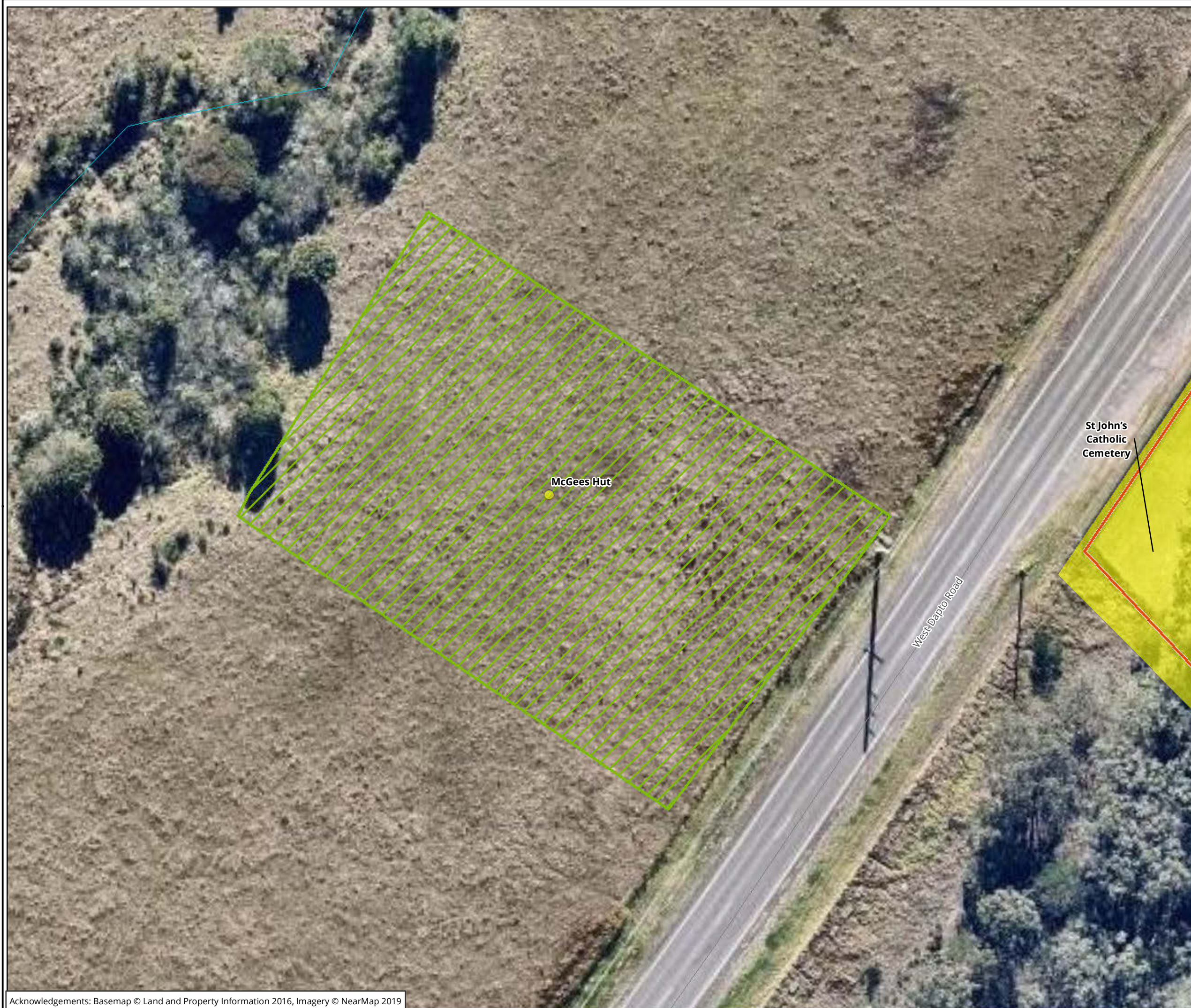
0 9 18 27 36 45
Metres

Scale: 1:900 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 29665
Date: 10 October 2019,
Checked by: SJK, Drawn by: AEDM, Last edited by: amurray
Location: P:\29600s\29665\Mapping\29665_F4_ArchPotential



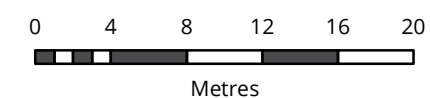
Legend

- Study area
- Historical item

Archaeological potential

- Moderate

Figure 4.3 Assessment of archaeological potential

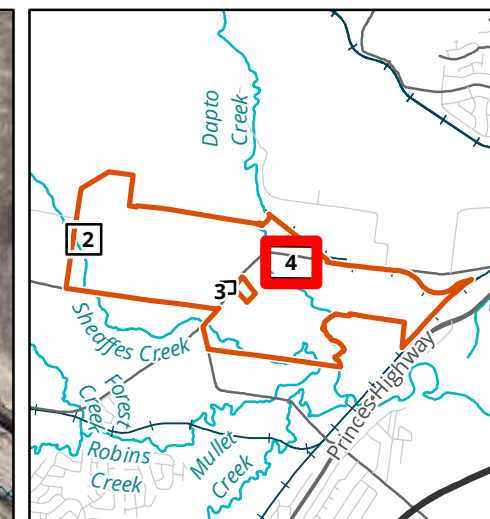


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Location: P:\29600s\29665\Mapping\29665_F4_ArchPotential



Legend

- Study area
- Historical item

Archaeological potential

- High

Figure 4.4 Assessment of archaeological potential

0 10 20 30 40 50
Metres

Scale: 1:1,200 @ A3
Coordinate System: GDA 1994 MGA Zone 56



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5 Significance assessment

An assessment of heritage significance encompasses a range of heritage criteria and values. The heritage values of a site or place are broadly defined as the 'aesthetic, historic, scientific or social values for past, present or future generations'⁷¹. This means a place can have different levels of heritage value and significance to different groups of people.

