7.0 Environmental assessment

7.8 Non-Aboriginal heritage

This section outlines the potential non-Aboriginal heritage impacts associated with the construction and operation of the proposed modification, and proposes mitigation measures to address these impacts. A detailed non-Aboriginal heritage impact assessment has been undertaken for the proposed modification and is included in **Appendix J** (Non-Aboriginal heritage assessment).

7.8.1 Introduction

Table 7-64 sets out the Secretary's Environmental Assessment Requirements (SEARs) relevant to the non-Aboriginal heritage assessment and identifies where the requirements have been addressed in this section.

Table 7-64 SEARs - Non-Aboriginal heritage

| Desired Performance Outcome | SEAR | Where addressed within the modification report | | |
|-----------------------------------|---|---|--|--|
| Other Issues | An assessment of the following issues must be undertaken in accordance with the commitments in Attachment 2 of the M7 Motorway (SSI 663) – Project Modification letter submitted 9 May 2022 (via Major Projects Portal): Non-Aboriginal heritage Extract from Attachment 2 of the M7 Motorway (SSI 663) – Project Modification letter submitted 9 May 2022: Identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of: a. environmental heritage, as defined under the NSW Heritage Act 1977 b. items listed on the National and World Heritage lists. Where impacts to State or locally significant heritage items are identified, the assessment will: a. include a statement of heritage impact for all heritage items including the State heritage listed Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) Site and Blacktown Native Institution (including significance assessment) b. consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant) c. outline measures to avoid and minimise those impacts in accordance with the current guidelines d. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the | Section 7.8.4 - Section 7.8.6 Cumulative impacts are assessed in Chapter 7.18 of the Modification report | | |
| | NSW Heritage Council's Excavation Director criteria). | | | |

7.8.2 Method of assessment

The overall approach to the non-Aboriginal heritage assessment is described below.

The term 'heritage item' is used throughout this section to indicate any non-Aboriginal historical heritage place including buildings, structures, and archaeological remains. Each heritage item is individually numbered but may include either a single component or multiple components making up a broader complex with direct historical and cultural associations.

Legislation and policy context

The non-Aboriginal heritage impact assessment has been prepared in accordance with the following:

- Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act)
- Heritage Act 1977 (NSW)
- Blacktown Local Environmental Plan 2015 (Blacktown LEP 2015)
- Fairfield Local Environmental Plan 2013 (Fairfield LEP 2013)
- Liverpool Local Environmental Plan 2008 (Liverpool LEP 2008)
- Assessing Heritage Significance (NSW Heritage Office, 2001)
- NSW Heritage Manual (Heritage Office and Department of Urban Affairs and Planning, 1996)
- The Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance 2013 (the Burra Charter) (Australia ICOMOS, 2013)
- Statements of Heritage Impact (NSW Heritage Office & Department of Urban Affairs & Planning, 2002).

In addition, a review of archaeological and historical reports relevant to the proposed modification was completed.

Method of assessment

The non-Aboriginal heritage impact assessment methodology included:

- Identification of heritage-listed items within a defined study area, through a desktop review of statutory heritage lists including the State Heritage Register (SHR), heritage schedules in Local Environmental Plans (LEPs) and State Environmental Planning Policies (SEPPs), Section 170 Heritage and Conservation Registers (S170 Registers), the National Heritage List (NHL) and the Commonwealth Heritage List (CHL)
- Review of previous heritage reports, heritage register listings, and historic plans within and adjacent to the study area
- Review of historical development of the Westlink M7 and surrounding areas using the historic
 plans, historical photographs, newspapers and other primary and secondary historical sources
- Site inspection of the study area to assess the existing road and adjoining properties to identify the existing character and potential heritage items that may be affected by the proposed modification
- Conducting an assessment of significance on non-Aboriginal heritage items within the study area.
 This combined with the identification of potential heritage impacts from the construction and operation of the proposed modification determined relative impacts, and was used to prepare a Statement of Heritage Impact (SoHI)
- Recommendation of appropriate environmental management measures to avoid, mitigate and/or manage potential impacts on relevant non-Aboriginal heritage values.

7.8.3 Study area

The study area for this assessment consists of a 250 metre radius applied around the construction footprint of the proposed modification. Construction ancillary facilities beyond this 250 metre radius formed part of the study area and were subject to this assessment. The study area passes through the

LGAs of Blacktown City Council, Fairfield City Council and Liverpool City Council. The study area is shown on Figure 7-73.

