

Volume 3
Appendix G

September 2012

Sydney
WATER

Water and wastewater servicing of the West Dapto Urban Release Area and Adjacent Growth Areas

Environmental Assessment



Appendix G

Non-Aboriginal heritage assessment



Water and Wastewater Servicing in the West Dapto Urban Release Area and Adjacent Growth Areas – Non-Indigenous Heritage Assessment and Impact Management

Non-Indigenous Heritage Assessment and Impact Management



AECOM

Prepared for
Sydney Water

Prepared by
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In association with
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19 July 2012

60189506

Quality Information

Document Water and Wastewater Servicing in the West Dapto Urban Release Area and Adjacent Growth Areas – Non-Indigenous Heritage Assessment and Impact Management 60189506

AECOM Ref p:\60189506_west_dapto_nonindigenous_heritage\5.delivery\5.2 reports final\60189506_final_impactmanagement report_20july12.doc

Sydney Water Ref 26009

Date 19 July 2012

Prepared by Susan Lampard

Reviewed by Ruth Baker

Revision History

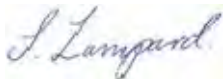
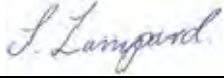
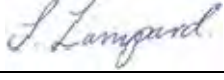
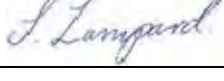
Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
Original	25 Feb 2011	Original Report	Susan Lampard Archaeologist	
Final	2 June 2011	Final	Susan Lampard Archaeologist	
Adequacy Review	19 July 2012	Minor amendments following Agency adequacy review	Susan Lampard Archaeologist	
Adequacy Review	20 July 2012	Minor corrections	Susan Lampard Archaeologist	

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Abbreviations

AGA	Adjacent Growth Areas
AMBS	Australian Museum Business Services
DGRs	Director-General's Requirements
DP&I	Department of Planning
EA	Environmental Assessment
GPS	Global Positioning System
HLA	HLA Envirosciences
LEP	Local Environment Plan
LGA	Local Government Area
REP	Regional Environmental Plan
SHR	State Heritage Register
WDURA	West Dapto Urban Release Area

Glossary

Concept Approval Area	The WDURA and Adjacent Growth Areas combined.
Project Approval Area	The area for which Sydney Water is seeking project approval located within the WDURA boundary and including the Yallah area (Figure 1). When the approval is granted by DP&I constructions work will commence.
Remaining Concept Approval Area	The project study area for which Sydney Water is seeking concept approval. Sydney Water does not plan to proceed with construction immediately and further detailed planning will be undertaken prior to construction.
Road Reserve	The area between two private properties occupied by a road, includes the verges.
25 m zone	A 25 m zone from a property boundary boarded by a road. This 25 m zone is to be assessed for heritage significance.
50 m corridor	The assessment corridor extending 25 m on either side of the pipeline alignment.

Executive summary

The NSW Department of Planning and Infrastructure (DP&I), responsible for the release of land for commercial and residential development, has developed the Illawarra Regional Strategy to coordinate the release of land in the Illawarra. Identified as a priority (First Release) was the West Dapto Urban Release Area (WDURA or Area) (Figure 1). WDURA will provide about 50% of the future residential housing demand in the Illawarra, with around 16,000 homes (DP&I website). The rezoning of the first release precincts was announced by the NSW Government in May 2010.

In order to provide the water and wastewater services required for the development of the WDURA, Sydney Water has developed a services proposal. In addition to the WDURA, DP&I has identified additional areas for inclusion in the services proposal. These areas are known as the Adjacent Growth Areas (AGA) and include the area surrounding Yallah and along Lake Illawarra to Koonawarra and an area south of the Illawarra Highway covering the areas of Calderwood and North Macquarie. Together the WDURA and the AGA comprise the project boundary, the Concept Approval Area (Area). Concept approval is being sought for the whole of the Concept Approval Area. In addition, Project approval is being sought for the pipelines in the rezoned areas of WDURA. The areas for which Project Approval is sought has been termed the Project Approval Area. The balance of the Concept Approval Area, for which concept approval only is sought, has been termed the Remaining Concept Approval Area. Water and wastewater pipelines outside the Area have been assessed and are included in comments relating to the Remaining Concept Approval Area. The Area falls within the Local Government Areas (LGAs) of Wollongong and Shellharbour, as indicated in Figure 1.

Sydney Water is seeking Concept Approval for the project under Part 3A of the *Environmental Planning and Assessment Act 1979*. Sydney Water has commissioned a series of studies to feed into a supporting Environmental Assessment to assess the impact of the proposed water and wastewater services. The production of the Non-Indigenous Heritage report, being prepared for input into the Environmental Assessment (EA), has been divided into six deliverables:

- Updated Desktop, Values and Maps
- Field Survey Methodology
- Field Survey Report
- Impact Assessment and Impact Management Report
- Heritage Assessment and Impact Management Report
- Section 146 Report.

The purpose of the project is to assess and report on Non-Indigenous heritage within the WDURA and to provide recommendations for managing the potential impacts of the proposed works. The aim of this Impact Assessment and Impact Management Report is to build on the findings of the desktop review, sensitivity mapping and field survey. Based on the above, this report assesses the potential impacts of the design, construction and operation on existing and potential Non-Indigenous heritage.

During the Updated Desktop a list of previously identified sites was compiled and the proximity of the sites to the proposed pipelines was assessed. The final list identified 195 sites, 82 within the Project Approval Area, 63 within the Remaining Concept Approval Area and 50 outside the Area. Of the sites 120 sites that were determined not to be impacted by the project at the Updated Desktop stage were not assessed during the field survey and have not been discussed in this report. A complete list of the 195 sites, with a brief description and history, where available, is provided in Appendix 1. The purpose of the field survey was to re-assess previously identified sites and to identify new sites, where visible. The field survey identified ten previously unidentified sites, six being potential archaeological sites along West Dapto Road (182-186) and one on Hayes Lane (187), all within the Project Approval Area. The balance comprise a Coral Tree Avenue within the

Project Approval Area (188), two houses on Tongarra Road (191 & 192) and one house on Church Street (193) within the Remaining Concept Approval Area.

