Richmond Bridge and Approaches- Intersection upgrade at March Street and Bosworth Street, Richmond

Addendum review of environmental factors 3 - Vegetation and tree removal and property adjustments

Transport for NSW | May 2020

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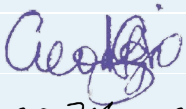
Prepared by DM Roads and Transport for NSW

Document controls

Approval and authorisation

Title	Richmond Bridge Approaches- Intersection upgrade at March Street and Bosworth Street, Richmond Addendum review of environmental factors 3 - Vegetation and tree removal and property adjustment
Accepted on behalf of Transport for NSW by:	Georgia Barnes Contract Relationship Manager- West Zone, Sydney Maintenance
Signed:	
Dated:	20 May 2020

Executive summary

The proposed modification

It is proposed that the approved Richmond Bridge Approaches - Intersection upgrade at Bosworth Street and March Street be modified to permit:

- the removal of an additional thirty (30) street trees along March Street
- the removal of vegetation in the Transport for NSW owned lot (1/DP518997) at the north-west corner of the March Street and Bosworth Street intersection
- the demolition and rebuilding of the garage at 168 March Street, to allow for the completion of the project.

Background

Transport for NSW proposes to upgrade the intersection of Bosworth Street and March Street at Richmond. The work was identified as part of the broader Richmond Bridge and Approaches strategy designed to alleviate traffic congestion on Richmond Bridge and its approach roads.

A Review of Environmental Factors (REF) was prepared by Jacobs and DM Roads and assessed by Transport for NSW in accordance with Division 5.1 of the Environmental Planning and Assessment Act 1979 (Part 5 at the time of the assessment). The Project and the activities described in the REF was approved by Transport for NSW in May 2016 (hereafter The Project).

Need for the proposed modification

The Project REF was based on the concept designs and detailed design has identified additional tree and vegetation removal, and the garage relocation associated with property adjustments necessary to complete the project. The modification is needed to allow for the adjustment and relocation of utilities kerbing and footpath for the road widening.

This addendum REF has been prepared to assess the potential environmental impacts of the removal of an additional 30 street trees along March Street, the removal of vegetation in the Transport for NSW owned lot (1/DP518997) at the north-west corner of March Street and Bosworth Street intersection and the demolition and rebuilding of the garage at 168 March Street, Richmond.

Proposal objectives and development criteria

Section 2.3.of the approved REF identifies the objectives and development criteria that apply to the Project, being to:

- Reduce traffic congestion and improve traffic flow
- Improve accessibility and efficiency for freight and private vehicles
- Improve safety for motorists, cyclists and pedestrians
- Minimise socio-economic and environmental impacts.

The proposed modification, to remove additional street trees and vegetation, and relocate the garage is in line with the Project objectives described in the approved REF. It is expected that the Project objectives will be met in full throughout construction and at project completion.

Options considered

Options considered included:

- Do nothing - leave the trees, vegetation and garage in place
- Remove the additional street trees and vegetation, and garage relocation to allow for the relocation of utilities, kerbing and footpaths for the road widening.

When considering the options it was noted the Project cannot be successfully achieved without the removal of the additional street trees and vegetation, and garage relocation.

Statutory and planning framework

The purpose of the addendum REF is to describe the modified activities, to document the likely impacts of the modified activities on the environment, to detail and additional mitigation measures to be implemented and to determine whether the modified activity can proceed. For the purposes of these works Transport for NSW is the proponent and determining authority under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The assessment of the proposed works and associated environmental impacts has been carried out in the context of clause 228 of the *Environmental Planning and Assessment Regulation 2000*, the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act) and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The addendum REF helps to fulfil the requirements of Section 5.5 of the EP&A Act that Transport for NSW examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity. The findings of the addendum REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity 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.
- The significance of any impact on threatened species as defined by the BC Act and/of FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Assessment Report.
- 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 proposal to significantly impact any other matters of national environmental significance or Commonwealth land and the need, subject to the EPBC Act strategic assessment approval, to make a referral to the Australian Government Department of Agriculture, Water and the Environment for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