7.8.4 **Existing environment**

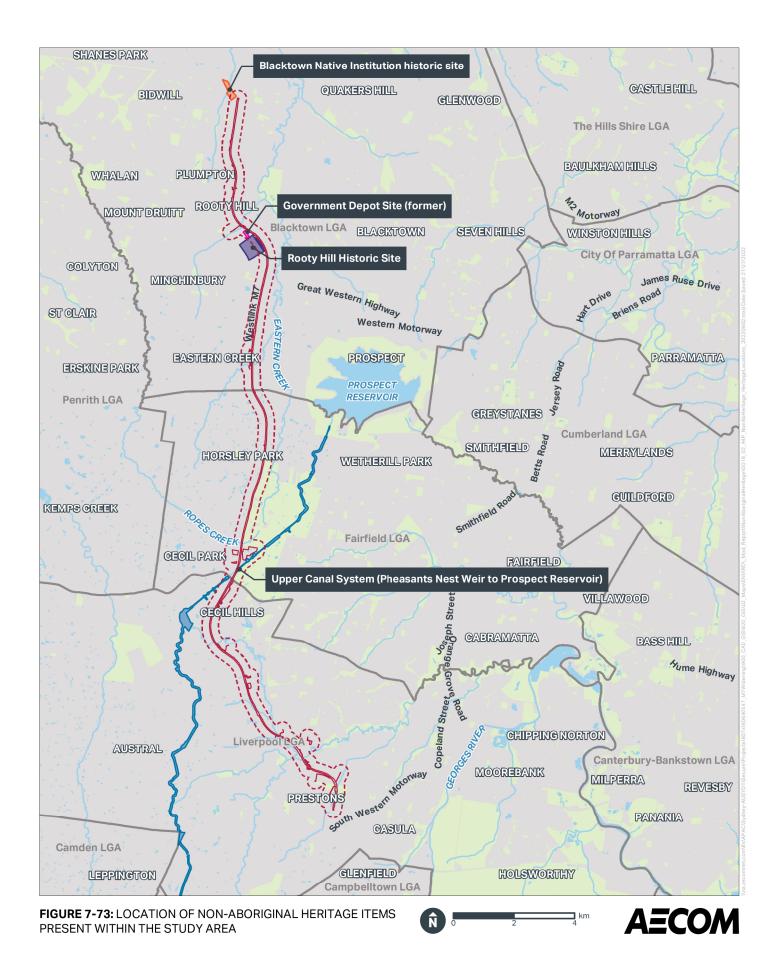
Recorded heritage items

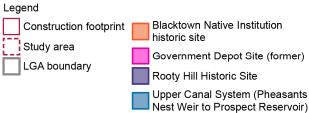
A search of the study area found the presence of the recorded heritage items outlined in Table 7-65, and shown on Figure 7-73.

No items are recorded on the World Heritage List (WHL), National Heritage List (NHL), Commonwealth Heritage List (CHL) or Register of National Estate (RNE) within or in the vicinity of the study area.

Table 7-65 Recorded heritage items within and adjacent to the study area

| Heritage listed item | Address | Heritage list | Proximity to construction footprint |
|--|---------------------------------|---|---|
| Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) | Various | State Heritage Register (SHR 1373) | Within |
| Blacktown Native Institution | Richmond Road, Oakhurst | State Heritage Register (SHR 1866) | Adjacent |
| Archaeological site – Native Institute Site | | Blacktown LEP 2015 (Archaeological Item) A121 | |
| Government Depot Ruins | Dunsmore Street, Rooty Hill | State Heritage Register (SHR 0345) | 80 metres |
| Archaeological site – Ruins (former Government Depot site) | | Blacktown LEP 2015 (Archaeological Item A123) | |
| The Rooty Hill | Eastern Road, Rooty Hill | State Heritage Register (SHR 01756) | More than 50 metres |
| West Fairfield Reservoir (WS 0137) | 92 Villiers Road, Cecil Park | Sydney Water s170 heritage & conservation register (4575816) | Over 250 metres (outside of study area) |





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Source

Historical context from early European settlement

In order to appreciate the heritage significance of an item, it is important to understand the historical context in which it developed and the subsequent factors that have influenced its development.

The following sections briefly discuss the historical background of the items potentially impacted by the proposed modification during construction and operation. Further discussion is provided in **Appendix J** (Non-Aboriginal heritage assessment).

Blacktown Native Institution

The concept of the Blacktown Native Institution originated in 1814 when a trader and former London Missionary proposed a place be built to educate Aboriginal people. Originally opened as Parramatta Native Institution at Parramatta in 1815, it was relocated the following year to a site which was later known as Black Town, and by 1823 it expanded to house at least 60 children. Due to a low number of enrolments and the rising cost of the institute's operation, its closure was recommended in 1829. In 1829, a new owner constructed a cottage and set up a small boarding school that his family ran until the late 1870's. In 1831, it was noted that the Blacktown Native Institution building was in disrepair with rain damage and roof rotting and was advertised for sale in 1833. It was re-sold numerous times before 1924 when the house was destroyed by a fire.

From 1955 to 1982, the site was used as a dairy farm and a fibro cottage built over the ruins of the former institution. The fibro cottage was demolished in 1985 for a housing development that never eventuated. By 1986, the preservation of the Blacktown Native Institution became a high priority for the Dharug Aboriginal Land Council, with archaeological investigations identifying within the boundaries of the original site the footings of the institute building, a contact site, and a pre-contact camp (Bickford, 1981). Subsequently, in 2002 the site was listed on the Blacktown City Council LEP and a conservation management plan was commissioned. In 2011 it was listed on the NSW State Heritage Register, and in 2018 the NSW State Government handed the land on which the Blacktown Native Institution was built, back to the Dharug Aboriginal People.