This report has provided a description and historical context for sites identified within the Concept Approval Area as potentially being impacted by the proposed water and wastewater pipelines. Based on this, the significance of the item has been established, or previous assessments confirmed. Establishing the significance of the items was vital in determining whether the potential impacts to the items by the proposed pipelines were acceptable or whether impact management recommendations needed to be developed. In the instances where impacts are anticipated management recommendations have been provided.

The project has been divided into two parts: the Project Approval Area and Remaining Concept Approval Area, as discussed in Section 1.1. As construction within the Project Approval Area is anticipated to commence shortly after approval is granted, the recommendations for the Project Approval Area are more specific. Those for the remaining Concept Approval Area are broader and may require refining during detailed design.

The impact of the proposed pipelines on a site was divided into four categories. In Appendix 1 these impacts are denoted by a symbol and have the following definition:

- No impact ●
- Indirect impact – where the item was unlikely to be removed as a result of construction but could potentially be impacted by vibration during construction ■
- Potential Impact – where the exact route of the pipeline would determine if the item was to be directly impacted ◆
- Direct Impact – where the current alignment will have an impact on an item or an element of its significance ▲

Area	Direct Impact	Potential Impact	Indirect Impact	No Impact
Project Approval Area	2, 18, 24b, 30, 50, 171, 188	17a, 17b, 20, 21, 22a, 22b, 23, 26, 27, 36a, 36b, 39, 40, 47, 48, 49, 55, 56, 59, 64, 76, 182, 183, 184, 185, 186, 187, 189	10, 11	19, 24a, 32, 38, 190, 195
Remaining Concept Approval Area	140, 180	61a, 61b, 62, 63, 66, 67, 68, 72, 73, 139, 148, 154, 165, 172, 191, 192, 193	84, 85, 86, 88, 116, 124, 131, 132, 133	65, 69, 138, 141, 144

Table 1 Summary of site impacts.

Note: for site names and relevant map number refer to Appendix 1.

The impacts are summarised in Table 1. Within the Project Approval Area direct impacts are anticipated to seven items:

- Kembla Grange Settler's Cemetery (2) – the Cemetery is listed on the 1990 Wollongong LEP. It is recommended that further work be undertaken to determine the likelihood of graves occurring outside the current cemetery boundary
- Brisbane Grove (18) – the house is listed on the 1990 Wollongong LEP. It is recommended that impacts be avoided by rerouting the pipeline. If this is not practicable it is recommended that archival recording be undertaken prior to demolition
- Modern House and Farm (24b) – the House and Farm are not listed on a heritage schedule and not considered to be of heritage value and no mitigation measures are required
- Barlyn Dairy (30) – is not listed, although the adjacent Barlyn Garden is listed on the 1990 Wollongong LEP. It is recommended that impacts be avoided by rerouting the pipeline. If this is not practicable it is recommended that archival recording be undertaken prior to demolition
- Avondale (50) – Avondale has previously been assessed as being of State significance. It is recommended that impacts be avoided

- Tramway (171) – The tramway is listed on the 1990 Wollongong LEP, it is recommended that a research design is developed to determine whether archaeological investigation is likely to yield information not available elsewhere
- Coral Tree Avenue (188) – the Avenue is not listed on a heritage schedule and is not considered to be of heritage value and no mitigation measures are required.

There are the potential impacts to a further 28 items, depending upon the exact location of the pipelines. Indirect impacts (vibration during construction) are possible to two items and five items would not be impacted.

In the Remaining Concept Approval Area direct impacts are anticipated to two items:

- Mark's Villa (140) – the Villa is listed on Shellharbour LEP. It is recommended that the impacts to Mark's Villa be avoided or that archival recording be undertaken prior to demolition and archaeological monitoring undertaken during construction
- Yallah Brush (180) – the Brush is listed on the 1990 Wollongong LEP. It is recommended that an ecologist be consulted to determine the extent of the impacts, as its significance is as remnant bush land.

There are 17 items that may be impacted by the proposed pipelines, depending upon the exact location of the corridors. Nine items may be indirectly impacted through vibration during construction and five items would not be impacted.

In summary, a total of 195 sites were identified by previous studies and the field survey undertaken for this project, 50 of these are outside of the Area. Of the remaining, 82 were located in the Project Approval Area, of which 35 may potentially be directly, indirectly or potentially impacted by the concept. Within the Remaining Concept Approval Area 63 items were identified, of which 28 items that may be directly, indirectly or potentially impacted. The significance assessment for this project confirmed that Avondale (50) and Marshall Mount (64) are of State significance and should be nominated to the State Heritage Register by the relevant body. No other recommendations regarding the listing of items are made.

1 Introduction

1.1 Project Background

The NSW Department of Planning & Infrastructure, who is responsible for the release of land for commercial and residential development, has developed the Illawarra Regional Strategy to coordinate the release of land in the Illawarra. Identified as a priority was the West Dapto Urban Release Area (WDURA or Area) (Figure 1). WDURA will provide about 50% of the future residential housing demand in the Illawarra with around 16,000 homes. The rezoning of the first release precincts was announced by the NSW Government in May 2010.

