Albion Park Rail bypass – utility works

Addendum review of environmental factors

Roads and Maritime Services | April 2018

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Roads and Maritime Services

Albion Park Rail bypass – utility works

Addendum review of environmental factors

April 2018

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Approval and authorisation

Title	Albion Park Rail bypass – Utility works addendum review of environmental factors
Accepted on behalf of Roads and Maritime NSW by	Matt Leslie Project Engineer Regional Project Office
Signed	M Leslie 27/04/2018
Dated	April 2018

Document status

Document status	Date	Prepared by	Reviewed by
Initial draft	November 2017	Morgan Cardiff/Emma Dean	Andrew Cook
Updated draft	January 2018	Angus Fanning	Emma Dean
Final draft	March 2018	Jarryd Barton	Emma Dean
Final	April 2018	Jarryd Barton	Emma Dean

Executive summary

The proposed modification

In 2016, Roads and Maritime Services completed a review of environmental factors for utility works associated with the Albion Park Rail bypass (the project REF) (Roads and Maritime, 2016). Following determination, ongoing design and development of the proposed utility works identified opportunities to optimise the design and construction of these works to support the overall Albion Park Rail bypass project. The proposed modifications comprise:

- Changes to utility works boundary and electrical relocation works
- Inclusion of additional water and sewerage infrastructure
- Two new ancillary facilities.

Further detail regarding the proposed scope of works associated with the proposed modification is provided in Chapter 3 of this report.

To address these proposed changes, an addendum review of environmental factors (addendum REF) has been prepared to document the potential environmental impacts of the proposed change. This addendum REF also addresses recent changes to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in relation to an ecological community known to occur within the area that has been listed as threatened since the determination of the project REF.

Need for the proposed modification

The proposed modification is needed due to changes in the design of utility works associated with the Albion Park Rail bypass project. The proposed modification would consist of refining the approved utility works and enabling essential reconfiguration of the Croom Regional Sporting Complex to occur ahead of the main Albion Park Rail bypass project works.

The proposed modification is also required to address the inclusion of Illawarra and South Coast Lowland Forest and Woodland, which is known to occur in the study area, as a critically endangered ecological community (CEEC) under the EPBC Act. This listing came into effect in September 2016 after determination of the project REF and as such was not addressed within the project REF.

Section 2 of the project REF also addressed the overall strategic need for the utility work. The proposed modification as described and assessed in this addendum REF is consistent with the overall strategic need for the utility works project.

Project and proposed modification objectives

The objective of the proposed utility works (as described in the project REF) is to relocate, protect or decommission existing utilities with minimal environmental and socio-economic impacts to allow the safe and efficient construction of the Albion Park Rail bypass.

The proposed modification supports this overall project objective by proposing early commencement of relevant utility works to allow the safe and efficient construction of the wider Albion Park Rail bypass project.

Options considered

As the proposed modification is largely a refinement of work included within the project REF (except for the inclusion of water and sewer infrastructure), the options considered are:

- **Option 1 – Do nothing**. This option would not allow necessary utility works to proceed prior to construction of the Albion Park Rail bypass project. Additionally, by not considering recent changes to the EPBC listing of an ecological community known to occur in the study area, the assessment would not fully consider matters under the EPBC Act
- **Option 2 – Proposed modification**. The proposed modification is the refinement of utility works which have been proposed since the determination of the project REF.

Option 2 was selected as the preferred option as it supports the overall project objective of undertaking early utility work to allow the safe and efficient construction of the Albion Park Rail bypass project with minimal environmental and socio-economic impacts.

The proposed modification would also address the recent EPBC Act listing, and as such fulfil Roads and Maritimes requirement to assess the environment to the fullest extent possible as required under Section 5.5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Statutory and planning framework

The Albion Park Rail bypass project was approved under Part 5.1 of the EP&A Act (now Division 5.2) on 30 January 2018 (SSI 6878). Schedule 4 of the State Environmental Planning Policy (State and Regional Development) 2011 specifies that development for the purpose of the Albion Park Rail bypass project does not include *'adjustments to, or relocation of, existing utilities infrastructure and installation of new utilities infrastructure'.*

Roads and Maritime is the proponent and determining authority for the proposed works. Clause 94 of the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP), permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by, or on behalf of a public authority without consent. As the proposed modification is for a road and is to be carried out on behalf of Roads and Maritime, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

A separate Preliminary Documentation Assessment has been prepared by Roads and Maritime in accordance with the requirements of the Commonwealth Department of the Environment and Energy to assess the impact of the Albion Park Rail bypass project and utility work for the project under the EPBC Act, excluding all works associated with the Croom Regional Sporting Complex. Other than works associated with the Croom Regional Sporting Complex, no work on the Albion Park Rail bypass project or utility work for the project can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.

Community and stakeholder consultation

To inform this addendum REF, additional consultation was undertaken with utility providers to refine the works needed to support the Albion Park Rail bypass project. The Department of the Environment and Energy has been consulted regarding impacts on the Illawarra and South Coast Lowland Forest and Woodland CEEC. No additional community consultation has been undertaken for the proposed modification.

Environmental impacts

The main potential environmental impacts and mitigation measures of the proposed modification include:

- **Heritage.** The project REF identified that the potential for ground disturbances within the boundary of the Swansea Farmhouse locally listed heritage item. Potential impacts to Stapletons Bridge over Frazers Creek, which is listed on Roads and Maritime's Section 170 Heritage and Conservation Register, and the Tongarra Road Homestead site of archaeological potential were also assessed. The project REF concluded that no impacts to the Albion Park Rail Cemetery locally listed heritage item would occur.

  The proposed modification is not expected to result in any substantial additional heritage impacts beyond those identified in the project REF. Some trenching works and establishment of one additional ancillary facility site would occur within the curtilage of the Swansea Farmhouse, however no direct impacts to any structures within the site would occur. Trenching would be carried out adjacent to the Albion Park Rail Cemetery, however no direct impacts would result. Work would be carried out near Stapletons Bridge over Frazers Creek, although this impact would be consistent with that assessed in the project REF. Potential impacts would be managed with standard mitigation measures, including demarcation of project boundaries, temporary exclusion fencing of heritage structures, identification of heritage items in the Construction Environmental Management Plan (CEMP) and Environmental Work Method Statements (EWMS), and inclusion of heritage items in site inductions.

  There is the potential for additional impacts to archaeological remains associated with the Tongarra Road Homestead. As described in the project REF, test excavations would be undertaken prior to work in this area.

- **Biodiversity**. The proposed modification would result in no clearing of Illawarra and South Coast Lowland Forest and Woodland CEEC, recently listed **under** the EPBC Act.

  The proposed modification would result in the clearing of an additional 0.11 hectares of the Freshwater Wetlands on Coastal Floodplains endangered ecological community (EEC), listed under the *Biodiversity Conservation Act 2016* (BC Act), beyond the extent identified in the project REF. Up to a total of 0.71 hectares of this community would be cleared to enable utility works, including the proposed modification. This same area of vegetation is within the approved footprint for the Albion Park Rail bypass project. Consistent with the project REF, impacts to this EEC have been assessed as not significant.

  Consistent with the project REF, potential biodiversity impacts would be managed with standard mitigation measures, including minimisation of vegetation clearing during detailed design, identification and demarcation of all threatened ecological communities (TECs) adjacent to the construction footprint and inclusion of environmentally sensitive areas in the CEMP.

Justification and conclusion

The proposed modification to the utility works for the Albion Park Rail bypass is subject to assessment under Division 5.1 of the EP&A Act. This addendum REF has examined and considered to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

Mitigation measures as detailed in this addendum REF would ameliorate or minimise the expected impacts of the proposed modification. Consistent with the project REF, the proposed modification would allow the efficient construction of the Albion Park Rail bypass. On balance, the proposed modification is considered justified.

The environmental impacts of the proposed modification are not likely to be significant and therefore it is not necessary for an environmental impact statement to be prepared and approval for the proposed modification to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. The proposed modification is unlikely to affect threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or *Fisheries Management Act 1994* and therefore a Species Impact Statement is not required. The proposed modification is also unlikely to affect Commonwealth land or have a significant impact on any matters of national environmental significance.

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1 Introduction

1.1 Proposed modification overview

In 2016, Roads and Maritime Services completed a review of environmental factors for utility works associated with the Albion Park Rail bypass (the project REF) (Roads and Maritime, 2016). Following determination, ongoing design and development of the proposed utility works identified opportunities to optimise the design and construction of these works to support the overall Albion Park Rail bypass project. The proposed modifications comprise:

- Changes to utility works boundary and electrical relocation works
- Inclusion of additional water and sewerage infrastructure
- Two new ancillary facilities.

To address these proposed changes, this addendum review of environmental factors (addendum REF) has been prepared to amend the project REF. The addendum REF also addresses recent changes to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in relation to an ecological community known to occur within the area that was listed as threatened after the determination of the project REF.

The location of the proposed modification, including the modified utility works boundary, is shown in Figure 1-1. The proposed modification is shown in Figure 3-1 to Figure 3-3. Chapter 3 describes the proposed modification in more detail.

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Albion Park Rail Bypass - Utility Works

Figure 1-1

Location of modified utility works boundary

1.2 Purpose of the report

This addendum REF has been prepared by WSP on behalf of Roads and Maritime Regional Project Office. For the purposes of these works, Roads and Maritime is the proponent and the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This addendum REF should be read in conjunction with the project REF. The purpose of this addendum REF is to describe the proposed utility works modification, document and assess the likely impacts of the proposed modification on the environment, and to detail protective measures to be implemented.

The description of the proposed modification and associated environmental impacts have been undertaken in the context of clause 228 of the Environmental Planning and Assessment Regulation 2000, the *Threatened Species Conservation Act 1995* (TSC Act), the *Fisheries Management Act 1994* (FM Act) and the Australian Government's EPBC Act.

In doing so, the addendum REF helps to fulfil the requirements of:

- Section 5.5 of the EP&A Act that Roads and Maritime examine and consider fully, all matters affecting or likely to affect the environment by reason of the activity
- The strategic assessment approval granted by the Commonwealth Government under the EPBC Act in September 2015, with respect to the impacts of Roads and Maritime's road activities on nationally listed threatened species, populations, ecological communities and migratory species.

The findings of the addendum REF would be considered when assessing:

- Whether the proposed modification is likely to result in a significant impact on the environment and therefore the need for an environmental impact statement to be prepared and approval from the Minister for Planning to be sought under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the *Biodiversity Conservation Act 2016* (BC Act) and/or FM Act, in Section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement
- The significance of any impact on nationally listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and whether offsets are required and able to be secured
- The potential for the proposed modification to significantly impact any other matters of national environmental significance or Commonwealth land and therefore the need to make a referral to the Commonwealth Department of the Environment and Energy for a decision by the Commonwealth Minister for the Environment and Energy on whether assessment and approval is required under the EPBC Act.

2 Need and options considered

2.1 Strategic need for the proposed modification

Chapter 2 of the project REF details the strategic need for the project, the project objectives and the options that were considered for the determined utility works. Overall, the proposed modification described and assessed in this addendum REF is consistent with the strategic need for the utility works described in the project REF.

More specifically, the proposed modification is required due to the progression in the design of utility works associated with the Albion Park Rail bypass project since determination of the project REF. The proposed modification would enable essential reconfiguration of the Croom Regional Sporting Complex to occur ahead of the main Albion Park Rail Bypass project works.

2.2 Project objectives and development criteria

The proposed modification supports the overall project objective of undertaking early utility work to allow the safe and efficient construction of the Albion Park Rail bypass with minimal environmental and socio-economic impacts.

Section 2.3 of the project REF identifies the project objectives that apply to the proposed modification.

2.3 Alternatives and options considered

Section 2.4 of the project REF discusses the alternatives and options considered for the overall utility works associated with the Albion Park Rail bypass project. This section discusses the options considered as part of the modification to the determined utility works.

2.3.1 Methodology for selection of preferred option

Section 2.4 of the project REF outlines the methodology for the selection of the preferred option, including the utility works strategy. The proposed modification remains relatively consistent with the intent of the utility works strategy. However, as the proposed modification is largely a refinement of work included within the project REF (except for the inclusion of water and sewer infrastructure), the options considered only included the ‘do nothing’ option or ‘modify the determined utility work’.

2.3.2 Identified options

Option 1 – Do nothing

This option would not enable the necessary utility works to proceed prior to construction of the Albion Park Rail bypass project. Additionally, by not considering recent changes to the EPBC Act listing of a critically endangered ecological community (CEEC) known to occur in the area, the assessment would not fully consider matters under the EPBC Act.

Option 2 – Proposed modification

This option would consist of refined utility works and enable essential reconfiguration of the Croom Regional Sporting Complex to occur ahead of the main Albion Park Rail bypass project works. This option would also address changes to the CEEC listing in the EPBC Act, and as such fulfil Roads and Maritime’s requirement to assess the environment to the fullest extent possible as required under Section 111 of the EP&A Act.

2.3.3 Analysis of options

Option 1 – Do nothing

This option would cause a disruption to program efficiencies associated with the implementation of utility works to enable the Albion Park Rail bypass project. Construction safety risks, environmental and community impacts would be increased if both the utility and main works for the Albion Park Rail bypass project were undertaken simultaneously.

Option 2 – Proposed modification

This option would allow for the implementation of utility works design changes and result in a more efficient program. The works would ensure that environmental and community impacts are minimised, reduce construction safety risks by minimising the interaction with the utility work and main works associated with the Albion Park Rail bypass project.

2.4 Preferred option

The preferred option is Option 2 as it would meet the overall project objectives. It would allow for the implementation of utility works and minimise the potential conflicts between the utility works and construction of the Albion Park Rail bypass project.

The proposed modification would also address the recent EPBC Act listing, and as such fulfil Roads and Maritimes requirement to assess the environment to the fullest extent possible as required under Section 5.5 of the EP&A Act.