The site of the former Blacktown Native Institute is currently a grassed, fenced field with an art installation depicting three stands of flowers (refer Figure 7-74). The site of the former schoolhouse of the Native Institute was located along the Rooty Hill Road south frontage. It is currently fenced and surrounded by stands of mature trees. Bells Creek runs to the west of the former schoolhouse and has been modified. The site has been subjected to disturbance primarily relating to the site's former agricultural use until 1985, and activities relating to clearance, sewerage and drainage works and the modification to Bells Creek following 1985 (Godden Mackay Logan Pty Ltd, 2018). Despite these disturbances, there is still potential for archaeological remains of the schoolhouse, the later residence "Lloydhurst", and the dairy farm. A previous inspection undertaken in 2018 noted that visible surface material was identified in the vicinity of the former institute building site (Godden Mackay Logan Pty Ltd, 2018).



Figure 7-74 Current view of the grassed areas and mature trees on the site of the Blacktown Native Institution

The Rooty Hill and Government Depot Site

The Rooty Hill site is a remnant of one of the four Government Depots and stock farms first selected in 1802 and further developed by Governor Macquarie after 1810. The Rooty Hill Government Depot Site and stock farm developed as the second most important of the stock farms in colonial NSW, covering 38,728 acres with boundary at the present-day City of Blacktown perimeter. It functioned to provide an important reserve food supply for the colony during its establishment when it frequently faced crop failures, drought and other difficulties. The Government Depot site was built within the stock farm in 1815. The site is located at the foot of the Rooty Hill (ruins still present), and is shown in Figure 7-75. This residence was sometimes referred to as the Superintendent's cottage, Government House, or Thornleigh house as it was the residence of the Superintendent of the farm. By the 1960s the residence was in a ruinous state and was demolished.

By 1822 the Rooty Hill stock farm was comprised of four paddocks of 50 acres each near the residence, used for grazing, growing wheat and maize with temporary log huts for stock keepers and convict labour. Between the early 1820s and by 1827, the size of the Rooty Hill farm was reduced through private grants to settlers and was closed in December 1828. It was reopened in 1832 and leased out for grazing cattle. The site was used for general farming, grazing and cattle breeding until droughts in 1875-76 where livestock was sold and the land was used for fruit-growing and canning.

Agricultural land use, such as grazing and cropping, would have had a low-moderate impact on subsurface archaeological remains, depending on the depths of the foundations and depths of later ploughing. Consequently, archaeological deposits may be present on the site for the main house and its associated outbuildings, however, given that the long-huts/barrack were referred to as "temporary", the archaeological potential for these are assessed as low. Aside from post-holes from any fencing, there is little to no potential for non-Aboriginal archaeological remains to be present for the four paddocks. An open stone artefact scatter has been located on the site indicating the site's potential as a research resource for Aboriginal history in the area. The site is currently a sports field and large, grassed public open space. The site is highly landscaped and manicured, with designated playing fields and asphalt courts (refer Figure 7-76).



Figure 7-75 Rooty Hill Government Farm residence of the Superintendent of the stock farm, also known as "Thornleigh House" (Source: Blacktown City Council Libraries. Blacktown Memories; Ref. no. 004792)



Figure 7-76 Current view of The Rooty Hill site

Upper Canal System

Constructed between 1880 and 1888, The Upper Canal System forms a part of the Upper Nepean scheme, supplying water to Sydney since its construction. The Upper Nepean Scheme was Sydney's fourth water supply system, consisting of two diversion weirs in the Upper Nepean River Catchment, located at Pheasant's Nest and Broughton's Pass, with water feeding into a reservoir at Prospect through a series of tunnels, canals, and aqueducts known as the Upper Canal. The 64 kilometre long Upper Canal remains the only way of transferring water from the four major Nepean dams, Cataract, Cordeaux, Nepean and Avon rivers, into the Prospect Reservoir.

The need for the canal system was realised in 1867, and work commenced in 1880. Each section profile was built using a variety of materials depending on the landscape it was to pass through. Tunnels were excavated where the canal had to go under a hill and were lined with brick or stone or unlined (where cut through solid rock). Tunnels in excess of 670 metres required air shafts for ventilation, including one capped with a cylindrical brick sandstock brick structure and an iron/steel cover, located in the median of the M7 at Cecil Hills (No. 4 Shaft within the study area, see Figure 7-77) (Edward Higginbotham & Associates Pty Ltd, 2002). The depth of the tunnel varies, and although the specific depth has not been not confirmed by Water NSW, sections of the Cecil Hills tunnel run approximately 30 metres below the existing motorway (SMEC Australia Pty Ltd, 2019). The original construction of the Westlink M7 in this area was done 'at grade' with the road works built up above the former ground level.