In order to provide the water and wastewater services required for the development of the WDURA, Sydney Water has developed a services proposal. In addition to the WDURA, DP&I has identified additional areas for inclusion in the services proposal. These areas are known as the Adjacent Growth Areas (AGA) and include the area surrounding Yallah and along Lake Illawarra to Koonawarra and an area south of the Illawarra Highway covering the areas of Calderwood and North Macquarie. Together the WDURA and the AGA comprise the project boundary, the Concept Approval Area (Area). Concept approval is being sought for the whole of the Concept Approval Area. In addition, Project approval is being sought for the pipelines in the rezoned areas of WDURA. The areas for which Project Approval is sought has been termed the Project Approval Area. The balance of the Concept Approval Area, for which concept approval only is sought, has been termed the Remaining Concept Approval Area. Water and wastewater pipelines outside the Area have been assessed and are included in comments relating to the Remaining Concept Approval Area. The Area falls within the Local Government Areas (LGAs) of Wollongong and Shellharbour, as indicated in Figure 1.

Sydney Water is seeking concurrent Project Approval and Concept Approval for the project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Sydney Water has commissioned a series of studies to feed into a supporting Environmental Assessment to assess the impact of the proposed water and wastewater services. The production of the non-Indigenous heritage assessment has been divided into six deliverables:

- Updated Desktop, Values and Maps
- Field Survey Methodology
- Field Survey Report
- Impact Assessment and Impact Management Report
- Heritage Assessment and Impact Management Report
- Section 146 Report.

The aim of this Impact Assessment and Impact Management Report is to build on the findings of the desktop review, sensitivity mapping, field survey of the Proposal area, and the Proposal components. Based on the above this report assesses the potential impacts of the Proposal design, construction and operation on existing and potential Non-Indigenous heritage.

This report provides a description and historical context for sites identified within the Concept Approval Area that are potentially impacted by the proposed water and wastewater pipelines. Based on this, the significance of an item has been established, or previous assessments confirmed. Establishing the significance of the items was vital in determining whether the potential impacts to the items by the proposed pipelines were acceptable and if impact management recommendations needed to be developed. In the instances where impact management is potentially required, management recommendations have been provided. In one instance, in the vicinity of newly identified archaeological sites on West Dapto Road, it is recommended that further investigation be undertaken to determine whether there is archaeological potential at these sites. Investigations of the nature required to determine the archaeological potential are outside the scope of this report. The management recommendations are summarised in Section 5.

The tender documentation identifies one purpose of this study was to establish whether items required notification to the Heritage Council under section 146 of the *Heritage Act*. The tender documentation interprets this section of the Act as relating to the nomination of items to the State Heritage Register, however, the intent of the section is to require the notification of newly discovered sites containing relics (archaeological deposits/sites). Given the intent of the tender, AECOM proposes that one site inspected meets the criteria for listing on the State Heritage Register – Avondale Homestead and Gardens (50). Under the *Heritage Act*, however, AECOM has not identified any new archaeological sites requiring notification to the Heritage Council. While sites of potential have been identified, these have not been conclusively determined to be archaeological sites they do not require notification to the Heritage Council at this stage.

1.2 Location and Description

WDURA covers an area of 3000 hectares and extends from Kembla Grange in the north, to the Illawarra Highway and North Macquarie in the south, a distance of approximately 10 km (Figure 1). The western boundary of the area is formed roughly by the Illawarra Escarpment and the villages of Wongawilli, Huntley, Avondale and Calderwood. To the east, the Princes Highway and the towns of Brownsville, Dapto, Yallah and Albion Park form the project boundary.

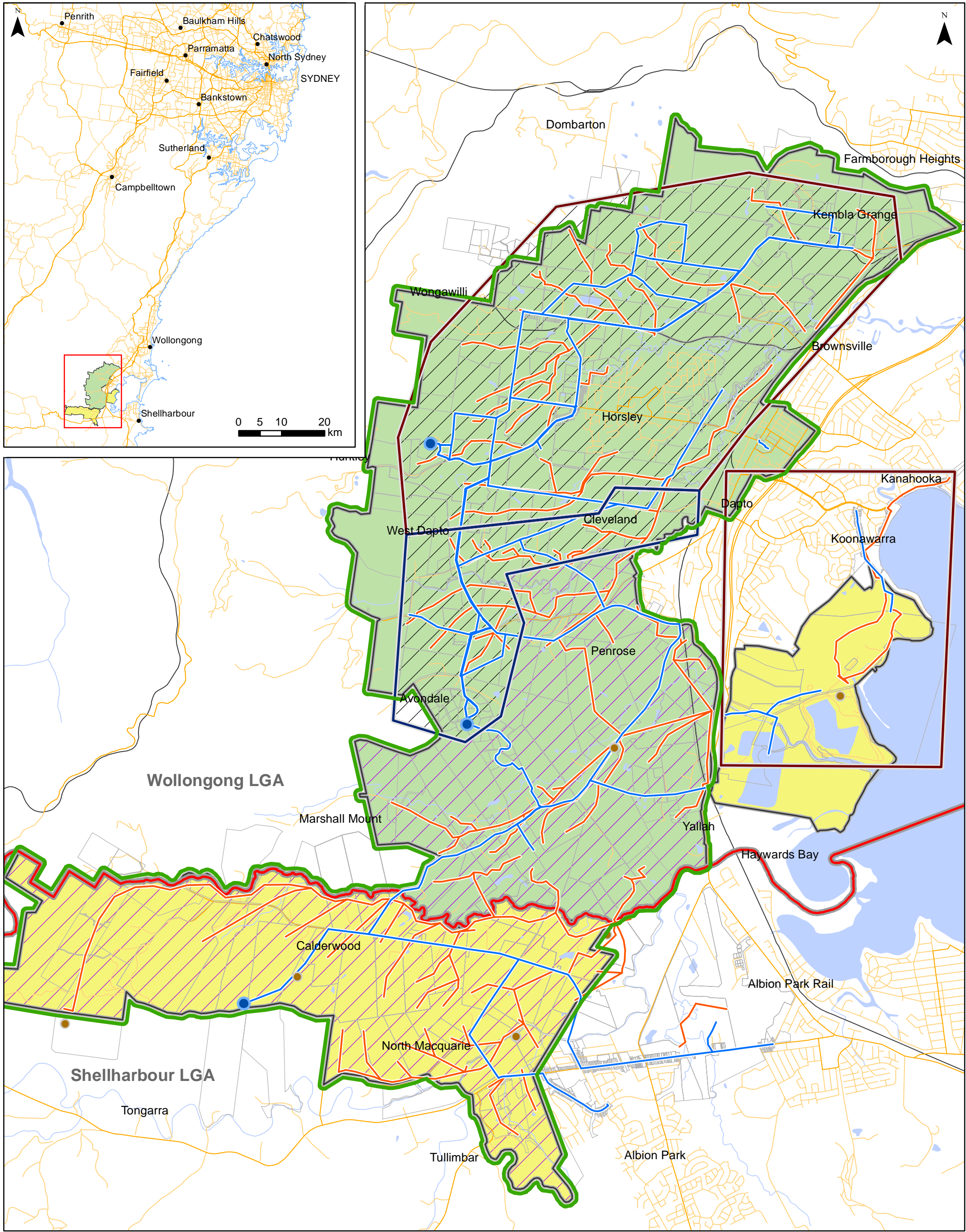
The majority of the Concept Approval Area is within the Wollongong Local Government Area (LGA), although the southern extent does cover a small section of the Shellharbour LGA. The Concept Approval Area is within the County of Camden and the Parishes of Kembla and Calderwood.

