

New M5

Environmental Impact Statement

Technical working paper: Non-Aboriginal heritage

Appendix R



November 2015

WestConnex New M5

Technical Working Paper: Non-Aboriginal Heritage

Client: Roads and Maritime Services

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Executive Summary

Roads and Maritime Services (Roads and Maritime) is seeking approval to construct and operate the New M5 (the project), which would comprise a new, tolled multi-lane road link between the existing M5 East Motorway, east of King Georges Road, and St Peters. The project would also include an interchange at St Peters and connections to the existing road network.

This report is an assessment of possible heritage impacts (both direct and indirect) on listed heritage items within proximity of the proposed works. This assessment has been undertaken in response to the Secretary's environmental assessment requirements. The study area for this assessment has been informed by the operational and construction footprint of the project, the preferred project corridor, ancillary facilities associated with construction and operation, and the location and construction methodology of underground infrastructure (such as the main alignment tunnels).

In summary, 57 heritage items would be directly or indirectly impacted by the project. In some instances, an item would be directly and indirectly impacted by the project. Of the 57 heritage items:

- Three items would be demolished, being:
 - Warehouse 'Rudders Bond Store' (Sydney LEP I405);
 - Terrace group – 28-44 Campbell Street, St Peters (Roads and Maritime Section 170 #4305629); and
 - House – 82 Campbell Street, St Peters (Roads and Maritime Section 170 #4305643).
- Modifications ranging from a minor to a significant level of assessment would be required at three items, being:
 - Alexandra Canal (State Heritage Register #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany LEP I1 and non-statutory Register of the National Estate (RNE) # 4571712);
 - St Peters Brickpit Geological Site (RNE #16240); and
 - Goodsell Estate Conservation Area (Marrickville LEP 2011 C16).
- The project includes the full or partial acquisition of two items, which would result the permanent loss of this curtilage or would result in a change in use:
 - Service Garage – 316 Princes Highway (Marrickville LEP 2011 I312); and
 - Goodsell Estate Heritage Conservation Area (Marrickville LEP 2011 C16) (partial).
- The heritage values of seven heritage conservation areas would be partially and directly impacted, being:
 - Pallamanna Parade Urban Conservation Area (RNE #102089);
 - Kingsgrove East Urban Conservation Area (RNE #102106);
 - Clemton Park Urban Conservation Area (RNE #102071);
 - Bardwell Park Urban Conservation Area (RNE #102101)
 - Goodsell Estate Heritage Conservation Area (Marrickville LEP 2011 C16); and
 - Cooper Estate Heritage Conservation Area (Sydney LEP 2012 C2).
 - Sydenham Village (ID No 100061 under the Register of the National Estate).

Landscaping of the project near to some heritage conservation areas would minimise the potential impacts. Some of these conservation areas would be impacted by secondary direct impacts (as the tunnel passes under some heritage conservation areas).

- Twenty three items would be potentially directly impacted due to construction vibration from surface works. These impacts are anticipated to have a negligible to minor risk of affecting the significance of the heritage items. The overall heritage value of the heritage items would not be significantly impacted by the project.

- Thirty four items would be directly impacted due to vibration, settlement and groundwater drawdown as a result of tunnelling works. These items are primarily located within the preferred project corridor and include items consisting of mainly residential houses. Impacts to these items are anticipated to be minor to negligible. Four of these items would also be directly impacted by construction vibration due to surface works. The overall heritage value of the heritage items would not be significantly impacted by the project.

Of the 57 heritage items, 21 items may also be indirectly impacted by the project, due to temporary and / or permanent visual impacts. Of the 21 items, 20 items would also be directly impacted as outlined above. Impacts to the heritage items as a result of visual effects are anticipated to be minor to moderate. The overall heritage value of the heritage items would not be significantly impacted by the project.

There is also the potential for direct impacts due to potential eligibility for at-property acoustic treatment. Two of the 57 items have also been identified as being potentially eligible for acoustic treatment. This would be confirmed during detailed design, in consultation with landowners, and with consideration of potential impacts to heritage values.

The cumulative impact of the project to heritage values would be moderate. These potential impacts are to be managed to reduce the risk of actual impacts to the identified items.

In summary, it is concluded that the impacts of the project can be mitigated through the following measures:

- Development of an interpretation plan, which would identify opportunities to reflect the history of the New M5 areas in the newly built fabric. The plan would be developed in conjunction with the urban design to develop specific suitable interpretation in areas where there will be changed use including, but not limited to:
 - Alexandra Canal and the industrial heritage of the area; and
 - The St Peters Brickpit geological site.
- In relation to the Alexandra Canal:
 - Monitoring of the canal should be undertaken during the works to ensure vibration is not impacting on the canal walls;
 - A condition report of the canal brickwork adjacent to the bridge crossings and drainage discharge points, including areas beneath the bridges and areas impacted by associated construction works, would be undertaken prior to the commencement of construction. Any rehabilitation and conservation requirements would be determined in consultation with Sydney Water;
 - An archival recording of the canal walls should be undertaken, involving both scale drawings and photography, prior to the removal of the sandstone blocks;
 - The sandstone blocks should be numbered and recorded in such a way that those not displaced by the discharge points can be replaced in their previous location;
 - Sandstone blocks displaced by the discharge points should be stockpiled for use in repairs of other sections of the canal; and
 - Heritage interpretation regarding the canal should be installed in proximity to the item, ideally at the Campbell Road bridge given this would have greater pedestrian accessibility, in accordance with an interpretation plan

- In relation to the St Peters Brickpit Geological Site
 - Interpretation of the geology of the area within the interchange and surrounds, including opportunities to:
 - the geological interpretation of the site in consultation with City of Sydney; and
 - Integrate the geological/palaeontological discovery of the *Paraclytosaurus davdii*.
 - Retaining an exposed section of the fresh shales and siltstones, including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults, if safe to do so for both landform stability and ongoing access for interpretation;
 - Photographic and drawn archival recording of the geological features prior to and/or during construction; and
 - An assessment and/or consultation with a palaeontologist to determine whether the project impact area has potential to contain further specimens of scientific interest.
- In relation to Rudders Bond Store:
 - The bond store should be subject to a full archival recording following the NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006);
 - Consideration should be given as to whether the laminated timber columns could be salvaged and re-erected and clad elsewhere within the St Peters interchange or the local area. The cladding and brick walls are not considered to be of heritage significance and are not included within the reuse proposal.
 - Investigate options for documenting the history of the Ralph Symonds company and presenting it to a national audience, in partnership with stakeholders such as the City of Sydney and Powerhouse Museum. The focus would be on their development of innovative timber construction methods during and after the Second World War.
- In relation to the house at 82 Campbell Street and terrace group at 28-44 Campbell Street:
 - The buildings should be subject to a full archival recording following the NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006);
 - Consideration should be given as to whether elements of the houses could be salvaged and used to maintain or restore other properties managed by Roads and Maritime.
- The curtilage of the Goodsell Estate Heritage Conservation Area has been identified as potentially being impacted by the project. The impacts to the Goodsell Estate Heritage Conservation Area are considered to be minimal and no mitigation is required.
- Detailed mitigation and management measures would be developed for each heritage item directly impacted by the project with regard to vibration (surface and tunnelling) and settlement once final disturbance areas have been identified through detailed design. These mitigation and management measures would be included in the construction environmental management plan(s) for the project.
- The individual contribution of views into and out from heritage properties and the long-term impact of construction, if any, would be considered in identifying ways to appropriately manage such impacts within the construction environmental management plan(s) for the project.
- For additional areas of archaeological potential identified within Sydney Park, an archaeological text excavation and, if necessary, salvage excavation would be undertaken prior to construction in these areas. An excavation methodology is provided in **Appendix C**.
- There remains the potential to encounter deposits or relics in any context. The Roads and Maritime 'Standard Management Procedure: Unexpected Heritage Finds' (Roads and Maritime, 2015) would be followed and incorporated into the construction environmental management plan.

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1.0 Introduction

NSW Roads and Maritime Services (Roads and Maritime) is seeking approval to construct and operate the New M5 (the project), which would comprise a new, tolled multi-lane road link between the existing M5 East Motorway, east of King Georges Road, and St Peters. The project would also include an interchange at St Peters and connections to the existing road network. The project is shown in **Figure 1**.

Approval is being sought under Part 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The project is declared to be State significant infrastructure (SSI) under section 115U(2) of the EP&A Act by reason of the operation of clause 14 and Schedule 3 of the *State Environmental Planning Policy (State and Regional Development) 2011*. Accordingly, the project is subject to assessment under Part 5.1 of the EP&A Act and requires the approval of the Minister for Planning. An environmental impact statement (EIS) is therefore also required.

Roads and Maritime is seeking the project to be declared by the Minister for Planning as State significant infrastructure and critical State significant infrastructure under sections 115U(4) and 115V of the EP&A Act.

On 11 August 2015, the Commonwealth Minister for the Environment determined that the project has the potential to significantly impact on a matter of national environmental significance and is therefore a 'controlled action'. This means that approval of the project will be required from the Commonwealth Minister for the Environment in addition to environmental and planning approvals required under State legislation.

Under the Bilateral Agreement relating to environmental assessment (February 2015) between the Commonwealth Government and the NSW Government, this EIS has been adopted for the purpose of meeting the assessment requirements of both the Commonwealth EPBC Act and the NSW EP&A Act.

This technical working paper identifies and assesses the potential non-Aboriginal impacts associated with construction and operation of the project and supports the EIS for the project.

1.1 Overview of WestConnex

WestConnex is a 33 kilometre motorway that is intended to link Sydney's west with the airport and the Port Botany precinct. The component projects of the WestConnex program of works are:

- M4 Widening – Pitt Street, Parramatta to Homebush Bay Drive, Homebush (planning approval granted on 21 December 2014 and under construction)
- M4 East – Homebush Bay Drive, Homebush to Parramatta Road and City West Link (Wattle Street) at Haberfield (planning application lodged and subject to planning approval)
- New M5 – (the subject of this EIS)
- King Georges Road Interchange Upgrade (planning approval granted on 3 March 2015 and under construction)
- M4-M5 Link – Haberfield to St Peters (undergoing concept development and subject to planning approval)
- Sydney Gateway (is the subject of further investigations by the NSW Government and would be subject to separate planning approval).

Separate planning applications have or will be lodged for each component project. Each project will be assessed separately, but the impact of each project will also be considered in the context of the wider WestConnex program of works.

A proposed Southern extension from Arncliffe to Kogarah is currently being investigated by the NSW Government, and would connect the New M5 to the southern and bayside suburbs of Sydney, and the proposed F6 motorway.

The WestConnex Delivery Authority (WDA) was established by the NSW Government to manage the delivery of the WestConnex series of projects for Roads and Maritime on behalf of the State. The WDA was a public subsidiary corporation of the Roads and Maritime. Following the achievement of early milestones for the WestConnex program of works, the NSW Government took the opportunity to evolve this early governance model.

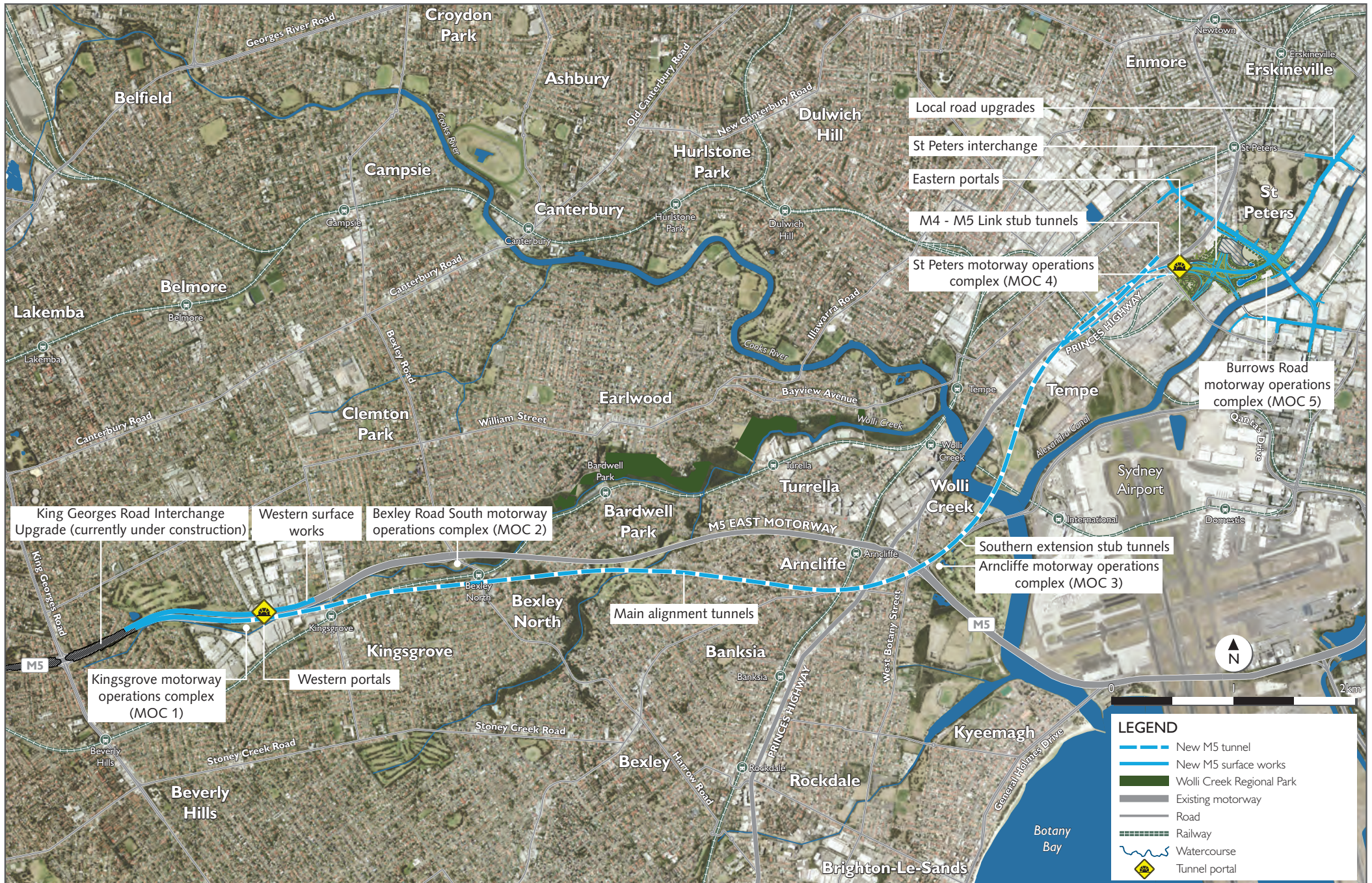
On 1 October 2015 the transfer of the project delivery functions of WDA to Sydney Motorway Corporation (SMC) was finalised, forming a single decision-making entity to finance and deliver the WestConnex program of works. SMC is a private corporation, the shareholders of which are the Minister for Roads, Maritime and Freight and the Treasurer, with a majority independent board of nine directors.

Roads and Maritime is the Government client agency for the WestConnex program of works. In that capacity Roads and Maritime will enter into contractual arrangements with SMC subsidiary entities which will design, build, own and operate the motorway on behalf of Roads and Maritime. Roads and Maritime and SMC are working together to manage the planning approval process for the project. However, for the purpose of the planning application for the project, Roads and Maritime is the proponent.

1.2 Overview of the project

Key components of the project would include:

- Twin motorway tunnels between the existing M5 East Motorway (between King Georges Road and Bexley Road) and St Peters. The western portals along the M5 East Motorway would be located east of King Georges Road, and the eastern portals at St Peters would be located in the vicinity of the Princes Highway and Canal Road. Each tunnel would be about nine kilometres in length and would be configured as follows:
 - Between the western portals and Arncliffe, the tunnels would be built to be three lanes but marked for two lanes as part of the project. Any change from two lanes to three lanes would be subject to future environmental assessment and approval
 - Between the Arncliffe and St Peters, the tunnels would be built to be five lanes but marked for two lanes as part of the project. Any change from two lanes to any of three, four or five lanes would be subject to future environmental assessment and approval.
- The western portals along the M5 East Motorway would be located east of King Georges Road, and the eastern portals at St Peters would be located in the vicinity of the Princes Highway and Canal Road
- Tunnel stubs to allow for a potential future connection to the future M4-M5 Link and a potential future connection to southern Sydney
- Surface road widening works along the M5 East Motorway between east of King Georges Road and the new tunnel portals
- A new road interchange at St Peters, which would initially provide road connections from the main alignment tunnels to Campbell Road and Euston Road, St Peters
- Two new road bridges across Alexandra Canal which would connect St Peters interchange with Gardeners Road and Bourke Road, Mascot
- Closure and remediation of the Alexandria Landfill site, to enable the construction and operation of the new St Peters interchange
- Works to enhance and upgrade local roads near the St Peters interchange
- Ancillary infrastructure and operational facilities for electronic tolling, signage (including electronic signage), ventilation structures and systems, fire and life safety systems, and emergency evacuation and smoke extraction infrastructure
- A motorway control centre that would include operation and maintenance facilities
- New service utilities and modifications to existing service utilities
- Temporary construction facilities and temporary works to facilitate the construction of the project
- Infrastructure to introduce tolling on the existing M5 East Motorway
- Surface road upgrade works within the corridor of the M5 East Motorway.



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Construction activities associated with the project would generally include:

- Commencement of enabling and temporary works, including construction power, water supply, ancillary site establishment, demolition works, property and utility adjustments and public transport modifications (if required)
- Construction of the road tunnels, interchanges, intersections and roadside infrastructure
- Haulage of spoil generated during tunnelling and excavation activities
- Fitout of the road tunnels and support infrastructure, including ventilation and emergency response systems
- Construction and fitout of the motorway control centre and ancillary operations buildings
- Upgrades to surface roads and construction of bridges
- Implementation of environmental management and pollution control facilities for the project.

Subject to the project obtaining environmental planning approval, construction of the project is anticipated to commence around mid-2016 and is expected to take around three years to complete.

The M5 Motorway corridor (the M5 East Motorway and the M5 South West Motorway) is the main passenger, commercial and freight corridor between Port Botany, Sydney Airport and south-west Sydney. Traffic demands on the M5 East Motorway currently exceed the design capacity of the roadway, and as a result, present a significant bottleneck to the M5 Motorway corridor with motorists experiencing heavy congestion and unreliable journey times. The project is needed to provide additional capacity along the M5 Motorway corridor, and would allow for a more robust and reliable transport network.

1.3 Project location

The project would be located within the Canterbury, Hurstville, Rockdale, Marrickville, Sydney and Botany Bay local government areas. The project corridor is located from about five to twenty kilometres to the south and south-west of the central business district of Sydney. The project would traverse the suburbs of Beverly Hills, Kingsgrove, Bexley North, Earlwood, Bardwell Park, Bardwell Valley, Arncliffe, Wolli Creek, Tempe, Sydenham, St Peters, Alexandria and Mascot.

1.4 Secretary's environmental assessment requirements

In preparing the Technical Working Paper: Non-Aboriginal Heritage, the Secretary's environmental assessment requirements (SEARs) issued for the New M5 project on 5 March 2015, and reissued on 26 August 2015 have been addressed. The key matters raised by the Secretary for consideration in the Technical Working Paper: Non-Aboriginal Heritage and where this report addresses the SEARs are outlined in **Table 1**.

Table 1 Secretary's Environmental Assessment Requirements for the Non-Aboriginal heritage impact assessment

Secretary's Environmental Assessment Requirement	Section Addressed in this Report
Impacts to State and local non-Aboriginal heritage (including conservation areas, built heritage landscapes and archaeology) must be assessed. Where impacts to State or locally significant historic heritage are identified, the assessment must:	
Outline any proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the measures) generally consistent with guidelines in the <i>NSW Heritage Manual</i> (Heritage Office and Department of Urban Affairs and Planning 1996)	Chapter 8
Be undertaken by a suitably qualified heritage consultant(s) with relevant heritage expertise (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria)	Section 1.6
Include a statement of heritage impact for all heritage items/conservation areas to be impacted (including significance assessment). This must include detailed mapping of all heritage items and how they are affected by the proposal	Chapter 9.0

Secretary's Environmental Assessment Requirement	Section Addressed in this Report
Include details of any proposed mitigation measures (architectural and landscape)	Chapter 8.0
Consider the impacts from vibration, demolition, archaeological disturbance, altered historical arrangements and access, increased traffic, landscape and vistas, and architectural noise treatment	Chapter 7.0
Develop an appropriate archaeological assessment methodology, including research design, in consultation with the Department and the Heritage Council of New South Wales, to guide physical archaeological test excavations and include the results of these excavations	Appendix C.

Accordingly, the following guidelines have been adopted for this assessment, as specified in the SEARs:

- *NSW Heritage Manual* (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996b); and

In addition to the guidelines identified in the SEARs, the following guidelines were considered in this assessment:

- *The Burra Charter* (the Australia ICOMOS Charter for Places of Cultural Significance) (ICOMOS (Australia), 2013).
- *Assessing Heritage Significance* (NSW Heritage Office, 2001);
- *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Heritage Branch, 2009);
- *Heritage Curtilages* (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996a); and
- *Levels of Heritage Significance* (NSW Heritage Office, 2008).

1.5 Study area

The study area for this assessment has been informed by:

- The preferred project design, as summarised in **Section 1.1** of this report, and as detailed further in Chapter 5 of the EIS for the project.
- The preferred project corridor, which represents a zone on the surface equal to a distance of 50 metres from the outer edge of excavations for the main alignment tunnels (underground).
- The construction footprint of the project at the surface and properties within 50 metres from the construction footprint. The construction footprint represents the area that would be physically impacted by construction works, including construction ancillary facilities.
- The construction methodology.

1.6 Project team

The historic heritage assessment was prepared by Dr Susan Lampard. Susan has a PhD in historic archaeology from Flinders University and has worked in the Government and consulting sectors for ten years. During her time as a consultant, Susan has prepared multiple historic heritage technical reports for EIS' and is a suitably qualified heritage consultant, as required by the SEARs (refer **Section 1.6**).

Susan was assisted during the field survey and in the compilation of the historical context by Graduate Environmental Scientist Anna Mohen, who holds a Bachelor of Arts in Environmental Science and Anthropology. Technical and QA review was undertaken by Luke Kirkwood. Luke completed a BSc/BA Hons 1st class degree in archaeology from the University of Queensland in 2000. Since then, he has obtained ten years' experience in both academia and consulting. Luke is appropriately qualified to provide technical and QA review of this document.

1.7 Report structure

The report is structured as follows:

- **Chapter 1 – Introduction.** This chapter introduces the project and the proponent, and describes the project area.
- **Chapter 2 – Statutory Controls.** The chapter outlines the relevant Commonwealth and State legislation relating to the assessment. Any guidelines and assessment criteria (where applicable) relevant to the construction and operation of the project are also identified.
- **Chapter 3 – Methodology.** This chapter defines the study area assessed in this report and describes the steps undertaken in the assessment.
- **Chapter 4 – Historical Context.** This chapter summarises the historical development of the study area in order to make predictions regarding the potential type and distribution of sites.
- **Chapter 5 – Desktop Assessment.** The chapter provides the results of the heritage register searches and examines the existing historical plans available for the study area and identifies area of archaeological potential.
- **Chapter 6 – Survey Results.** This chapter describes the existing environmental values of the study area relevant to historic heritage and archaeology, including results of the field investigations.
- **Chapter 7 – Issues and potential impacts.** The chapter examines the potential historical heritage significance impacts associated with the construction and operation of the project.
- **Chapter 8 – Management measures.** This chapter outlines the proposed mitigation strategies to be implemented during the life of the project to manage the potential environmental impacts.
- **Chapter 9 – Statement of Heritage Impact.** This chapter provides the statements of heritage impacts for items carried forward for further assessment following consideration of the potential impacts (Chapter 7) and mitigation measures (Chapter 8).
- **Chapter 10 – Findings and recommendations.** This chapter presents the recommendations and conclusion to the report and presents the next steps in the advancement of the project.

1.8 Limitations

This assessment targeted individual listed heritage items as indicated through maps and location data provided in relevant heritage databases and registers. Potential impacts on heritage items have been identified through an initial, conservative evaluation of potential construction and operational impacts.

Access to properties and internal assessments of each listed heritage items was not possible in the majority of instances at the time of the assessment. Where possible, heritage items were inspected from the nearest publicly-accessible location(s). Visual inspections were limited in some cases where elements such as gates, fences and vegetation obscured the item.

Predictions have been made within this report about the probability of subsurface archaeological materials occurring within the study area and subject to physical disturbance, based on the land use history of specific areas, surface indications and environmental contexts. However, it is possible that materials may occur in areas without surface indications and in any environmental context.

Mitigation and management measures recommended within this report include the completion of a ground settlement assessment during detailed design to confirm the predicted impacts on heritage structures and to identify additional feasible and reasonable mitigation measures. Existing condition surveys would also be completed prior to the commencement of construction for heritage items within the preferred project corridor or that have been identified during detailed design to be within recommended safe working distances to surface works. At that time, internal condition assessments would also be undertaken. These are discussed further in **Chapter 8**.

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2.0 Statutory controls

A number of planning and legislative documents govern how heritage is managed in NSW and Australia. The following section provides an overview of the requirements under each as they apply to the project.

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic heritage items. Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of national environmental significance may only be carried out with the approval of the Commonwealth Minister for the Environment. An action is defined as a project, development, undertaking, activity, 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.
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

On 11 August 2015, the Commonwealth Minister for the Environment determined that the project has the potential to significantly impact on a matter of national environmental significance and is therefore a 'controlled action'. This was on the basis of the potential significant impact on biodiversity matters. This means that approval of the project will be required from the Commonwealth Minister for the Environment in addition to environmental and planning approvals required under State legislation.

Under the Bilateral Agreement relating to environmental assessment (February 2015) between the Commonwealth Government and the NSW Government, this EIS has been adopted for the purpose of meeting the assessment requirements of both the Commonwealth EPBC Act and the NSW EP&A Act.

Under the EPBC Act, protected heritage items are listed on either the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the non-statutory Register of the National Estate (RNE). The RNE has been suspended and is no longer a statutory list.

The heritage registers mandated by the EPBC Act have been consulted and there are no heritage items listed on the Commonwealth Heritage List or the National Heritage List within or directly adjacent to the study area.

There are a number of sites on non-statutory Register of the National Estate (RNE) within the study area and these are discussed where relevant.

As there are no heritage items listed on the Commonwealth Heritage List or the National Heritage List within the study area, the EPBC Act is not of further relevance to the project in relation to heritage matters.

2.2 State Legislation

2.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) provide the framework for environmental planning in NSW. They include provisions to ensure that developments and activities that have the potential to impact on the environment are subject to detailed assessment and provide opportunity for public involvement. In NSW, environmental impacts are interpreted as including impacts on cultural heritage.

Roads and Maritime is seeking approval for the project under Part 5.1 of the EP&A Act. The project has been declared to be State significant infrastructure.

The following Local Environmental Plans (LEPs) apply to the study area:

- *Canterbury Local Environment Plan 2012;*
- *Hurstville Local Environment Plan 2012;*
- *Rockdale Local Environment Plan 2011;*
- *Marrickville Local Environment Plan 2011;*
- *Botany Bay Local Environment Plan 2013; and*
- *Sydney Local Environment Plan 2012.*

A proposed amendment to Sydney LEP 2012 also applies to the study area, which proposes to list a number of additional items within the Sydney LGA (Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings)).

These instruments set out objectives for conservation and protection of historic heritage within each local government area. Each instrument also provides a list of heritage items in each local government area.

2.2.2 The Heritage Act 1977

The NSW *Heritage Act 1977* (as amended) (the Heritage Act) was enacted to conserve the environmental heritage of NSW. Under section 32 of the Heritage Act, places, buildings, works, relics, moveable objects or precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the NSW State Heritage Register (SHR). Sites that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the Heritage Council of NSW.

Archaeological relics (i.e. any relics that are buried) are protected by the provisions of Section 139 of the Heritage Act (if not protected by listing within a State Heritage Register curtilage). Pursuant to Section 139 of the Heritage Act, it is illegal to disturb or excavate any land knowing or suspecting that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. In such cases, an excavation permit under section 140 of the Heritage Act is required. It is to be noted that that no formal listing is required for archaeological relics. Archaeological relics are automatically protected if they are of local significance or higher.

Approvals under section 139 of the *Heritage Act 1977* are not required for a State Significant Infrastructure project approved under Part 5.1 of the EP&A Act by virtue of section 115ZG of the EP&A Act. However, the impact on heritage items as a result of the project has been addressed through this assessment report.

Proposals to alter, damage, move or destroy places, buildings, works, relics, moveable objects or precincts protected by an IHO or listed on the SHR require an approval under section 60 of the *Heritage Act 1977*. Demolition of whole buildings will not normally be approved except under certain conditions (section 63). Some of the sites listed on the SHR or on LEPs 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 State Heritage Register listed item.

Under section 170 of the *Heritage Act 1977*, NSW government agencies are required to maintain a register of heritage assets. The register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items. The results of the search are provided in **Chapter 5**.

3.0 Methodology

This chapter describes the methodology used in preparing this technical working paper, including heritage register searches, field survey of the project area and significance assessment criteria.

This assessment has followed the NSW Heritage Division publications *Assessing Historical Significance*, *Assessing Significance for Historical Archaeological Sites and Relics* (NSW Heritage Branch, 2009) and *Statements of Heritage Impact* (NSW Heritage Office, 2002). Further guidance and requirements for this assessment have been detailed in the SEARs.

The assessment of non-Aboriginal heritage has included the following tasks to address relevant aspects of the NSW Heritage Branch guidelines:

- A search of relevant historic heritage registers has been conducted at numerous points throughout the assessment, the most recent being completed on 1 September 2015, including:
 - World Heritage List (World Heritage Committee, UNESCO).
 - National Heritage List (Australian Heritage Council).
 - Commonwealth Heritage List (Australian Heritage Council).
 - NSW State Heritage Register (NSW Heritage Branch, OEH).
 - NSW State Heritage Inventory (NSW Heritage Branch, OEH).
 - NSW section 170 Heritage and Conservation Registers (hereafter referred to as S170 Registers) compiled by Roads and Maritime, Sydney Water, Sydney Trains and Transport for NSW and other government agencies as relevant.
 - *Canterbury Local Environment Plan 2012*;
 - *Hurstville Local Environment Plan 2012*;
 - *Rockdale Local Environment Plan 2011*;
 - *Marrickville Local Environment Plan 2011*;
 - *Botany Bay Local Environment Plan 2013*;
 - *Sydney Local Environment Plan 2012*, including proposed industrial heritage listings currently under consideration for inclusion in Schedule 5;
 - National Trust Listings; and
 - Register of the National Estate (Australian Heritage Council) (non-statutory).
- A review of historic materials, such as historical parish maps and plans, to determine the historic context of the study area and to identify any potential for archaeological heritage items (refer to **Section 5.2**).
- Mapped historic heritage listings have been assessed to ascertain properties within the study area with possible direct and indirect impacts during construction and operation of the project:
 - For construction, it is anticipated that direct impacts may include surface works and/ or land acquisition, and indirect impacts may include vibration or settlement generated by construction activity at the surface or underground.
 - For operation, it is anticipated that direct impacts may include acoustic treatments at affected properties and indirect impacts may include the visual presence of adjoining permanent features of the project, for example, interchanges, ventilation infrastructure and/or noise walls.
- Available heritage listing information has been compiled of the potentially impacted listings, including past inspection photographs. This data has been compiled to provide a point of comparison.
- Field surveys of the identified properties have been carried out (refer to **Chapter 6.0**).
- During the surveys, areas of potential heritage value have been investigated to look for historic heritage outside the recorded listing locations that may be impacted by the proposed works (refer to **Chapter 6.0**).
- Existing background information has been updated with field survey results.

- Statements of Heritage Impact (SOHIs) have been produced for the identified heritage sites considering direct and indirect impacts during construction and operation.
- Results of the non-Aboriginal heritage investigations and assessment have been documented in this report, including identification of mitigation and management measures to address direct and indirect impact on heritage items.

3.1 Historic research

The historical context provided in **Chapter 4.0** has been summarised from a series of primary maps, plans and newspapers in combination with secondary sources. The following archives and institutes' catalogues were searched for relevant information, which was then sourced either in person or electronically:

- National Library of Australia, including Picture Australia;
- State Library of NSW, particularly the Mitchell Library;
- City of Sydney Archives;
- Land and Property Information's on-line Historical Land Records Viewer;
- Trove digitised newspaper collections; and
- Relevant local libraries.

3.2 Field survey methodology

A pedestrian and vehicle survey was undertaken from 20 to 23 April 2015 and comprised a survey from public domain within the project area. The project area consists of the sub-surface tunnel alignments and all surface works, with a 50 metre buffer as described in Section 1.5. The 50 metre buffer has been determined as adequate to assess the potential impacts to heritage items surrounding the study area. The topography of the study area in the areas of surface disturbance is such that there are no or limited sightlines beyond 50 metres. Vibration modelling (AECOM 2015) has indicated that there would be negligible impacts beyond 50 metres of the tunnel alignments (refer to Section 7.1). This methodology was determined to be appropriate for the following reasons:

The following assessment method was undertaken at each site identified either through location of the sites marked on parish plans or identified as part of the survey:

- 1) The structures and/or features identified at each site were recorded;
- 2) The structures/features were then assessed for historical significance; and
- 3) Photographs were taken of the structures/features with details maintained in a photo log.

Access was able to be obtained for a limited number of heritage listed properties. As such, an additional day of survey was undertaken on 21 May 2015 to inspect the interior of the Rudders Bond Store (53-57 Campbell Road, St Peters) and a number of heritage listed terraces in St Peters (15, 36, 40, 44 and 126 Campbell Street, St Peters).

3.3 Significance assessment criteria

In order to understand how a development will impact on a heritage site it is essential to understand why a site 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 International Council on Monuments and Sites 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 1.2). 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. What is of significance now may change as similar sites are located, more historical research is undertaken and community tastes change (ICOMOS (Australia), 2013).

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* (NSW Heritage Office, 2001), part of the NSW *Heritage Manual* (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996b). 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 site can be significant at a local level (i.e. to the people living in the vicinity of the site), at a State level (i.e. to all people living within NSW) or be significant to the country as a whole and be of National or Commonwealth significance.

In accordance with the guideline *Assessing Heritage Significance* (NSW Heritage Office, 2001) and the *Heritage Act 1977*, a site will be considered to be of State significance if it meets two or more of the assessment criteria at a State level. A site is assessed as being of local significance if it meets one or more of the criteria. The criteria and the guidelines for inclusion or exclusion are provided in Table 2.

Table 2 NSW criteria for assessing heritage significance

Criterion	Requirements
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).	- items which demonstrate strong associations to past customs, cultural practices, philosophies or systems of government, regardless of the intactness of the item or any structure on the place; - items associated with significant historical events, regardless of the intactness of the item or any structure on the place; - significant cultural landscapes and other items demonstrating overlays of the continual pattern of human use and occupation; and/or - items where the physical fabric (above or below ground) demonstrates any of the points described above.
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).	- items which demonstrate strong associations to a particular event, historical theme, people or philosophies, regardless of the intactness of the item or any of its structures; - items associated with significant historical events, regardless of the intactness of the item or any structure on the place; and/or - items where the physical fabric (above or below ground) demonstrates any of the points described above.
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).	- items which demonstrate creative or technical excellence, innovation or achievement; - items which have been the inspiration for creative or technical achievement; - items which demonstrate distinctive aesthetic attributes in form or composition; - items which demonstrate a highly original and influential style, such as an important early (seminal) work of a major architect; and/or - items which demonstrate the culmination of a particular architectural style (known as climactic).
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.	- items which are esteemed by the community for their cultural values; - items which if damaged or destroyed would cause the community a sense of loss; and/or - items which contribute to a community's sense of identity. - Items are excluded if: - they are valued only for their amenity (service convenience); and/or - the community seeks their retention only in preference to a proposed alternative.

Criterion	Requirements
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).	- has the potential to yield new or further substantial scientific and/or archaeological information - is an important benchmark or reference site or type - provides evidence of past human cultures that is unavailable elsewhere
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).	- provides evidence of a defunct custom, way of life or process - demonstrates a process, custom or other human activity that is in danger of being lost - shows unusually accurate evidence of a significant human activity - is the only example of its type - demonstrates designs or techniques of exceptional interest - shows rare evidence of a significant human activity important to a community
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.	- is a fine example of its type - has the principal characteristics of an important class or group of items - has attributes typical of a particular way of life, philosophy, custom, significant process, design, technique or activity - is a significant variation to a class of items - is part of a group which collectively illustrates a representative type - is outstanding because of its setting, condition or size - is outstanding because of its integrity or the esteem in which it is held

The Heritage Council require the summation of the significance assessment into a succinct paragraph, known as a Statement of Significance. The Statement of Significance is the foundation for future management and impact assessment.

3.4 Statements of Heritage Impact

The objective of a Statement of Heritage Impact is to evaluate and explain how the proposed development, rehabilitation or land use change will affect the heritage value of the site and/or place. A Statement of Heritage Impact should also address how the heritage value of the site/place can be conserved or maintained, or preferably enhanced by the proposed works.

This report has been prepared in accordance with the NSW Heritage Office & Department of Urban Affairs and Planning's *NSW Heritage Manual* (1996) and the NSW Heritage Office *Statements of Heritage Impact* (NSW Heritage Office, 2002). The guidelines pose a series of questions as prompts to aid in the consideration of impacts due to the project. The questions vary in the guideline, depending on the nature of the impact to the heritage site. The Statement of Heritage Impact for direct and indirect impacts to identified heritage items is provided in **Appendix B**.

4.0 Historical context

4.1 Introduction

The historical context of an area is important in understanding the significance of a project area and to identify the location of sites of heritage significance or with archaeological potential. Due to the intensive use of the area following European settlement and the wealth of histories of the area, this context is by necessity a brief summary of secondary sources, with reference to historic images and plans.

4.2 Aboriginal occupation

Available sources indicate that project area falls within the traditional country of the Darug people, who spoke the Darug (also spelt Dhaŋ-rook, Dharrook, Dhaŋrook, Dharruk and Dharug) language. Darug is believed to have been spoken from the Hawkesbury River in the north, to Appin in the south, and from the coast west across the Cumberland Plain into the Blue Mountains.

In common with other regions of New South Wales (e.g. Attenbrow, 2010) and Australia more broadly (Peterson, 1976), available historical records suggest that the primary units of social organisation amongst the Darug were the clan and band. The size of the individual bands near the coast at contact appears to have varied considerably and was no doubt activity and season dependent (Attenbrow 2010). However, an upper limit of around 60 individuals, consisting of several nuclear families, has been suggested. Individual band sizes notwithstanding, much larger groups of Aboriginal people, numbering in the hundreds, are known to have come together for events such as corroborees, ritual combats and feasts.

The post-contact history of the Darug-speaking peoples of the Sydney Region is primarily one of dispossession and loss, with traditional hunting and camping grounds rapidly claimed and settled by Europeans and populations decimated by introduced diseases such as tuberculosis and small pox (Attenbrow 2010: 14-15, 21-22).

Further details regarding the Aboriginal history and heritage of the project area can be found in the Technical Working Paper: Aboriginal heritage (AECOM, 2015).

4.3 Early European settlement (1788-1850)

The Cooks River and Wolli Creek were explored by Captain Cook in advance of the settlement at Port Jackson. The area to the west of Cooks River was first described as 'fine meadow' and then later as swamp land. This, and the area's relative inaccessibility from Sydney, resulted in it being one of the last around the city to be settled (Wolli Creek Preservation Society, 2011a).

Thomas Smyth was granted 30 acres, which was later extended to 470 acres in 1799, in what is today Tempe and St Peter's (Thorpe, 1994a). Thomas Smyth was a discharged sergeant with the marine corps and worked the land he had with the help of nine convicts, until it was assigned to Robert Campbell in payment of a debt (Muir, 2013a).

In 1804 Hannah Laycock was granted 500 acres of good pasture and timbered land on either side of the upper reaches of Wolli Creek. Hannah Laycock was the wife of Thomas Laycock, Quartermaster of the NSW Corps, who was instrumental in the foiling of the Irish rebellion known as the Battle of Vinegar Hill. It was unusual at this time for women to be granted land, it is thought this may have been a first, and may have been in recognition of her husband's services to the Colony. The couple had six children and many land grants. Thomas died in 1809 and in the years following, his wife and family received further grants in the area eventually totalling 830 acres from South Campsie to Stoney Creek Road. Ms Laycock's estate was named "Kings Grove", now honoured by the suburb Kingsgrove (Wolli Creek Preservation Society, 2011b). A plan of the grant in 1841 indicates improvements consisted of a hut, tents, well, paddock, corn field and an orchard (**Figure 2**). The homestead is purported to have been in the vicinity of the corner of Rosemeath Avenue and Homer Street in Kingsgrove, over 400 metres north of the project.



Figure 2 'Field Plan of the Kingsgrove Homestead', 1841. Source: Library of NSW Mitchell Library map collection. Call no. Z/M2 811.1851/1841/1. The project is located off the bottom of the plan, beyond the 'Chain of Ponds', now known as Wolli Creek.

The area that is today known as Beverley Hills was first settled in 1810 by Captain John Connell and Dr Robert Townson, under a grant named Dumbleton. With limited further settlement, the area remained dense forest with only small breaks for small market gardens, dairies, timber getters and charcoal burners. In 1830 John Connell took ownership of Dr Townson's grant and the area became known as Connell's Bush. Dumbleton (now Beverley Hills) was part of this (City of Canterbury Library, 2012).

The first large estate in the area was owned by James Chandler. He has arrived in Sydney aboard the *Surry* on the 24 September 1820 and set up a cloth and grain business at 99 Pitt Street. In March 1822, he purchased 'Sylvester's Farm', an area of 100 acres on the western side of Wolli Creek adjoining Kingsgrove. He was granted 1200 acres from Governor Brisbane in April 1822 adjoining his existing land covering what is today Bexley, Bexley North, Kogarah and part of Rockdale. This land brought Chandler an increased social standing, however, his property was frequently used by escaped convicts for hiding places and, due to its isolation, he could not lease the land. It was not gazetted for subdivision until 1831. By 1832 the Chandler had heavily mortgaged the land, but it was not until August 1836 that he could clear his debts when Charles Thompson of "Clydesdale" paid £991.50 for the property (Rathbone, 1980:1).

Arncliffe was settled around this time by David Hannam and Mary Masterson. David was the son of Reuben Hannam who was a reformed convict credited with making the first sandstock bricks in Australia and the official overseer of the government brickworks at Brickfield Hill. Mary was one of the first two white children to be born in the district of Airds. David and Mary, in 1825, used their land for farming and raising pigs, poultry, cattle and horses (Rathbone, 1997:5). At a land auction in January 1839, James Pike of Parramatta purchased 100 acres to the south of Hannam's grant.

Alexander Brodie Spark was a prominent figure of wealth and influence in 1820s Sydney society. Through various lifestyle choices, enterprises and the death of his father, his wealth fluctuated, however in 1836 he built 'Tempe House'. Originally, the house was intended for entertaining only, however after it was completed he enjoyed it so much that it became his permanent residence. The house was built surrounded by ornate gardens including a variety of rare plants and trees. It was a prime location for large extravagant gatherings of the elite with over 500 visitors in his first year of residence. He married Frances Mara Radford in 1840 and had six children with her. The couple, their six children and the three children from Mrs Spark's previous marriage lived in 'Tempe' together (Rathbone, 1997:16).

After a period of no rain in 1837-1838 a decision was made to provide Sydney with more dependable water supply than the existing Busby's bore which tapped the unreliable swamps of what is now Centennial Park. Damming of the Cooks River was the chosen solution. The location of the dam required Spark to relocate his bathing pavilion and had a number of other smaller impacts to the function of the gardens. In 1839 nearly two hundred convicts were assembled and work commenced on the dam in September of that year. Upon completion in 1840 it was the largest engineering feat to that date in the colony (Rathbone, 1997:17). However, it was a complete failure, with the dammed water found to be salty and undrinkable.

The Land Grant system was abolished in 1831, leaving all crown land for sale at public auction. In June 1840 Spark bought two additional areas of land in Arncliffe. At this time Dr James Mitchell, a colourful character who had been recently dismissed from the government service for insubordination and was evidently one of the most astute land dealers in the colony, purchased 50 acres each on the western side of Edward Flood and David Hannam's land grants in order to have access to the road that would be soon put in. Spark had also taken advantage of the land boom without securing the credit he had extended to others. The property bubble burst and land value plummeted. Added to this, was the pressure of the declining prices of wool and livestock as well as an extended drought. When the Bank of Australia collapsed in 1842, Spark was already struggling and by August 1843 he declared himself bankrupt (Rathbone, 1997:18).

The depression of the 1840s plunged many owners of the big estates into bankruptcy; these estates were subdivided as a result and land along Wolli Creek was sold for small farms and market gardens (Wolli Creek Preservation Society, 2011b).

4.4 Suburban development (1850-1900)

Throughout the 1860s and 1870s the railway extension throughout NSW was a great political divider. The councillors elected for the Municipal District of West Botany in the 1874 election were those who ran with the extension of the railway as part of their platform. The proposed line crossed through a number of properties and required the removal of two homes in the area. Immediately south of the Cooks River the line had to pass through three market gardens, according to R.D Stephens the Engineer in Chief, this was unavoidable due to the

prominence of market gardens in the area. In 1881, the Illawarra Railway Line alignment was formally approved in Parliament. This resulted in a relative population boom and the subdivision of some land along the railway line (Rathbone, 1997:48).

A notable arrival in this period of population expansion was Charles Thomas Richardson who was the grandson of Rebecca Small (the first white child born to free parents in the colony of NSW). He was particularly wealthy and he and his wife had lived at "Glenrock", Darling Point (now Ascham School) but moved into Spark's Tempe House on the edge of the Cooks River around 1875. In February 1881 Richardson purchased eight acres of The Town of Wincanton Estate across from what is now the St Francis Xavier Primary School, Presbytery and Church north to Burrows Street. This was where he constructed 'Wickham' a grand two storey homestead including a gatekeeper's cottage, coach house, stables and a large barn. Richardson and his land epitomise the gracious lifestyle led by the wealthy families of the era (Rathbone, 1997:49).

William George Rudd is noted to have had the greatest impact on the district of these pre 1900 settlers. After acquiring several lots near the Arncliffe Station and seven acres of The Village of Arncliffe Estate fronting Wollongong Road he erected a large home on another lot of Wollongong Road called 'Athelstane'. He opened a produce store on Cooks River Road and he had a financial interest in the district's brickworks, where he had once worked. He was mayor of St Peters between 1877 and 1880 and went on to be elected to the Rockdale Council in 1882, where he also served terms as Mayor and in 1906, was appointed the first President of the Sutherland Shire (Rathbone, 1997:50).

Despite reasonable population growth in Arncliffe following the extension of the railway line, the area remained a predominantly farming and gardening area. It was particularly popular with Chinese tenant farmers who had originally been attracted to Australia by the gold rushes of the 1850s and 1860s, but failed to make fortunes so were reverting to running market gardens (Rathbone, 1997).

The Illawarra Railway Line was opened in October 1884 and caused significant changes to the landscape of Arncliffe and the other suburbs on the line. The railway also generated a need for a new school, larger church and an official post office. The first official postal facilities were established in William Smithson's General Store in April 1878. It moved a number of times before ending up at the Railway Station in 1884 with station master Mr W. Marsden conducted the postal business. In 1898 the postal service moved to its current location in the post office building on Firth Street (Rathbone, 1997:55).

West Botany (later Rockdale) achieved municipal status in 1871, the same year as St Peters, followed by Hurstville in 1887. In 1900 the Borough of Bexley was created, allowing for the emergence of a local identity as well as a structure for the funding of public works such as road works and drainage systems.

Before 1877, there was no public school in Arncliffe. Children who did not go to the several private schools in the area were either forced to travel to Tempe Public School or just didn't attend. Two acres of land fronting Rocky Point Road was acquired from the owner Hon. Samuel Terry M.L.C and a stone building capable of accommodating 135 children, complete with an attached teacher's residence was erected and ready for occupation by June 1880. It was given the name West Botany Public School and changed to Arncliffe Public school in September 1885. By this stage the school had 233 students and a second building was built.

The year 1885 also saw the building of Dappeto by Frederick Gibbins. The grand home was built on eleven acres of landscaped grounds with glasshouse, fernery, coach house and stables, gardener's and groom's accommodation, orchard, vineyard and tennis court. The house itself consisted of over 20 rooms and was built with bricks that are reputed to have been mixed with whale oil to keep out the dampness, the slates for the roof were imported from Wales and all the furnishings were made to order in London. Gibbins had made his fortune as an oyster merchant with leases on nearly all the northern rivers of NSW. He built his own ships to transport the oysters to Sydney (Rathbone, 1997:60).

Hon. Samuel Terry M.L.C was a wealthy man with an extensive and distinguished career in the Legislative Assembly before being appointed to the Legislative Council in 1881. He owned 60 acres of elevated land in the area. In 1886 he registered the area as the Avenel Park Estate. He kept two acres adjacent to Arncliffe School with views across the estuaries of Muddy Creek and Cooks River to Botany Bay for his own residence. As he began construction on the property it became known that the Government intended to appropriate the land over which he was to look for a sewerage farm. He withdrew the sale of the estate and settled in Ashfield instead (Rathbone, 1997:60).

In 1882, 309 acres of land at the mouth of the Cooks River, known as Webb's grant, was resumed for the sewerage farm project. In 1886 nearby residents were made aware of the plans and in 1890 an additional 311 acres were resumed to account for the inclusion of the western suburbs sewerage line as well. Work on the project began in late 1891 and reached Wolli Creek in 1892. The line crossed Wolli Creek through three large cast iron pipes, each eight feet in diameter supported on a steel and concrete bridge. Covered aqueducts and underground tunnels carried the system across the suburbs to reach the sewerage farm. The glazed bricks used in the line's construction, along with the cast iron pipes, were landed at the wharf near Tempe House and conveyed to the site by horse drawn carts. The Western Suburbs Outfall Sewer was not completed until 1896 and at a cost well in excess of the estimates of £327,000 (Rathbone, 1997:65).

Upon completion of the sewerage farm Michael Thomas Morgan purchased the unfinished home of Hon. Samuel Terry M.L.C., completed it and called it 'Teluba' and lived in it until his death in 1920. His surviving son sold the home to the Department of Education in June 1922 (Rathbone, 1997:90).

Tempe House had a new owner in 1885 following the death of the Maguire brothers and the resale by Michael Gannon. The estate was sold to the Catholic religious order, The Sisters of the Good Samaritan of the Order of St Benedict in March 1885 for the use as a women's refuge. The Sisters were in need of a new location due to the construction of Central Railway Station at their existing refuge. The women were also of the view that their refuge was now too close to temptations of the growing city and they needed a location close to, but not in, the city. Tempe House was renamed St Magdalen's Retreat. The Refuge was fully functioning in 1887 and in 1888 the chapel was constructed. The next 30 years saw the refuge grow, but a tumultuous time of insecurity occurred after there were accusations of sinister actions on behalf of the overseers. The accusations were investigated in a full scale inquiry into the establishment in 1919, which heard that the women in the Refuge were being paid minimum wage for their work in the laundry. The inquiry determined that there was no wrong doing – if the women had not been housed and employed by the Refuge they would have been living on the streets or have been a burden to the public purse in mental institutions (Rathbone, 1997:72). The work of St Magdalen's continued for almost a century until it closed in 1989 when the Tempe Estate was sold to Qantek, a branch of Qantas and in 2000 was passed on to Interciti Arncliffe Developments Pty. Ltd.

4.5 Early 20th Century consolidation (1900-1950)

In the first few decades of the 1900s a considerable number of older houses and mansions in the region were subdivided and replaced by working class housing and industries. The introduction of a building covenant ensured the standard of new builds remained high. By this time the suburbs of the region had established particular identities, with Bexley remaining an elite suburb favoured by the wealthy for the vistas and topography whilst Arncliffe began to accommodate many of the noxious industries such as tanneries, boiling down works and wool washing and St Peters was known for its brickworks (Thorp, 1994b).

A number of major building projects were carried out in Arncliffe in the 1930s. Of significant note is the St Francis Xavier Catholic Church. Construction started on the Forest Road block in June 1931 to build the 625 person church. The architect, Clement Clancy, had incorporated the 107 feet high round tower as a distinctive feature. It is reported that the priest at the time, Father Joseph Patrick Rafferty, supervised every stage of the construction and was uncompromising in the quality of workmanship he expected (NSW Heritage Division, 2010i).

The opening of the East Hills railway line in 1931, the break-up for former private lands and the greater access to cars as a means of transport encouraged significant increase in the suburbanisation of many parts of the region. However, Bexley North, Kingsgrove and Kyeemagh remained quite sparsely settled until after the war (Thorp, 1994b).

4.6 Late 20th century development (1950 to present)

Small farms remained in the Wolli Creek Valley until the 1960s, when the last of the dairies and market gardens closed, bowing to the pressures of urbanisation (Wolli Creek Preservation Society, 2011b).

In 1976, the Cooks River Environment Survey and Landscape Design report noted the lack of passive urban space as a serious recreational problem in the Cooks River Area. Recommendations included the transformation of the river into a useable recreational resource, with boat, canoe and bicycle hire centres, cycling and walking trails with underpasses and river crossings, natural bush areas as well as quiet areas and areas for socialising (Muir, 2013b).