In some locations concrete was used to line the canal walls. Additional design features were added to assist in controlling water flow within the canal, including multiple flumes, aqueducts, coping drains, stop logs, sluice gates, and wrought iron inverted syphons (Stedinger Associates Pty Ltd, 2013). The sides of the canals were subjected to regular cleaning, with some lengths patched and relined by the 1900s. The canal in this area is a tunnel and is not visible from the surface, or accessible as part of this heritage assessment. The only visible feature that indicates the location of the tunnel is the concrete portal entrance installed when the Westlink M7 was originally constructed.

In the 20th century, only minor work was required to bring the Upper Canal to its current 150 million gallon per day capacity, including replacement of rough areas of the canal and tunnels with concrete to improve water flow. The Upper Canal is listed on the State Heritage Register as the "Upper Canal System" under the *Heritage Act 1977* (NSW), and includes the entire length and area of the Upper Canal corridor and all related water supply components.



Figure 7-77 View of the Tunnel shaft 4 entrance above the Upper Canal Tunnel located in the median of the Westlink M7 (looking south west from the southbound lanes of the Westlink M7) (Source: Google Earth, 2021)

Previous non-Aboriginal heritage assessments undertaken in the study area

A summary of the non-Aboriginal heritage assessments previously undertaken in the study area is provided below.

Western Sydney Orbital Non-Indigenous Heritage Report, 1999

A preliminary heritage assessment was undertaken within the proposed route of the Western Sydney Orbital in 1995 (Robynne Mills Archaeological and Heritage Services, 1995). During archival investigations, 34 items of known heritage significance were identified within the vicinity of the proposed route across multiple local government areas. During a preliminary survey, 11 sites were identified as areas of possible heritage significance including one burial site, seven standing structures, and three archaeological sites. Following the assessment of heritage significance, further investigations were undertaken, particularly at the site of a possible burial. This area and others identified were fully assessed and recorded, with subsequent approval from NSW Heritage Council for its removal from the motorway corridor. Due to the presence of both European and Aboriginal cultural heritage, an archaeological site with structural remains and exotic trees ('SO-E-4') was recommended for an historical research program including further survey and excavation. As a result of findings in the report it was concluded that 'there is no archaeological reason why the proposed development should not proceed', providing their recommendations were adhered to.

Conservation Management Plan for the Upper Canal, Pheasant's Nest to Prospect Reservoir, 2002

This Conservation Management Plan (CMP) was prepared by Edward Higginbotham & Associates (2002) for the former Sydney Catchment Authority (now Water NSW). It is a three-volume report comprising its history, survey results and heritage significance of the canal, conservation management policies, guidelines and recommendations.

Upper Canal Conservation Management Plan, 2016

This report is an update of Higginbotham's 2002 CMP for the Upper Canal System, prepared for Water NSW.

M12 Motorway Non-Aboriginal Heritage Assessment Report, 2019

A non-Aboriginal heritage assessment was undertaken as part of the Environmental Impact Statement for the M12 Motorway (now approved) (Jacobs Group Pty Ltd on behalf of Roads and Maritime Services, 2019a). The assessment identified 13 listed or potential items of heritage significance within the footprint of the M12 Motorway. This included the Cecil Hills Tunnel portion of the State-heritage listed Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) and the former Cecil Hills Public School, Post Office and Church site at the intersection of Elizabeth Drive and the Westlink M7.

It was noted that the canal is located in a brick-lined tunnel approximately 32 metres below the ground surface. The brick-lined Tunnel Shaft 4 for the Cecil Hills Tunnel is located within the existing Westlink M7 central road median, approximately 300 metres north of Elizabeth Drive (Figure 7-78). The shaft was measured as 33.8 metres deep (Roads and Maritime Services, 2019a). As there are no works required to the Westlink M7 central road median as part of the M12 Motorway, no impacts were expected to this shaft for the construction and operation of the M12 Motorway. However, owing to the high significance of the Upper Canal System, it was recommended that policies in the CMP for the Upper Canal System be incorporated into a Construction Cultural Heritage Management Plan.

The former Cecil Park Public School, Post Office and Church site are located on the northern intersection of Wallgrove Road and Elizabeth Drive, adjacent to the Westlink M7. As noted above, these buildings represented the civic centre of the village of Cecil Park and were assessed as having archaeological potential. The site of the former Cecil Park Public Hall was also identified on Wallgrove Road, approximately 160 metres north-east of the former church site. In 2019 test excavations were undertaken on the site, which confirmed the site school and other buildings. It was recommended that further archaeological salvage excavation be undertaken.



Figure 7-78 Location of Tunnel Shaft 4

Significance assessment

In order to understand how a development would impact on a heritage item, it is essential to understand why an item is significant. An assessment of significance is undertaken to explain why a particular item 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 (ICOMOS)*Charter for Places of Cultural Significance 2013 (Australia ICOMOS 2013) as meaning "aesthetic, historic, scientific, social or spiritual value for past, present or future generations" (Article 1.2).