The archaeological significance of a site is commonly assessed in terms of historical and scientific values, particularly by what a site can tell us about past lifestyles and people. There is an accepted procedure for determining the level of significance of an archaeological site.

A detailed set of criteria for assessing the State's cultural heritage was published by the (then) NSW Heritage Office. These criteria are divided into two categories: nature of significance, and comparative significance.

Heritage assessment criteria in NSW fall broadly within the four significance values outlined in the Burra Charter. The Burra Charter has been adopted by state and Commonwealth heritage agencies as the recognised document for guiding best practice for heritage practitioners in Australia. The four significance values are:

- Historical significance (evolution and association).
- Aesthetic significance (scenic/architectural qualities and creative accomplishment).
- Scientific significance (archaeological, industrial, educational, research potential and scientific significance values).
- Social significance (contemporary community esteem).

The NSW Heritage Office issued a more detailed set of assessment criteria to provide consistency with heritage agencies in other States and to avoid ambiguity and misinterpretation. These criteria are based on the Burra Charter. The following SHR criteria were gazetted following amendments to the *Heritage Act 1977* (Heritage Act) that came into effect in April 1999:

- 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 the aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).
- Criterion (d) - an item has strong or special association with a particular community or cultural group in NSW (or the 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).

⁷¹ (Heritage Office 2001)

- Criterion (g) - an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments; or a class of the local area's cultural or natural places; or cultural or natural environments.

5.1 Levels of heritage significance

Items, places, buildings, works, relics, movable objects or precincts can be of either local or state heritage significance, or have both local and state heritage significance. Places can have different values to different people or groups.

Local heritage items

Local heritage items are those of significance to the local government area. In other words, they contribute to the individuality and streetscape, townscape, landscape or natural character of an area and are irreplaceable parts of its environmental heritage. They may have greater value to members of the local community, who regularly engage with these places and/or consider them to be an important part of their day-to-day life and their identity. Collectively, such items reflect the socio-economic and natural history of a local area. Items of local heritage significance form an integral part of the State's environmental heritage.

State heritage items

State heritage items, places, buildings, works, relics, movable objects or precincts of state heritage significance include those items of special interest in the state context. They form an irreplaceable part of the environmental heritage of NSW and must have some connection or association with the state in its widest sense.

The following evaluation attempts to identify the cultural significance of the study area. This significance is based on the assumption that the site contains intact or partially intact archaeological deposits.

5.2 Evaluation of significance

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).

Built heritage

The study area encompasses five veterans grants awarded in 1829 to James Mitchell, Richard Mallon, Thomas O'Brien, John McKelly and Ben Bundett. Although some of these grants did not stay with the grantees for long, the study area has been associated with a number of prominent families in the Dapto region, who played an important part in the development of local farming industry in the Kembla Grange area. However, outside of these associations, the study area does not appear to have contained a successful or notable farm in the Illawarra.

The built heritage of the study area **does not** satisfy this criterion at local and state level.

Archaeology

Should the study area be found to contain substantial archaeological remains, it is likely to become significant to the local community on a social and cultural level. Currently the presence or absence of archaeological remains is unknown and therefore the archaeological remains within the study area are not important in the course, or pattern, of Kembla Grange's or NSW's cultural or history.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

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).

Built heritage

Paul Wild, a scientist at CSIRO's Division of Radiophysics, used the world's first radio-spectrograph from a makeshift observatory at the foot of the Blue Mountains in 1949. He identified, classified and interpreted the different types of bursts of radio emission received from the sun and his classifications became the internationally accepted standards. Paul Wild is associated with the study area, specifically the spectrograph observatory that was established beneath Mount Kembla in 1952. During his time at the Dapto radio telescope, Paul Wild revolutionised our understanding of the sun by making discoveries about magnetic storms and space weather.

The built heritage of the study area **does** satisfy this criterion at local level.

Archaeology

There is no association with the life or works of a person or group of persons of importance in the cultural history of the Kembla Grange area. However, if intact archaeological remains from the mid to late 19th century are uncovered, this criterion may need to be readdressed.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

Criteria C: An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).

Built heritage

The study area contains two heritage listed items that are landscape features. The Moreton Bay Fig trees and Bunya pine trees are typical of many early plantings introduced throughout the West Dapto region and were used for ornamental purposes and as windbreaks to protect nearby homesteads and associated buildings. The trees have landmark, landscape, natural and aesthetic value.

In addition, the location of the world's first solar spectrographic observatory was within the study area. This sophisticated dynamic radio spectrograph had three times the frequency range and consisted of an improved radio spectrograph attached to three odd-looking antennas. It was an instrument that was unique in the world at the time, which demonstrates a high degree of technical achievement in the Illawarra and NSW.

The built heritage of the study area **does** satisfy this criterion at local level.

Archaeology

The archaeology of the study area is not important in demonstrating aesthetic, creative, and/or technical characteristics of Kembla Grange. However, if intact archaeological remains from the mid to late 19th century are uncovered, this criterion may need to be readdressed.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

Criterion D: An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.

Built heritage

The built heritage within the study area does not have a strong or special association with a particular community or cultural group in the local area for social, cultural or spiritual reasons.

The built heritage of the study area **does not** satisfy this criterion at local and state level.

Archaeology

Should the study area be found to contain substantial archaeological remains, it is likely to become significant to the local community on a social and cultural level. Currently the presence or absence of archaeological remains is unknown and therefore the study area does not have a strong or special association with a particular community or cultural group in NSW or the Wollongong area for social, cultural or spiritual reasons.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

Criterion E: An item has the 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).

Built heritage

The built heritage within the study area does not have the potential to yield information that will contribute to an understanding of Kembla Grange's cultural or natural history.