The Concept Approval Area is sparsely developed, although there exist areas of urban development around Horsely, Dapto and extending south along the Princes Highway. The area is mainly cleared farm land with pockets of vegetation increasing in the west in proximity to the Illawarra Escarpment and in association with ridge and drainage lines.

1.3 Report Structure

The report has the following structure:

- 1. Introduction** – introduces the project and background
 - 2. Statutory Controls Relating to Heritage** – outlines the relevant legislation and regulations as they relate to this project
 - 3. Historical Context** – a historical summary of the Concept Approval Area to contextualise the sites and their historical significance
 - 4. Methodology** – provides an outline of the processes used to reach the recommendations
 - 5. Description, Significance Assessment, Impacts and Recommendations**- outlines the sites potentially impacted by the proposed pipelines, including a description and significance assessment, based on Heritage Branch guidelines. The sites are assessed regarding impact the proposed pipelines may have and management recommendations to mitigate or ameliorate these impacts are provided
 - 6. Summary** – summarises the recommendations of the report.
 - 7. References** – texts used in the production of this study
- Appendix 1** – Table summarising site impacts and management recommendations
- Appendix 2** – Heritage Inventory Sheets for sites inspected during field survey – Project Approval Area
- Appendix 3** – Heritage Inventory Sheets for sites inspected during field survey – Remaining Concept Approval Area



	Waterway		Reservoir
	Road		Pumping station
	Railway		Water pipeline
	LGA boundary		Wastewater pipeline
	Cadastral boundary		West Dapto Urban Release Area
	Project Approval Area		Adjacent Growth Area
	Project Approval Area - Water only		Concept Approval Area

WEST DAPTO RELEASE AREA
IDENTIFIED HERITAGE ITEMS IN RELATION TO THE
PROPOSED WATER AND WASTEWATER SERVICES

Source: StreetPro (2010), Sydney Water (2010)

	Project Approval Area
	Remaining Concept Approval Area

JUN 2011
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1

2 Statutory Controls Relating to Heritage

The nature and level of relevant statutory controls to protect cultural heritage within the Concept Approval Area are set out below.

This summary of the statutory requirements regarding heritage is provided on the basis of experience of working with the NSW heritage system and does not purport to be legal advice. It should be noted that legislation, regulations and guidelines change over time and users of this report should satisfy themselves that the statutory requirements have not changed since the report was written.

2.1 Commonwealth Legislation

2.1.1 Environmental Protection and Biodiversity Conservation Act 1999 (as amended 2003)

This Act has been amended to protect heritage places of National significance or those heritage places which the Commonwealth owns. The amendment replaced the Australian Heritage Commission with the Australian Heritage Council and created a Commonwealth Heritage list (for items owned or controlled by the Commonwealth or its agencies) and a National Heritage List (for items of National significance).

These two lists replaced the Register of the National Estate (RNE). While the RNE has been suspended and is no longer a statutory list, Section 391A of the Act requires the Minister to consider RNE listing if a referral is made. This requirement expires in 2012, by which time all RNE listings are to be transferred to a relevant heritage register. Items on the RNE can have a variety of statuses, including Registered (it is inscribed on the Register) and Indicative (it is in the database, but no formal nomination has been received or an assessment has not been completed).

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities. Actions by the Commonwealth or any actions having a significant impact on items on the above two lists or the Register of National Estate should be referred to the Department of Sustainability, Environment, Water, Population and Communities for Consideration.

An action is defined as a project, development, undertaking, activity (or series of activities), or alteration.

An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact;
- It is undertaken outside Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; and,
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage items.

2.2 New South Wales Legislation

2.2.1 Heritage Act (NSW) 1977

The *Heritage Act 1977* (NSW) has the purpose of conserving items of environmental heritage of NSW. *Environmental heritage* is broadly defined under Section 4 of the *Heritage Act* as consisting of the following items: *'those places, buildings, works, relics, moveable objects, and precincts, of State or Local heritage significance.'*

The *Heritage Act* 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* deal with these different situations and the Act provides a number of mechanisms by which items and places of heritage significance may be protected.

State Heritage Register

Proposals to alter, damage, move or destroy places, buildings, works, relics, moveable objects or precincts protected by an Interim Heritage Order or listed on the State Heritage Register (SHR) require an approval under Section 60 of the *Heritage Act*. Demolition of whole buildings will not normally be approved except under certain conditions (section 63). Some of the sites listed on the SHR may either be 'relics' or have relics associated with them. In such cases, a section 60 approval is also required for any disturbance to relics *associated* with a listed item.