Sydney Airport (Kingsford Smith Airport) is one of the oldest continuously operating airports in the world with the first aircraft taking off from the site in April 1911. The 'Mascot Aerodrome' was officially opened in January 1920 and acquired by the Commonwealth the following year as part of a program to develop a nation-wide airport network. Incremental developments of the airport took place over time with the addition of new passenger terminals and enhanced military facilities. Following the Second World War, the Cooks River was diverted in order to enable the development of new runways. In 1968 and again in 1972, the main north-south runway was extended into Botany Bay to cater for the new long-haul international jets. In 1989 the Commonwealth commenced development of the third runway that was opened in 1994. This third runway required the resumption of a number of residences in the Sydenham and Tempe Areas, particularly of note is the area now known as Sydenham Green. In July 2002 the airport was privatised (Sydney Airport Corporation Limited, 2009).

In December 1997 the Roads and Traffic Authority (now Roads and Maritime) was given planning approval to proceed with the M5 East Motorway project. In December 2001 the motorway was opened to traffic (Roads and Maritime Services, 2015).

5.0 Desktop assessment

A desktop assessment was undertaken of the project area that included a search of relevant heritage databases, as provided in **Section 5.1**, and a review of historic maps, plans and images to identify areas of archaeological potential, as discussed in **Section 5.2**.

5.1 Heritage register searches

A search of the relevant heritage databases was undertaken on 13 April 2015 and updated on 1 September 2015 to identify non-Aboriginal heritage items within the study area. The study area consists of the sub-surface tunnel alignments and all surface works, with a 50 metre buffer as discussed on **Section 1.5**. The 50 metre buffer has been determined as adequate to assess the potential impacts to heritage items surrounding the study area.

In total, 57 individual items or conservation areas were identified on a statutory and non-statutory heritage register as part of the desktop assessment. Taking in account that seven items are listed on more than one register, a total of 70 listings were identified. The results of the search are shown in **Table 3** and **Figure 2**.

Table 4 provides the summary of listings ordered by local government area and LEP identification number, the corresponding register(s) and listed heritage significance level. **Appendix A** provides maps illustrating the curtilage of the heritage items relative to the key features of the project.

There are no listed items within the study area for the following registers: World Heritage Register, National Heritage Register, Commonwealth Heritage Register, Canterbury LEP 2012 or the Hurstville LEP 2012.

Five of the 57 items within the study area are listed on the State Heritage Register:

- Alexandra Canal (#01621);
- Arncliffe Railway Station (#01076);
- Western Outfall Main Sewer (Rockdale to Homebush) (#01647);
- Timber Slab Cottage, 44 Barden Street (#01412); and
- St Peters Anglican Church, Princes Highway (#00032).

The majority of the 57 items are listed on the Rockdale LEP 2011 and Marrickville LEP 2011, with 21 and 17 items respectively. Six items were identified on the Sydney LEP 2012, two items on a draft proposed amendment to the Sydney LEP 2012 and one item on the Botany Bay LEP 2013.

Nine items (including conservation areas) were identified on the non-statutory Register of the National Estate. Of the nine items, six items are not listed on a statutory register. These items are the Pallamanna Parade Urban Conservation Area (RNE #102089), Kingsgrove East Urban Conservation Area (RNE #102091), Clemton Park Urban Conservation Area (RNE #102071), Bardwell Park Urban Conservation Area (RNE #102101), Sydenham Village (RNE #100061) and the St Peters Brickpit Geological Site (RNE #162040).

Nine items of the 57 items are listed on Section 170 Heritage and Conservation Registers including: Sydney Water (three items); Sydney Trains (four items) and Roads and Maritime Services (two items).

Table 3 Summary of heritage listings by heritage register

Heritage Register	Number of identified listings
World Heritage Register	0
National Heritage Register	0
Commonwealth Heritage Register	0
Register of the National Estate (non-statutory)	9
State Heritage Register	5
Sydney Water s170 Register	3
Sydney Trains s170 Register	4
Roads and Maritime s170 Register	2
Canterbury LEP 2012	0
Hurstville LEP 2012	0
Rockdale LEP 2011	21
Marrickville LEP 2011	17
Sydney LEP 2012	6
Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings)	2
Botany Bay LEP 2013	1
Total Individual Items	70 (including seven items on multiple registers)

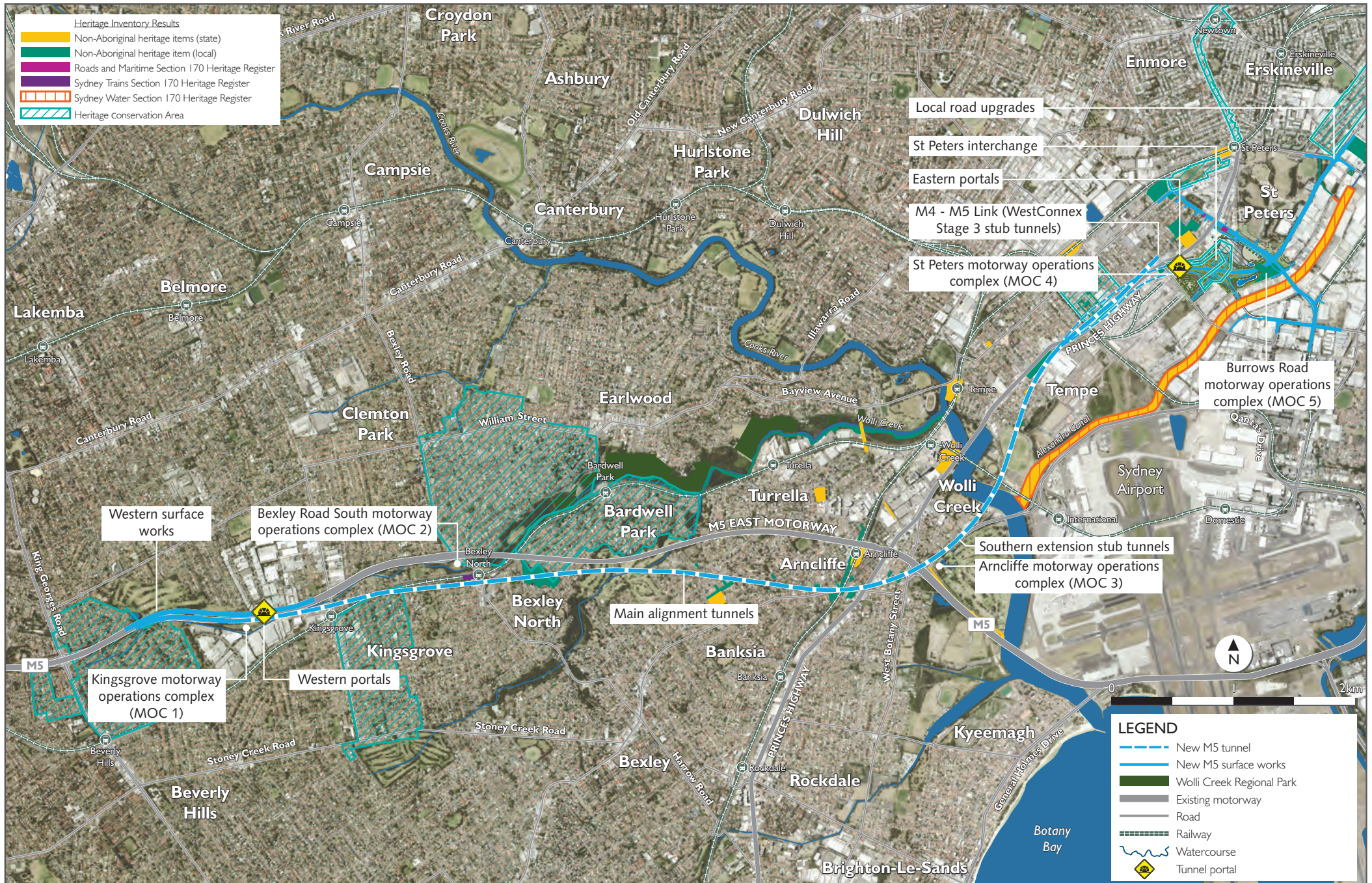


Figure 3 Heritage inventory results within the study area and surrounds

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Table 4 Summary of registered heritage items by local government area

Local government area	Item Name and Address	Heritage Register and Id Number	Listed Significance Level
Canterbury / Hurstville	Pallamanna Parade Urban Conservation Area	RNE #102089	n/a
Rockdale	Western Outfall Main Sewer (Rockdale to Homebush) Valda Ave (south-western side of Kogarah Golf Course)	State Heritage Register #01647 Sydney Water S170 Register #4572728	State
Rockdale	Arncliffe Railway Station Group* Firth Street	State Heritage Register #01076 Sydney Trains s170 Register #4801150 Rockdale LEP I1	State
Rockdale	Bard of Avon 13 Eden Street Arncliffe	Rockdale LEP 2011 I13	Local
Rockdale	Californian Bungalow 7 Fairview Street	Rockdale LEP 2011 I15	Local
Rockdale	Californian Bungalow 21 Fairview Street	Rockdale LEP 2011 I16	Local
Rockdale	Street Plantings Firth Street	Rockdale LEP 2011 I18	Local
Rockdale	Arncliffe Post Office 35 Firth Street	Rockdale LEP 2011 I19 RNE #19170	Local
Rockdale	Glenevie Lane Firth Street (laneway between Nos 43 and 44 through to Stanley Street)	Rockdale LEP 2011 I20	Local
Rockdale	Victorian Shop and Dwelling 45 Firth Street	Rockdale LEP 2011 I21	Local
Rockdale	St Francis Xavier Church Group 2-4 and 6 Forest Road	Rockdale LEP 2011 I22	Local
Rockdale	St Francis Xavier Catholic Presbytery 26 Forest Road	Rockdale LEP 2011 I23	Local
Rockdale	Rosslyn Hospital 30 Forest road	Rockdale LEP 2011 I24	Local
Rockdale	House 31 Kyle Street	Rockdale LEP 2011 I35	Local

Local government area	Item Name and Address	Heritage Register and Id Number	Listed Significance Level
Rockdale	Victorian House 16 Stanley Street	Rockdale LEP 2011 I48	Local
Rockdale	Victorian House 20 Stanley Street	Rockdale LEP 2011 I49	Local
Rockdale	Victorian House 22 Stanley Street	Rockdale LEP 2011 I50	Local
Rockdale	Victorian Semi-detached Dwelling 26 Stanley Street	Rockdale LEP 2011 I51	Local
Rockdale	House 73 West Botany Street	Rockdale LEP 2011 I56	Local
Rockdale	House 148 Wollongong Road	Rockdale LEP 2011 I61	Local
Rockdale	Stotts Reserve 167 Slade Road	Rockdale LEP 2011 I165	Local
Rockdale	Stone Federation House	Rockdale LEP 2011 I81	Local
Rockdale	Wolli Creek Valley Wolli Creek	Rockdale LEP 2011 I237	Local
Rockdale	Clemton Park Urban Conservation Area	RNE #102071	n/a
Rockdale	Bardwell Park Urban Conservation Area	RNE #102101	n/a
Rockdale	Kingsgrove East Urban Conservation Area	RNE #102091	n/a
Rockdale	Bexley North Railway Station	Sydney Trains s170 #48101898	Local
Rockdale	Arncliffe (Forest Rd) Overbridge Forest Road	Sydney Trains s170 #4805728	Local
Rockdale	Wolli Creek Culvert Bexley Road	Sydney Trains s170 #4305006	Local
Marrickville / Sydney / Botany Bay	Alexandra Canal	State Heritage Register #01621 Sydney Water S170 #4571712 Sydney LEP 2012 I3 Marrickville LEP 2011 I270 Botany Bay LEP 2013 I1 RNE #103889	State
Marrickville	St Peters Public School	Marrickville LEP 2011 I271	Local

Local government area	Item Name and Address	Heritage Register and Id Number	Listed Significance Level
Marrickville	Terrace Housing, including interiors 105-119 May Street	Marrickville LEP 2011 I273	Local
Marrickville	St. Peters Anglican Church 187-209 Princes Highway, St Peters	State Heritage Register #00032 Marrickville LEP 2011 I275 RNE #1716	State
Marrickville	Southern Cross Hotel 340 Princes Highway	Marrickville LEP 2011 I277	Local
Marrickville	Waugh and Josephson Industrial Buildings 1-7 Unwins Bridge Road	Marrickville LEP 2011 I280	Local
Marrickville	Town and Country Hotel 2 Unwins Bridge Road	Marrickville LEP 2011 I281	Local
Marrickville	Narara Terrace – Victorian Terraces 4-18 Unwins Bridge Road	Marrickville LEP 2011 I282	Local
Marrickville	Remaining brick road and footpath paving and stone guttering Victoria Street, St Peters	Marrickville LEP 2011 I283	Local
Marrickville	Brick Kerbs and Sandstone Kerb Guttering George St, Henry St, Park Rd, Park Lane, Railway Lane, Rowe Lane, Reilly Lane and Stewart Lane	Marrickville LEP 2011 I284	Local
Marrickville	Victorian Filigree Style Sandstone Faced Residence, Including Interiors 19 Railway Road	Marrickville LEP 2011 I288	Local
Marrickville	St Mary/St Mina Coptic Orthodox Church 24A Railway Road	Marrickville LEP I289 (Note: Marrickville Council have determined to demolish the Church. It will be removed from the Schedule)	Local
Marrickville	Timber Slab Cottage 44 Barden Street	State Heritage Register #01412 Marrickville LEP 2011 I294	State
Marrickville	Westpac Stores and Penfolds Wine Cellars 634-808 Princes Highway	Marrickville LEP 2011 I299	Local
Marrickville	Moreton Bay Fig 43 South Street Tempe	Marrickville LEP 2011 I303	Local
Marrickville	Service Garage 316 Princes Highway	Marrickville LEP 2011 I312	Local

Local government area	Item Name and Address	Heritage Register and Id Number	Listed Significance Level
Marrickville	Goodsell Estate Heritage Conservation Area Between Illawarra Railway Line, May Street, Bedwin Road and Princes Highway	Marrickville LEP 2011 C16	Local
Marrickville	St Peters Brickpit Geological Site Corner of Princes Highway and Canal Road	RNE #162040	n/a
Marrickville	Sydenham Village Railway Road	RNE #100061	n/a
Marrickville	House – 28-44 Campbell Street, St Peters 28-44 Campbell Street	Roads and Maritime s170 #4305629	Local
Marrickville	House – 82 Campbell Street, St Peters 82 Campbell Street	Roads and Maritime s170 #4305643	Local
Sydney	Terrace Group Including Interiors 2-34 Campbell Street	Sydney LEP 2012 I12	Local
Sydney	Sewage Pumping Station No. 39 (SP0039) Water Board Pump House Including Interior and Substructure 48 Huntley Street	Sydney Water s170 #4571730 Sydney LEP 2012 I18	Local
Sydney	Industrial Building “Frank G Spurway” Including Interiors 20-30 Maddox Street	Sydney LEP 2012 I20	Local
Sydney	Warehouse “Rudders Bond Store” Including Interiors 53-57 Campbell Road	Sydney LEP 2012 I405	Local
Sydney	Cooper Estate conservation area	Sydney LEP 2012 C2	Local
Sydney	Macdonaldtown Stormwater Channel	Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings) #3	Local
Sydney	Former Alexandria Spinning Mills	Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings) #14	Local

* The Arncliffe Railway Station Group curtilage for the State Heritage Register listing and Section 170 Conservation and Heritage Register is outside the study area. However, the curtilage for the same item under the Rockdale LEP 2011 is more expansive and extends into the study area. For the purposes of this assessment, the item has been carried forward.

5.2 Review of maps, plans and images

The review of historic maps, plans and images focused on areas where surface disturbance is proposed. Archaeological relics or deposits located in the vicinity of the tunnel alignments are unlikely to be impacted by the project. This section is divided into an examination of the western surface works, Kingsgrove Road surface works, Bexley Road surface works, Arncliffe surface works area, St Peters interchange and local roads upgrades.

5.2.1 Western surface works

The available records for this area include parish plans dating to 1889 and 1903, together with an aerial photograph from 1943 aerial. The parish plans show the area of the western portals, now within the existing M5, had been granted to Richard Podmore, Richard Tuckwell and John Leadbeater. The plans from 1889 (**Figure 4**) and 1903 (**Figure 6**) do not show any structures, although this is not unusual in a semi-rural environment where there were sufficient other markers, such as roads and fences, to position one's self within the landscape. The 1903 parish plan indicates that by this time, Podmore's grant had been subdivided as the 'Gratham Park Estate' and Tuckwell's as 'Canarys Hill Estate'. Leadbeater's grant was still intact. An undated plan of the subdivision of Bardwell Park (**Figure 5**) provides the location of an existing residence 'Lambert Heights'. This area is located to the north of the project and will not be impacted by the project.

The 1943 aerial indicates the beginnings of residential development in the area (**Figure 7**) – Pallamanna Avenue and associated streets are laid out and there are a growing number of houses in the area.

There is no indication of potential archaeological relics or deposits based on the available plans. Additionally, the works would not impact on historic road alignments, based on the fact that the project in this area is within the existing M5 East Motorway road corridor. The road alignments, established during the subdivision of the historical estates, have already been impacted by the existing M5 East Motorway.

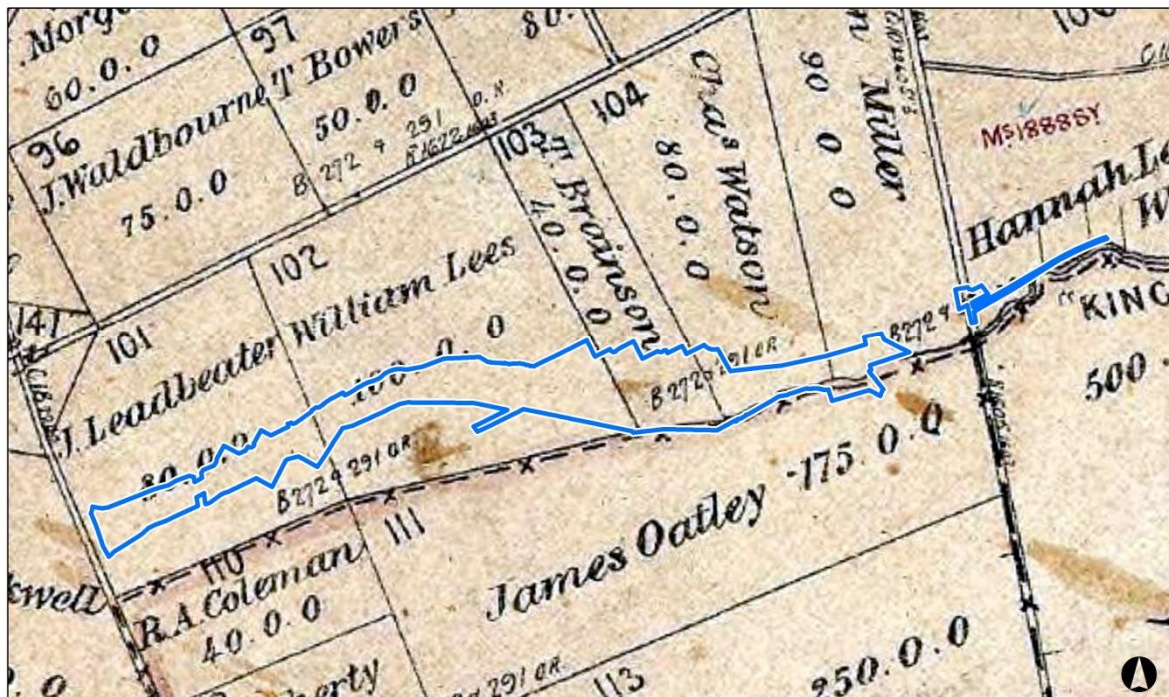


Figure 4 Excerpt of the 1889 St George Parish Plan with overlay of the western surface works in orange (Source: NSW Property & Information).

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Figure 5 Excerpt from “Bardwell Park subdivision plans” Image 1. Source: Library of NSW, Mitchell Library Map collection. Call No. Z/SP/B7. Location of ‘Lambert Heights’ highlighted

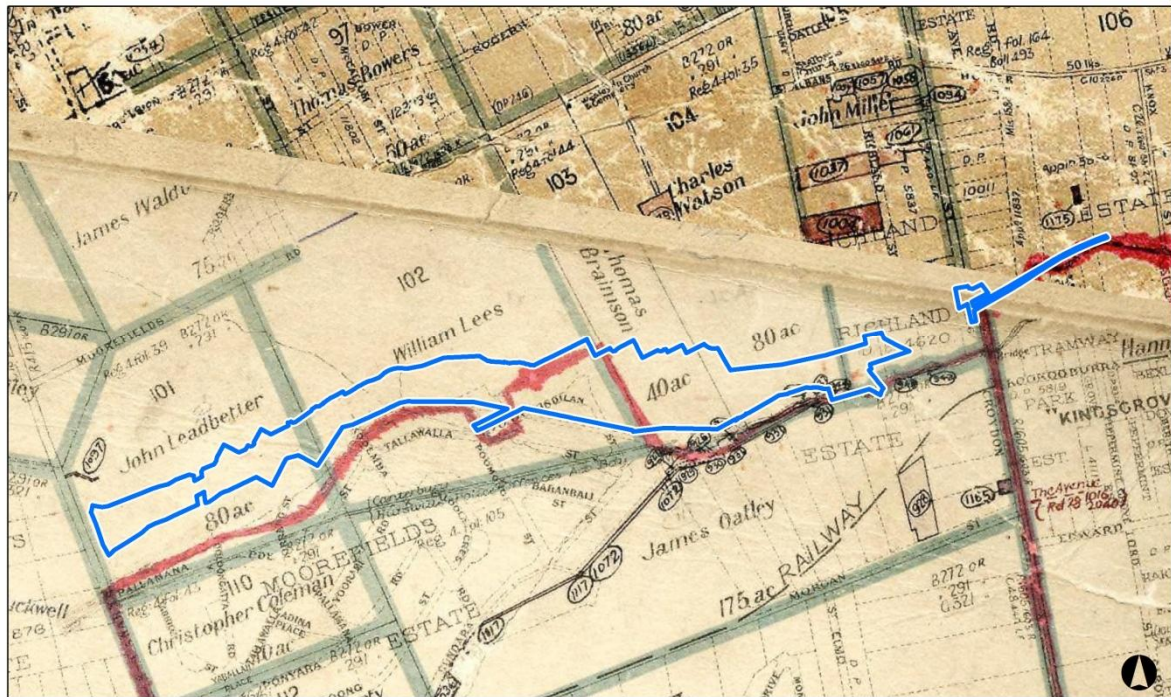


Figure 6 Excerpt of the 1903 St George Parish Plan (Sheet 2) with overlay of the western surface works in blue (Source: NSW Property & Information).



Figure 7 Excerpt from the 1943 aerial of Sydney (Source: NSW Property & Information).

5.2.2 Kingsgrove Road surface works

The Kingsgrove Road surface works are within the existing road reserve. It is concluded that there is no archaeological potential within the area proposed for tolling and service infrastructure, having been previously impacted by the construction of Kingsgrove Road and the existing M5 East Motorway.

5.2.3 Bexley Road surface works

The Bexley Road surface works (which would include construction and operational ancillary facilities) are located within three discrete locations on the east and west side of Bexley Road, north of the Bexley North Railway Station. The earliest plan covering the area of the Bexley Road surface works is an undated plan for the parish of St George (**Figure 8**). Both the undated and the 1889 edition of the St George's Parish Plan indicates that this area was within land granted to Hannah Laycock (**Figure 9**). Other early maps, such as 'Field plan of the Lords Forest' (Mitchell Library Map Collection Maps/0518) and 'Manuscript cadastral map of allotments near Canterbury Road and Punch Bowl Road' (Mitchell Library Map Collection Maps/0335), while they cover portions of Laycock's grant, do not include the area covered by the project. By 1903, the area to the east had been subdivided as the 'Forest Hill Estate', but the area of the proposed surface works was still open farmland (**Figure 10**).

The 1943 aerial indicates that two of the three areas within the Bexley Road surface works, labelled 1 and 2 on **Figure 11**, remained undeveloped. Any relics in these areas would post-date the early 1940s. The area labelled 3 on **Figure 11**, indicates that there were some houses in the area. This is the site of an existing M5 East Motorway building, as such, there is no potential for relics or deposits associated with these houses to remain *in situ*.

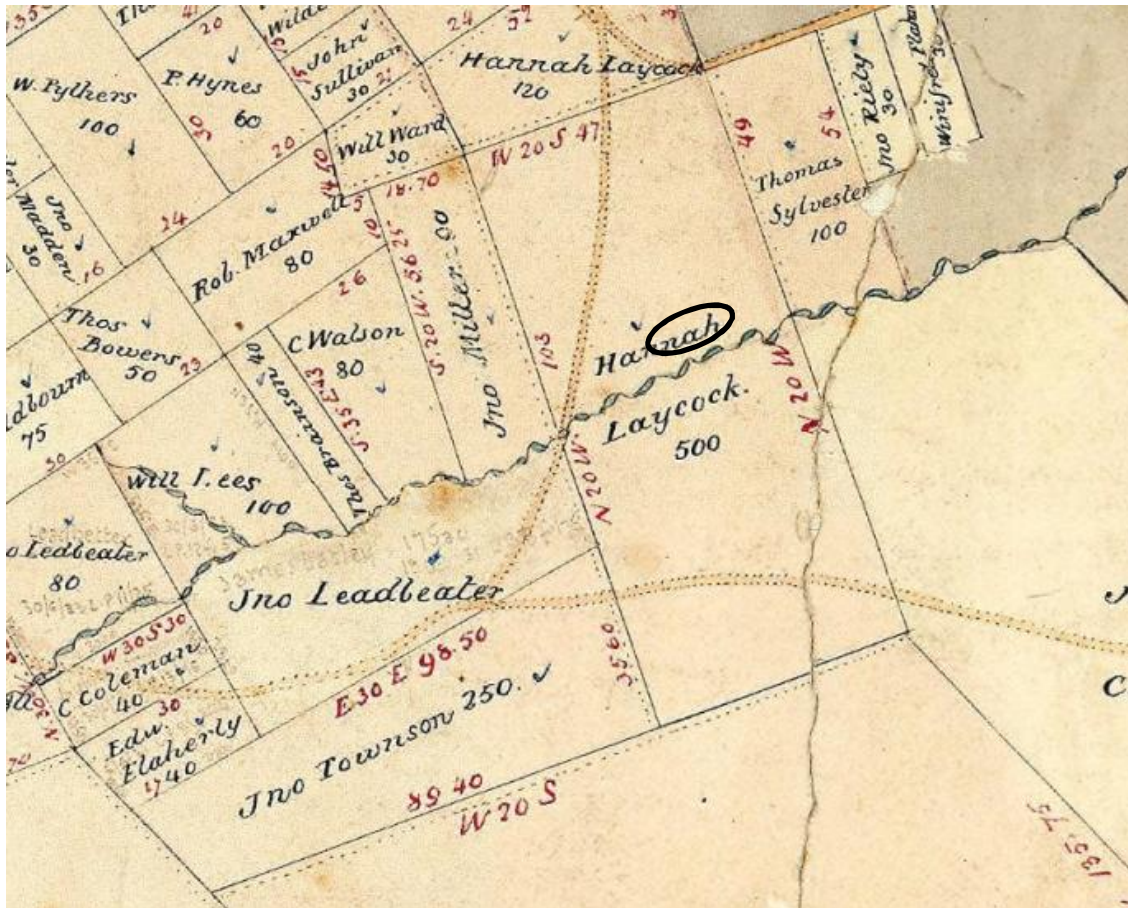


Figure 8 Excerpt of an undated St George Parish Plan with the approximate area of the Bexley Road surface works area circled in red (Source: NSW Property & Information).

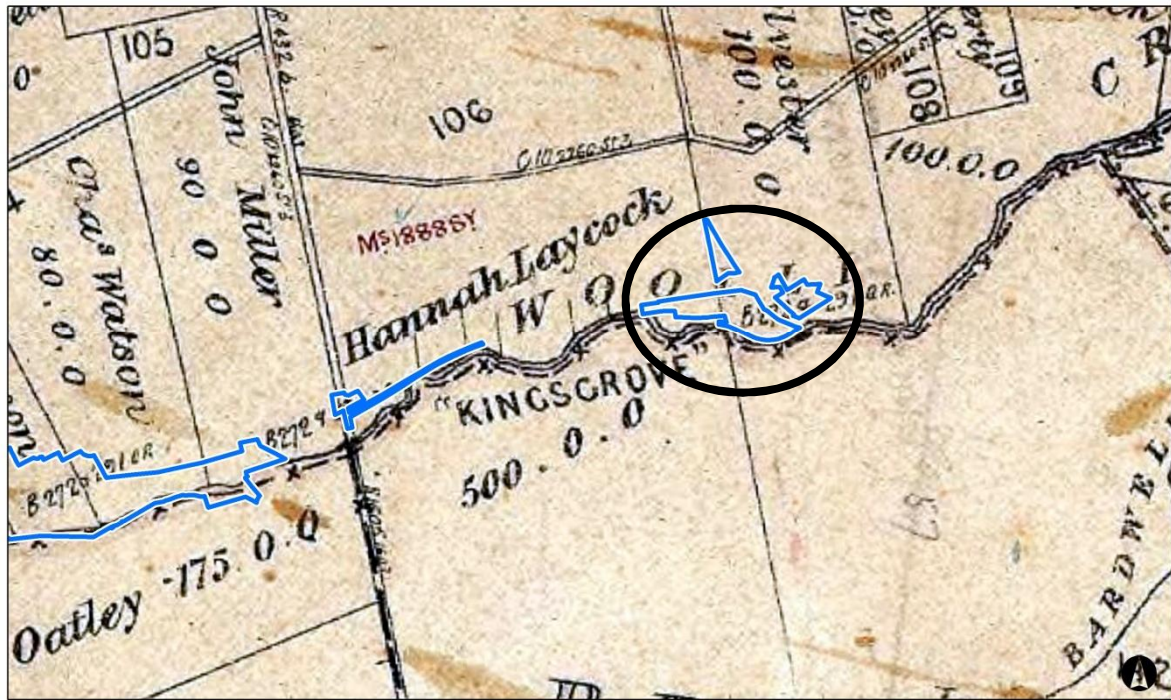


Figure 9 Excerpt of the 1889 St George Parish Plan with the Bexley Road surface works area circled in black (Source: NSW Property & Information).

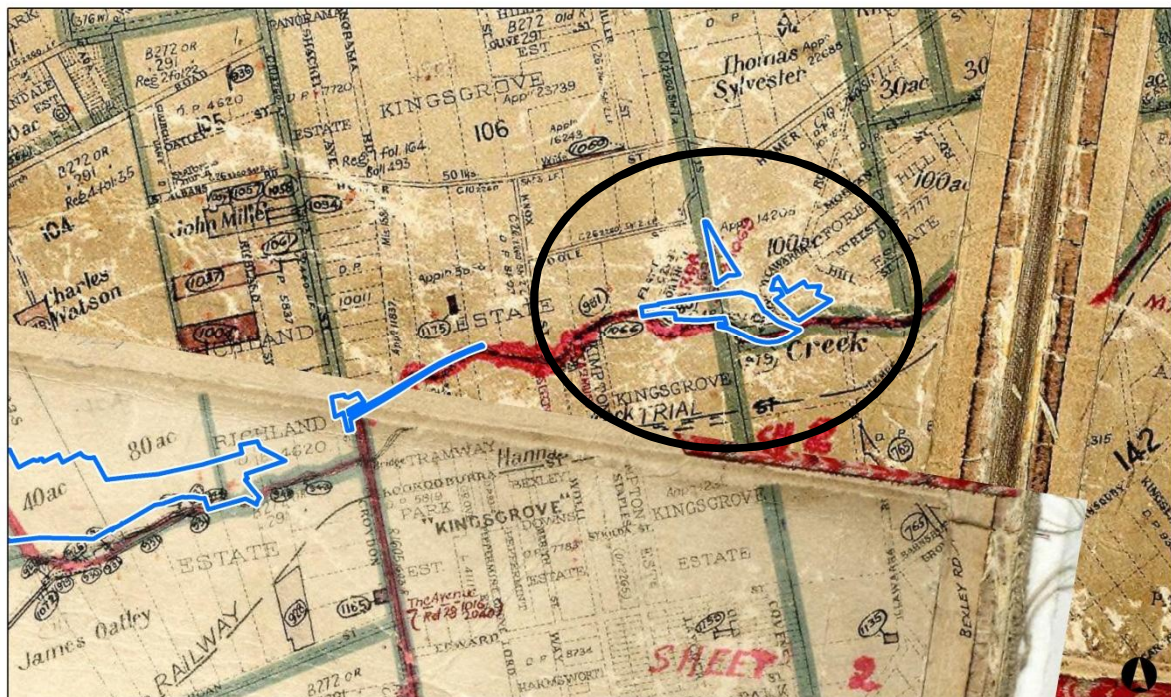


Figure 10 Excerpt of the 1903 St George Parish Plan (Sheet 3) with approximate location of the Bexley Road surface works areas circled in black (Source: NSW Property & Information).

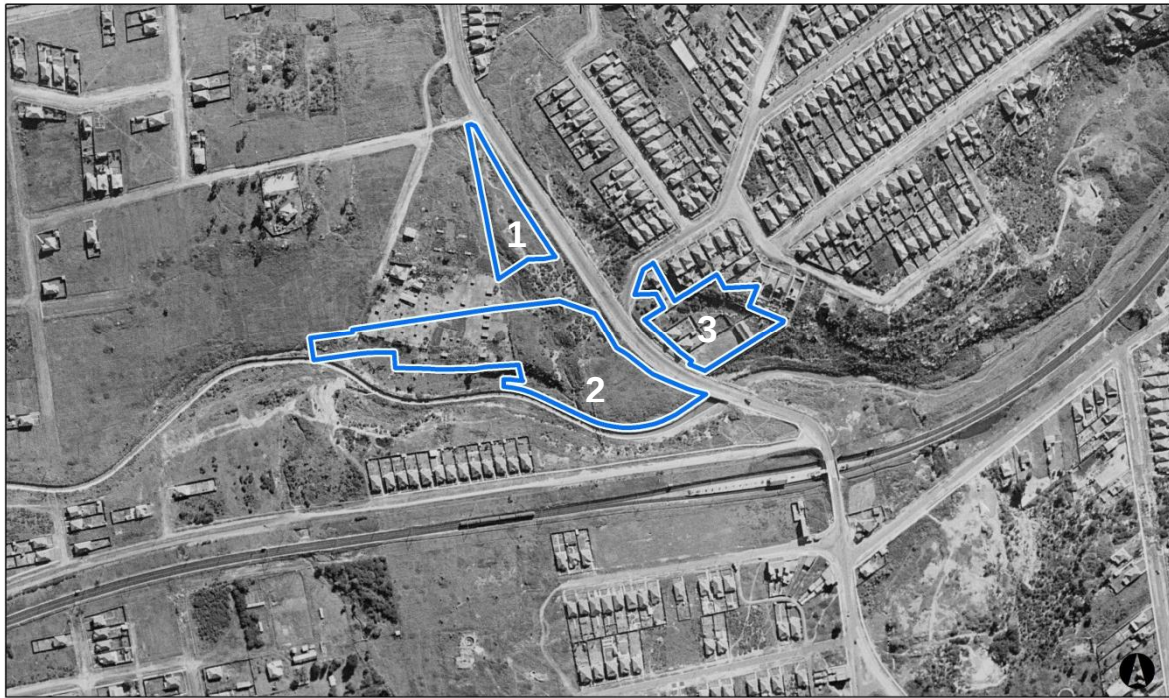


Figure 11 Excerpt from the 1943 aerial of Sydney with the approximate Bexley Road surface works area highlighted and numbered (Source: NSW Property & Information).

5.2.4 Arncliffe surface works area

The location on the Arncliffe surface works area is shown on an undated, but probably pre 1830s (based on the surrounding grants), with the parish plan indicating that this area was still crown land at this time (**Figure 12**). The 1943 aerial (**Figure 13**) indicates that the Arncliffe surface works area and surrounds were being used for market gardening, a common land use in the area at the time. The area appears to be low lying and subject to flooding, an issue that has since been rectified through the subsequent reclamation of the land. There are a number of small structures indicated within the extent of the works, however, it is anticipated that relics and deposits associated with these structures would have been removed during the construction of the golf course and associated reclamation activities.

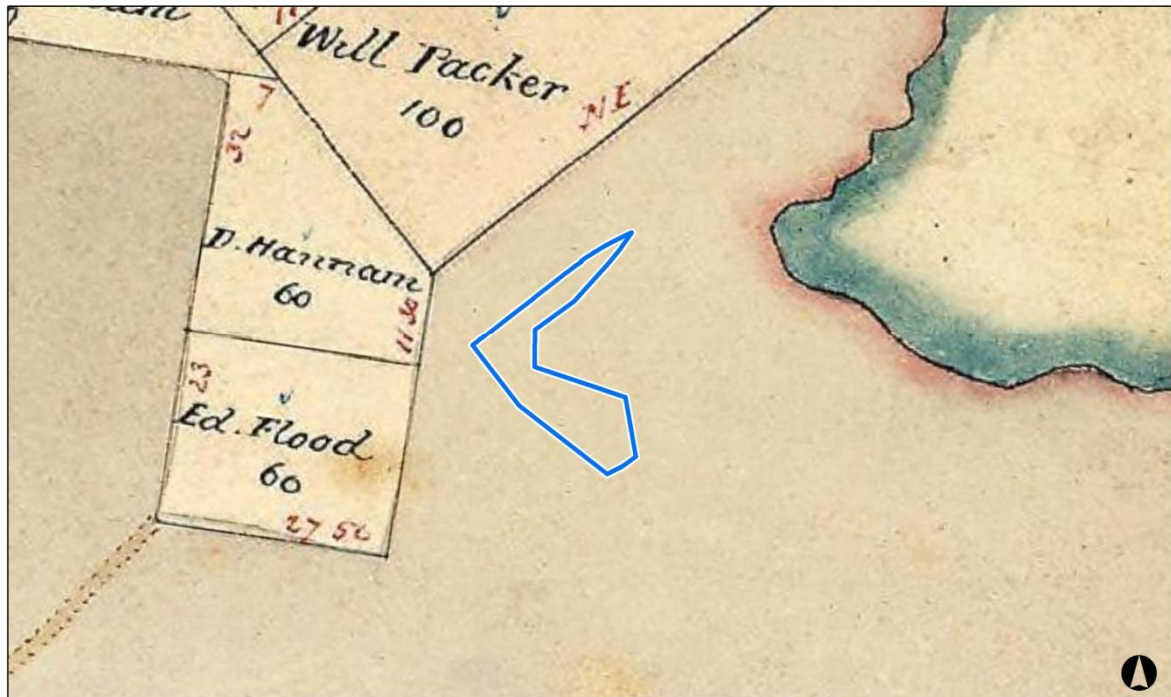


Figure 12 Excerpt of an undated St George Parish Plan with approximate area of the Arncliffe surface works highlighted. (Source: NSW Property & Information).

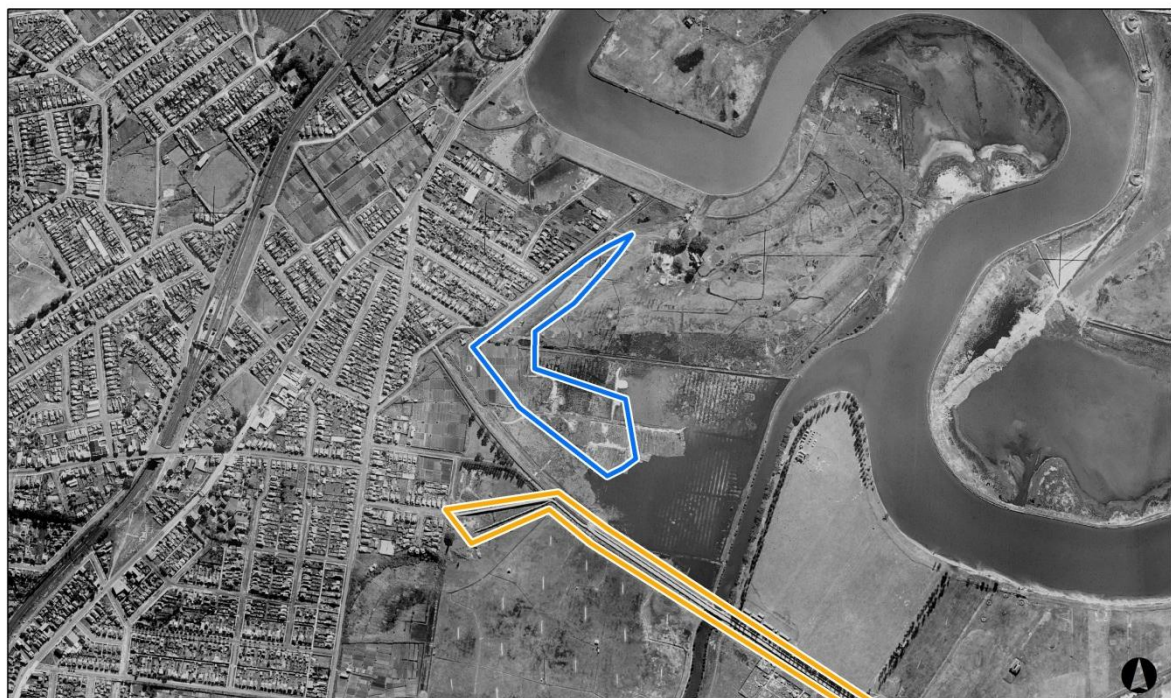


Figure 13 Excerpt from the 1943 aerial of Sydney with the approximate compound areas highlighted in orange. The Western Outfall Main Sewer is highlighted in green (Source: NSW Property & Information).

5.2.5 St Peters interchange

The area in which the St Peters interchange would be located was initially granted to William Hutchinson, who gave the grant the name 'Waterloo'. Due to the swampy nature of the area, Hutchinson did little to develop it and it was not until noxious trades, such as tanneries, abattoirs and wool washes were removed from the growing centre of Sydney, that a use for the land became apparent. A 1890s parish plan of the area shows that Campbell Street had been formed, along with some suburban streets, but Sheas Creek was yet to be formalised as the Alexandra Canal. A complex of structures is shown on the banks of the creek, which today is within the Burrows Road entrance to 53-57 Campbell Road (**Figure 14**). This area is currently hardstand and an examination of the aerials between 1943 and present indicate that this has been the case for the entire period, although the 1975 aerial indicates a small temporary structure (**Figure 15**).

Also shown on this parish plan is Barwon Park. It is unclear the form of the structure, although it has evidently been demolished. With reference to the 1951 aerial, Barwon Park is under what became the Central Brick and Tile Company kilns. The kilns and associated structures can be seen to the east of the brickpit, subsequently used as a landfill site. An examination of the area formerly containing the kilns indicates that, as a relatively flat area adjacent to the pit, it has been used to manage and stockpile waste and appears to have been substantially disturbed, as indicated in a run of aerials taken between 1951 and 1997 shows (**Figure 15**). This run of aerials also indicates that the kilns and associated structures were demolished between 1961 and 1978. It is considered unlikely that relics (eg structural remains) or deposits associated with the Central Brick and Tile Company remains *in situ* as any remains are likely to have been disturbed by subsequent landfill related activities.

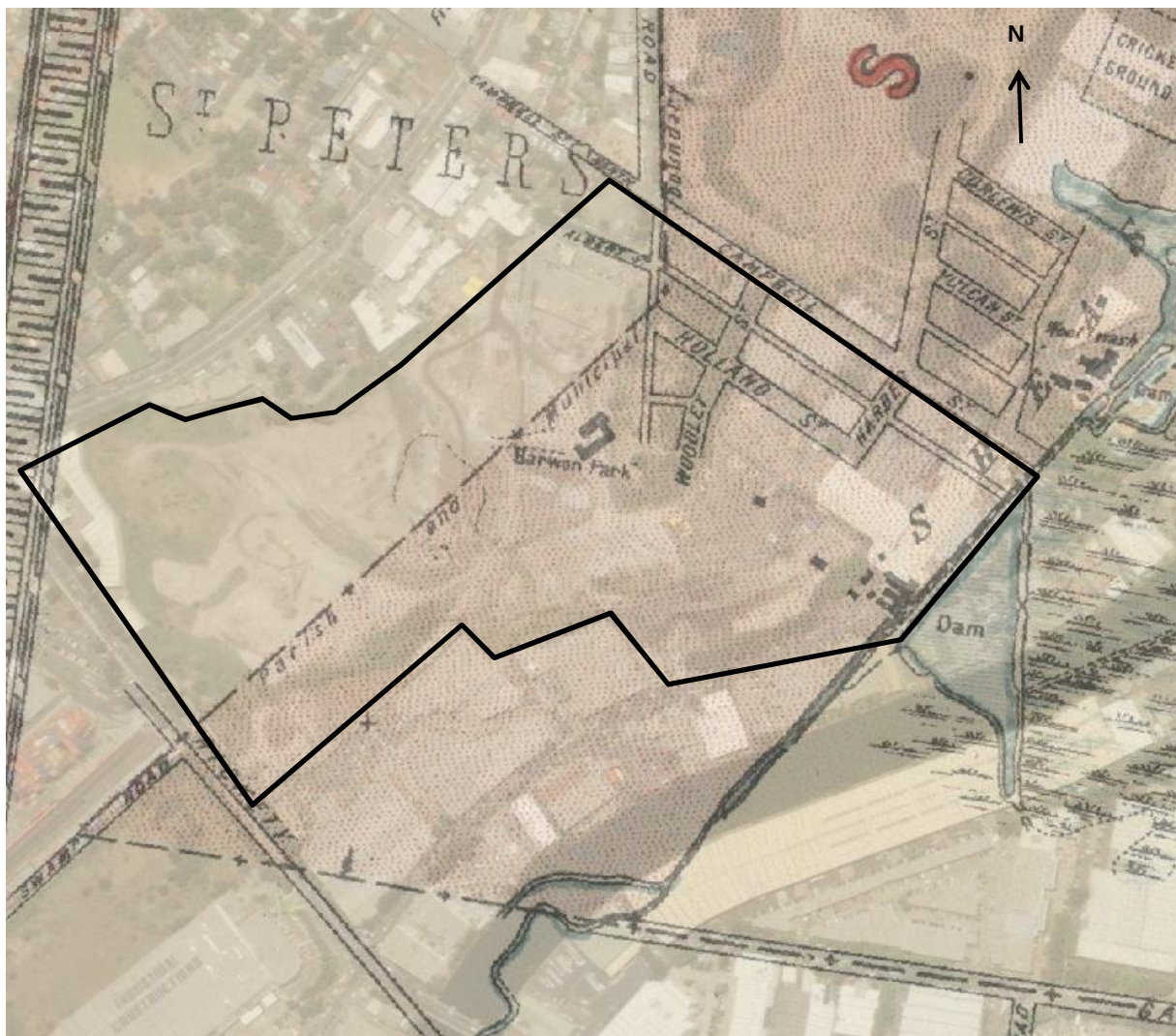


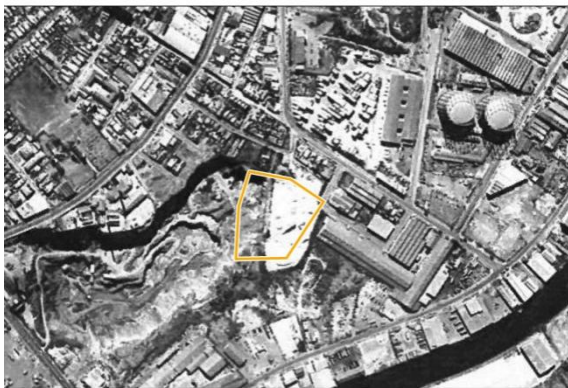
Figure 14 Aerial with over lay excerpt from "Alexandria: Parishes of Alexandria and Petersham" by Higinbotham & Robinson, c.1890-1899. (Source: National Library of Australia <http://nla.gov.au/nla.map-1fsp22>). Approximate extent of interchange outlined



Excerpt of an 1951 aerial (Source NSW Property & Information)



Excerpt of an 1961 aerial (Source NSW Property & Information)



1978



1986



1989



1997

Figure 15 Aerial photography of the Central Brick and Tile Company kilns between 1951 and 1997 (Area highlighted). Source: NSW Property & Information. Arrows denote north

The area adjacent to the Princes Highway and along to Canal Road historically fell within the areas administrated by Marrickville Council. As a result, there are fewer historical plans of this area as the council did not commission or archive as many plans as the City of Sydney. However, it is known that the Austral Brick Company established kilns and a brickpit, separate from that operated Central Brick and Tile Company discussed above, on the intersection of Princes Highway and Canal Road, extending south along Canal Road. The extent of the operations can be seen in an excerpt of the 1943 aerial (**Figure 16**). In an aerial from 1986 (**Figure 17**), the extent of earthworks associated with the construction of the currently standing structures, particularly the commercial complex along Canal Road, can be seen. With the exception of a small section on the corner of Princes Highway and Canal Road, these areas were excavated below grade. It is therefore considered unlikely that relics associated with the Austral Brick Company will remain in either of the two areas identified in **Figure 16**, other than the previously mentioned section on the corner of Princes Highway and Canal Road, as highlighted in **Figure 18**. No substantial ground disturbance works are planned for this area as it contains a heritage item (refer **Chapter 7**) that is being retained. The footprint of the heritage item closely mirrors that of the historical building shown and it is therefore considered unlikely that landscaping works or similar around the heritage item are likely to encounter relics.



Figure 16 Excerpt of the 1943 aerial showing the extent of the Austral Brickworks (areas with structures highlighted. (Source: NSW Property & Information).



Figure 17 Excerpt of the 1986 aerial showing the extent of the Austral Brickworks (areas with structures highlighted. (Source: NSW Property & Information).



Figure 18 Excerpt of a current aerial indicating area of archaeological potential associated with the Austral Brick Company (Source: NSW Property & Information).

5.2.6 Local roads upgrades

The local roads upgrades are largely been undertaken within current road reserves and associated footpaths or in industrial areas developed recently. There are no archaeological areas of potential anticipated within the areas likely to be disturbance by these works.

The exception to this is the works along Campbell and Euston Roads, which includes some works extending into Sydney Park. Historically, this area was used for industrial purposes and contained a number of brickworks and two gas storage tanks (**Figure 19**). The bases of the gas storage tanks now sit under the industrial 215-225 Euston Road and will not be impacted by the project. The historic aerial indicates earthworks near the intersection of Campbell and Euston Roads that are indicative of air raid shelters, possibly built to protect those who worked at the gas storage tanks. The construction may uncover evidence of these earthworks. It is recommended that works in this area be monitored by a suitably qualified archaeologist according to the methodology provided in **Appendix C**.

Historical plans and the aerial indicate the local road upgrade may also impact on archaeological relics associated with two brickworks. The first was located on Euston Road and is referred to as the Brickworks Pty Ltd City Yard on a 1956 plan of the area (**Figure 21**). The works appears to have consisted of two kilns with three ancillary buildings, with perhaps a residence on the northern boundary. The overlay of the project with the historical aerial indicates that the works would extend into areas where one of the ancillary buildings, the potential residence and possibly the verandah/awning of one of the kiln buildings were located (**Figure 22**). The ancillary building in question appears to have been demolished between the taking of the 1943 aerial and the production of the 1950 Civic Survey (**Figure 20**).

The second, The NSW Brick Company Ltd, was located at the intersection of Euston Road and Sydney Park Road (formerly Huntley Street). The 1956 plan indicates the project may impact on areas formerly containing portions of four kilns and what was possibly a warehouse (**Figure 19** and **Figure 21**).

It is unclear to what extent the landscaping and rehabilitation of the former brick pits adjacent to these structures may have impacted on their archaeological survival.



Figure 19 Excerpt of 1943 aerial showing the proposed areas of impact associated with the local roads upgrades along Campbell and Euston Roads, St Peters. Source: NSW Government.