3 Description of the proposed modification

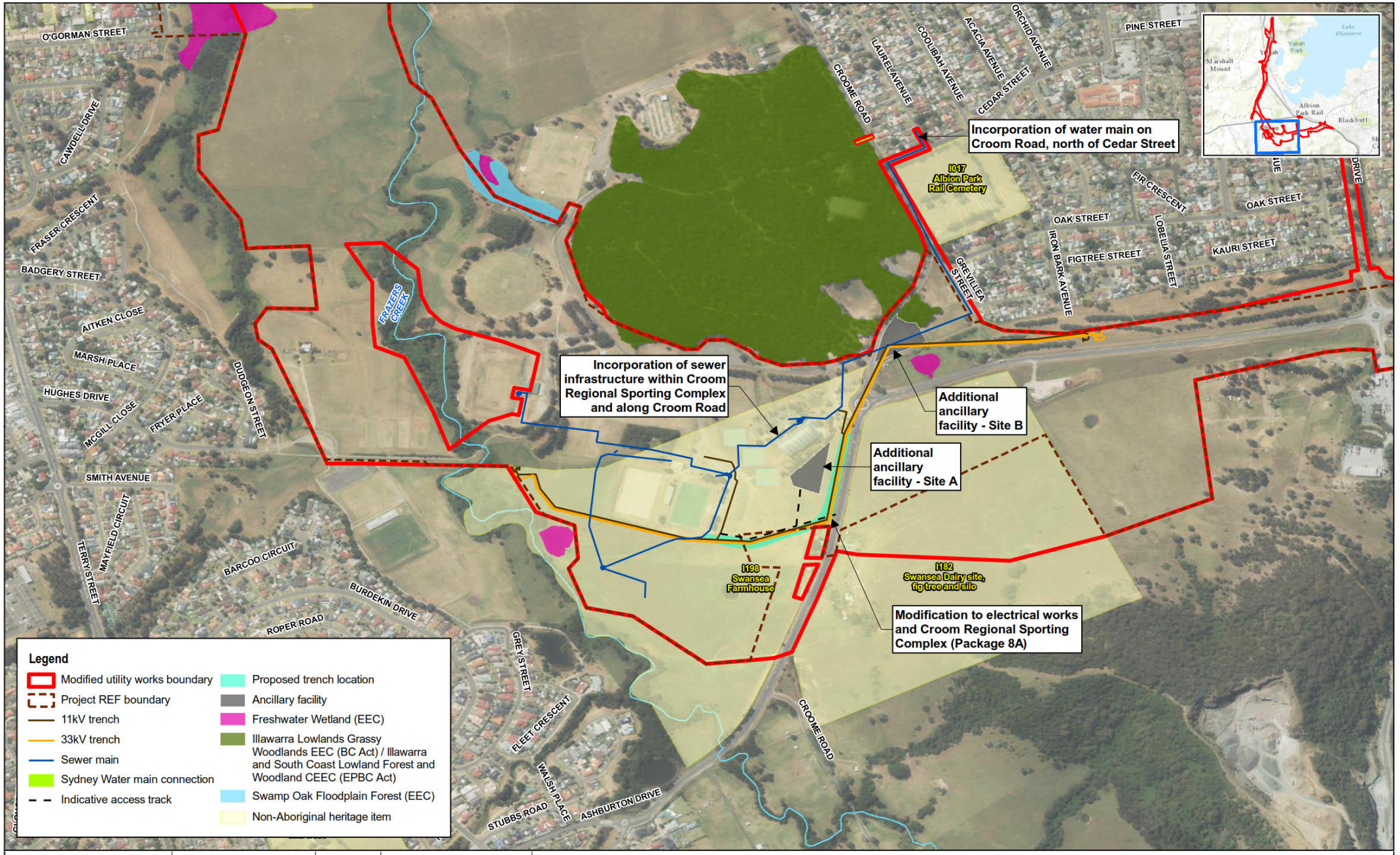
3.1 The proposed modification

Roads and Maritime proposes to modify the project REF in response to design and legislative changes. The proposed modification and modified utility works boundary is shown in Figure 3-1 to Figure 3-3.

Key features of the proposed modification include:

- Modification to the utility works boundary to better align with the Albion Park Rail bypass project
- Incorporation of sewer infrastructure within the Croom Regional Sporting Complex extending north west along Croome Road, into Cedar Street and Laurel Street
- Incorporation of a water main on Croome Road, north of Cedar Street
- Modification to electrical works around Croom Regional Sporting Complex (electrical works package 8A)
- Modification to electrical works along Tongarra Road (electrical works package 6)
- Modification to electrical works in Yallah (electrical works package 3) requiring the creation of an easement over the north-east corner of a private property adjacent to Yallah Road
- Incorporation of two additional ancillary facilities, within and adjacent to Croom Regional Sporting Complex
- Revised project REF safeguards and management measures to better align with the Albion Park Rail bypass project.

In addition to the proposed design changes, this addendum REF incorporates information to address the recent listing of the Illawarra and South Coast Lowland Forest and Woodland as a CEEC on the EPBC Act.



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Note:
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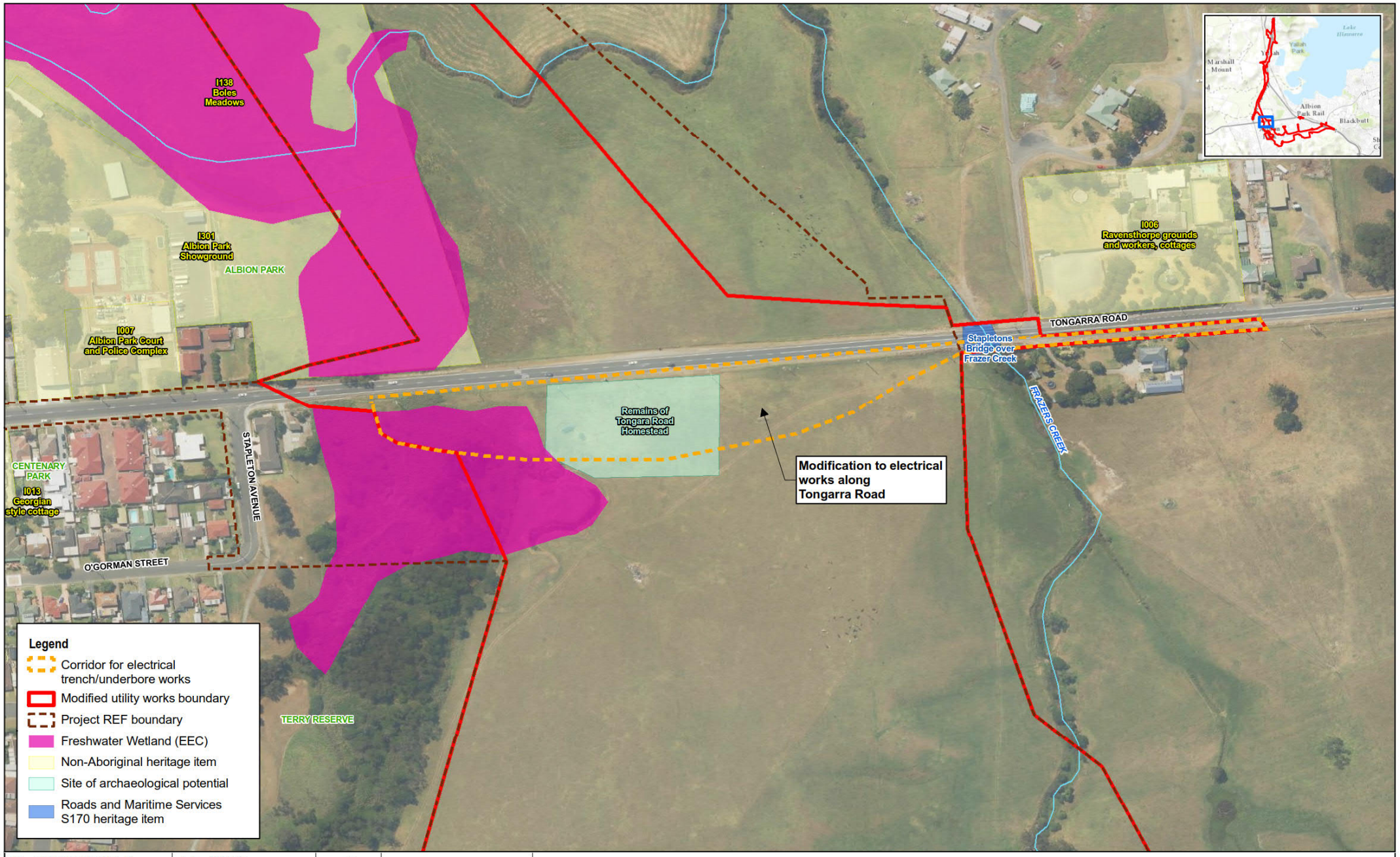
Albion Park Rail Bypass - Utility Works

Figure 3-1
Proposed modification
Croom Regional Sporting Complex utility works



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Albion Park Rail Bypass - Utility Works

Figure 3-2
Proposed modification
Tongarra Road electrical works

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Albion Park Rail Bypass - Utility Works

Figure 3-3
Proposed modification
Yallah electrical works

3.2 Design

3.2.1 Design criteria

The proposed modification has been designed using the same standards and criteria as described in section 3.2 of the project REF.

3.2.2 Engineering constraints

The engineering constraints presented in section 3.2.6 of the project REF continue to apply to the proposed modification. They would be managed in the same manner as described in the project REF.

3.2.3 Main features of the modification

Modified utility works boundary and safeguards

The project REF boundary has been modified to better align with the approved Albion Park Rail bypass project boundary (the modified utility works boundary) (refer to Figure 1-1). The safeguards in the project REF have also been modified where relevant to better align with the approved Albion Park Rail bypass project.

Electrical

Modifications to the following electrical works packages are proposed:

- Modifications associated with the installation of electrical works package 8a (at chainage 22,300)
- Electrical works package 6 (at chainage 21,500)
- Electrical works package 3 (at chainage 17,800).

Specific design changes associated with the proposed modification are outlined below.

Electrical works package 8a – Croom Regional Sporting Complex

Electrical works associated with the Croom Regional Sporting Complex near chainage 22,300 would include the following:

- The existing underground 11 kV line would be decommissioned. Around 420 metres of new underground cable would be installed. The trench would be around 1.5 metres wide. Construction would be carried out over about two months, moving progressively along the route
- The dual 33 kV overhead transmission lines and an 11 kV distribution line on the same pole would be decommissioned. Construction of around one kilometre of underground lines would be required adjacent to the proposed internal road system of the Croom Regional Sporting Complex. The underground lines are proposed to extend from the south-eastern extent of the complex towards Croome Road, then following Croome Road to the north and underbored beneath the proposed corridor alignment, before connecting to the existing overhead lines to the east of Croome Road. The trenches would be around two to three metres wide. Construction would be carried out over around five months, moving progressively along the route. The dual 33 kV and single 11 kV lines would connect from the existing two poles immediately to the west of Frazers Creek and cross overhead to three separate underground to overhead transition poles to the east of Frazers Creek (refer to Figure 3-1).

Electrical works package – Tongarra Road

At around chainage 21,500 along the southern side of Tongarra Road, both the existing 11 kV and 33 kV overhead lines would be relocated underground, likely using a combination of trenching and underboring, depending on the local geology.

Electrical works package – near Yallah Road

At around chainage 17,800, near Yallah Road, the overhead electrical cable is required to be restrung from an existing pole to a new pole causing the cable to cross over the north-west corner of private property. A new electrical easement would be created at this location.

Water and sewer connections

Water

The existing water mains connection to the Croom Regional Sporting Complex consists of two small connections into the main supply meter. The water pressure supplied by these two small connections is too low to adequately supply the Croom Regional Sporting Complex. The water supply mains network within the complex has a larger diameter supply pipe. To increase water pressure within the complex, it is proposed to upgrade the existing water main connection to a single larger diameter pipe. This connection would cross Croome Road into an existing access track on the western side of the road and be about 25 metres long. The trench required to install the new connection would be around two metres wide and two metres deep. Construction of the new connection would take around two weeks.

Sewer

The Croom Regional Sporting Complex is not currently connected to sewer mains. Sewage is processed on site via two enviro-cycle septic systems. The southernmost system would require decommissioning as part of the Albion Park Rail bypass project. This system currently services the rugby league amenities, hockey amenities and Shellharbour City Stadium amenities. Replacement sewer connections would be required for these buildings as well as new connections to the two new amenities buildings.

To connect the existing and new buildings to the sewer mains, a new sewer network is proposed. Gravity-fed sewer piping would be installed within the Croom Regional Sporting Complex connecting amenities to a sewer main to the west of the proposed cricket pitch. The main would then be constructed in a north-easterly direction, past the netball courts and stadium, and towards the roundabout on the existing Croome Road alignment. The main would then continue in a north-easterly direction avoiding any remnant vegetation and known Aboriginal heritage sites to the intersection of Grevillea Street and Oak Street, where it would follow the western side of Croome Road, east into Cedar Street and then north into Laurel Street where it would join existing Sydney Water sewer infrastructure (refer to Figure 3-1).

3.3 Construction activities

The proposed modification would be completed as part of the project under the methods and program described in section 3.3 of the project REF.

3.3.1 Work methodology

Work methodologies associated with the proposed modification would remain consistent with those described in section 3.3.1 of the project REF.

3.3.2 Construction hours and duration

The works associated with the proposed modification are anticipated to commence in early 2018. The work would be expected to take around 18 to 36 months to complete.

The proposed work would generally be undertaken during standard construction hours:

- Monday to Friday 7 am to 6 pm
- Saturdays 8 am to 1 pm
- No works on Sundays and public holidays.

Some works may be required outside of standard construction hours, including to minimise impacts on traffic. As described in the project REF, any works outside of standard hours would be undertaken in accordance with Roads and Maritime's Construction Noise and Vibration Guideline (2016).

3.3.3 Plant and equipment

The proposed modification would be built using plant and equipment consistent with that described in section 3.3.3 of the project REF.

3.3.4 Earthworks

The earth works for this proposed modification would be minimal, involving the excavation and backfill of trenches, bore entry pits or protection slabs only.

3.3.5 Source and quantity of materials

As per the project REF, the materials needed for the proposed modification would come from a range of sources including local, national and international providers where required. The source and quantity of materials are outlined in section 3.3.5 of the project REF.

The requirements for the proposed modification would be consistent with those identified in the project REF.

3.3.6 Traffic management and access

Traffic management requirements are outlined in section 3.3.6 of the project REF. The identified traffic management and access requirements would remain applicable to the proposed modification, with the addition of requirements for utility work at the following locations:

- Croome Road
- Grevillea Street
- Cedar Street
- Laurel Street
- Yallah Road
- Tongarra Road between Stapleton Avenue and the unnamed creek to the east of Frazers Creek.

3.4 Ancillary facilities

The location of the main compound site is described in section 3.4 of the project REF. Two additional ancillary facilities are proposed to support the utility works.

An additional ancillary facility would be installed within the Croom Regional Sporting Complex, between Croome Road and Shellharbour City Stadium (Figure 3-1) (Site A). This site would be utilised to support construction of the utility works, such as for site offices, carpark and material storage. The location of this additional ancillary facility was chosen due to its proximity to the Croom Regional Sporting Complex

utility works and its relatively level and clear ground. The site also has good access to and from Croome Road and meets the principles for compound and stockpile sites described in the project REF.

An additional ancillary facility is also proposed between Croome Road and Grevillia Street, in the north-east of the Croom Regional Sporting Complex (Site B). This site would be utilised to support construction of the utility works, including launch and retrieval for directional drilling, materials storage and site offices (Figure 3-1). The site is located adjacent to areas of Woollybutt – White Stringybark – Forest Red Gum grassy woodland on coastal woodlands vegetation community. This site incorporates areas of the Illawarra Lowlands Grassy Woodlands in the Sydney Basin Bioregion endangered ecological community (EEC), listed under the BC Act and the Illawarra and South Coast Lowland Forest and Woodland EPBC Act listed CEEC.

Two known Aboriginal heritage sites (isolated finds) also occur within and near the site. Through implementation of the safeguards and management measures outlined in section 7.2, the use of this site would not disturb adjacent vegetation and Aboriginal heritage sites. Table 3-1 provides an assessment of this ancillary facility against the principles for compound and stockpile sites identified in the project REF.