The built heritage of the study area **does not** satisfy this criterion at local and state level.

Archaeology

Any archaeological remains associated with the mid to late 19th century occupation of the study area have the potential to yield information relating to the people who occupied the homesteads and utilised the land for farming purposes. Specifically, any artefact assemblages would have the potential to provide insights into the lifestyle and economy associated with the owners and community which would have existed in Kembla Grange. Any assemblages would have the potential to yield comparisons to other archaeological sites both locally and regionally.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

Criterion F: An item possesses uncommon, rare or endangered aspects of the area's cultural or natural history (or the cultural or natural history of the local area).

Built heritage

The study area contained the world's first solar spectrographic observatory and from its construction in 1952 until its removal in 1965, it was at the very forefront of solar science. Apart from some concrete strip footings, little remains of the telescope and its associated building today. Due to its removal, the Dapto radio telescope is an uncommon and rare aspect of the history of radio spectrographs in Australia and NSW.

The built heritage of the study area **does** satisfy this criterion at local level.

Archaeology

The potential archaeological resources within the study area do not possess uncommon, rare or endangered aspects of Kembla Grange's cultural or natural history.

The archaeology within the study area **does not** satisfy this criterion at a local and state level.

Criterion G: An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places, or cultural or natural environments (or a class of the local area's cultural or natural places, or cultural or natural environments).

Built heritage

The Moreton Bay Fig trees and Bunya pine trees are typical of many early plantings introduced throughout the Illawarra and have representative value. They are characteristic of early ornamental plantings and windbreaks for 19th century homesteads and their associated buildings across the Illawarra region.

The built heritage of the study area **does** satisfy this criterion at local level.

Archaeology

The potential archaeological resources within the study area are not important in demonstrating the principle characteristics of a class of NSW or the local areas cultural or natural places or environments. However, if intact archaeological remains from the mid to late 19th century are uncovered, this criterion may need to be readdressed.

Archaeological remains within the study area **have the potential** to satisfy this criterion at a local level.

5.1 Statement of significance for the study area

The study area is located within a series of veterans grants made in 1829 to James Mitchell, Richard Mallon, Thomas O'Brien, John McKelly and Ben Bundett, who were some of the first settlers in the Illawarra. Following these land grants, William Clarke purchased three portions of land directly west of Mitchell's grant in 1845 where he constructed two huts [1] [2] and a stockyard [3]. During this early period, Barrett established the Travellers Inn [6] on the West Dapto Road in 1848. A crown plan from 1861 shows the location of the inn and two associated outbuildings, Barrett's house [7] including an outbuilding and circular driveway, and a cottage and outbuilding [8] associated with the locally listed Moreton Bay Fig [18]. These buildings are likely to be some of the earliest buildings in the Kembla Grange area and any associated archaeological deposits are likely to hold local significance. Whilst there are no above ground structures associated with the inn or residential dwellings from the mid-19th century, it has the potential to contain archaeological remains which could yield information relating to the socio-economic development of Kembla Grange and Dapto. Archaeological resources are a finite resource and the study area has the potential to contain archaeological remains unlikely to be present elsewhere.

The association of the Dapto radio telescope [9] with the study area is also significant. Built in 1952, the sophisticated dynamic radio spectrograph had three times the frequency range and was the world's first solar spectrographic observatory. Paul Wild, a scientist at CSIR's Division of Radiophysics, used this radio telescope to identify, classify and interpret the different types of bursts of radio emission received from the sun. His classifications became the internationally accepted standards and revolutionised our understanding of the sun by making discoveries about magnetic storms and space weather.

The study area also contains two heritage listed items. The Moreton Bay Fig trees [18] and Bunya pine trees [17] are typical of many early plantings introduced throughout the West Dapto region and were used for ornamental purposes and as windbreaks to protect nearby homesteads and associated buildings. The trees have landmark, landscape, natural and aesthetic value. The Bunya Pines, Moreton Bay Figs and Hills Figs [17] located on knoll on Sheaffes Road are suspected to be associated with Clarke's historical huts [1] [2] and stockyards [3].

The study area has been assessed as being locally significant under criterion B, C, E, F and G. It should be noted however that should intact archaeological remains from the mid to late 19th century be uncovered, these may also have local significance.

The study area is considered to be significant at a **local** level.

5.2 Existing statements of significance

The study area contains two heritage items and an additional four being located within the vicinity of the study area. Statements of significance for heritage items either within close proximity to the study area are outlined in Table 6.

Table 6 Statements of significance for heritage items within or adjacent to the study area

Item	Significance assessment criteria							Level of significance	Statement of significance
	A	B	C	D	E	F	G		
Group of Bunya Pines, Moreton Bay Figs and Hills Figs (Item no. I6326)			X				X	Local	Vegetation located in a knoll is indicative of plantings associated with a homestead in the last 100 years.
Moreton Bay Fig (Item no. 6329)			X				X	Local	Significant mature age specimen of landmark and representational value.
St John's Catholic Cemetery (Item no. 5974)	X	X	X	X	X			Local	St John's Roman Catholic Cemetery in Kembla Grange is of significance for Wollongong for historical, aesthetic, scientific and social reasons. The Cemetery is associated with a number of significant people and events through the decades of interment in its grounds and presents a unique collection of monuments and an unparalleled source of information about the past of the area. It is particularly significant for the local Roman Catholic community members who frequently have a direct family association with its grounds. It has potential to reveal further information about the past of the area, and is a landmark for the local residents. Of note is the grave of Richard Mallon (1851), a former member of the NSW Royal Veteran Company and a recipient of an early veterans grant.
"Barlyn" homestead, gardens and dairy (Item no. 6325)	X		X		X		X	Local	The site of "Barlyn" is significant for the local area for its historical, aesthetic, social and reasons of representativeness. "Barlyn" is representative of an early 20 century dairy farm with significant intact site features including ornamental plantings and remnant garden, fence, outbuildings and dairy. The site is typified by rural vernacular Australian building techniques, ornamental plantings, driveway, and a substantial dairy. The dairy provides a good example of an original agricultural operation and its technological advances. "Barlyn" has some potential to yield information about early 20th century rural farmsteads, to archaeological, architectural or landscape analysis. Archaeological deposits and relics are potentially of local significance.