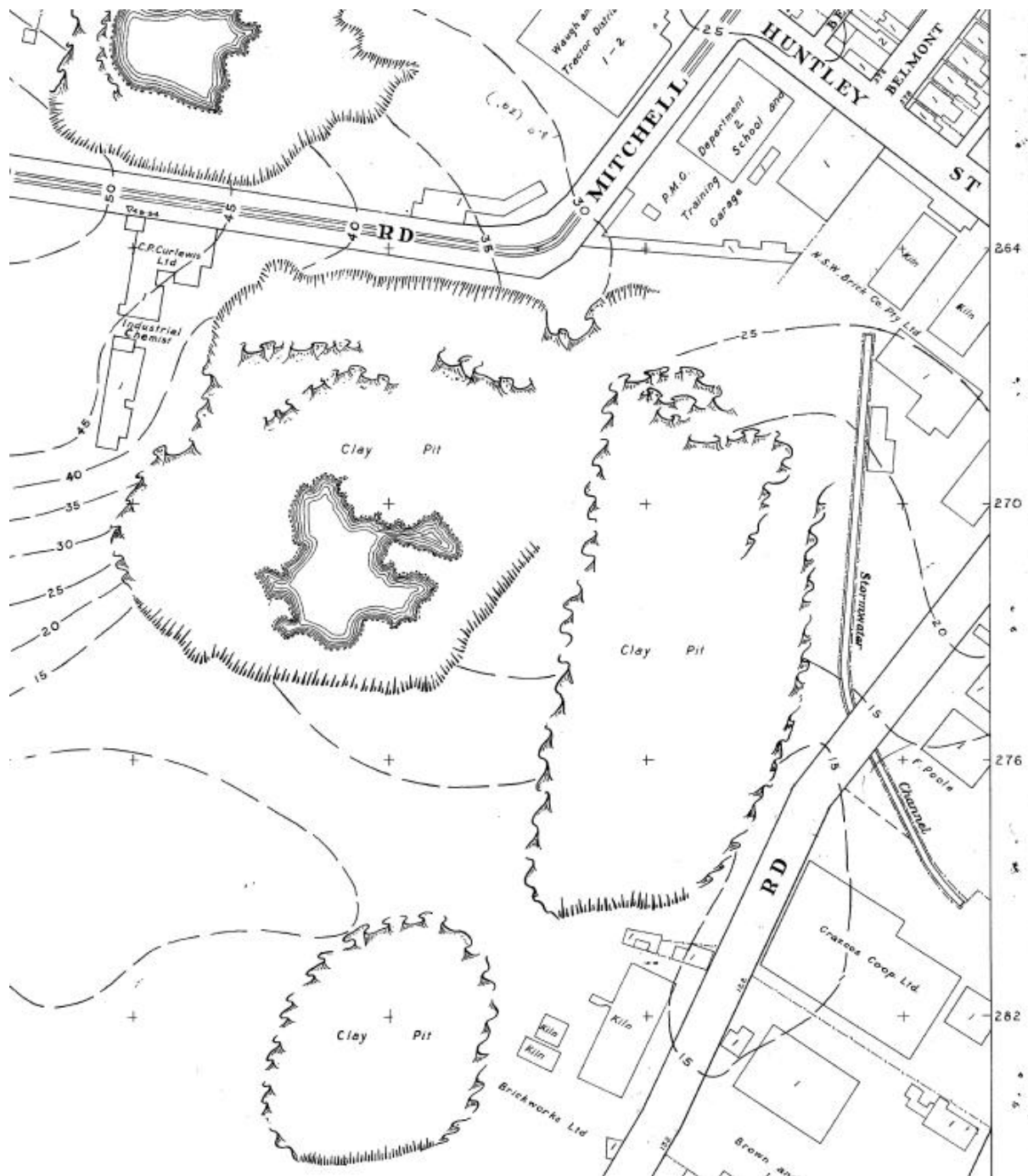


Figure 20 Excerpt from 'Civic Survey, 1938-1950 - Alexandria West'. Source: City of Sydney Archives.



Figure 21 Excerpt of 'City Building Surveyors' Detail Sheets, ca1956 – Sheet 23'. Source: City of Sydney Archive. The black line indicates construction footprint of the project.



Figure 22 Excerpt of 1943 aerial showing detail of the Brickworks Pty Ltd City Yard on Euston Roads, St Peters. Source: NSW Government. Red line indicates approximate extent of the project.

An examination of the historical aerials and plans for the area around Sydney Park indicate that there have been minimal changes to the road network. In 1988, Mitchell Road was extended to meet Huntley Road and was renamed Sydney Park Road (**Figure 23**). Additionally, during the 1980s a number of smaller roads, including Haber Road, which formerly extended northward from Campbell Road towards the gas holders were closed. Haber Road in particular now forms part of the carpark and rear access to residences along Campbell Road. There has been no further alteration to the roads in the area. The project would not alter the alignment of the roads as they currently stand, albeit Euston Road would be widened to the west and Campbell Road north into Sydney Park.



Figure 23 Excerpt of 'City of Sydney' Plan. Dated 1988. Source: City of Sydney Archives.

5.3 Additional considerations

King Street, Newtown is a major state road which forms part of the Princes Highway. It runs through the retail precinct of Newtown. Under the Sydney LEP 2012 and Marrickville LEP 2011, the King Street / Enmore Road retail precinct is listed as a Heritage Conservation Area. It is identified as a conservation area of State significance (although not listed on the State Heritage Register).

The curtilage of the heritage conservation area extends beyond the study area as defined in **Section 1.5**. Consultation during the preparation of the EIS identified a concern that the project would have impacts on King Street and its retail function (and therefore heritage significance of the area).

The project does not propose to modify King Street, including speed limits or on-street parking arrangements along King Street. In future years, traffic modelling indicates that King Street is expected in most cases to experience similar or reduced peak hour volumes under the 2021 'with project' scenario and 2031 cumulative scenario when compared to the without project scenario (refer to Technical Working Paper: Traffic and Transport (AECOM, 2015a). The exception to this would occur in the 2031 cumulative case, where AM peak hour volumes southbound would increase by around 280 vehicles per hour when compared to the 'without project' scenario. However, this is in the opposing direction to the dominant AM peak hour, which would experience a reduction in flows) and is within the design carrying capacity of the road. Technical Working Paper; Social and Economic (AECOM, 2015b) also identifies that the project would not have a significant impact on King Street.

As the assessments conclude that there would not be a significant impact to King Street, there would be no flow-on effects to the heritage values of the King Street heritage conservation area. As such, this heritage conservation area has not been carried forward for further assessment.

6.0 Survey results

6.1 Introduction

A survey was undertaken between 21 and 24 April 2015 and on 21 May 2015 (refer **Section 3.2**) to identify heritage items and to confirm their heritage significance. The following sections provide a description of the identified sites. The sites have been divided by suburb, arranged from west to east, and then heritage listing identification number.

At the time, the majority of the properties could not be accessed and assessments were undertaken from the property boundary or other publicly-accessible locations. Interior features or condition of the interior, if relevant to the listing, were based on the details provided within the specific database listing.

The following descriptions of heritage items are the result of a combination of research and the visual inspections for all properties identified as listed heritage items located within the bounds of, or in proximity to, areas of project works. Statements of significance included here are quoted verbatim (where available), having been sourced from the published listings for these properties. Where necessary, and based upon the site inspection and historical research, the significance assessments have been revised to ensure the significance is accurate. Quoted items are referenced accordingly.

6.2 Beverley Hills

6.2.1 Pallamanna Parade Urban Conservation Area

The Pallamanna Parade Urban Conservation Area was identified as an indicative item on the non-statutory Register of the National Estate (#102089). The Conservation Area appears to have been built up in the 1930s and in the immediate post-World War Two period. It consists of shrub lined streets with well-landscaped gardens. At the time of the nomination to the RNE there were only a small number of unsympathetic intrusions onto the area, an inspection on the 21 May 2015 determined that there are now numerous and an increasing number of modern infill developments that are not sympathetic to the former aesthetic.

The non-statutory Register of the National Estate listing has no assessment against individual criteria, but provides the following Statement of significance:

Pallamanna Parade Urban Conservation Area is important because:

- 1) *The precinct possesses streetscape integrity because it was developed during one period.*
- 2) *The area has a uniformity of housing style including colour, form and architectural detail that gives the area an harmonious appearance.*
- 3) *The predominance of 1930s bungalows is a rare example of a homogeneous 1930s subdivision.*
- 4) *It reflects the availability of finance enabling the middle class to borrow money and finance the purchase of a house and epitomises the great diversion of funds in Australia from private investment in industry and infrastructure to non-productive investment in private housing. By virtue of the importance of home ownership in Australia, the area embodies the success in successive Australian governments political control and subjection of the electorate.*

(Australian Heritage Council, n.d.-d)



Plate 1 Example of a larger house on Pallamanna Parade



Plate 2 Example of a modest c.1960s house on Pallamanna Parade



Plate 3 Example of unsympathetic modern infill, Pallamanna Parade

6.3 Kingsgrove

6.3.1 Kingsgrove East Urban Conservation Area

The Kingsgrove East Urban Conservation Area was identified as an indicative place of the non-statutory Register of the National Estate (#102091). As with the Pallamanna Parade Urban Conservation Areas discussed above, it is identified as an area of 1930s Californian bungalows, with some 1940s and 1950s houses. The statement of significance reads thus:

Kingsgrove East Urban Conservation Area is important because:

- 1) *The precinct possesses streetscape integrity because it was developed during one period.*
- 2) *The area has a uniformity of housing style including colour, form and architectural detail that gives the area an harmonious appearance.*
- 3) *The predominance of 1930s bungalows is a rare example of a homogeneous 1930s subdivision.*
- 4) *It reflects the availability of finance enabling the middle class to borrow money and finance the purchase of a house and epitomises the great diversion of funds in Australia from private investment in industry and infrastructure to non-productive investment in private housing. By virtue of the importance of home ownership in Australia, the area embodies the success in successive Australian governments political control and subjection of the electorate.*

(Australian Heritage Council, n.d.-c)

6.4 Bexley North

6.4.1 Bexley North Railway Station

The Bexley North Railway Station is located on the T2 Airport rail line, adjacent to the Bexley Road overbridge. It is listed on Sydney Trains Section 170 Heritage and Conservation Register (S170 Register) (#48101898) as an item of local significance.

The Bexley North Railway Station services four tracks and consists of one island platform, a Railway Station Platform building, and stairs leading to the Bexley Road overbridge. The platform is concrete faced with concrete deck and finished with an asphalt surface. The platforms have been modified to include timber bench seating, lighting, signage and aluminium palisades (**Plate 4**). The platform is around 160 metres in length. A modern shallow pitched asymmetrical roofed weather shelter was erected on the Platform in 2010 to the east and west of the existing Railway Station building. The Platform Railway Station Building is located centrally along the platform. The building is a rectangular liver red face brick building of English bond¹ brickwork (**Plate 5**), divided into five bays, with bays defined by engaged piers. The building has a brick stepped parapet at both the east and west ends. The roof is gabled at east and west ends against the parapets, and is hipped over awnings to north, south and east elevations, which are an integral part of the roof form. Roof cladding is corrugated steel. The east awning wraps around the eastern stepped parapet. The stepped parapets each feature a projecting moulded brick capping course and three vertical lines of projecting decorative brickwork. There are pairs of timber louvered vents to each gabled parapet. There are modern fibre cement sheet ceilings to the awnings. The assessed significance is provided in **Table 5**.

¹ English bond features alternating rows of header and stretcher bricks.



Plate 4 Overview of Bexley North Railway Station. View north west



Plate 5 Detail of windows at Bexley North Railway Station showing brickwork detailing

Table 5 Significance assessment for Bexley North Railway Station (NSW Heritage Division, 2009b)

Significance Assessment	
Criterion a (historical)	Bexley North Railway Station is of historical significance as part of the East Hills line, a major Depression period public work undertaken under the controversial Premiership of Jack Lang and through its relationship to the development of the suburb of Bexley North and the broader East Hills region. The austere design of the platform building is reflective of the completion of the East Hills line as a Depression period unemployment relief works project.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	Bexley North Railway Station is of aesthetic significance as an example of a small Inter-War period suburban railway building matching other East Hills line Railway Station buildings in design and style. The building is very austere in style, with Inter War Art Deco style touches (for example brick detailing to parapets) and is competently executed, exhibiting fine workmanship in its brickwork. The building is noted for its use of monochromatic brickwork, stepped parapets, irregular fenestration and engaged piers. Bexley North platform building is also of significance for its seamless 1947 addition in the same style as the original section of the building, involving recreation of a new parapet to match the original at the eastern end of the building.
Criterion d (social)	The place has the potential to contribute to the local community's sense of place, and can provide a connection to the local community's past.
Criterion e (technical/research)	Bexley North Railway Station is of research significance for its ability to demonstrate design and construction techniques of the Inter-War period. The building provides insights into NSW Railways experimentation with styles of architecture and adaptation to depression period economic conditions.
Criterion f (rare)	The Bexley North Railway Station is not rare, as it is part of a cohesive group of 10 similar to identical Inter-War suburban railway Stations completed in 1931 between Turrella and East Hills.
Criterion g (representative)	Bexley North Railway Station is a good representative example of the cohesive collection of East Hills line railway Stations built from Turrella to East Hills, with the platform and platform building generally intact (except for sympathetic extension to the platform building in 1948), and demonstrates the effects of the economic Depression of 1929-1930s on railway Station construction.

Statement of Significance

Bexley North Railway Station - including the 1931 platform and platform building - is of local heritage significance. Bexley North Railway Station is of historical significance as a major public work completed as an unemployment relief project during the Great Depression, and as a major transport hub for the suburb of Bexley North since 1931. Bexley North Railway Station platform building is of aesthetic/technical significance as an austere 1930s railway building with simple Art Deco detailing and fine brick workmanship that is evocative of the effects of the Depression on building programs for NSW Railways. Bexley North Railway Station is representative of the cohesive collection of 10 East Hills line railway Stations from Turrella to East Hills.

6.4.2 Stotts Reserve – 167 Slade Road

Stotts Reserve has a street address at 167 Slade Road Bexley North. The Reserve is listed on the Rockdale LEP 2011 as an item of local significance as item number I165. The reserve consists of a vegetated gully and covering 2.86 hectares. It constitutes one of the largest undisturbed patches of Sandstone Open Forest and Eastern Sandstone Gully forest (**Plate 6**). Play equipment has been erected on Churchill Street (**Plate 7**). Edges of reserve are mown grass. A surface scatter of glass, slag, earthenware and refined earthenware, slate roof tiles & brick was identified on the Barnsbury Grove frontage near Stotts Reserve sign (**Plate 9**). The reserve also contains pecked sandstone blocks that have been used to form stormwater outlets (**Plate 8**). The assessed significance can be found in **Table 6**.



Plate 6 Vegetation within Stotts Reserve



Plate 7 Churchill Street playground within Stotts Reserve



Plate 8 Sandstone and concrete drain



Plate 9 Artefact scatter within Stotts Reserve

Table 6 Significance assessment of Stotts Reserve (NSW Heritage Division, 2010k)

Significance Assessment	
Criterion a (historical)	Despite the extensive urbanisation of Rockdale local government area, a number of significant remnants have survived, retaining valuable examples of a variety of the vegetation communities once present. These bushland remnants provide snapshots of the original vegetation present within Rockdale LGA prior to European settlement.
Criterion b (associative)	Does not meet this criterion.
Criterion c (aesthetic)	The sandstone vegetation and forested area of Stotts Reserve provides a large relatively undisturbed area of bush which provides a contrast to the highly urbanised environment of the surrounding Rockdale LGA.
Criterion d (social)	Does not meet this criterion.
Criterion e (technical/research)	The vegetation within Stotts Reserve is one of the largest relatively undisturbed patches of sandstone vegetation within Rockdale LGA containing two distinct assemblages of species, Sandstone Open Forest and Eastern Sandstone Gully Forest.
Criterion f (rare)	Does not meet this criterion.
Criterion g (representative)	The vegetation communities are representative of sandstone vegetation community prior to European settlement.
Statement of Significance	
<i>The sandstone vegetation and forested area of Stotts Reserve provides a large relatively undisturbed area of bush which is representative of a pre-Colonial settlement landscape and provides a contrast to the highly urbanised environment of the surrounding Rockdale LGA. The two distinct assemblages of species, Sandstone Open Forest and Eastern Sandstone Gully Forest are also significant for their scientific value.</i>	

6.5 Clemton Park

6.5.1 Clemton Park Urban Conservation Area

The Clemton Park Urban Conservation Area was identified as an indicative place of the non-statutory Register of the National Estate (#102071). As with the Pallamanna Parade Urban Conservation Areas discussed above, it is identified as an area of 1930s Californian bungalows, with some 1940s and 1950s houses. The statement of significance is as follows:

Clemton Park Urban Conservation Area is important because:

- 1) *The precinct possesses streetscape integrity because it was developed during one period.*
 - 2) *The area has a uniformity of housing style including colour, form and architectural detail that gives the area an harmonious appearance.*
 - 3) *The predominance of 1930s bungalows is a rare example of a homogeneous 1930s subdivision.*
 - 4) *It reflects the availability of finance enabling the middle class to borrow money and finance the purchase of a house and epitomises the great diversion of funds in Australia from private investment in industry and infrastructure to non-productive investment in private housing.*
- By virtue of the importance of home ownership in Australia, the area embodies the success in successive Australian governments political control and subjection of the electorate.*

(Australian Heritage Council, n.d.-b)

6.6 Bardwell Park

6.6.1 Bardwell Park Urban Conservation Area

The Bardwell Park Urban Conservation Area was identified as an indicative place of the non-statutory Register of the National Estate (#102101). As with the Pallamanna Parade, Kingsgrove West and Clemton Urban Conservation Areas discussed above, it is identified as an area of 1930s Californian bungalows, with some 1940s and 1950s houses. The statement of significance reads thus:

Bardwell Park Urban Conservation Area is important because:

- 1) *The precinct possesses streetscape integrity because it was developed during one period.*
 - 2) *The area has a uniformity of housing style including colour, form and architectural detail that gives the area an harmonious appearance.*
 - 3) *The predominance of 1930s bungalows is a rare example of a homogeneous 1930s subdivision.*
 - 4) *It reflects the availability of finance enabling the middle class to borrow money and finance the purchase of a house and epitomises the great diversion of funds in Australia from private investment in industry and infrastructure to non-productive investment in private housing.*
- By virtue of the importance of home ownership in Australia, the area embodies the success in successive Australian governments political control and subjection of the electorate.*

(Australian Heritage Council, n.d.-a)

6.6.2 Stone Federation House

Number 15 East Street is listed on the Rockdale LEP 2011 as an item of local significance under the item name Stone Federation House (I81). It is the middle of three identical houses and was probably the only one to be selected as it has undergone, at least externally, the least unsympathetic alterations. The house has a double fronted form with a verandah supported on turned wooden posts. It is clad in ashlar-laid sandstone, with a tiled roof and sandstone lintel and window sills (**Plate 10**). The assessed significance is provided in **Table 7**.



Plate 10 15 East Street, Bardwell Valley

Table 7 Assessment of Significance of Stone Federation House (NSW Heritage Division, 2010)

Significance Assessment	
Criterion a (historical)	This stone dwelling is historically significant as part of the c. 1910 Mayland Estate subdivision. It was built in 1922 as part of a group of stone cottages which was built by the same stonemason/builder; he added a new cottage to the group every year or so as he was able.
Criterion b (associative)	Does not meet this criteria.
Criterion c (aesthetic)	The house is aesthetically significant as part of a group of six Federation sandstone cottages.
Criterion d (social)	Does not meet this criteria.
Criterion e (technical/research)	The building is significant because it has the potential to yield information about early building materials and techniques.
Criterion f (rare)	This dwelling is part of a rare grouping of six late Federation rusticated sandstone dwellings built by the same stonemason/builder in Rockdale.
Criterion g (representative)	The building is a good example of a late Federation sandstone house.
Statement of Significance	
<i>The house at 15 East Street, Bardwell Valley is significant as part of a unique group of six late Federation rusticated sandstone cottages built by the same builder/stonemason on a prominent location overlooking Bardwell Park. It is representative of the historic development of the 1910 Maylands Estate subdivision.</i>	

6.7 Earlwood

6.7.1 Wolli Creek culvert – Bexley Road

Wolli Creek culvert is located under Bexley Road in Earlwood adjacent to the Bexley North railway station. It is listed on the Roads and Maritime's Section 170 Heritage and Conservation Register (#4305006) as an item of local significance. The culvert has three arched cells. The curvature of the arch is slightly non-uniform and appears to have been formed using plywood or similar bent over the supporting false work (**Plate 11**). Both sides of the culvert have footways protected by corrugated guard railing. The upstream face has had a footway of cantilever steel beams with concrete cast on profiles added. A footway of similar age is on the downstream side which appears to have been created by using concrete to raise the level of an older footway.

The waterway has been channelled upstream of the bridge with concrete walls that incline and warp to match the vertical abutment walls of the bridge. Downstream blockage of the waterway has been caused by build-up of debris some areas have been stabilised by rock filled gabions on the northern side (**Plate 12**). The assessed significance is provided in **Table 8**.



Plate 11 Culvert and footway from southern bank



Plate 12 Downstream side of culvert from northern bank

Table 8 Assessment of Significance of Wolli Creek culvert (NSW Heritage Division, 2005b)

Significance Assessment	
Criterion a (historical)	The Wolli Creek culvert has local historic significance. It was constructed as a key component in the Bexley Road upgrade program of the 1930s which recognised the importance of that route for traffic movements in and around the fast growing Canterbury area. The culvert's accommodation of a wide carriageway, which has not required widening thus far, and its crossing of the creek on a substantial skew, which enables the roadway to achieve a straight and smooth alignment, physically demonstrate the motor-age standards of the Main Roads Board / Department of Main Roads' upgrade program. The culvert has provided satisfactory service for seventy years.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The Wolli Creek culvert has some aesthetic significance. It is a modest structure, but visually pleasing due to the arched forms of the cells. The design, similar to that of the Cup and Saucer Creek culvert, seems to reflect a pride in workmanship and civic pride in providing transport infrastructure on this important local route. The culvert also forms a landmark in the Wolli Creek valley. Upstream of the culvert the creek consists of a sterile looking deep-walled and fenced concrete channel. The creek emerges from the culvert to flow along a largely natural streambed surrounded by thick vegetation.

Significance Assessment	
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No overview study of concrete culverts has been undertaken. It is therefore not possible to establish whether this structure may have any rarity value.
Criterion g (representative)	No overview study of concrete culverts has been undertaken. It is therefore not possible to establish whether this structure may have the capacity to represent the important characteristics of a class of structures.
Statement of Significance	
<i>The Wolli Creek culvert has local historic and aesthetic significance. It is articulate about the history and aesthetics of road infrastructure in the Canterbury area in the 1930s and about the impacts of Departmental management on the landscape and provision of services in the Canterbury area at the inception of the motor-age. The Wolli Creek culvert was constructed as a key component of the upgrade works undertaken on Bexley Road to bring it up to standard as a newly classified Main Road to serve the fast growing Canterbury municipality. The culvert's accommodation of a wide carriageway and its crossing of the creek on a skew, which enables the roadway to achieve a smooth alignment, physically demonstrate those motor-age standards. The structure has provided satisfactory service for seventy years. The arched form of the culvert cells is visually pleasing and indicates an attention to aesthetics on the part of the contractors even in the design of modest, utilitarian structures. The culvert also holds a pivotal position on Wolli Creek, forming a gateway between the sterile concrete channel upstream and the largely natural streambed downstream, a contrast instructive about human action on this local landscape.</i>	

6.8 Arncliffe

6.8.1 Arncliffe Railway Station Group

The Arncliffe Railway Station is located on the T4 Eastern Suburbs and Illawarra line. It is listed on the State Heritage Register (#01076), Sydney Trains Section 170 Heritage and Conservation Register (#4801150) and the Rockdale Local Environment Plan (L1) as an item of state significance.

The Arncliffe Railway Station Group curtilage for the State Heritage Register listing is outside the study area. However, the curtilage for the same item under the Rockdale LEP 2011 is more expansive and extends into the study area. For the purposes of this assessment, the item has been carried forward.

The station services four tracks and consists of two island platforms, two station platform buildings, a footbridge for access to platforms with a large kiosk enclosed in the footbridge. The station is accessed via a footbridge and stairs, entered from Firth Street on the western side and via a footpath across a public park from Butterworth Lane on the eastern side. The footbridge is a Dorman Long & Co steel footbridge with stairs with concrete flooring and steps and includes a metal screen on the northern side. The two platforms are asphalt surfaces with some areas of modern brick paving on platforms 1 and 2 (**Plate 13**). The platforms are around 160 metres in length each and have been modified to include seating, lighting and signage. The main section of building located on platforms 1 and 2 has a hipped roof with transverse gables clad in corrugated steel roofing with timber louvered vents to the roof. The other platform building is primarily gabled corrugated steel roofing. Both platform buildings are painted red brick with stucco sills and heads and located on the northern ends of the platforms (**Plate 14**).

The overhead booking office on the footbridge was formerly a weatherboard building but has since been reclad with panels of fibre-cement sheeting. The building has a hipped and gabled corrugated steel roof and original timber framed double hung windows with nine paned top sashes with glazing. The significance assessment is provided in **Table 9**.



Plate 13 Arnccliffe Railway Station from Firth Street pedestrian path



Plate 14 Arnccliffe Railway Station from footbridge

Table 9 Significance Assessment of Arnccliffe Railway Station (NSW Heritage Division, 2010b)

Significance Assessment	
Criterion a (historical)	Arnccliffe Railway Station is of State historical significance as an important station on the Illawarra Line, demonstrating its development from 1884 to 1925, during important phases of railway construction and development. The development of the station has included the adaptation of two wayside buildings for island use.
Criterion c (aesthetic)	The platform buildings are of aesthetic significance, the building on Platforms 1 and 2 being an elaborate Victorian Italianate style building with decorative cast iron columns and brackets to awnings, and elaborate detail, the building on Platforms 3 and 4 being an altered 1884 wayside platform building altered to an island platform building in 1923, with major alterations including new platform awnings, and alterations to windows, doors and joinery.
Criterion f (rare)	Arnccliffe Railway Station is considered rare for its remarkably externally intact second class building on Platforms 1 and 2 dating from 1884, as only three stations on the Illawarra line retain platform buildings of this type and period (other examples at Sydenham and Tempe).
Criterion g (representative)	The Arnccliffe Railway Station 1919 steel footbridge and stairs, and the 1923 overhead booking office are considered to be good representative examples of their types.
Statement of Significance	
<i>Arnccliffe Railway Station is of State historical significance as an important station on the Illawarra Line demonstrating its development from 1884 to 1925, including the adaptation of two wayside buildings for island use. The Arnccliffe Railway Station is of historical significance as one of three remaining stations with 1880s 'second class' brick platform buildings on the Illawarra line, and is one of the best examples of suburban station architecture from the first period of construction on the Illawarra line. The platform buildings are of aesthetic significance, the Platform 1/2 building being an elaborate Victorian Italianate style building with decorative cast iron columns and brackets to awnings, and elaborate detail, the Platform 3/4 building being an 1884 wayside platform building altered in 1923 to an island platform building. The Arnccliffe Railway Station 1919 steel footbridge and stairs, the 1923 overhead booking office, and the concrete and brick road overbridge are considered to be good representative examples of their types.</i>	

6.8.2 House – 31 Kyle Street

This site is a single storey Victorian house with hipped roof and a verandah across the front elevation. The walls of 31 Kyle Street are rendered masonry with ashlar courses marked in the render. The façade is symmetrical with a central door and a pair of windows on either side (**Plate 15**). Separating each half of the pair of windows is a small tiled plate with wooden frame (**Plate 16**). There is drive way along the eastern side of the block. The roof is replaced concrete tiles on the main structure and verandah. The rear of the house has been altered over time. There is a spear headed steel palisade fence across the front boundary of the site. The site is listed on the Rockdale LEP 2011 as being of local heritage significance (I35). The assessed significance is provided in **Table 10**.



Plate 15 31 Kyle Street facade



Plate 16 31 Kyle Street detail

Table 10 Significance assessment of 31 Kyle Street Arncliffe (NSW Heritage Division, 2010d)

Significance Assessment	
Criterion a (historical)	The house at 31 Kyle Street and originally known as "Hazeldene", is historically significant as one of the first houses to be built on the Innesdale Estate.
Criterion b (associative)	The house has association with George W Beehag who was the son of James Beehag, market gardener and mayor of Rockdale 1872-1874.
Criterion c (aesthetic)	The dwelling is aesthetically significant as a highly intact Victorian house.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The building is a good representative example of a single storey Victorian house in Rockdale.
Statement of Significance	
<i>The house at 31 Kyle Street and originally known as "Hazeldene", is historically significant as one of the first houses to be built on the Innesdale Estate. The house has association with George W Beehag who was the son of James Beehag, market gardener and mayor of Rockdale 1872-1874. The building is a good representative example of a single storey Victorian house in Rockdale.</i>	

6.8.3 Victorian Shop and Dwelling – 45 Firth Street

This site is a two storey shop and residence that is part of a group of nine shops extending from Glenevie Lane to around the corner to 30 Forest Road (**Plate 17**). The building has a distinctive parapet, screening a skillion roof behind, the parapet is dated 1909 (**Plate 18**). The site is in the middle of a group of three Federation shops known as Bayview. None of the original shop fronts or timber windows remains. The site is listed on the Rockdale LEP 2011 as being of local heritage significance (I21). The assessed significance is provided in **Table 11**.



Plate 17 45 Firth Street shop fronts



Plate 18 Detail of 45 Firth Street

Table 11 Significance Assessment of 45 Firth Street, Arncliffe (NSW Heritage Division, 2010n)

Significance Assessment	
Criterion a (historical)	The shop and dwelling are significant historically as evidence of the economic growth of the district at the beginning of the 19th century. The building is physical evidence of the half a century of use as a grocery shop servicing the growing population in the district which accompanied the improved railway access.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The shop is aesthetically significant as part of a group of nine defining the corner of Forest Road and Firth Street in the Arncliffe shopping centre.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The building with the shop and dwelling above is representative of strip commercial development in Rockdale in the early 20th century.
Statement of Significance	
<i>The shop and dwelling are significant historically as evidence of the economic growth of the district at the beginning of the 19th century. The building is physical evidence of the half a century of use as a grocery shop servicing the growing population in the district which accompanied the improved railway access. The building is aesthetically significant as part of a group of nine defining the corner of Forest Road and Firth Street in the Arncliffe shopping centre. The building with the shop and dwelling above is representative of strip commercial development in Rockdale in the early 20th century.</i>	

6.8.4 Californian Bungalow – 7 Fairview Street

The residence, 7 Fairview Street, is listed on the Rockdale LEP 2011 as an item of local heritage significance (I15). The house is a Californian bungalow with a gable roof and three bay windows with timber frames across the façade. The property has a low dark brick fence with pillars across the street boundary and a concrete drive way along the side of the dwelling (**Plate 19**). The State Heritage Inventory does not contain a significance assessment for the item. Therefore an assessment has been undertaken for the purposes of this report, based on a visual inspection from public space, and is provided in **Table 12**.



Plate 19 7 Fairview Street

Table 12 Significance Assessment of 7 Fairview Street, Arncliffe

Significance Assessment	
Criterion a (historical)	Number 7 Fairview Street is of local historical significance. It demonstrates the expansion of the suburb of Arncliffe during the 1920s and 1930s.
Criterion b (associative)	Number 7 Fairview Street has not been associated with a person or group of persons of significance in the history of the local area or the State. It is not considered to hold significance under this criterion.
Criterion c (aesthetic)	Number 7 Fairview Street is of local aesthetic significance as a modest, but well-proportioned and executed example of a Californian Bungalow in Arncliffe.
Criterion d (social)	Number 7 Fairview Street is not considered to hold social significance at either a State or local level.
Criterion e (technical/research)	Number 7 Fairview Street is unlikely to yield information not available from other sources. It is not considered to be of technical or research significance at a State or local level.
Criterion f (rare)	Number 7 Fairview Street is not considered to be rare at either a State or local level.
Criterion g (representative)	Number 7 Fairview Street is of local representative significance. It represents a modest Californian Bungalow in the Rockdale area.
Statement of Significance	
Number 7 Fairview Street is of local historical, aesthetic and representative significance. It demonstrates the expansion of the suburb of Arncliffe during the 1920s and 1930s. The house's aesthetic significance arises it is a modest, but well-proportioned and well-executed example of a Californian Bungalow in Arncliffe.	

6.8.5 Californian Bungalow – 21 Fairview Street

Number 21 Fairview Street is identified on the Rockdale LEP 2011 as an item of local significance (I16). It is a double fronted house constructed of liver brick with a gabled roof. The significance assessment is provided in **Table 13**.



Plate 20 21 Fairview Street

Table 13 Significance Assessment of 21 Fairview Street, Arncliffe

Significance Assessment	
Criterion a (historical)	This Californian Bungalow house is historically significant as part of the original Gibbini Dappeto Estate subdivision in 1918 and as part of the development of commuter suburbs in the Rockdale area. The house is of value as part of one of the only remaining streets in Rockdale where a number of returned soldiers built their homes after World War 1. The house is aesthetically significant as a good representative example of a Californian style bungalow which forms part of a consistent streetscape of intact Inter-war bungalows.
Criterion b (associative)	Does not meet this criterion.
Criterion c (aesthetic)	The house is aesthetically significant as a Californian style bungalow which forms part of a consistent streetscape of intact Inter-war bungalows.
Criterion d (social)	Does not meet this criterion.
Criterion e (technical/research)	Does not meet this criterion.
Criterion f (rare)	The house forms part of a rare remaining group of houses in Rockdale, which were constructed by returning World War 1 soldiers.
Criterion g (representative)	The building forms is a good representative example of a Inter-war Californian style bungalow.
Statement of Significance	
This Californian Bungalow house is historically significant as part of the original Gibbini Dappeto Estate subdivision in 1918 and as part of the development of commuter suburbs in the Rockdale area. The house is of value as part of one of the only remaining streets in Rockdale where a number of returned soldiers built their homes after World War 1. The house is aesthetically significant as a good representative example of a Californian style bungalow which forms part of a consistent streetscape of intact Inter-war bungalows.	

6.8.6 Arncliffe (Forest Rd) Overbridge

The Arncliffe Overbridge carries Forest Road over the T4 Eastern suburbs rail line, around 400 metres south of the Arncliffe Railway Station. The overbridge is listed on the Sydney Trains Section 170 Heritage and Conservation Register of local heritage significance (#4805728). It is also incorporated into the Rockdale LEP 2011 listing (I1) as discussed in **Section 6.8.1**.

The bridge is a single 17.3 metre span shallow brick arch railway bridge for the double track below (refer to **Plate 21**). The bridge is supported on bridge abutments with brick parapet walls. At the point of the bridge Forest Road has four lanes of traffic and a wide pedestrian path on each side. The bridge also has a left turn only lane from Firth Street. The significance assessment is provided in **Table 14**.



Plate 21 View of Forest Road Overbridge from Wardell Street looking north

Table 14 Significance Assessment of Arncliffe (Forest Rd) Overbridge (NSW Heritage Division, 2009a)

Significance Assessment	
Criterion a (historical)	The Forest Road Overbridge has historical significance as part of the quadruplication of the Illawarra Line. The brick construction is consistent with the Government directive of the time to use local materials in preference to imported iron bridges.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The Forest Road Overbridge has aesthetic significance large arch coupled with the size of the cutting in which the bridge is located creates a highly visual landmark for rail and road users. The bridge has technical significance as the largest single span brick arch road bridge in the NSW rail network.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	The Forest Road Overbridge has research significance as a fine example of historic bridge construction technique.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The Forest Road Overbridge is a good representative example of brick arch construction in the style of semi-circular elevation.
Statement of Significance	
<i>The Forest Road Overbridge is of local significance as the largest single span brick arch road bridge on the NSW rail network (at 17.3m clear between abutments). The bridge is highly visible from the surrounding area due to the deep multi-track rail cutting leading to the wide brick overbridge and is an impressive landmark.</i>	

6.8.7 Arncliffe Post Office

Arncliffe Post office is identified as an Indicative Place on the non-statutory Register of the National Estate (#19170) (a non-statutory register) and the Rockdale LEP 2011 as an item of local heritage significance (119). The site consists of a two storey primarily light brown brick post office and residence. The building has sandstone detailing across the façade with a hipped tiled roof with wide eaves and exposed rafters (**Plate 22**). The postal chamber forms a central projecting wing, built to the eastern boundary of the site. Multi-paned windows with coloured glass remain on the upper level verandah. The significance assessment is provided in **Table 15**.



Plate 22 Arncliffe Post Office

Table 15 Significance Assessment for Arncliffe Post Office (NSW Heritage Division, 2010a)

Significance Assessment	
Criterion a (historical)	The building is historically significant associated with postal services in Arncliffe since the end of the nineteenth century. The building provides physical evidence of the development history of Arncliffe and the City of Rockdale in general.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	Building is aesthetically significant contributing to the character of Arncliffe shopping centre.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	Post office is a rare example of a Federation Post Office in Rockdale. Other offices in Rockdale and Bexley now demolished
Criterion g (representative)	Post Office is representative of Sydney suburban post offices built at the beginning of the twentieth century
Statement of Significance	
<i>The Arncliffe post office and residence building is a substantially intact example of late nineteenth century post office architecture from the office of W L Vernon, government architect. It is significant for its accomplished architectural design, fine detailing and as a reminder of the prosperous period in the area's early development.</i> <i>A rare Federation style Post Office in Rockdale contributing to the character of Arncliffe business centre and representative of postal services in the area. It provides evidence of the development history of Arncliffe and the municipality in general.</i>	

6.8.8 Bard of Avon

The Bard of Avon terrace house, located at 39 Eden Street, is identified on the Rockdale LEP 2011 (I13) as an item of local significance. This two storey terrace is oriented to the south, having a filigree verandah on this façade (**Plate 23**). The parapet has a moulded bust of William Shakespeare, giving rise to the name of the terrace. The significance assessment is provided in **Table 16**.



Plate 23 Bard of Avon

Table 16 Significance assessment of the Bard of Avon (NSW Heritage Division, 2000a)

Significance Assessment	
Criterion a (historical)	The house known as the "Bard of Avon" has historic significance as early evidence of the Wincanton Estate and the late 19th century development of Arncliffe.
Criterion b (associative)	Does not meet this criterion.
Criterion c (aesthetic)	The Bard of Avon retains the original aesthetic qualities of 19th century Eden Street formerly Rocky Point Road, and Arncliffe.
Criterion d (social)	Does not meet this criterion.
Criterion e (technical/research)	Does not meet this criterion.
Criterion f (rare)	Does not meet this criterion.
Criterion g (representative)	The building is a good representative example of a two storey late Victorian house in Rockdale.
Statement of Significance	
<i>The house known as the "Bard of Avon" has historic significance as early evidence of the Wincanton Estate and the late 19th century development of Arncliffe. The Bard of Avon retains the original aesthetic qualities of 19th century Eden Street formerly Rocky Point Road, and Arncliffe. The building is a good representative example of a two storey late Victorian house in Rockdale.</i>	

6.8.9 Street Plantings – Firth Street

Firth Street is a key transit way for the Arncliffe community with access to the Arncliffe Railway Station and a variety of retail outlets, grocery stores and cafes. A row of six large fig trees, together with other plantings, alongside the railway line are listing as being of locally significant on the Rockdale LEP 2011 (I18). The tree plantings are in reasonable condition (**Plate 24**). The significance assessment is provided in **Table 17**.



Plate 24 Tree plantings on Firth Street, Arncliffe

Table 17 Significance assessment of Firth Street, Arncliffe (NSW Heritage Division, 2010)

Significance Assessment	
Criterion a (historical)	The Fig trees in Firth Street are historically significant as early evidence of the beautification program of public streets in the early twentieth century
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	The Fig trees and Brushbox trees are aesthetically significant as contributing to the amenity of the Arncliffe shopping centre.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	The large fig trees are rare in the Rockdale area.
Criterion g (representative)	The planting is indicative of planting at the early part of the twentieth century.
Statement of Significance	
The Fig trees in Firth Street are historically significant as early evidence of the beautification program of public streets in the early twentieth century. The Fig trees and Brushbox trees are aesthetically significant as contributing to the amenity of the Arncliffe shopping centre. The large Fig trees are uncommon in the Rockdale area.	

6.8.10 Glenevie Lane

Glenevie Lane is a pedestrian lane between 45 and 43 Firth Street, Arncliffe. The lane links Firth Street with a number of suburban streets behind and contributes to the village character of Arncliffe. The Lane is bordered by many of the original plantings which were on the land occupied by the now demolished house 'Glenevie' (**Plate 25** and **Plate 26**). The site is listed on the Rockdale LEP 2011 as an item of local heritage significance (I20). The significance assessment is provided in **Table 18**.



Plate 25 Glenevie Lane looking north west towards Barden Lane



Plate 26 43 Firth Street ornamental fencing detail

Table 18 Significance assessment of Glenevie Lane, Arncliffe (NSW Heritage Division, 2010c)

Significance Assessment	
Criterion a (historical)	Glenevie Lane is historically significant as a lane connecting an urban network of streets with Firth Street and Arncliffe Railway Station.
Criterion b (associative)	The lane is historically associated with Thomas Firth, an engineer with the Department of Railroads when the Illawarra Railway line was built. Firth Street was named after him and Glenevie Lane was named after his home "Glenevie" adjacent to the lane
Criterion c (aesthetic)	The laneway is aesthetically significant as part of a network of lanes contributing to character of Arncliffe.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No assessment provided
Criterion g (representative)	Glenevie Lane is an example of a pedestrian walkway in Rockdale.
Statement of Significance	
<i>Glenevie Lane is historically significant as a lane connecting an urban network of streets with Firth Street and Arncliffe Railway Station. The lane is historically associated with Thomas Firth, an engineer with the Department of Railroads when the Illawarra Railway line was built. Firth Street was named after him and Glenevie Lane was named after his home "Glenevie" adjacent to the lane.</i>	

6.8.11 House – 148 Wollongong Road

Number 148 Wollongong Road is a single storey Federation Arts and Crafts style stone and brick house. A projecting gable at the front and side add to the hipped slate roof. The gable ends are stone parapets with infill pieces of brick. The façade includes a verandah with a stone balustrade integrated with stone columns and small timber posts supporting the roof (**Plate 27**). The dwelling has three original chimneys and a bulls eye window in the side elevation (**Plate 28**). The Rockdale LEP 2011 lists the site as a site of local heritage significance (I61). The significance assessment is provided in **Table 19**.



Plate 27 148 Wollongong Rd façade



Plate 28 148 Wollongong Rd western side

Table 19 Significance assessment of 148 Wollongong Rd (NSW Heritage Division, 2010e)

Significance Assessment	
Criterion a (historical)	The house at 148 Wollongong Road, originally known as Rocky Glen, provides evidence of the historical development of Arncliffe and Wollongong Road in the early twentieth century.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	The house is aesthetically significant as a very fine Federation free-style rusticated stone house that contributes to the historic character of Wollongong Road. The building is technically significant as an example of the use of locally produced stone adapted to architectural fashions of the time.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	The house is a rare example of a Federation free-style rusticated stone house in the Rockdale area.
Criterion g (representative)	No assessment provided
Statement of Significance	
<i>The house at 148 Wollongong Road, originally known as Rocky Glen, provides evidence of the historical development of Arncliffe and Wollongong Road in the early twentieth century. The house is aesthetically significant as a very fine Federation free-style rusticated stone house that contributes to the historic character of Wollongong Road. The building is technically significant as an example of the use of locally produced stone adapted to architectural fashions of the time.</i>	

6.8.12 House – 73 West Botany St

Number 73 West Botany Street is a single storey Victorian Italianate dwelling with a transverse gable roof and a gable roof projecting at the front to cover a small verandah. The roof of the verandah is corrugated metal painted in a wide vertical stripe pattern; the main structure roof is slate. The verandah retains its original cast iron posts, decorative lace valence and brackets along with the tessellated tiles on the verandah floor. The house also retains the original chimneys and detailing on windows. Below the front facing gable is an elaborate decorative faceted bay window with a parapet roof (**Plate 29**). The cornice moulding is supported on florets and within the frieze are panels of embedded pilasters. The parapet is topped with a small decorative pediment. This house is listed on the Rockdale LEP 2011 as being of local heritage significance (I56). The significance assessment is provided in **Table 20**.



Plate 29 73 West Botany Street

Table 20 Significance assessment for 73 West Botany Street, Arncliffe (NSW Heritage Division, 2010f)

Significance Assessment	
Criterion a (historical)	The house once known as "The Grange" is historically significant as one of the remaining house of the Innesdale Estate Arncliffe which formed the village of West Botany.
Criterion b (associative)	The house is associated with W E Grainger postmaster of Arncliffe for 20 years and later alderman and mayor of Ashfield.
Criterion c (aesthetic)	The house is associated with W E Grainger postmaster of Arncliffe for 20 years and later alderman and mayor of Ashfield.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No assessment provided
Criterion g (representative)	The dwelling is an excellent representative of Victorian dwellings in Rockdale.
Statement of Significance	
<i>This highly intact building at 73 West Botany Street has aesthetic value due to its integrity as a Victorian house. It's location in the context of other Victorian houses in Kyle Street add to its value both aesthetically and historically. The house is historically significant as one of the remaining houses which formed the village of West Botany.</i>	

6.8.13 Rosslyn Hospital – 30 Forest Road

Rosslyn Hospital is listed on the Rockdale LEP 2011 as an item of local heritage significance (I24). It is a two storey brick and stucco Victorian Italianate villa with minimal decorative detail. The building has a hipped slate roof with a central captains walk. The main entrance to the building is on the eastern side as the front is screened from the street by large evergreen trees (**Plate 30** and **Plate 30**). The structure retains its original windows, string courses and entrance portico but has been altered extensively in the 1920s for use as a hospital and then more recently for apartments. The significance assessment is provided in **Table 21**.



Plate 30 Rosslyn Hospital facade



Plate 31 Rosslyn Hospital Facade

Table 21 Significance Assessment for Rosslyn Hospital, Arncliffe (NSW Heritage Division, 2005a)

Significance Assessment	
Criterion a (historical)	The villa is historically significant as representative of the construction of villa in Rockdale in the 1880s.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	Number 30 Forest Rd. has aesthetic significance linking with other Victorian style buildings in a precinct along Forest Rd. It is one of a number of prominent buildings along this important Rockdale street.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion g (representative)	No assessment provided
Criterion f (rare)	No assessment provided
Statement of Significance	
A prominent Victorian style villa, part of a grouping of other Victorian buildings contributing to the historic character of Forest Road. Its later conversion to a hospital is significant contributing to the development of health services in Arncliffe.	

6.8.14 St Francis Xavier Catholic Presbytery – 26 Forest Road

The St Francis Xavier Catholic Presbytery is located at 26 Forest Road Arncliffe and is listed on the Rockdale LEP 2011 as an item of local heritage significance (I23). The structure is a single storey Italianate brick villa with a basement. A verandah wraps around the front half of the house with structural support from red brick pillars. The verandah retains its original cast iron posts and brackets and the roof of the verandah is covered with new aluminium roof decking (Plate 32). The structure has a hipped slate roof with dormer windows. Adjacent to the dwelling is the T4 Sydney Trains rail line (Plate 33). The significance assessment is provided in Table 22.



Plate 32 St Francis Xavier Presbytery from Forest Road



Plate 33 St Francis Xavier Presbytery from Wardell St

Table 22 Significance Assessment of St Francis Xavier Catholic Presbytery (NSW Heritage Division, 2010h)

Significance Assessment	
Criterion a (historical)	St Francis Xavier Catholic Presbytery is historically significant as part of the early development of the northern end of Forest Road.
Criterion b (associative)	The building has historical association with William Robson and with the Roman Catholic Church.
Criterion c (aesthetic)	St Francis Xavier Catholic Presbytery is aesthetically significant as a late 19th century villa on the ridge of Forest Road providing evidence of the original 19th century character of Forest Road and Arncliffe.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No assessment provided
Criterion g (representative)	St Francis Xavier Catholic Presbytery is a good representative example of a Victorian villa in Rockdale.
Statement of Significance	
<i>St Francis Xavier Catholic Presbytery is historically significant as part of the early development of the northern end of Forest Road. St Francis Xavier Catholic Presbytery is aesthetically significant as a late 19th century villa on the ridge of Forest Road providing evidence of the original 19th century character of Forest Road and Arncliffe. The building has historical association with William Robson and with the Roman Catholic Church. St Francis Xavier Catholic Presbytery is a good representative example of a Victorian villa in Rockdale.</i>	

6.8.15 St Francis Xavier Church Group – 4-6 Forest Road

St Francis Xavier Church group consists of the St Francis Xavier Roman Catholic Church and an associated presbytery next door. The group are listed on the Rockdale LEP 2011 as items of local heritage significance (I22).

The church is a 1930s Romanesque style church of dark red brick with a circular tower (**Plate 34**). The main feature of the façade is a large recessed arch with an inset rose window in the centre. The recessed double doors are at the top of a small stair case leading from the sandstone fence on the street boundary. The sand stone fence has short steel pickets and a stone arched entry. The roof of the church is a steeply pitched gable with a parapet gable to the front on Forest road. The opposite side of the building to the tower is a two storey faceted bay and a semi-circular bay at the back.

The presbytery is a two storey Victorian Italianate rendered brick house (**Plate 35**). A verandah and balcony run across half the front façade on both levels with Victorian lace balustrade and iron columns. There is a side wing with front facing gables and transverse hipped roofing. This has a two storey faceted bay with three arched windows at each level surmounted by label moulds. The site has an iron spear picket fence at the street boundary with a stone base.

Both the church and presbytery have Marseilles tile cladding on the roof. The significance assessment of the group is provided in **Table 23**.



Plate 34 St Francis Xavier Roman Catholic Church from Forest Road



Plate 35 St Francis Xavier Presbytery from Forest Road

Table 23 Significance Assessment St Francis Xavier Church Group (NSW Heritage Division, 2010i)

Significance Assessment	
Criterion a (historical)	St Francis Xavier Catholic Presbytery is historically significant as part of the early development of the northern end of Forest Road.
Criterion b (associative)	The building has historical association with William Robson and with the Roman Catholic Church.
Criterion c (aesthetic)	St Francis Xavier Catholic Presbytery is aesthetically significant as a late 19th century villa on the ridge of Forest Road providing evidence of the original 19th century character of Forest Road and Arncliffe.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No assessment provided
Criterion g (representative)	St Francis Xavier Catholic Presbytery is a good representative example of a Victorian villa in Rockdale.
Statement of Significance	
<i>St Francis Xavier Church group has high level of aesthetically significance for its architectural excellence and for its landmark qualities. St Francis Xavier Church is an excellent example of ecclesiastical design from the inter-war period, demonstrating Romanesque characteristics. St Francis Xavier Church group are historically significant as part of the early 20th century development of Arncliffe and the inter-war period. The Church group of buildings is representative of the growth of Catholicism and reflects the overall historical development of Arncliffe.</i>	

6.8.16 Western Outfall Main Sewer (Rockdale to Homebush)

The Western Outfall Main Sewer is a sewerage aqueduct and in this portion consists of three 1.83 diameter brick barrel drains. These have been encased in concrete and masonry superstructure (**Plate 36** and **Plate 37**). The item is listed on the State Heritage Register (SHR #01647). It is also listed as the Southern and Western Suburbs Ocean Outfall Sewer on the Sydney Water Section 170 Heritage and Conservation Register (#4571742) as an item of State heritage significance. The curtilage as per the coordinate provided on the State Heritage Register does not reflect the location of the heritage item. This has been corrected on maps produced for this report.

The significance assessment is provided in **Table 24**.



Plate 36 SWSOOS looking south east from the shared path located between Kogarah Golf Course and M5 East Motorway, Arncliffe



Plate 37 SWSOOS looking north west from the shared path located between Kogarah Golf Course and M5 East Motorway, Arncliffe

Table 24 Significance assessment of Southern and Western suburbs ocean outfall sewer (NSW Heritage Division, 2010g)

Significance Assessment	
Criterion a (historical)	This section of the Western Outfall Main Sewer is of historical significance, being one of Sydney's earliest main sewers, built in the 1890s to end the discharge sewage into Sydney Harbour. It is also significant for its association with the former Botany Sewage Farm, which it served until 1916, when the farm was superseded by the SWSOOS No1.
Criterion b (associative)	No assessment provided against this criterion.
Criterion c (aesthetic)	Item does not have any notable outstanding aesthetic values.
Criterion d (social)	Item is listed on the National Trust (NSW) register and is thus recognised by an identifiable group, and as such has importance to the broader community.
Criterion e (technical/research)	The three barrels are an excellent example of the oviform brick construction method of the period, which have been in continuous operation for over 100 years and continues to give excellent service.
Criterion f (rare)	The brick barrels are a rare and unusual example of late 19th century sewer construction and are part of the highly significant SWSOOS sewer system which is the largest in the SWC system and likely NSW.
Criterion g (representative)	The brick barrels are a representative example of late 19th century sewage construction.
Statement of Significance	
<i>The Valda Avenue, Arncliffe to SWSOOS Merging Chamber section of the original Western Outfall Main Sewer is of historical and technical significance. Historically, it is an original section of one of Sydney's oldest main sewers, built in the 1890s to end the discharge of sewage into Sydney Harbour. Its flow originally terminated at the former Botany Sewage Farm (which was one of only two known large scale sewage farms built in Australia during the 19th century), with which it has close temporal and locational associations. Technically, the three brick barrels, which are encased in concrete, are an excellent example of the oviform brick construction method of the time, which have provided continuous service for over 100 years.</i>	

6.8.17 Victorian Houses and Semi-Detached Dwellings – 16, 20, 22 & 26 Stanley Street

This is collection of semi-detached dwellings at 16 (**Plate 38**), 20 (**Plate 39**), 22 (**Plate 40**) and 26 (**Plate 41**) Stanley Street, Arncliffe registered on the Rockdale LEP 2011 as items of local heritage significance (I48-I51). The dwellings are single storey semi-detached Victorian Filigree houses with original verandahs across the façade. The verandahs have Victorian detailing and filigree lace balustrade with label mould over the front windows. The underside of the verandah is enclosed rendered and painted masonry with brick arch opening and wooden door. The significance assessment is provided in **Table 25**.