Table 3-1 Ancillary facility assessment

Criteria	Site A	Site B
At least 40 metres distant from any waterway	The ancillary facility complies with this principle. It is located around 200 metres from an unnamed waterway and associated wetland to the north in a disturbed semi-urban area.	The ancillary facility is located around 25 metres from an unnamed waterway and associated wetland, which occur in a disturbed semi-urban area. It should be noted that this wetland (unnamed waterway 1 wetland) would be removed as a result of the Albion Park Rail bypass project. A small ephemeral drainage line is also located near the ancillary facility. Appropriate erosion and sediment controls would be implemented to minimise the risk of any impact to these waterways.
Established in cleared area with no clearing of vegetation to be undertaken to establish compound and/or stockpile sites	The ancillary facility complies with this principle.	The ancillary facility complies with this principle.
Outside any heritage constraint areas (e.g. Aboriginal PADs)	The ancillary facility is within the curtilage of the Swansea Farmhouse locally listed heritage item. The ancillary facility would not impact on any structures within this heritage item.	The ancillary facility complies with this principle. Two Aboriginal heritage sites occur near the ancillary facility. However, these sites would be fenced off and protected from impacts during establishment and use of the ancillary facility.
As a first priority, at least 100 metres distant from residential dwellings and other land uses that may be sensitive to noise	The ancillary facility complies with this principle.	The ancillary facility complies with this principle. Any proposed extension to this ancillary facility would be subject to consultation with adjacent landowners.
On relatively level ground	The ancillary facility complies with this principle.	The ancillary facility complies with this principle.
Outside the 1 in 10-year average recurrence interval (ARI) floodplain.	The ancillary facility complies with this principle. It is outside the existing Horsley Creek 10 year ARI floodplain.	The ancillary facility complies with this principle. It is outside the existing Horsley Creek 10 year ARI floodplain.

3.5 Property acquisition

Overhead electrical cables at Yallah would be restrung from an existing pole to a new pole as a component of electrical works package 3 resulting in cable crossing over the north-east corner of private property adjacent to Yallah Road (SP89821).

Roads and Maritime would arrange for the creation of an easement for the electrical works over the property.

There are no further changes to the property acquisition requirements as outlined in section 3.5 of the project REF.

4 Statutory and planning framework

4.1 *Environmental Planning and Assessment Act 1979*

4.1.1 State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

The Albion Park Rail bypass project was approved under Part 5.1 of the EP&A Act (now Division 5.2) on 30 January 2018 (SSI 6878). Schedule 4 of the State Environmental Planning Policy (State and Regional Development) 2011 specifies that development for the purpose of the Albion Park Rail bypass project does not include *'adjustments to, or relocation of, existing utilities infrastructure and installation of new utilities infrastructure'*.

Clause 94 of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP), permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposed modification is for a road and is to be carried out on behalf of Roads and Maritime, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposed modification is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by State Environmental Planning Policy No. 14 – Coastal Wetlands, State Environmental Planning Policy No. 26 – Littoral Rainforests, State Environmental Planning Policy (State and Regional Development) 2011 or State Environmental Planning Policy (Major Development) 2005.

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in section 5 of this addendum REF.

State Environmental Planning Policy No.44 – Koala Habitat Protection

A discussion on the State Environmental Planning Policy No 44 (Koala habitat protection) is included in section 4.1.2 of the project REF and remains consistent with the proposed modification.

State Environmental Planning Policy No.14 – Coastal Wetlands

A discussion on the State Environmental Planning Policy No 14 (Coastal Wetlands) is included in section 4.1.3 of the project REF. Since determination of the project REF, coastal management legislation in NSW has been amended.

The *State Environmental Planning Policy No. 14 (Coastal Wetlands*) has recently been repealed by *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP), which commenced on 3 April 2018. The Coastal Management SEPP gives effect to the objectives of the new *Coastal Management Act 2016* from a land use planning perspective, specifying how development proposals are to be assessed if they fall within the coastal zone.

The proposed modification would however remain consistent with the intent of the revised legislation for wetland and coastal management as previously assessed in the project REF.

Illawarra Environmental Planning Policy No.1 (deemed a SEPP)

This SEPP applies to land within the Shellharbour, Shoalhaven, Wollongong and Kiama local government areas. This plan aims to maximise the opportunities for the region's population to meet individual, community and social needs. The impacts of the proposed modification on community and social needs are assessed in section 6.10 of the project REF and remain consistent with the proposed modification.

4.1.2 Local Environmental Plans

A review of local environmental plans for the two relevant local government areas, Wollongong and Shellharbour, is included in section 4.2 of the project REF. The proposed modification is consistent with the project REF.

4.2 Other relevant NSW legislation

4.2.1 *Fisheries Management Act 1994*

A summary of the *Fisheries Management Act 1994* (FM Act) is included in section 4.3.1 of the project REF and remains consistent with the proposed modification.

4.2.2 *Heritage Act 1997*

A summary of the *Heritage Act 1997* (Heritage Act) is included in section 4.1.3 of the project REF and remains consistent with the proposed modification.

4.2.3 *National Parks and Wildlife Act 1974*

The *National Parks and Wildlife Act 1974* (NPW Act) is the principal legislation dealing with Aboriginal cultural heritage in New South Wales. Items of Aboriginal heritage (Aboriginal objects) or Aboriginal places (declared under Section 84) are protected and regulated under the NPW Act. There are offences and penalties relating to the harm to, or desecration of, an Aboriginal object or declared Aboriginal place. Harm includes destroying, defacing, damaging or moving an object or place. Under Section 90(1) of the Act, an Aboriginal heritage impact permit (AHIP) may be issued for an activity which will harm an Aboriginal object. The regulation of AHIPs is provided in Part 6 Division 2 of the Act.

The project REF identified that the proposed utility works would have the potential to impact on six known Aboriginal heritage sites (refer section 6.9 of the project REF). As discussed in section 6.4 of this addendum REF, the proposed modification would have the potential to impact three Aboriginal heritage sites, including one site not previously identified as being impacted as part of the determined project.

As the utility works would be carried out under Division 5.1 of the EP&A Act, an AHIP would be required for any impact to Aboriginal heritage sites.

4.2.4 *Threatened Species Conservation Act 1995* (repealed)

The TSC Act has been repealed by the *Biodiversity Conservation Act 2016* (BC Act), which commenced on 25 August 2017 (refer to section 4.2.5).

The TSC Act lists threatened species, populations or ecological communities to be considered in deciding whether there are likely significant impacts on threatened biota or their habitats. If a significant impact is likely, an assessment of significance that addresses the requirements of the EP&A Act must be completed.

For this addendum REF, an assessment of significance in accordance with the TSC Act was undertaken for the Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion EEC (Freshwater Wetlands EEC). No significant impact on this EEC is likely to occur as a result of the proposed modification. Further detail on impacts to threatened species, populations and ecological communities is provided in section 6.7 of the project REF.

4.2.5 *Biodiversity Conservation Act 2016*

The BC Act and its supporting regulations commenced on 25 August 2017. The BC Act repeals the TSC Act along with the *Native Vegetation Act 2003* and part of the NPW Act.

The BC Act sets out the environmental impact assessment framework for threatened species, threatened ecological communities and areas of outstanding biodiversity value (formerly critical habitat) for activities under Division 5.1 of the EP&A Act (amongst other types of development).

However, the environmental impact assessment of the activity began under Part 5 (now Division 5.1) of the EP&A Act before the commencement of the new BC Act. Therefore, the transitional provisions of the Biodiversity Conservation (Savings and Transitional) Regulation 2017 apply to the proposed modification and it has been assessed in accordance with the TSC Act.

Impacts to biodiversity are assessed in section 6.7 of the project REF and section 6.2 of the addendum REF.

4.3 Commonwealth legislation

4.3.1 *Environment Protection and Biodiversity Conservation Act 1999*

Under the EPBC Act, a referral is required to the Commonwealth Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in Chapter 6 and Appendix B of the project REF. However, the project REF did not include an assessment of the Illawarra and South Coast Lowland Forest and Woodland ecological community as it was not listed as a CEEC under the EPBC Act at the time of the REF determination.

A subsequent assessment of this community for the Albion Park Rail bypass project determined that the project may cause a significant impact. A referral was submitted to the Commonwealth Department of the Environment and Energy on 29 March 2017 for the construction and operation of the Albion Park Rail bypass (EPBC 2017/7909). The referral considered relevant matters of national environmental significance, including the Illawarra and South Coast Lowland Forest and Woodland CEEC and utility works for the Albion Park Rail bypass. The referral was determined on 29 May 2017 to be a controlled action under the EPBC Act for Listed Threatened Species and Communities (Sections 18 and 18A).

On 10 September 2017, Roads and Maritime received agreement from the Department of the Environment and Energy to remove works associated with the Croom Regional Sporting Complex, including utility work associated with the complex, from the original project referral as it is not likely to significantly impact on matters of national environmental significance.

In accordance with the requirements of the Department of the Environment and Energy, a Preliminary Documentation Assessment has been prepared by Roads and Maritime. This document assesses the impact of the Albion Park Rail bypass project and utility work for the project, excluding all works associated with the Croom Regional Sporting Complex.

With the exception of works associated with the Croom Regional Sporting Complex, no work on the Albion Park Rail bypass project or associated utility work can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.

4.4 Confirmation of statutory position

The proposed modification is categorised as development for the purpose of road infrastructure facilities and is being carried out by or on behalf of a public authority. Under Clause 94 of the ISEPP the proposed modification is permissible without consent. The proposed modification is not State significant infrastructure or State significant development. Schedule 4 of the State Environmental Planning Policy (State and Regional Development) 2011 specifies that development for the purpose of the Albion Park Rail bypass does not include *'adjustments to, or relocation of, existing infrastructure and installation of new utilities infrastructure'*. The proposed modification can be assessed under Division 5.1 of the EP&A Act. Consent from Council is not required.

5 Consultation

5.1 Consultation strategy

The community strategy is outlined in section 5.1 of the project REF and remains consistent with the proposed modification.

5.2 Consultation outcomes

Roads and Maritime consulted with the Aboriginal community and carried out investigations for the Albion Park Rail bypass project. The proposed modification would not impact previous Aboriginal stakeholder engagement as outlined in section 5.3 of the project REF.

Roads and Maritime has undertaken consultation with Wollongong City Council and Shellharbour City Council regarding the Albion Park Rail bypass project, which has informed the utility works.

Consultation was undertaken with the Department of Environment and Energy regarding the impacts of the overall project on matters of national environmental significance and to remove works associated with the Croom Regional Sporting Complex from the project referral.

To inform this addendum REF, additional consultation was undertaken with utility providers including Endeavour Energy, Sydney Water and Shellharbour City Council.

Under the provisions of Part 2 of ISEPP, Roads and Maritime is required to notify local councils and relevant Government agencies where development has the potential to impact on assets or environmental values managed by these authorities. These issues are identified through the checklist in Appendix B. In the case of the proposed modification and project REF, the notification requirements under Clauses 13 to 16 of ISEPP have not been triggered as the proposed modification is not considered to have a substantial impact on council-related infrastructure, local heritage items or flood-liable land. Further consideration of the relevant triggers is provided in Appendix B.

No formal ISEPP letter was issued for the project REF or is proposed to be issued for the proposed modification.

5.3 Ongoing or future consultation

Consultation with directly affected residents and other stakeholders would be ongoing during design and construction.

If previously unforeseen impacts to land owners from the proposed modification are identified, Roads and Maritime would consult directly with the affected landowner.

6 Environmental assessment

This section of the addendum REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposed modification. All aspects of the environment potentially impacted upon by the proposed modification are considered. This includes consideration of the factors specified in the guidelines Roads and Related Facilities (DUAP 1996) and Is an EIS required? (DUAP 1999) as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000 (refer Appendix B).

Site-specific safeguards and management measures are provided to ameliorate the identified potential impacts. Chapter 6 in the project REF provides information about the existing environment, potential impacts and safeguards relevant to the project. Any additional requirements based on the proposed modification are included below. In consideration of the scale of the proposed modification, the addendum REF has focused on key issues associated with the modification only (soils, land formation, water quality and hydrology, biodiversity, non-Aboriginal heritage, Aboriginal heritage, visual impact, noise and traffic and transport).

Detailed assessments of air quality, land use and property, socio economic, waste management and cumulative impacts were not included as the potential impact remains consistent with the project REF. Notwithstanding, these aspects have been considered in the Clause 228 Checklist (Appendix A).

6.1 Soils, land formation, water quality and hydrology

A description of soils, land formation, water quality and hydrology relevant to utility works is included in section 6.1 of the project REF.

6.1.1 Existing environment

A summary of the existing environment is included in section 6.11 of the project REF. Small areas of the proposed modification (within the modified utility works boundary) would occur adjacent to, but outside of the project REF boundary. However, these areas were included in the regional mapping presented in the project REF and do not include any additional geological, hydrological or other physical features beyond those identified in the project REF. Therefore, the information remains consistent with the project REF.

6.1.2 Potential impacts

Potential impacts of the determined project are included in section 6.1.2 of the project REF. The proposed modification would result in minor changes to the project REF boundary to better align with the Albion Park Rail bypass project, to enable:

- Modified electrical work along Tongarra Road and in Yallah
- Additional electrical and sewer infrastructure works within and adjacent to Croom Regional Sporting Complex
- The provision of two additional ancillary facilities to support utility works.

Part of the additional sewer infrastructure would be constructed in close proximity to threatened ecological communities in Croom Reserve and the Albion Park Rail Cemetery, which is a locally listed heritage item (refer to section 6.3). While there would be no direct impact to these sensitive areas, utility works in this location have the potential to result in indirect erosion and sediment impacts, such as the run-off from sediment-laden water. Such impacts would be appropriately managed with the implementation of standard erosion and sediment control measures.

The proposed modification includes a minor change to the utility works boundary at Tongarra Road for electrical works, within an area of Freshwater Wetland EEC (refer to section 6.2.2). Utility works in this location have the potential to result in indirect erosion and sediment impacts to areas of Freshwater Wetland EEC outside of the modified utility works boundary. Such impacts would be adequately managed with the implementation of appropriate erosion and sediment control measures.

Apart from a minor modification to the location of impacts, the nature and scale of impacts to soils, land formation, water quality and hydrology is consistent with the project REF.

6.1.3 Safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 6-1 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 6-1 Soil, land form, water quality and hydrology safeguards and management measures.