Item	Significance assessment criteria							Level of significance	Statement of significance
	A	B	C	D	E	F	G		
Cemetery (Item no. 6327)	X	X	X	X	X			Local	The old "Settlers" Cemetery in Kembla Grange is of significance for Wollongong for historical, aesthetic, scientific and social reasons. The Cemetery is associated with a number of locally significant people and events through the decades of interment in its grounds and presents a unique collection of monuments and an unparalleled source of information about the past of the area. It is particularly significant for the actual local community members, many of whom have direct family members interred in its grounds. It has potential to reveal further information about the past of the area, and is a landmark for the local residents.
Kembla Grange Racecourse Railway Station (Item no. 61061)	X			X			G	Local	The site has important associations with the development of the rail network between Sydney and the Illawarra region. The station is also of social significance for its role in providing a transport route to the Kembla Grange Racecourse.

6 Statement of heritage impact

This SoHI has been prepared to address impacts resulting from the proposed redevelopment of the study area. The SoHI identifies the level of impact arising from the proposed development and discusses mitigation measures which must be taken to avoid or reduce those impacts. The SoHI identifies the level of impact arising from the proposed development and discusses mitigation measures which must be taken to avoid or reduce those impacts. This section of the report has been prepared in accordance with the Heritage Manual guideline *Statements of Heritage Impact*⁷².

6.1 Proposal details

This SoHI will assist BlueScope Steel in managing their lands and determining if proposed developments within the lots will impact on historical heritage values. This SoHI will also support future Development Applications (DA) to Wollongong City Council for the development activities proposed by BlueScope Steel. Although the exact nature of these activities are unknown, they are expected to have the potential to impact on historical items or archaeological resources within the study area. Furthermore, separate SoHI's or updates to this assessment will need to be undertaken to address specific impacts to heritage values.

Biosis is also undertaking an Aboriginal cultural heritage assessment (ACHA) for the same study area, which has identified an area of high Aboriginal archaeological potential that overlaps with an area of moderate historical potential. If impacts to this area, including Aboriginal test excavations, are proposed it is recommended that Cardno and BlueScope Steel apply for an excavation exception in accordance with s139 of the (Heritage Act. This is discussed in the recommendations section.

6.2 Assessing impact to heritage item(s)

6.2.1 Discussion of heritage impact(s)

The discussion of impacts to heritage can be centred upon a series of questions which must be answered as part of a SoHI which frame the nature of impact to a heritage item. The Heritage Manual guideline *Statements of Heritage Impact* includes a series of questions in relation to indicate the criterion which must be answered.⁷³

Subdivision:

- *How is the proposed curtilage allowed around the heritage item appropriate?*
- *Could future development that results from this subdivision compromise the significance of the heritage item? How has this been minimised?*
- *Could future development that results from this subdivision affect views to, and from, the heritage item? How are negative impacts to be minimised?*

Tree removal or replacement:

- *Does the tree contribute to the heritage significance of the item or landscape?*

⁷² (Heritage Office & DUAP 1996)

⁷³ (Heritage Office & DUAP 1996)

- *Why is the tree being removed?*
- *Has the advice of a tree surgeon or horticultural specialist been obtained?*
- *Is the tree being replaced? Why? With the same or a different species?*

New development adjacent to a heritage item:

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

Additionally, Chapter E11 of the WDCP under clause 14.2 outlines the following matters which will need to be considered for developments in the vicinity of a heritage item:

- Development on land adjacent to or within the vicinity of a heritage item or a heritage conservation area should not detract from the identified significance or setting of the heritage building or the heritage conservation area.
- Where development is proposed adjacent to or within the vicinity of a heritage site or heritage conservation area, the following matters must be taken into consideration:-
 - The character, siting, bulk, scale, height and external appearance of the development.
 - The visual relationship between the proposed development and the heritage item or heritage conservation area.
 - The potential for overshadowing of the adjoining heritage item or any building within a heritage conservation area.
 - The colours and textures of materials proposed to be used in the development.
 - The landscaping and fencing of the proposed development.
 - The location of car parking spaces and access ways into the development.
 - The impact of any proposed advertising signs or structures.
 - The maintenance of the existing streetscape, where the particular streetscape has significance to the heritage site.
 - The impact the proposed use would have on the amenity of the heritage site.
 - The effect the construction phase will have on the wellbeing of a heritage building.

- Development in the vicinity of a heritage item should give strong regard to any significant views to and from the heritage item or heritage conservation area and any public domain area.
- Where subdivision is proposed in the vicinity of a heritage item, the impact of future development of the lots should be considered.

Section 19.2 of the WDCP also outlines development controls around impacts to archaeological sites, these are:

- Any Development Application which proposes the disturbance or development of a heritage item listed in Schedule 5 of the WLEP 2009 as an 'archaeological site', or where the site is known, or is likely, to contain an archaeological site, is to undertake an Archaeological Assessment and to submit the assessment as part of the Heritage Impact Statement or Conservation Management Plan.
- Any development that involves the disturbance of archaeological sites shall not proceed without the appropriate approvals under the NSW Heritage Act 1977. The applicant should seek advice from the Heritage Branch of the Department of Planning and Council's Heritage Officer in relation to these requirements.
- New development should be designed to avoid impacts on archaeological sites that are considered to be of heritage significance.
- Where new development will have direct or indirect impacts on an archaeological site, interpretive measures should be given careful consideration as part of the proposed development in order to mitigate the impacts of the proposal.
- Any disturbance of archaeological sites is to be conditional of Council's requirements and those of the NSW Heritage Council.