Plate 38 16 Stanley Street, Arncliffe



Plate 39 20 Stanley Street, Arncliffe



Plate 40 22 Stanley Street, Arncliffe



Plate 41 26 Stanley Street, Arncliffe

Table 25 Significance assessment for Victorian semi-detached dwellings (NSW Heritage Division, 2010m)

Significance Assessment	
Criterion a (historical)	The houses provide evidence of the early development of the Bardens Estate of 1895.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	The dwellings are aesthetically significant as part of a group of semi-detached dwellings in a prominent location on a ridge close to Forest Rd.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	The houses are one of a rare grouping of Victorian semi-detached houses in the Rockdale area.
Criterion g (representative)	The buildings are a good representative example of a Victorian semi-detached house.
Statement of Significance	
<i>The house at 20 Stanley Street, Arncliffe forms part of a rare group of eight semi-detached Victorian houses and sits in a prominent hillside location near the Forest Road ridgeline. The house provides evidence of the early development of the Bardens Estate of 1895. The building is a good representative example of a Victorian semi-detached house.</i>	

6.9 Wolli Creek

6.9.1 Wolli Creek Valley

Wolli Creek is a lower tributary of the Cooks River with a sub-catchment area of 15.5 square kilometres. The creek is around eight kilometres long from Beverley Hills to the Cooks River; much of which is in the form of a lined channel from Kingsgrove Road to Bexley Road. Beyond the Bexley road culvert the river takes a more natural state and forms a defined watercourse to Turrella where a concrete weir separates the estuarine parts and the freshwater areas. The creek is classified as a Class 1 Major Fish habitat as a result of much of the mid to lower reaches of the creek being bordered by the Wolli Creek Nature Reserve which protects riparian vegetation and several fish species. The site is identified on the Rockdale LEP 2011 as I237.

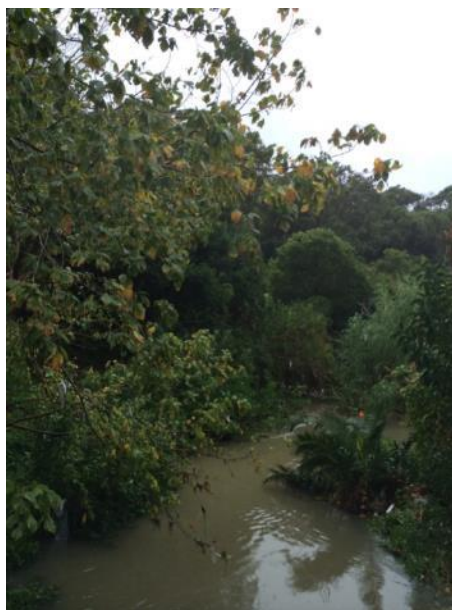
**Plate 42** Wolli Creek downstream of Culvert

Table 26 Assessment of Significance of Wolli Creek Valley (source: NSW Heritage Register)

Significance Assessment	
Criterion a (historical)	The Wolli Creek Valley is historically significant for its role in the decision to begin settlement in this area as it provided water and promised good soils for crops.
Criterion b (associative)	Wolli Creek Valley is associated with Reuben Hannam one of the earliest European settlers in the area and his son David Hannam who was responsible for early land subdivision in Arncliffe.
Criterion c (aesthetic)	The Wolli Creek Valley is integral to the protection of the riparian corridor of Wolli Creek and is today an essential green recreation corridor buffering the densely urban areas surrounding it.
Criterion d (social)	The Wolli Creek Valley has special association for a local group known as the Wolli Creek Preservation Society who have actively campaigned for the conservation of the Valley since 1983
Criterion e (technical/research)	Further research may reveal more about Aboriginal inhabitants of the area prior to and subsequent to Colonial settlement.
Criterion f (rare)	The Wolli Valley contains extensive bushland, much of it of high conservation value. It is associated with one of the few remaining creeks in inner Sydney with banks that have not been extensively engineered or channelled. In combination, they represent a heritage of natural values unique in a wide region from the fringes of the Parramatta River to those of the Georges River and from the coast to as far west as Prospect. (Wolli Creek preservation Society)
Criterion g (representative)	The Wolli Creek Valley is representative of pre-settlement riparian environments in the Rockdale area.
Statement of Significance	
<i>The Wolli Creek Valley is historically significant for its role in the decision to begin settlement in this area as it provided water and promised good soils for crops. Wolli Creek Valley is associated with Reuben Hannam one of the earliest European settlers in the area and his son David Hannam who was responsible for early land subdivision in Arncliffe. The Wolli Creek Valley is integral to the protection of the riparian corridor of Wolli Creek and is today an essential green recreation corridor buffering the densely urban areas surrounding it. The Valley is a rare example of native vegetation and landscape in the inner urban area of Sydney, containing several rare and significant faunal and floral species. The place has the potential to reveal more about Aboriginal inhabitants of the area prior to and subsequent to Colonial settlement.</i>	

6.10 Tempe

6.10.1 Moreton Bay Fig

A large Moreton Bay Fig (*Ficus macrophylla*) is located at 43 South Street Tempe (**Plate 43**). It is listed as an item of local significance on the Marrickville LEP 2011 (I303). It is thought to have been planted shortly after the subdivision of this section of the Tempe Estate. The assessed significance is provided in **Table 27**.



Plate 43 Moreton Bay Fig. View north

Table 27 Significance assessment for the Moreton Bay Fig (NSW Heritage Division, 2011b)

Significance Assessment	
Criterion a (historical)	Local
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	No assessment provided.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	Local- The tree is a rare example of an established Moreton Bay Fig tree in the area with associated stone surround.
Criterion g (representative)	No assessment provided.
Statement of Significance	
<i>Planted late 19th century/ early 20th century, a prominent feature of the landscape and probably planted shortly after the subdivision of this part of Tempe.</i>	

6.10.2 Timber Slab Cottage

The Timber Slab Cottage at 44 Barden Street, Tempe, is listed on the SHR (SHR #01412) and the Marrickville LEP 2011 (I294). The State Heritage Register listing states “Based on an analysis of the building fabric and the existing land title information it is considered it was constructed c. 1840 and would have been a worker’s cottage on land owned by A.B. Sparke the man who built Tempe House in the 1830s” (NSW Heritage Division, 2000b). Sparke mortgaged the area to the Bank of Australia in the late 1840s, having surveyed the area for subdivision in 1842. In 1850 the Bank of Australia sold 156 allotments, including Block 2 of Lot 43 on which the cottage sits, to Edward Flood. Flood sold a portion of his land to Joseph Nobbs, including the Cottage in 1854, who in turn sold it to Fredrick Barden in 1861.

The cottage is constructed of split timbers arranged horizontally. The exterior seems to have been clad in weatherboard more recently. The recent corrugated iron roof also covers the deep verandah along the front façade (**Plate 44**). The assessed significance contained in the State Heritage Register listing is provided in **Table 28**.



Plate 44 Timber Slab Cottage, 44 Barden Street, Tempe.

Table 28 Significance assessment for Timber Slab Cottage, 44 Barden Street, Tempe (NSW Heritage Division, 2000b)

Significance Assessment	
Criterion a (historical)	Land Grants for the site go back to October 1799. The original grant of 470 acres was used for agricultural purposes farmed with assigned convicts. The land was also owned by Robert Campbell who built Tempe House across the river. He sold the land at about this time possibly to help pay for Tempe House. It is probably the oldest extant vernacular house in Tempe.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	Small cottage form evident from street. The original southern exterior wall is now part of the living room which is now internal. This wall is 6m slab wall and 2.7m. The adjacent 19th century brick wall is also visible. The cottage is a rare example of a rudimentary timber slab cottage. Although the exterior is now encapsulated within modern aluminium weatherboard cladding it is visible on the inside wall of the living room.
Criterion d (social)	It is significant because it shows an example of a small domestic house from early Sydney. It was constructed c.1840 and would have been a worker's cottage on land owned by A.B. Sparke, the man who built Tempe House in the 1830s. The house shows how older buildings are set on sites at a skew angle and do not always align with new sub-divisions. This provides evidence of an earlier occupation before sub division. It is one of the oldest house in the area and provides evidence of early land use. Grooves in the rear wall show evidence of early steam driven machines. This may have been associated with the agricultural development or be part of some small industry manufacturing process.
Criterion e (technical/research)	Provides evidence of the technology of slab cottages in the middle of the 19th century. The house is raised of the ground and uses nails to fix the slabs which have been roughly thinned out to receive the 'Ewbank' nails. The construction shows a reasonable understanding of carpentry techniques and uses mortise and tenon joints. Accommodation seems above normal for convict/ lessee/ or shepherd. More likely built for a supervisor or farm caretaker for owners.
Criterion f (rare)	This type of vertical timber slab construction is rare, particularly in the Sydney region. It is similar to Dundullimal Homestead, Dubbo. Normally slab buildings are built on the ground, this cottage is unusual in that it has a well ventilated floor space underneath it.

Significance Assessment

Criterion g (representative)	No other building of this type in the area.
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Statement of Significance

The timber slab cottage at 44 Barden Street Tempe dates from the mid-19th century. It is a rare surviving example of the type of vernacular rudimentary timber building built in early Sydney. The house is one of the oldest houses in Tempe and is on land which was part of an original land grant dating back to 1799. It was constructed c.1840, and would have been a worker's cottage on land owned by A.B. Sparke, the man who built Tempe House in the mid-1830s.

The walls are made up of vertical timber slabs which have been split. The hardwood slabs have been crudely thinned at each end and are fixed with original 'Ewbank' nails (produced from 1838-70). The walls have been painted with multiple layers of limewash. The gaps between the timber slabs have been caulked with a lime putty made from slaked rock lime. The interior walls are timber lath and plaster. The floors are hardwood pit-sawn timber, with saw markings and square edge detailing fixed on round joists with the remnants of the original bark still preserved. The foundations are sandstone piers set into a sand clay footing.

6.11 Sydenham**6.11.1 Brick Kerbs and Sandstone Kerb Guttering**

The Marrickville LEP 2011 identifies brick and sandstone kerbing located in George Street, Henry Street, Park Road, Park Lane, Railway Lane, Rowe Lane, Reilly Lane and Stewart Lane in Sydenham as being of local significance (1284). The sandstone sections are dressed, with some having stormwater outlets neatly cut out (**Plate 45**). The brick sections are of a liver colour and have a rounded edge on the outer surface. The liver brick is contrast with a light grey mortar (**Plate 46**). It is noted that sections of the brick guttering on Railway Lane are being damaged by vehicles using the adjacent vacant area for informal parking. The LEP listing does not contain a Statement of Significance or an assessment against the criteria. **Table 29** contains an assessment undertaken by AECOM.



Plate 45 Example of the Sandstone Kerbing in George Street.



Plate 46 Example of Brick guttering in George Street.

Table 29 Significance assessment for the Brick Kerbs and Sandstone Kerb Guttering, Sydenham

Significance Assessment

Criterion a (historical)	The Brick Kerb and Sandstone Kerb Guttering are of local historical significance. The Kerbing demonstrates the development of the suburb and the civic pride as demonstrated by the high degree of workmanship and attention to detail.
Criterion b (associative)	No associative significance identified.

Significance Assessment	
Criterion c (aesthetic)	The Brick Kerb and Sandstone Kerb Guttering are of local aesthetic significance. The Kerbs contribute to the heritage character of the local area. The high degree of workmanship and attention to detail also provide aesthetic significance in their own right.
Criterion d (social)	No social significance identified.
Criterion e (technical/research)	No research significance identified.
Criterion f (rare)	The Brick Kerb and Sandstone Kerb Guttering are of local rarity. The majority of the guttering in suburban environments having been impacted by upgrade works and replaced with concrete.
Criterion g (representative)	No representative significance identified.
Statement of Significance	
<i>The Brick Kerb and Sandstone Kerb Guttering are of local historical, aesthetic and rarity heritage significance. The sections of guttering demonstrate the development of the Sydenham area and the local civic pride. The brick and sandstone gutters both demonstrate a high degree of workmanship, which contribute to the aesthetic significance. The Kerbs also contribute to the broader heritage character of the local area. It is considered that the Kerbs are likely to be rare, the majority of guttering having been impacted by upgrade works and replaced with concrete versions.</i>	

6.11.2 Victorian Filigree Style Sandstone Faced Residence, Including Interiors – 19 Railway Road

No. 19 Railway Road in Sydenham is identified as an item of local significance on the Marrickville LEP 2011 (I288). The two storey terrace is principally constructed of red brick, but has been faced with sandstone. The verandah/balcony covers both floors. The asymmetrical façade has been finely finished with moulding to the door and window fenestration (**Plate 47**). The House is currently used as an art studio.

Table 30 Significance assessment for the Sandstone House, Sydenham

Significance Assessment	
Criterion a (historical)	Local
Criterion b (associative)	No heritage significance identified.
Criterion c (aesthetic)	No heritage significance identified.
Criterion d (social)	No heritage significance identified.
Criterion e (technical/research)	No heritage significance identified.
Criterion f (rare)	Local
Criterion g (representative)	No heritage significance identified.
Statement of Significance	
A large Victorian residence with unusual stone front facade that reflects its proximity to stone quarries.	



Plate 47 Sandstone House

6.11.3 St Mary/ St Mina Coptic Orthodox Church

The St Mary/St Mina Coptic Orthodox Church is located at 24A Railway Parade in Sydenham and is an item of local significance on the Marrickville LEP 2011 (I289). The Church was originally constructed as the Tempe Park Methodist Church, opened in 1902, but was re-consecrated in the 1968 following the arrival of the first Coptic Orthodox Priest in Australia. The Church was resumed following the extension to the Sydney Airport.

The red brick building is within the church architectural style. The entrance has a separate pitched roof, set at a lower height so as not to detract from the scale of the structure. The corners of the building are decorated with non-supporting buttresses. The roofline is highlighted with a moulded string course and the corners of the entrance and main body of the church are topped with small steeple-like decorations (**Plate 48**). A weatherboard addition has been added to the rear of the church, forming a 'T' shaped layout (**Plate 49**).

The LEP listing does not contain an assessment against the significance criteria, other than to identify under which criteria it is significant. A brief Statement of Significance is provided. AECOM has prepared the assessment in **Table 31**, incorporating the information from the listing.

In 2015, Marrickville Council determined to demolish the Church as no suitable use for the structure has been found (Marrickville Council, 2015).



Plate 48 St Mary/St Mina Coptic Orthodox Church. View of front façade. View south west.



Plate 49 St Mary/St Mina Coptic Orthodox Church showing rear addition. View north.

Table 31 Significance assessment for the St Marys/St Minas Coptic Orthodox Church (NSW Heritage Division, 1999).

Significance Assessment	
Criterion a (historical)	The church is of local historical significance as it demonstrates the pattern of development and social change within the Sydenham area. Originally constructed as a Methodist Church, its re-consecration as a Coptic Orthodox Church demonstrates the increasing multiculturalism of the Sydney suburbs.
Criterion b (associative)	No associative significance identified.
Criterion c (aesthetic)	The church is not of particular aesthetic significance and does not meet the threshold.
Criterion d (social)	The church is of local social significance to the former parishioners.
Criterion e (technical/research)	No research significance identified.
Criterion f (rare)	No rarity significance identified.
Criterion g (representative)	The church is of local representative significance as a modest church within a suburban setting.
Statement of Significance	
<i>When the Tempe Park Methodist Church was built it represented the growing Methodist congregation in the district. However during the 1950s and 60s the cultural mix of the area changed dramatically, and this has been represented by the re-consecration of a number of local churches including this one.</i>	

6.11.4 Sydenham Village

Sydenham Village, which encompasses the area between Unwins Bridge Road and the Princes Highway and Yelverton Street and Belmore Lane, was identified on the non-statutory Register of the National Estate as an indicative place (#100061). It is identified as an area of worker's cottages, built with bricks from the local brickworks. There is no assessment against criteria and the statement of significance simply reads "Whilst not grand in its scale or architecture, the area is significant as a fine example of working class development in the late nineteenth century" (Australian Heritage Council, n.d.-e).

The central portion of the indicative place was demolished as noise mitigation related to the construction of the third runway at the Kingsford Smith Airport. The front fences and letter boxes were retained along Railway Road (Plate 51). The open space has been converted to parkland by the council, yet there remains significant archaeological potential in the area (Plate 50).

**Plate 50** Extant front fences along Railway Road.**Plate 51** Sydenham Village open space.

Table 32 Significance assessment for Sydenham Village.

Significance Assessment	
Criterion a (historical)	Sydenham Village does not meet this criterion.
Criterion b (associative)	Sydenham Village does not meet this criterion.
Criterion c (aesthetic)	Sydenham Village is of local aesthetic significance as open space within a densely developed suburb.
Criterion d (social)	Sydenham Village is of local social significance. The acquisition and subsequent demolition of the houses left an indelible mark on the community. The open park land is now of local social significance for the public amenity it provides.
Criterion e (technical/research)	Sydenham Village is of local research significance. The investigation of the archaeological relics and deposits associated with the demolished houses has the potential to yield information regarding life in the suburb from the late 1890s on.
Criterion f (rare)	Sydenham Village does not meet this criterion.
Criterion g (representative)	Sydenham Village does not meet this criterion.
Statement of Significance	
<i>Sydenham Village is of local aesthetic, social and research significance. The Village creates an aesthetically appealing area of open green space that juxtaposes with the dense residential development around it. Socially, the area is recognised as being associated with a deeply traumatic period in the local areas history. The acquisition and subsequent demolition of the houses left an indelible mark on the community. The open park land is now of local social significance for the public amenity it provides. The investigation of the archaeological relics and deposits associated with the demolished houses has the potential to yield information regarding life in the suburb from the late 1890s on.</i>	

6.12 St Peters and Alexandria

6.12.1 Industrial Building “Frank G Spurway” Including Interior

The Frank G Spurway Building, now the Sydney Park Business Centre, is located on the corner of Maddox Street and Euston Road in Alexandria. The building is listed on the Sydney LEP 2012 as item I20. Constructed of red brick in the Inter-War Functionalist style, the prominent corner location is maximised through the placement of an asymmetrical tower and rounded entrance, which addresses the corner (**Plate 52**). The tower is dominated by the initials “F.G.S.” on each frontage (**Plate 53**). The facades of the two storey building are dominated by almost floor to ceiling aluminium framed windows on the ground floor and smaller, but equally proportioned windows on the second storey.

The building was constructed in 1940 for Frank G. Spurway, who operated an iron foundry and tool making business. The building was designed by architects Stafford Moore & Farrington. The assessed significance can be found in **Table 33**.



Plate 52 Frank G Spurway Building. View south west along Maddox Street.



Plate 53 Detail of the Frank G Spurway Building from Maddox Street.

Table 33 Significance assessment for Industrial building "Frank G Spurway" Including Interior (NSW Heritage Division, 2006b).

Significance Assessment	
Criterion a (historical)	The Frank G. Spurway building is historically significant as it represents later industrial/commercial development c. 1940.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The building represents a good example of the Inter-War Functionalist architectural style showing Dudock influences.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	No assessment provided.
Statement of Significance	
<i>The Frank G. Spurway building is historically significant as it represents mid-twentieth century industrial/commercial development (1940). The building is of aesthetic significance as it represents a good example of the Inter-War Functionalist architectural style showing Dudock influences, and is representative of the work of Stafford Moore & Farrington.</i>	

6.12.2 Former Bedford Brickworks group and Sydney Park

The remnant structures associated with the Former Bedford Brickworks are located on the corner of the Princes Highway and Sydney Park Road. It is identified as an item of local significance on the Sydney LEP 2012 (I27). The site contains two Hoffman kilns, with associated chimneys, two down draught kilns with one chimney and a separate chimney set within a landscaped park. The assessed significance is provided in **Table 34**.

Table 34 Significance assessment for the Former Bedford Brickworks group (NSW Heritage Division, 2007a)

Significance Assessment	
Criterion a (historical)	The Brickworks site is a significant component of one of Sydney's oldest and most important industries. It retains sufficient material and occupies an appropriate site to present clear evidence of the operation of the site as a brickworks. The Brickworks provided vital employment in the St Peters district for several generations and contributed largely to the construction of the district itself.
Criterion b (associative)	The site has general past association with the industrial development of St Peters and South Sydney and with the local working community. Present association with the local community who are users of Sydney Park.
Criterion c (aesthetic)	The site and its structures, particularly the former Brickworks chimneys, are landmarks which can be viewed from a number of locations and contribute to the Princes Highway and Sydney Park Road streetscapes. The site constitutes an architectonic feature of Sydney Park that reinforces its visually distinctive urban man-made character. The robust materials contribute to the interpretation of the history and former uses of the site and park, and generally to the interpretation of the industrial context. The Brickworks, in its Sydney Park setting, reveals the relationship between several types of industrial activity and between the structures and the urban open space.
Criterion d (social)	Socially significant due to association with Bedford Brickworks and with the Austral Brick Company who employed an important specialised labour force.
Criterion e (technical/research)	The entire site constitutes a good example of a local brickworks built taking advantage of the adjacent clay pits, railway facilities and major transport routes, and industrial practises common at the time of the Brickworks' operation. Its layout and arrangement of buildings and items contribute to the interpretation of the various brick making processes. Its associated industrial items and artefacts contribute to the interpretation of former uses and technologies at the site. These include but are not limited to: industrial items, original signage, industrial artefacts (shale crushing mill, boiler, other machinery parts from the processing plant building (currently located at the site of Down Draught Kiln No. 2). Significant archaeological remains may be assumed to exist underground.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	Of brickworks operating in southern Sydney from the late 19th century.
Statement of Significance	
<i>The Bedford Brickworks site is a significant component of one of Sydney's oldest and most important industries. It retains sufficient material, and occupies an appropriate site to present a clear indication of the working of the site. The Brickworks formed a vital component of the labour force of the St Peters district for several generations and contributed largely to the construction of the district itself. The Brickworks, in its Sydney Park setting, reveals the relationship between several types of industrial activity and between the structure and urban open space.</i> <i>The entire site constitutes a landmark that contributes to the stark industrial character of the streetscape. Significant views and vistas that contribute to enhance the significance of the site include the views and vistas along the Princes Highway; along Sydney Park Road; to the site from Sydney Park hills; and from Sydney Park Road to the city to the north and to Sydney Airport to the south.</i>	

The former Brickworks sit within Sydney Park, which is bound by Princes Highway, Euston Road and Sydney Park Road. The Park is not listed on a heritage schedule, but given the industrial heritage of the area, does contain areas of archaeological potential pertaining to the former brickworks that operated in the vicinity. The archaeological potential of the Park has been discussed in **Section 5.2.6**.

6.12.3 Sewage Pumping Station No. 39 (SP0039)

The Pump House is located on the corner of Huntley Street and Burrows Road, with a street address of 48 Huntley Street, Alexandria. It is listed on Sydney Water's Section 170 Heritage and Conservation Register (ID#4571730) and the Sydney LEP (I18) as 'Water Board Pump House Including Interior and Substructure'. The Station was constructed in 1925 to combat the increasing pollution caused by the increasing population of Sydney.

The Sydney Water listing provides a description of the item:

SP0039 Alexandria is a low level sewage pumping station located within a Sydney Water works depot. The station consists of two distinct parts: a superstructure comprising a small load bearing brick building; and a circular substructure approximately 10 metres deep constructed of concrete which houses machinery and sewage chambers. Architecturally, the building was designed in a utilitarian version of the Federation Free style (Plate 54). Externally there is a tiled gambrel roof with two gable vents and exposed eaves; gable with barge board, cross rails and roughcast panels; and walls of red-brown coloured tuck pointed brickwork with splayed brick piers (Plate 55). The entrance consists of a steel roller shutter door with applied lettering to the lintel proclaiming A.D.1925. Internally, the ceiling is lined with tongue and grooved boarding and walls are of painted brickwork. The substructure consists of two cylinders, one within the other, the annular space taking the sewage flow and the inner well housing the machinery. The machinery well comprises two vertical spindle centrifugal pumps direct coupled to electric motors. The station is located on the banks of the Alexandra Canal (Sheas Creek) which was built in 1889.

(Sydney Water, 2014)



Plate 54 Huntley Street Sewage Pumping Station.



Plate 55 Huntley Street Sewage Pumping Station.

Table 35 Significance assessment for Sewage Pumping Station No 39 (Sydney Water, 2014)

Significance Assessment	
Criterion a (historical)	SP0039 Alexandria was built in 1925 and is a good example of an inter-war period sewage pumping station. It is associated with the Southern Outfall and later Southern and Western Suburbs Ocean Outfall Sewer No.1 (SWSOOS No.1). Its construction evidences the advances made in the development of municipal services in the Alexandria area in the 1920s.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	SP0039 is a representative example of a small scale late Federation Free style utility building. It has strong streetscape appeal in its location on the corner of two streets.
Criterion d (social)	Item is likely to be held in regard by the local community for its function.

Significance Assessment	
Criterion e (technical/research)	SP0039 has the potential to reveal information about the design and construction of mechanical components. The pumping station still fulfils its role over 75 years after its introduction as a low level sewage pumping station as originally designed and constructed apart from modifications to mechanical and electrical equipment.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The superstructure is a representative example of a Federation Free style public utility building. SP0039 is a representative example of a low level sewage pumping station on the Southern and Western Suburbs Ocean Outfall Sewer.
Statement of Significance	
<i>SP0039 Alexandria is of historic, aesthetic and technical/research significance. Historically, it is associated with the Western and Illawarra Suburbs System (and later SWSOOS No.1) which was a major inter-war period sewage development. The construction of SP0039 and the SWSOOS No.1 formed a part of the major improvement in the public health of Alexandria in the 1920s. Aesthetically it is a good example of a small scale robust and well proportioned late Federation Free style sewage pumping station which displays excellent brickwork, and due to its prominent corner location, has streetscape significance. Technically, the station has the potential to reveal information about construction techniques and sewage pumping technologies employed during the inter-war period. SP0039 is also significant for fulfilling its role continuously after its introduction as a low level sewage pumping station over 75 years ago as originally designed and constructed, albeit with some modifications to mechanical and electrical components.</i>	

6.12.4 Cooper Estate

The Cooper Estate conservation area is bound by Fountain Street, Lawrence Street, Hartley Street, Lawrence Lane, Huntley Street and Mitchell Road. It is recognised on the Sydney LEP 2012 as being of local significance (C2). Subdivided in the 1880s, the area contains Victorian style terraces (**Plate 56**) and semi-detached houses with a smaller number of Federation and Interwar houses along tree-lined streets (**Plate 57**). The assessed significance is provided in **Table 36**.



Plate 56 Example of Victorian terrace housing in the Cooper Estate.



Plate 57 Tree-lined streets in the Cooper Estate.

Table 36 Significance assessment for the Cooper Estate Conservation Area (NSW Heritage Division, 2006a)

Significance Assessment	
Criterion a (historical)	Subdivided in the early 1880s, Coopers Waterloo Estate was developed as a working class housing area serving tradespersons employed in local industry. Amalgamated industrial allotments reflect the growing importance of industry in the early twentieth century.
Criterion b (associative)	Working class settlement, corner store communities associated with the Waterloo Industries and the expansion of the railways.
Criterion c (aesthetic)	The area has a diverse array of working class housing, warehouses and industrial development from the Victorian, Federation and Interwar periods.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	Archaeological potential on redeveloped sites predominantly along Lawrence Street.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	Representative of Victorian residential subdivision with industrial overlay.
Statement of Significance	
<i>The Cooper Estate Heritage Conservation Area has significance as an 1880s subdivision of Cooper's Estate, developed to provide housing for workers of nearby industry at Waterloo, Eveleigh and Alexandria. The area was developed primarily as a residential area in the late Victorian through to Interwar periods and overlain with small industry on amalgamated sites.</i>	

6.12.5 Macdonaldtown stormwater channel

The Macdonaldtown stormwater channel has been identified as an item of potential local heritage significance by the City of Sydney. The item is currently under consideration for listing on the LEP. The item consists of an open channel drain running between Sydney Park Road in the north, crosses under Euston and Burrows Road and terminates at an outlet into the Alexandra Canal. The drain is constructed of brick and concrete, including a brick bull-nose coping. It is open for the majority of its length, but has been covered in sections, for example at Euston and Burrow Roads, to allow for vehicular and pedestrian traffic.

In 1890, the secretary for Public Works had directed that stormwater drainage should be constructed that was separate from the sewerage system and should not be discharged into natural channels. The objective was to lower rates of water-borne diseases such as typhoid, diarrhoea, diphtheria and phthisis (pulmonary tuberculosis). The channel was constructed in around 1904 as part of a program of works to achieve stormwater and sewerage separation.

The significance assessment provided in the draft listing is provided in **Table 37**.

Table 37 Significance assessment in the draft listing of the Macdonaldtown stormwater channel

Significance Assessment	
Criterion a (historical)	Built in approximately 1904, Macdonaldtown stormwater channel, together with the other open stormwater channels draining into Alexandra Canal, represents a period of major improvement to the public infrastructure in the Alexandria area at the turn of the century from 1890s to the 1930s. It forms one of a group of the earliest purpose-built stormwater drains constructed in Sydney following the 1890 direction of the secretary for Public Works to build a stormwater system separate to the sewer. The construction of this channel represents significant government initiatives to alleviate the City's severe public health problems, to control floods and support the development of industry in the area during the early twentieth century. Through its proximity to the major industrial centre of southern Sydney, the channel demonstrates the important role of natural and constructed waterways in the history of Sydney's industrial development. The channel records the catchment of the former natural creek and swamp-lands which initially attracted noxious industries to the area, such as wool washing, tanneries, boiling down works and market gardens. The construction of the channel system provides evidence of the draining of the former swamp-lands and the dramatic changes this brought for the development of the area, in particular by opening up large tracts of land for secondary industry. The extent and scale of this and other stormwater channels in Alexandria reflects the history of major floods in this area. They demonstrate Sydney's flood management engineering during the late nineteenth and early twentieth century to control this natural phenomenon. As supporting built infrastructure, the channel forms part of one of the largest known collections of industrial and warehouse buildings in Australia, which records City of Sydney's past as one of only two historic industrial heartlands in Australia. This collection provides evidence of Australia's twentieth century transformation through industrialisation when Sydney became one of the largest industrialised cities in the South Pacific.
Criterion b (associative)	The construction of this channel is associated [with] the NSW Public Works Department.
Criterion c (aesthetic)	Aesthetically, the open brick and concrete stormwater channel running through the urban landscape and parkland contributes to the distinctive character of the area derived from its low-lying topography and industrial history when Sydney Park was once large clay pits for major brickworks. Technically, the channel demonstrates flood management engineering of the early twentieth century.
Criterion d (social)	Social significance requires further study to ascertain the value of this channel to communities.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	The channel forms one of a group of the earliest purpose-built stormwater drains constructed in Sydney following the 1890 direction of the secretary for Public Works to build a stormwater system separate to the sewer.
Criterion g (representative)	The structure represents an example of an open stormwater channel from the early twentieth century.

Significance Assessment**Statement of Significance**

Built in approximately 1904, Macdonaldtown stormwater channel, together with the other open stormwater channels draining into Alexandra Canal, represents a period of major improvement to the public infrastructure in the Alexandria area at the turn of the century from 1890s to the 1930s. It forms one of a group of the earliest purpose-built stormwater drains constructed in Sydney following the 1890 direction of the secretary for Public Works to build a stormwater system separate to the sewer. The construction of this channel represents significant government initiatives to alleviate the City's severe public health problems, to control floods and support the development of industry in the area during the early twentieth century.

Through its proximity to the major industrial centre of southern Sydney, the channel demonstrates the important role of natural and constructed waterways in the history of Sydney's industrial development. The channel records the catchment of the former natural creek and swamp-lands which initially attracted noxious industries to the area, such as wool washing, tanneries, boiling down works and market gardens. The construction of the channel system provides evidence of the draining of the former swamp-lands and the dramatic changes this brought for the development of the area, in particular by opening up large tracts of land for secondary industry.

The extent and scale of this and other stormwater channels in Alexandria reflects the history of major floods in this area. They demonstrate Sydney's flood management engineering during the late nineteenth and early twentieth century to control this natural phenomenon.

Aesthetically, the open brick and concrete stormwater channel running through the urban landscape and parkland contributes to the distinctive character of the area derived from its low-lying topography and industrial history when Sydney Park was once large clay pits for major brickworks.

As supporting built infrastructure, the channel forms part of one of the largest known collections of industrial and warehouse buildings in Australia, which records City of Sydney's past as one of only two historic industrial heartlands in Australia. This collection provides evidence of Australia's twentieth century transformation through industrialisation when Sydney became one of the largest industrialised cities in the South Pacific

The Macdonaldtown stormwater channel is of local heritage significance in terms of its historical, aesthetic and representative values.

6.12.6 Alexandra Canal

The Alexandra Canal runs from Huntley Street in Alexandria to the Cooks River in Tempe. The Canal is listed on the State Heritage Register (SHR #01621) and Sydney Water's Section 170 Heritage and Conservation Register (ID# 4571712). The canal passes through the local government areas of the Botany Bay, City of Sydney and Marrickville and is listed on the respective local environmental plans as item numbers I1, I3 and I270 respectively. The canal is also identified on the non-statutory Register of the National Estate (ID # 103889).

In order to facilitate the development of manufacturing and industrial uses along Sheas Creek, dredging of the Creek began in 1887. The intention was to convert the creek into a canal and thereby attract investment by offering shipping as a mode of transportation. The canal was conceived as the 'Birmingham of Australia'.

Built under an unemployed work relief scheme, the canal was originally formed with fascine dykes. Fascine consists of bundles of sticks, or similar material, which are placed horizontally and held in place with stakes. The bundles are placed on top of each other to form a wall. Smaller sections were formed with sandstone, or later replaced the fascine dykes.

The original section extended between the Sydenham to Botany railway bridge to the Canal Road Bridge. In 1894 plans were floated to extend the canal to Buckland Street, Redfern. However, only part of this was constructed and the canal halted just to the south of Huntley Street, Alexandria, with works completed by 1900. Major alterations were made during the expansion of the Sydney Airport between 1947 and 1970. As part of these alterations, the outlet in to the Cooks River was altered.

The canal was never fully utilized, being subject to silting, tidal factors and limitations on the draft of vessels that could use the passage. Also, by 1930, road transportation had become more prevalent and economical. The closure of the canal to shipping traffic began in the 1930s when two lifting span bridges were replaced with fixed span bridges. In the early 1940s the wharves that had serviced the canal were demolished as the declining use of the canal did not warrant their maintenance.

A Conservation Management Plan (CMP) was prepared by the NSW Government Architect's Office for the canal in 2004 and was endorsed by the Heritage Council of NSW in the same year. A CMP provides policies intended to preserve and enhance the significance of the subject item. Any proposal that impacts on an item must address the policies in the CMP and seek to limit the potential impacts to the heritage significance of the item.

The CMP divided the canal into different 'reaches' in order to address the variable nature of the remnant fabric along the length of the item. The project area sits within the Archives Reach. The CMP identifies this reach as being of high significance. The embankments along this section have been constructed of Broken Range Bond Ashlar Sandstone (**Plate 58** and **Plate 59**). The CMP ranks the fabric as being of high significance and states that the fabric must be preserved and/or restored.

The significance assessment associated with the State Heritage Register listing is provided in **Table 38**.



Plate 58 Alexandra Canal – view north from the Ricketty Street.

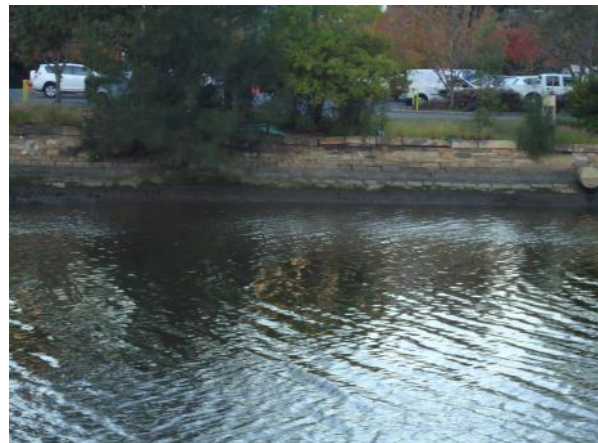


Plate 59 Alexandra Canal – Ashlar sandstone embankment near Ricketty Street.

Table 38 Significance assessment for Alexandra Canal (NSW Heritage Division, 2014)

Significance Assessment	
Criterion a (historical)	Alexandra Canal was built during the 1890s depression using unemployed labour. It is one of two navigational canals built in NSW and is the only canal built to provide access for water transport for the delivery of cargo in NSW. The canal, the warehouses and factories around it the bridges that cross it and the remains of the wharves are evidence of attempts by the government to encourage development in the area.
Criterion b (associative)	No assessed values.
Criterion c (aesthetic)	Sections of the canal exhibit relatively intact sections of ashlar stonework which are excellent examples of late nineteenth century coastal engineering works that provide a pleasantly textured and coloured finish to the canal. The canal is a major visual landmark in the area and has strong landmark appeal, particularly as viewed from the Ricketty Street Bridge.
Criterion d (social)	Item does not have any notable outstanding social values.

Significance Assessment	
Criterion e (technical/research)	The discovery of butchered Dugong bones, Aboriginal axes and the remains of an ancient forest in this area, all of which were found beneath the then low water mark during the excavation of the canal, were the subject of an academic paper. This paper contributed to the scientific understanding of the changing sea-levels along the eastern seaboard and the antiquity of the Aboriginal presence in Australia. The Canal exemplifies and is rare tangible evidence of Government initiatives of canal transportation and implementation of pre twentieth century unemployment relief schemes.
Criterion f (rare)	Alexandra Canal is one of two extant navigational canals in NSW and one of the few built in Australia in the nineteenth and twentieth century. It was the only purpose built canal constructed to provide navigational access in industrial areas in NSW.
Criterion g (representative)	Alexandra Canal is a representative example of a late nineteenth century coastal navigational canal.
Statement of Significance	
<i>Alexandra Canal is of high historic, aesthetic and technical/research significance. Historically, it is a rare example of 19th century navigational canal construction in Australia, being one of only two purpose built canals in the State, with one other known example in Victoria. It has the ability to demonstrate the NSW Governments initiative to create water transport as a means of developing an industrial complex in the Alexandria and Botany areas and exploiting the use of unemployed labour to achieve its scheme.</i> <i>It played a seminal role in the changing pattern and evolution of the occupation and industrial uses of the local area and nearby suburbs, which included filling large areas of low lying land for development.</i> <i>Aesthetically, intact original sections of the canal, comprising pitched dry packed ashlar sandstone, provides a textured and coloured finish which is aesthetically valuable in the cultural landscape. It is a major landmark and dramatic component of the industrial landscape of the area, particularly as viewed from the Ricketty Street Bridge and along Airport Drive.</i> <i>Scientifically, the excavation of the canal provided a valuable contribution to the understanding of the changing sea-levels along the eastern seaboard and the antiquity of the Aboriginal presence in Australia. Intact original sections of the fascine dyke sandstone construction are rare examples of late 19th century coastal engineering works.</i> <i>The area has been assessed as having no potential to contain historical archaeological material associated with the development or occupation of the area, either prior to or since the construction of the canal. As a result, the study area would contain no material of historical significance, or material that could contribute to the significance of Alexandra Canal itself.</i>	

6.12.7 Goodsell Estate Heritage Conservation Area – Heritage Conservation Area 16

The Goodsell Estate Heritage Conservation Area is located on the corner of Bedwin Road and May Street, opposite the Waugh and Josephson Industrial Buildings and the Town and Country Hotel. The conservation area backs on to the Illawarra Railway line. It is listed on the Marrickville LEP 2011 as an item of local significance (C16).

The conservation area encompasses the former Goodsell Brickworks. Frederick Goodsell took over the operation of a brickworks run by his brother in 1848. The brickworks within the conservation area were in operation by 1869. It was the first fully steam powered brickworks and produced the first shale plastic bricks in the Colony (NSW Heritage Division, 2012a). In anticipation of the opening of the railway line to Hurstville (1884) the western portion of the Brickworks (now Council and Goodsell Streets) were subdivided and auctioned in 1883. The Brickworks were taken over by P. Speare in 1891 and closed in 1916. Mammoth Incubators & Brooders Ltd used the site from 1917 until it became the Newtown Council Garbage Destructor in 1923. The former brickpit was filled and became the Camdenville Park in 1957.

The north eastern portion of the conservation area is characterised by high density terrace housing, mainly constructed between 1884 and 1910. The central section contains the publically accessible Camdenville Park. The south western portion, located in the project area, is currently fenced and inaccessible to the public. It is used to contain stormwater runoff, sloping towards the centre and forming a basin, which is vegetated with native trees. The area contains a number of concrete pads (**Plate 60**). The corner of Bedwin Road and May Street contains remnants of earlier sandstone fence foundations (**Plate 61**).

The significance assessment is provided in **Table 39**.



Plate 60 South western portion of Goodsell Estate Conservation Area showing vegetation in basin and concrete pads.



Plate 61 Sandstone fence foundations corner of Bedwin Road and May Street, associated with the Goodsell Estate Heritage Conservation Area.

Table 39 Significance assessment for the Goodsell Estate Conservation Area (NSW Heritage Division, 2012a)

Significance Assessment	
Criterion a (historical)	The Goodsell Estate Heritage Conservation Area is historically significant for demonstrating the principles and patterns of Marrickville's development from Colonial to contemporary eras. The Marrickville area contained many brick and pottery works. Frederick Goodsell's Steam Brick Factory and pit, located in the heritage conservation area, was, Sydney's first full steam-powered brickworks and the leading producer of its period (1869 onwards). The footprint of Camdenville Park overlays the site of the brickworks and the surviving terrace facing May Street was built by Goodsell and occupied by brickmakers. The Area is historically significant for the pattern of the built forms in the area has responded to the progressive release of land for development. The terrace groups in the area were built after successive land releases and demonstrate the patterns of subdivision and development in the Marrickville area.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The conservation area is aesthetically significant for its narrow and dense streetscape development that establishes a tightly described street wall which creates a sense of intimacy and privacy within the area. It also significant for its 19th and early 20th Century terraces, cottages and houses (detached and semi-detached) including several highly cohesive groups.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The conservation area is representative of the range of modest housing available to the Victorian worker and is significant for demonstrating the evolution of the terrace typology in Marrickville throughout the second half of the nineteenth Century to its final form before being superseded by the suburban cultural landscape.

Statement of Significance

The Goodsell Estate Heritage Conservation Area is historically significant for demonstrating the principles and patterns of Marrickville's development from Colonial to contemporary eras. The Marrickville area contained many brick and pottery works. Frederick Goodsell's Steam Brick Factory and pit, located in the HCA, was, Sydney's first full steam-powered brickworks and the leading producer of its period (1869 onwards). The footprint of Camdenville Park overlays the site of the brickworks and the surviving terrace facing May Street was built by Goodsell and occupied by brick makers. The Area is historically significant for the pattern of the built forms in the area has responded to the progressive release of land for development. The terrace groups in the area were built after successive land releases and demonstrate the patterns of subdivision and development in the Marrickville area. The Area is aesthetically significant for its narrow and dense streetscape development that establishes a tightly described street wall which creates a sense of intimacy and privacy within the area. It also significant for its 19th and early 20th Century terraces, cottages and houses (detached and semi-detached) including several highly cohesive groups. The area is representative of the range of modest housing available to the Victorian worker and is significant for demonstrating the evolution of the terrace typology in Marrickville throughout the second half of the 19th Century to its final form before being superseded by the suburban cultural landscape.

6.12.8 Terrace group – 28-44 Campbell Street, St Peters

The terrace group at 28-44 Campbell Street, St Peters is listed on Road and Maritime Service's Section 170 Heritage and Conservation Register (ID # 4305629). The terraces were constructed by a local brick maker Henry Woodley for his workers. The first two terraces were constructed in 1882 with two more added in 1887. These first four are now numbers 34 to 40 Campbell Street. The remainder, being numbers 28, 30, 42 and 44, were added in 1906. The Woodley family retained ownership of the terraces until 1972, when they were sold to Wallace Allan Bubb. Bubb subdivided each onto a separate lot and sold the individual terraces in the same year (1972) (Roads and Maritime Services, 2004a).

The terrace group is two storeys with verandah/balconies over both levels. Some variations are evident, with the terraces at 42 and 44, constructed in 1906 being slightly more elaborate in the detailing on the ground floor (**Plate 62**). These two terraces have a stinger course across the front and arching above the twin windows and door, both of which are decorated with a key stone. The other terraces do not have this detailing, having a single window and door on the ground floor (**Plate 63**). The first floor of each terrace has French doors that open out onto the balcony. The balustrades of various terraces have been replaced. The terraces are separated from the street by a cast iron fence across the verandah.

The interiors of 36, 40 and 44 were inspected on 21 May 2015. The survival of original features varied, for example, there was a fire in number 38 in 2014 (not inspected), which caused a secondary fire in the roof cavity of number 40. This resulted in the ceilings on the first floor being replaced with the loss of the original cornices and ceiling roses. Number 36 also has limited original or early features remaining, although this is the result of successive renovations and both addresses have had the fire places boarded up (**Plate 64**). Of those inspected, number 44 contained the most original and early detailing. The ceiling roses on the ground floor included roses and Scottish thistles. **Plate 65** shows one of these ceiling roses, behind which the lathe batons for the ceiling are evident. The majority of the joinery, including the doors appear original and the cornices and picture rails are preserved in the front rooms on both the ground and first floor (**Plate 67**). The two fireplaces on the ground floor have marble mantle pieces with tile insets (**Plate 66**), while the upstairs fireplace has a wooden mantle piece.

Table 40 contains the significance assessment, as assessed by Roads and Maritime (2004).



Plate 62 Terrace Group – 28-44 Campbell Street. No's 42 and 44 at right of image showing detailing to first floor façade



Plate 63 Terrace Group – 28-44 Campbell Street. No. 28 at left of image showing undecorated first floor façade.



Plate 64 Interior of 40 Campbell Street indicating the removal of original features



Plate 65 Interior of 44 Campbell Street. Ceiling rose in living room with lathe batons behind

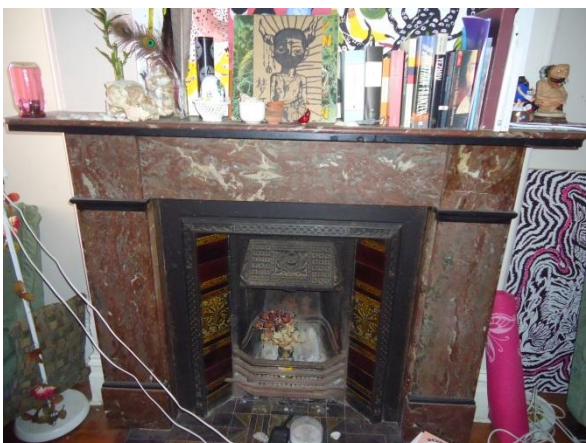


Plate 66 Interior of 44 Campbell Street. Fire surround and mantle piece in living room.



Plate 67 Interior of 44 Campbell Street indicating the preservation of the cornice and picture rails.

Table 40 Significance assessment for 28-44 Campbell Street Terrace Group (Roads and Maritime Services, 2004a)

Significance Assessment	
Criterion a (historical)	The terrace is of local historical value in reflecting a part of the industrial history of the area. Built by a local brickmaker, the terrace housed a number of people who worked in the brickfields, and provides physical evidence for workers' housing, in interesting contrast to the physical remains of the brickworks presently located in Sydney Park, adjacent. The terrace reflects the predominant industry and social class of the local brick industry's most productive period, 1880-1914.
Criterion b (associative)	From its early years, the terrace is associated with workers in the local brickfields. The terrace is also associated with local brickmaker Henry Woodley.
Criterion c (aesthetic)	The terrace is of local aesthetic value as a good example of a Victorian terrace made of locally-manufactured bricks. The subtle differences between the components built in 1882 and those built in 1906 provide interesting contrast in detail. The terrace makes a significant contribution to the local streetscape due to its intactness including cast iron fences and balustrades.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	The terrace is rare in the local suburb for the small scale of the individual houses, the number of houses contained in the terrace, and its general intactness.
Criterion g (representative)	The terrace has outstanding ability to demonstrate brickfield workers' housing from the 1880s to the turn of the 20th century.
Statement of Significance	
<i>28-44 Campbell Street has outstanding ability to demonstrate brickfield workers' housing from the 1880s to the turn of the 20th century. Built by local brickmaker Henry Woodley, the terrace reflects the areas industrial history. Generally intact, the terrace has aesthetic value as a representative Victorian terrace constructed with locally manufactured bricks.</i>	

6.12.9 House – 82 Campbell Street, St Peters

The house at 82 Campbell Street, St Peters is listed on the Roads and Maritime Services Section 170 Heritage and Conservation Register as an item of local significance (ID #4305643). The listing contains no specific history of the house, but it is assumed to have been constructed for the working class employed at the local brickpits. The listing dates the year of construction to 1890 (Roads and Maritime Services, 2004b).

The house is a single storey residence of rendered brick. The façade is symmetrical, having a central door flanked by two windows with stone sills. The pitched roof extends out over the verandah, which reaches to the property boundary and is separated from the footpath with a simple fence. The house is conjoined to number 80, but there is a pedestrian laneway between 82 and 84 Campbell Street (**Plate 68**). The house is currently boarded up and said to be in a very poor state, suffering extensive termite and rising damp damage (pers com. 21 May 2015 Robert Taylor, Brough Real Estate).

Table 41 contains the significance assessment, as assessed by Roads and Maritime (2004).



Plate 68 House – 82 Campbell Street, with conjoined number 80 to left of image.

Table 41 Significance assessment for House - 82 Campbell Street (Roads and Maritime Services, 2004b)

Significance Assessment	
Criterion a (historical)	82 Campbell Street is historically significant in the local area for its location within the original village of St Peters as laid out in the 1840s, one of the first planned villages in Australia. The cottage is a reflection of the change in social composition of the suburb as the St Peters brickworks became the dominant industry, attracting a working class who were housed in simple, modest cottages.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	No assessment provided.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	As an example of the modest workers' cottages which proliferated in St Peters from the 1870s in order to house workers in the local brick yards, 82 Campbell Street is rare.
Criterion g (representative)	82 Campbell Street has the ability to demonstrate the style of worker's cottages to be found in the industrial areas of St Peters from the 1870s to the turn of the twentieth century.
Statement of Significance	
82 Campbell Street, St Peters, has local significance as a rare and representative example of a modest worker's cottage, a type which proliferated in the suburb with the rise of the brick manufacturing industry from the 1870s.	

6.12.10 Narara Terrace – 4-18 Unwins Bridge Road

The Narara Terrace encompasses 4-18 Unwins Bridge Road and is listed as an item of local significance on the Marrickville LEP 2011 (I282). The land was purchased by Henry A. Crause, together with the land on which the adjacent Town and Country Hotel stands, in 1880. Almost immediately, he constructed a hotel on the adjacent site and two terraces – 4 and 6 Unwins Bridge Road (**Plate 69**). The remaining six terraces were constructed between 1890 and 1895. Following Crause's death in 1899 they passed through numerous hands.

The terraces are two storey, constructed in the Victorian Filigree style, having an ornate parapet. Built of brick, they have been rendered with incised lines to give the impression of ashlar sandstone construction. The LEP listing notes the manner in which the terraces curve to follow the frontage of Unwins Bridge Road is unusual (NSW Heritage Division, 2011c). Numbers 4 and 6 differ to the remainder of the Terrace, having a recessed verandah at the ground level, while the remainder feature a full-height balcony (**Plate 70**).

An assessment of significance is provided in **Table 42**.



Plate 69 Narara Terrace and junction with the Town and Country Hotel.



Plate 70 Detail of Narara Terrace, No. 8-18 Unwins Bridge Road.

Table 42 Significance assessment for the Narara Terrace – Victorian Terrace (NSW Heritage Division, 2011c)

Significance Assessment	
Criterion a (historical)	Narara Terrace, built 1880-1895, is of historical significance for association with Henry A. Crause, who established the Town and Country Hotel at 2 Unwins Bridge Road, and association with the hotel. The terrace is an unusual for its close historical association with the hotel.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	Of aesthetic significance as a prominent row of 2 storey Victorian Italianate/Victorian Filigree style terraces, unusual in the manner that the terraces are built to respond to the curve of the road. Along with neighbouring Town & Country Hotel, the terraces form a unifying corner treatment to Unwins Bridge Road.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	Narara Terrace is rare as a terrace with a close historical association with a hotel (being built as an investment property for the hotel owner).
Criterion g (representative)	Representative examples of Victorian Italianate/Victorian Filigree style terraces
Statement of Significance	
Narara Terrace, built 1880-1895, is of historical significance for association with Henry A. Crause, who established the Town and Country Hotel at 2 Unwins Bridge Road, and association with the hotel. The terrace is an unusual for its close historical association with the hotel. The terrace is of aesthetic significance as a prominent row of 2 storey Victorian Italianate/Victorian Filigree style terraces, representative of their style but unusual in the manner that the terraces are built to respond to the curve of the road. Along with neighbouring Town & Country Hotel, the terraces form a unifying corner treatment to Unwins Bridge Road. Narara Terrace is rare as a terrace with a close historical association with a hotel (being built as an investment property for the hotel owner), and for the siting of the terraces in response to the curve of the road.	

6.12.11 Service Garage – 316 Princes Highway

The Service Garage at 316 Princes Highway, St Peters, is identified on the Marrickville LEP 2011 as item I312. There is no listing sheet associated with the item. It is currently occupied by the Dynamo Auto Electrician business. The architectural style is unusual in the elaborate parapet is shaped in a Moorish style, which is carried through, although less obviously, in the adjacent associated office building (**Plate 72**). The site was previously part of the Austral Brick Company land. A photograph of the site from 1946 indicates that the garage had been constructed by that time (**Plate 72**). The heritage significance has been assessed in **Table 43**.

Table 43 Significance assessment for the Service Garage.