For some works if they are only minor in nature, and will have minimal impact on the heritage significance of the place, they may be exempted from the requirement to submit a Section 60. The circumstance under which an exception may be claimed are covered under the *Standard Exemptions for Works requiring Heritage Council Approval*. There may also be specific exemptions approved for individual sites, upon application.

Archaeological Relics

This report identifies the Concept Approval Area as having heritage significance and the potential to contain some historical archaeological resources or 'relics' as defined by the *Heritage Act*. Section 139 of the *Heritage Act* 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. It applies to all land in New South Wales that is not included on the SHR.

Amendments to the *Heritage Act* made in 2009 changed the definition of an archaeological 'relic' under the Act. A relic is now an archaeological deposit, resource or feature that has *heritage significance* at a local or State level. The definition is no longer based on age.

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"*

If a relic is located, the discoverer is required to notify the NSW Heritage Council.

Section 139 of the *Heritage Act* 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)).

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.

Section 146 of the *Heritage Act, 1977* requires that the discovery of relics be notified to the Heritage Council in a reasonable time and in a form required by the Heritage Council. Section 146 does not require items to be nominated to the SHR and relates only to the notification of relics.

Section 170 Register

Under Section 170 of the *Heritage Act*, Government agencies are required to maintain a Heritage and Conservation Register.

2.3 Environment Planning and Assessment Act 1979

Planning and development in NSW is carried out under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2000*. The EP&A Act requires that consideration be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts are interpreted as including impacts to cultural heritage.

Part 3A of the EP&A Act provides an approvals regime for all 'major projects'. Major projects are defined under Schedule 1 of the Major Development SEPP (2005) and are identified by way of declaration as a listed project in the Major Development SEPP or by notice in the NSW Government Gazette. Part 3A applies to all projects where the Minister for Planning has the approval role. Under Part 3A, the Minister can issue a Project Approval or a Concept Approval. Both maintain the requirement for consultation with the community and relevant State Government agencies. However, the requirement for certain other permits and licences is removed under Part 3A.

Non-Indigenous heritage impact assessments carried out under Part 3A of the EP&A Act should firstly address the Director General's Requirements then the guidelines developed by the Heritage Office, Office of Environment and Heritage (Heritage Office).

This Project is classified as a 'major project' under Part 3A of the EP&A Act. The Director General's Requirements for this project include the following in relation to Non-Indigenous Cultural Heritage Impacts:

"The Environmental Assessment shall include an assessment of indigenous and non-indigenous heritage values that may be impacted by the project with details on any subsurface archaeological investigations undertaken for potential archaeological deposits. Consideration should be given to the significance of the impacts of the project and any mitigation measures."

The Heritage Office does not have specific guidelines to follow regarding heritage assessments under Part 3A. This Project has therefore used the following guidelines as an indication of methods and principles required by the Heritage Office, together with the ICOMOS Burra Charter (2004):

- Heritage Manual (1996)
- Assessing Historical Significance (2001)
- Heritage Curtilages (1996)
- Levels of Heritage Significance (2008)

Additionally, the EP&A Act allows the making of Regional and Local Environmental Plans (REP and LEPs) with provisions that protect heritage items, heritage conservation areas and archaeological sites. See Section 2.3.1 for a summary of the relevant LEPs.

2.3.1 Local Environmental Plans

The Concept Approval Area is located within two Local Government Areas (LGAs) the City of Shellharbour and the City of Wollongong. The relevant LEPs and other regulations that manage heritage within the Concept Approval Area are as follows:

- Shellharbour Local Environmental Plan 2000
- Wollongong Local Environmental Plan 1990 - The 1990 LEP was gazetted on 28 December 1990. With the gazetting of subsequent LEPs the 1990 LEP now relates only to Cleveland Avondale, Marshall Mount, Huntley and part of Yallah.
- Wollongong Local Environmental Plan 2009 - The 2009 LEP relates to the majority of the Council area, with the exclusion of those areas covered by the 1990 LEP and the 2010 LEP
- Wollongong Local Environmental Plan (West Dapto) 2010 - The 2010 LEP rezones land in the WDURA for release, including Dapto town centre, Kembla Grange, Horsley and Wongawilli.

Overall these plans manage heritage by listing items as items of environmental heritage or conservation areas on a Schedule in the LEP.

2.3.2 Regional Environmental Plans

One Regional Environmental Plan has relevance to the current project – the Illawarra Regional Environmental Plan No 1. Schedule 1 contains a list of Items of the Environmental Heritage. Following amendments to the EP&A Act in 2009 this REP was deemed a SEPP

2.3.3 Sydney Water Act 1994

The *Sydney Water Act 1994* is administered by Sydney Water. Under the Act Sydney Water has the authority to “operate, repair, replace, maintain, remove, extend, expand, connect, disconnect, improve or do any other things” necessary to provide water and waste water services within its area of operation, which includes the Illawarra.

3 History

3.1 Introduction

Below is a brief historical summary of the Concept Approval Area. A more detailed, thematic history is provided in Appendix 4. The thematic history is based on the Wollongong City Council themes and is cross-referenced with the heritage items discussed in this report.

3.2 Early Settlement

Initial exploration of the coastal area adjoining the Concept Approval Area was undertaken by Bass and Flinders in 1796. They landed at Towradgi and the entrance to Lake Illawarra. The area was cut off from Sydney by the steep terrain until 1815 when drought in Sydney forced Dr Charles Throsby to drive cattle down the escarpment at Bulli.

Settlement was slow to begin, hampered by the Illawarra Escarpment. Throsby was followed by Cornelius O'Brien, who built a house, barn, cattle yards and a whaling station on Sandon Point. At the end of 1816 Surveyor General John Oxley marked out the first land grants and five of these were officially issued on 24 January 1817. One of these was 'Macquarie Gift' to George Johnston, which was the first land issued in West Dapto.