Impact	Environmental safeguards	Responsibility	Timing

Soil and water management	• Works must be undertaken in accordance with Roads and Maritime specifications, including but not limited to:
	  • G38 Soil and Water Management (Soil and Water Management Plan)
	  • R44 Earthworks (Cut, Fill, Imported Fill and Imported Selected Material)
	  • R50 Stabilisation of Earthworks ***(where relevant)***
	• Erosion and sediment control plans must be prepared for all discrete utility works
	• Works within wetlands must be undertaken during dry conditions if feasible and in line with an Environmental Work Method Statement to minimise water quality impacts
	• ***Industry standard erosion and sediment controls will be designed and implemented in accordance with the following specifications and guidelines:***
	  • ***Managing Urban Stormwater: Soils and Construction (Landcom, 2004)***
	  • ***Roads and Maritime Erosion and Sedimentation Management Procedure (PN143)***
	  • ***The Department of Primary Industry (Water) Guidelines for Controlled Activities***
	  • ***These controls will be established before the start of construction and maintained in effective working order for the duration of the construction period until the site is restored***
		Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing

	• ***The CEMP will include a Construction Soil and Water Quality Management Plan to manage potential impacts on soils and receiving watercourses, to include, but not limited to:***
	  • ***Objectives and targets for soil and water quality management***
	  • ***Information on the relevant statutory and other requirements relating to soils and water quality, including any permits or licences required for the project***
	  • ***Details of any consultation requirements under the Plan***
	  • ***An overview of the existing environment and potential impacts related to the construction works***
	  • ***Measures to manage impacts of the project including in relation to:***
	  • ***Soils, erosion and sedimentation***
	  • ***Stockpile management***
	  • ***Spoil and fill management***
	  • ***Surface water quality***
	  • ***Significant weather events (such as heavy rainfall or flooding)***
	  • ***Re-fuelling of vehicles and other equipment and accidental spills***
	  • ***Unexpected finds such as asbestos or contaminated fill***
	  • ***Auditing and reporting requirements***
	  • **Site inductions and training for construction personnel in the implementation of the plan.**		

Impact	Environmental safeguards	Responsibility	Timing

Specific high risk activities	• ***Environmental Work Method Statements must be prepared for high risk activities, including:***
	  • ***Work in environmentally sensitive areas***
	  • ***Clearing and grubbing***
	  • ***Trenching***
	  • ***Underboring (directional drilling)***
	• ***Task-specific*** Environmental Work Method Statements must be prepared for the following activities:
	  • Underbore of water mains beneath Duck Creek
	  • Trenching of watermains across a wetland east of the Princes Highway at chainage 1,700
	  • Installation of concrete protection slab within a wetland west of the Princess highway and North of Yallah Bay Road at chainage 17,300
	  • Underbore of utilities beneath Frazers Creek at Illawarra Highway chainage
	  • Trenching ***or underbore*** of utilities along the north and south of Tongarra Road where wetlands occur
	• The Environmental Work Method Statement (EWMS) must be prepared and submitted to Roads and Maritime's Environment Branch ***(***and DPI (Fisheries) ***for task-specific Environmental Work Method Statements)*** at least 2 weeks prior to works and approved prior to works starting. The EWMS must include, but not be limited to, the following:
	  • Descriptions of works/activities including machinery to be used
	  • Outline of the sequence of the works/activities
	  • Identification of the potential environmental impacts due to works/activities
	  • An environmental risk assessment to determine potential risks to discrete work elements or activities likely to affect the environment
	  • Evaluation of methods to reduce environmental risks
	  • Mitigation measures to reduce environmental risks
	  • A process for assessing the performance of the implemented mitigation measures
	  • A process for resolving environmental issues and conflicts.
		Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing

Flood management	• ***For ancillary facilities with flood immunity of less than a 20 year ARI, a flood contingency plan will be prepared. This plan will consider likelihood of flooding, excavation routes, warning times, and potential impacts from the site flooding. It will include but not limited to:***
	  ◦ ***any monitoring requirements to ensure advanced notice of a flood event***
	  ◦ ***procedures to be implemented in the event of a flood***
	  ◦ ***details of the required staff training and staff inductions.***
	• ~~A flood evacuation procedure as part of the EWMS must be prepared and implemented in the event of a flooding event that has the potential to impact disturbed areas.~~
		Contractor	Construction

Stockpile Management	• Stockpiles must be managed in accordance with the *Stockpile Site Management Guideline EMS-TG-10* (RTA 2011).	Contractor	Construction
Pollution	• Concrete washout must be carried out offsite or in concrete washout areas described in the EWMS and/or CEMP and identified on the ESCP • Procedures for testing, treatment and discharge of construction waste water must be as described in the EWMS and/or CEMP • All fuels, chemicals, and liquids must be stored at least 50 metres away from any waterways or drainage lines and must be stored in an impervious bunded area • The refuelling of plant and maintenance of machinery must be undertaken in impervious bunded areas • Machinery must be checked daily to ensure there is no oil, fuel or other liquids leaking from the machinery.	Contractor	Construction
Pollution incident	• ***An emergency spill response procedure will be prepared to minimise the impact of any accidental spoil, and include details on the requirement for managing spills, disposing of any contaminated waste and reporting of such incidents*** • All staff must be appropriately trained through toolbox talks or similar for the minimisation and management of accidental spills • If a spill occurs, Roads and Maritime's Environmental Incident Classification and Management Procedure must be followed and Roads and Maritime's Contract Manager notified as soon as possible.	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Contamination	• If signs of contaminated soils are discovered (e.g. smell, discolouration, suspect rubbish), the site must be marked and the soil replaced to cover the contamination • The soil must be analysed without delay to determine the type of contamination • An appropriate management actions must be developed and implemented.	Contractor	Construction
ASS Management	• An Acid Sulphate Soil Management Plan must be prepared for any works likely to disturb potential ASS. The plan must be prepared in accordance with Guidelines for the *Management of Acid Sulfate Materials: Acid Sulfate Soils, Acid Sulfate Rock and Monosulfidic Black Ooze* (RTA 2005).	Contractor	Construction

6.2 Biodiversity

A description of biodiversity relevant to utility works is included in section 6.7 of the project REF.

6.2.1 Existing environment

A summary of the existing environment is included in 6.7.1 of the project REF. This section summarises the existing environment of the EPBC Act listed Illawarra and South Coast Lowland Forest and Woodland CEEC, which was not addressed in the project REF and the BC Act listed Freshwater Wetlands EEC, which would be affected by the modification.

Illawarra and South Coast Lowland Forest and Woodland CEEC

Illawarra and South Coast Lowland Forest and Woodland is listed as a CEEC under the EPBC Act.

The canopy cover of this community includes Woollybutt – White Stringybark Forest Red Gum. Forest Red Gum (*Eucalyptus tereticornis*) or Woollybutt (*E. longifolia*) is typically present and often dominant in the mature tree canopy. One or more of the following canopy species may also be dominant, especially where there has been selective removal of trees (for example, *E. tereticornis*) from some patches of the ecological community: Rough-barked Apple (*Angophora floribunda*); Coast Grey Box (*E. bosistoana*); Thin-leaved Stringybark (*E. eugenioides*); White Stringybark (*E. globoidea*). Patches with hybrid dominant canopy species may be included in the ecological community; areas should not be excluded on the basis of hybridisation. Other tree species commonly found in the ecological community, but not typically dominant are: Spotted Gum (*Corymbia maculata*); Cabbage Gum (*E. amplifolia subsp. amplifolia*); Bangalay (*E. botryoides*); Grey Ironbark (*E. paniculata subsp. paniculata*); Blackbutt (*E. pilularis*); and Coastal White Box (*E. quadrangulata*).

This community provides good quality habitat for threatened flora species, including the Eastern Flame Pea and the Illawarra Greenhood Orchid. There is some potential for Curved Rice-flower to be found in high quality patches of this community. The community also provides preferable habitat for fauna, and bird and bat species that do not rely on hollows.

Freshwater Wetlands EEC

Freshwater Wetlands is a listed EEC under the BC Act. The extent of Freshwater Wetlands on the Illawarra Plain has been estimated to be about 100 hectares. About 29 hectares of this community occurs within or near the modified utility works boundary.

Native species in this community may include Water Primrose (*Ludwigia peploides*), Nardoo (*Marsilea mutica*), Slender Knotweed (*Persicaria decipiens*), a Rush (*Juncus usitatus*), Tufted Sedge (*Carex appressa*), Buttercup (*Ranunculus* sp.), Swamp Dock (*Rumex brownii*), Common Reed (*Phragmites australis*) and Cumbungi (*Typha orientalis*).

This community provides only marginal quality habitat for threatened flora species, and it is unlikely that any threatened species would become established in the community.

This plant community provides potential foraging and/or breeding habitat for a range of species including waterbirds, amphibians, fish, and migratory species; and suitable foraging habitat for microbats.

6.2.2 Potential impacts

Illawarra and South Coast Lowland Forest and Woodland CEEC

The Illawarra and South Coast Lowland Forest and Woodland CEEC was listed under the EPBC Act in September 2016, after determination of the project REF. Around 4.8 hectares of this community occur within the modified utility works boundary. The proposed modification would not have any direct impacts on this community.

Following listing of this CEEC on the EPBC Act, an assessment was carried out for the whole of the Albion Park Rail bypass project, including utilities. The assessment determined that the project may cause a significant impact to the CEEC. A referral was submitted to the Commonwealth Department of the Environment and Energy on 29 March 2017 for the construction and operation of the Albion Park Rail bypass (EPBC 2017/7909) which considered relevant matters of national environmental significance, including the Illawarra and South Coast Lowland Forest and Woodland CEEC. The referral was determined on 29 May 2017 to be a controlled action under the EPBC Act for Listed Threatened Species and Communities (Sections 18 and 18A).

On 10 September 2017, Roads and Maritime received agreement from the Department of the Environment and Energy to remove works associated with the Croom Regional Sporting Complex, including utility work, from the original project referral as it is not likely to significantly impact on matters of national environmental significance.

A Preliminary Documentation Assessment has been prepared by Roads and Maritime in accordance with the requirements of the Department of the Environment and Energy to assess the impact of the Albion Park Rail bypass project and utility work for the project, excluding all works associated with the Croom Regional Sporting Complex.

With the exception of works associated with the Croom Regional Sporting Complex, no work on the Albion Park Rail bypass project or utility work for the project can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.

Freshwater Wetlands EEC

The project REF identified that up to 0.59 hectares of Freshwater Wetlands EEC would be cleared for the utility works. The proposed modification includes a minor change to the utility works boundary along the southern side of Tongarra Road for electrical works (Figure 3-2), resulting in the clearing of up to an additional 0.11 hectares of Freshwater Wetlands EEC. As such, up to a total of 0.70 hectares of Freshwater Wetlands EEC would be cleared for utility works.

The area of Freshwater Wetlands EEC to be impacted represents about 2.4 per cent of the community within and near the modified utility works boundary and less than one per cent of the known extent of this community on the Illawarra Plain.

An assessment of significance under the TSC Act was completed for Freshwater Wetlands EEC (Appendix C), taking into consideration the total impact (project REF and addendum REF) to the community. The assessment of significance concluded that the utility works, including the proposed modification, would be unlikely to have a significant impact on the Freshwater Wetlands EEC as it would only remove a small area of this vegetation community from the locality and is unlikely to modify the structure of the community. A Species Impact Statement is not required.

6.2.3 Safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 6-1 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 6-2 Biodiversity safeguards and management measures.

Impact	Environmental safeguards	Responsibility	Timing
EPBC Act approval	• ***Other than works associated with the Croom Regional Sporting Complex, no physical utility work for the project (including mobilisation to site) can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act*** • ***Other than works associated with the Croom Regional Sporting Complex, all utility work for the project must comply with the overall project approval (EPBC 2017/7909) under the EPBC Act, if and when granted.***	***Roads and Maritime*** ***Contractor***	***Detailed design, Pre-construction and Construction***
Vegetation removal	• Detailed design must limit vegetation clearing • Vegetation clearing for access purposes during construction must be minimised.	Roads and Maritime	Detailed Design, Construction
Biodiversity	• ***Measures to avoid or minimise impacts to threatened ecological communities must be included in the EWMS and/or CEMP*** • ***All construction personnel must be inducted on the presence of threatened ecological communities on site.***	***Roads and Maritime*** ***Contractor***	***Detailed design, Pre-construction and Construction***

Impact	Environmental safeguards	Responsibility	Timing

Vegetation removal	~~• Detailed design must ensure that vegetation clearing is minimised~~
	~~• The requirement to offset the removal of Illawarra Lowlands Grassy Woodland must be determined once the extent of the vegetation clearing is known. Should offsetting be required, this must be undertaken in accordance with an approved offset strategy (for example the offset strategy for Albion Rail bypass project)~~
	• ***The detailed design and construction planning will demonstrate that it has sought to minimise the extent of vegetation clearing within the project boundary; particularly of endangered ecological communities***
	• The safeguards detailed in this section of the REF will be included in the CEMP ~~and/or EWMS~~ to avoid, minimise or mitigate impacts to biodiversity. ***The plan will describe the management measures to be implemented to limit the impact of the project on biodiversity, in accordance with Roads and Maritime's Biodiversity Guidelines (2011), including, but not limited to:***
	  • ***Pre-clearing processes (Guide 1)***
	  • ***Exclusion zones and fencing or other means to demarcate vegetation to be retained (engendered ecological communities) near the works (Guide 2)***
	  • ***Re-establishment of native vegetation (Guide 3)***
	  • ***Clearing of vegetation and removal of bush rock (Guide 4)***
	  • ***Weed management (Guideline 6)***
	  • ***Pathogen Management (Guideline 7)***
	  • ***Nest Boxes***
	  • ***Fauna handling***
	  • ***Aquatic habitats and riparian zones.***
	~~• Vegetation clearing for construction access must be minimised by selecting appropriate access locations and construction plant.~~
	~~• Threatened species, EECs and significant habitat features will be protected from overclearing by undertaking a preclearing process in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects*~~
	~~• Overclearing will be prevented by establishing no go areas and tree protection zones in accordance with *Guide 2: Exclusion zones of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*~~
	~~• Vegetation clearing must be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA Projects.*~~
		Roads and Maritime
		Contractor
			Detailed design, pre-construction and construction

Impact	Environmental safeguards	Responsibility	Timing
Environmentally sensitive areas	• ***Environmentally sensitive areas (e.g. areas outside the project boundary, sensitive receivers, threatened ecological communities, Aboriginal heritage sites, non-Aboriginal heritage sites) must be delineated on sensitive areas maps and included in the CEMP. These areas must be fenced, unless agreed otherwise with Roads and Maritime, to ensure they are not subject to disturbance during construction.***	***Contractor***	***Detailed design, Pre-construction and Construction***
Impacts to Illawarra Lowland Forest and Woodland	• ***No clearing of, or other impacts to, areas of Illawarra and South Coast Lowland Forest and Woodland are permitted for works associated with the Croom Regional Sporting Complex*** • ***No vegetation clearing for sewer or water connection infrastructure is permitted during trenching works adjacent to Croom Reserve.***	***Contractor***	***Detailed design, Pre-construction and Construction***
Impacts to threatened species ***and ecological communities***	• An unexpected threatened species finds procedure must be developed as part of the EWMS and/or CEMP in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects* • All personnel must be inducted on the potential threatened species ***and ecological communities*** occurring on site and the unexpected threatened species finds procedure • Photos and descriptions of threatened species occurring or likely to occur would be included in the EWMS and/or CEMP.	Contractor	Construction
Spread of weeds and pathogens	• Weeds must be managed in accordance with *Guide 6: Weed management of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects* • Pathogens such as Phytophtora must be managed in accordance with *Guide 7: Pathogen management of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*	Contractor	Construction
Impacts on fauna	• Detailed design must avoid removing the three hollow bearing trees if feasible • Any handling of fauna must be done in accordance with *Guide 9: Fauna handling of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Impacts to waterways	• Waterways must be underbored to avoid impacts. In accordance with DPI (Fisheries) requirements, a buffer zone of at least 10 metres from the waterways are to be maintained at entry and exit points • DPI (Fisheries) must be notified of any proposed dredging and/or reclamation for any additional works not assessed in the REF in accordance with Clause 199 of the *Fisheries Management Act 1994* prior to start of construction and their requirements taken into consideration during detailed design and construction • Works within the riparian zones must be undertaken in accordance with Weeds must be managed in accordance with *Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects* • ***Disturbance to riparian areas caused by grubbing and excavation works will be minimised for areas identified for post construction rehabilitation. Clearing in these areas will seek to retain root mass and existing seed banks to aid in stabilisation and post construction rehabilitation.***	Roads and Maritime Contractor	Construction
Impacts to wetlands	• Detailed design must consider avoiding directly impacting wetlands by modifying the alignment of any utility works. In particular, this must be investigated for unnamed waterway wetland.	Roads and Maritime Contractor	Detailed design Construction

6.2.4 Biodiversity offsets

A biodiversity offset strategy has been prepared for the Albion Park Rail bypass project in accordance with the Framework for Biodiversity Assessment. Biodiversity offsets for the utility works would be managed in accordance with this offset strategy as described in the project REF.