Significance Assessment	
Criterion a (historical)	The service garage appears to have operated in a motor vehicle maintenance role since 1948 and therefore demonstrates a continuity of use that is historically significant.
Criterion b (associative)	No associative significance identified.
Criterion c (aesthetic)	The detailing and architectural style of the Garage is unusual as applied to a mechanical workshop. Paired with the prominent location on a busy intersection, the Service Garage is of local aesthetic significance.
Criterion d (social)	No social significance identified.
Criterion e (technical/research)	No research significance identified.
Criterion f (rare)	The architectural style applied to a mechanical workshop is rare.
Criterion g (representative)	No representative significance identified.
Statement of Significance	
The Service Garage is of local aesthetic and rarity significance. The detailing and architectural style of the Garage is unusual as applied to a mechanical workshop. Paired with the prominent location on a busy intersection, the Service Garage is of local aesthetic significance.	



Plate 71 Service Garage (Dynamo Auto Electrician) View north east



Plate 72 Intersection of Princes Highway and Canal Road in 1946. Service garage highlighted (Source: Mitchell Library Hood Home and Away Collection ID 23897)

6.12.12 Southern Cross Hotel – 340 Princes Highway

Located at 340 Princes Highway, St Peters, the Southern Cross Hotel is identified on the Marrickville LEP 2011 as an item of local significance (I277). The hotel was originally constructed in 1906, but replaced in 1937 with the present structure, which was designed by prolific hotel designer Cyril C. Ruwald. It is constructed in the Inter-War Free Classical style with a rounded corner addressing the Princes Highway and Canal Road intersection (**Plate 73**). The assessed significance is provided in **Table 44**.



Plate 73 Southern Cross Hotel, view from Princes Highway

Table 44 Significance assessment for the Southern Cross Hotel (NSW Heritage Division, 2009c).

Significance Assessment	
Criterion a (historical)	Of historical significance as a site with hotel use since 1906, and for its existing 1936 hotel building designed by architect Cyril C. Ruwald. The hotel is also of historical significance as a place of public recreation since 1936.
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	Of aesthetic significance as an architect designed example of the Inter war Free Classical style on a prominent corner site.
Criterion d (social)	No assessment provided
Criterion e (technical/research)	No assessment provided
Criterion f (rare)	No assessment provided
Criterion g (representative)	A representative Inter War Free Classical style hotel building.
Statement of Significance	
The Southern Cross Hotel is of historical significance as a site with a hotel use since 1906, and for its existing 1936 hotel building designed by architect Cyril C. Ruwald. The hotel is also of historical significance as a place of public recreation since 1936. The hotel is of aesthetic significance as an architect designed representative example of the Inter war Free Classical style on a prominent corner site.	

6.12.13 Terrace Group Including Interiors – 2-34 Campbell Road

The Terrace Group is located at 2-34 Campbell Road in Alexandria and is listed on the Sydney LEP 2012 as an item of local significance (I12). The terraces appear to have been constructed in 1886 when the land was in the ownership of Ebenezer Vickery and Ebenezer Vickery Junior. The original grant was converted to Torrens title in 1896 and the Vickery's sold the houses to William and Edward Hallet Fieldhouse in 1901. The Terraces were leased to families employed at the nearby brickpits and factories.

The Terraces are two storey and constructed of red brick in the Victorian Regency style (**Plate 74** and **Plate 75**). A red brick parapet forms a continuous frontage above the two storey verandah/balconies. The balustrades of the terraces have been replaced and are now no longer uniform. A fin wall separates the terraces from each other. A brick fence has been constructed across the frontage of some of the Terraces at a later date. The assessed significance is provided in **Table 45**.



Plate 74 Terrace Group – 2-34 Campbell Road.



Plate 75 Terrace Group – 2-34 Campbell Road.

Table 45 Significance assessment for 2-34 Campbell Road Terrace Group (NSW Heritage Division, 2012b)

Significance Assessment	
Criterion a (historical)	The housing represents early c1886 housing associated with the brick making and pottery works in the local area
Criterion b (associative)	The terraces are associated with the adjacent brickpits.
Criterion c (aesthetic)	The terraces are a good example of mid Victorian workers housing which date from the early period of development for the Alexandria area.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	There is potential for further research on the social history of residents of the terraces and where they worked.
Criterion f (rare)	The houses are located on the hill away from the swampy areas that covered a large proportion of the area. They are rare in terms of its location and context.
Criterion g (representative)	The terraces are representative examples of working class mid Victorian terrace housing.
Statement of Significance	
<i>The terrace group are historically significant as they represent early housing associated with the nearby brick making and potting works. They are located on the hill away from the former swampy areas in Waterloo and Alexandria area. Prior to the 1890s group housing is rare within the southern industrial suburbs in the City of Sydney.</i>	

6.12.14 Town and Country Hotel – 2 Unwins Bridge Road

The Town and Country Hotel is located on the south western corner of the intersection of Unwins Bridge Road and Campbell Street. It is listed on the Marrickville LEP 2011 as item number I281. The three storey hotel is constructed in the Inter-War Free Classical style in red brick laid in stretcher bond. The façade of the ground floor was originally tiled in yellow and green, however, recently the tiles have been removed and the façade rendered and painted grey. The top of the hotel is decorated with a pediment and a parapet with moulded string coursing picked out in cream and heritage green. The third storey has a recessed balcony centrally located on both facades (**Plate 76**). The hotel was designed by Sidney Warden in 1923 and replaced an earlier hotel constructed in 1880/1 (NSW Heritage Division, 2012c). The assessed significance and Statement of Heritage Impact is provided in **Table 46**.



Plate 76 Town and Country Hotel.

Table 46 Significance assessment for the Town and Country Hotel (NSW Heritage Division, 2012c)

Significance Assessment	
Criterion a (historical)	Of historical significance as a site with a continuous hotel use since 1881, and for its 1923 hotel building. The hotel has historical association with its designer, Sidney Warden, Tooth & Co architect. The existing hotel building has been a place of recreation for this industrial area since 1923.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	Of aesthetic significance as a good example of an Inter war Free Classical style hotel on a prominent corner site.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	No assessment provided.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	A representative Inter War Free Classical style hotel building.
Statement of Significance	
<i>The Town & Country Hotel is of historical significance as a site with a continuous hotel use since 1881, and for its 1923 hotel building. The hotel has historical association with its designer, Sidney Warden, Tooth & Co architect. The existing hotel building has been a place of recreation for this industrial area since 1923. The hotel is of aesthetic significance as a good representative example of an Inter war Free Classical style hotel on a prominent corner site.</i>	

6.12.15 Westpac Stores and Penfolds Wine Cellars – 634-808 Princes Highway

Located at 634-808 Princes Highway, the site contains the former Westpac Stores and Penfolds Wine Cellars, assessed as being of local significance on the Marrickville LEP 2011 (I299). The former Penfolds Wine Cellars is a monolithic cream brick structure, broken by a central clock tower with austere art deco styling (**Plate 77**). The plans were drawn by Ross A Lightfoot & Stanton of Bligh Street, Sydney. The windows are recessed with dominant fins. The Cellars were completed in 1959 and were the largest of their type, extending 200 metres to the rear. The show room and offices have been retained and are used by Ikea as a service office, however the warehouse space has been redeveloped into an Ikea store.

The Westpac Store has a tiered frontage to the Princes Highway, stepping back from the south to the north. Constructed of cream brick, the façade is dominated by producing windows, screened with vertical fins (**Plate 78**). The building was constructed by Drug Houses Australia in 1956.

The assessed significance can be found in **Table 47**.



Plate 77 Former Penfolds Cellars. View north.



Plate 78 Former Westpac Stores. View south.

Table 47 Significance assessment for the Westpac Stores and Penfolds Wine Cellars (NSW Heritage Division, 2011d)

Significance Assessment	
Criterion a (historical)	Local. Research with various 20th century authorities indicates that the building may be of higher than local significance. Post war industrial buildings are becoming increasingly less common, especially intact examples and those with such long standing and well recognised landmark values.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	Locally significant post-war industrial building. Designed by architects, Ross A Lightfoot & Stanton of Bligh St, Sydney. Further assessment of architectural merit, streetscape and views required.
Criterion d (social)	Social significance is the landmark value to which the wider community continues to have a firm attachment and the fact that this landmark is within the mental maps of the many thousands who pass the site en route through Sydney.
Criterion e (technical/research)	Local. Includes rear building Bayview; listed on Council's archaeological map as governed by the Heritage Act.
Criterion f (rare)	Possibly rare at the local level as work of Lightfoot and Stanton and as fine example of post-war industrial building.
Criterion g (representative)	Local
Statement of Significance	
<i>A modern industrial precinct of better quality than many of the other recent industrial developments in the Municipality. The Penfolds site has already become a local landmark.</i> <i>Heritage significance includes all phases of site use including the firm that cause the building to be designed, i.e. c1956-1990 by Penfold Wines. Possibly of higher than local significance due to archaeological potential, the history of Penfolds Wines and the architectural significance (history needs researching and heritage assessment).</i>	

6.12.16 Waugh and Josephson Industrial Buildings – 1-7 Unwins Bridge Road

The Waugh and Josephson Industrial Buildings are located opposite the Town and Country Hotel at 1-7 Unwins Bridge Road. They are identified on the Marrickville LEP 2011 as an item of local significance (I280). David Waugh and Sydney Josephson had established an engineering works in 1880 in Sydney. They primarily supplied refrigeration and processing equipment to the dairy and meat industries. As demand increased, the company sort larger premises and the site at the corner of Unwins Bridge and Bedwin Roads was selected and were in operation on the site by 1895. In 1923 the company were made the sole dealership for Daniel Holt crawler tractors and following the merger with Charles Best Manufacturing Company two years later, they became the sole agents for Caterpillar in New South Wales and the Australian Commonwealth Territory in 1934. They were licenced to manufacture motor graders, scoops, winches and various other attachments for Caterpillar in about 1939. During World War II, increased demand lead to a need for more space and modernised buildings. Building applications were lodged in 1939 and following approval, the former buildings were demolished, except for a cottage. In their place were constructed a steel workshop and a brick office and show room. The buildings were completed by the end of 1940 and were used by the Company until they moved in 1949. The buildings were then used by Greenway & Banks and today have a number of tenants, including the Greenway Banks Estate, the Sydney Trapeze School and an indoor climbing gym.

The office building and show room dominate the Unwins Bridge Road frontage (**Plate 79**). Constructed of cream brick, it features a 'waterfall' façade with rounded corners and rounded window corners (**Plate 80**), together with porthole windows. The flat roof is hidden by a parapet. Behind this building are two saw-toothed industrial buildings. The assessed significance can be found in **Table 48**.



Plate 79 Central tower of Waugh and Josephson Industrial Buildings.



Plate 80 Eastern end of the Waugh and Josephson Industrial Buildings showing curved glass elements.

Table 48 Significance assessment for the Waugh and Josephson Industrial Buildings (NSW Heritage Division, 2012d)

Significance Assessment	
Criterion a (historical)	The site as a whole is of historical significance for its ability to evoke mid-20th century industrial practices.
Criterion b (associative)	No assessment provided.
Criterion c (aesthetic)	The main Inter-war Functionalist style industrial administration building and showroom which fronts Unwins Bridge Road is of aesthetic significance as an exemplar of the style and the manner in which it forms an important industrial streetscape on a major intersection.
Criterion d (social)	No assessment provided.
Criterion e (technical/research)	The remaining Waugh & Josephson industrial buildings on the site are of research significance for their ability to demonstrate innovative mid-20th century construction techniques.
Criterion f (rare)	No assessment provided.
Criterion g (representative)	Local [it is assumed that the item holds local representative significance as a representative example of a mid-20 th century industrial building complex].
Statement of Significance	
<i>The main Inter-war Functionalist style industrial office and showroom building is of aesthetic significance as an architect-designed exemplar of the style, and for the manner in which it forms an important industrial streetscape on a major intersection. The 1940s buildings on the site (office & showroom; central factory building; and building in the northeast corner of the site) are of historical significance for their association with Waugh & Josephson and for their ability to demonstrate mid-20th century industrial practices. The 1940s central factory building and building in the northeast corner of the site are also of technical significance for their innovative architectural design to facilitate mid-20th industry. The multi-bay, rigid frame, all steel workshop which is the latest type of design", designed for "full use of the interior due to the absence of any trusses, also excellent lighting, and an excellent appearance both internally and externally." The site as a whole is of historical significance for its ability to evoke mid-20th century industrial practices, and for the Company's role in the construction industry.</i>	

6.12.17 St. Peters Anglican Church

The St. Peters Anglican Church, located at 187-209 Princes Highway, is listed on the State Heritage Register (SHR#00032), the Marrickville LEP 2011 (I275) and was a registered place on the non-statutory Register of the National Estate (#1716). The site contains three main buildings: the church (**Plate 81**) and hall, the 1906 rectory and 1996 rectory. To the north of the church is a graveyard containing many of the earliest settlers (**Plate 82**).

**Plate 81** St Peters Anglican Church.**Plate 82** St Peters Cemetery.

Table 49 Significance assessment for the St Peters Anglican Church

Significance Assessment	
Criterion a (historical)	The site, with its landmark church building and graveyard, is an integral part of the former village of St. Peters and village of Tempe, is the derivation of the name of the locale and strongly associated with its identity as a made place. The site has been occupied and used as an Anglican Church facility since 1838. The site contains one of the earliest church buildings constructed by free labour and one of the earliest to be constructed as a result of the Religious Establishment Act 1836.
Criterion b (associative)	The church was designed by the Colonial period architect Thomas Bird and the built fabric added to altered by the work of subsequent notable architects: Edmund Blacket and sons, George Allen Mansfield, Professor Leslie Wilkinson and Morton Herman. Repair and reconstruction of damaged building fabric was supported by the congregation often with donations from local brickmakers. The establishment of the church was associated with Robert Campbell and Alexander Brodie Spark, two prominent Sydney Merchants and local landowners. The graveyard contains graves of prominent Sydney people
Criterion c (aesthetic)	The site contains fabric which demonstrates a high degree of creative achievement in the built form of the church, graveyard and Federation Period parsonage. The church is a good example of Old Colonial Gothick Picturesque despite its various additional works throughout the nineteenth century. The 1906 Parsonage is a good example of residential scale of the Arts and Crafts movement of the Federation Period and the graveyard contains a diversity of expression through the monumental tombs and commemorative gravesite markers. Together they form a landmark cultural landscape within the Marrickville municipality.
Criterion d (social)	The site has local social significance because of its importance to the Church congregation and the community associated with St Peters Church.
Criterion e (technical/research)	The site contains built fabric of a local technical significance for its potential to provide information into early construction methods including the use of sun dried bricks and local timber columns. It also provides good examples of the process of alteration, reconstruction and adaptation and displays an evolution of building and construction techniques. The site contains archaeological potential in the vicinity of the site of the original parsonage building complex as an interred population of known individuals.
Criterion f (rare)	The site contains items of State significance and the church building has rare surviving fabric of the Old Colonial Gothic Picturesque architectural style and a nineteenth century graveyard. The remaining original Church form and some of its fabric is the only surviving built form designed by the Colonial Period architect ,Thomas Bird, in Australia.
Criterion g (representative)	The site has state representative significance because it demonstrates principal characteristics of the work of prominent architects; Thomas Bird, Edmund Blacket, George Allen Mansfield and Professor Leslie Wilkinson.

Statement of Significance

The St Peters Church and grounds is of State heritage significance. It contains a rare and early example of Primitive Gothic Revival Church architecture in Australia. It contains a rare surviving work of the Colonial Period architect Thomas Bird (arrived Australia 1835) It contains one of the earliest churches to be constructed as a result of the Religious establishment Act of 1836. It contains evidence of the work and influence of a number of distinguished Australian architects: Thomas Bird, Edmund Blacket, James Hume, John Bibb, George Allen Mansfield, Blacket Brothers, Professor Leslie Wilkinson and Morton Herman. It contains one of the first churches to be constructed of free labour in NSW. It is a landmark within the Sydney environment contained within the greater landscape of Botany Bay. It formed an integral part of Alexander Brodie (A.B.) Sparke's vision for an appropriate setting for the village of St Peters, Cooks River c.1840. St Peters Church is a unique early form of building construction utilising sun dried bricks and local timber in the form of turpentine columns relating to the indigenous environment of the foreshores of Botany Bay and the Cooks River. The site has social significance due to its continuity of use and importance to the Anglican Church community since its formation in 1838. The site contains graves and remnant grave stones and monuments of significant persons including; A.B Sparke, Henry Knight, Elizabeth Knight, Ann Knight, architect John Bibb, Thomas Gratten, James Raymond, grazier Thomas Icely, Susanna Hensley and descendants of Governor King amongst many local pioneers. The site contains a former rectory which is a good representative of the Federation Period with intact details and materials

6.12.18 St Peters Public School, including interiors

The St Peters Public School is listed on the Marrickville LEP 2011 as an item of local significance (I271). The school is located at 93A Church Street. Constructed of brick, the work is in Flemish bond (vertically off-set rows of alternating header and stretcher laid bricks). The subsequent buildings do not detract from the heritage significance of the building. No images are available of the school due to the sensitivities around photographing the site during school hours. The assessed significance does not contain a statement of significance and therefore one has been provided for the purposes of this project.

Table 50 Significance assessment for St Peters Public School

Significance Assessment	
Criterion a (historical)	The school is of local historical significance, demonstrating the development of the suburb and the provision of education to local families
Criterion b (associative)	The school does not meet this criterion, having no special link with an individual of historical significance
Criterion c (aesthetic)	The school does not meet this criterion as it is not of aesthetic significance
Criterion d (social)	The school is of local social significance to the community who attended or still attends it.
Criterion e (technical/research)	The school does not meet this criterion as it does not have the potential to yield new or substantive information
Criterion f (rare)	The school is not rare and therefore does not meet this criterion
Criterion g (representative)	The school is representative of late nineteenth century school buildings
Statement of Significance	
<i>The St Peters Public School is of local historical, social and representative significance. The school is of local historical significance, demonstrating the development of the suburb and the provision of education to local families. The school is of local social significance to the community who attended or still attends it. The school is representative of late nineteenth century school buildings.</i>	

6.12.19 Terrace Housing, including interiors – 105-119 May Street

Item I273 on the Marrickville LEP 2011 is a set of eight terrace houses located between 105 and 119 May Street. The terraces are constructed of brick, are two-storey, with integrated verandah and balconies covering both storeys. The verandah/balconies are supported on timber posts and decorated with iron lacework. The listing contains no assessment against the criteria and therefore a brief assessment has been undertaken for the purposes of this project (**Table 51**).

Table 51 Significance assessment of Terrace Housing – 105-119 May Street

Significance Assessment	
Criterion a (historical)	The terrace houses are of local historical significance through their ability to demonstrate the course of local history with regard to the provision of accommodation for the working-class, who initially settled in the area to work in the brickworks and other industries
Criterion b (associative)	No associative significance has currently been identified.
Criterion c (aesthetic)	The terrace houses contribute to the streetscape.
Criterion d (social)	No social significance has been identified.
Criterion e (technical/research)	It is considered unlikely that the rear yards would contain significant archaeological deposits. There may be limited sub-floor deposits.
Criterion f (rare)	The terraces are unlikely to be rare, but a comparative study would be needed to determine this.
Criterion g (representative)	The terraces are of local representative significance as a good example of terrace housing built for the working class of the area.
Statement of Significance	
<i>The terrace houses are of local historical and representative significance. They demonstrate the provision of accommodation for the working class, who were drawn to the area by the brickworks and similar opportunities. The terrace houses provide a representative example of this type of accommodation.</i>	

6.12.20 Remaining brick road and footpath paving and stone guttering

Listed on the Marrickville LEP 2011 is a section of brick road with associated footpath paving and stone guttering (I283). The road forms part of Victoria Street, at its south eastern terminus. The bricks have been laid in a herringbone pattern and the guttering is of worked sandstone blocks. The listed significance is provided in **Table 52**.

Table 52 Significance assessment for remaining brick road and footpath paving and stone guttering (NSW Heritage Division, 2011a)

Significance Assessment	
Criterion a (historical)	Local
Criterion b (associative)	No assessment provided
Criterion c (aesthetic)	No assessment provided
Criterion d (social)	No assessment provided
Criterion e (technical/research)	Local
Criterion f (rare)	Local - This brick road, footpath paving and stone guttering is the only example existing in the Municipality.
Criterion g (representative)	Local - This brick road, footpath paving and stone guttering is representative of relief work which was undertaken in the area during the Depression years.
Statement of Significance	
<i>An extremely good example of an early road complex comprising brick pavements, sandstone guttering and brick road surface. No other examples of brick road paving have been identified in the Municipality. The following is from a DES Committee Meeting Report of August 1996 " The brick paved road is an early example of brick paving laid in a herringbone pattern with sandstone kerb and guttering, assumed to be from the 1920s. It is unknown as to whether the road was constructed by the brickworks or as depression relief work in association with the former Town Hall site. The road is associated with the early extractive clay brick industries of the St Peters district for it lead to the former brick pit belonging to Austral/Speares/Central Brick Company Brickworks. The road is located beside the former St Peters Town Hall site and connects to the former Cooks River Road, one of the earliest roads leading from the township of Sydney.</i>	

6.12.21 Warehouse “Rudders Bond Store” Including Interior – 53-57 Campbell Road

The former Rudders Bond Store is located at 53-57 Campbell Road, St Peters (**Plate 83**). The bond store is listed on the Sydney LEP 2012 as I1405. It is ‘L’ shaped in plan, oriented in a north-east/south-westerly direction and having a second frontage on Burrows Road (**Plate 84**). The arm of the store extends from the north western side of the building. The Store is currently divided into three tenancies, the one on Campbell Road being vacant, the central portion being leased by Sita Pty Ltd as a recycling centre and the third, southern most section is used by Dial-a-Dump. Externally, the store is constructed of brick (painted cream) to the first storey height. The front is distinguished with round-edged brick supporting columns evenly spaced. The central span contains an almost full-height access doors. The other spans (eight in all) contain vertically arranged louvres over windows. The roof is of a complex clerestory style, with the pitched corrugated iron and corrugated clear fibreglass roof covering the four central spans. The fall containing the windows is angled in the opposite direction to the pitch of the roof. The final pitch of the roof extends to the walls. The gable is filled with rectangular aluminium windows. In faded paint across the windows is the word ‘RUDDERS’ (**Plate 84**).

On the interior, the roof structure is supported on arched struts of laminated timber. The timber segments are around 15 millimetres thick and of variable length. The timber is held together with bolted ‘D’ shaped brackets held by welded bolts on either side (**Plate 85**). The arched structure leaves the interior space free of columns (**Plate 86**). **Figure 25** shows the site 1943 and indicates the Bond Store was constructed in two sections. The store fronting Campbell Street had been constructed by the time the aerial was flown, but it appears as though early construction works may have been taking place for the second wing as laminated timber segments can be seen in the adjacent yard. The different building phases are evident in the structure, the later section having a different interior form, which includes columns to allow for the increased width (**Plate 87**).

Although not mentioned in the listing, adjacent to the Bond Store is a smaller structure with a corrugated iron pitched roof and similar brickwork and piers. These appear to have been added to the front of the structure and are not part of the load bearing structure. The gable is filled with timber tiles and board in an Arts and Craft style. An interior inspection of the property would seem to indicate it was initially constructed as a residence, probably for the manager of the Bond Store. The internal ceilings each have plaster moulded motifs in each room (**Plate 89**), although the internal walls of the front three rooms have been removed and it appears as though it was used as a café or canteen for a period of time. Evidence of a commercial kitchen is still evident through a large extractor range hood, sinks and a counter with under-bench refrigeration (**Plate 90**).



Plate 83 Overview of Rudders Bond Store. View south from Campbell Road



Plate 84 Rudders Bond Store from Burrows Road entrance. View north.



Plate 85 Detail of the laminated timber supports held together with 'D' bolts.



Plate 86 Interior of former Rudders Bond Store, showing open expanse created by arched form.



Plate 87 Southern section of Rudders Bond Store showing difference in form.



Plate 88 Building associated with the Rudders Bond Store. View south west



Plate 89 Building associated with the Rudders Bond Store. Interior showing moulded plaster ceilings in hallway.



Plate 90 Building associated with the Rudders Bond Store. Interior showing adaptations for café/canteen.

Historical research indicates the land was owned by Ralph Symonds Pty Ltd, who operated a plywood and veneer factory. Symonds opened his company in 1941. The shortage of steel created an ideal environment for the use of laminated timber and it was widely used until steel became more widely available following the close of World War Two. Symonds became a world authority on laminated timber and glued laminated timber. Thought to be Symond's first building venture is the extant former National Springs igloo building at 52-54 O'Riordan Street in Alexandria, constructed in 1941 and used for the engineering and construction of aircraft during the war. This building has been nominated for listing on the Sydney Local Environmental Plan (#5062448). The advantages of

laminated timber were quick construction times and the ability to create wide spans. The Symonds company also contributed to the Melbourne Myer Music Bowl, Glenbawn and Warragamba Dams and his laminated timbers still grace the interior of the Sydney Opera House.

A plan created in the 1930s or early 1940s, indicates the original Symonds factory was located in the north west portion of the site. This was demolished prior to 1943, by which time a new factory had been constructed fronting Campbell Street (**Figure 25**). A document held by the City of Sydney archives (Item No. 710), indicates that the factory shown in the 1943 aerial was substantially rebuilt and extended several times. The archives also hold a development application from 1959 (Item No. 697-59) showing the current configuration of the building. It is unclear from the plans, however, if any of the structures were existing. Nevertheless, the warehouse, in its present form seems to have been formalised in 1959. Shortly after construction was completed, the council granted permission for the premises to be used for general storage by Rudders – with the property being leased to them by Symonds. Rudders appears to have occupied the building until around 1969 or 1970, when it was purchased by Alltrans Storage (SA) Pty Ltd.

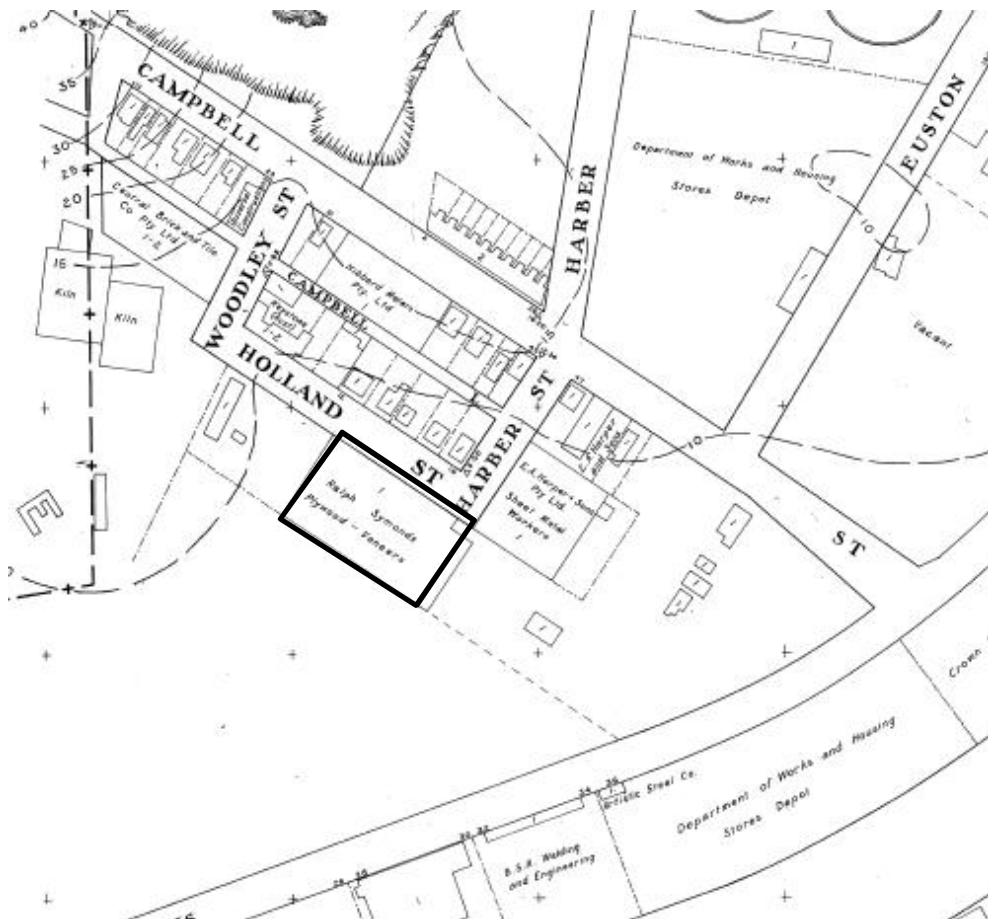


Figure 24 Excerpt of Civic Survey, 1838-1950 – Alexandria West (Source: City of Sydney Archive). Ralph Symonds Factory highlighted.

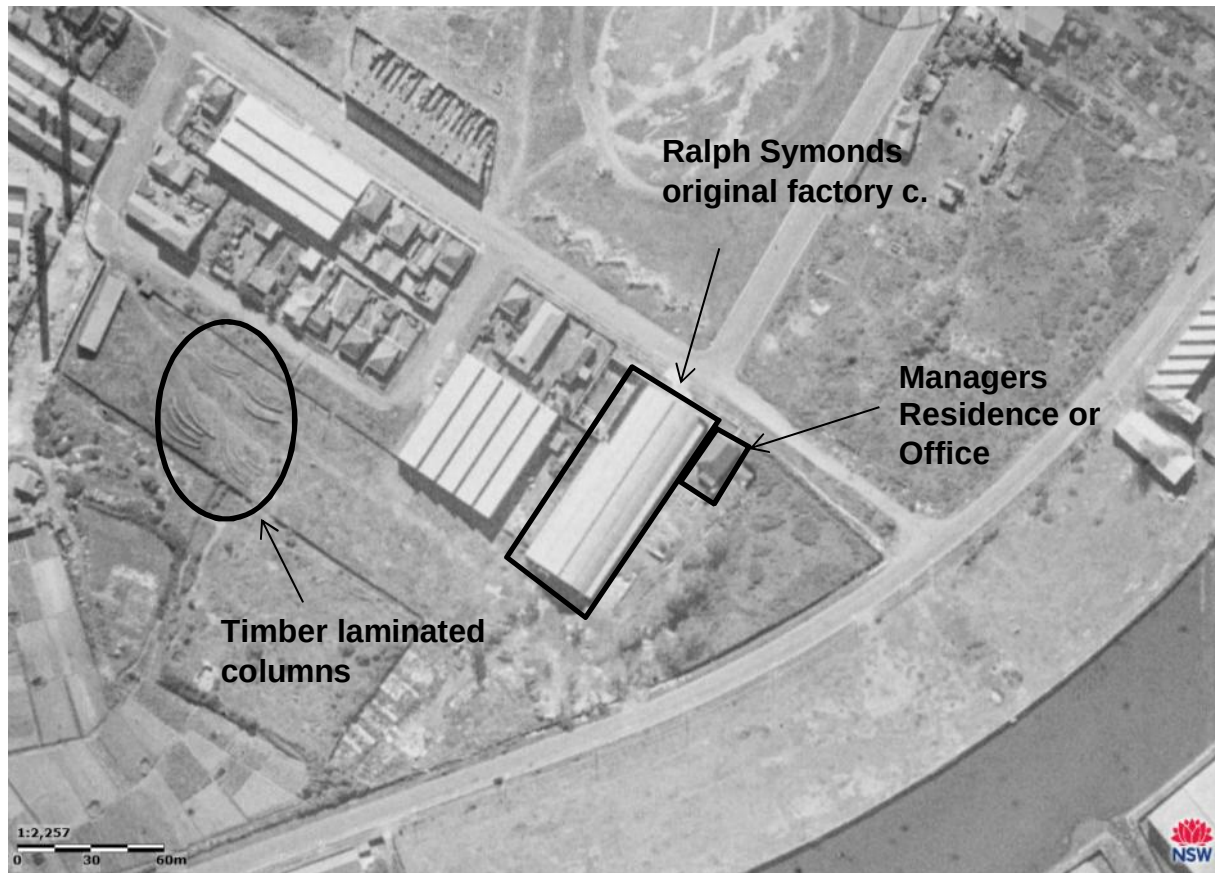


Figure 25 1943 aerial of the Rudders Bond Store with items of interest highlighted (Source: SIX Maps, NSW Land and Property Information).

Table 53 provides an assessment against the criteria for this project, which is a revision of the listed significance, based on the additional historical research and inspection of the interior spaces.

Table 53 Significance assessment for Warehouse “Rudders Bond Store” Including Interior.

Significance Assessment	
Criterion a (historical)	The Rudders Bond Store is of State historical significance through its associations with Ralph Symonds Pty Ltd. The Symonds company were instrumental in the development and wide-spread use of glued structural laminated timber and laminated timber more generally, particularly during the materials shortages of World War Two and the following years. The Rudders Bond Store is of local historical significance as it demonstrates the course of history in St Peters. It is a symbolic site in the move from the ‘dirty industries’ of the brick pits to the warehouse/distribution ‘industrial’ nature of the area now.
Criterion b (associative)	The Rudders Bond Store is to hold State significance under this criterion, being associated with Ralph Symonds and his company. The company constructed several significant buildings during World War Two and in the post-war era were associated with the construction of the Melbourne Myer Music Bowl, Glenbawn and Warragamba Dams and their laminated timbers still grace the interior of the Sydney Opera House.
Criterion c (aesthetic)	The Rudders Bond Store is of State architectural significance, as it reflects an innovative form of construction, being the use of glued laminated timber columns. The curve of the columns allowed the roof to span the width of the Store. The shape of the curves, almost like an inverted hull of a ship, creates an aesthetically pleasing space.
Criterion d (social)	The Rudders Bond Store is not considered to be of social significance.
Criterion e (technical/research)	The Rudders Bond Store is of State technical significance for the use of glued laminated timber columns. Together with the former National Spring Store at 52-54 O’Riordian Street, Alexandria (1941) and the company’s own warehouse (1858-59) on Burroway Road, Homebush, the bond store shows a progression and perfecting of the use of glued laminated timbers, form and function.
Criterion f (rare)	The Rudders Bond Store is of State significance, being a rare example of a warehouse using laminated timber columns. Two other examples have been identified in NSW, being the National Spring Store at 52-54 O’Riordian Street, Alexandria (1941) and the company’s own later warehouse and construction facility (1858-59) on Burroway Road, Homebush (previously listed on Schedule 5 of Sydney Regional Environmental Plan No. 24 – Homebush Bay Area).
Criterion g (representative)	The Rudders Bond Store is not considered to be a representative example as it used an unusual construction technique.
Statement of Significance	
The Rudders Bond Store is of State historical, associative, aesthetic, technical and rarity significance. Historically, the store demonstrates the innovative building techniques developed in response to a lack of materials during World War Two and in the immediate decades following the war. On a local scale, the Bond Store also demonstrates the course of history in St Peters, with the decline of the brickpits and the move towards warehouse and distribution facilities, with some light industrial enterprises. The store is of State significance through its associations with Ralph Symonds, a world expert in the use of glued laminated timber columns and laminated timber in general. The Symonds company was involved in the construction of the Melbourne Myer Music Bowl, Glenbawn and Warragamba Dams and their laminated timbers still grace the interior of the Sydney Opera House. The State aesthetic, technical and rarity significance all relate to the construction method. The use of glued laminated timber columns to allow for a largely column free internal space appears to be rare, only two other extant examples being identified in NSW. The store, together with the examples in Alexandria and Homebush, show the evolution of the design of warehouse space in these materials and is of technical interest. The construction method creates a cathedral-like space that is aesthetically pleasing to the eye.	

6.12.22 St Peters Brickpit Geological Site – corner of Princes Highway and Canal Road

The St Peters Brickpit Geological Site was a registered item on the non-statutory Register of the National Estate (ID # 162040), now a non-statutory register. The site consists of around five hectares on the corner of the Princes Highway and Canal Road. The site was used to as a quarry for shale and clay, used by the nearby Bedford Brickworks (former). The fringes of the site with street frontages are now used by various industrial and light industrial companies, with the curtilage of the item being a 'U' shaped polygon within the central void. The site has been landfilled (refer to **Plate 91**).



Plate 91 St Peters Brickpit Geological Site – eastern wall

The quarry produced Ashfield shale, the lowest known strata within the upper Triassic Wianamatta Group, which sits on top of Hawkesbury Sandstone. The shale formed within the Botany Basin, a sub-basin of the Sydney Basin. According to the non-statutory Register of the National Estate listing, the site “provides an excellent opportunity to observe geological structures in fresh shales in siltstones including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults (including normal and reverse faults) and recent mass movements ...” (Australian Heritage Commission, 1991). The shale contains fossils of bivalves, isopods, soft marine organisms (guilielites) and insects as well as plant fragments. Vertebrate fossils have also been identified at the Brickpit and include fish and an amphibian known as *Paracyclotossaurus davidii*. The 2.3 metre long amphibian is thought to have lived in fresh water lakes and have hunted like a crocodile.

The non-statutory Register of the National Estate listing does not contain an assessment against the criteria, however the Statement of Significance summarises the values thus:

St Peter's Brickpit contains a section of prior Botany Bay shoreline sediments of late Pleistocene/early Holocene Age (18,000 to 6,000 years bp). These sediments provide important evidence of the extent to which the waters of Botany Bay rose at the end of the last glaciation. The deposits found within the brickpit are a rare occurrence of this shoreline (Criterion A.1 and B.1). The Ashfield shale in the vicinity of the brickpit has been a rich source of fossils of upper Triassic Age (approximately 210 million years bp). With both vertebrate and invertebrate fossils identified including an amphibian named PARACYCLOTOSAURUS DAVIDII, a member of the sub-class Labyrithodontia. This species has only been identified from this site. It is one of the few species of this sub-class of this age discovered in Australia to date. This species has contributed to the understanding of the evolution of the Australian amphibian fauna (Criterion A.1). The quarry is used extensively as a teaching resource by local tertiary institutions. It provides an excellent opportunity for students of geology to observe structures in fresh shale and siltstone of the Ashfield formation. These structures include joints, faults and recent mass movement on the edges of the quarry. There is also potential for significant additional fossil finds within the Ashfield formation the former Botany Bay shoreline deposits are of research value, providing evidence of former sea levels around Botany Bay. The shell within the deposit, may yield information on environmental conditions that existed as sea levels rose at the end of the last glaciation (Criterion C.1). The site contains a representative example of Ashfield shale which is the lowest formation of the upper Triassic Wianamatta group of the Sydney Basin the shoreline deposits provide an important example of the former shoreline of Botany Bay (Criterion D.1). The site is of historic interest for the way it demonstrates part of the geographical spread of the St Peter's brick-shale deposits and so complements the restored Bedford Brickworks to the north (Criteria A.4 and B.2).

It is unclear whether the brickpit contains further paleontological specimens of scientific interest. It is recommended that advice from a palaeontologist be sought.

6.12.23 Former Alexandria Spinning Mill

The Former Alexandria Spinning Mill has been identified as an item of potential heritage significance within a proposed draft amendment to the Sydney LEP 2012 (#14). It is currently not on a statutory list. Located at 40A – 42 Maddox Street and 58-68 Euston Road, it was initially constructed in 1924 as a wool and cotton mill. It was later used to manufacture stationery and for printing. The significance assessment provided in the draft listing is provided in **Table 54**.

Table 54 Significance assessment for the Former Alexandria Spinning Mill.

Significance Assessment	
Criterion a (historical)	Built for the Alexandria Spinning Mills from 1924, this complex represents one of Australia's largest wool and cotton mills from the first half of the twentieth century. The complex demonstrates the twentieth-century industrial development of Alexandria and provides evidence of the formerly widespread textiles industry in the City of Sydney. The mills are historically significant for their connection to the Australian production of textiles from the time when Australian-made textiles first began to compete with foreign imports. The scale of the site and its buildings demonstrate the importance of the wool and cotton industry to Sydney and Australia. The construction of these mills provide evidence of the rapid growth of the Australian textile manufacturing industry during the 1920s as the range of production extended to finer qualities of yarn and cloth. Its subsequent expansion demonstrates the growth of the textiles industry to support the war effort for World War II. As a major employer, in particular for girls and women, infamous for its poor working conditions, the former mills are also significant for their connection to the history of employment of women and the development of the labour movement in Sydney. These mills represent the site of major strikes during the 1930s and 1940s, which were a significant event in Sydney's twentieth century movement for improved rights and conditions for the working class, better conditions for women in the workforce and the growth of unions. The former mills complex forms part of one of the largest known collections of industrial and warehouse buildings of its kind in Australia, which records City of Sydney's past as one of only two historic industrial heartlands in Australia. This collection of buildings provides evidence of Australia's twentieth century transformation through industrialisation when Sydney became one of the largest industrialised cities in the South Pacific.
Criterion b (associative)	The complex has significant associations with the Alexandria Spinning Mills from the 1920s to the 1960s and the knitting wool, knitting books, clothing for the Australian military during World War II, and other products made at this site during this period.
Criterion c (aesthetic)	Dating from 1924 to the 1960s, the collection of buildings within this site represent a good example of a large industrial precinct from the early twentieth century. The buildings on the site demonstrate the distinctive modular building form of inter-war and post-war industrial buildings, characterised by repeated bays of sawtooth roofs containing southern roof lights, load-bearing brick walls and internally exposed timber or steel-framed construction.
Criterion d (social)	Social significance requires further study to ascertain its value to communities. As a major former employer, infamous for its poor working conditions, and site of major strikes of its mostly female workforce in the 1930s and 1940s, the site is likely to have social significance to the community of former workers of the Alexandria Spinning Mills, and their descendants. It may also have significance to the Australian community as the source of the Sug-glo knitting books, Twin-Prufe knitting wool and some clothing that supplied the Australian military during World War II.
Criterion e (technical/research)	No assessment provided.

Significance Assessment	
Criterion f (rare)	No assessment provided.
Criterion g (representative)	The former Alexandria Spinning Mills complex is a good example of a large-scale industrial precinct from the first half of the twentieth century.
Statement of Significance	
<i>Built for the Alexandria Spinning Mills from 1924, this complex represents one of Australia's largest wool and cotton mills from the first half of the twentieth century. The complex demonstrates the twentieth-century industrial development of Alexandria and provides evidence of the formerly widespread textiles industry in the City of Sydney.</i> <i>The mills are historically significant for their connection to the Australian production of textiles from the time when Australian-made textiles first began to compete with foreign imports. The scale of the site and its buildings demonstrate the importance of the wool and cotton industry to Sydney and Australia. The construction of these mills provide evidence of the rapid growth of the Australian textile manufacturing industry during the 1920s as the range of production extended to finer qualities of yarn and cloth. Its subsequent expansion demonstrates the growth of the textiles industry to support the war effort for World War II.</i> <i>The complex has significant associations with the Alexandria Spinning Mills from the 1920s to the 1960s and the knitting wool, knitting books, Australian military clothing used in World War II, and other products made at this site during this period.</i> <i>As a major employer, in particular for girls and women, infamous for its poor working conditions, the former mills are also significant for their connection to the history of employment of women and the development of the labour movement in Sydney. These mills represent the site of major strikes during the 1930s and 1940s, which were a significant event in Sydney's twentieth century movement for improved rights and conditions for the working class, better conditions for women in the workforce and the growth of unions. For this reason, the site is likely to have social significance to the community of former workers and their descendants.</i> <i>Dating from 1924 to the 1960s, the collection of buildings within this site represent a good example of a large industrial precinct from the early twentieth century. The buildings on the site demonstrate the distinctive modular building form of inter-war and post-war industrial buildings, characterised by repeated bays of sawtooth roofs containing southern roof lights, load-bearing brick walls and internally exposed timber or steel-framed construction.</i> <i>The former mills complex forms part of one of the largest known collections of industrial and warehouse buildings of its kind in Australia, which records City of Sydney's past as one of only two historic industrial heartlands in Australia. This collection of buildings provides evidence of Australia's twentieth century transformation through industrialisation when Sydney became one of the largest industrialised cities in the South Pacific.</i> <i>The former Alexandria Spinning Mills is of local heritage significance in terms of its historical, aesthetic, social and representative values.</i>	

6.13 Non-listed heritage items

During the surveys, areas of potential heritage value were investigated to look for items with heritage value that are not listed and may be impacted by the project. This was achieved via a pedestrian and vehicle survey of the project area. The project area has been previously extensively investigated through heritage surveys commissioned by local councils for the preparation of Local Environmental Plan heritage schedules, as well as by non-statutory organisations such as the National Trust and listings on the non-statutory Register of the National Estate, as nominated by members of the public. In general, it was found that unlisted items, being mainly residential houses, were captured through locally listed heritage conservation areas. Late 19th and early 20th century housing is well represented within the Goodsell Estate Heritage Conservation area (Marrickville Local Environmental Plan C16) and the Cooper Estate (Sydney Local Environmental Plan C2) contains representative examples from the late Victorian era through to the inter-War period. The commercial and retail development of the inner west of Sydney is adequately captured through the King Street conservation areas listed on the Sydney and Marrickville LEP (C47 and C2 respectively, as well as a number of listings for individual corner stores within residential precincts, the group of retail premises listed on the Marrickville LEP 2011 being an example of which. It is therefore considered that the heritage significance of the project area has been well-canvassed and is

adequately captured by the listed heritage items on statutory and non-statutory lists, particularly through the conservation areas.

The pedestrian and vehicle survey identified one item of potential heritage value, being Campbell Street St Peters, within the study area. This should be directly impacted by the project and is described and assessed further in **Section 6.13.1**.

Potential negligible impacts to structures along the preferred project corridor as a result of tunnel construction have also been identified. Nonetheless, existing condition surveys for properties within this corridor would be completed prior to construction and would provide a benchmark against which to measure the condition of the items. So long as the items maintain or are remediated, there would be no impact to their heritage significance. This is discussed further in **Section 7.2**.

6.13.1 Campbell Street, St Peters

The south western side of Campbell Street between Unwins Bridge Road and Church Street is lined with single storey bungalows and terraces interspersed with two storey terraces. With the exception of 82 Campbell Street, which is listed on Road and Maritime's Section 170 Heritage and Conservation Register, numbers 1 to 78 are not listed on a heritage register. The style of the houses indicate they were constructed between the 1880s through to the 1920s or 1930s. In many respects, therefore, the houses on Campbell Street are represented within the Cooper Estate heritage conservation area (Sydney Local Environmental Plan C2). The residences front on to Simpson Park, which on the Campbell Street frontage is lined with a row of mature Moreton Bay Fig trees.

Table 55 Significance assessment for Campbell Street.

Significance Assessment	
Criterion a (historical)	The unlisted residences along Campbell Street have the potential to demonstrate the pattern of development in the area. However, there is no element or feature that elevates this street above others in the area. The item does not meet this criterion.
Criterion b (associative)	Further research into the residents of the houses would be required to determine if any hold associative significance.
Criterion c (aesthetic)	The unlisted residences along Campbell Street demonstrate a diverse range of forms and construction dates. As such the streetscape is not unified. There is no one residence that stands out with regard to form or execution. The item does not meet this criterion
Criterion d (social)	Further research into the community's perception of the street is required to determine its significance under this criterion
Criterion e (technical/research)	There are no known previous structures in the area. The houses have been constructed following the period in which municipal garbage collection was in use. It is therefore considered unlikely the yards contain significant deposits. There is potential for some subfloor deposits to be associated with some of the residences, however, it is considered that such deposits are unlikely to yield new or substantial information that is not available elsewhere.
Criterion f (rare)	The residences are not considered to be rare and therefore do not meet this criterion
Criterion g (representative)	The unlisted residences along Campbell Street could be considered representative of development in the local area, however it is considered this is represented elsewhere within listed conservation areas and items.
Statement of Significance	
<i>The unlisted residences along Campbell Street are not considered to hold heritage significance at a local or State level.</i>	

7.0 Issues and potential impacts

The following section draws upon information provided in **Chapter 5** and **Chapter 6** to address the issues and potential impacts on identified heritage items during the construction and operation of the project. These impacts would need to be reviewed during detailed design.

During the concept design of the project, every attempt has been made to reduce the short and long-term impacts to heritage values through a cascading method of:

- Avoidance by planning and design;
- Reduction in footprint or scale;
- Mitigation by modification of the construction methodology or other means; and
- Archival documentation prior to loss as a final resort.

7.1 Potential impact areas

For the purpose of the non-Aboriginal heritage impact assessment, the potential areas of impact have been divided into the following components:

- The **western surface works**, including:
 - The M5 South West Motorway and M5 East Motorway integration works during construction and operation.
 - The Kingsgrove North construction compound (C1), the Kingsgrove South construction compound (C2) and the Commercial Road construction compound (C3) during construction.
 - The Kingsgrove motorway operations complex (MOC1) during operation.
- The **main alignment tunnels**.
- The **Kingsgrove Road surface works**, which would be associated with the installation of tolling infrastructure.
- The **Bexley Road surface works**, including:
 - The Bexley Road North construction compound (C4), the Bexley Road South construction compound (C5) and the Bexley Road East construction compound (C6) during construction.
 - The Bexley Road South motorway operations complex (MOC2) during operation.
- The **Arncliffe surface works**, including:
 - The Arncliffe construction compound (C7) during construction.
 - The Arncliffe motorway operations complex (MOC3) during operation, including the Arncliffe ventilation facility.
- The **St Peters interchange and local road upgrade surface works**, including:
 - The St Peters interchange works during construction and operation.
 - The Canal Road construction compound (C8), the Campbell Road construction compound (C9), the Landfill Closure construction compound (C10), the Burrows Road construction compound (C11), the Campbell Road bridge construction compound (C12), the Gardeners Road Bridge construction compound (C13) and the Sydney Park construction compound (C14) during construction.
 - The St Peters motorway operations complex and Burrows Road motorway operations complex, including the motorway control centre and maintenance facility and the interchange ventilation facility, during operation.
 - Local road upgrade works during construction and operation.

Potential impact areas are shown in **Figure 26** to **Figure 31**, with more detailed descriptions of activities that would be undertaken at each of the sites listed above provided in Chapter 5 and Chapter 6 of the EIS for the project. More detailed figures are provided in **Appendix A**.