Other grants issued at the same time were 526 ha to R. Brooks named 'Exmouth', 283 ha to A. Allan called 'Waterloo', 1000 acres (406 ha) named 'Berkley' to R. Jenkins and 890 ha to D. Allan and named 'Illawarra Farm'. In 1829 Throsby's nephew, Charles Throsby Smith, was granted 518 ha, which he named 'Calderwood'. 'Avondale' was granted to Chief Clerk of the Supreme Court in the 1840s. Of these 'Exmouth', 'Calderwood', 'Avondale' and several other smaller holdings were acquired by Sarah and Henry Osborne, which, together with their initial grant of 'Marshall Mount', took their land to 2023 ha. The Osborne's had a lasting impression on the area.

HLA (2005) and AMBS (2010) provide summaries of a range of other settlers and their holdings. It is important to have an understanding of the way the area was settled as land grants influenced the location of houses and other items. The current information in relation to settlement and land grants available in these documents, while not reproduced here, is sufficient to build an understanding of the area and inform the Field Survey within the initial stages of this project. More detailed historical information may be required when it is determined if any of the physical remnants of these early grants are to be impacted.

3.3 Agriculture

It is probable that cedar cutters were active in the area from around 1800. Despite this, the first years of settlement were spent clearing the dense sub-tropical rainforest to open up land for stock. After the cessation of convict transportation there was a shortage of labour and in response larger landholders leased small uncleared lots to farmers for a rent-free period of six years. At the end of six years the farmer was able to pay around £10 a year in rent though production of wheat, barley, oats, potatoes, turnips and maize. The area remained largely undeveloped, being scattered with isolated homesteads surrounded by infrastructure associated with farming.

Wheat was initially a large crop in the area, however, by the early 1860s production had declined. Frequent flooding and rust, due to the high rainfall, reduced yields and it was soon determined to be an unsuitable crop. Dairying and, in particular, the production of butter and to a lesser extent cheese, became the mainstay of the agricultural economy. Mills constructed for grinding wheat were converted into butter factories, for example Brown's mill on Mullet Creek.

The success of dairying in the region led to the importation of cattle from England to improve the local herds. Imports included the Longhorn, Shorthorn, Red Lincoln and Ayrshire. While most farmers bred their herds independently, bulls were shared or sold and this led to a new breed, recognised as the Australian Illawarra Shorthorn.

Dairying in the region was characterised by small family operations of between 20 and 160 ha and running from 60 to 100 cows. A herd of this size would produce between two and five kegs a week, although it is not clear how much a keg contained (HLA 2005:15). The production of butter was seen as more profitable than cheese, especially following the collapse of several cheese factories in the 1890s. In the late 1880s and 1890s the industry formed into Co-operatives, where farmers contracted to sell their milk to a particular factory for an agreed price. HLA (2005) and AMBS (2010) provide limited details regarding the setup of the Co-operatives in the Concept Approval Area or the location of the separating stations and other factories. The dairy industry was, and still is, an important economic driver for the area and the physical remnants of the industry may have historical and social significance to local residents and heritage professionals. Further research is required to determine the location of these facilities.

3.4 Mining and Associated Industry

Mining and smelting was not a viable industry until the Lake Illawarra Harbour Scheme was completed in 1899. The Scheme involved the excavation of a channel from the ocean through to Lake Illawarra to allow shipping traffic.

The Scheme allowed the establishment of the Dapto Smelting Works, operated by the Smelting Company of Australia Ltd. Being opened in 1899, the Works smelted lead, silver, zinc, copper and gold from Broken Hill, Zeehan, Mount Morgan and Western Australia. The Works employed 500 men, half of whom lived in tents near the works. The Works closed in 1905 as competitors cut off ore supplies.

Significant mining was not undertaken until the Wongawilli Colliery was established in 1910, although mining did not commence until 1917. In 1928 BHP bought the Colliery to provide coal to the blast furnace at Port Kembla. In 1947 the mine was mechanised, but the following year the washery and coke ovens were demolished. Mining at the Colliery declined in the 1980s.

Associated with the Wongawilli Colliery was the establishment of Wongawilli as a village. Initially, families squatted on nearby 'Bankbook Hill' or 'Wongawilli Hill'. The homes were temporary and constructed of whatever materials could be sourced cheaply or at no cost from the local area. It was not until 1936 that a village was surveyed and laid out on either side of Wongawilli Road. All the lots had a standard 19.1 metre frontage and a depth of 70 metres, much larger than the average subdivision lot. This subdivision pattern created a village with a unique character.

There were a number of smaller and shorter-lived collieries in the area, including the Huntley Colliery opened in 1951 and purchased the following year by the Federal Government to supply the Tallawarra Power Station.

While the Project is unlikely to impact on the Collieries themselves, the associated infrastructure and the towns established to service the mining industry, for example Wongawilli, are of importance in understanding the development of mining in the area and the history of the area more generally and have the potential to be impacted.

3.5 Development and Subdivision

The original village of Dapto was located at Brownsville, on George Brown's grant. It consisted of the Illawarra Hotel, the Central Illawarra Council Chambers, a butcher's shop, blacksmith, Church of England and Wesleyan Chapel and police station.

Dapto, as known today, came into being with the construction of the railway line between Clifton and Kiama in 1887. Settlement moved closer to the line and eventually Brownsville became a separate town. The advantages of the railway saw many commercial businesses move from Brownsville, including the post office. Another effect of the railway was some larger land holders saw an opportunity to subdivide their holdings. For example, the Marshall estate was divided into 22 farm lots and sold to the highest bidders.

The proximity of the Dapto Smelting Works aided the growth of the town, but with the closure of the Works in 1905 Dapto went into decline. Men previously employed at the Works now had to travel to Port Kembla for work and many left the area, although many returned with the opening of the Wongawilli mine in 1916.