6.3 Non-Aboriginal heritage

A description of non-Aboriginal heritage relevant to utility works is included in section 6.8 of the project REF.

6.3.1 Existing environment

A detailed description of the existing environment is included in section 6.8.1 of the project REF. Listed non-Aboriginal heritage items and sites of archaeological potential within the area of the proposed modification are described in Table 6-3.

Table 6-3 Listed non-Aboriginal heritage items and sites of archaeological potential within the area of the proposed modification.

Item	Distance from proposed modification	Listing and significance	Statement of significance
Swansea Farmhouse (Item no. 198 Shellharbour LEP 2013, Schedule 5)	0 m	Shellharbour LEP 2013 Local	'Swansea' has strong local historic associations with the important local dairy industry and with the Youll family who were prominent dairy farmers in Albion Park, and important contributors to the Albion Park Agricultural Society. The Junior Farmers Pavilion at the Albion Park Showground was named in honour of Donald Youll. Swansea is a good example of a weatherboard cottage in the Federation style with some modifications and setting changes, although the oval spatial relationship retains a rural setting (State heritage inventory, accessed 1 March 2018).
Albion Park Rail Cemetery (Item no. 007 Shellharbour LEP 2013, Schedule 5)	0 m	Shellharbour LEP 2013 Local	The Albion Park Cemetery has strong local historic significance. Interred within are district pioneers including former Mayor John Frazer, who instigated the cemetery's beginnings. A monument erected in the cemetery by the community honours his civic services. Monuments and headstones date from the early 1900s and throughout 20th century. They are of varied style and display fine monumental mason craftsmanship. The cemetery has research value providing information about 20th century burial practices and genealogical data (State heritage inventory, accessed 1 March 2018).
Stapletons Bridge over Frazers Creek	0 m Within proposed corridor for electrical trench/underbore works	Roads and Maritime s.170 database no. 4309612 Local	Stapletons Bridge is of local historical, associative, aesthetic and technical significance. The bridge is a component of Tongarra Road, a historically important route in the area. While the crossing has been bridged since at least the 1850s, the present bridge, constructed in 1929 demonstrates the process of road infrastructure improvement undertaken by the Main Roads Board cum Department of Main Roads from the late 1920s to bring such infrastructure up to the standards required to cope with the changing nature and volume of traffic. Subsequent modifications are related to the industrial, commercial and residential expansion of the Greater Wollongong area in the late twentieth century. The bridge's design employs a reinforced concrete beam cantilever approach span system, which gives the bridge a distinctive appearance (State heritage inventory, accessed 1 March 2018).

Item	Distance from proposed modification	Listing and significance	Statement of significance
Tongarra Road Homestead (unlisted site of archaeological potential)	0 m Within proposed corridor for electrical trench/underbore works	Unlisted Local	The Tongarra Road Homestead remains include 20th century concrete and brick footings and/or structural remains as well as bluestone and sandstone footings. A small pepper tree is located close to the footings and is likely to be associated with the homestead (Artefact, 2015a).

6.3.2 Potential impacts

The potential impacts of the proposed modification are described in Table 6-4 below.

Table 6-4 Potential impacts of the proposed modification on listed non-Aboriginal heritage items and sites of archaeological potential.

Impact	Nearby proposed utility works	Potential impacts
Swansea Farmhouse	Trenching of underground utilities within the Croom Regional Sporting Complex. Establishment and use of ancillary facility (Site A).	Trenching works and establishment of ancillary facility within the curtilage of this item resulting in minor temporary ground disturbances. However, no direct impacts to any structures within the site would occur.
Albion Park Rail Cemetery	Trenching of underground utilities along Croome Road and Cedar Street.	Trenching works are outside the curtilage of this item, though are adjacent to western curtilage of the item. No direct impacts to any structures within the site would occur.
Stapletons Bridge over Frazers Creek	Trenching or underbore works to the south of Tongarra Road.	Trenching (or underbore) works would likely occur adjacent to the alignment of the bridge. No direct impacts to the bridge structure are anticipated.
Tongarra Road Homestead	Trenching or underbore works to the south of Tongarra Road.	Potential underbore depths would range between one to five metres below the existing ground surface. At shallower depths, this would have the potential to impact on archaeological remains associated with the Tongarra Road Homestead. At the greater depths, it would be expected to pass below areas of potential archaeological remains. If trenching is carried out, there is a high potential for archaeological remains associated with the Tongarra Road Homestead to be impacted.

In addition to the identified potential direct impacts described in Table 6-4 above, there is the potential for some indirect impacts to heritage items (including indirect vibration, erosion and sedimentation) from construction trenching or underbore works. These impacts were assessed in the project REF and are further considered within section 6.1 and section 6.5 of this addendum REF.

6.3.3 Safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 6-5 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 6-5 Heritage safeguards and management measures.

Impact	Environmental safeguards	Responsibility	Timing
Impacts to sites of archaeological potential	• Detailed design should avoid***, where possible,*** any ground disturbances within the Potential remains of the Tongarra Road Homestead and the potential remains associated with Terry's Meadows Estate • Should ground disturbances be required within the potential remains of the Tongarra Road Homestead and the potential remains associated with Terry's Meadows estate then test excavations must be undertaken. ~~An appropriate archaeological assessment methodology, including research design (in consultation with the Department and the Heritage Council) must be developed to guide physical archaeological test excavations prior to works commencing. An excavation report must be prepared to outline the results of the excavation.~~ ***An excavation and salvage methodology will be prepared in consultation with the Department of Planning and Environment and the Heritage Council prior to commencement. A report will be prepared to outline the results of the investigation*** • The potential remains of the Tongarra Road Homestead and Terry's Meadows Estate must be identified on maps as no-go areas within the EWMS and/or CEMP • The sites must be included in the induction process.	Roads and Maritime Contractor	Pre-construction, construction
Impacts to heritage sites	• ***Heritage site boundaries and heritage structures must be identified on sensitive area maps within the CEMP*** • ***Heritage sites must be included in the induction process*** • ***There must be no impact to structures within the Swansea Farmhouse, Swansea Dairy Site, Fig Tree and Silo heritage sites*** • ***There must be no impact to the Albion Park Rail Cemetery heritage site.***	***Contractor***	***Construction***
Impacts to Duck Creek Bridge and Stapleton's Bridge	• There must be no direct impacts to the two heritage listed bridges • The heritage significance of the bridges must be included in the induction process.	Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
~~Accidental discovery of items of Non-Aboriginal cultural significance~~	• ~~If unexpected archaeological remains are uncovered during ***construction***, all works must cease ***near*** the material/find and the steps in Roads and Maritimes *Standard Management Procedure: Unexpected Archaeological Finds Procedure* must be followed.~~	~~Contractor~~	~~Construction~~
Unexpected finds – Aboriginal ***and non-Aboriginal*** heritage	• ***If unexpected Aboriginal and/or non-Aboriginal heritage items are discovered during construction, the Roads and Maritime Unexpected Heritage Items Procedure (2015) will be followed*** • ***The NSW Heritage Division will be notified of the discovery of a relic in accordance with Section 146 of the Heritage Act 1977*** • The process for the unexpected discovery of items of Aboriginal ~~cultural significance~~ ***and non-Aboriginal heritage and responsibilities under the Heritage Act 1977 and the National Parks and Wildlife Act 1974*** must be included in the induction process.	Contractor	Construction

6.4 Aboriginal heritage

A description of Aboriginal heritage relevant to utility works is included in section 6.9 of the project REF.

6.4.1 Existing environment

A detailed description of the existing environment is included in section 6.9.1 of the project REF.

An assessment of the potential for the project to impact on Aboriginal heritage objects or places was undertaken as part of the Albion Park Rail bypass environmental impact statement (EIS) (Technical Paper 6; Artefact 2015b). Based on the findings of the literature and database review, field surveys, test excavations and consultation with Aboriginal stakeholders for Albion Park Rail bypass project, the project REF identified that 23 Aboriginal heritage sites (20 archaeological sites and three cultural sites) occur within or in proximity to the project REF boundary.

Based on the Albion Park Rail bypass EIS and further investigations for the Albion Park Rail bypass submissions and preferred infrastructure report (Roads and Maritime, 2017), no additional Aboriginal heritage sites occur within or near the modified utility works boundary beyond those identified in the project REF.

Aboriginal heritage sites within and in proximity to the modified utility works boundary are shown in Figure 6-1.

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Figure 6-1 Identified Aboriginal sites within modified utility works boundary

6.4.2 Potential impacts

A detailed description of potential impacts to identified Aboriginal sites is included in section 6.9.2 of the project REF.

The proposed modification has the potential to impact up to three Aboriginal heritage sites, however direct impact would be avoided where possible. This would include one site not previously identified in the project REF as being impacted as part of the determined project (site YTOF AS 3).

Table 6-6 below describes those sites which have the potential to be impacted by the proposed modification.

Table 6-6 Potential impacts of the proposed modification to identified Aboriginal heritage sites.

Site ID	Proposed utility works	Potential impacts
YTOF IF 2	Removal of above ground powerlines Trenching Ancillary site	This site was previously identified in the project REF as being potentially impacted. The proposed modification would be undertaken in close proximity to this site. There is potential for a direct impact if the site is not adequately protected during construction activities.
YTOF IF 3	Removal of above ground powerlines Trenching Ancillary site	This site was previously identified in the project REF as being potentially impacted. The proposed modification would be undertaken in close proximity to this site. There is potential for a direct impact if the site is not adequately protected during construction activities.
YTOF AS 3	Trenching	This site was previously identified in the project REF as not being impacted by the utility works. Trenching for installation of sewer infrastructure may result in a direct impact to this site. Artefact (2015b) has identified this site as having a low archaeological significance and that no further archaeological investigation is required prior to impact.

Note: AS – Artefact Scatter, IF – Isolated Find.

6.4.3 Safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 6-7 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 6-7 Safeguards and management measures to protect Aboriginal heritage sites

Impact	Environmental safeguards	Responsibility	Timing
Impacts to known Aboriginal sites	***An Aboriginal Heritage Management Plan will be prepared to manage the impacts of construction works on Aboriginal cultural heritage. This will include but not be limited to:*** • The Aboriginal heritage sites must be identified on maps as no go zones within the EWMS and/or CEMP • ***Site inductions and training for construction personnel, including Aboriginal cultural awareness training and their obligations under the National Parks and Wildlife Act 1974, to be conducted by a heritage specialist*** • The Aboriginal sites must be protected through temporary means on site (e.g. fencing, flagging tape) to ensure there are no inadvertent impacts during construction • The location of YTOF CS 1 should not be included in the EWMS and/or CEMP as it is culturally sensitive information • Detailed design must ensure that ***where possible*** no direct impacts on Aboriginal heritage sites occur, in particular YTOF AS1, AS2 and AS7 • ***If impacts to Aboriginal heritage sites are unavoidable, an AHIP will be required.***	Roads and Maritime Contractor	Construction
Impacts to the Duck Creek Cultural Site	• There must be no impacts to the creek bed within the identified boundary of the cultural site • The site must be included in the induction process and identified as a no go zone. Should any works be required within 15 metres of the boundary of the cultural site, temporary exclusion fencing will be installed to prevent inadvertent impacts. The temporary fencing must be confirmed on site by a heritage specialist.	Roads and Maritime Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
Unexpected finds – Aboriginal ***and non-Aboriginal*** heritage	• ***If unexpected Aboriginal and/or non-Aboriginal heritage items are discovered during construction, the Roads and Maritime Unexpected Heritage Items Procedure (2015) will be followed*** • ***The NSW Heritage Division will be notified of the discovery of a relic in accordance with Section 146 of the Heritage Act 1977*** • The process for the unexpected discovery of items of Aboriginal ~~cultural significance~~ ***and non-Aboriginal heritage and responsibilities under the Heritage Act 1977 and the National Parks and Wildlife Act 1974*** must be included in the induction process.	Contractor	Construction
Consultation	• A stakeholder consultation program will be prepared and implemented to ensure that stakeholders are informed about the construction program and activities. This will separate out residential stakeholders from business and government stakeholders, addressing their specific concerns • ***Ongoing consultation with the local Aboriginal community will be carried out in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2012) and the Aboriginal heritage consultation requirements for applicants (Department of Environment, Climate Change and Water, 2010).***	Roads and Maritime Contractor	Construction

6.5 Other impacts

A description of other impacts relevant to utility works is included in the project REF.

6.5.1 Existing environment and potential impacts

Table 6-8 Existing environment and potential impacts

Environmental factor	Existing environment	Potential impacts
Visual impact	There are a number of sensitive residential receivers within the residential areas of Grevillea and Oak Streets.	Some impacts on visual amenity would occur during construction. However, these are expected to be minor and shot-term, and only occur during trenching associated with the sewer works.
Traffic and access	Vehicle access restrictions to residential properties along Grevillea and Oak Streets.	Some access restrictions would occur during construction. These restrictions would be short-term and only occur during trenching associated with the sewer works.
Noise, traffic and transport	Sensitive receivers along Croome Road adjacent to the proposed ancillary facility (Site B).	Some temporary, short-term noise and traffic impacts would occur during construction due to general works and vehicle movements at the proposed ancillary site on Croome Road.

6.5.2 Safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 6-9 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 6-9 Visual impact, access, noise and traffic safeguards and management measures.

