















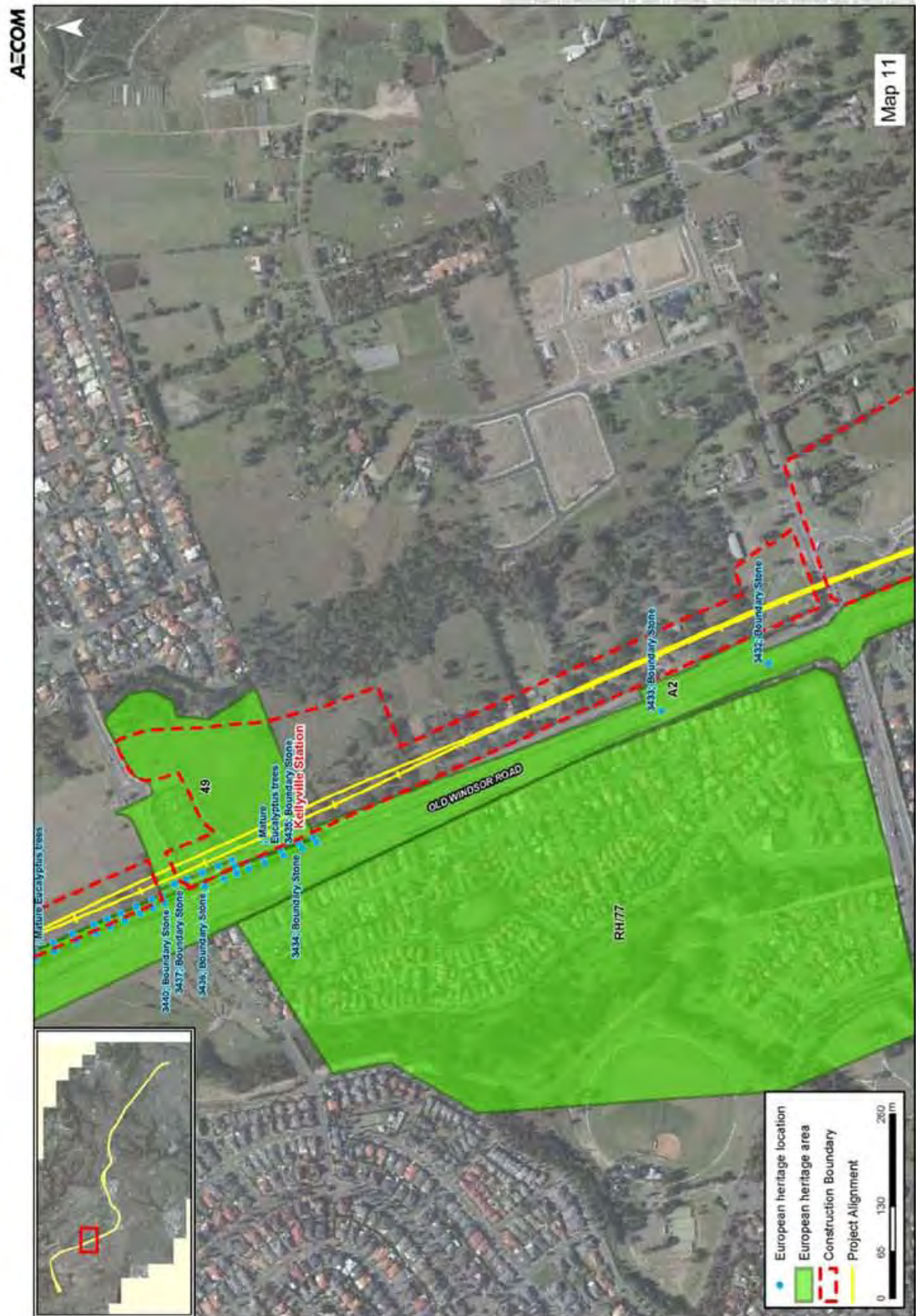






AECOM





AECOM

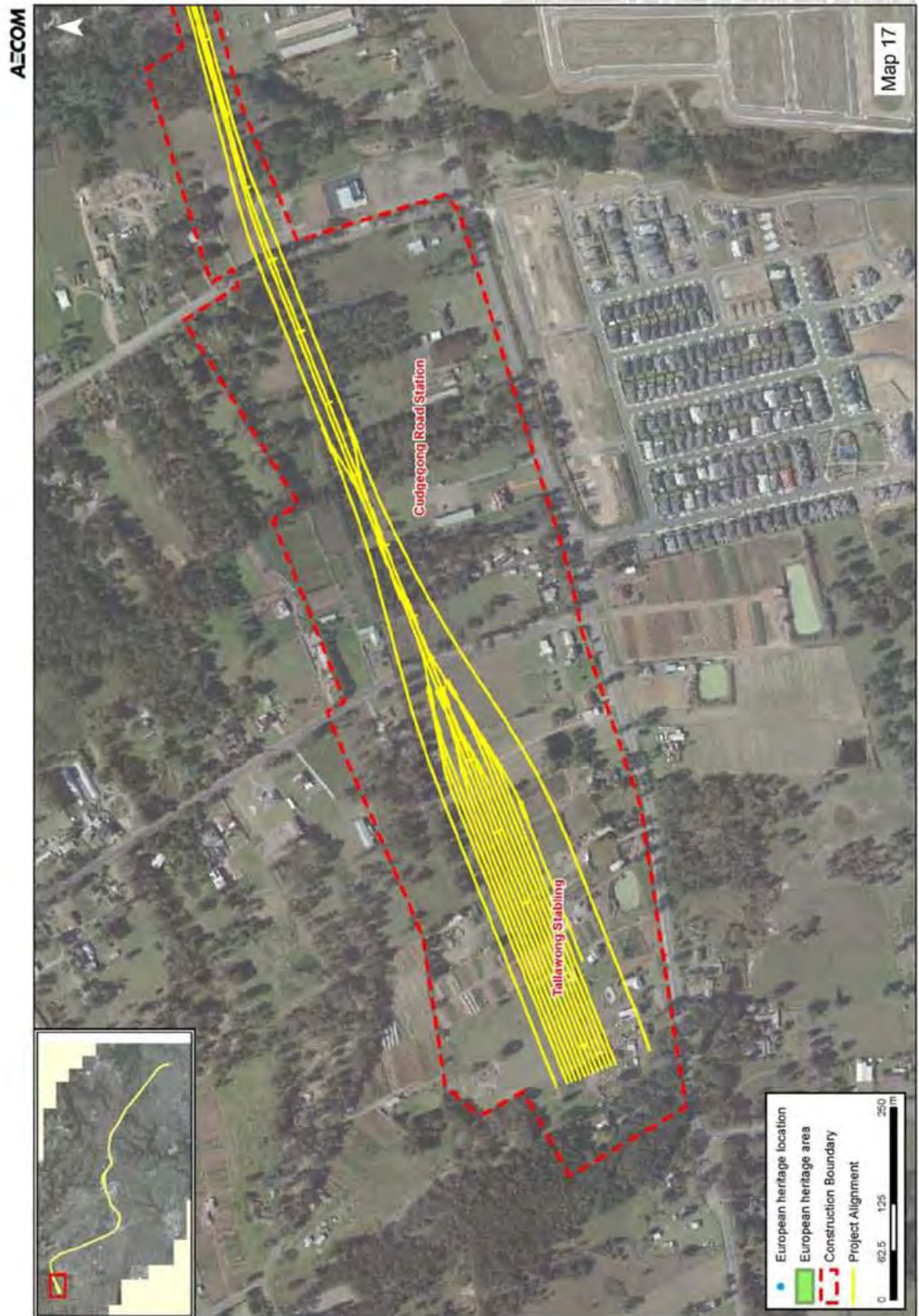












4.0 Mitigation Measures and Recommendations

4.1 Mitigation Measures

4.1.1 Recommended Mitigation Measures for Heritage Items

The following measures are recommended to mitigate against the adverse impacts on heritage values identified in Section 3.0.

Table 4.1 Summary of Impacts and Mitigation Measures for Heritage Items.

Site No.	Heritage Item	Overall Impact Ranking	Recommended Mitigation Measures
1 and 2	Bushland	Major adverse	<ul style="list-style-type: none"> Avoid any unnecessary removal of existing bushland vegetation in the affected areas. Rehabilitate removed areas of bushland following completion of construction works.
	'Woodlands' house	Minor adverse	<ul style="list-style-type: none"> Rehabilitate/reinstate bushland around services facility following completion of construction works.
3	Bushland, Beecroft/Cheltenham Park	Minor adverse	<ul style="list-style-type: none"> Rehabilitate/reinstate bushland around services facility following completion of construction works.
	Street trees	Minor adverse	<ul style="list-style-type: none"> Introduce new (replacement) street tree planting in affected zones following completion of works.
	Beecroft/Cheltenham Heritage Conservation Area	Minor adverse	<ul style="list-style-type: none"> Reinstate street trees and rehabilitate/reinstate bushland around services facility following completion of construction works.
4	Glenhope	Moderate adverse	<ul style="list-style-type: none"> Retain an adequate buffer of vegetation along the northern side of Castle Hill Road opposite Glenhope to preserve the character of its setting and to screen the visual impacts of the station construction site in the northern outlook from this property.
	Inala	Minor adverse	<ul style="list-style-type: none"> Retain a buffer of vegetation along the western side of Franklin Road opposite Inala.
5	Arthur Whitting Reserve	Major adverse	<ul style="list-style-type: none"> Arthur Whitting Reserve, with its existing park landscaping, trees and several memorial elements, should be conserved. However, reinstatement of a public park following construction works would partially mitigate the negative heritage impacts arising from the works. If possible, the existing mature plantings along the Old Northern Road edge of the park should be retained and protected during construction, however it is recognised that this may be neither practical nor feasible. Reinstatement of key elements of the reserve, including the railway signal and various memorials and plaques, would help mitigate the adverse impacts of the construction works.