The significance assessment has been undertaken in accordance with the guideline *Assessing Heritage Significance* (NSW Heritage Office, 2001), part of the *NSW Heritage Manual* (Heritage Branch, Department of Planning, 2001). The full assessments of significance and statements of significance for each heritage-listed item are provided in **Appendix J** (Non-Aboriginal heritage assessment), and summarised in Table 7-66.

Table 7-66 Summary of significance for heritage-listed items

| Heritage item | Summary of significance |
|------------------------------------|---|
| Blacktown Native Institution | The Blacktown Native Institution is a site of State significance because of its combination of historical, social and archaeological values. The Blacktown Native Institution played a key role in the history of colonial assimilation policies and race relations. The site is notable for the range of associations it possesses with prominent colonial figures. The Blacktown Native Institution site is valued by the contemporary Aboriginal community and the wider Australian community as a landmark in the history of cross-cultural engagement in Australia, where the first land grants were made to Aboriginal people (Colebee and Nurragingy). For Aboriginal people in particular, it represents a key historical site symbolising dispossession and child removal. The site is also important to the Sydney Maori community as an early tangible link with colonial history of trans-Tasman cultural relations and with the history of children removed by missionaries. The Blacktown Native Institution is a rare site reflecting early 19 th century |

| Heritage item | Summary of significance |
|---|--|
| | missionary activity. The site has the potential to reveal evidence about the lives of the children who lived at the school and the customs and management of the earliest Aboriginal school in the colony. The site also has the potential to contain archaeological evidence relating to later phases of land use and Aboriginal camps. |
| Government Depot ruins | The Government Depot site has potential State significance for its association with Governor Macquarie and is certainly of regional significance as the former residence of the Superintendent of the stock farm. The site also has local significance through its association with early travellers and settlers in the district. The station at Rooty Hill was the next principal one to that at Camden for the grazing of the Government horned cattle and horses in the early 1800s (Bertie, 1935). |
| The Rooty Hill | The Rooty Hill is of State heritage significance as a remnant of one of the four Government Depots and stock farms first selected by Governor King in 1802 and further developed by Governor Macquarie after 1810. Under Macquarie, Rooty Hill Depot and stock farm developed as the second most important of the stock farms in colonial NSW. It functioned to provide an important reserve food supply for the colony during its establishment when it frequently faced crop failures, drought and other difficulties. The stock farm also enabled the government to control livestock prices and prevent exploitation of the market, and contributed to the establishment of colonial breeding herds. An open stone artefact scatter has been located on the site indicating the site's potential as a research resource for Aboriginal history in the area. The hill also has significance to the Aboriginal community as a post-contact camping and meeting place for those travelling over the Blue Mountains and into Sydney. |
| Upper Canal System (Pheasants Nest Weir to Prospect Reservoir) | The Upper Canal System is significant as a major component of the Upper Nepean Scheme. As an element of this Scheme, the Canal has functioned as part of Sydney's main water supply system since 1888. Apart from maintenance and other improvements, the Upper Canal has changed little. The Canal is aesthetically significant and is an excellent example of 19th century hydraulic engineering, including the use of gravity to feed water along the canal (BCubed Sustainability, 2/2006). |

7.8.5 Impact assessment

As part of the impact assessment methodology, an assessment of significance was conducted for each of the four heritage items above, which are provided in further detail in **Appendix J** (Non-Aboriginal heritage assessment). Following the assessment of significance, the potential impacts during construction and operation of the proposed modification were assessed, and mitigation measures proposed to address these impacts.

Construction

Of the four heritage items identified within and adjacent to the proposed modification, only one is situated within the construction footprint (Upper Canal System) and would be potentially subject to construction-related impacts.

Upper Canal System

From a heritage perspective, the proposed modification is not likely to have a direct impact on the Upper Canal System.

The construction of the proposed modification in this location would require excavation to a depth of up to one metre and would be contained within the current median area between lanes of traffic either side. The tunnel is approximately 30 metres below the ground level, and the shaft is about 33.8 metres deep. Consequently, impacts are not anticipated on the tunnel structure as a result of the construction of the proposed modification. As the works would be restricted to the current road corridor for the Westlink M7, there are not expected to be any direct impacts to the Cecil Hills tunnel section located below the Westlink M7. The location of the Upper Canal System is shown in Figure 7-79.