6.2.2 Quantifying heritage impact(s)

Based upon the discussion of impacts to heritage items, impact to these items can be quantified under three main categories: direct impacts, indirect impacts and no impact. These kinds of impacts are dependent on the proposed impacts, nature of the heritage item and its associated curtilage.

Direct impacts

Direct impacts are where the completion of the proposed development will result in a physical loss or alteration to a heritage item which will impact the heritage value or significance of the place. Direct impacts can be divided into whole or partial impacts. Whole impacts essentially will result in the removal of a heritage item as a result of the development where as partial impacts normally constitute impacts to a curtilage or partial removal of heritage values. For the purposes of this assessment direct impacts to heritage items have been placed into the following categories:

- Physical impact - whole: where the development will have a whole impact on a heritage item resulting in the complete physical loss of significance attributed to the item.
- Physical impact - partial: where the project will have a partial impact on an item which could result in the loss or reduction in heritage significance. The degree of impact through partial impacts is dependent on the nature and setting of a heritage item. This typically these impacts are minor impacts to a small proportion of a curtilage of an item or works occurring within the curtilage of a heritage item which may impact on its setting (i.e. gardens and plantings).

Indirect impacts

Indirect impacts to a heritage item relate to alterations to the environment or setting of a heritage item which will result in a loss of heritage value. This may include permanent or temporary visual, noise or vibration impacts caused during construction and after the completion of the development. Indirect impacts diminish the significance of an item through altering its relationship to its surroundings; this in turn impacts its ability to be appreciated for its historical, functional or aesthetic values. For the purposes of this assessment impacts to heritage items have been placed into the following categories:

- Visual impact.
- Noise impact.
- Vibration impact.

Cumulative impacts

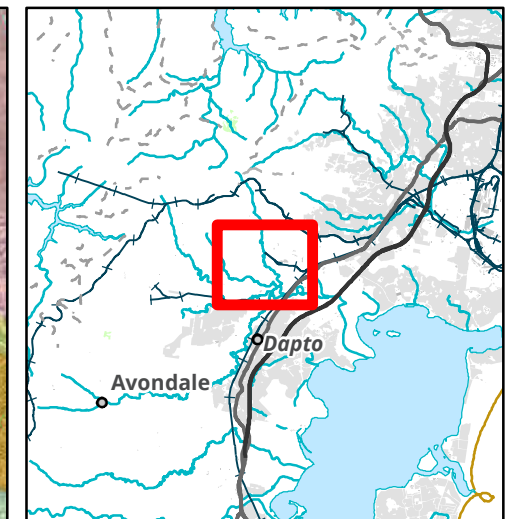
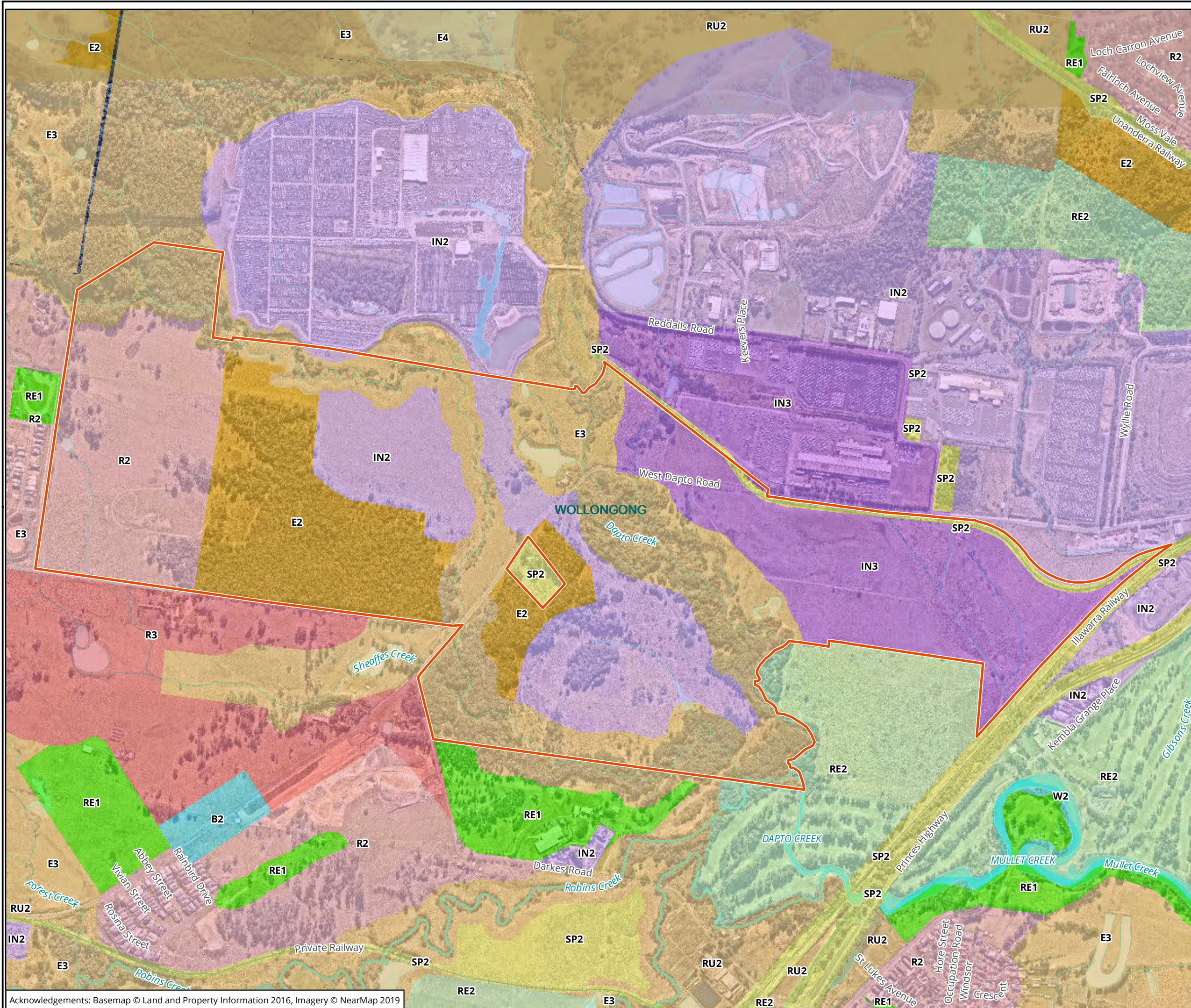
Cumulative impacts relate to minimal or gradual impacts from a single or multiple developments upon heritage values. A cumulative impact would constitute a minimal impact being caused by the proposed development which over time may result in the partial or total loss of heritage value to the study area or associated heritage item. Cumulative impacts may need to be managed carefully over the prolonged period of time.