Impact	Environmental safeguards	Responsibility	Timing
Visual Impact	• The construction areas must be maintained in a tidy manner • ~~Disturbed areas must be progressively reinstated during construction.~~ • ***Disturbed areas must be progressively rehabilitated to minimise soil exposure and the potential for dust generation, erosion and sedimentation, and visual impacts.***	Contractor	Construction

Traffic and Access	• ***A Traffic Management Plan must be prepared (in accordance with Roads and Maritime specification G10) including:***
	  • ***Traffic control plans showing the access arrangements to ancillary sites and the location of required signs and devices***
	  • ***Pedestrian and cyclist management plan where necessary to ensure access is maintained where it is safe and feasible during construction***
	  • ***Road safety audit requirements.***
	• ~~A traffic management plan (vehicular and pedestrian) must be prepared in accordance with Roads and Maritime' *Traffic Control at Work Sites* (RTA 2010)~~
		Contractor	Construction

Traffic delays	• Works must be programed to avoid peak traffic wherever possible • Consultation must be undertaken with residents regarding the timing and anticipated traffic impact of the construction program.	Contractor	Construction
Access	• ***Property access will be maintained or alternative arrangements made in consultation with the affected landowners prior to relevant access impacts.*** • ~~Consultation with the landowner must occur before access to private properties for utility adjustments~~	***Roads and Maritime***	***Construction***

Impact	Environmental safeguards	Responsibility	Timing
Noise pollution	• A construction noise and vibration management plan (NVMP) must be prepared as part of ~~the proposal EWMS a~~nd/or CEMP. The construction NVMP must be prepared in accordance with G36 and Roads and Mari~~time's *Environmental Noise Management Manual* (RTA~~ 2001) ***Construction Noise and Vibration Guideline (2016)*** and include, but not to be limited to, measures outlined below. • Works will be restricted to standard work hours o 7 am to 6 pm Monday to Friday; 8 am to 1 pm Saturdays o No work on Sunday or Public Holidays • If working outside the standard work hours, noise impacts are to be minimised in accordance with Practice Note ~~7 in the RTA's Environment Noise Management Manual and RTA's Environmental fact sheet NO. 2 – Noise Management and Night Works~~ ***~~Roads and Maritime's~~ Construction Noise and Vibration Guideline (2016)*** • ***Noise and vibration monitoring and reporting requirements*** • ***A map showing the location of all sensitive receivers*** • ***Specific mitigation treatments, management methods and procedures to be implemented to control noise and vibration during construction*** • ***Construction timetabling to minimise noise impacts including time and duration restrictions, respite periods and frequency*** • ***Procedures for notifying residents, business owners and other sensitive receivers of construction activities likely to affect their amenity through noise and vibration, including sensitive receivers adjacent to ancillary sites*** • ***Contingency procedures to be implemented in the event of non-compliance and/or noise complaints*** • ***The type of noise mitigation measures that must be adopted in the NVMP include:*** o ***Selection of less noisy plant and equipment, where feasible*** o ***Where feasible, avoid simultaneous operation of noisy plant*** o ***Avoid queuing and idling of construction vehicles outside of the standard construction hours*** o ***Maintain plant and equipment so as to ensure optimum operating conditions*** o ***Plan construction traffic flow to minimise reversing and noise from reversing alarms***	Roads and Maritime Contractor	Construction

Impact	Environmental safeguards	Responsibility	Timing
	• All employees, contractors and subcontractors are to receive an induction. The environmental component may be covered in toolboxes and must include: o Relevant licence and approval conditions o Permissible hours of work o Any limitations of high noise generating activities o Location of nearest sensitive receivers o Construction employee parking areas o Relevant site specific mitigation measures o Appropriate behavioural practices • ~~Where vibration intensive equipment is used which is predicted to exceed vibration objectives, determine whether alternative construction methodology or less vibration intensive equipment can be used, e.g. using bored piles rather than impact or percussion piling~~ • ***The type of vibration management measures that must be adopted in the plan include:*** o ***Undertaking building dilapidation surveys for buildings that could be impacted by vibration*** o ***Consideration of feasible alternative construction methodologies or equipment where vibration intensive equipment is expected to exceed the criteria*** • To limit the number of highly noise affected receivers, high noise impact activities will be carried out between: o 8 am and 6 pm Monday to Friday; and o 8 am and 1 pm Saturday • High noise impact activities will be carried out in continuous blocks of up to 3 hours. Respite from high noise impact activities will be provided between each block for at least 1 hour. No high noise impact activities will be carried out during this 1 hour respite period • ***Work will be carried out generally in accordance with the Interim Construction Noise Guidelines (Department of Environment and Climate Change 2009). Prior to out of hours work being carried out, all affected receivers will be notified of relevant details and the proposed activities.***		

7 Environmental management

7.1 Environmental management plans

A number of safeguards and management measures have been identified to minimise adverse environmental impacts, which could potentially arise as a result of the proposed modification. Should the proposed modification proceed, these management measures would be addressed if required during detailed design and incorporated into the Project Environmental Management Plan (PEMP) and CEMP and applied during the construction and operation of the proposed modification.

7.2 Summary of safeguards and management measures

The safeguards and management measures identified in the project REF have been revised to mitigate impacts of the proposed modification and to better align with the Albion Park Rail bypass project.

Table 7-1 below provides the revised safeguard and management measures for the Albion Park Rail bypass utility works, incorporating the proposed modification. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. Deleted safeguards and management measures are shown in strikethrough.

Table 7-1 Summary of safeguards and management measures.

No.	Impact	Environmental safeguards	Responsibility	Timing
1	***EPBC Act approval***	• ***Other than works associated with the Croom Regional Sporting Complex, no physical utility work for the project (including mobilisation to site) can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act*** • ***Other than works associated with the Croom Regional Sporting Complex, all utility work for the project must comply with the overall project approval (EPBC 2017/7909) under the EPBC Act, if and when granted.***	***Roads and Maritime*** ***Contractor***	***Detailed design, Pre-construction and Construction***

2	General	All environmental safeguards must be incorporated within the following:
		• Detailed design stage
		• Contract specifications for the proposal
		• Contractor's Environmental Management Plans if used
		• Environmental management sub-plans including:
		  • Waste management
		  • Noise and Vibration
		• Environmental Work Method Statements.
			Roads and Maritime Project Manager	Pre-construction

3	General	• A risk assessment must be carried out on the proposal in accordance with the Roads and Maritime Services Project Pack and PMS risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented. • A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate if the level of risk chosen for the project is appropriate. • Any works resulting from the proposal and as covered by the REF may be subject to environmental audit(s) and/or inspection(s) at any time during their duration.	***Roads and Maritime*** Project Manager and regional environmental staff	Pre-construction After first audit
4	General	• The environmental contract specification must be forwarded to the Roads and Maritime Services Environment Manager Southern region for review at least 10 working days prior to the tender stage. • A contractual hold point must be maintained until the EWMS and/or CEMP is reviewed by the Roads and Maritime Services Environment Manager Southern region.	***Roads and Maritime*** Project Manager	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
5	General	• The Roads and Maritime Services Project Manager must notify the Roads and Maritime Services Environment Officer Southern Region at least five working days prior to commencing.	***Roads and Maritime*** Project Manager	Pre-construction
6	General	• All businesses and residences likely to be affected by the proposed works must be notified at least five working days prior to the commencement of the proposed activities.	***Roads and Maritime*** Project Manager	Pre-construction
7	General	• Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Contractor	Pre-construction and during construction as required.
8	General	• Once the locations of compound sites and stockpile sites have been determined, the Roads and Maritime Environment Officer would review the sites to determine if additional assessments are required.	Roads and Maritime	Pre-construction and during construction as required.

9	Soil and water management	• Works must be undertaken in accordance with Roads and Maritime specifications, including but not limited to:
		  • G38 Soil and Water Management (Soil and Water Management Plan)
		  • R44 Earthworks (Cut, Fill, Imported Fill and Imported Selected Material)
		  • R50 Stabilisation of Earthworks ***(where relevant)***
		• Erosion and sediment control plans must be prepared for all discrete utility works
		• Works within wetlands must be undertaken during dry conditions if feasible and in line with an Environmental Work Method Statement to minimise water quality impacts
		• ***Industry standard erosion and sediment controls will be designed and implemented in accordance with the following specifications and guidelines:***
		  • ***Managing Urban Stormwater: Soils and Construction (Landcom, 2004)***
		  • ***Roads and Maritime Erosion and Sedimentation Management Procedure (PN143)***
		  • ***The Department of Primary Industry (Water) Guidelines for Controlled Activities***
		These controls will be established before the start of construction and maintained in effective working order for the duration of the construction period until the site is restored
			Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing

		• ***The CEMP will include a Construction Soil and Water Quality Management Plan to manage potential impacts on soils and receiving watercourses, to include, but not limited to:***
		  • ***Objectives and targets for soil and water quality management***
		  • ***Information on the relevant statutory and other requirements relating to soils and water quality, including any permits or licences required for the project***
		  • ***Details of any consultation requirements under the Plan***
		  • ***An overview of the existing environment and potential impacts related to the construction works***
		  • ***Measures to manage impacts of the project including in relation to:***
		  • ***Soils, erosion and sedimentation***
		  • ***Stockpile management***
		  • ***Spoil and fill management***
		  • ***Surface water quality***
		  • ***Significant weather events (such as heavy rainfall or flooding)***
		  • ***Re-fuelling of vehicles and other equipment and accidental spills***
		  • ***Unexpected finds such as asbestos or contaminated fill***
		  • ***Auditing and reporting requirements***
		  • ***Site inductions and training for construction personnel in the implementation of the plan.***		

No.	Impact	Environmental safeguards	Responsibility	Timing

10	Specific high risk activities	• ***Environmental Work Method Statements must be prepared for high risk activities, including:***
		  • ***Work in environmentally sensitive areas***
		  • ***Clearing and grubbing***
		  • ***Trenching***
		  • ***Underboring (directional drilling)***
		• ***Task-specific*** Environmental Work Method Statements must be prepared for the following activities:
		  • Underbore of water mains beneath Duck Creek
		  • Trenching of watermains across a wetland east of the Princes Highway at chainage 1,700
		  • Installation of concrete protection slab within a wetland west of the Princess Highway and North of Yallah Bay Road at chainage 17,300
		  • Underbore of utilities beneath Frazers Creek at Illawarra Highway ~~chainage~~
		  • Trenching ***or underbore*** of utilities along the north and south of Tongarra Road where wetlands occur
		• The Environmental Work Method Statement (EWMS) must be prepared and submitted to Roads and Maritime's Environment Branch ***(***and DPI (Fisheries) ***for task-specific Environmental Work Method Statements)*** at least 2 weeks prior to works and approved prior to works starting. The EWMS must include, but not be limited to, the following:
		  • Descriptions of works/activities including machinery to be used
		  • Outline of the sequence of the works/activities
		  • Identification of the potential environmental impacts due to works/activities
		  • An environmental risk assessment to determine potential risks to discrete work elements or activities likely to affect the environment
		  • Evaluation of methods to reduce environmental risks
		  • Mitigation measures to reduce environmental risks
		  • A process for assessing the performance of the implemented mitigation measures
		  • A process for resolving environmental issues and conflicts. Emergency procedures for chemical spills and any other potential emergency incidents.
			Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing

11	Flood management	• ***For ancillary facilities with flood immunity of less than a 20 year ARI, a flood contingency plan will be prepared. This plan will consider likelihood of flooding, excavation routes, warning times, and potential impacts from the site flooding. It will include but not limited to:***
		  ◦ ***any monitoring requirements to ensure advanced notice of a flood event***
		  ◦ ***procedures to be implemented in the event of a flood***
		  ◦ ***details of the required staff training and staff inductions.***
		• ~~A flood evacuation procedure as part of the EWMS must be prepared and implemented in the event of a flooding event that has the potential to impact disturbed areas.~~
			Contractor	Construction

12	Stockpile Management	• Stockpiles must be managed in accordance with the *Stockpile Site Management Guideline EMS-TG-10* (RTA 2011).	Contractor	Construction
13	Pollution	• Concrete washout must be carried out offsite or in concrete washout areas described in the EWMS and/or CEMP and identified on the ESCP • Procedures for testing, treatment and discharge of construction waste water must be as described in the EWMS and/or CEMP • All fuels, chemicals, and liquids must be stored at least 50 metres away from any waterways or drainage lines and must be stored in an impervious bunded area • The refuelling of plant and maintenance of machinery must be undertaken in impervious bunded areas • Machinery must be checked daily to ensure there is no oil, fuel or other liquids leaking from the machinery.	Contractor	Construction
14	Pollution incident	• ***An emergency spill response procedure will be prepared to minimise the impact of any accidental spill, and include details on the requirement for managing spills, disposing of any contaminated waste and reporting of such incidents*** • All staff must be appropriately trained through toolbox talks or similar for the minimisation and management of accidental spills • If a spill occurs, Roads and Maritime's Environmental Incident Classification and Management Procedure must be followed and Roads and Maritime's Contract Manager notified as soon as possible.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
15	Contamination	• If signs of contaminated soils are discovered (e.g. smell, discolouration, suspect rubbish), the site must be marked and the soil replaced to cover the contamination • The soil must be analysed without delay to determine the type of contamination • An appropriate management actions must be developed and implemented.	Contractor	Construction
16	ASS Management	• An Acid Sulphate Soil Management Plan must be prepared for any works likely to disturb potential ASS. The plan must be prepared in accordance with Guidelines for the *Management of Acid Sulfate Materials: Acid Sulfate Soils, Acid Sulfate Rock and Monosulfidic Black Ooze* (RTA 2005).	Contractor	Construction
17	Vegetation removal	• Detailed design must limit vegetation clearing • Vegetation clearing for access purposes during construction must be minimised.	Roads and Maritime	Detailed Design, Construction
18	Overhead Powerlines	• Overhead powerlines must be located in a way that minimises impacts on residential receivers • Directly impacted residents must be consulted during detailed design to determine potential strategies to minimise visual impacts. This would occur as a minimum with the Colden Drive residential property (viewpoint 41 in the project REF).	Roads and Maritime	Detailed Design
19	Visual impacts	• The construction areas must be maintained in a tidy manner at all times ~~• Disturbed areas must be progressively reinstated during construction.~~ • ***Disturbed areas must be progressively rehabilitated to minimise soil exposure and the potential for dust generation, erosion and sedimentation, and visual impacts.***	Contractor	Construction

20	Traffic and Access	• ***A Traffic Management Plan must be prepared (in accordance with Roads and Maritime specification G10) including:***
		  • ***Traffic control plans showing the access arrangements to ancillary sites and the location of required signs and devices***
		  • ***Pedestrian and cyclist management plan where necessary to ensure access is maintained where it is safe and feasible during construction***
		  • ***Road safety audit requirements.***
		~~• A traffic management plan (vehicular and pedestrian) must be prepared in accordance with Roads and Maritime' *Traffic Control at Work Sites* (RTA 2010)~~
			Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
21	Traffic delays	• Works must be programed to avoid peak traffic wherever possible • Consultation must be undertaken with residents regarding the timing and anticipated traffic impact of the construction program.	Contractor	Construction
22	Access	• ***Property access will be maintained or alternative arrangements made in consultation with the affected landowners prior to relevant access impacts.*** • ~~Consultation with the landowner must occur before access to private properties for utility adjustments~~	Roads and Maritime	Construction
		• ~~The EWMS and/or CEMP must include measures and procedures to minimise or prevent air pollution~~	Contractor	Construction

23	Air Quality	• ***The CEMP must include a strategy to manage air quality during construction. It will include, but not limited to:***
		  • ***Air quality and dust management objectives***
		  • ***Potential sources and impacts of dust, identifying all dust sensitive receptors***
		  • ***Mitigation measures to minimise dust impacts, such as the use of water carts to supress dust, stabilisation of exposed soils, covering trucks transporting loose material, and stopping dust generating activities during windy conditions***
		  • ***A monitoring program to assess compliance with the identified objectives***
		  • ***Contingency plans to be implemented in the event of non-compliances and /or complaints about dust.***
		• ~~In accordance with the EWMS and/or CEMP the following must be implemented:~~
		  • ~~Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust~~
		  • ~~Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation~~
		  • ~~Vehicles must be maintained to the manufactures standards and regular checks will be made to ensure there are no continuous exhaust emissions of 10 seconds or longer~~
		  • ~~Vegetation or other materials are not to be burnt on site~~
		• ~~Stockpiles or areas that may generate dust are to be managed to supress dust emissions in accordance with *RTA's Stockpile Site Management Guideline (2011).*~~
			Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing