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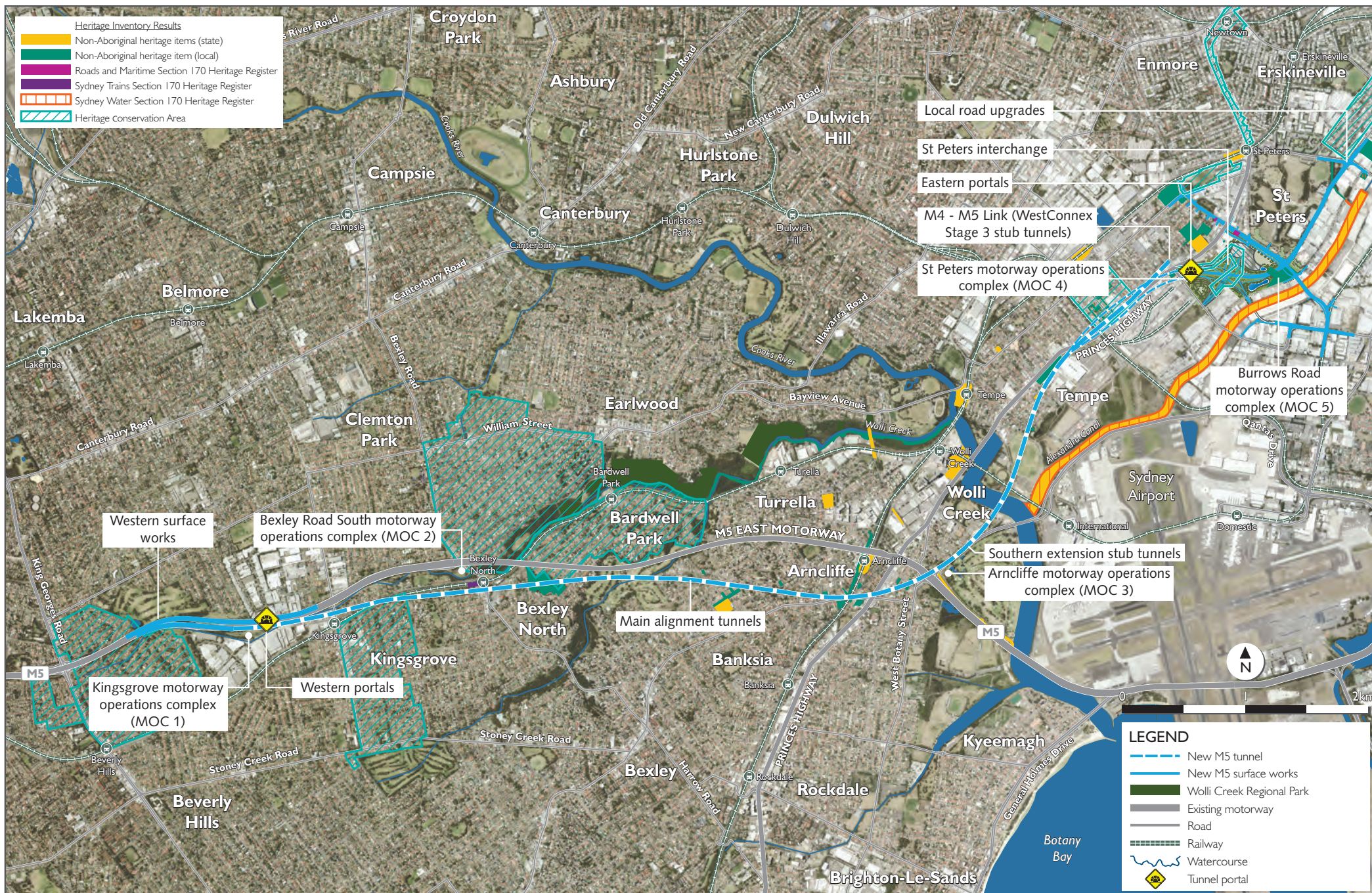


Figure 26 The project and heritage inventory results

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Figure 27 Construction disturbance footprint and heritage inventory results - Map 1 (Western surface works)

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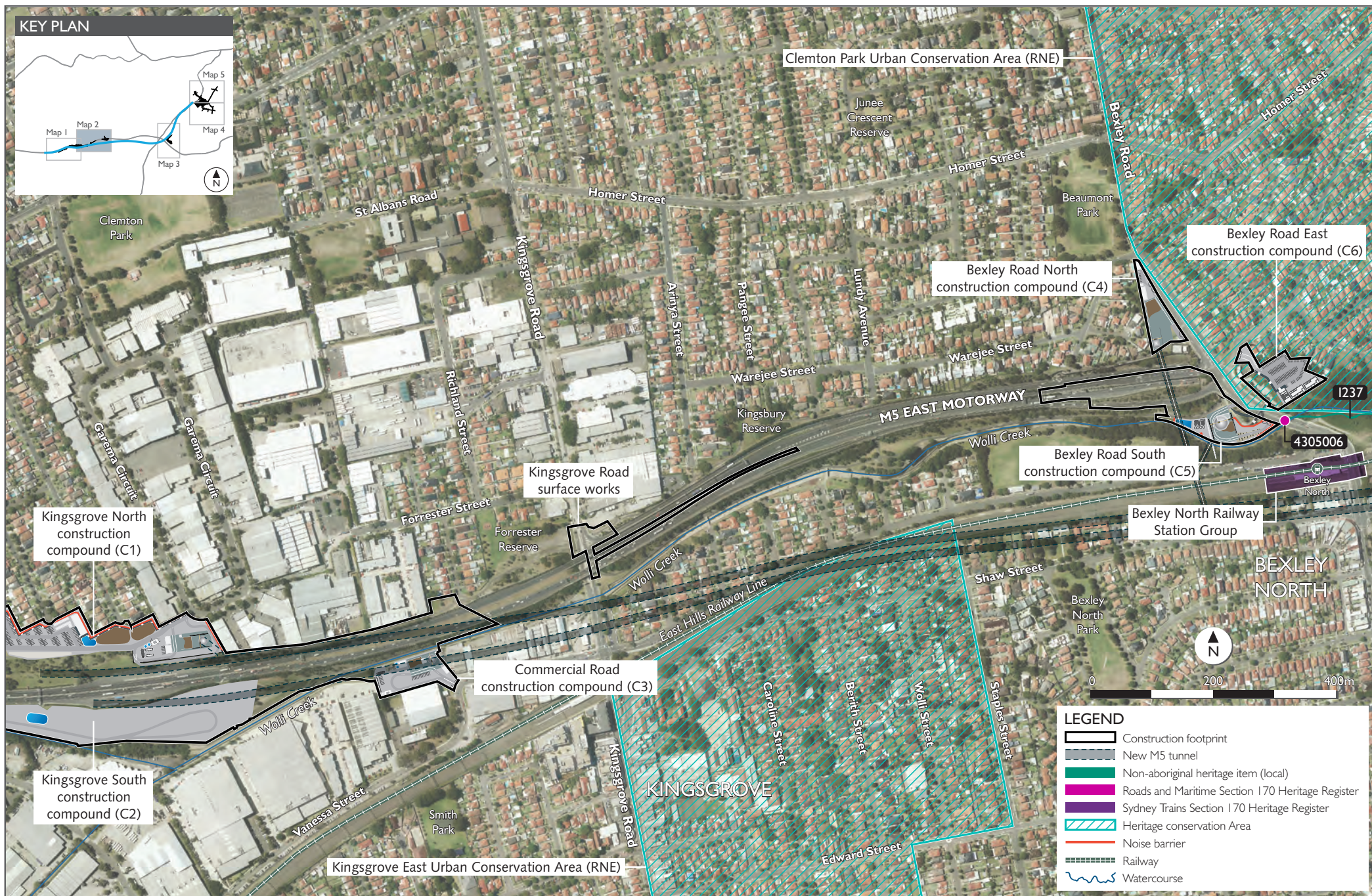


Figure 28 Construction disturbance footprint and heritage inventory results - Map 2 (Kingsgrove and Bexley Road surface works)

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Figure 29 Construction disturbance footprint and heritage inventory results - Map 3 (Arncliffe surface works)

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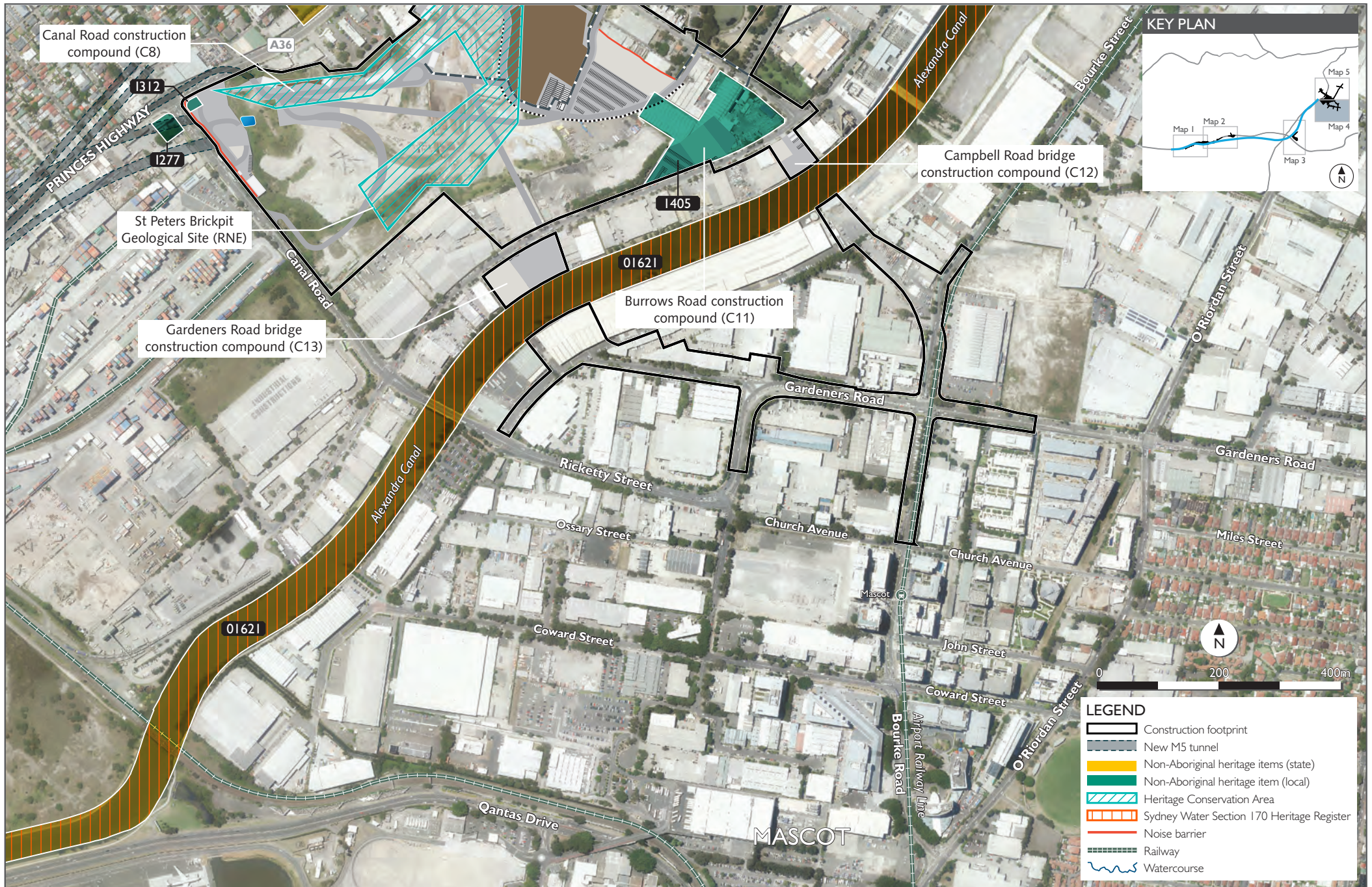


Figure 30 Construction disturbance footprint and heritage inventory results - Map 4 (St Peters interchange and local roads)

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Figure 31 Construction disturbance footprint and heritage inventory results - map 5 (St Peters interchange and local roads)

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7.2 Potential impact types

Impacts on non-Aboriginal heritage items have been categorised as follows:

- **Primary Direct** – where the project would be located within the curtilage of the heritage item and / or involve the demolition or modification of the heritage item or its heritage significance.
- **Secondary Direct** – where the project may impact on the heritage item or its significance subject to the condition of the item, more detailed investigation, construction methodologies and / or the implementation of mitigation and management measures.
- **Indirect** – where the project would change the visual context and surroundings of a heritage item with the potential to affect its heritage significance.

Table 56 Potential impact types

Impact	Description
Primary Direct	
Demolition	Demolition of structures.
Modification	Modification to a heritage item or the elements that provide its heritage significance to cater for the project.
Acquisition	Impacts resulting from the full or partial acquisition of properties that contain heritage items, but where acquisition would not result in the demolition of the heritage item. An example of heritage impact arising from acquisition would be a change from original use.
Change in heritage conservation area values	Construction of a new element within a heritage conservation area.
Secondary direct	
Acoustic treatment	Properties, some of which may be listed heritage items, may qualify for at-property acoustic treatment. This may impact on the fabric or the significance of the heritage item.
Vibration, settlement and groundwater drawdown from tunnelling works	The area of potential impact for the main alignment tunnels, on-ramp and off-ramp tunnels includes a zone on the surface equal to a distance of 50 metres from the outer edge of the underground tunnels. The potential impacts on non-Aboriginal heritage items would be a potential indirect impact by virtue of: - construction vibration as the road headers pass underneath properties; - the settlement of land if tunnelling activities are conducted underneath or within a 50 metre buffer of heritage features; or - impacts on tree roots, in the case of street trees, depending on the depth of the tunnelling activity.
Vibration from surface works	Depending on the setback of buildings from the construction footprint, there is the potential for vibration impacts associated with surface road works, building construction and / or the cut-and-cover sections of the main alignment tunnels, and on and off-ramps.
Dust	Construction activities may result in the generation of dust where works are at the surface or during the handling of spoil. Spoil handling would be in part undertaken inside acoustic sheds at compounds. Air quality impacts during construction would be managed by implementing standard and best practice mitigation measures. As such, this potential impact has not been considered further.

Impact	Description
Indirect	
Visual	There may be temporary and permanent visual impacts as result of the project. These may include: - construction of new road infrastructure or ancillary facilities; - alterations to surface roads; - new noise walls or modifications to existing noise walls, including changes to the height of noise walls; - removal of vegetation; or - establishment and use of construction compounds.

7.2.1 Vibration

Technical working paper: Noise and vibration (AECOM, 2015c) provides an assessment of potential construction vibration impacts as a result of works at surface and below ground (tunnelling).

The extent of potential vibration impacts to structures would be dependent on the type of equipment, the activity being undertaken and the separation distances. Earthworks, tunnelling and bridge works are expected to be the major vibration causing activities, given the activity and the type of equipment being used.

In summary, the noise and vibration assessment for the project concludes that:

- for tunnelling activities, the predicted maximum vibration levels at any building or structure (including heritage items) has been predicted to be 0.26 millimetres per second, which is well below three millimetres per second due to the depth of the tunnelling activities below ground level. Three millimetres is below the recommended maximum level of vibration that would be applicable to heritage structures set within the German Standard DIN 4150 - Part 3 - Structural Vibration in Buildings – Effects on Structures (refer to **Table 57**). These levels are designed to minimise the risk of cosmetic surface cracks and are set well below the levels that have the potential to cause damage to the main structure. Examples of threshold or cosmetic cracking include minor non-structural effects such as superficial cracking in cement render or plaster.
- Blasting would be undertaken along the length of the alignment during the excavation of the tunnel. Impacts created by blasting are largely dependent on the blast methodology. The size of the charge, spaces between charge and timing between charges results in a large variability in the vibration generated by a blast. This variability necessitates the use of a specialised blast consultant to design blasts to achieve compliance with the applicable vibration criteria for heritage structures (refer to **Table 57**). for surface works, such as at the local road surface works, cosmetic damage to buildings would be unlikely where the building is distanced from the project by two metres to 25 metres (depending on the vibration-generating equipment being used and the location of that equipment within each construction area). The recommended safe working distances are provided in **Table 58**, which are presented in Technical Working Paper: *Noise and vibration* (AECOM, 2015c). Depending on the construction equipment that is used, the safe working distances outlined in **Table 58** may be encroached. The primary form of mitigation of vibration would be ensuring vibration intensive works do not occur within the safe working distances. If vibration intensive works are planned within the safe working distances identified, alternative equipment would be identified and vibration monitoring would be implemented. Further mitigation of vibration would not be required where the safe working distances are adhered to. In some circumstances, construction activity within the safe working distance cannot be avoided due to the work required and the prevalent geological site conditions. These conditions may not be fully understood until work has commenced, resulting in a potential change in operating equipment. Approaches to manage such circumstances are detailed in Technical Working Paper: *Noise and vibration* (AECOM, 2015c) for the New M5.

Table 57 Structural damage vibration limits relevant to heritage structures

Type of structure	Vibration Velocity (mm/s)			
	At Foundation at a Frequency of			Vibration at the Horizontal Plane of the Highest Floor
	Less than 10Hz	10Hz to 50 Hz	50Hz to 100Hz	All frequencies
Structures that because of their particular sensitivity to vibration, do not correspond to commercial, industrial, or residential building types and have intrinsic value (e.g. buildings that are under a heritage listing)	3 mm/s	3 to 8 mm/s	8 to 10 mm/s	8 mm/s

Table 58 Recommended safe working distances for vibration intensive plant

Plant	Rating/description	Safe working distance	
		Cosmetic damage (metres)	Human response (metres)
Vibratory roller	< 50 kN (Typically 1-2 t)	5	15-20
	< 100 kN (Typically 2-4 t)	6	20
	< 200 kN (Typically 4-6 t)	12	40
	< 300 kN (Typically 7-13 t)	15	100
	> 300 kN (Typically 13-18 t)	20	100
	> 300 kN (> 18 t)	25	100
Small hydraulic hammer	(300 kg – 5-12 t excavator)	2	7
Medium hydraulic hammer	(900 kg – 12-18 t excavator)	7	23
Large hydraulic hammer	(1,600 kg – 18-34 t excavator)	22	73
Vibratory pile driver	Sheet piles	2–20	20
Pile boring	≤ 800 mm	2 nominal	N/A
Jack hammer	Handheld	Avoid contact with structure	Avoid contact with structure

Note: More stringent conditions may apply to heritage or other sensitive structures. Any heritage property would need to be considered on a case by case basis.

7.2.2 Ground settlement

The ground settlement as a result of the project, and its potential impacts on heritage structures would be dependent on the geotechnical conditions, the depth of the tunnelling activity, the number of storeys of the building, and the position, condition and masonry of the structure itself.

Settlement of the surface can create tensile strains in buildings. The strain calculated within representative buildings was used to allocate a damage category. Damage categories negligible to slight are considered acceptable as they represent aesthetic damage only. The moderate to very severe categories are related to serviceability and stability damage and are therefore considered not acceptable.

Chapter 19 (Groundwater) of the EIS for the project provides an assessment of the potential impacts of ground settlement on structures. The calculated settlement for the project is generally less than 20 millimetres for the majority of the tunnel alignment. Locations of peak settlement are at the portals and at the Y-junction caverns. It is expected that settlement would stabilise within two months of the roadheader passing under a structure.

All heritage structures have a predicted settlement of less than 20 millimetres and are assessed as having a building damage category of "negligible". Examples of visible potential impacts would only be cosmetic and could include hairline cracks.

However, it is noted that these results are preliminary and do not take into account the specifics of the property itself. Further assessments and property condition reports would be undertaken during detailed design to determine the level of potential impact on structures and to identify what mitigation and management measures would be required to minimise potential ground settlement impacts. A monitoring program would also be undertaken to ensure that settlement has stabilised before monitoring is completed.

7.2.3 Acoustic treatment

Technical working paper: Noise and vibration (AECOM, 2015c) identifies properties that may be eligible for at-property acoustic treatment, due to the potential for exceedances of applicable noise criteria at these locations. Depending on the level of noise exceedance, at-property treatment may include for example, sealing of wall vents or upgrading of window and door seals.

The properties eligible for consideration of at-property acoustic treatment that are heritage items are as follows:

- St Peters Public School (Marrickville LEP 2011, I271)
- Terrace Group, 2 – 34 Campbell Road (Sydney LEP 2012, I12).

The need for acoustic treatment at each property would be confirmed during detailed design, in consultation with the relevant landowners, and with consideration of potential impacts to heritage values.

Should at-property acoustic treatment be required for the above listed heritage items, this should be done in such a way as to minimise heritage impacts, while preserving owner amenity. Treatment would be sympathetic to the heritage values of each item and would be undertaken in accordance with the Burra Charter, which stipulates that changes which reduce cultural significance should be reversible. Where this involves incorporating noise-proofing within heritage structures the advice of a conservation architect would be sought.

7.2.4 Visual impacts

Table 59 provides a summary of the aesthetic significance, the project and provides an indication as to whether the heritage significance would be impacted.

Table 59 Summary of visual impacts against aesthetic significance

Item name and ID	Aesthetic significance summary	Visual impact summary	Impact to significance?
Pallamanna Parade Urban Conservation Area RNE #102089,	Streetscape integrity and uniformity of design	The project is located within the curtilage of the conservation area, which was determined prior to the construction of the M5 East Motorway. Changes in this area as a result of the project including removal of vegetation, construction compounds, changes to noise barriers and a motorway operations complex.	No. Impacts to heritage values within the conservation area would be localised to specific areas already associated with major transport network infrastructure. However, there would be no direct impacts in the sense that there would be no demolition of houses or structures in the urban conservation area. Landscaping would provide screening of the project from the heritage conservation area, once established.
Kingsgrove East urban conservation area (non-statutory Register of the National Estate #102106)	Streetscape integrity and uniformity of design	The conservation area is located over 100 metres from temporary and permanent infrastructure.	No. The complexes would be obscured by distance and by the screening effect of surrounding industrial developments.
Clemton Park Urban Conservation Area (non-statutory Register of the National Estate #102071)	Streetscape integrity and uniformity of design	The Bexley Road surface works, including compounds would be within and adjacent to the conservation area. Works within the conservation area would be temporary and in areas previously disturbed by the M5 East Motorway. Permanent infrastructure would be placed within the existing motorway corridor and would be landscaped.	No. Works within the conservation area would be temporary and in areas previously disturbed by the M5 East Motorway. Works adjacent to the conservation area would be temporary and permanent. However, these would be placed within the existing motorway corridor and would be landscaped.

Item name and ID	Aesthetic significance summary	Visual impact summary	Impact to significance?
Bexley North Railway Station Group	Representative example of a small Inter-War period suburban railway	Glimpses of the surface works may be possible.	No. The views to the station would be maintained.
Wolli Creek Valley (Rockdale LEP #I237)	The Wolli Creek Valley is integral to the protection of the riparian corridor of Wolli Creek and is today an essential green recreation corridor buffering the densely urban areas surrounding it.	Construction activities would occur directly adjacent to the item and the Bexley Road South motorway operations complex would be located in proximity to the item.	No. The works would not occur within the curtilage of the item and in areas previously disturbed by construction activity. The motorway operations complex would sit on the western side of Bexley Road and would not alter the views to or from the Valley substantially.
<i>Western Outfall Main Sewer, SHR #1647, Sydney Water s170 #4572728</i>	The listing assessment states: "Item does not have any notable outstanding aesthetic values."	The temporary and permanent activities would be located within 50 metres of the item. This includes the Arncliffe motorway operations complex which would be a smaller footprint to construction stage of the project.	No. No aesthetic significance identified.
Alexandra Canal (RNE #103889, SHR #01621, Sydney Water Section 170 #4571712, Sydney LEP I13, Marrickville LEP I270);	Sections of the canal exhibit relatively intact sections of ashlar stonework which are excellent examples of late 19 th century coastal engineering works that provide a pleasantly textured and coloured finish to the canal. The canal is a major visual landmark in the area and has strong landmark appeal, particularly as viewed from the Ricketty Street Bridge.	Two road bridge and one pedestrian/cycle bridge crossings and modification of the landscape at the crossing sites, being the demolition of warehouses that currently line the canal.	Yes. Sections of the sandstone embankments are proposed for removal and reinstatement following the insertion of stormwater outlets. Additional crossings of the canal have also been identified as a visual impact.
Waugh and Josephson industrial buildings, former, showroom, offices and workshops, including interiors (Marrickville LEP I275)	The main Inter-war Functionalist style industrial administration building and showroom which fronts Unwins Bridge Road is of aesthetic significance as an exemplar of the style and the manner in which it forms an important industrial streetscape on a major intersection.	The local road upgrades (Campbell Street, Unwins Bridge Road/May Street/ Bedwins Road) would be widened and upgraded.	No. The building would retain its landmark qualities and location on the intersection as no part of it would be obscured by the project.

Item name and ID	Aesthetic significance summary	Visual impact summary	Impact to significance?
Town and Country Hotel (Marrickville LEP I281)	Of aesthetic significance as a good example of an Inter war Free Classical style hotel on a prominent corner site.	The local road upgrades (Campbell Street, Unwins Bridge Road/May Street/ Bedwins Road) would be widened and upgraded.	No. The building would retain its landmark qualities and location on the intersection as no part of it would be obscured by the works. Additional separation to Campbell Street would also assist in minimising visual impacts
Group of Victorian filigree and Italianate terrace houses (Marrickville LEP 2011 I282)	Of aesthetic significance as a prominent row of 2 storey Victorian Italianate/Victorian Filigree style terraces, unusual in the manner that the terraces are built to respond to the curve of the road. Along with neighbouring Town & Country Hotel, the terraces form a unifying corner treatment to Unwins Bridge Road.	The local road upgrades (Campbell Street, Unwins Bridge Road/May Street/ Bedwins Road) would be widened and upgraded.	No. The terraces would retain their prominent corner location.
Terrace Group Including Interiors, 2-34 Campbell Road (Sydney LEP I12)	The terraces are a good example of mid Victorian workers housing which date from the early period of development for the Alexandria area.	The local road (Campbell Road) would be widened and upgraded.	The aesthetic significance of the terraces would not be impacted and the removal of the trees has the potential to positively impact on the aesthetic appeal from the street with greater visibility. Views from the terraces are currently of industrial/commercial buildings (Plate 92). This would be altered to be green parkland and the elevated pedestrian/cycleway (Figure 32). Architectural and landscape measures to mitigate the potential visual and noise impacts would be tailored to the individual terraces and their heritage significance during detailed design.
Sewerage Pumping Station No. 39 (SP0039) (Sydney Water Section 170 Heritage and Conservation Register #4571730; Sydney LEP 2012 I18 as Water Board Pump House Including Interior and Substructure)	SP0039 is a representative example of a small scale late Federation Free style utility building. It has strong streetscape appeal in its location on the corner of two streets.	The local road (Huntley Street) would be widened and upgraded.	No. The station would retain its landmark qualities and location on the intersection as no part of it would be obscured by the project.

Item name and ID	Aesthetic significance summary	Visual impact summary	Impact to significance?
Industrial Building "Frank G Spurway" (Sydney LEP 2012 I20)	The building represents a good example of the Inter-War Functionalist architectural style showing Dudock influences.	The local road (Euston Road) would be widened and upgraded.	No. The building would retain its representative heritage features and would remain a corner landmark as no part of it would be obscured by the works.
Cooper Estate Conservation Area (Sydney LEP 2012 C2)	The area has a diverse array of working class housing, warehouses and industrial development from the Victorian, Federation and Interwar periods.	The intersection of Huntley Street and Euston Road at the south eastern corner of the Conservation Area, would be widened and upgraded. Huntley Street is included in the listing.	No. The intersection is not visible from within the conservation area and the works do not constitute a significant impact.
Former Alexandria Spinning Mills (Sydney LEP 2012 proposed amendment)	Industrial complex fronting Euston Road	Tie in works associated with the local roads upgrade would be undertaken in the vicinity of the item consisting of line marking	No. The works are of a minor nature (tie in works) and would not alter views or setting of the item.
Terrace housing, including interiors (105-119 May Street, St Peters) (Marrickville LEP 2011 I273)	The terraces contribute to the streetscape	Tie in works associated with the local roads upgrades	No. The terraces would continue to contribute to the streetscape.
Macdonaldtown Stormwater Channel (Sydney LEP 2012 proposed amendment)	Concrete and brick stormwater drain. No assessed aesthetic significance.	The works would have no impact on the aesthetic/visual significance of the channel	No.
Southern Cross Hotel (Marrickville LEP 2011 I277)	Of aesthetic significance as an architect designed example of the Inter war Free Classical style on a prominent corner site.	The St Peters motorway operations complex, including ventilation facility, would be positioned to the east of the heritage item that may alter the visual setting of the hotel.	No. The hotel would continue to be located on a prominent corner and there are no direct impacts to the architectural design.
Service Garage (Marrickville LEP #I312)	The detailing and architectural style of the Garage is unusual as applied to a mechanical workshop. Paired with the prominent location on a busy intersection, the Service Garage is of local aesthetic significance.	The St Peters interchange would alter the visual setting of the Service Garage.	Minor. A statement of heritage impact is provided in Section 9.5 .

Item name and ID	Aesthetic significance summary	Visual impact summary	Impact to significance?
St Peters Brickpit Geological Site (non-statutory Register of the National Estate #16240)	No aesthetic significance	Site of the St Peters interchange	The brickpit does not hold aesthetic significance to be impacted by the project and has been subject to landfilling.
Goodsell Estate Heritage Conservation Area (Marrickville LEP C16)	Aesthetically significant for its narrow and dense streetscape development that establishes a tightly described street wall which creates a sense of intimacy and privacy within the area.	The local road upgrades (Campbell Street, Unwins Bridge Road/May Street/ Bedwins Road) would be widened and upgraded.	No. There would be no impact to the heritage conservation area, which is located to the north east of the project.



Plate 92 Prospect from 2-34 Campbell Road terraces across Campbell Road.



Figure 32 Photomontage of the view from 2-34 Campbell Road terraces ten years after opening of the project (AECOM, 2015d)

The Former Bedford Brickworks Group Including Chimneys, Kilns and Grounds, as described in **Section 6.12.2**, sits outside the study area of the project. Given the visual prominence of the item, additional consideration has been undertaken for this assessment.

The closest point of the project (being local road upgrades along Sydney Park Road, and the Princes Highway and Campbell Street intersection) to the heritage item would be around 400 metres. This would involve intersection works, road widening and line marking. It is not anticipated that this would impact the heritage significance or visual curtilage of the Former Brickworks. Similarly, further minor works would be undertaken at the intersection of Barwon Park Road and Campbell Road. These works would not be visible from the Former Brickworks as the view lines between the two points are screened by structures and mature vegetation. It is therefore concluded that there would be no impacts to the Former Brickworks.

The Technical Working Paper: Landscape and visual impact assessment (AECOM 2015d) for the project has assessed the visual impacts of the construction compounds. The visual impacts have been assessed against the heritage significance of the area in **Table 60**.

Table 60 Heritage assessment of visual impacts

Construction compound	Identified visual impacts	Assessment of heritage impact
Kingsgrove North construction compound	The residents adjoining the Kingsgrove North construction compound site to the north would be the most affected by the visual changes during the construction period. Existing outlook from their properties to vegetated open space would be blocked by tall noise walls, seen at close proximity. Further, pedestrians and cyclists would be directed past the back / side boundary to their properties and lighting would be brought adjacent to their properties for the safety of these users.	The Kingsgrove North construction compound is not located adjacent to or near statutory listed heritage items. The temporary visual impacts identified in the visual assessment would not have an impact to heritage.
Kingsgrove South and Commercial Road construction compounds	Few receiver groups would see the changes to the Kingsgrove South construction compound and Commercial Road construction compound, as the site is visually contained to the north by the M5 East Motorway, and is bounded to the south by industrial development. Users of the M5 Linear Park at this location would be redirected to the northern park pathway / cycleway so would not see the changes to the site during construction. The workers in the industrial compound to the south of the Kingsgrove South construction compound would be the most affected by the visual changes to the site during the construction period.	The Kingsgrove South construction compound is not located adjacent to or near statutory listed heritage items, being fronted by modern commercial properties. The temporary visual impacts identified in the visual assessment would not have an impact to heritage.
Bexley Road North construction compound	Residents with adjoining boundaries were also assessed as having a higher sensitivity to visual changes that may occur along their common boundaries, or be affected by overshadowing from the built elements of the site. As such, residents of Flatrock Road and Jones Avenue who share a common boundary with Bexley Road North construction compound were assessed as having a High impact rating.	The Bexley Road North construction compound is located across Bexley Road from the non-statutory Register of the National Estate listed Clemton Park Urban Conservation Area. The temporary visual impacts identified in the visual assessment would not have an impact to the identified heritage significance.
Bexley Road South construction compound	The Bexley Road South construction compound is more visually isolated than the Bexley Road North construction compound, as it is bounded by Bexley Road to the east, Wolli Creek to the south and the M5 East Motorway to the North. The receivers who would be most impacted by visual changes to the site would be pedestrians and cyclists using the existing pathway at the entry to the M5 Linear Park. This user group would pass a construction compound / site where the existing view is to a mature vegetated park and riparian corridor beyond. Some residential neighbours would view the changes to the site, but the receiver number is low and receivers would see the changes from a moderate distance away, and with a major road and pedestrian overpass between them and the site.	The Bexley Road South construction compound is not located adjacent to or near statutory listed heritage items, being fronted by modern commercial properties and the existing M5 East Motorway. No views to or from the non-statutory Register of the National Estate listed Clemton Park Urban Conservation Area, located across the M5 have been identified. There would be no visual impacts to heritage significance.
Bexley Road East construction compound	The Bexley Road East construction compound is visually isolated within the landscape due to landform, existing mature vegetation within and surrounding the site, and the existing sandstone walling along the western edge of the site fronting Bexley Road. The only receivers that may obtain views of built element within the compound are residential neighbours that front onto Johnston Street and Wolli	The Bexley road East construction compound is located within the curtilage of the non-statutory Register of the National Estate listed Clemton Park Urban Conservation Area. The construction compound is limited to previously cleared areas, with visual impacts being contained to a small number of residences in

Construction compound	Identified visual impacts	Assessment of heritage impact
	Avenue, whose properties sit at a higher level and may have views into the site. These views may be framed or limited by existing mature vegetation within the back gardens of properties, or on the compound site itself. Further, the built elements within the compound are low (site offices and ablutions blocks), with a majority of the site used for parking. A four to 4.5 metre noise barrier / hoarding would surround the site and may block some views for these residents.	Johnston Street and Wolli Avenue. Views would be minimally impacted with no long-term impact to the identified heritage significance. As the impacts are temporary, no mitigation is considered to be warranted.
Arncliffe construction compound	The significant change in character of this site from a green open space to a construction compound with associated construction activity and removal of mature vegetation, coupled with the sensitivity of residents to change in views to their environment has resulted in a number of High / High – Moderate ratings for visual impact at this location. Further study into the possible retention of mature trees, particularly along the boundary of the golf course, would assist in mitigating the visual impact for surrounding neighbours and users of the Cook Park Trail.	The Arncliffe construction compound is located around 65 metres from the State Heritage Register and Sydney Water Section 170 Heritage and Conservation Register listed Western Outfall Main Sewer (Rockdale to Homebush). The views to and from the item have not been identified as contributing to the heritage significance of the sewer. As such, the Arncliffe construction compound would not impact on the significance of the sewer. While there will be visual impacts to other receivers in the vicinity, these items are not of heritage significance. There would be no visual impacts to heritage items as a result of the Arncliffe construction compound.
Canal Road construction compound	The Canal Road construction compound would be located on the north-eastern side of Canal Road and the southern side of the Princes Highway; St Peters. Identified receivers adjacent to the compound consist of road users, commercial complexes, the Southern Cross Hotel and St Peters Anglican Church. The visual assessment determined that, at worst, there would be glimpses from the Church towards the compound, due to vegetation, distance and angles. The Canal Road construction compound lies within an area of low scenic value due to the surrounding land use of industrial and commercial enterprise, and flanked by two major roads. The sensitivity of visitors to local heritage items is reduced due to the utilitarian character of the surrounding area. Parts of the site on which the compound is situated is an enclosed, visually inaccessible area with a high level of existing construction activity, due to its existing use as a landfill. All these factors influence the low visual impact ratings for changes occurring on the site.	The Southern Cross Hotel is listed on Marrackville LEP 2011 as an item of local significance. An item listed on the State Heritage Register, St Peters Anglican Church is located around 90 metres north east of the compound. The visual assessment indicated that there would not be a substantial change in the visual outlook from either heritage item. It is therefore considered that there would be no visual impacts to the heritage items as a result of the Canal Road construction compound.
Campbell Road construction compound	The Campbell Road construction compound would be located on the southern side of Campbell Road between Woodley Street and Harber Street, St Peters. Receivers include a small portion of fringing residential development, recreational users of Sydney Park and road users. Although the Campbell Road construction compound	The terraces located at 2-34 Campbell Road are identified as items of local heritage significance on the Sydney LEP 2012. Views from the terraces currently consist of views towards industrial and commercial premises. Noise walls and hoarding

Construction compound	Identified visual impacts	Assessment of heritage impact
	is situated back from Campbell Road, the industrial buildings fronting the road would be demolished, which would allow views to the compound from the road and land beyond it. Two sensitive receiver groups are present: residents in a row of heritage listed terrace homes opposite the compound, and visitors to Sydney Park. Although residents would get uninterrupted views to the compound from their homes, views from the internal areas of Sydney Park are substantially screened by mature vegetation and landform.	would limit views into the compound. The impacts to the visual outlook should be minimised, where possible, by maintaining vegetation, where feasible and reasonable.
Landfill Closure construction compound	The Landfill Closure construction compound would be located on the southern side of Campbell Road, west of the Campbell Road construction compound, St Peters. Views of the construction compound would be possible from the industrial complexes accessed from the Princes Highway. The compound would be partially located within the non-statutory Register of the National Estate listing of the St Peters Brickpit Geological Site	The industrial complexes have no heritage significance. The Landfill Closure construction compound would partially located within the St Peters Brickpit Geological Site, although it is noted that this item is currently not available for the public to appreciate, being within an active landfill site.
Burrows Road construction compound	The Burrows Road construction compound would be located on the northern side of Burrows Road, west of the intersection with Campbell Road, St Peters. Receivers comprise industrial neighbours and road users. The Burrows Road construction compound is situated within an existing industrial area with low visual amenity and a low sensitivity of surrounding receivers. It has a limited visual impact on its surrounds, and would be in keeping with the character of the area.	There are no statutory or non-statutory listed heritage items in the vicinity of the Burrows Road construction compound. There would have no adverse visual impacts to heritage items as a result of the Burrows Road construction compound.
Campbell Road bridge construction compound	The Campbell Road bridge construction compound would be located on the southern side of Burrows Road, opposite the intersection with Campbell Road, St Peters. Receivers comprise industrial neighbours and road users.	The Campbell Road bridge construction compound is situated within an existing industrial area with low visual amenity and a low sensitivity of surrounding receivers. It has a limited visual impact on its surrounds, and would be in keeping with the character of the area. However, the compound does front the Alexandra Canal, which is listed on the State Heritage Register, Sydney Water Section 170 Heritage and Conservation Register and LEPs. Views to and from this section of the canal are currently obscured by the industrial complexes. The construction of the bridge, coupled with the proposed interpretation, would enhance the public views of the canal and increase public understanding and appreciation of the heritage significance of the canal.

Construction compound	Identified visual impacts	Assessment of heritage impact
Gardners Road bridge construction compound	The Gardeners Road bridge construction compound would be located on the southern side of Burrows Road in St Peters. Receivers comprise industrial neighbours and road users. The Gardeners Road bridge construction compound is situated within an existing industrial area with low visual amenity and a low sensitivity of surrounding receivers. It has a limited visual impact on its surrounds, and would be in keeping with the character of the area.	The Gardners Road bridge construction compound is situated within an existing industrial area with low visual amenity and a low sensitivity of surrounding receivers. It has a limited visual impact on its surrounds, and would be in keeping with the character of the area. However, the compound does front the Alexandra Canal, which is listed on the State Heritage Register, Sydney Water Section 170 Heritage and Conservation Register and LEPs. Views to and from this section of the canal are currently obscured by the industrial complexes. The construction of the bridge, coupled with the proposed interpretation, would enhance the public views of the Canal and increase public understanding and appreciation of the heritage significance of the canal.
Sydney Park construction compound	The Sydney Park construction compound would be located on the northern side of Campbell Road in Sydney Park, St Peters. Receivers comprise residential neighbours, road users and passive recreational users of the park. The Sydney Park construction compound lies within an existing, regionally important parkland surrounded by a number of sensitive receiver groups. Overall, the visual impact ratings for Receiver Locations associated with this compound are relatively high, which in part is due to receiver sensitivity, but also due to the significant change in character of views to the site, from an established parkland corner to a construction compound. Receivers who would experience the greatest change to the views and lighting levels are residents living in the apartments on the corner of Campbell Road and Barwon Park Road. These receivers currently have views into Sydney Park that would change to views to the construction compound. These changes are temporary, and the site would be returned to park on completion of the project.	Sydney Park is not identified as an item of heritage significance, although it has been determined to contain potential for archaeological relics (refer to Section 5.2.6). The receivers with views towards the compound are not identified heritage items. It is noted that the compound is located adjacent to the terraces at 2-34 Campbell Road, which are identified as items of local heritage significance on the Sydney LEP 2012. However, due to the viewlines from the terraces, which are confined to views directly across Campbell Road and directly north from the rear of the terraces, this construction compound would not be visible.
Western surface works	Motorists along the M5 would be subject to road construction works over a period of up to around three years. Visual impacts will be limited to the M5 corridor.	There would be no or limited views from Pallamanna Parade Urban Conservation Area of the construction works within the existing M5 East Motorway. These works would have no impacts to visual heritage significance.

7.2.5 Archaeological heritage

In addition to listed items with known archaeological potential identified within existing heritage registers (refer to **Chapter 6**), a review of historical parish maps and plans was undertaken for the study area to gain an understanding and appreciation of the potential archaeological heritage present within the identified impact areas. The review in **Section 5.2.3** identified the potential to impact on archaeological relics associated with a potential air raid shelter and two former brickworks along Euston Road, St Peters. Management measures that would be implemented prior to construction are provided in **Section 8.4**. It was determined that archaeological investigations were not required at this stage to inform the impacts of the project for the following reasons:

- The local roads upgrade along Euston Road has been designed to minimise acquisition and demolition impacts to the existing commercial and industrial complexes located along the eastern side of Euston Road by maximising the use of the existing road reserve along Euston Road.
- If impacts were to be avoided, the impacts would result in unacceptable acquisition and demolition impacts to the existing commercial and industrial complexes located along the eastern side of Euston Road.
- It is unclear to what extent the landscaping and rehabilitation of the former brick pits adjacent to these structures may have impacted on their archaeological survival.

The archaeological relics, if extant, can be mitigated through investigation and/or *in situ* preservation, but advanced knowledge would not allow for a redesign of the project due to the impacts identified above. Mitigation and management of this potential is discussed further in **Section 8.8**.

Elsewhere, there remains the potential to encounter deposits or relics in any context. The works in the St Peters interchange area retains the potential to encounter late 19th and early 20th century refuse deposits and brick wasters (bricks that did not fire properly or were faulty in some way) from the surrounding bricks works. Within road reserves there is potential to encounter earlier road surfaces beneath the current asphalt or evidence of the dismantled tram network in the vicinity of the Princes Highway and Campbell Street intersection. Should such deposits or relics be encountered they are unlikely to be of archaeological significance due to their ubiquitous nature and lack of provenance, making their ability to contribute to archaeological research minimal. Uncovering such finds would not trigger the unexpected finds procedure as they are anticipated and are unlikely to be of archaeological significance.

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7.3 Assessment of potential impacts

For the purposes of comparative assessment, the criteria in **Table 61** have been established for ranking the degree of impact from the construction and operation of the project.

Table 61 Non-Aboriginal heritage impact criteria

Impact assessment	Criteria
Negligible	- Impacts to the heritage item in question or its significance would be negligible and would not affect the overall heritage significance of the item.
Minor impact	- Minor impacts may occur to the listed item, typically with respect to its reported curtilage as opposed to the listed item itself. - These impacts would be minimal in nature and would not affect the overall heritage significance of the item. - Impacts that can be repaired or rectified, such as repair of cracking
Significant impact	- Impacts to the heritage item are unavoidable with the current project design. - The heritage significance of the item would be impacted.

7.4 Identified impacts to listed heritage items

Identified impacts to heritage items, both direct and indirect, are detailed in **Appendix B**.

In summary, 57 heritage items would be directly or indirectly impacted by the project. In some instances, an item would be directly and indirectly impacted by the project. Of the 58 heritage items:

- Three items would be demolished, being:
 - Warehouse 'Rudders Bond Store' (Sydney LEP I405);
 - Terrace group – 28-44 Campbell Street, St Peters (RMS Section 170 #4305629); and
 - House – 82 Campbell Street, St Peters (RMS Section 170 #4305643).
- Modifications ranging from a minor to a significant level of assessment would be required at three items, being:
 - Alexandra Canal (RNE # 4571712, SHR #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany LEP I1);
 - St Peters Brickpit Geological Site (RNE #16240); and
 - Goodsell Estate Conservation Area (Marrickville LEP 2011 C16).
- The project includes the full or partial acquisition of two items, which would result the permanent loss of this curtilage or would result in a change in use:
 - Service Garage – 316 Princes Highway (Marrickville LEP 2011 I312); and
 - Goodsell Estate Heritage Conservation Area (Marrickville LEP 2011 C16) (partial).

- The heritage values of seven heritage conservation areas would be partially and directly impacted, being:
 - Pallamanna Parade Urban Conservation Area (non-statutory Register of the National Estate #102089);
 - Kingsgrove East Urban Conservation Area (non-statutory Register of the National Estate #102106);
 - Clemton Park Urban Conservation Area (non-statutory Register of the National Estate #102071);
 - Bardwell Park Urban Conservation Area (non-statutory Register of the National Estate #102101);
 - Goodsell Estate Heritage Conservation Area (Marrickville LEP 2011 C16);
 - Cooper Estate Heritage Conservation Area (Sydney LEP 2012 C2); and
 - Sydenham Village (ID No 100061 under the Register of the National Estate).

Landscaping of the project near to some heritage conservation areas would minimise the potential impacts. Some of these conservation areas would be impacted by secondary direct impacts (as the tunnel passes under these heritage conservation areas). The overall heritage value of the heritage conservation areas would not be significantly impacted by the project.

- Twenty three items would be directly impacted due to construction vibration from surface works. These impacts are anticipated to have a negligible to minor risk of affecting the significance of the heritage items. The overall heritage value of the heritage items would not be significantly impacted by the project.
- Thirty four items would be directly impacted due to vibration, settlement and groundwater drawdown as a result of tunnelling works. These items are primarily located within the preferred project corridor and include items consisting of mainly residential houses. Impacts to these items are anticipated to be minor to negligible. Four of these items would also be directly impacted by construction vibration due to surface works. The overall heritage value of the heritage items would not be significantly impacted by the project.

Of the 57 heritage items, 21 items (including heritage conservation areas) may also be indirectly impacted by the project, due to temporary and / or permanent visual impacts. Of the 21 items, 20 items would also be directly impacted as outlined above. Impacts to the heritage items as a result of visual effects are anticipated to be minor to moderate. The overall heritage value of the heritage items would not be significantly impacted by the project.

There is also the potential for direct impacts due to potential eligibility for at-property acoustic treatment. Two of the 57 items have also been identified as being potentially eligible for consideration of property acoustic treatment. This would be confirmed during detailed design, in consultation with landowners, and with consideration of potential impacts to heritage values.

The cumulative impact of the project to heritage values would be moderate. These potential impacts are to be managed to reduce the risk of actual impacts to the identified items.

Table 62 Summary of impacts by heritage item identification number (*italics denote an item that may potentially be subject to more than one impact type and therefore appears twice in the table*)

Type of impact	Negligible impact	Minor impact	Significant impact
Primary Direct			
Demolition			– Warehouse 'Rudders Bond Store', Sydney LEP 2012 I405 – Terrace group – 28-44 Campbell Street RMS S170 #4305629 – House – 82 Campbell Street, RMS Section 170 #4305643
Modification		– Goodsell Conservation Area, Marrickville LEP 2011 C16	– Alexandra Canal, State Heritage Register #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany Bay LEP I1 and RNE # 4571712, – St Peters Brickpit Geological Site, RNE #16240
Acquisition		– Goodsell Conservation Area (partial), Marrickville LEP 2011 C16	– Service Garage, Marrickville LEP 2011 I312
Change in heritage conservation area values	– Pallamanna Parade Urban Conservation Area RNE #102089, – Kingsgrove East Urban Conservation Area RNE #102106 – Clemton Park Urban Conservation Area RNE #102071 – Bardwell Park Urban Conservation Area RNE #102101 – Cooper Estate Heritage Conservation Area (Sydney LEP 2012 C2)	– Goodsell Estate Heritage Conservation Area, Marrickville LEP 2011 C16	

Type of impact	Negligible impact	Minor impact	Significant impact
Secondary Direct			
Acoustic treatment (subject to confirmation during detailed design)		– <i>St Peters Public School, including interiors, Marrickville LEP 2011 I271</i> – <i>Terrace group – 2-34 Campbell Road, Sydney LEP 2012 I12</i>	
Vibration, settlement and groundwater drawdown from tunnelling works	– <i>Kingsgrove East Urban Conservation Area RNE #102106</i> – <i>Bexley North Railway Station Group Sydney Trains #4801898</i> – <i>Bardwell Park Urban Conservation Area RNE #102106</i> – <i>Western Outfall Main Sewer, SHR #1647, Sydney Water s170 #4572728</i> – <i>Southern Cross Hotel, Marrickville LEP 2011 I277</i> – <i>Bard of Avon – 39 Eden Street, Rockdale LEP I13</i> – <i>Californian bungalow house – 7 Fairview Street, Rockdale LEP I15</i> – <i>Californian bungalow house – 21 Fairview Street, Rockdale LEP I16</i> – <i>Street plantings – Firth Street, Rockdale LEP I18</i> – <i>Arncliffe Post Office, Rockdale LEP 2011 I19 and RNE#19170</i> – <i>Glenevie Lane, Rockdale LEP 2011 I20</i> – <i>Victorian shop and dwelling – 45 Firth Street, Rockdale LEP 2011 I21</i>	– <i>Service Garage, Marrickville LEP 2011 I312</i>	

Type of impact	Negligible impact	Minor impact	Significant impact
	– St Francis Xavier Church Group, Rockdale LEP 2011 I22 – St Francis Xavier Catholic Presbytery, Rockdale LEP 2011 I23 – Rosslyn hospital, Rockdale LEP 2011 I24 – House (31 Kyle Street), Rockdale LEP 2011 I35 – Victorian House – 16 Stanley Street, Rockdale LEP I48 – Victorian House – 20 Stanley Street, Rockdale LEP I49 – Victorian House – 22 Stanley Street, Rockdale LEP I50 – Victorian semi-detached dwelling – 26 Stanley Street, Rockdale LEP I51 – House (73 West Botany St)Rockdale LEP 2011 I56 – House – 148 Wollongong Road, Rockdale LEP I61 – Stotts Reserve Rockdale LEP 2011 I165 – Stone Federation House – 15 East Street, Rockdale LEP 2011 I81 – Arncliffe (Forest Rd) Overbridge Sydney Trains s170 #4805728 – Moreton Bay Fig Tree, Marrickville LEP 2011 I303 – Timber Slab Cottage, including interiors, SHR #01412, Marrickville LEP 2011 I294		

Type of impact	Negligible impact	Minor impact	Significant impact
	- Part of Westpac stores department and Penfolds wine cellar (former), including interiors, Marrickville LEP 2011 I299 - Brick Kerb and sandstone kerb guttering, Marrickville LEP 2011 I284 - Victorian filigree style sandstone faced residence, including interiors, Marrickville LEP 2011 I288 - St Mary / St Mina Coptic Orthodox Church, Marrickville LEP 2011 I289 (Note: to be demolished by Marrickville Council) - Sydenham Village, RNE #100061 - Arncliffe Railway Station Group SHR #01076, Rockdale LEP 2011 I1 and Sydney Trains Section 170 register #4801150		
Vibration from surface works	<i>Pallamanna Parade Urban Conservation Area RNE #102089,</i> <i>Bexley North Railway Station Group Sydney Trains #4801898</i> <i>Western Outfall Main Sewer, SHR #1647, Sydney Water s170 #4572728</i> - Remaining brick road and footpath paving and stone guttering, Marrickville LEP 2011 I283 <i>St Peters Public School, including interiors, Marrickville LEP 2011 I271</i> <i>St Peter's Anglican Church and Graveyard, RNE #1716, SHR#00032, Marrickville LEP 2011 I275</i>	<i>Clemton Park Urban Conservation Area RNE #102071</i> <i>Wolli Creek Culvert, RMS Section 170 #4305006</i> <i>Terrace housing, including interiors - 105-119 May Street, Marrickville LEP 2011 I273</i> <i>Waugh and Josephson industrial buildings, former, showroom, offices and workshops, including interiors, Marrickville LEP 2011 I280</i> <i>Town and Country Hotel, including interiors, Marrickville LEP 2011 I281</i> <i>Group of Victorian Filigree and Victorian Italianate terrace houses – Narara, including interiors, Marrickville LEP 2011 I282</i>	<i>St Peters Brickpit Geological Site, RNE #16240</i> <i>Alexandra Canal, RNE # 4571712, SHR #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany Bay LEP I1)</i>

Type of impact	Negligible impact	Minor impact	Significant impact
	– Southern Cross Hotel, Marrickville LEP 2011 I277 – Cooper Estate conservation area, Sydney LEP 2012 C2	– Service Garage, Marrickville LEP 2011 I312 – Goodsell Estate Heritage Conservation Area, Marrickville LEP 2011 C16 – Terrace group – 2-34 Campbell Road, Sydney LEP 2012 I12 – Water Board pump house, including Interior and substructure, Sydney LEP 2012 I18, Sydney Water Section 170 #4571730 – Industrial Building, 'Frank G Spurway', Sydney LEP 2012 I20 – Macdonaldtown Stormwater Channel, Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings) #3 – Former Alexandria Spinning Mills, Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings) #14	
Indirect			
Visual	– Wolli Creek Valley, Rockdale LEP I237 – Bexley North Railway Station Group Sydney Trains #4801898 – Former Alexandria Spinning Mills, Proposed amendment to Sydney LEP 2012 (Industrial and warehouse – Pallamanna Parade Urban Conservation Area RNE #102089, – Kingsgrove East Urban Conservation Area RNE #102106 – Clemton Park Urban Conservation Area RNE #102071	– Terrace housing, including interiors - 105-119 May Street, Marrickville LEP 2011 I273 – Waugh and Josephson industrial buildings, former, showroom, offices and workshops, including interiors, Marrickville LEP 2011 I280 – Town and Country Hotel, including interiors, Marrickville LEP 2011 I281 – Group of Victorian Filigree and Victorian Italianate terrace houses – Narara, including interiors, Marrickville LEP 2011 I282 – Service Garage, Marrickville LEP 2011 I312	– St Peters Brickpit Geological Site, RNE #16240 – Alexandra Canal, RNE # 4571712, SHR #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany LEP I1

Type of impact	Negligible impact	Minor impact	Significant impact
	– <i>Cooper Estate Conservation Area (Sydney LEP 2012 C2)</i> – <i>Western Outfall Main Sewer, SHR #1647, Sydney Water s170 #4572728</i> – <i>Southern Cross Hotel, Marrickville LEP 2011 I277</i>	– <i>Terrace group – 2-34 Campbell Road, Sydney LEP 2012 I12</i> – <i>Water Board pump house, including Interior and substructure, Sydney LEP 2012 I18, Sydney Water Section 170 #4571730</i> – <i>Industrial Building, 'Frank G Spurway', Sydney LEP 2012 I20</i> – <i>Macdonaldtown Stormwater Channel, Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings) #3</i> – <i>Goodsell Estate Heritage Conservation Area, Marrickville LEP 2011 C16</i>	

8.0 Management Measures

8.1 Introduction

Chapter 7.0 identified that there is potential for heritage items to be potentially impacted directly or indirectly, by vibration and settlement associated with tunnelling activities, vibration associated with surface works and visual impacts. These impacts can be managed or mitigated through the implementation of measures. The following sections outlines the proposed measures based on the impact type.

8.2 General

The project would result in an alteration, both real and perceived, to the interactions between people, traffic and the built environment. This will be particularly evident around the St Peters interchange. It is recommended that this impact be mitigated through the development and implementation of an interpretation plan during detailed design, which would identify opportunities to reflect the history of the areas in the newly built fabric. The plan should be developed in conjunction with the urban design to develop specific suitable interpretation in areas where there will be changed use including, but not limited to:

- Alexandra Canal and the industrial heritage of the area; and
- The St Peters Brickpit geological site.