No impact

This is where the project does not constitute a measurable direct or indirect impact to the heritage item.

6.3 Assessment of impacts

A discussion, assessment and mitigation of impacts to heritage items located within or adjacent to the study area is presented in Table 7. As the exact nature of the proposed activities within the study area are unknown, the following discussion makes assumptions about the works likely to occur within the different Wollongong LEP zones for the study area (Figure 5). These will be refined or amended once the exact nature of the activities within the study area are known.



Legend

Study area

Land zoning

- B2
- E2
- E3
- E4
- IN2
- IN3
- R2
- R3
- RE1
- RE2
- RU2
- SP2
- W2

Figure 5 Zoning within the study area

0 100 200 300 400 500
Metres

Scale: 1:10,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Biosis Pty Ltd
Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 29665
Date: 04 October 2019,
Checked by: SJK, Drawn by: AEDM, Last edited by: amurray
Location: P:\29600s\29665\Mapping\29665_F5_LandZone

Table 7 Assessment of impacts to heritage items either within or adjacent to the study area

Element	Significance	Discussion	Assessment	Mitigation measures
Heritage items				
Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17]	Local	This group of heritage listed trees is located on a knoll adjacent to Hayes Lane and within the R2 (Low Density Residential) zoning. The trees are typical of many early plantings introduced throughout the Illawarra and have representative value. They are characteristic of early ornamental plantings and windbreaks for 19th century homesteads and their associated buildings across the Illawarra region. An arborists report would determine the condition of the heritage item. If the trees are to be removed for residential houses, this will have significant and irreversible impact on the heritage item. Archival recording of the heritage item and incorporation of the same species into green space within the Neighbourhood Plan could mitigate this impact. Furthermore, the establishment of a curtilage for the group of trees is recommended to ensure the heritage values are retained if the trees are to be retained.	Direct physical impact – whole	<ul style="list-style-type: none"> Arborist report Establishment of a curtilage Archival recording Inclusion of new plantings into Neighbourhood Plan
Moreton Bay Fig [18]	Local	The Moreton Bay Fig is located on the east side of Dapto Creek within the E3 (Environmental Management) zoning. The objectives of this zone are to protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values; and to limit the range of development. It is assumed that this heritage item will not be impacted upon; however, any proposed development within the vicinity of the tree may result in a minor noise and visual impact which will not affect the significance of the item.	No impact	<ul style="list-style-type: none"> N/A
St John's Catholic Cemetery [4]	Local	The study area surrounds St John's Catholic Cemetery on all sides. The primary impact to the cemetery would be visual, particularly as the heritage item is opposite an area zoned as IN2 (Light Industrial). Establishment of visual barriers between the cemetery and the industrial zone in the form of hedging could mitigate this impact. Any proposed development opposite the cemetery may result in a minor noise and visual impact; however, this is unlikely to affect the significance of the item.	Indirect impact – visual	<ul style="list-style-type: none"> Establishment of visual barrier
"Barlyn" homestead, gardens and dairy	Local	"Barlyn" homestead, gardens and dairy are located 320 metres south of the study area. Any proposed development may result in a minor noise and visual impact; however,	No impact	<ul style="list-style-type: none"> N/A

Element	Significance	Discussion	Assessment	Mitigation measures
		this is unlikely to affect the significance of the item.		
Cemetery	Local	The cemetery is located along West Dapto Road opposite the northern boundary of the study area. The primary impact to the cemetery would be visual, particularly as the heritage item is opposite an area zoned as IN3 (Heavy Industrial). Establishment of visual barriers between the cemetery and the industrial zone in the form of hedging could mitigate this impact. Any proposed development opposite the cemetery may result in a minor noise and visual impact; however, this is unlikely to affect the significance of the item.	Indirect impact – visual	<ul style="list-style-type: none"> Establishment of visual barrier
Built items				
Joliffe house and outbuildings [10]	N/A	Joliffe house and its associated outbuildings is located within an IN2 (Light Industrial) zone and would likely be demolished should development occur within this zone. This item is currently not listed as a heritage item and the historical research determined that it was constructed in the early 20th century and is unlikely to hold any historical significance.	Direct physical impact – whole	N/A
“Koondi” house [11]	N/A	“Koondi” is located within the E3 (Environmental Management) zoning and it is assumed that this house and outbuildings will not be impacted upon. Additionally, the house is not heritage listed and the historical research determined that it was constructed in the early 20th century and is unlikely to hold any historical significance.	No impact	N/A
Billett house and outbuildings [16]	N/A	Billet house and its associated outbuildings are located within an IN2 (Light Industrial) zone and would likely be demolished should development occur within this zone. This item is currently not listed as a heritage item and the historical research determined that it was constructed in the early 20th century and is unlikely to hold any historical significance.	Direct physical impact – whole	N/A
Archaeological resource				
Clarke’s hut [1], outbuilding [2] and fenced stockyard [3]	Unknown	Archaeological resources associated with Clarke’s hut and outbuildings are located within the R2 (Low Density Residential) zoning and in close proximity to the listed heritage item Group of Bunya Pines, Moreton Bay Figs and Hills Figs. Archaeological remains may be disturbed through the bulk excavation and construction of future housing and will result in the removal of the majority of archaeological material from the site, should it be present. If impacts cannot be avoided, an archaeological	Direct physical impact – whole	<ul style="list-style-type: none"> Application to NSW Heritage Council under Section 140 of the <i>Heritage Act</i>