24	Noise Pollution	• A construction noise and vibration management plan (NVMP) must be prepared as part of the ~~proposal EWMS and/or~~ CEMP. The construction NVMP must be prepared in accordance with G36 and Roads and Maritime's ~~*Environmental Noise Management Manual* (RTA 2001)~~ ***Construction Noise and Vibration Guideline (2016)*** and include, but not to be limited to, measures outlined below:
		  o Works will be restricted to standard work hours
		  o 7 am to 6 pm Monday to Friday; 8 am to 1 pm Saturdays
		  o No work on Sunday or Public Holidays
		  o If working outside the standard work hours, noise impacts are to be minimised in accordance with ~~Practice Note 7 in the RTA's Environment Noise Management Manual and RTA's Environmental fact sheet NO. 2 – Noise Management and Night Works~~ ***Roads and Maritime's Construction Noise and Vibration Guideline (2016)***
		  o ***Noise and vibration monitoring and reporting requirements***
		  o ***A map showing the location of all sensitive receivers***
		  o ***Specific mitigation treatments, management methods and procedures to be implemented to control noise and vibration during construction***
		  o ***Construction timetabling to minimise noise impacts including time and duration restrictions, respite periods and frequency***
		  o ***Procedures for notifying residents, business owners and other sensitive receivers of construction activities likely to affect their amenity through noise and vibration, including sensitive receivers adjacent to ancillary sites***
		  o ***Contingency procedures to be implemented in the event of non-compliance and/or noise complaints***
		  o ***The type of noise mitigation measures that must be adopted in the NVMP include:***
		  ▪ ***Selection of less noisy plant and equipment, where feasible***
		  ▪ ***Where feasible, avoid simultaneous operation of noisy plant***
		  ▪ ***Avoid queuing and idling of construction vehicles outside of the standard construction hours***
		  ▪ ***Maintain plant and equipment so as to ensure optimum operating conditions***
		  ▪ ***Plan construction traffic flow to minimise reversing and noise from reversing alarms***
			Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• All employees, contractors and subcontractors are to receive an induction. The environmental component may be covered in toolboxes and must include: o Relevant licence and approval conditions o Permissible hours of work o Any limitations of high noise generating activities o Location of nearest sensitive receivers o Construction employee parking areas o Relevant site specific mitigation measures o Appropriate behavioural practices • ~~Where vibration intensive equipment is used which is predicted to exceed vibration objectives, determine whether alternative construction methodology or less vibration intensive equipment can be used, e.g. using bored piles rather than impact or percussion piling~~ • ***The type of vibration management measures that must be adopted in the plan include:*** o ***Undertaking building dilapidation surveys for buildings that could be impacted by vibration*** o ***Consideration of feasible alternative construction methodologies or equipment where vibration intensive equipment is expected to exceed the criteria*** • To limit the number of highly noise affected receivers, high noise impact activities will be carried out between: o 8 am and 6 pm Monday to Friday; and o 8 am and 1 pm Saturday • High noise impact activities will be carried out in continuous blocks of up to 3 hours. Respite from high noise impact activities will be provided between each block for at least 1 hour. No high noise impact activities will be carried out during this 1 hour respite period • ***Work will be carried out generally in accordance with the Interim Construction Noise Guidelines (Department of Environment and Climate Change 2009). Prior to out of hours work being carried out, all affected receivers will be notified of relevant details and the proposed activities.***		

No.	Impact	Environmental safeguards	Responsibility	Timing
26	***Biodiversity***	• ***Measures to avoid or minimise impacts to threatened ecological communities must be included in the EWMS and/or CEMP*** • ***All construction personnel must be inducted on the presence of threatened ecological communities on site.***	***Roads and Maritime*** ***Contractor***	***Detailed design, Pre-construction and Construction***

28	Vegetation removal	• ~~Detailed design must ensure that vegetation clearing is minimised~~
		• ~~The requirement to offset the removal of Illawarra Lowlands Grassy Woodland must be determined once the extent of the vegetation clearing is known. Should offsetting be required, this must be undertaken in accordance with an approved offset strategy (for example the offset strategy for Albion Rail bypass project)~~
		• ***The detailed design and construction planning will demonstrate that it has sought to minimise the extent of vegetation clearing within the project boundary, particularly of threatened ecological communities***
		• The safeguards detailed in this section of the REF will be included in the CEMP ~~and/or EWMS~~ to avoid, minimise or mitigate impacts to biodiversity. ***The plan will describe the management measures to be implemented to limit the impact of the project on biodiversity, in accordance with Roads and Maritime's Biodiversity Guidelines (2011), including, but not limited to:***
		  • ***Pre-clearing processes (Guide 1)***
		  • ***Exclusion zones and fencing or other means to demarcate vegetation to be retained (threatened ecological communities) near the works (Guide 2)***
		  • ***Re-establishment of native vegetation (Guide 3)***
		  • ***Clearing of vegetation and removal of bush rock (Guide 4)***
		  • ***Weed management (Guideline 6)***
		  • ***Pathogen management (Guideline 7)***
		  • ***Nest boxes***
		  • ***Fauna handling***
		  • ***Aquatic habitats and riparian zones.***
		• ~~Vegetation clearing for construction access must be minimised by selecting appropriate access locations and construction plant.~~
			Roads and Maritime
			Contractor
				Detailed design, Pre-construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• ~~Threatened species, EECs and significant habitat features will be protected from overclearing by undertaking a preclearing process in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects*~~ • ~~Overclearing will be prevented by establishing no go areas and tree protection zones in accordance with *Guide 2: Exclusion zones of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*~~ • ~~Vegetation clearing must be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bushrock of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA Projects.*~~		
29	***Environmentally sensitive areas***	• ***Environmentally sensitive areas (e.g. areas outside the project boundary, sensitive receivers, threatened ecological communities, Aboriginal heritage sites, non-Aboriginal heritage sites) must be delineated on sensitive areas maps and included in the CEMP. These areas must be fenced, unless agreed otherwise with Roads and Maritime, to ensure they are not subject to disturbance during construction.***	***Contractor***	***Detailed design, Pre-construction and Construction***
30	***Impacts to Illawarra Lowland Forest and Woodland***	• ***No clearing of, or other impacts to, areas of Illawarra and South Coast Lowland Forest and Woodland are permitted for works associated with the Croom Regional Sporting Complex*** • ***No vegetation clearing for sewer or water connection infrastructure is permitted during trenching works adjacent to Croom Reserve.***	***Contractor***	***Detailed design, Pre-construction and Construction***
31	Impacts to threatened species ***and ecological communities***	• An unexpected threatened species finds procedure must be developed as part of the EWMS and/or CEMP in accordance with Guide 1: Pre-clearing process of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects • All personnel must be inducted on the potential threatened species ***and ecological communities*** occurring on site and the unexpected threatened species finds procedure • Photos and descriptions of threatened species occurring or likely to occur would be included in the EWMS and/or CEMP.	Contractor	Construction
33	Spread of weeds and pathogens	• Weeds must be managed in accordance with Guide 6: Weed management of the *Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects* • Pathogens such as Phytophtora must be managed in accordance with *Guide 7: Pathogen management of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
34	Impacts on fauna	• Detailed design must avoid removing ~~the three~~ hollow bearing trees if feasible • Any handling of fauna must be done in accordance with *Guide 9: Fauna handling of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects.*	Contractor	Construction
35	Impacts to waterways	• Waterways must be underbored to avoid impacts. In accordance with DPI (Fisheries) requirements, a buffer zone of at least 10 metres from the waterways are to be maintained at entry and exit points • DPI (Fisheries) must be notified of any proposed dredging and/or reclamation for any additional works not assessed in the REF in accordance with Clause 199 of the *Fisheries Management Act 1994* prior to start of construction and their requirements taken into consideration during detailed design and construction • Works within the riparian zones must be undertaken in accordance with Weeds must be managed in accordance with *Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects* • ***Disturbance to riparian areas caused by grubbing and excavation works will be minimised for areas identified for post construction rehabilitation. Clearing in these areas will seek to retain root mass and existing seed banks to aid in stabilisation and post construction rehabilitation.***	Roads and Maritime, Contractor	Construction
36	Impacts to wetlands	• Detailed design must consider avoiding directly impacting wetlands by modifying the alignment of any utility works. In particular, this must be investigated for unnamed waterway wetland.	Roads and Maritime Contractor	Detailed design Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
37	Impacts to sites of archaeological potential	• Detailed design should avoid***, where possible,*** any ground disturbances within the potential remains of the Tongarra Road Homestead and the potential remains associated with Terry's Meadows Estate • Should ground disturbances be required within the potential remains of the Tongarra Road Homestead and the potential remains associated with Terry's Meadows estate then test excavations must be undertaken. ~~An appropriate archaeological assessment methodology, including research design (in consultation with the Department and the Heritage Council) must be developed to guide physical archaeological test excavations prior to works commencing. An excavation report must be prepared to outline the results of the excavation.~~ ***An excavation and salvage methodology will be prepared in consultation with the Department of Planning and Environment and the Heritage Council prior to commencement. A report will be prepared to outline the results of the investigation*** • The potential remains of the Tongarra Road Homestead and Terry's Meadows Estate must be identified on ***sensitive area*** maps as no-go areas within the ~~EWMS and/or~~ CEMP • The sites must be included in the induction process.	Roads and Maritime Contractor	Pre-construction, construction
38	***Impacts to heritage sites***	• ***Heritage site boundaries and heritage structures must be identified on sensitive area maps within the CEMP*** • ***Heritage sites must be included in the induction process*** • ***There must be no impact to structures within the Swansea Farmhouse, Swansea Dairy Site, Fig Tree and Silo heritage sites*** • ***There must be no impact to the Albion Park Rail Cemetery heritage site.***	***Contractor***	***Construction***
39	Impacts to Duck Creek Bridge and Stapleton's Bridge	• There must be no direct impacts to the two heritage listed bridges • The heritage significance of the bridges must be included in the induction process.	Contractor	Construction
	~~Accidental discovery of items of Non-Aboriginal cultural significance~~	~~• If unexpected archaeological remains are uncovered during ***construction***, all works must cease ***near*** the material/find and the steps in Roads and Maritimes *Standard Management Procedure*: *Unexpected Archaeological Finds Procedure* must be followed.~~ ~~• If any items defined as relics under the NSW *Heritage Act 1977* are uncovered during the works, all works must cease in the vicinity of the find and the Roads and Maritime Services Environment Manager Southern region contacted immediately.~~ ~~• The process for the unexpected discovery of items of Non-Aboriginal cultural significance must be included in the induction process.~~	~~Contractor~~	~~Construction~~

No.	Impact	Environmental safeguards	Responsibility	Timing
40	Impacts to known Aboriginal sites	***An Aboriginal Heritage Management Plan will be prepared to manage the impacts of construction works on Aboriginal cultural heritage. This will include but not be limited to:*** • The Aboriginal heritage sites must be identified on ***sensitive area*** maps as no go zones within the ~~EWMS and/or~~ CEMP • ***Site inductions and training for construction personnel, including Aboriginal cultural awareness training and their obligations under the National Parks and Wildlife Act 1974, to be conducted by a heritage specialist*** • The Aboriginal sites must be protected through temporary means on site (e.g. fencing, flagging tape) to ensure there are no inadvertent impacts during construction • The location of YTOF CS 1 should not be included in the EWMS and/or CEMP as it is culturally sensitive information • Detailed design must ensure that ***where possible,*** no direct impacts on Aboriginal heritage sites occur, in particular YTOF AS1, AS2 and AS7 • ***If impacts to Aboriginal heritage sites are unavoidable, an AHIP will be required.***	Roads and Maritime Contractor	Construction
41	Impacts to the Duck Creek Cultural Site	• There must be no impacts to the creek bed within the identified boundary of the cultural site • The site must be included in the induction process and identified as a no go zone. Should any works be required within 15 metres of the boundary of the cultural site, temporary exclusion fencing will be installed to prevent inadvertent impacts. The temporary fencing must be confirmed on site by a heritage specialist.	Roads and Maritime Contractor	Construction
42	Unexpected finds – Aboriginal ***and non-Aboriginal*** heritage	• ***If unexpected Aboriginal and/or non-Aboriginal heritage items are discovered during construction, the Roads and Maritime Unexpected Heritage Items Procedure (2015) will be followed*** • ***The NSW Heritage Division will be notified of the discovery of a relic in accordance with Section 146 of the Heritage Act 1977*** • The process for the unexpected discovery of items of Aboriginal ~~cultural significance~~ ***and non-Aboriginal heritage and responsibilities under the Heritage Act 1977 and the National Parks and Wildlife Act 1974*** must be included in the induction process.	Contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
43	Consultation	• A stakeholder consultation program will be prepared and implemented to ensure that stakeholders are informed about the construction program and activities. This will separate out residential stakeholders from business and government stakeholders, addressing their specific concerns • ***Ongoing consultation with the local Aboriginal community will be carried out in accordance with the Procedure for Aboriginal cultural heritage consultation and investigation (Roads and Maritime, 2012) and the Aboriginal heritage consultation requirements for applicants (Department of Environment, Climate Change and Water, 2010).***	Roads and Maritime Contractor	Construction
44	Impacts on Croom Regional Sporting Complex	• ***The construction planning for the reconfiguration of the Croom Regional Sporting Complex will be developed in consultation with Shellharbour City Council and the Croom Regional Sporting Complex user groups so as to minimise impacts on the ongoing use of and special events at the Croom Regional Sporting Complex during construction*** • ~~The Council and sporting complex will be consulted to ensure the timing of the utility works within the Croom Regional Sporting Complex minimised impacts during special events.~~	Roads and Maritime Contractor	Construction
45	Impacts on Illawarra Regional Airport	• ***A Method of Working Plan, in accordance with the CASA Manual of Standards, Part 139 must be prepared. The Method of Working Plan would set out the arrangements for carrying out all works which may impact on aviation safety, any necessary restrictions to aircraft operations, however there would be implemented, administered and managed to ensure safety. The Method of Working Plan will be agreed with the aerodrome operator (Shellharbour City Council) and subject to consultation with all stakeholders including regularity agencies (CASA, Airservices Australia) and all aircraft operators at Illawarra regional airport prior to the commencement of works which may affect operations at the airport*** • ***Any construction impact on the airspace operational requirements of the Illawarra Regional Airport will be managed in consultation with the Shellharbour City Council*** • ~~Any utilities (poles), construction plant including temporary lighting to be installed for construction purposes must comply with the requirements of the Civil Aviation Safety Authority.~~	Roads and Maritime Contractor	Design and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing

46	Waste	• A ***Resource and*** Waste Management Plan must be prepared for construction which includes the following:
		  • identify all potential waste streams associated with the works
		  • ***a waste register detailing types of wastes collected, amounts, dates, time, transport method and details of disposal***
		  • ***a resource management strategy to*** identify opportunities to minimise the use of resources, and to reuse and recycle materials including vegetation
		  • outline methods of disposal of waste that cannot be reused or recycled at appropriately licensed facilities. Waste must be disposed of at a facility able to accept the waste
		  • ***Consideration or procurement strategies to minimise unnecessary consumption of materials and waste generation in accordance with the NSW government Code of Practice for Procurement and Implementation Guidelines.***
			Contractor	Pre-construction

47	Waste	• Cleared vegetation must not be burnt at the site • General waste and recycling receptacles must be provided onsite. Waste will be transported to an appropriate waste disposal facility • Working areas must be maintained, free of rubbish and cleaned up at the end of each working shift • Waste must be managed in accordance with the *Protection of the Environment Operations Act 1997* (POEO Act) • Toilets (e.g. portable toilets) must be provided for construction workers.	Contractor	Construction
48	Cumulative impacts	• Detailed design must take into consideration, through consultation with relevant stakeholders, future projects being planned in the locality so that any potential cumulative impact are avoided or minimised.	Roads and Maritime	Design

7.3 Licensing and approvals

All relevant licenses, permits, notifications and approvals needed for the utility works and when they need to be obtained are listed in Table 7-2. Additional or changed licenses and approval requirements identified in this addendum REF are indicated by bold and italicised font.