Further detail of the recommended Non-Aboriginal heritage interpretation plan is provided in the following sections of this report.

The construction environment management plan would also be prepared following detailed design and implemented prior to and during construction, detailing how construction impacts on heritage would be minimised and managed. As a minimum, the plan will include the following elements:

- Induction protocols for staff and project personnel to undertake a cultural heritage induction, to assist them in understanding and complying with their legal obligations under the Heritage Act;
- A list, plan and GIS layer showing the location of identified heritage items;
- The significance assessment and Statement of Significance for each site (refer to the relevant sections in **Chapter 6.0**);
- Mitigation measures identified for relevant items and details on when the measures are to be implemented;
- Protocols and procedures to be enacted during construction to ensure the protection of items of heritage significance; and
- An unexpected finds procedure in the event that further sites are identified during works, including skeletal remains.

8.3 Significant impact

The assessment has found that there would be a significant impact to seven items, primarily due to the proposed demolition, acquisition or modifications required. These items are:

- Warehouse 'Rudders Bond Store', Sydney LEP 2012 I1405.
- Terrace group – 28-44 Campbell Street, Roads and Maritime section 170 #4305629.
- House – 82 Campbell Street, Roads and Maritime section 170 #4305643.
- Service Garage, Marrickville LEP 2011 I312.
- Alexandra Canal, State Heritage Register #01621, Sydney LEP 2012 I3, Marrickville LEP 2011 I270, Botany LEP I1 and RNE # 4571712.
- St Peters Brickpit Geological Site, RNE #16240.

Three items, being the Rudders Bond Store, and the houses at 28-44 and 82 Campbell Street, are proposed for demolition as a result of the project. The houses have been assessed as being of local significance, while the Rudders Bond Store is of State significance. As outlined in **Chapter 7.0**, the first option assessed was to avoid the impacts through planning and design, followed by reduction in footprint or modification in construction methodology. This has not been possible for the reasons provided in **Chapter 7.0**. The impact significance of the items can therefore be ameliorated through the implementation of two management measures: archival recording and salvage, as elaborated below.

Firstly, prior to the commencement of construction works, all three items should be subject to a full archival recording following the NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006).

Secondly, consideration should be given as to whether elements of the houses could be salvaged and used to maintain or restore other properties managed by Roads and Maritime. Similarly, a feasibility study should be undertaken to determine whether the Rudders Bond Store, in particular the laminated columns, could be relocated and re-erected. The brickwork and cladding are not considered to be of particular significance, however, the laminated columns are rare and consideration should be given to their reuse. In addition to this, options would be investigated during detailed design for ways in which the history of the Ralph Symonds company can be documented in a manner that would present it to a national audience and in partnership with stakeholders such as the City of Sydney and Powerhouse Museum. The focus would be on their development of innovative timber construction methods during and after the Second World War.

In addition to the proposed complete demolition of the above three items, the project would require the construction of stormwater discharge points into Alexandra Canal, which would have a direct impact. Secondary direct impacts would also occur as a result of vibration intensive construction activities occurring in close proximity of the embankments. To minimise the potential impacts on the canal, the following management measures are to be implemented:

- Monitoring of the canal should be undertaken during the works to ensure vibration is not impacting on the canal walls;
- A condition report of the canal brickwork adjacent to the bridge crossings and drainage discharge points, including areas beneath the bridges and areas impacted by associated construction works, would be undertaken prior to the commencement of construction. Any rehabilitation and conservation requirements would be determined in consultation with Sydney Water.
- An archival recording of the canal walls should be undertaken, involving both scale drawings and photography, prior to the removal of the sandstone blocks;
- The sandstone blocks should be numbered and recorded in such a way that those not displaced by the discharge points can be replaced in their previous location;
- Sandstone blocks displaced by the discharge points should be stockpiled for use in repairs of other sections of the canal; and
- Heritage interpretation regarding the canal should be installed in proximity to the item, ideally at the Campbell Road pedestrian and cyclist bridge given this would have greater pedestrian accessibility, in accordance with an interpretation plan.

The works within the non-statutory listing for the St Peters Brickpit Geological Site, while noting that this site has been an active landfill, would result in the modification of the geological site, but ultimately, the geological features are such that they would be preserved within behind a new landform or terraced retaining walls at the St Peters interchange. In addition, the public access created by the interchange could allow for greater public knowledge of the geological and palaeontological significance of the site and the Sydney basin more generally, through the following mitigation measures:

- Interpretation of the geology of the area within the interchange and surrounds, including opportunities to:
 - the geological interpretation of the site in consultation with City of Sydney; and
 - Integrate the geological/palaeontological discovery of the *Paraclytosaurus davdii*.

- Retaining an exposed section of the fresh shales and siltstones, including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults, if safe to do so for both landform stability and ongoing access for interpretation;
- Photographic and drawn archival recording of the geological features prior to and/or during construction; and
- An assessment and/or consultation with a palaeontologist to determine whether the project impact area has potential to contain further specimens of scientific interest.

The project proposes to acquire the Service Garage, located on the corner of Princes Highway and Canal Road. The acquisition and location of the service garage within the St Peters interchange would result in a change in use. As the building has been used as a service garage since the 1940s, this has been assessed as a significant heritage impact. A statement of heritage impact is provided in **Section 9.3.1A** photographic archival recording would be undertaken prior to the current use ceasing. The archival recording should conform to the guidelines provided in *How to prepare archival records* (NSW Heritage Office, 1998a) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006). The archival recording should be integrated into on-site future interpretation of the item.

8.4 Acquisition

The curtilage of the Goodsell Estate Heritage Conservation Area has been identified as potentially being impacted by the project. The impacts to the Goodsell Estate Heritage Conservation Area are considered to be minimal and no mitigation is required.

8.5 Vibration (surface and tunnelling)

Vibration has been identified as a secondary direct impact for both the surface and subsurface (tunnelling) works. The following mitigation measure is proposed to address potential impacts for both secondary direct impacts.

The potential impacts on heritage items due to construction vibration would be confirmed during detailed design. If required, mitigation and management measures to minimise impacts would be investigated, and monitoring would be carried out at properties identified as being above recommended criteria. Property dilapidation surveys would also be carried out for all heritage items located within the preferred project corridor or properties within recommended safe working setbacks (in the case of potential surface vibration impacts).

Detailed mitigation and management measures would be developed for each heritage item directly impacted by the project once final disturbance areas have been identified through detailed design. These mitigation and management measures would be included in the construction environmental management plan(s) for the project.

8.6 Settlement

Settlement has been identified as a secondary direct impact associated with the tunnelling works. Any potential impacts would result in cosmetic damage, depending on the structure and its location. The potential impacts on heritage items due to settlement would be confirmed during detailed design. If required, mitigation and management measures to minimise impacts would be investigated. Property dilapidation surveys would also be carried out for all heritage items located within the preferred project corridor.

8.7 Visual impacts

Table 59 provides a summary of the aesthetic significance, the project and provides an indication as to whether the heritage significance would be impacted. **Section 7.2.4** discussed the potential visual impacts and determined there was unlikely to be major visual modifications to the outlook at the majority of identified heritage items. There would be alterations to the visual outlook from the terraces located at 2-34 Campbell Road, St Peters. It is recommended that landscaping treatments to mitigate these impacts be investigated during detailed design.

The exception to this is Alexandra Canal, a State heritage item. The Conservation Management Plan (NSW Government Architect's Office, 2004) for the item indicates that the open air space above the canal is important to the significance of the item. The document also recommends that the number of new bridge crossings be limited in order to maintain the open air space. The need for the bridge crossings as part of the project is detailed in Chapter 4 of the EIS and Technical Working Paper: Traffic and Transport (AECOM, 2015) for the New M5.

The impacts of the new crossings can be minimised through the design of the bridges. The Conservation Management Plan for the item recommends that the following is considered for any new crossings:

- The bridges should have a minimum two metre freeboard above Mean High Spring Tide to allow the canal to stay open to small craft in line with policy 39 of the Conservation Management Plan
- However, the scale should be limited to ensure the crossings do not overwhelm the canal, in line with policy 36 of the Conservation Management Plan
- The bridges should be set back from the edge of the Canal to allow for unimpeded pedestrian access, in line with policy 40 of the Conservation Management Plan
- Ensure high quality urban design in relation to the crossings and pedestrian connections to reflect their historical and geological context and the industrial character of the place.

These considerations have been assessed in the statement of heritage impact, which is provided in **Section 9.2**.

As no impacts to heritage significance have been identified as arising out of the visual modifications to the environment for other heritage items, no statement of heritage impact for those items are required. The landscape design for the project would be further developed during detailed design and would take into consideration the heritage significance of items in the vicinity. The design would seek to further minimise and mitigate the minor visual impacts identified.

8.8 Archaeological potential

In addition to listed items with known archaeological potential identified within existing heritage registers (refer to **Chapter 6**), a review of historical parish maps and plans was undertaken for the study area to gain an understanding and appreciation of the potential archaeological heritage present within the identified impact areas. This review identified additional areas of archaeological potential within Sydney Park. An archaeological testing and excavation methodology has been prepared and can be found in **Appendix C**.

In addition, there remains the potential to encounter deposits or relics in any context. The works in the St Peters Interchange area retains the potential to encounter late 19th and early 20th century refuse deposits and brick wasters (bricks that did not fire properly or were faulty in some way) from the surrounding bricks works. Within road reserves there is potential to encounter earlier road surfaces beneath the current asphalt or evidence of the dismantled tram network in the vicinity of the Princes Highway and Campbell Street intersection. Should such deposits or relics be encountered they are unlikely to be of archaeological significance due to their ubiquitous nature and lack of provenance, making their ability to contribute to archaeological research minimal. The unexpected finds procedure employed for the project includes provisions for the assessment of the archaeological significance of all deposits or relics. The assessment of the St Peters Geological Brickpit identified that it was unknown whether the site may still contain paleontological specimens of scientific interest. It is recommended that a palaeontologist be consulted.

8.9 Assessment of the suitability of the proposed measures

The SEARs for the historical impact assessment require the effectiveness and reliability of the proposed management and mitigation measures be evaluated (**Section 1.4**).

The management of the heritage assets within the construction and operation area would be undertaken through a Non-Aboriginal Heritage Management Plan. Such management documents are commonly used as heritage management tools and their effectiveness and reliability is supported by Heritage Council of NSW advocacy. Should impacts be unavoidable, the management plan would contain management and mitigation measures relevant to the type and significance of the site, as outlined in this section of the technical working paper. The use of archival recordings, recommended for those items proposed for demolition, is a standard management measure, as recommended in NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006).

The level of effectiveness in mitigating the impact to individual items and conservation areas has been ranked in the following manner:

- Highly effective – the measure completely mitigates the impacts to the item's/area's heritage significance;
- Moderately effective – the measure largely mitigates the impacts to the item's/area's heritage significance, but the impact is not fully mitigated;
- Somewhat effective – the measure only partly mitigates the impacts to the item's/area's heritage significance;
- Ineffective – the measure is not effective in mitigating the impacts to the item's/area's heritage significance.

The rankings of the effectiveness of the measures are shown in **Appendix B**. As every effort has been made to effectively mitigate the impacts of the project through avoidance in the first instance, followed by reduction in footprint or modification in construction methodology, the measures selected are, for the most part highly effective.

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9.0 Statements of Heritage Impact

9.1 Introduction

The objective of a statement of heritage impact is to evaluate and explain how the proposed development, rehabilitation or land use change will affect the heritage value of the site and/or place. A statement of heritage impact should also address how the heritage value of the site/place can be conserved or maintained, or preferably enhanced by the proposed works. These statements of heritage impact have been prepared in accordance with the following guidelines: NSW Heritage Office & Department of Urban Affairs and Planning *NSW Heritage Manual* (1996); and NSW Heritage Office *Statements of Heritage Impact* (NSW Heritage Office, 2002). The guidelines pose a series of questions as prompts to aid in the consideration of impacts due to the project. Where the questions in the guidelines do not adequately capture the potential impacts of the current proposal, the guidelines allow for the development of relevant questions.

It has been determined above that the majority of items within the project area have the potential to be subject to negligible to minor heritage impacts, mostly associated with surface vibration or subsurface vibration and settlement associated with tunnelling. As these impacts are expected to be negligible for affected heritage items, impacts will not affect the heritage significance of the items (refer to **Section 8.5**) and, therefore, a statement of heritage impact has not been prepared in relation to these impacts.

Statements of heritage impact have been prepared for the following items which would be significantly or physically impacted by acquisition by the project:

- Alexandra Canal (refer **Section 6.12.6**);
- Rudders Bond Store (refer **Section 6.12.21**);
- Terraces and houses on Campbell Street (refer **Sections 6.12.8** and **6.12.9**);
- Service garage (refer **Section 6.12.11**); and
- Goodsell Heritage Conservation Area (refer **Section 6.12.7**).

These items are shown in Figure X.

9.2 Alexandra Canal

Alexandra Canal is identified as an item of State significance, being listed on the State Heritage Register (SHR #01621) as well as the heritage registers of Marrickville Council (I270), City of Sydney (I13) and City of Botany Bay (I1). As an asset of Sydney Water, it is also listed on that agency's Section 170 Heritage and Conservation Register (ID# 4571712).

9.2.1 Proposed impacts

The project proposes the construction of three new crossings of the Alexandra Canal, being:

- A road bridge that would provide a continuation of Campbell Road across the canal to Bourke Street (Campbell Road bridge) and an adjacent pedestrian and cycleway (Campbell Road pedestrian and cyclist bridge) (**Figure 33**).
- A road bridge that would connect with Gardeners Road (the Gardeners Road bridge). The Gardeners Road bridge would be of a similar design to the Campbell Road bridge.

The crossings would provide a clear span across the canal to avoid piers within the centre of the canal. In order to achieve this, however, the abutment piers for the road bridges would be located one metre from top of the sandstone embankment walls. Construction of the crossings would be managed to ensure there are no direct impacts to the sandstone embankments on either side of the canal. The crossings would result in direct vibrational impacts and indirect visual impacts.

The St Peters interchange and the crossings would also involve the construction of stormwater discharge points into the canal at the Campbell Road bridge crossing location. The discharge points are in the form of a 3300 by 2400 millimetre channel in the western wall and a 525 millimetre pipe in the eastern wall. These outlets would require the removal of sections of the Broken Range Ashlar embankment walls, which have been identified in the Conservation Management Plan for the item as being of high significance. Fabric of high significance should be retained and restored as it has been identified as being of State significance (NSW Government Architect's Office, 2004:70).



Figure 33 Visual representation of the Campbell Road crossing of the Alexandra Canal. View north west.

9.2.2 Process questions

The questions of greatest relevance are those relating to 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 new development affect views to and from the heritage item? What has been done to minimise negative effects?
- Is the development sited on any know, 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 (eg form, siting, proportions, design)?
- Will the additions visually dominate the heritage item? How has this been minimised?
- Will the public, and uses of the item, still be able to view and appreciate its significance?

Each of these will be addressed below.

How is the impact of the new development on the heritage significance of the item or area to be minimised?

The Conservation Management Plan for the canal includes policies intended to protect the heritage significance of the item. **Table 63** provides the policies relevant to the project and provides commentary on how the policy has been integrated into the design or how impacts would be mitigated.



Figure 34 Heritage items with significant impacts

- **Why is the new development required to be adjacent to a heritage item?**

By its very nature, the canal forms a physical barrier between east and west for traffic, pedestrians and cyclists. The crossings are required to bridge this barrier and improve traffic flow throughout the area.

- **Is the development sited on any known, or potentially significant archaeological deposits? If so, have alternative sites been considered? Why were they rejected?**

The Conservation Management Plan identifies that the canal has limited archaeological potential, being confined to occupation deposits associated with the construction of the canal (NSW Government Architect's Office, 2004: 73) and the State Heritage Register statement of significance indicates that the canal has no historical archaeological potential. However, it has been identified in **Section 6.12.6**, that a wharf was constructed at the intersection of Campbell Road and the canal. Relatively little is known about this wharf and it is unclear whether pylons are retained beneath the water surface. While the proposed bridge and the construction methodology do not impact on this area, it is located in close proximity to works. It is therefore recommended that consideration be given during construction to ensure the approximate location of the wharf is avoided. No other known deposits or relics are located within the curtilage of the canal that may be impacted by the proposed works. Nevertheless, stop work provisions would be provided in the Non-Aboriginal Construction Management Plan in the unlikely event that relics or deposits are encountered.

Table 63 Policies contained within the Alexandra Canal Conservation Management Plan relevant to the New M5 project (Source: NSW Government Architect's Office, 2004)

Policy No.	Policy	Page No.	Response
19	Any development within the defined curtilage of the canal should accordingly take responsibility for the conservation of the listed heritage items within that curtilage. Stabilisation of the canal walls should be conducted ahead of any construction or redevelopment within the curtilage area. Responsibility for any conservation/ stabilisation work should fall equally with the SWC and the development proponent.	64	The construction of the stormwater outlets into the canal would necessitate the removal of two sections of the Broken Range Ashlar embankment walls. These sections would be reinstated following the insertion of the channel and pipe, reusing the sandstone blocks where possible. Stabilisation of the surrounding sections of wall would be undertaken as necessary. Any rehabilitation and conservation requirements would be determined in consultation with Sydney Water.
28	Any development proposal within the site curtilage of the Alexandra Canal must also plan for the conservation of the canal. This includes programming restoration works with the development, stabilisation of the canal walls, reversal of intrusive fabric in the canal and responsibility for water treatment and water disposal in the canal.	66	If necessary, conservation of the canal walls would be undertaken in the vicinity of the crossings and stormwater discharge points. This would be determined in consultation with Sydney Water.
29	Ensure that all proposed work to this site is assessed for heritage impacts against the policies of the CMP	66	This table (Table 63) assesses the proposed works against the policies of the Conservation Management Plan.
34	Any new developments within the curtilage of the site would prepare a statement of heritage impact and outline all positive and negative impacts on the significance of the Alexandra Canal and any of the heritage items within the curtilage area associated with the canal. It must outline a strategy that protects the stability of the embankment walls.	67	Section 9.2 includes a statement of heritage impact to assess the potential impacts to the heritage significance of the canal. The strategy to protect the stability of the embankment walls would be included in the Construction Management Plan. In summary, however, the crossing abutments would be placed 3.5 metres from the canal walls. The canal walls would undergo condition assessment prior to construction commencing and would be monitored with in situ vibration monitors throughout the construction.
36	Any new development should be of a small enough scale so as to not overwhelm the existing landscape, in terms of form, scale or height.	67	The crossings are simple in form and have been kept to a minimum in terms of scale. In order to form a clear span across the canal, the piers do sit close to the sandstone embankment walls, forming a pinch point. However, this is mitigated as there is no necessity for a pier in the canal itself.
37	The open air space over the canal should be retained as far as possible and bridges over the canal should be restricted.	67	This is addressed in detail below the table.

Policy No.	Policy	Page No.	Response
38	Before any new crossings or bridges are undertaken, existing crossings should be considered to see if they can have a dual function. Any new crossings should be designed to have a multi-purpose function such as a pipe/pedestrian bridge if possible.	67	The Gardeners Road bridge would be a dual traffic and pedestrian/cycle bridge. The Campbell Road bridge proposes a separate pedestrian/cycle bridge running adjacent to the vehicular bridge. It is necessary to provide a bridge in order to allow for a continuous pedestrian/cycle path from Sydney Park and across the canal and grade separation at the local roads, while moderating the changes in elevation.
39	Any new and replacement crossings or bridges must maintain a minimum two metre freeboard height above Mean High Water Spring Tide to allow the Canal to remain navigable to small craft.	67	The crossings maintain a minimum two metre freeboard height above Mean High Water Spring Tide. There are no piers proposed within the canal and therefore the crossings do not pose a navigation hazard.
40	Any new and replacement crossings or bridges must maintain pedestrian access along the banks and be set back off the significant sandstone embankment walls as set down in the engineering report Appendix A (of the CMP) to protect the stability of the walls.	67	The crossings would not impede pedestrian access along either bank and the design includes pedestrian access in the vicinity of the crossings.
41	All fabric of Exceptional, High and Moderate grading of significance shall be conserved to protect it at a State Significant level.	70	The proposed construction of additional stormwater outlets into the canal would result in impacts to two sections of Broken Range Ashlar embankment wall, graded as of high significance. During the reconstruction of the wall sections, the sandstone blocks would be reinstated, where possible, in their former positions. The disturbance of the sandstone has been minimised by redirecting stormwater to existing discharge points where possible, rather than creating new points. The design also incorporates one larger channel to limit the number of points required. The channel replaces up to four smaller discharge points.
59	Ensure all works to the site are undertaken by skilled trades people with experience working on heritage sites.	72	The construction of the crossing would be undertaken by skilled trades people, who would take advice from heritage professionals as and when necessary.
63	All Broken Range Ashlar embankment walls of Alexandra Canal are to be conserved.	72	It would be necessary to remove two sections of the Broken Range Ashlar embankment walls, however, they would be reinstated, to the extent possible, in their original locations.
64	All items of High and Moderate Significance are to be conserved or restored to their original format.	72	As stated above, the removed sandstone blocks would be replaced following the insertion of the proposed pipe and channel in their original format. This would require careful recording and numbering of the blocks to ensure they can be repositioned in their original locations.

Policy No.	Policy	Page No.	Response
68	All new pipes entering Alexandra Canal will follow the Engineering guidelines set down in "Strategic Bank Stabilisation Plan for Alexandra Canal" DPWS 2002. All existing pipes entering Alexandra Canal that are causing damage to the Gauged Bond Ashlar should be replaced so that they will follow the Engineering guidelines set down in this CMP	72-73	The pipes entering the canal as a result of the project have been designed to comply with or exceed the engineering guidelines. Both locations would be provided with scour protection mattresses to ensure that the additional water flow would not damage the canal indirectly.
70	Recognise the potential presence and significance of archaeological remains within the site.	73	The potential relics associated with the former wharf have been identified. No direct impacts are anticipated to this area. In the unlikely event that unidentified archaeological deposits and relics are encountered, stop work procedures would be included in the Environmental and Construction Management Plans.
71	Ensure excavation works are avoided in areas of archaeological sensitivity wherever possible. If excavation in these areas is essential and are of a minor nature, ensure works are supervised by a qualified historical or Aboriginal archaeologist.	73	There are no known archaeological sensitivities in the areas of disturbance and the supervision of a qualified historical archaeologist is not warranted.
76	New penetrations to the canal should be kept to an absolute minimum and should be reviewed by a suitably qualified heritage professional and follow the Engineering guidelines included in "Strategic Bank Stabilisation Plan for Alexandra Canal" DPWS 2002.	73	New discharge points into the canal have been minimised to the extent possible and have been designed to comply with or exceed the engineering guidelines.
82	Photographically record the site and canal before, during and after any major changes and use this record in the site's interpretation. Place copies of this record with the Botany, South Sydney and Marrickville Library Local Studies Collection.	74	A photographic archival recording would be undertaken prior to the start of construction.

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- **Is the new development sympathetic to the heritage item? In what way (eg form, siting, proportions, design)?**

The crossings and discharge points have been designed to minimise the impact on the canal. The bridges have been designed to be minimalist and simple so as not to detract from the surroundings. In allow for the slender superstructure and narrow piers, the bridges have been designed using the balanced cantilever technique.

The height above the canal has also been kept to a minimum (giving due regard to the requirement to allow two metres freeboard at spring high tide) and will thereby minimise overwhelming the existing landscape (CMP Policy 36). In this way the proportions are sympathetic to the canal and maintain to the extent possible the open air space over the canal (CMP policy 37).

The visual impacts of the proposed stormwater outlets would be minimised through the use of sandstone to obscure the concrete pipes and box culvert. The stormwater design has also increased the length of pipes required outside the curtilage of the canal in order to connect with existing stormwater discharge points. This design has allowed at least four fewer new discharge points with the associated impacts to the State significant Broken Range Ashlar sandstone wall sections.

- **Will the crossings visually dominate the heritage item? How has this been minimised? How does the new development affect views to and from the heritage item? What has been done to minimise negative effects?**

The specific crossing locations, at Campbell Road and Gardeners Road, have been selected based on the requirements of vehicular traffic, however, the spatial arrangement of the canal is such at this point that the visual impacts are also minimised. The Conservation Management Plan, in policy 37, recommends that open air space over the canal should be retained as far as possible, with the number of crossings kept to a minimum. While the construction of the crossings is necessary, the visual impact, particularly the maintenance of the open air space, has been minimised through the placement of the crossings. From the present crossing at Ricketty Street, the Campbell Road bridge would not be visible, due to the eastward curve of the canal. The reverse is equally true; the Ricketty Street Bridge would not be visible from the Campbell Road bridge, thereby maintaining the sense of open space.

The greatest impact to the open space above the canal would be from the Gardeners Road bridge, with the Ricketty Street bridge being evident to the south and the Campbell Road bridge visible to the north. This has been minimised to the extent possible through the design of the bridge, as discussed above.

Appreciation of uninterrupted views along the canal would still be available to the south of the Ricketty Street bridge and also to the north of the Campbell Road bridge.

- **Will the public, and uses of the item, still be able to view and appreciate its significance?**

The significance of the canal within the public conscience has the potential to be increased by the proposed crossings. At present, the views of the canal are fleeting and limited to the crossing at the Ricketty Street bridge and along Airport Drive. The amenity of these two areas is such that they do not invite people to exit their vehicles and appreciate or explore the canal. The increased number of crossings, and particularly the pedestrian/cycle bridge adjacent to the Campbell Road bridge would increase access to and visibility of the canal. This, it is anticipated, would be capitalised on through the provision of interpretive signage in association with the Campbell Road pedestrian and cycle bridge.

9.2.3 Statement of heritage impact

The impacts identified above are summarised in Table 64.

Table 64 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	The proposed stormwater discharge points would impact on the State assessed aesthetic significance. The statement of significance summarises thus: <i>"Aesthetically, intact original sections of the canal, comprising pitched dry packed ashlar sandstone, provides a textured and coloured finish which is aesthetically valuable in the cultural landscape."</i> The discharge points would impact on two intact sections of the ashlar sandstone walls. These works would be somewhat mitigated through the reinstatement of sandstone blocks and their re-use to finish the discharge points, thereby minimising the visual disruption. The stormwater design has been sympathetically thought through to enable the necessary discharge to be achieved with only two points and thereby limiting the impact to fabric of State significance.
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	The construction of the additional crossings would have a minor impact on the significance of the canal. The statement of significance states that <i>"It is a major landmark and dramatic component of the industrial landscape of the area, particularly as viewed from the Ricketty Street Bridge and along Airport Drive."</i> The construction of the crossings would open up further views of the canal and allow for a greater appreciation of the industrial heritage of the item.
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	None.
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	The Campbell Road pedestrian and cycle bridge would increase public access to, and appreciation of, the Alexandra Canal.

In summary, while there would be impacts to fabric of heritage significance, these impacts can be mitigated through increased public access and interpretation along the Campbell Road pedestrian and cycle bridge, together with the reinstatement of sandstone removed for the insertion of the proposed discharge points.

9.3 Rudders Bond Store

The Rudders Bond Store and associated office, located at 53-57 Campbell Road, is listed on the City of Sydney LEP 2012 (I1405). The heritage significance of the store has been assessed for the purposes of this project and is deemed to hold State historical, aesthetic, technical and rarity significance.

9.3.1 Proposed impact

The store sits within the area of the St Peters interchange and as such there is no potential to retain the store or the associated office. The store and office would require complete removal.

9.3.2 Process questions

The process questions from the *Statements of Heritage Impact* guideline of greatest relevance are those relating to the demolition of a building:

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

Have all options for retention and adaptive re-use been explored?

The store is located in the path of the St Peters interchange connection to the Campbell Road and Euston Road intersection. The design of the St Peters interchange has been considered to limit the footprint and impacts of the project. The location of the New M5 ramps and connection to the Campbell Road/ Euston Road/Burrows Road intersection has been positioned to satisfy road geometry requirements and network integration.

It is not possible to achieve the desired traffic and public amenity outcomes if the store is retained. It is therefore not possible under this design to retain the store and office *in situ* nor adaptively re-use or repurpose the structure.

Can all the significant elements of the heritage item be kept and any new development be located elsewhere on the site?

It is proposed, pending a structural assessment, that a portion of the store's laminated timber columns be salvaged for use elsewhere (to be determined during the detailed design). This course of action is proposed based on the aesthetic significance and rarity of the store, specifically the cathedral-like proportions of the interior space, as well as being the only identified laminated timber columned structure on a heritage list in NSW. These values can be appreciated whatever the location of the store. It is considered that while some of the significance would be lost by moving the store from its current context, this is preferable to losing these values altogether. It is noted here that the bricks and corrugated iron cladding are not considered significant fabric and do not warrant salvage and reconstruction. It is anticipated that these elements would be replaced with new, sensitively selected materials during the reconstruction of the store within its new capacity.

It is not considered that the heritage significance of the office warrants its relocation and conservation. The impacts can be mitigated through an archival recording prior to demolition.

Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible?

The demolition of this heritage item is essential for the construction of the project. As the store and office are located within the construction footprint of the St Peters interchange connection, it is not possible to postpone the demolition of the store.

Has the advice of a heritage consultant been sought?

This document contains the advice of a heritage consultant, which comprises:

- An investigation into the historical context of the store,
- A significance assessment following Heritage Division guidelines
- An assessment of the proposed impacts and investigation of alternatives to demolition; and
- Consideration of mitigation measures based on the significance.

The first three points can be found in **Section 6.12.21** and the last in **Section 8.2**.

Have the consultant's recommendations been implemented? If not, why?

While the salvage and re-use of the laminated timber columns from the store has been recommended, further investigation into the feasibility of this is required. This includes from an engineering/structural perspective as well as identifying a potential use and location for the reconstructed store. A full archival recording should be completed prior to the salvage/demolition commencing. Further options for documenting the history of the Ralph Symonds company would be explored during detailed design.

9.3.3 Statement of heritage impact

The impacts identified above are summarised in **Table 65**.

Table 65 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	The demolition of the store and associated office would result in an irreversible loss of fabric and values of State significance. It is anticipated that this would in part be mitigated through the salvage and reuse of at least a section of the store (focussing on the significant laminated timber columns). The project would mitigate the demolition and its impact on the aesthetic, technical and rarity significance. However, this would need to be investigated further during detailed design to determine if such a solution is feasible. An archival recording of the store and associated office prior to the start of demolition/salvage works would partially mitigate the historical significance of the store.
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	None.
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	None.
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	None.

In summary, the demolition of the store and office would result in an irreversible loss of fabric and values of State significance, however, it is anticipated this can be partially mitigated through archival recording, salvage and reuse of elements of the store structure. Option for documenting the history of the Ralph Symonds company in partnership with City of Sydney and the Powerhouse Museum would be explored during detailed design.

9.4 Terraces and houses on Campbell Street

The terraces at 28-44 and 82 Campbell Street, St Peters, are listed on Road and Maritime's Section 170 Heritage and Conservation Register (ID # 4305629 & ID #4305643). These items have been assessed as being of local significance. For the purposes of this project, the remainder of the houses on the south western side of Campbell Street between Unwins Bridge Road and Church Street have also been assessed. It has been determined that these houses are adequately represented elsewhere in the area and hold no particular historical, aesthetic, associative or other significance that warrants their retention. This statement of heritage impact examines the proposed demolition of the listed houses together.

9.4.1 Proposed impacts

The project would require the demolition of the terraces and houses along south western side of Campbell Street between Unwins Bridge Road and Church Street, together with the terraces at 28-44 Campbell Street. The terraces are by no means rare within the Marrickville and Sydney local government area. Similar examples within the project area that would not be significantly impacted include terraces within locally listed conservation areas such as Goodsell Estate Heritage Conservation Area (Marrickville LEP 2011, C16) and the Cooper Estate Heritage Conservation Area (Sydney LEP 2012 C2) and individually listed examples such as the Narara Terrace at 4-18 Unwins Bridge Road (Marrickville LEP 2011 I282), Terrace housing at 105-119 May Street (Marrickville LEP 2011 I273) and the Terrace Group at 2-34 Campbell Road (Sydney LEP 2012 I12).

9.4.2 Process questions

The process questions from the *Statements of Heritage Impact* guideline of greatest relevance are those relating to the demolition of a building:

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

Have all options for retention and adaptive re-use been explored? Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible? Can all the significant elements of the heritage item be kept and any new development be located elsewhere on the site?

The project has undergone an extensive options analysis and development process. The residences on Campbell Street are located on or close to the front property boundary. It is therefore not possible to widen the road without first removing the houses. The widening of the road has been determined necessary to meet the project objectives and postponing the demolition is unlikely to result in a different option becoming available.

Has the advice of a heritage consultant been sought? Have the consultant's recommendations been implemented? If not, why?

This report constitutes the advice of a heritage consultant and the recommendations would be implemented following project approval. It has been recommended that an archival recording be undertaken prior to demolition.

9.4.3 Statement of heritage impact

The impacts identified above are summarised in Table 66.

Table 66 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	None
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	The demolition of the terraces and houses is unavoidable within the objectives of the project. The loss of fabric can be mitigated through archival recording prior to demolition.
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	None.
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	None.

9.5 Service Garage

The Service Garage at 316 Princes Highway, St Peters, is identified on the Marrickville LEP 2011 as item I276. It holds historic, aesthetic and rarity value.

9.5.1 Proposed impacts

There are no direct physical impacts proposed to the service garage. It would be acquired and would cease to operate as a service garage. However, it is proposed that the structure would be retained with possible re-use opportunities, such as a commercial/retail purpose. The aesthetic and rarity value would not be impacted by the acquisition at this time. The potential modifications required for the change of use would need to be assessed at a future time, once approved. The service garage has operated in that capacity since at least 1946, and there would be some loss of significance associated with the change in use in this respect.

9.5.2 Process questions

The process questions from the *Statements of Heritage Impact* guideline of greatest relevance are those relating to the change of use of a building:

- Does the existing use contribute to the significance of the heritage item?
- Why does the use need to be changed?
- What changes to the fabric are required as a result of the change of use?
- What changes to the site are required as a result of the change of use?

Does the existing use contribute to the significance of the heritage item?

Yes. Based on a historical photograph from 1946 (**Plate 72**), it would appear that the garage has continued to operate on this site until the present.

Why does the use need to be changed?

It has been deemed a safety hazard with the increased pedestrian and cycle activities in the area to maintain an active garage once construction is complete. The garage would be repurposed to form a distinct entrance into the St Peters interchange and associated pedestrian and cycle routes.

What changes to the fabric are required as a result of the change of use?

No change to the fabric is proposed at this time. Once the exact use of the garage has been determined and if changes to the fabric are necessary, a separate statement of heritage impact would be prepared outlining the project and the associated potential impacts to heritage significance.

What changes to the site are required as a result of the change of use?

The surrounding area would be landscaped and the structure would be incorporated into the urban design for the project. The exact details of which would be determined during detailed design.

9.5.3 Statement of heritage impact

The impacts identified above are summarised in **Table 67**.

Table 67 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	None
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	None
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	It appears as though the site has operated to service and maintain vehicles since at least 1946. A minor negative impact would result from the loss of continuity of operation. However, there would be no impact to the fabric of the structure as a result of the project.
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	None.

9.6 St Peters Brickpit Geological Site

The St Peters Brickpit Geological Site is a registered item on the non-statutory Register of the National Estate (ID # 162040). The site consists of around five hectares on the corner of the Princes Highway and Canal Road. The site was used to as a quarry for shale and clay, by the nearby Bedford Brickworks (former). The fringes of the site with street frontages are now used by various industrial and light industrial companies, with the curtilage of the item being a 'U' shaped polygon within the central void.

According to the non-statutory Register of the National Estate listing, the site "provides an excellent opportunity to observe geological structures in fresh shales in siltstones including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults (including normal and reverse faults) and recent mass movements ..." (Australian Heritage Commission, 1991). The shale contains fossils of bivalves, isopods, soft marine organisms (guillemots) and insects as well as plant fragments. Vertebrate fossils have also been identified at the Brickpit and include fish and an amphibian known as *Paracyclotosaurus davidii*. The 2.3 m long amphibian is thought to have lived in fresh water lakes and have hunted like a crocodile. The heritage significance of the site therefore relates to its geological significance and is not associated with the brick making operations. Further details regarding the brickpit site can be found in **Section 6.12.22**.

The non-statutory Register of the National Estate listing does not contain an assessment against the criteria, however the Statement of Significance summarises the values thus:

St Peter's Brickpit contains a section of prior Botany Bay shoreline sediments of late Pleistocene/early Holocene Age (18,000 to 6,000 years bp). These sediments provide important evidence of the extent to which the waters of Botany Bay rose at the end of the last glaciation. The deposits found within the brickpit are a rare occurrence of this shoreline (Criterion A.1 and B.1). The Ashfield shale in the vicinity of the brickpit has been a rich source of fossils of upper Triassic Age (approximately 210 million years bp). With both vertebrate and invertebrate fossils identified including an amphibian named PARACYCLOTOSAURUS DAVIDII, a member of the sub-class Labyrinthodontia. This species has only been identified from this site. It is one of the few species of this sub-class of this age discovered in Australia to date. This species has contributed to the understanding of the evolution of the Australian amphibian fauna (Criterion A.1). The quarry is used extensively as a teaching resource by local tertiary institutions. It provides an excellent opportunity for students of geology to observe structures in fresh shale and siltstone of the Ashfield formation. These structures include joints, faults and recent mass movement on the edges of the quarry. There is also potential for significant additional fossil finds within the Ashfield formation the former Botany Bay shoreline deposits are of research value, providing evidence of former sea levels around Botany Bay. The shell within the deposit, may yield information on environmental conditions that existed as sea levels rose at the end of the last glaciation (Criterion C.1). The site contains a representative example of Ashfield shale which is the lowest formation of the upper Triassic Wianamatta group of the Sydney Basin the shoreline deposits provide an important example of the former shoreline of Botany Bay (Criterion D.1). The site is of historic interest for the way it demonstrates part of the geographical spread of the St Peter's brick-shale deposits and so complements the restored Bedford Brickworks to the north (Criteria A.4 and B.2).

9.6.1 Proposed impacts

The St Peters interchange would sit within the St Peters Brickpit Geological Site. The construction of the interchange would result in alterations, including cut and fill, within the non-statutory curtilage. The project would result in the geological formations, noted above, being obscured by landscaping, but will not necessarily result in their removal.

9.6.2 Process questions

The process questions from the *Statements of Heritage Impact* guideline of greatest relevance are those relating to the change of use, these have been modified to account for the non-structural nature of the item:

- Does the existing use contribute to the significance of the heritage item?
- Why does the use need to be changed?
- What changes to the site are required as a result of the change of use?

Does the existing use contribute to the significance of the heritage item?

The site has been used for the deposition of refuse since the 1970s and continues to be used for the disposal of building and construction waste. This use does not positively contribute to the geological significance of the site.

Why does the use need to be changed?

The rationale for the project has been outlined in **Section 1.0** and detail concerning the selection of this site as the preferred location for the interchange is provided in Chapter 4 of the EIS. This includes minimising the impact on residential areas and areas of open space. The brickpit site has therefore been selected as it is the site that will have the least impact on the local community, while providing the connectivity required for the project.

What changes to the site are required as a result of the change of use?

The works within the non-statutory listing for the St Peters Brickpit Geological Site would result in the modification of the geological site, but ultimately, the geological features are such that they would be preserved within behind a new landform or terraced retaining walls at the St Peters interchange. Other exposed cuttings that display geological features may be obscured through landscaping and other construction activities. The impacts would be mitigated through the following means:

- Interpretation of the geology of the area within the interchange;
- Retaining an exposed section of the fresh shales and siltstones, including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults, if safe to do so for both landform stability and ongoing access for interpretation;
- Photographic and drawn archival recording of the geological features prior to and/or during construction; and
- An assessment and/or consultation with a palaeontologist to determine whether the project impact area has potential to contain further specimens of scientific interest.

The site is currently not open to the public to appreciate the geological significance of the area. The St Peters interchange would provide an opportunity to educate and provide greater access to the geological history of the Sydney basin. It is therefore considered that the project would have a positive impact on the site.

9.6.3 Statement of heritage impact

The impacts identified above are summarised in **Table 68**.

Table 68 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	None
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	None
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	The construction of the interchange would result in the removal or concealment of the currently exposed cuttings.
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.

Impact Type	Impact
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	The potential for access and interpretation within the interchange would allow for greater public knowledge of the site. The interpretation will contribute to a greater understanding of the geological and palaeontological history of the Sydney basin. An interpretation plan would be prepared during detailed design would could consider opportunities such as the: - Integration of the geological item in consultation with City of Sydney; and - Integration of the geological/palaeontological discovery of the <i>Paraclytosaurus davdii</i> into the interchange.

It is concluded that the project result in the modification of the geological site, but ultimately, the geological features would be preserved within undisturbed or newly exposed cuttings. In addition, the public access created by the interchange would allow for greater public knowledge of the geological and palaeontological significance of the site and the Sydney basin more generally, through the mitigation measures outlined above.

9.7 Goodsell Estate Heritage Conservation Area

The Goodsell Estate Heritage Conservation Area (C16) is located on the corner of Bedwins Road and May Street, opposite the Waugh and Josephson Industrial Buildings (I280) and the Town and Country Hotel (I281). The conservation area backs on to the Illawarra Railway line. It is listed on the Marrickville LEP 2011 as an item of local significance (C16) holding historical, aesthetic and representative.

9.7.1 Proposed impacts

The local road upgrade includes the realignment of the intersection of Bedwin Road, Unwins Bridge Road, Campbell Street and May Street. The project includes the acquisition of the south western corner of the conservation area for road widening and the temporary occupation of an area of the park. The majority of the area that would be temporarily occupied is currently part of Camdenville Park and is a fenced area providing a depression for the collection of stormwater runoff. The project would result in an amendment to the curtilage of the item. The stormwater basin would also be augmented to cater for the project.

9.7.2 Process questions

The process questions from the *Statements of Heritage Impact* guideline are not relevant to the proposed impacts. Therefore the following questions have been developed to specifically address the project:

- Will the acquisition of land and the revision of the curtilage impact on the heritage significance of the conservation area?
- Are any known or potential archaeological deposits affected by the proposed works?

Will the acquisition of land and the revision of the curtilage impact on the heritage significance of the conservation area?

The significance of the conservation area is vested in the built form of the workers housing in the north eastern portion of the conservation area. This area has been assessed as demonstrating the pattern of the built form in the area as they responded to the progressive release of land. The proposed works would not directly impact on the housing, its form or the narrow and dense streetscape to which aesthetic significance has been ascribed. The proposed revised curtilage leaves an area of park as a buffer between the proposed intersection and the terraces along Unwins Bridge Road. It is therefore concluded that the project would not impact on the heritage significance of the conservation area.

Are any known or potential archaeological deposits affected by the proposed works?

Historical aerials from 1943 indicate that the corner proposed for acquisition and the site of the intersection works was under a building associated with the brickworks. This building extended out into the present intersection. It is considered that *in situ* archaeological deposits associated with the structure are unlikely, given the works that have previously been undertaken to form, maintain and upgrade the intersection since the demolition of the building.

9.7.3 Statement of heritage impact

The impacts identified above are summarised in **Table 69**.

Table 69 Summary of the nature of the impacts

Impact Type	Impact
Major negative impacts (substantially affects fabric or values of state significance)	None
Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance)	None
Minor negative impacts (reversible loss of local significance fabric or where mitigation retrieves some value of significance; loss of fabric not of significance but which supports or buffers local significance values)	None
Negligible or no impacts (does not affect heritage values either negatively or positively)	None.
Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance)	None.
Major positive impacts (enhances access to, understanding or conservation of fabric or values of state significance)	None.

It is concluded that the project would not impact on the heritage significance of the heritage conservation area.

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10.0 Findings and Recommendations

Roads and Maritime is seeking approval under Part 5.1 of the *Environmental Planning & Assessment Act 1979* to construct and operate the New M5 (the project); which would comprise a new, tolled multi-lane road link between the existing M5 East Motorway east of King Georges Road and St Peters. The project would also include an interchange at St Peters and connections to the existing road network.

Fifty seven listed heritage items are located within the preferred project corridor or within 50 metres of surface disturbance or tunnelling activities. The heritage significance of these items was confirmed by pedestrian and vehicular survey between 20 to 23 April 2015 and on 21 May 2015.

The construction of the project would result in both direct and indirect impacts to 57 heritage items. The direct impacts consist of the demolition of three listed heritage items, being the Rudders Bond Store and houses at 28-44 and 82 Campbell Street, St Peters. Strategies for the mitigation of impacts have been proposed for both sets of items. In addition, the construction of three new bridge crossings would occur within the curtilage of the State Heritage Register listed Alexandra Canal which would result in visual impacts to the item as well as secondary direct impacts due to vibration intensive activities. It is proposed to mitigate the direct and visual impacts to the canal through sensitive detailed design of the bridge crossings, in line with the policies outlined in the Conservation Management Plan and an archaeological assessment (NSW Government Architect's Office, 2004).

Other direct impacts involve local road upgrades resuming portions of the curtilages of the Goodsell Estate Heritage Conservation Area and modifications to the St Peters Brickpit Geological Site. The impacts to the Goodsell Estate Heritage Conservation Area are considered to be minimal and no mitigation is required. Interpretation strategies have been recommended for the St Peters Brickpit Geological Site which would be considered during detailed design for incorporation into the interchange design.

There is also the potential for direct impacts due to potential eligibility for at-property acoustic treatment. This would be confirmed during detailed design, in consultation with landowners, and with consideration of potential impacts to heritage values.

The potential impacts to heritage items due to ground movement and construction vibration would be confirmed during detailed design. If required, mitigation and management measures to minimise impacts would be investigated (such as the modification of construction methodology), and monitoring undertaken at properties identified as being above recommended criteria. Property dilapidation surveys would also be undertaken for all items located within the preferred project corridor or properties within recommended safe working setbacks.

In summary, it is concluded that the impacts of the project can be mitigated through the following measures:

- Development of an interpretation plan, which would identify opportunities to reflect the history of the New M5 areas in the newly built fabric. The plan should be developed in conjunction with the urban design to develop specific suitable interpretation in areas where there will be changed use including, but not limited to:
 - Alexandra Canal and the industrial heritage of the area; and
 - The St Peters Brickpit geological site.
- In relation to the Alexandra Canal:
 - Monitoring of the canal should be undertaken during the works to ensure vibration is not impacting on the canal walls;
 - A condition report of the canal brickwork adjacent to the bridge crossings and drainage discharge points, including areas beneath the bridges and areas impacted by associated construction works, would be undertaken prior to the commencement of construction. Any rehabilitation and conservation requirements would be determined in consultation with Sydney Water.
 - An archival recording of the canal walls should be undertaken, involving both scale drawings and photography, prior to the removal of the sandstone blocks;
 - The sandstone blocks should be numbered and recorded in such a way that those not displaced by the discharge points can be replaced in their previous location;
 - Sandstone blocks displaced by the discharge points should be stockpiled for use in repairs of other sections of the canal; and

- Heritage interpretation regarding the canal should be installed in proximity to the item, ideally at the Campbell Road bridge given this would have greater pedestrian accessibility, in accordance with an interpretation plan
- In relation to the St Peters Brickpit Geological Site
 - Interpretation of the geology of the area within the interchange and surrounds, including opportunities to:
 - the geological interpretation of the site in consultation with City of Sydney; and
 - Integrate the geological/palaeontological discovery of the *Paraclytosaurus davdii*.
 - Retaining an exposed section of the fresh shales and siltstones, including features associated with deposition of the sedimentary rocks, later formed fractures such as joints and faults, if safe to do so for both landform stability and ongoing access for interpretation;
 - Photographic and drawn archival recording of the geological features prior to and/or during construction; and
- In relation to Rudders Bond Store:
 - The bond store should be subject to a full archival recording following the NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006);
 - Consideration should be given as to whether the laminated timber columns could be salvaged and re-erected and clad elsewhere within the St Peters interchange or the local area. The cladding and brick walls are not considered to be of heritage significance and are not included within the reuse proposal.
 - Investigate options for documenting the history of the Ralph Symonds company and presenting it to a national audience, in partnership with stakeholders such as the City of Sydney and Powerhouse Museum. The focus would be on their development of innovative timber construction methods during and after the Second World War.
- In relation to the house at 82 Campbell Street and terrace group at 28-44 Campbell Street:
 - The buildings should be subject to a full archival recording following the NSW Heritage Division guidelines *How to Prepare an Archival Recording* (NSW Heritage Office, 1998b) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006);
 - Consideration should be given as to whether elements of the houses could be salvaged and used to maintain or restore other properties managed by Roads and Maritime.
- In relation to the Service Garage:
 - A photographic archival recording is undertaken prior to the current use ceasing. The archival recording should conform to the guidelines provided in *How to prepare archival records* (NSW Heritage Office, 1998a) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006). The archival recording should be lodged with the relevant local libraries and the State Library of NSW. The archival recording should be integrated into on-site interpretation of the item.
- The curtilage of the Goodsell Estate Heritage Conservation Area has been identified as potentially being impacted by the project. The impacts to the Goodsell Estate Heritage Conservation Area are considered to be minimal and no mitigation is required.
- Detailed mitigation and management measures would be developed for each heritage item directly impacted by the project with regard to vibration (surface and tunnelling) and settlement once final disturbance areas have been identified through detailed design. These mitigation and management measures would be included in the construction environmental management plan(s) for the project.
- Visual impacts have been identified to the terraces at 2-34 Campbell Road, St Peters. Individually tailored landscape treatments would be developed during detailed design.
- The individual contribution of views into and out of additional heritage properties and the long-term impact of construction, if any, will be considered during detailed design. Landscape would be determined during detailed design to appropriately manage such impacts.

- The need to provide at-property acoustic treatment of the two heritage listed properties would be confirmed during detailed design. Any required treatment would be sympathetic to the heritage values of each item and would be undertaken in accordance with the Burra Charter. Where this involves incorporating noise-proofing within heritage structures, the advice of a conservation architect would be sought.
- This review identified additional areas of archaeological potential within Sydney Park. The archaeological testing and, if necessary, excavation methodology is provided in **Appendix C** which would be implemented with respect to the areas of archaeological potential within Sydney Park. There remains the potential to encounter deposits or relics in any context. The Roads and Maritime *Standard Management Procedure: Unexpected Heritage Finds* (Roads and Maritime, 2015) would be followed and incorporated into the construction environmental management plan.