Element	Significance	Discussion	Assessment	Mitigation measures
		methodology which considers all potential archaeology within the vicinity of Clarke's hut will need to be considered. A program of archaeological monitoring and salvage (if required) will need to be undertaken during bulk earthworks under an approved Section 140 permit from the NSW Heritage Council.		<ul style="list-style-type: none"> Archaeological monitoring
McGhee's hut [5]	Unknown	McGhee's hut is located within the E3 (Environmental Management) zoning and it is assumed that the archaeological resources associated with hut will not be impacted upon.	No impact	N/A
Travellers Inn [6]	Unknown	Archaeological resources associated with the Travellers Inn and its associated outbuildings are located within an IN3 (Heavy Industrial) zone. Archaeological remains may be disturbed through the bulk excavation and construction required for an industrial zone and will result in the removal of the majority of archaeological material from the site, should it be present. If impacts cannot be avoided, an archaeological methodology which considers all potential archaeology within the vicinity of the Travellers Inn and outbuildings will need to be considered. A program of archaeological monitoring and salvage (if required) will need to be undertaken during bulk earthworks under an approved Section 140 permit from the NSW Heritage Council.	Direct physical impact – whole	<ul style="list-style-type: none"> NSW Heritage Council under Section 140 of the <i>Heritage Act</i> Archaeological monitoring
Barrett's house and outbuilding [7]	Unknown	Archaeological resources associated with Barrett's house and its associated outbuildings are located within an IN3 (Heavy Industrial) zone. Archaeological remains may be disturbed through the bulk excavation and construction required for an industrial zone and will result in the removal of the majority of archaeological material from the site, should it be present. If impacts cannot be avoided, an archaeological methodology which considers all potential archaeology within the vicinity of the Barrett's house and outbuilding will need to be considered. A program of archaeological monitoring and salvage (if required) will need to be undertaken during bulk earthworks under an approved Section 140 permit from the NSW Heritage Council.	Direct physical impact – whole	<ul style="list-style-type: none"> NSW Heritage Council under Section 140 of the <i>Heritage Act</i> Archaeological monitoring
Cottage and outbuilding [8]	Unknown	Archaeological resources associated with the cottage and outbuilding adjacent to Dapto Creek are located within the E3 (Environmental Management) zoning. It is assumed that the archaeological resources will not be impacted upon.	No impact	N/A
Radio telescopes [9]	N/A	The Dapto radio telescopes were demolished in 1965 and the only surface remnants of the facility are concrete strip footings. There is limited potential for dense	Direct physical	<ul style="list-style-type: none"> Development of a heritage

Element	Significance	Discussion	Assessment	Mitigation measures
		archaeological deposits beyond construction and demolition fill making the archaeological value limited. However, due to the community interest in the historic value of the site, it is recommended that some form of heritage interpretation for the site of the former telescope be prepared and incorporated into the Neighbourhood Plan.	impact – whole	interpretation plan
Booth house [12]	N/A	Archaeological resources associated with the Booth's house are located within an E3 (Environmental Management) zoning. It is assumed that the archaeological resources will not be impacted upon.	No impact	N/A
Watts house [13]	N/A	Archaeological resources associated with the Watt's house are located within an IN3 (Heavy Industrial) zone and would likely be demolished should development occur within this zone. This item is currently not listed as a heritage item and the historical research determined that it was constructed in the early 20th century and is unlikely to hold any historical significance.	No impact	Unexpected finds protocol
Wright house [14]	N/A	Archaeological resources associated with the Wright's house and its outbuildings are located within an E3 (Environmental Management) zoning. It is assumed that the archaeological resources will not be impacted upon.	No impact	N/A
Cotter house [15]	N/A	Archaeological resources associated with the Cotter's house and its outbuildings are located within an E3 (Environmental Management) zoning. It is assumed that the archaeological resources will not be impacted upon.	No impact	N/A

6.4 Statement of heritage impact

Historical research indicates that the study area contained known structures and archaeological features associated with the farming, commercial and domestic activities that took place from the mid-19th century until the present. The archaeological assessment presented in this report has assessed the potential within the majority of the study area as being low, with the exception of those areas considered to possess high and moderate potential (Figure 4).

The exact nature of future development within the study area is unknown but are expected to have the potential to impact on historical items or archaeological resources within the areas of potential. If present, archaeological remains may consist of Clarke's hut [1], Clarke's outbuilding [2], Clarke's stockyard [3], the Travellers Inn and outbuildings [6], and Barrett's house and outbuildings [7] dating from c. 1845 to 1861. If present, these archaeological remains would be locally significant and would comprise some of the earliest archaeological remains within Kembla Grange area. This will result in the removal of the majority of archaeological material from these areas, should they be present.