Table 7-2 Summary of licensing, approval and statutory notification required

Instrument	Requirement	Timing
Fisheries Management Act 1994	DPI (Fisheries) notification for proposed dredging and reclamation under clause 199 of the *Fisheries Management Act 1994*.	A minimum of 28 days prior to the commencement of the ***dredging*** works.
National Parks and Wildlife Act 1974	***Under Section 90(1) of the National Parks and Wildlife Act 1974, an Aboriginal heritage impact permit (AHIP) may be issued for an activity which will harm an Aboriginal object.***	***An AHIP would be required prior to impacting any Aboriginal heritage site.***
Environment Protection and Biodiversity Conservation Act 1999	***Under the EPBC Act, approval is required for proposed actions that are likely to significantly impact on matters of national environmental significance or Commonwealth land.***	***Other than works associated with the Croom Regional Sporting Complex, no work on the Albion Park Rail bypass project or utility work for the project can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.***

8 Conclusion

8.1 Justification

The proposed modification remains consistent with the intent of the project REF. It would allow for the early commencement of utility works and includes assessed refinement of works. The proposed modification remains consistent with the need for the overall utility works to minimise construction risks and conflicts with the Albion Park Rail bypass program.

The impacts of the proposed modification are minor and the safeguards listed in this addendum REF would avoid, minimise or mitigate any impacts such that the benefit of the proposed modification would outweigh any potential impacts. As such the proposed modification is considered justified.

8.2 Objects of the EP&A Act

Table 8-1 Objects of the EP&A Act

Object	Comment
1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The proposed modification is intended to allow for the early commencement of utility works to allow for the construction of the proposed Albion Park Rail bypass to be built in an efficient manner. The development of the bypass would assist in promoting the social and economic welfare of the wider Wollongong community. The proposed modification would also not have a substantial impact on the development and conservation of the State's natural and other resources.
1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	Ecologically sustainable development is considered in sections 8.2.1 to 8.2.4 of the project REF.
1.3(c) To promote the orderly and economic use and development of land.	The proposed modification would allow for utilities to be adjusted in an efficient manner in order to construct the proposed Albion Park Rail bypass.
1.3(d) To promote the delivery and maintenance of affordable housing.	Not relevant to the proposed modification.
1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The proposed modification would require the removal of some additional vegetation and fauna habitat, including a threatened ecological community. The safeguards outlined in the project REF and this addendum REF would ensure that impacts are avoided, minimised and/or mitigated.
1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	The proposed modification would have the potential to result in impacts to existing cultural heritage. The safeguards outlined in the project REF and this addendum REF would ensure that impacts are avoided, minimised and/or mitigated.
1.3(g) To promote good design and amenity of the built environment.	Not relevant to the project.
1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Not relevant to the project.

Object	Comment
1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Not relevant to the project.
1.3(j) To provide increased opportunity for community participation in environmental planning and assessment.	The planning for the Albion Park Rail bypass project, which will be supported by the implementation of the proposed modification, has involved extensive consultation with the local community. This included display of the Albion Park Rail bypass EIS and submissions and preferred infrastructure report.

8.2.1 The precautionary principle

A summary of the assessment based on the precautionary principle is included in section 8.2.1 of the project REF and is consistent with the proposed modification.

8.2.2 Intergenerational equity

A summary of the assessment based on intergenerational equity is included in section 8.2.2 of the project REF and is consistent with the proposed modification.

8.2.3 Conservation of biological diversity and ecological integrity

A summary of the assessment based on the conservation of biological diversity and ecological integrity is included in section 8.2.3 of the project REF and is consistent with the proposed modification.

8.2.4 Improved valuation, pricing and incentive mechanisms

A summary is included in section 8.2.4 in the project REF and is consistent with the proposed modification.

8.3 Conclusion

This addendum REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed modification.

This has included consideration where relevant, of conservation agreements and plans of management under the NPW Act, joint management and biobanking agreements under the TSC Act, wilderness areas, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the EPBC Act.

A number of potential environmental impacts from the proposed modification have been avoided or reduced during the design development and options assessment. The proposed modification as described in this addendum REF, best meets the project objectives but would still result in some impacts on biodiversity values within the proposal area. Safeguards and management measures as detailed in this addendum REF would ameliorate or minimise these expected impacts. The proposed modification would also allow the overall project to continue, improve safety and driving conditions, and reduce travel times. On balance, the proposed modification is considered justified and the following conclusions are made.

8.3.1 Significance of impact under NSW legislation

The proposed modification would not result in a change to the findings of the project REF and would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Species Impact Statement is not required. The proposed modification is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

8.3.2 Significance of impact under Australian legislation

The proposed modification is unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Commonwealth Department of the Environment and Energy for the proposed modification is not required.

It is noted that the Albion Park Rail bypass project and utility work for the project, excluding works associated with Croom Regional Sporting Complex, is currently the subject of assessment under the EPBC Act. With the exception of works associated with the Croom Regional Sporting Complex, no work on for the project can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.

9 Certification

This addendum REF provides a true and fair review of the proposed modification in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed modification.

Emma Dean
Principal Environmental Scientist
WSP

Date: 19 April 2018

I have examined this addendum REF and accept it on behalf of Roads and Maritime Services.

M Leslie 27/04/2018

Matt Leslie
Project Engineer
Roads and Maritime Services

Date:

10 References

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11 Terms and acronyms used in this addendum REF

Term / Acronym	Description
AHIP	Aboriginal heritage impact permit
ARI	annual recurrence interval
BC Act	*Biodiversity Conservation Act 2016*
CEEC	Critically endangered ecological community
CEMP	Construction environmental management plan
DPI	Department of Primary Industries
EEC	Endangered ecological community
EIS	Environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process
ESCP	Erosion and sediment control plan
EWMS	Environmental Work Method Statements
FM Act	*Fisheries Management Act 1994* (NSW)
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NVMP	Noise and vibration management plan
PAD	Potential archaeological deposit
project REF	Albion Park Rail bypass – utility works review of environmental factors
PEMP	Project Environmental Management Plan
Roads and Maritime	NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act
SEPP 14	State Environmental Planning Policy No.14 – Coastal Wetlands
TSC Act	*Threatened Species Conservation Act 1995* (NSW)

Appendix A

Consideration of clause 228(2) factors and matters of national environmental significance

Clause 228(2) Checklist

In addition to the requirements of the Is an EIS required? (1995/1996) guideline and the Roads and Related Facilities EIS Guideline (DUAP 1996) as detailed in the addendum REF, the following factors, listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000, have also been considered to assess the likely impacts of the proposed modification on the natural and built environment.

Factor	Impact
a. Any environmental impact on a community?	The proposed modification would result in some environmental impact on the local community including: • Visual Impacts – minor/short term • Traffic and Access – minor/short term • Air Pollution – minor/short term • Noise – minor/short term.
b. Any transformation of a locality?	Nil. The proposed modification would not transform the locality.
c. Any environmental impact on the ecosystems of the locality?	Minor. The proposed modification would result in the clearing of an additional 0.11 hectares of the Freshwater Wetlands EEC, listed under the BC Act, beyond the extent identified in the project REF. Up to a total of 0.71 hectares of this community would be cleared to enable utility works, including the proposed modification. This is unlikely to have a significant impact on this EEC.
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	The proposed modification would have minor, short-term impacts on the aesthetic and recreational aspects of the locality during construction.
e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	Nil. The proposed modification would not negatively affect future generations.
f. Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act* 1974)?	Nil. The proposed modification would not impact on the habitat of protected fauna.
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Nil. The proposed modification would not endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.
h. Any long-term effects on the environment?	Nil. The proposed modification would not have any long-term effects on the environment.
i. Any degradation of the quality of the environment?	Nil. The proposed modification would not result in any degradation of the quality of the existing environment.
j. Any risk to the safety of the environment?	The proposed modification would have minor, short-term impacts as a result of construction works. This would be managed with standard mitigation measures as identified within this addendum REF.
k. Any reduction in the range of beneficial uses of the environment?	Nil. The proposed modification would not reduce the range of beneficial uses of the existing environment.

Factor	Impact
l. Any pollution of the environment?	Nil. The proposed modification would not result in any pollution of the environment. This would be managed with standard mitigation measures as identified within this addendum REF.
m. Any environmental problems associated with the disposal of waste?	Nil. The proposed modification would not result in any environmental problems associated with the disposal of waste. This would be managed with standard mitigation measures as identified within this addendum REF.
n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Nil. The proposed modification would not result in any substantial increase on resources.
o. Any cumulative environmental effect with other existing or likely future activities?	Nil. The proposed modification would not have any cumulative impacts on the existing or future environment.
p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Nil. The proposed modification would not impact any coastal processes or environments.

Matters of National Environmental Significance

Under the environmental assessment provisions of the *Environment Protection and Biodiversity Conservation Act 1999*, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposed modification should be referred to the Australian Government Department of the Environment and Energy.

Under the EPBC Act strategic assessment approval a referral is not required for proposed road actions that may affect nationally listed threatened species, populations, endangered ecological communities and migratory species. Impacts on these matters are assessed in detail as part of this addendum REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

Factor	Impact
a. Any impact on a World Heritage property?	Nil
b. Any impact on a National Heritage place?	Nil
c. Any impact on a wetland of international importance?	Nil
d. Any impact on a listed threatened species or communities?	The proposed modification is unlikely to significantly impact the threatened species, populations, ecological communities or migratory species, within the meaning of the EPBC Act. It is noted that the Albion Park Rail bypass project and utility work for the project, excluding works associated with Croom Regional Sporting Complex, is currently the subject of assessment under the EPBC Act. Other than works associated with the Croom Regional Sporting Complex, no work for the project can commence prior to approval of the overall project (EPBC 2017/7909) under the EPBC Act.
e. Any impacts on listed migratory species?	Nil
f. Any impact on a Commonwealth marine area?	Nil
g. Does the proposed modification involve a nuclear action (including uranium mining)?	Nil
Additionally, any impact (direct or indirect) on Commonwealth land?	Nil

Appendix B

Statutory consultation checklists

Infrastructure SEPP

Council related infrastructure or services

Issue	Summary of issue	Potential impact Yes / No	ISEPP clause
Stormwater	Are the works likely to have a *substantial* impact on the stormwater management services which are provided by council?	No. The proposed modification is not likely to have a substantial impact on the council managed stormwater services.	ISEPP cl.13(1)(a)
Traffic	Are the works likely to generate traffic to an extent that will *strain* the existing road system in a local government area?	No. The proposed modification is not likely to generate traffic to an extent that it would strain the existing road system.	ISEPP cl.13(1)(b)
Sewerage system	Will the works involve connection to a council owned sewerage system? If so, will this connection have a *substantial* impact on the capacity of any part of the system?	No. The proposed modification would require connection to the existing Sydney Water sewerage system.	ISEPP cl.13(1)(c)
Water usage	Will the works involve connection to a council owned water supply system? If so, will this require the use of a *substantial* volume of water?	Yes. Minor impact. The proposed modification would require connection to the existing council water system. The proposed modification would not require the use of a substantial volume of water from this system.	ISEPP cl.13(1)(d)
Temporary structures	Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a *minor* or *inconsequential* disruption to pedestrian or vehicular flow?	Yes. Minor impacts. The proposed modification would involve the installation of temporary structures. However, the proposed structures would not cause more than a minor disruption to pedestrian or vehicular flow.	ISEPP cl.13(1)(e)
Road and footpath excavation	Will the works involve more than *minor* or *inconsequential* excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	No. The proposed modification would not involve more than minor excavation of a road or adjacent footpath.	ISEPP cl.13(1)(f)

Local heritage items

Issue	Potential impact	Yes / No	ISEPP clause
Local heritage	Is there is a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the item/area are more than *minor* or *inconsequential*?	Yes. While some of the proposed modification would occur within the curtilage of two identified heritage items, the proposed modification would not have more than a minor or inconsequential impact on these items.	ISEPP cl.14

Flood liable land

Issue	Potential impact	Yes / No	ISEPP clause
Flood liable land	Are the works located on flood liable land? If so, will the works change flood patterns to more than a *minor* extent?	No. The works are not within land known to be flood liable.	ISEPP cl.15

Public authorities other than councils

Issue	Potential impact	Yes / No	ISEPP clause
National parks and reserves	Are the works adjacent to a national park or nature reserve, or other area reserved under the *National Parks and Wildlife Act 1974*?	No.	ISEPP cl.16(2)(a)
Marine parks	Are the works adjacent to a declared marine park under the *Marine Parks Act 1997*?	No.	ISEPP cl.16(2)(b)
Aquatic reserves	Are the works adjacent to a declared aquatic reserve under the *Fisheries Management Act 1994*?	No.	ISEPP cl.16(2)(c)
Sydney Harbour foreshore	Are the works in the Sydney Harbour Foreshore Area as defined by the *Sydney Harbour Foreshore Authority Act 1998*?	No.	ISEPP cl.16(2)(d)
Bush fire prone land	Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land?	No.	ISEPP cl.16(2)(f)

Appendix C

Updated assessment of significance – Freshwater Wetlands EEC

SIGNIFICANCE ASSESSMENT

FRESHWATER WETLAND ON COASTAL FLOODPLAINS OF THE NSW NORTH COAST, SYDNEY BASIN AND SOUTH EAST CORNER BIOREGIONS

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable.

In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable.

In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

The action proposed will result in the direct impact and removal of about 0.7 hectares of Freshwater Wetland on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (Freshwater Wetland). The extent of Freshwater Wetland on the Illawarra Plain has been estimated to cover about 100 hectares and as such the loss of 0.7 hectares represents less than 1% of the known extent of this community on the Illawarra Plain. The loss of less than 1% of Freshwater Wetland is unlikely to have an adverse effect on the extent of this community such that a viable local occurrence is placed at the risk of extinction.

ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

The action proposed will result in the loss of about 0.7 hectares from several patch sizes totalling about 28.78 hectares adjacent to or within the modified utility works boundary. This impact has the potential to lead to a slight increase in edge effects although mitigation measures including weed management will limit any adverse modification to the composition of this community. Given this, the action proposed is unlikely to adversely modify the composition of freshwater wetland such that the local occurrence is placed at the risk of extinction.

In relation to the habitat of a threatened species, population or ecological community:

i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The proposed action will require the removal of about 0.7 hectares of Freshwater Wetland. Much of the vegetation within and surrounding the proposed development area already occurs in a fragmented state because of the existing land uses including roads, power transmission easement, agriculture and recreation and as such subject to existing edge effects such as exotic weed invasion.

Although the proposed action would contribute to further fragmentation via increasing gaps between vegetation patches, the proposal in unlikely to have a significant impact on ecological processes such as pollination and seed dispersal and is unlikely to affect the viability of the local occurrence of this community.

Much of the vegetation has been previously disturbed, modified and fragmented by existing land uses. The proposed action is considered unlikely to be of importance to the long-term survival of this community in the locality.

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat has been listed for Freshwater Wetland under the TSC Act or areas of outstanding biodiversity value under the BC Act.

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.

A recovery plan for Freshwater Wetland has not been prepared.

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The project would potentially constitute five key threatening process (KTP) listed under the TSC Act:

- clearing of native vegetation
- removal of dead wood and dead trees
- infection of frogs by chytrid causing disease *chytridiomycosis*
- infection of native plants by *Phytophthora cinnamomi*
- invasion of native plant communities by exotic perennial grasses.

The project would implement mitigation measures to reduce impacts or minimise the potential for the above KTPs to occur. Therefore, KTPs would unlikely be significantly increased by the project.

Conclusion

The action proposed is unlikely to lead to a significantly impacted on Freshwater Wetland. A species impact statement is not required to support this project.

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April 2018
RMS.18.884
ISBN: 978-1-925797-43-5