During the first half of the 20th century Dapto was a small rural service centre with less than 500 people and between 70 and 80 structures. There remained, however, a chronic housing shortage, mainly due to an influx of people to the Wongawilli mine. In the early 1940s a building society was established and 150 blocks made available for residential development. A mixture of private, Commonwealth and Housing Commission development conjoined Dapto and Brownsville.

After World War II there were larger residential developments, starting in 1955 with the Taylor and Woodrow house and land packages east of the railway line and south of Fowlers Road. Development continued through to the 1970s when shopping facilities were included in a major Housing Commission construction at Koonawarra Estate. Further subdivisions were approved in the 1990s with Forest Grove, Kanahooka, Glen Orchid and Horsley.

3.6 Summary

This section has provided a brief history of the Concept Approval Area as a means to understand the items identified as of heritage significance in the following section. The WDURA moved from an economy based on grazing to a diverse economy, in large part sustained by the dairy and mining industries.

4 Methodology

4.1 Introduction

The Field Survey was undertaken between Monday 17 and Friday 21 January 2011 by AECOM archaeologist Dr Susan Lampard and sub-consultant Dr Iain Stuart of JCIS.

4.2 Field Survey

Monday 17 January was used by the field survey participants to familiarise themselves with the area. Dr Lampard and Dr Stuart were joined by project historian Dr Terry Kass. The team drove the extent of the Concept Approval Area, noting the route of the pipelines and viewing identified heritage items from the road. The day confirmed that the methodology, as follows, was suitable to the terrain and the project requirements. The following four days were used to visit items identified as being potentially impacted by the proposed works. This was done in a systematic manner using the figures provided in the Updated Desktop as the survey area. For example, the team surveyed all items on Figure 3, before moving on to Figure 4 and so on. This was determined to be the most accurate way of ensuring that no sites were overlooked.

The predicted zone of impact of the project components given by Sydney Water and therefore the area for field survey was as follows:

- the assessment area for a reservoir is 2.0Ha
- the assessment area for a pumping station is 1.25sqm
- the assessment area for service alignments within a road reserve, covers 25 m from both property boundaries (making a total width of approximately 65m). This 25 m area is referred to as the 25 m zone
- service corridors 50 m wide, i.e. 25 m either side of the proposed alignment, for all other pipelines.

4.3 Field Survey Method

The following method was undertaken at each site:

- The property owner or tenant was located and permission was sought to access their property
- The structures and/or features at the site were identified and recorded
- A measurement was taken from the property boundary to the structure/feature to determine whether it was within the 25 m zone
- The structures/features were assessed for historical significance
- Photographs were taken of the structures/features
- The extent of the curtilage required to protect the values and potential associated archaeological deposits (if present) was determined and recorded with GPS.

4.4 Analysis Method

The GPS data was handed over to AECOM's GIS analyst for mapping. While this was in progress, the field notes were typed into Heritage Inventory Sheets for each of the sites inspected during the field survey. During this process, the physical evidence was analysed in light of the item's historical context and the item's significance assessed. The process of determining significance is described more fully in Section 4.5. It was vital to determine the significance of each item in order to assess what impact, if any, the proposed works may have on the items. The information collected in the field was used to determine which items will, potentially, be impacted by the proposed pipelines. Based on the significance of the item and the level of potential impact, management recommendations were developed. It was determined during the field survey that a number of sites were not within the proposed pipeline route. For these sites no recommendations were developed.

During the field survey curtilages for the purposes of this Project were developed in consideration of the likely impacts from the construction and operation of the pipelines. The location of the sites are shown in Figures 2- 13 at the end of Section 4.

4.5 Significance Assessment

In order to understand how development will impact on a heritage item it is essential to understand why an item is significant. An assessment of significance is undertaken to explain why a particular site is important and to enable the appropriate site management and curtilage to be determined. Cultural significance is defined in the Australia ICOMOS Charter for the conservation of places of Cultural Significance (the Burra Charter) as meaning "aesthetic, historic, scientific or social value for past, present or future generations" (Article 1.1). Cultural significance may be derived from a place's fabric, association with a person or event, or for its research potential. The significance of a place is not fixed for all time, and what is of significance to us now may change as similar items are located, more historical research is undertaken and community tastes change.

The process of linking this assessment with a site's historical context has been developed through the NSW Heritage Management System and is outlined in the guideline *Assessing Heritage Significance*, part of the NSW Heritage Manual (Heritage Branch, Department of Planning). The Assessing Heritage Significance guidelines establish seven evaluation criteria (which reflect four categories of significance and whether a place is rare or representative) under which a place can be evaluated in the context of State or local historical themes. Similarly, a heritage item can be significant at a local level (ie to the people living in the vicinity of the item), at a State level (ie to all people living within New South Wales) or be significant to the country as a whole and be of National or Commonwealth significance.

This project uses the NSW heritage significance criteria, which are:

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).

The site must show evidence of significant human activity or maintains or shows the continuity of historical process or activity. An item is excluded if it has been so altered that it can no longer provide evidence of association.

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 to area).

The site must show evidence of significant human occupation. An item is excluded if it has been so altered that it can no longer provide evidence of association.

Criterion (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).

An item can be excluded on the grounds that it has lost its design or technical integrity or its landmark qualities have been more than temporarily degraded.

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.

This criterion does not cover importance for reasons of amenity or retention in preference to proposed alternative.

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). Significance under this criterion must have the potential to yield new or further substantial information.