However, an air shaft ("No. 4 Shaft") contemporaneous with the construction of the Cecil Hills tunnel is located within the median of the Westlink M7. All air shafts within the Upper Canal System are considered to be within the category of "Ancillary Facilities, Structures and Infrastructure" of the Upper Canal System (E. Higgenbotham, 2000) (NSW Government Architect's Office, 2016). The air shafts within tunnels form part of the tunnel fabric, and are therefore considered to be of exceptional heritage significance (NSW Government Architect's Office, 2016). The No. 4 Shaft above-ground access point within the M7 median comprises a modern metal structure which is not considered to be part of the heritage fabric associated with the Upper Nepean Canal System. Beneath this modern access structure is 1.5 metres of fill, followed by the original air shaft constructed of timber and brick. The depth of impact within the road corridor is assessed as one metre, which would impact the ballast fill but not the fabric of the No. 4 Shaft. However, while the current design avoids direct impact to the air shaft, vibration during construction may impact the stability of the air shaft. It should be noted that the 2002 CMP contains the following recommendation for the air shaft:

The brick cap to the air shaft on the Cecil Hills Tunnel... should be stabilised, maintained and preserved (Higginbotham, 2002: Volume 2, 66).

Measures would need to be implemented to minimise accidental damage during construction by machinery and ground vibration impacts from construction works in the vicinity of the Upper Nepean Canal System.

The Rooty Hill and former Government Depot Site

The Rooty Hill and former Government Depot Site are located outside the construction footprint of the proposed modification and would not be impacted by the construction for the proposed modification. This is shown in Figure 7-80.

Blacktown Native Institution

Although the Blacktown Native Institution Historic Site is adjacent to the M7 Motorway, the proposed works in this area would be contained within the Westlink M7 corridor (Figure 7-81). It is therefore considered unlikely that there would be any impact to this item.

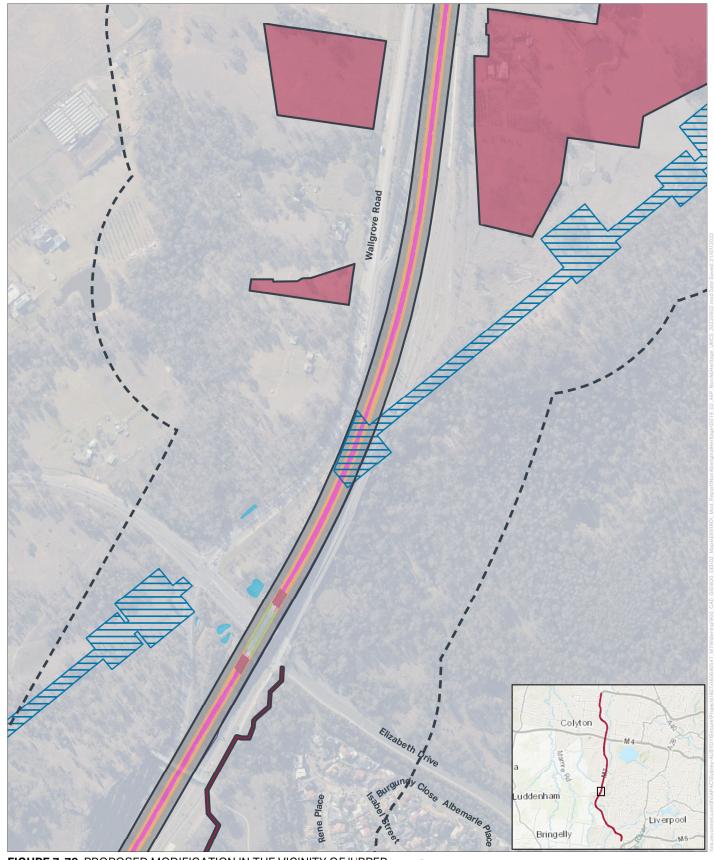


FIGURE 7-79: PROPOSED MODIFICATION IN THE VICINITY OF 'UPPER CANAL SYSTEM (PHEASANTS NEST WEIR TO PROSPECT RESERVOIR)' [SHR 1373]



Legend

Construction footprint

Study area

Upper Canal System (Pheasants Nest Weir to Prospect Reservoir)

Construction ancillary facility

Access route for construction ancillary facility

ancillary facility

— Existing noise wall

Bridge widening area

Existing on-site detention basin

Line-marking and resurfacing works

Median earthworks

Proposed widening into the existing median

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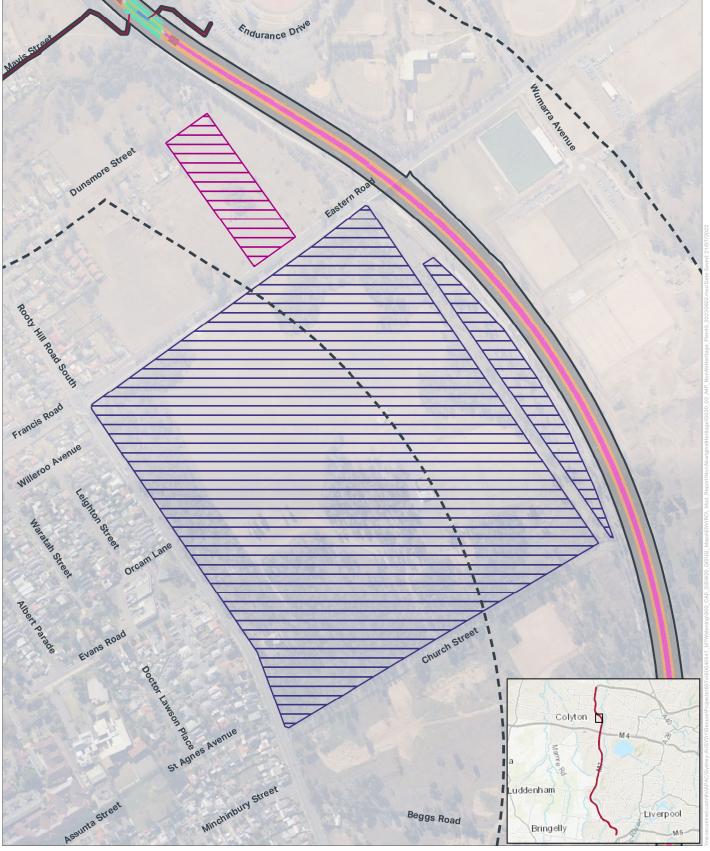
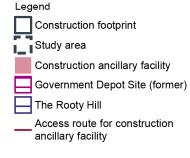
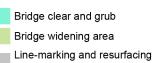