Furthermore, any proposed development within the study area will have impact upon two listed heritage items within the study area – Group of Bunya Pines, Moreton Bay Figs and Hills Figs [17] and the Moreton Bay Fig [18]. The Group of Bunya Pines, Moreton Bay Figs and Hills Figs are typical of many early plantings introduced throughout the Illawarra and have representative value. The group of trees are located within the R2 (Low Density Residential) zoning; therefore, the establishment of a curtilage for the heritage item is recommended to ensure the heritage values are retained. However, if future development of the site requires the removal of the trees, this will have significant and irreversible impact on the heritage item. The Moreton Bay Fig is located on the east side of Dapto Creek within the E3 (Environmental Management) zoning; therefore, it is assumed that this heritage item will remain and not impacted upon.

Impacts upon the study area through the proposed development can be mitigated through a program of archaeological monitoring in areas assessed as high potential. This precautionary approach would mitigate any delays in development should any unrecorded archaeological remains that relate to the occupation of the study area be encountered. The proposed development has been assessed as being acceptable from a historical heritage perspective if the recommendations included within this report are implemented.

7 Conclusions and recommendations

7.1 Conclusions

Two historical heritage items listed in the Wollongong LEP are located within the study area. Item no. 6326 consists of a Group of Bunya Pines, Moreton Bay Figs and Hills Figs, while item no. 6329 consists of Moreton Bay Fig. Both items are considered locally significant due to their historical and aesthetic values. They are also representative of their type in the local area. Historical background research indicates that the Group of Bunya Pines, Moreton Bay Figs and Hills Figs are likely to have been associated with two huts [1] [2] and associated stock yards [3] located in the western portion of Lot 1 DP 588139 within William Clarke's allotment, which date to c.1845. These structures were still extant in 1891, as shown in the Crown plan dating to that year. Furthermore, a hut dating to c.1861 [5] was also recorded in Lot 1 DP 588139 within Richard Mallon's grant. Should any archaeological remains associated with the c.1845 structures [1, 2, 3] and c.1861 hut [5] be present within the study area, they could potentially provide insight into early settlement and living conditions in Kembla Grange and the wider Illawarra region.

In the eastern portion of the study area, a number of additional structures were also identified from the historical research. The Travellers Inn and outbuildings [6], Barrett's house and outbuildings [7], and cottage and outbuilding [8] all date from c. 1845 to 1861. The archaeological resources associated with these buildings could also provide insight into early settlement and living conditions in Kembla Grange and the wider Illawarra region.

7.2 Recommendations

These recommendations have been formulated to respond to client requirements and the significance of the site. They are guided by the ICOMOS *Burra Charter* with the aim of doing as much as necessary to care for the place and make it useable and as little as possible to retain its cultural significance.⁷⁴

Recommendation 1 Archaeological investigation required for areas of high potential

The analysis for this report has determined that some parts of the study area have a high potential for the survival of archaeological resources of local significance. In NSW, archaeological sites of State or local significance are considered "relics", which are protected by the *Heritage Act 1977*. In NSW, impacts to relics are only permitted with a section 140 approval (excavation permit). Given the potential for local significant archaeological remains to be present within the study area a section 140 approval is required.

An application should be made to the Heritage Council for a section 140 approval (excavation permit) supported by this SoHI. An archaeological research design and methodology will also need to be prepared to support the application.

It is likely that archaeological works will consist of monitoring during demolition works (i.e. removal of floor surfaces, foundations etc.) and any additional ground disturbance works within the study area until archaeological remains or a sterile layer is encountered. Deeper archaeological excavation may be required depending on the nature of remains encountered. The works described must be supervised by and guided by an appropriately qualified archaeologist to ensure that any archaeological remains are identified and

⁷⁴ (Australia ICOMOS 2013)

recorded. Should substantial archaeological remains be identified it may be required to undertake archaeological excavation using open area techniques.

Recommendation 2 s139 exemption for Aboriginal test excavations to occur near the location of Clarke's hut

The crest landform unit that adjacent to the western boundary of the study area, along Paynes Road, contains an area of high Aboriginal archaeological potential and moderate historical potential. If impacts to this area, including Aboriginal test excavations, are proposed it is recommended that Cardno and BlueScope Steel apply for an excavation exception in accordance with s139 of the *Heritage Act 1977*. Part 1(a) of this exception would cover *"the excavation or disturbance of land will have a minor impact on archaeological relics including the testing of land to verify the existence of relics without destroying or removing them"*.

This exemption would allow for Aboriginal test excavations to be conducted in this area and if, during these excavations, historical relics are identified, the Aboriginal test pit would cease and the test pit relocated. This procedure would not destroy or remove relics; however, if substantial intact archaeological relics are discovered during Aboriginal test excavations, work must cease in the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the *Heritage Act*. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area.

Recommendation 3 Heritage interpretation strategy

Any development within the study area should incorporate heritage interpretation in the form of signs and other interpretive media, which detail the history of the study area and adjacent heritage values. The interpretation strategy should draw upon the historical context within this report and the results of any archaeological investigations completed as part of Recommendation 2.

Recommendation 4 Unexpected finds procedure

An unexpected finds procedure should be incorporated into a construction heritage management plan in the event that demolition works encounter unexpected historical structural or depositional remains, or any Aboriginal objects or places.

In both these instances all works should cease. A determination should then be made by an appropriately qualified archaeologist of whether the remains identified are likely to be 'relics' under the *NSW Heritage Act 1977* or an Aboriginal object or place.

Where the remains are identified as being 'relics', the Heritage Council of NSW must be notified in accordance with section 146 of the *NSW Heritage Act 1977*. Failure to notify the Heritage Council is considered an offence under the act, with penalties including fines and imprisonment. After contacting the Heritage Council, a permit or exemption should be sought under the relevant section of the act to allow works to recommence.

All Aboriginal objects and places are protected under the *NSW National Parks and Wildlife Act 1974*. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

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Appendices