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11.0 References

- AECOM (2015a). *New M5 Technical Working Paper: Aboriginal heritage*. Prepared for Roads and Maritime Services
- AECOM. (2015b). *New M5 Technical Working Paper: Social and Economic*. Prepared for Roads and Maritime Services
- AECOM. (2015c). *New M5 Technical Working Paper: Noise and vibration*. Prepared for Roads and Maritime Services
- AECOM. (2015d). *New M5 Technical Working Paper: Landscape and Visual Impact Assessment*. Prepared for Roads and Maritime Services
- Attenbrow, V. (2010). *Sydney's Aboriginal Past: Investigating the archaeological and historical records*. Sydney: University of New South Wales Press Ltd.
- Australian Heritage Commission. (1991). St Peters Brickpit Geological Site, Canal Rd, St Peters, NSW, Australia. Retrieved May 13, 2015, from [http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=St Peters Brickpit;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240](http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=St%20Peters%20Brickpit;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240)
- Australian Heritage Council. (n.d.-a). Bardwell Park Urban Conservation Area, Bardwell Park, NSW, Australia. Retrieved July 23, 2015, from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=Bardwell%20park;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240
- Australian Heritage Council. (n.d.-b). Clemton Park Urban Conservation Area, Homer St, Clemton Park, NSW, Australia. Retrieved July 23, 2015, from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=Clemton%20Park;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240
- Australian Heritage Council. (n.d.-c). Kingsgrove West Urban Conservation Area, Kinggrove, NSW, Australia. Retrieved July 23, 2015, from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=kingsgrove%20west;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240
- Australian Heritage Council. (n.d.-d). Pallamanna Parade Urban Conservation Area, Beverley Hills, NSW, Australia. Retrieved June 9, 2015, from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=Pallamanna%20Parade%20Urban%20Conservation%20Area;list_code=RNE;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240
- Australian Heritage Council. (n.d.-e). Sydenham Village, Railway Rd, Sydenham, NSW, Australia. Retrieved June 15, 2015, from http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name=Sydenham;keyword_PD=on;keyword_SS=on;keyword_PH=on;latitude_1dir=S;longitude_1dir=E;longitude_2dir=E;latitude_2dir=S;in_region=part;place_id=16240
- City of Canterbury Library. (2012). Beverley Hills, NSW. Retrieved from http://www.canterburycommons.net/index.php?title=Beverly_Hills_NSW
- ICOMOS (Australia). (2013). *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Burwood, Victoria: Australia ICOMOS. Retrieved from <http://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf>
- Marrickville Council. (2015). Memories of the old Coptic Church. Retrieved November 2, 2015, from <http://www.marrickville.nsw.gov.au/en/council/newsandnotices/mediareleases/memories-of-the-old-coptic-church/>

- Muir, L. (2013a). Bark Huts and Country Estates. *Dictionary of Sydney*. Retrieved June 3, 2015, from http://dictionaryofsydney.org/entry/bark_huts_and_country_estates
- Muir, L. (2013b). Urban Growth in the Cooks River Valley. *Dictionary of Sydney*. Retrieved from http://dictionaryofsydney.org/entry/urban_growth_in_the_cooks_river_valley
- NSW Government Architect's Office. (2004). *Alexandra Canal Conservation Management Plan*. Sydney, Australia: Prepared for Sydney Water.
- NSW Heritage Branch. (2009). *Assessing Significance for Historical Archaeological Sites and "Relics."* Parramatta. Retrieved from http://www.heritage.nsw.gov.au/docs/Arch_Significance.pdf
- NSW Heritage Division. (1999). St Mary/St Mina Coptic Orthodox Church. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030193>
- NSW Heritage Division. (2000a). Bard of Avon. Retrieved July 23, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330080>
- NSW Heritage Division. (2000b). Timber Slab Cottage. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5049609>
- NSW Heritage Division. (2005a). Rosslyn Hospital. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330063>
- NSW Heritage Division. (2005b). Wolli Creek Culvert. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4305006>
- NSW Heritage Division. (2006a). Cooper Estate Conservation Area. Retrieved July 23, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2421468>
- NSW Heritage Division. (2006b). Industrial Building "Frank G Spurway" Including Interior. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2420717>
- NSW Heritage Division. (2009a). Arncliffe (Forest Rd) Overbridge. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4805728>
- NSW Heritage Division. (2009b). Bexley North Railway Station Group. Retrieved April 10, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4801898>
- NSW Heritage Division. (2009c). Southern Cross Hotel. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030463>
- NSW Heritage Division. (2010a). Arncliffe Post Office. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330198>
- NSW Heritage Division. (2010b). Arncliffe Railway Station Group. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045717>
- NSW Heritage Division. (2010c). Glenevie Lane. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330185>
- NSW Heritage Division. (2010d). House. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?id=2330051>
- NSW Heritage Division. (2010e). House- 148 Wollongong Road. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?id=2330117>

- NSW Heritage Division. (2010f). House- 73 West botany Street. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330057>
- NSW Heritage Division. (2010g). Southern and Western Suburbs Ocean Outfall Sewer (Swoos). Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330255>
- NSW Heritage Division. (2010h). St Francis Xavier Catholic Presbytery. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330204>
- NSW Heritage Division. (2010i). *St Francis Xavier Church Group*. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330203>
- NSW Heritage Division. (2010j). Stone Federation House. Retrieved July 28, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330083>
- NSW Heritage Division. (2010k). Stotts Reserve. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330177>
- NSW Heritage Division. (2010l). Street Plantings. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330184>
- NSW Heritage Division. (2010m). Victorian Semi-Detached Dwelling. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330062>
- NSW Heritage Division. (2010n). Victorian Shop and Dwelling. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2330061>
- NSW Heritage Division. (2011a). Brick Road, Footpath Paving, Stone Guttering (Partly Obliterated). Retrieved July 23, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030187>
- NSW Heritage Division. (2011b). Morton Bay Fig. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030204>
- NSW Heritage Division. (2011c). Narara Terrace - Victorian Terraces. Retrieved May 13, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030397>
- NSW Heritage Division. (2011d). Westpac Stores and Penfolds Wine Cellars. Retrieved May 14, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030200>
- NSW Heritage Division. (2012a). Goodsell Estate Heritage Conservation Area. Retrieved May 13, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030480>
- NSW Heritage Division. (2012b). Terrace Group Including Interiors. Retrieved May 13, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2420544>
- NSW Heritage Division. (2012c). Town and Country Hotel. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030359>
- NSW Heritage Division. (2012d). Waugh and Jospheson Industrial Buildings. Retrieved May 13, 2015, from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2030123>
- NSW Heritage Division. (2014). Alexandra Canal. Retrieved from <http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5053860>
- NSW Heritage Office. (1998a). *How to prepare archival records*. Parramatta: Heritage Office.
- NSW Heritage Office. (1998b). *How to Prepare Archival Records of Heritage Items*. Heritage Information Series.

- NSW Heritage Office. (2001). *Assessing heritage significance*. Parramatta. Retrieved from <http://www.heritage.nsw.gov.au/docs/assessingheritagesignificance.pdf>
- NSW Heritage Office. (2002). *Statements of Heritage Impact*. Parramatta: Heritage Office. Retrieved from http://www.heritage.nsw.gov.au/03_index.htm#S-U
- NSW Heritage Office. (2006). *Photographic recording of heritage items using film or digital capture*. Parramatta: Heritage Office. Retrieved from http://www.heritage.nsw.gov.au/docs/info_photographicrecording2006.pdf
- NSW Heritage Office. (2008). *Levels of Heritage Significance*. Parramatta: Heritage Office. Retrieved from http://www.heritage.nsw.gov.au/docs/levels_of_heritage_significance_2008.pdf
- NSW Heritage Office, & NSW Department of Urban Affairs and Planning. (1996a). *Heritage Curtilages*. Parramatta: Heritage Office & Department of Urban Affairs & Planning.
- NSW Heritage Office, & NSW Department of Urban Affairs and Planning. (1996b). *NSW Heritage Manual*. Parramatta: Heritage Office & Department of Urban Affairs & Planning. Retrieved from http://www.heritage.nsw.gov.au/03_index.htm#M-O
- Peterson, N. (1976). *Tribes and Boundaries in Australia*. (N. Peterson, Ed.). Canberra: Australian Institute of Aboriginal and Torres Strait Islander Studies.
- Rathbone, R. . (Ronald W. (1980). *A History of Bexley*. Carlton: Forest Press Pty. Ltd.
- Rathbone, R. . (Ronald W. (1997). *A Village Called Arncliffe*. Arncliffe, NSW.
- Roads and Maritime Services. (2004a). House - 28-44 Cambell Street, St Peters. Retrieved May 13, 2015, from <http://www.rms.nsw.gov.au/cgi-bin/index.cgi?action=heritage.show&id=4305629>
- Roads and Maritime Services. (2004b). House - 82 Campbell Street, St Peters. Retrieved May 13, 2015, from <http://www.rms.nsw.gov.au/cgi-bin/index.cgi?action=heritage.show&id=4305643>
- Roads and Maritime Services. (2015). History. Retrieved from <http://www.m5east.com.au/about-m5-east/history/>
- Sydney Airport Corporation Limited. (2009). *Sydney Airport Environment Strategy 2010-2015*.
- Sydney Water. (2014). Sewage Pumping Station No 39 (SP0039). Retrieved May 14, 2015, from <http://www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/Heritage-search/heritage-detail/index.htm?heritageid=4571730&FromPage=searchresults>
- Thorp, W. (1994a). *M5 East Motorway Environmental Impact Assessment: European Heritage Issues*. Retrieved from http://nswaol.library.usyd.edu.au/data/pdfs/13525_ID_Thorp1994M5EastMotorwayEIS.pdf
- Thorp, W. (1994b). *M5 East Motorway Environmental Impact Assessment: European Heritage Issues*.
- Wolli Creek Preservation Society. (2011a). Farming. Retrieved from <http://www.wollicreek.org.au/wp-content/wolliupload/panel11-farming.pdf>
- Wolli Creek Preservation Society. (2011b). Farming.

Appendix A

Figures

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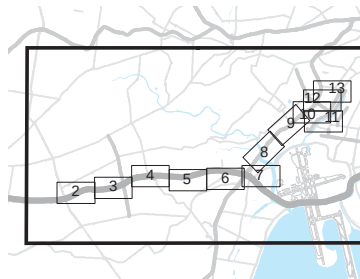
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- LEP heritage
- Western Outfall Main Sewer
- State Heritage Register areas
- Register National Estate
- Local Government Area
- Section 170 heritage areas
- Section 170 heritage points
- State Heritage Register locations
- ✱ Local Council heritage items

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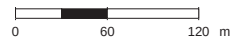
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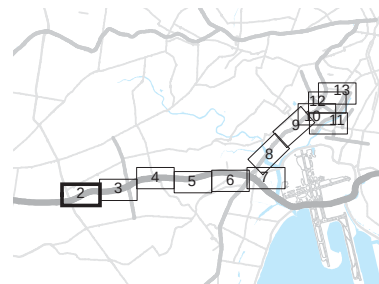
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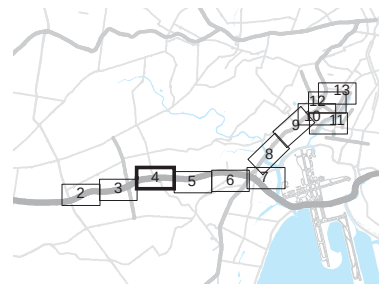
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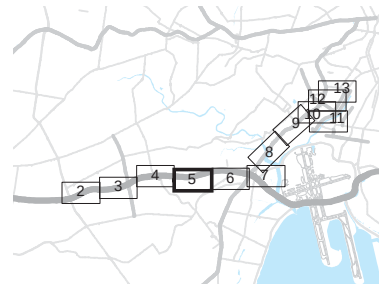
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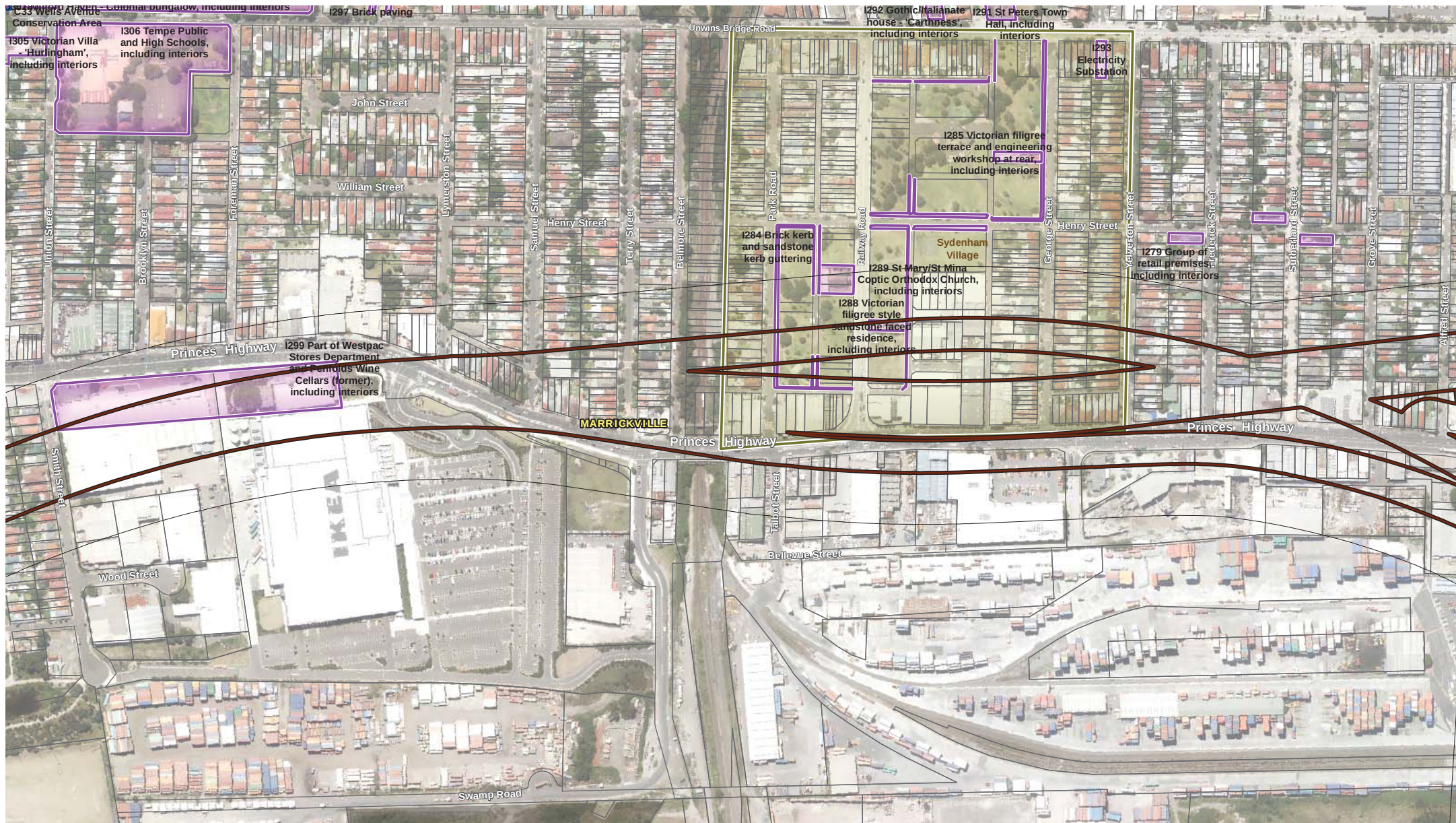
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- Study Area (50m Buffer)
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- Local Government Area

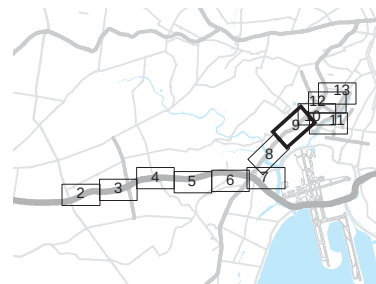
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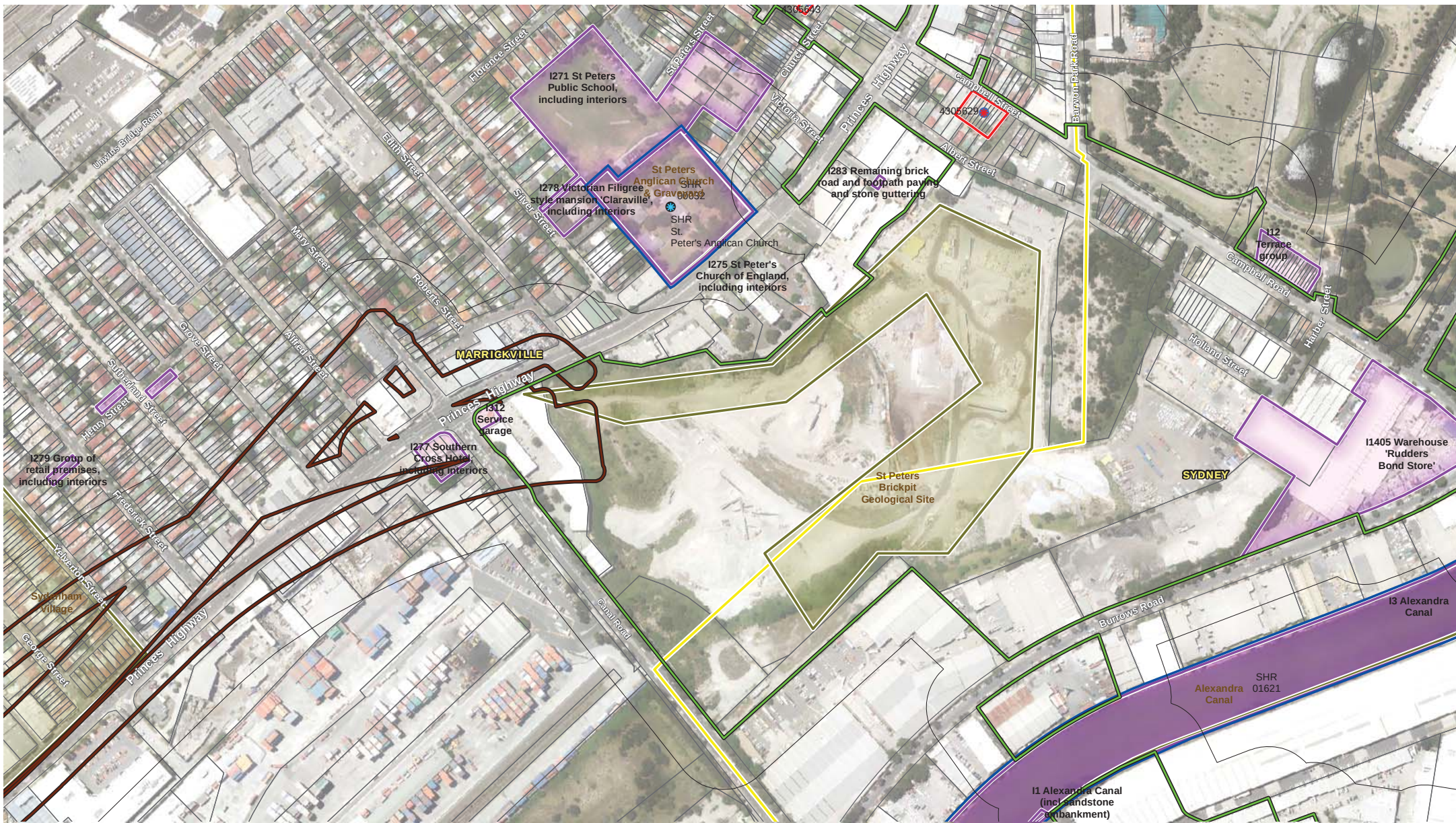
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- Section 170 heritage areas
- Section 170 heritage points
- State Heritage Register locations

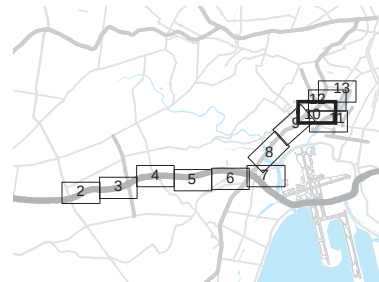
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TITLE
PROJECT AND STUDY AREA
HERITAGE LOCATIONS

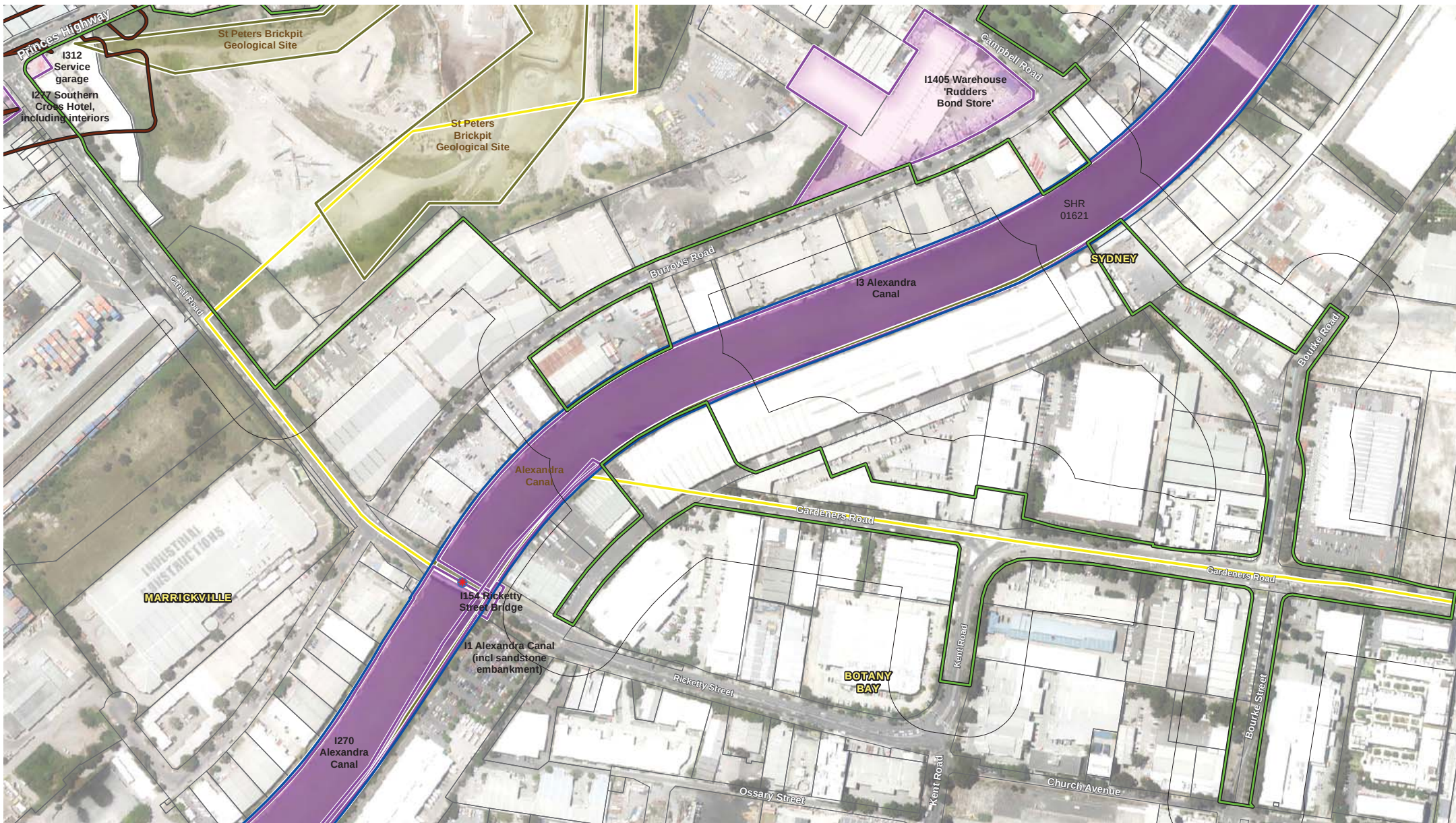
PROJECT

WESTCONNEX STAGE 2

CLIENT
WESTCONNEX DELIVERY AUTHORITY

DRAWN	LC	PROJECT #	MAP #	REV	Project
CHECK	DATE	16/11/2015	WCXTR069 02 60327128		

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- Construction Footprint
- Sub-surface, including main alignment tunnels
- Study Area (50m Buffer)
- LEP heritage
- State Heritage Register areas
- Register National Estate
- Local Government Area

● Section 170 heritage points

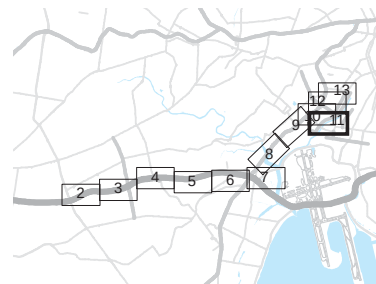
WestConnex
Building for the future

AECOM

0 60 120 m

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COORDINATE SYSTEM
GDA 1994 MGA Zone 56

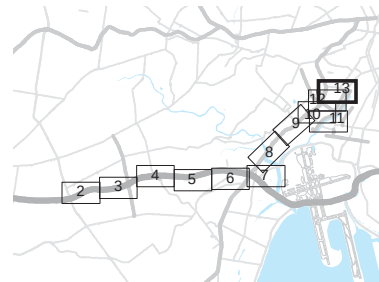
TITLE
PROJECT AND STUDY AREA
HERITAGE LOCATIONS

PROJECT
WESTCONNEX STAGE 2

CLIENT
WESTCONNEX DELIVERY AUTHORITY

DRAWN	LC	PROJECT #	MAP #	REV	Project
CHECK	DATE	16/11/2015	WCXTR069 02 60327128		

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Appendix B

Impact assessment table

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Appendix B Impact assessment table

Table 70 Potential impact summary

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Western surface works	Register National Estate	RNE #102089	Pallamanna Parade Urban Conservation Area	Change in heritage conservation area values Vibration from surface works Visual	The preferred project corridor at this location follows the existing motorway alignment and passes through conservation area. The curtilage of this urban conservation area was determined prior to the construction of the M5 East Motorway and has not been updated since. Impacts to heritage values within the conservation area would be localised to specific areas already associated with major transport network infrastructure. The M5 East Motorway would be widened to cater for the western portal and associated ancillary facilities. This would extend into the heritage conservation area. Visual impacts due to changes due to new noise walls and the Kingsgrove motorway operations which would be visible above the noise walls may affect certain properties. However, there would be no direct impacts in the sense that there will be no demolition of houses or structures in the urban conservation area.	Negligible direct impact - change in heritage values Low to negligible indirect impact - visual Negligible secondary direct impact – vibration (surface works)	Maintain safe surface working distances as shown in Table 58.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					Landscaping would provide screening of the project from the heritage conservation area, once established. For these reasons, visual impacts would be low to negligible. Buildings that are within 50 metres of the construction footprint have the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the heritage conservation area that are within safe working distances. Temporary visual impacts may also occur while the Kingsgrove North construction compound (C1), the Kingsgrove South construction compound (C2) and the Commercial Road construction compound (C3) are operational during construction.			
Arncliffe surface works Main alignment	State Heritage Register Sydney Water Heritage and Conservation	SHR #1647 #4572728	Western Outfall Main Sewer	Vibration and settlement (tunnelling) Vibration (surface works)	This site would be located near the Arncliffe surface works and has the potential to be directly and/ or indirectly impacted during construction and operation.	Secondary negligible direct impact – vibration and settlement (tunnelling).	Settlement and vibration impacts are negligible and do not require mitigation,	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
tunnels	Register			Visual	Potential impacts may include: - Vibration impacts during surface construction, however surface works would adhere to safe working distances. A program of monitoring would be undertaken to identify early potential risks to the heritage item. - Settlement during and after construction, however this would be less than 15 millimetres, which may result in cosmetic damage. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. - Visual impacts during construction and operation, however this would not affect the listed aesthetic significance. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Negligible indirect impact - visual	however, a condition survey report and monitoring will be undertaken as a precautionary measure. Maintain safe surface working distances as shown in Table 58. Visual and modification impacts to be managed through urban design and interpretation plan	Highly effective Highly effective
Main alignment tunnels	State Heritage Register Rockdale LEP Sydney Trains section 170 register	SHR #01076 I1 #4801150	Arncliffe Railway Station Group	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. However, only part of the LEP listed item would be located within the study area (being Forest Road bridge). The station buildings and nearby structures, which form part of the State Heritage	Negligible secondary direct impact – vibration and settlement (tunnelling)	Settlement and vibration impacts are negligible and do not require mitigation, however, a	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					and Sydney Trains Section 170 listing are beyond the study area. Potential impacts may include: - Settlement during and after construction. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures		condition survey report and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I13	Bard of Avon	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction. However, settlement is not predicted at this item as it is offset from the main alignment tunnels. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I15	Californian bungalow house	Vibration and settlement (tunnelling)	The property would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than five millimetres, which is considered to be	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures with the tunnelling activities occurring at depth (around 60 metres). An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		condition survey report and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I16	Californian bungalow house	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction. However, settlement is not predicted at this item as it is offset from the main alignment tunnels. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Main alignment tunnels	Rockdale LEP 2011	I18	Street plantings	Vibration and settlement (tunnelling)	The heritage listed street trees would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. The main alignment tunnels would be around 60 metres below ground at this point would unlikely have an impact on tree roots.	Secondary negligible direct impact	None	-
Main alignment tunnels	Register of National Estate Rockdale LEP 2011	RNE #19170 I19	Arncliffe Post Office	Vibration and settlement (tunnelling)	The preferred project corridor would be just located within the southern curtilage of the heritage item. Potential impacts may include: - Settlement during and after construction. However, settlement is not predicted at this item as it is offset from the main alignment tunnels. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					The heritage item has a dual listing under the Rockdale LEP 2011 (I19). However, the preferred corridor does not extend to the curtilage as per its listing under the Rockdale LEP 2011.			
Main alignment tunnels	Rockdale LEP 2011	I20	Glenevie Lane	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which is considered to be negligible, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I21	Victorian shop and dwelling	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I22	St Francis Xavier Church Group	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I23	St Francis Xavier Catholic Presbytery	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than five millimetres,	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation,	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		however, a condition survey report and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I24	Rosslyn hospital	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than five millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment	Rockdale LEP 2011	I35	House	Vibration and settlement	The heritage item would be located within the preferred project corridor. Potential impacts may include:	Secondary negligible direct impact	Settlement and vibration impacts are	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
tunnels				(tunnelling)	- Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I48	Victorian house	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Main alignment tunnels	Rockdale LEP 2011	I49	Victorian house	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I50	Victorian house	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					program of monitoring would be undertaken to identify early potential risks to the heritage item.			
Main alignment tunnels	Rockdale LEP 2011	I51	Victorian semi-detached dwelling	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I56	House	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I61	House	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than five millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Rockdale LEP 2011	I165	Stotts Reserve	Vibration and settlement (tunnelling)	The reserve is located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than 10 millimetres, which may result in cosmetic damage only to any structures within the reserve.	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures (although noting this item is listed for its natural heritage). An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item. It is noted that an Aboriginal heritage site is located within Stotts Reserve. Impacts to this item have been considered in Technical working paper: Aboriginal heritage. Values of settlement and vibration would differ to the values presented in this assessment, which identifies the greatest value within the heritage curtilage. The values presented in the Aboriginal heritage assessment relate to the location of the actual item.		and monitoring would be undertaken as a precautionary measure.	
Main alignment tunnels	Rockdale LEP 2011	I81	Stone Federation House	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: Settlement during and after construction. However, settlement is not predicted at this item as it is offset from the main alignment tunnels.	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					- Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.		survey report and monitoring would be undertaken as a precautionary measure.	
Bexley Road surface works	Rockdale LEP 2011	I237	Wolli Creek Valley	Visual	The Wolli Creek Valley is listed as an area of natural significance. The item is located less than ten metres from the Bexley Road surface works. Temporary and permanent infrastructure is located within developed or cleared open space areas and as such, there would be no alterations or impacts to the curtilage of the item. There would be no change to the geomorphology of Wolli Creek as a result of temporary groundwater treatment plant discharges. These temporary and permanent structures would have no impact on the heritage significance of the item.	Negligible direct impact	Visual impacts to be managed through urban design and interpretation plan	Highly effective
Main alignment tunnels	Register of National Estate	RNE #102106	Kingsgrove East Urban Conservation Area	Change in heritage conservation area values Vibration and settlement (tunnelling)	The preferred project corridor passes under the northern extent of the conservation area. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only.	Negligible secondary direct impact – vibration and settlement (tunnelling) Negligible direct impact –change in heritage values	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
				Visual	- Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. - Visual impacts from the Kingsgrove motorway operations complex which could occur however this would be reduced in part by distance and the screening effect of surrounding industrial developments. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the conservation area and within 50 metres of the main alignment tunnels.	Negligible indirect impact – visual	and monitoring would be undertaken as a precautionary measure. Visual impacts are unlikely given the distance to the heritage conservation area and only distant views would be available.	Highly effective
Bexley Road surface works Main alignment tunnels	Register of National Estate	RNE #102071	Clemton Park Urban Conservation Area	Change in heritage conservation area values Vibration from surface works Visual	Impacts to heritage values within the conservation area would be localised to specific areas already associated with major transport network infrastructure, or have been previously disturbed by previous road infrastructure projects (such as the M5 East Motorway, and the M5 East Motorway filtration trial). Visual impacts due to Bexley Road South motorway operations complex would be visible and may affect certain properties.	Negligible direct impact – change in heritage values Negligible indirect impact – visual Minor secondary direct impact – vibration (surface works)	Maintain safe surface working distances as shown in Table 58.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					Temporary visual impacts may also occur while Bexley Road North construction compound (C4), the Bexley Road South construction compound (C5) and the Bexley Road East construction compound (C6) are operational during construction. However, there would be no direct impacts in the sense that there will be no demolition of houses or structures in the urban conservation area. The works within the urban conservation area are restricted to the current motorway road reserve, land used to support the M5 East Motorway or vacant land. Buildings that are within 50 metres of the construction footprint have the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the conservation area. Landscaping would provide screening of the Bexley Road South motorway operations complex from the heritage conservation area, once established.			

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Main alignment tunnels	Register of National Estate	RNE #102106	Bardwell Park Urban Conservation Area	Vibration and settlement (tunnelling)	The preferred project corridor passes under the south-western extent of the conservation area. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the conservation area and within 50 metres of the main alignment tunnels..	Negligible secondary direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Bexley Road surface works Main alignment tunnels	Sydney Trains Section 170 Heritage and Conservation Register	#4801898	Bexley North Railway Station Group	Vibration and settlement (tunnelling) Vibration from surface works Visual	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling and surface works. However, vibration levels are anticipated to be below potential	Negligible secondary direct impact – vibration and settlement (tunnelling). Negligible secondary direct impact – surface works (vibration) and visual	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					damage levels relevant to heritage structures. - Structures that are within 50 metres of the construction footprint have the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. - Visual An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Negligible indirect impact – visual	a precautionary measure. Maintain safe surface working distances as shown in Table 58.	Highly effective Highly effective
Main alignment tunnels	Rockdale LEP 2011	Sydney Trains Section 170 Heritage and Conservation Register #4805728	Arncliffe (Forest Road) overbridge	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					risks to the heritage item.			
Bexley Road surface works	Section 170 - Roads and Maritime	#4305006	Wolli Creek Culvert	Vibration from surface works	This item is located within ten to 20 metres to the construction footprint and has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Minor secondary direct impact – vibration (surface works)	Maintain safe surface working distances as shown in Table 58.	Highly effective
Local road works St Peters interchange	State Heritage Register Sydney LEP 2012 Marrickville LEP Botany Bay LEP Register of National Estate Section 170 Sydney Water Heritage and Conservation Register	SHR #01621 I3 (Sydney LEP) I270 (Marrickville LEP) I1 (Botany LEP) RNE # 4571712	Alexandra Canal	Modification Visual Vibration (surface works)	Three new bridges would be constructed across Alexandra Canal. This has the potential to generate the following impacts on the heritage values of the canal: - Visual, due to the introduction of three new bridges, including two road bridges and one dedicated pedestrian/cyclist bridge. - Changes to the navigability of the canal. - Direct modification to the embankment, to enable new surface water discharge points and scour protection. - Vibration, due to surface works occurring in close proximity to the	Significant direct impact – modification Significant indirect impact – visual Significant direct impact – vibration (surface works)	Visual and modification impacts to be managed through urban design and interpretation plan Maintain safe surface working distances as shown in Table 58.	Moderately effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					embankments of the canal. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.			
Local road works	Marrickville LEP 2011	I271	St Peters Public School, including interiors	Vibration (surface works) At-property acoustic treatment	The eastern curtilage of the heritage item is located around 50 metres from construction footprint and has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item. The properties have also been identified for consideration for at property acoustic treatment, which would be confirmed during detailed design.	Negligible secondary direct impact – Vibration (surface works) Minor direct impacts – At-property acoustic treatment	Maintain safe surface working distances as shown in Table 58.	Highly effective
Local road works	Marrickville LEP 2011	I273	Terrace housing, including interiors	Vibration (surface works) Visual	The item would be directly located to surface works associated with the local road works, and would have minor impacts to the visual setting of the heritage item. The item also has the potential to be directly impacted due to vibration impacts associated with surface	Potential minor direct impact – vibration (surface works) Minor indirect	Maintain safe surface working distances as shown in Table 58. Visual impacts	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					construction. However surface works would adhere to safe working distances. An existing condition survey report and a program of monitoring would be undertaken to identify early potential risks to the heritage item.	impact – visual	to be managed through urban design and landscaping plan	
St Peters interchange Local road works	State Heritage Register Marrickville LEP 2011 Register of National Estate	SHR#00032 I275 RNE #1716	St Peter's Anglican Church and Graveyard	Vibration (surface works)	The south-eastern curtilage of the heritage item is located within around 40 metres to 50 metres of construction footprint and has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Negligible direct impact	Maintain safe surface working distances as shown in Table 58.	Highly effective
Main alignment tunnels St Peters interchange	Marrickville LEP 2011	I277	Southern Cross Hotel	Vibration and settlement (tunnelling) Vibration (surface works) Visual	The heritage item would be located within the preferred project corridor and adjacent to the St Peters interchange. Potential impacts may include: - Settlement during and after construction, however this would be less than 18 millimetres, which may result in cosmetic damage. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be within criteria for heritage buildings.	Negligible secondary direct impact – vibration and settlement (tunnelling) and vibration (surface). Negligible indirect impact – visual.	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					- Vibration impacts resulting from surface works. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. - Visual impacts associated with the St Peters interchange, and associated motorway operations complexes (such as ventilation facilities). An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		a precautionary measure. Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and landscape plan	Highly effective Highly effective
Local road works	Marrickville LEP 2011	I280	Waugh and Josephson industrial buildings, former, showroom, offices and workshops, including interiors	Visual Vibration (surface works)	The item would be directly located to surface works associated with the local road works. However, at this location, the Campbell Road/Unwins Bridge Road and May Street intersection would be realigned to provide greater setback from the heritage curtilage from its eastern boundary. Widening of Unwins Bridge Road at the intersection, however, would result in a minor reduction in setback from its southern boundary. However, overall, the building would retain its landmark qualities as no part of it would be obscured by the works.	Potential minor direct impact – vibration (surface works) Minor indirect impact – visual	Visual impacts to be managed through urban design and interpretation plan Maintain safe surface working distances as shown in Table 58.	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					Construction works also has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.			
Local road works	Marrickville LEP 2011	I281	Town and Country Hotel, including interiors	Visual Vibration (surface works)	Surface works associated with the local road works would be undertaken directly adjacent to the heritage item. However, at this location, the realignment of the Campbell Road/Unwins Bridge Road/Bedwin Road/May Street intersection would be realigned to provide greater setback of the building from the road carriageways. As such, the project would not have a significant impact on the visual context of the heritage item in terms of its landmark qualities at this intersection. Construction works also has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Potential minor direct impact – vibration (surface works) Minor indirect impact – visual	Visual impacts to be managed through urban design and interpretation plan Maintain safe surface working distances as shown in Table 58.	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Local road works	Marrickville LEP 2011	I282	Group of Victorian Filigree and Victorian Italianate terrace houses – Narara, including interiors.	Vibration (surface works) Visual	The item would be directly located to surface works associated with the local road works, and would have minor impacts to the visual setting of the heritage item. Construction works also has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing survey condition report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Potential minor direct impact – vibration (surface works) Minor indirect impact – visual	Visual impacts to be managed through urban design and interpretation plan Maintain safe surface working distances as shown in Table 58 .	Highly effective Highly effective
Local road works St Peters interchange	Marrickville LEP 2011	I283	Remaining brick road and footpath paving and stone guttering	Vibration (surface works)	This item is located within 30 to 40 metres to the construction footprint and has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances.	Negligible secondary direct impact	Maintain safe surface working distances as shown in Table 58 .	Highly effective
Main alignment tunnels	Marrickville LEP 2011	I284	Brick Kerb and sandstone kerb guttering	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.		will be undertaken as a precautionary measure.	
Main alignment tunnels	Marrickville LEP 2011	I288	Victorian filigree style sandstone faced residence, including interiors	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than five millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Marrickville LEP 2011	I289	St Mary / St Mina Coptic Orthodox Church	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction. However, settlement is not predicted at this item as it is offset from the main alignment	Nil – Marrickville Council have determined to demolish the item	Nil	n/a

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					tunnels. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.			
Main alignment tunnels	State Heritage Register Marrickville LEP 2011	SHR #01412 I294	Timber Slab Cottage, including interiors	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Main alignment tunnels	Marrickville LEP 2011	I299	Part of Westpac stores department and Penfolds wine cellar (former), including interiors	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as a precautionary measure.	Highly effective
Main alignment tunnels	Marrickville LEP 2011	I303	Moreton Bay Fig Tree	Vibration and settlement (tunnelling)	The heritage item would be located within the preferred project corridor. Potential impacts may include: - Settlement during and after construction, however this would be less than ten millimetres, which is considered to be negligible. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures.	Secondary negligible direct impact	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring will be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					The main alignment tunnels would be around 45 metres below ground at this point would unlikely have an impact on tree roots.			
St Peters interchange Main alignment tunnels	Marrickville LEP 2011	I312	Service Garage	Vibration and settlement (tunnelling) Vibration (surface works) Visual impacts Acquisition	The heritage item would be located within the construction footprint, and directly above the eastern portal. Potential impacts may include: - Settlement during and after construction however this would be less than ten millimetres, which is considered to be cosmetic only. - Vibration impacts during tunnelling. - Change in use and visual impacts associated within the integration of this item within the urban design of the interchange. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Secondary direct minor impact – vibration and settlement (tunnelling) and vibration (surface works) Significant direct impact – acquisition Minor indirect impact – visual impacts	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure. Any cosmetic damage will be rectified. Maintain safe surface working distances as shown in Table 58. Visual impacts will not impact heritage	Highly effective Highly effective n/a

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
							significance and do not require mitigation. The change of use and acquisition impacts will be mitigated through archival recording and interpretation	Somewhat effective
Local road works	Marrickville LEP 2011	C16	Goodsell Estate Heritage Conservation area	Acquisition Modification Change in heritage conservation area values Visual	An area of Camdensville Park, which is located within the Godsell Conservation Area would be directly impacted by the project as a result of: - The realignment of the Campbell Road/Unwins Bridge Road/Bedwin Road/May Street intersection. This would result in the permanent loss of an area along the western extent of the conservation area. - Construction activity associated with the augmentation of the stormwater detention basin for additional flood storage and surface water treatment.	Minor secondary direct impact – vibration (surface works) Minor direct impact – acquisition and modification Minor indirect impact – visual Minor indirect impact – conservation area values	No impacts to heritage significance have been identified. No mitigation warranted.	n/a

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					This has the potential to generate the following impacts on the heritage values of the conservation area: - Impacts to heritage values within the conservation area, which would be localised to the western curtilage of the conservation area. - Visual, due to the realignment and widening of roads, and alterations to the existing stormwater detention basin which is vegetated. However, proposed landscaping would minimise the potential for adverse impacts. - Direct acquisition of land within the curtilage of the conservation area, resulting in the permanent loss of this area. - Modification to areas within the conservation area associated with the upgrade of the stormwater detention basin. This would result in the excavation of the basin of around two metres from current level. Surface road works would also occur within or adjacent to the conservation area, which have the potential to have vibration impacts on structures within the conservation area.			

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the conservation area and within 50 metres of the main alignment tunnels.			
St Peters interchange	Register of National Estate	RNE #16240	St Peters Brickpit Geological Site	Modification Visual impacts Vibration (surface works)	The heritage item would be directly impacted as a result of the St Peters interchange and the construction of a share pathway along the northern boundary of the interchange.	Significant direct impact – modification Significant indirect impact – visual Significant secondary direct impact – vibration (surface works)	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure. Maintain safe surface working distances as shown in Table 58.	Highly effective Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
							The acquisition, modification and visual impacts will be mitigated through interpretation	
Main alignment tunnels	Register of the National Estate	RNE #100061	Sydenham Village	Vibration and settlement (tunnelling)	The conservation area would be located above the preferred project corridor and there would be no changes to the conservation values of the heritage conservation area. Potential impacts to structures within the conservation area may include: - Settlement during and after construction, however this would be less than ten millimetres, which may result in cosmetic damage only. - Vibration impacts during tunnelling. However, vibration levels are anticipated to be below potential damage levels relevant to heritage structures. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to relevant structures within the conservation area and within 50 metres of the main alignment tunnels.	Secondary negligible direct impact – vibration and settlement. Secondary negligible direct impact – conservation area values	Settlement and vibration impacts are negligible and do not require mitigation, however, a condition survey report and monitoring would be undertaken as a precautionary measure.	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Local road works	Roads and Maritime Heritage and Conservation Register	#4305629	Terrace group – 28-44 Campbell Street	Demolition	The project would involve the demolition of this item to enable the widening of Campbell Street. This impact cannot be avoided.	Significant direct impact – demolition	Archival recording and salvage and reuse	Somewhat effective
Local road works	Roads and Maritime Heritage and Conservation Register	#4305643	House	Demolition	The project would involve the demolition of this item to enable the widening of Campbell Road. This impact cannot be avoided.	Significant direct impact – demolition	Archival recording and salvage and reuse	Somewhat effective
Local road works St Peters interchange	Sydney LEP 2012	I12	Terrace group	Visual Vibration (surface works) At-property acoustic treatment	The item is located directly adjacent to the surface works associated with the widening of Campbell Road and opposite the St Peters interchange. A new pedestrian bridge would also be constructed to the north-west of the heritage curtilage. Construction compounds would also be located in the vicinity of the heritage item. Permanent structures and the widening of the road would change the visual setting of this heritage item. Construction works also has the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working	Minor secondary direct impact – vibration (surface works) Minor indirect impact –visual Minor direct – At-property acoustic treatment	Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and interpretation plan	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item. The properties have also been identified for consideration for at property acoustic treatment, which would be confirmed during detailed design.			
Local road works	Sydney LEP 2012 Sydney Water Section 170	I18 #4571730	Water Board pump house, including Interior and substructure	Visual Vibration (surface works)	Surface works associated with the local road works would occur in proximity to the heritage item. However, works associated with the project would be within an existing road corridor. As such, there would be no significant change to the visual setting of the heritage item. There is the potential for the item to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Minor secondary direct impact – vibration (surface works) Minor indirect impact – visual	Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and landscape plan	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Local road works	Sydney LEP 2012	I20	Industrial Building, 'Frank G Spurway'	Visual Vibration (surface works)	Surface works associated with the local road works would occur in proximity to the heritage item. However, works associated with the project would be within an existing road corridor. As such, there would be no significant change to the visual setting of the heritage item. There is the potential for the item to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Minor secondary direct impact – vibration (surface works) Minor indirect impact – visual	Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and interpretation plan	Highly effective Highly effective
St Peters interchange	Sydney LEP 2012	I1405	Warehouse 'Rudders Bond Store'	Demolition	The project would involve the demolition of this item. This impact cannot be avoided.	Significant direct impact – demolition	Archival recording and salvage and reuse	Somewhat effective
Local road works	Sydney LEP 2012	C2	Cooper Estate conservation area	Vibration (surface works) Change in heritage area values	Surface works associated with the local road works would occur in proximity to the conservation area. Existing buildings would screen the majority of the project from the conservation area, and works associated with the project would be within an existing road corridor. As such, there would be no change to the visual setting of the conservation area.	Negligible direct impact – Change in heritage area values Negligible secondary direct impact – vibration (surface works)	Maintain safe surface working distances as shown in Table 58 .	Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					Structures within the conservation area have the potential to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances.			
Local road works	Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings)	#3	Macdonaldtown Stormwater Channel	Visual Vibration (surface works)	Surface works associated with the local road works would occur within the curtilage of the stormwater canal, which presently passes under Euston Road. The project would require the widening of Euston Road, which would require additional sections of the canal to be covered. The works would not require a direct modification of the canal structure, but would be directly impacted by the project as a result of: - Change to the visual setting of the item - Impacts from vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Minor secondary direct impact – vibration (surface works) Minor indirect impact – visual	Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and interpretation plan	Highly effective Highly effective

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
Local road works	Proposed amendment to Sydney LEP 2012 (Industrial and warehouse buildings)	#14	Former Alexandria Spining Mills	Visual Vibration (surface works)	Surface works associated with the local road works would occur in proximity to the heritage item. However, works associated with the project would be within an existing road corridor. As such, there would be no significant change to the visual setting of the heritage item. There is the potential for the item to be directly impacted due to vibration impacts associated with surface construction. However surface works would adhere to safe working distances. An existing condition survey report and program of monitoring would be undertaken to identify early potential risks to the heritage item.	Minor secondary direct impact – vibration (surface works) Negligible indirect impact – visual	Maintain safe surface working distances as shown in Table 58. Visual impacts to be managed through urban design and interpretation plan	Highly effective Highly effective
Local road works	Sydney LEP 2012 Marrickville LEP	C47 C2	King Street conservation area (Sydney LEP) King Street/Enmore Road conservation area (Marrickville LEP)	Change in heritage conservation area values	No surface works associated with the local road works would occur immediately adjacent to or within the heritage conservation area boundaries. There would be no change to the visual setting of the conservation area. King Street is a major state road, part of the Princes Highway, running through the retail precinct of Newtown. It serves as one of the key connections between the Sydney CBD and areas in the south of Sydney. It is a four-lane, two-way road with two lanes in each direction.	No impact – Change in heritage conservation area values	No mitigation required.	n/a

Impact area	LEP and / or other register	LEP no. (or other ID if LEP does not apply)	Item	Impact type	Comment	Degree of impact	Mitigation measure	Effectiveness of measure
					King Street has a posted speed limit of 50 kilometre per hour and on-street parking in non-clearway periods. The project does not propose to modify King Street, including speed limits or on-street parking arrangements along King Street. In future years, King Street is expected in most cases to experience reduced or similar peak hour volumes under the 2021 'with project' scenario and 2031 cumulative scenario when compared to the without project scenario (refer to Technical Working Paper: Traffic and Transport (AECOM, 2015). The exception to this would occur in the 2031 cumulative case, where AM peak hour volumes southbound would increase when compared to the 'without project' scenario. However, this is in the opposing direction to the dominant AM peak hour and is within the design carrying capacity of the road.			

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Appendix C

Archaeological Monitoring and Excavation Methodology

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Archaeological Monitoring and Excavation

Introduction

As identified in **Chapter 8**, a proposed methodology to manage the potential to disturb areas of archaeological potential would be implemented for the following potential areas of archaeological potential:

- Potential air raid shelters near the corner of Campbell and Euston Roads;
- Kilns and ancillary structures associated with the Brickworks Pty Ltd City Yard; and
- Kilns and ancillary structures associated with the NSW Brick Company Ltd.

This section provides details regarding the manner in which these site would be tested and, if warranted, salvaged prior to construction works. Test excavation and salvage has been recommended within the areas marked as being of archaeological potential prior to the commencement of construction in these areas.

The final methodology would be contained within the Construction Environmental Management Plan and finalised in consultation with Department of Planning and Environment, City of Sydney Council and NSW Office of Heritage (Heritage Division).

Proposed Methodology

Test excavation

Prior to works within the areas of archaeological potential, an appropriately qualified archaeologist would supervise the excavation of test trenches to determine the archaeological preservation and the location of the identified potential relics. Excavation would be undertaken by personnel using a smooth edged mud bucket or by hand shovel, dependant on the location, depth, safety considerations and prevailing soil conditions, to remove top soil. An archaeologist would monitor the works and would halt excavations when evidence of intact deposits or relics are encountered.

Should archaeological testing reveal substantial, intact or significant archaeological features, deposits and/or relics, construction in the immediate area will cease with an appropriate works exclusion area established and the NSW Heritage Division will be contacted. Based on a review of the outcome of the test excavations, a detailed research design and salvage excavation methodology, building on that provided below will be developed in consultation with the NSW Heritage Division.

Recording

If relics, features or deposits are uncovered, the machine or work personnel would stop and the find will be inspected by the archaeologist. The following methodology would be implemented:

- Establish a survey datum to record the location of the features, deposits and/or relics;
- Archaeological excavation and/or cleaning with hand tools, as required, in order to define the feature, deposits and/or relics;
- Produce scaled plans and cross-sections, as required;
- Photographically record all phases of the excavations and recording with an appropriate photographic scale and photographic log;
- Complete a context recording form for each feature, which should be sequentially numbered and also record the location, dimensions and characteristics of the feature, context and/or spit; and
- Artefacts should be bagged according to the feature, context and/or spit from which they were retrieved.

Excavation

Should test excavations reveal substantial or intact archaeological features, deposits and/or relics that are considered to be of archaeological significance, a program of salvage excavation would be undertaken, following consultation with the Office of Environment and Heritage (Heritage Division). The size and location of the excavation trenches would be determined by the location, nature and extent of the archaeology revealed during test excavations. The focus of the excavation would be to mitigate the impact to the archaeological record by investigating the archaeology to the extent necessary to understand and interpret the feature or relic.

The following should guide the excavation:

- The location of the excavation trenches should be recorded, in relation to the extant structures and other features, using Differential Global Positioning System to produce a detailed site plan;
- The squares should be excavated according to context, or in two centimetre spits in the absence of identifiable contexts;
- Spoil from the squares should be sieved through three millimetre mesh and all artefacts retrieved;
- Artefacts should be bagged according to the feature, context and/or spit from which they were retrieved; and
- Squares should be excavated to sterile soil or until safe working limits are reached.

In relation to recording, the following should be undertaken:

- A plan of the site prior to excavation;
- Standardised context recording form completed for each feature, context and/or spit which should be sequentially numbered and record the location, dimensions and characteristics of the feature, context and/or spit;
- A plan of features and contexts (if found) prior to excavation;
- Plan and sections of the trench on completion of excavation;
- Photographic record of the excavation including the site prior, during and on the completion of the excavation using an appropriate photographic scale.

Artefact Analysis & Collections Management Policy

Should artefacts be uncovered during the excavation, they would be cleaned according to their material type (ie. washing for glass and ceramic, dry brushing for bone and metal). Hazardous materials would be recorded by photographs and discarded appropriately.

The artefacts retrieved would be entered into a database containing the following as a minimum:

- Unique artefact number;
- Locational information;
- Material type;
- Form/function;
- Colour/decoration;
- Dimensions;
- Weight; and
- Additional comments if necessary.

The artefact database would be developed with regard to quantity and nature of the material retrieved. At the conclusion of the analysis, artefacts from contexts that are not secure or that are not of State or Local significance would be disposed of. Building materials would be recorded photographically and catalogued and a small sample of items kept for further analysis and the remaining items discarded. Once the scope of the artefact collection is established, a further discard policy would be developed in consultation with the Office of Heritage (Heritage Division) and the Department of Planning and Environment to identify what materials are to be discarded, retained only as samples, retained for long-term storage and retained for possible display. Following confirmation of the policy, the collection would be culled and the remainder prepared for long-term storage.

Once catalogued and analysed, Roads and Maritime would confer with relevant stakeholders to establish the preferred recipient of the permanent artefact collection. Storage, conservation, curation and display would be determined at this time and in light of the quantity and nature of the recovered material.

Reporting

A report would be produced detailing the excavation, including the implementation of the methodology, the results of the test excavations and analysis of artefacts retrieved (if any). The following headings would be used as a minimum:

- Executive Summary;
- Introduction;
- Site History;
- Research Design;
- Methodology;
- Excavation results, including descriptions of features and artefacts identified (if any);
- Analysis;
- Conclusion and future management recommendations (if required).

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