FIGURE 7-80: PROPOSED MODIFICATION IN THE VICINITY OF THE ROOTY HILL' [SHR 01756] AND 'GOVERNMENT DEPOT SITE (FORMER)' [SHR 0345]







Median earthworks

Temporary stream crossing diversion

Proposed widening into the existing median

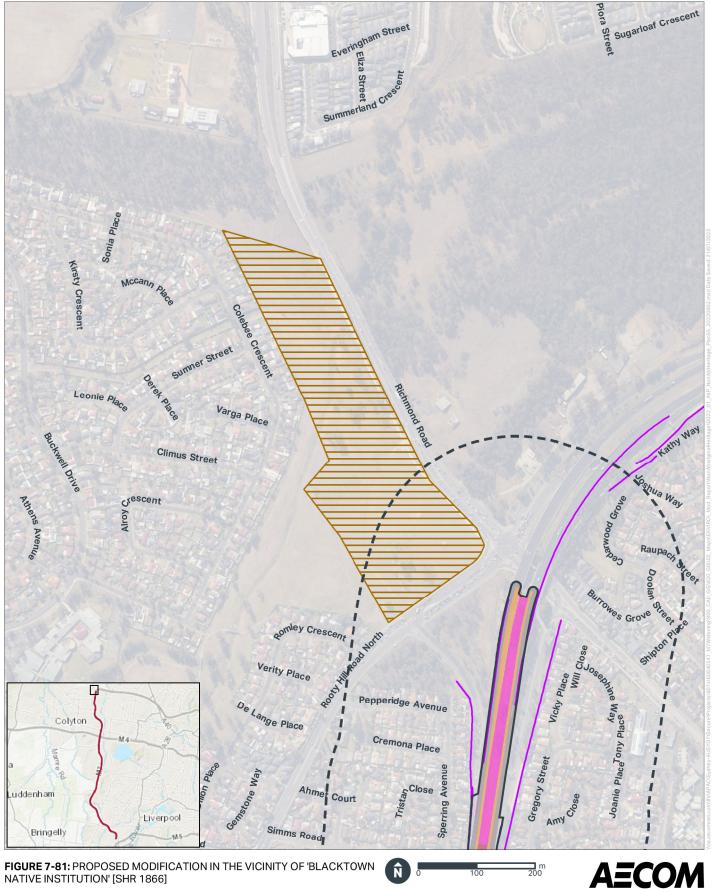
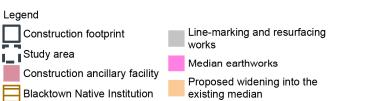


FIGURE 7-81: PROPOSED MODIFICATION IN THE VICINITY OF 'BLACKTOWN NATIVE INSTITUTION' [SHR 1866]



Existing noise wall

Operation

The Westlink M7 would continue to operate as per the existing motorway, following construction. In relation to ongoing impacts during operation, only the Upper Canal System would be within the operational footprint of the proposed modification. This item would be avoided and is not expected to be directly or indirectly impacted.

In relation to potential ongoing visual impacts caused by the proposed modification during operation, an Urban Design, Landscape Character and Visual Impact Assessment (LCVIA) was prepared (refer **Appendix K**). It was found that due to the underground nature of the Cecil Hills tunnel portion of the Upper Canal System, no visual impacts during operation are expected. In relation to the Blacktown Native Institution Historic Site, the former Government Depot Site or to the Rooty Hill Historic Site, both items are archaeological in nature and therefore would not be impacted visually.

Statement of Heritage Impact

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

The SoHI for the proposed modification is provided in Appendix J (Non-Aboriginal heritage assessment). The potential impacts to Upper Nepean Canal System, Rooty Hill Historic Site, including the former Government Depot Site, and the Blacktown Native Institution Historic Site have been assessed against the criteria outlined in the *NSW Heritage Division guidelines* (NSW Heritage Office & Department of Urban Affairs & Planning, 2002). The impacts of the proposed modification have been graded against the significance of the site as outlined in Section 7.8.4.