Site No.	Heritage Item	Overall Impact Ranking	Recommended Mitigation Measures
5	White House Gallery	Minor adverse	<ul style="list-style-type: none"> Reinstate landscaped public parkland following completion of construction to improve the visual setting of the White House Gallery.
6	Castle Hill Showground	Moderate adverse	<ul style="list-style-type: none"> Measures to reinstate or rejuvenate any areas of the Showground disturbed for construction works following completion of the works should be implemented.
7	No items identified	N/A	No mitigation measures necessary.
8	Bella Vista Farm	Neutral	No mitigation measures necessary.
	Weatherboard House	Believed to have been demolished	No mitigation measures recommended.
9	No items identified	N/A	No mitigation measures necessary.
10	Boundary stones, Old Windsor Road	Neutral	No mitigation measures necessary.
11	Stanhope Farm Alignment, Old Windsor Road	Minor adverse	<ul style="list-style-type: none"> Re-establish planted vegetation along the eastern side of the Northwest Transitway following completion of the construction works.
13	Caddies Creek Alignment, Windsor Road	N/A	No mitigation measures necessary.
	Mungerie	Moderate adverse	<ul style="list-style-type: none"> Re-establish planted vegetation along the eastern side of the Northwest Transitway following completion of the construction works. The viaduct should be as light and stream-lined as possible. At Mungerie, the viaduct supports should be spaced widely and symmetrically on either side of the carriage loop from Old Windsor Road. A buffer of trees between Mungerie and the rail corridor should be maintained. Reinstatement of any trees removed for the construction works should be considered. The area of the carriage drive that will be removed during construction works should be reinstated.
14	Battle of Vinegar Hill (memorial)	Neutral	No mitigation measures necessary.
15	Royal Oak Inn (former) (Mean Fiddler Hotel)	Neutral	No mitigation measures necessary.
16 and 17	Rouse Hill House and Farm	Neutral	No mitigation measures necessary.
	Battle of Vinegar Hill (memorial)	Neutral	No mitigation measures necessary.

4.1.2 Recommended Mitigation Measures for Archaeological Sites

In general, the proposed construction of the NWRL has the potential to impact on the known and potential archaeological resource at a number of locations along the proposed route, as identified in

this report. The proposed impacts would primarily occur in the initial stages of site preparation and infrastructure works (grading, installation of machinery and services), but may also occur at other stages of the proposed works.

The sites with archaeological potential are:

- Sites 1 and 2—Epping Services and Epping Decline
- Site 4—Cherrybrook Station
- Site 5—Castle Hill Station
- Site 6—Hills Centre
- Site 11—Kellyville Station
- Site 13—Old Windsor Road to White Hart Drive
- Site 17—Cudgegong Road and Tallawong Stabling yards

Table 4.2 Summary of Impacts and Mitigation Measures for Archaeological Sites.

NWRL Site No.	Archaeological Resource	Archaeological Potential	Overall Impact Ranking	Recommended Mitigation Measures
1 and 2	Stone causeway over Devlin's Creek.	High	Neutral	No mitigation measures necessary.
3	No archaeological sites identified.	N/A	N/A	No mitigation measures necessary.
4	House site, Franklin Road.	Low	Moderate adverse	<ul style="list-style-type: none"> • To determine if any mitigation measures would be necessary, further assessment of the archaeological potential and significance of the potential resource should be undertaken before commencement of any construction activities. • Removal of any surviving remains would be mitigated by the opportunity to realise the archaeological research potential of the subject area, which would require archaeological monitoring and recording in accordance with archaeological best practice. • Exposed archaeological features (should there be any) would be identified, excavated and fully recorded prior to their removal. • Based on the level of significance of discovered features, the preparation of an interpretation plan and strategy could be required.
	House site, Franklin Road.	Low	Moderate adverse	<ul style="list-style-type: none"> • As above.
5	Tramway within Arthur Whitting Reserve	Low-nil	Moderate adverse	<ul style="list-style-type: none"> • Removal of any surviving remains (should any be identified) would be mitigated by the opportunity to realise the archaeological research potential of the subject area, which would require archaeological monitoring and recording in accordance with archaeological