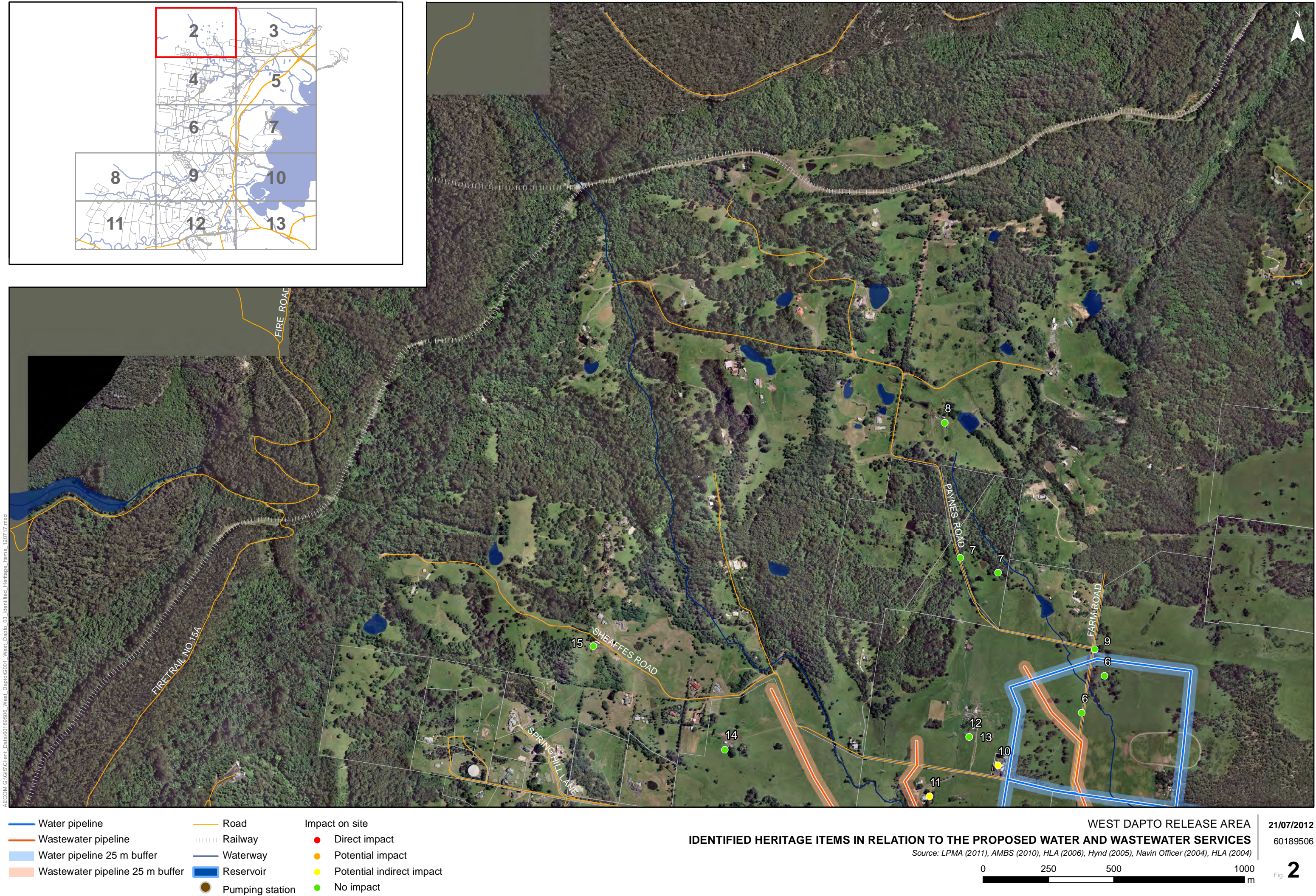
Guidelines for exclusion include the information would be irrelevant or only contains information available in other sources.

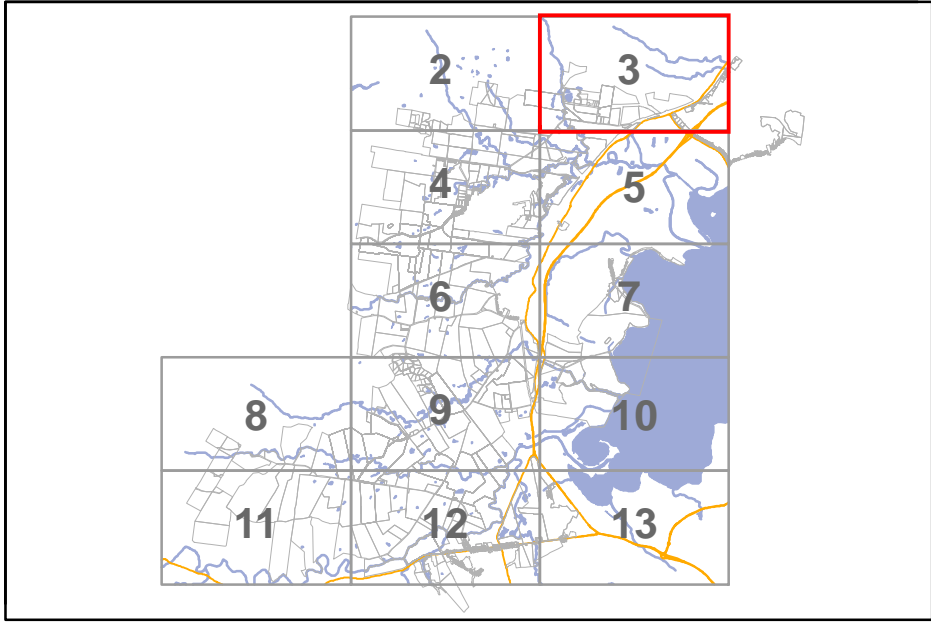
Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area). The site must show evidence of the element/function etc proposed to be rare.

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.

An item is excluded under this criterion if it is a poor example or has lost the range of characteristics of a type.





- | | | |
|---------------------------------|-----------------|---------------------------|
| Water pipeline | Road | Impact on site |
| Wastewater pipeline | Railway | Direct impact |
| Water pipeline 25 m buffer | Waterway | Potential impact |
| Wastewater pipeline 25 m buffer | Reservoir | Potential indirect impact |
| | Pumping station | No impact |