Table 7-67 Summary of direct and indirect impacts

| Impact type | Impact |
|--|--|
| Major negative impacts (substantially affects fabric or values of State significance) | N/A |
| Moderate negative impacts (irreversible loss of fabric or values of local significance; minor impacts on State significance) | N/A |
| 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) | N/A |
| Negligible or no impacts (does not affect heritage values either negatively or positively) | There are expected to be negligible impacts to the Blacktown Native Institution, the Government Depot site and the Rooty Hill Historic Site. There would be no change to their operation or indirect visual impacts. |
| | With the application of mitigation measures there is not expected to be any direct or indirect impact to the Upper Nepean Canal System tunnel section and air shaft which passes beneath the Westlink M7. |
| Minor positive impacts (enhances access to, understanding or conservation of fabric or values of local significance) | N/A |
| Major positive impacts (enhances access to, understanding or conservation of fabric or values of State significance) | N/A |

7.8.6 Management and mitigation

Based on the assessment described above, the mitigation and management measures described in Table 7-68 are proposed to be implemented to address the potential impacts to non-Aboriginal heritage items.

Table 7-68 Mitigation measures

| | | | Timing |
|----|---|---|--|
| H1 | A Construction Heritage Management Plan, to be included in the Construction Environmental Management Plan, will be prepared prior to construction of the proposed modification. The CEMP should include the location of the known heritage items that are within the study area, including the Upper Canal System, details relating to vibration management measures for works in the vicinity of the Upper Canal, and a stop works procedure for unexpected finds. | Construction contractor | Construction |
| H2 | Vibration recommendations contained in Appendix E (Noise and vibration assessment) of the Modification report) will be adhered to during construction for minimising potential ground vibration impacts to the Upper Canal System tunnel. | Construction contractor | Construction |
| H3 | Consultation with WaterNSW detailing the proposed works in the vicinity of the Upper Canal System shall be undertaken prior to construction. A copy of this assessment shall be made available to WaterNSW prior to any consultation. | Transport | Construction |
| H4 | The Upper Canal System is subject to a Conservation Management Plan (CMP) (Government Architects Office, 2016). All work in the vicinity of this heritage item should have regard to the relevant policies included in this CMP, which are provided in Section 8.2 of Appendix J (Non-Aboriginal heritage assessment) of the modification report. These include but are not limited to: Policy 3: All works within the vicinity of the No. 4 Shaft should avoid its original fabric and avoid adding new fabric. Policy 40: An archival recording of No. 4 Shaft will be undertaken prior | Transport Construction contractor | Prior to construction Construction |
| 1 | H2 H3 | Plan, to be included in the Construction Environmental Management Plan, will be prepared prior to construction of the proposed modification. The CEMP should include the location of the known heritage items that are within the study area, including the Upper Canal System, details relating to vibration management measures for works in the vicinity of the Upper Canal, and a stop works procedure for unexpected finds. Wibration recommendations contained in Appendix E (Noise and vibration assessment) of the Modification report) will be adhered to during construction for minimising potential ground vibration impacts to the Upper Canal System tunnel. Consultation with WaterNSW detailing the proposed works in the vicinity of the Upper Canal System shall be undertaken prior to construction. A copy of this assessment shall be made available to WaterNSW prior to any consultation. The Upper Canal System is subject to a Conservation Management Plan (CMP) (Government Architects Office, 2016). All work in the vicinity of this heritage item should have regard to the relevant policies included in this CMP, which are provided in Section 8.2 of Appendix J (Non-Aboriginal heritage assessment) of the modification report. These include but are not limited to: Policy 3: All works within the vicinity of the No. 4 Shaft should avoid its original fabric and avoid adding new fabric. | Plan, to be included in the Construction Environmental Management Plan, will be prepared prior to construction of the proposed modification. The CEMP should include the location of the known heritage items that are within the study area, including the Upper Canal System, details relating to vibration management measures for works in the vicinity of the Upper Canal, and a stop works procedure for unexpected finds. H2 Vibration recommendations contained in Appendix E (Noise and vibration assessment) of the Modification report) will be adhered to during construction for minimising potential ground vibration impacts to the Upper Canal System tunnel. H3 Consultation with WaterNSW detailing the proposed works in the vicinity of the Upper Canal System shall be undertaken prior to construction. A copy of this assessment shall be made available to WaterNSW prior to any consultation. H4 The Upper Canal System is subject to a Conservation Management Plan (CMP) (Government Architects Office, 2016). All work in the vicinity of this heritage item should have regard to the relevant policies included in this CMP, which are provided in Section 8.2 of Appendix J (Non-Aboriginal heritage assessment) of the modification report. These include but are not limited to: • Policy 3: All works within the vicinity of the No. 4 Shaft should avoid its original fabric and avoid adding new fabric. • Policy 40: An archival recording of No. 4 Shaft will be undertaken prior |