NWRL Site No.	Archaeological Resource	Archaeological Potential	Overall Impact Ranking	Recommended Mitigation Measures
				<p>best practice.</p> <ul style="list-style-type: none"> Any exposed archaeological features and deposits related to the Parramatta to Castle Hill tramway should be fully investigated and recorded prior to their removal. The information retrieved should be used to inform the interpretation of the site within the new station for communication of the site's history to the local community as well as wider audience.
6	House site, Carrington Road.	Low-medium	Moderate adverse	<ul style="list-style-type: none"> To determine if any mitigation measures would be necessary, further assessment of the archaeological potential and significance of the potential resource should be undertaken prior to the commencement of any construction activity. At the minimum, the recommended mitigation strategy would include archaeological monitoring of the areas that are likely to contain archaeological remains and recording of any identified features and/or deposits associated with the identified buildings in accordance with archaeological best practice.
7	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
8	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
9	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
10	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
11	Pair of Boundary Markers.	Nil	Neutral	No mitigation measures necessary.
	Pair of Boundary Markers.	Nil	Neutral	No mitigation measures necessary.
	Archaeological site, south of Samantha Riley Drive.	Low-medium	Major adverse	<ul style="list-style-type: none"> To determine what form of mitigation measures would be necessary, further assessment of the archaeological potential and significance of the potential resource should be undertaken prior to the commencement of any construction activity. At the minimum, the recommended mitigation strategy would include archaeological monitoring and recording prior to construction work commencing on the site of any identified features and/or deposits associated with the identified buildings in accordance with archaeological best practice. The two identified brick cisterns/wells should be recorded in detail and retained in situ, should they be outside the footprint of permanent works.

NWRL Site No.	Archaeological Resource	Archaeological Potential	Overall Impact Ranking	Recommended Mitigation Measures
12	Boundary stone markers	Low	Neutral	Should any remaining boundary markers be identified during the construction works, archaeological recording and mapping will be required. In situ preservation may be recommended depending on the level of ground disturbance required.
13	Archaeological site, former Swan Inn (also referred to as Site RH/36).	Low-medium	Major adverse	<ul style="list-style-type: none"> Given the nature of such early inn sites that usually included backyard outbuildings (stables, kitchen, storage room, etc) the recommended mitigation strategy for the former Swan Inn site would include further research to assess archaeological potential and significance. Depending upon the outcomes of the research, archaeological excavation and recording of features and/or deposits would be undertaken if required. Excavation works would be undertaken in accordance with archaeological best practice and should occur before or in conjunction with the construction works in this area. Based on the extent and level of significance of discovered features, the preparation of an interpretation plan and strategy could be required.
14	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
15	No archaeological sites identified.	Nil	N/A	No mitigation measures necessary.
16	Remains of walking tracks and fence post holes.	Low	Minor adverse	<ul style="list-style-type: none"> No mitigation measures required prior to construction. Should archaeological deposits be encountered during construction, impacts would be mitigated by the opportunity to realise the archaeological research potential of the subject area through recording of the surviving features and deposits in accordance with archaeological best practice. Depending on the extent and level of significance of any discovered features, the preparation of an interpretation plan and strategy could be required.
17	Remains of walking tracks and fence post holes.	Low	Minor adverse	<ul style="list-style-type: none"> No mitigation measures required prior to construction. Should archaeological deposits be encountered during construction, impacts would be mitigated by the opportunity to realise the archaeological research potential of the subject area through recording of the surviving features and deposits in accordance with archaeological best practice. Depending on the extent and level of significance of any discovered features, the preparation of an interpretation plan and

NWRL Site No.	Archaeological Resource	Archaeological Potential	Overall Impact Ranking	Recommended Mitigation Measures
				strategy could be required.

4.2 General Recommendations

The detailed design, documentation and execution of the proposed NWRL major civil construction works will need to be managed to ensure that the potential heritage and archaeological impacts identified in this report are minimised and/or avoided by implementation of the mitigation strategies proposed.

- Heritage specialists should be involved in the design documentation phase and with the construction teams selected to carry out the civil construction works to ensure that the recommended mitigation measures are implemented and impacts on heritage items minimised. Heritage specialists would also be able to assist by identifying opportunities for enhancing the significance of heritage items and archaeological sites.
- Works within or adjacent to heritage items or heritage conservation areas should be subject to careful detailed design to ensure adverse impacts are minimised or avoided.
- Archival recording of affected sites (as per the recommended mitigation measures above) should be undertaken in accordance with the NSW Heritage Branch guidelines.
- Recommended mitigation measures for impacts on archaeological remains, including processes for disturbing and recording of identified and potential archaeological remains, should be undertaken in accordance with archaeological best practice.
- In the event that archaeological remains be encountered during excavation works in the areas of the designated route not specifically identified as archaeological sites or areas of archaeological potential in this report, it is required that the Heritage Branch of OEH be advised and that the measures set out in the Heritage Act for the management of archaeological remains be implemented.