Community and stakeholder consultation

Consultation with the community and stakeholders began in July 2012 with the Richmond Bridge and Approaches Congestion Study (which preceded the proposal).Consultation has been ongoing and includes consultation with the broader community; Hawkesbury City Council; State MPs for Hawkesbury and Londonderry; Federal MP for Macquarie; Transport for NSW; Heritage Council of NSW; Sydney Catchment Authority; and NSW Department of Planning and Environment.

Consultation was carried out during the preparation of the Project REF. This consultation was based on concept designs and, as we have now progressed to detailed design, further consultation has been

completed on the additional impacts including the removal of an additional 30 trees and other vegetation, and the relocation of a private garage, proposed in the modification. Consultation has included door knocks of adjacent properties and notifications to the surrounding community, as well as ongoing communication with Hawkesbury City Council.

The potential impacts are considered manageable, and all potentially affected residents will be notified prior to work starting and in accordance with the environmental management safeguards and the DM Roads Community and Stakeholder Engagement Plan.

Section 6 summarises the potential impacts arising from the modification together with the proposed approach to minimising and mitigating the likely and potential impacts on neighbouring residential and commercial properties.

Environmental impacts

Through this addendum REF, the proposed modification to the intersection upgrades at March Street and Bosworth Street has been considered. The likely and potential environmental impacts arising from the proposed modification are discussed in Section 6 of the addendum REF. In consideration of the scope of the modification, the assessment focused largely on impacts to Landscape character and visual amenity arising from the removal of additional street trees along March Street.

Justification and conclusion

Through this addendum REF, the proposed modification to the project has been considered. The addendum REF has examined and considered all matters affecting or likely to affect the environment due to the removal of an additional thirty (30) street trees along March Street, the removal of vegetation in the Transport for NSW owned lot (1/DP518997) at the north-west corner of the March Street and Bosworth Street intersection and the demolition and rebuilding of the garage at 168 March Street, Richmond. The modified Project, as described in the addendum REF, meets the Project objectives, however it does result in some additional minor environmental impacts. Mitigation measures as detailed in this addendum REF would seek to minimise or mitigate these potential impacts.

Contents

Tables

Appendices

1. Introduction

1.1 Proposed modification overview

Transport for NSW proposes to modify the Richmond Bridge Approaches- Intersection of Bosworth Street and March Street (the Project) by the removal additional thirty (30) street trees along March Street, the removal vegetation in the Transport for NSW owned lot (1/DP518997) at the north-west corner of March Street and Bosworth Street intersection and demolishing and rebuilding of the garage at 168 March Street to allow for road-way widening, the adjustment of utilities and construction of the kerbing and footpath. Key features of the proposed modification would include:

- The removal of 30 additional street trees along March Street
- The removal of vegetation in the Transport for NSW owned lot (1/DP518997) at the north-west corner of the March Street and Bosworth Street intersection
- The demolition and rebuilding of a garage at 168 March Street.

The location of the proposed modification is shown in **Figure 1-1** and the proposed modification is shown in **Figure 1-2**. Chapter 3 describes the proposed modification in more detail.

A review of environmental factors (REF) was prepared for Transport for NSW (formally Roads and Maritime) in April 2016 and was determined on the 3 May 2016 (referred to in this addendum REF as the Project REF).

In addition, the following addendum REFs for the Richmond Bridge Approaches- Intersection upgrade at Bosworth Street and March Street, Richmond have been prepared:

- Addendum REF 1 - Kentucky Fried Chicken (KFC) sign removal and replacement (Determined 20 August 2018)
- Addendum REF 2 - Ancillary facilities (Determined 3 December 2019).

Figure 1-1: Location of the proposed modification in relation to the approved project

Figure 1-2: The proposed modification

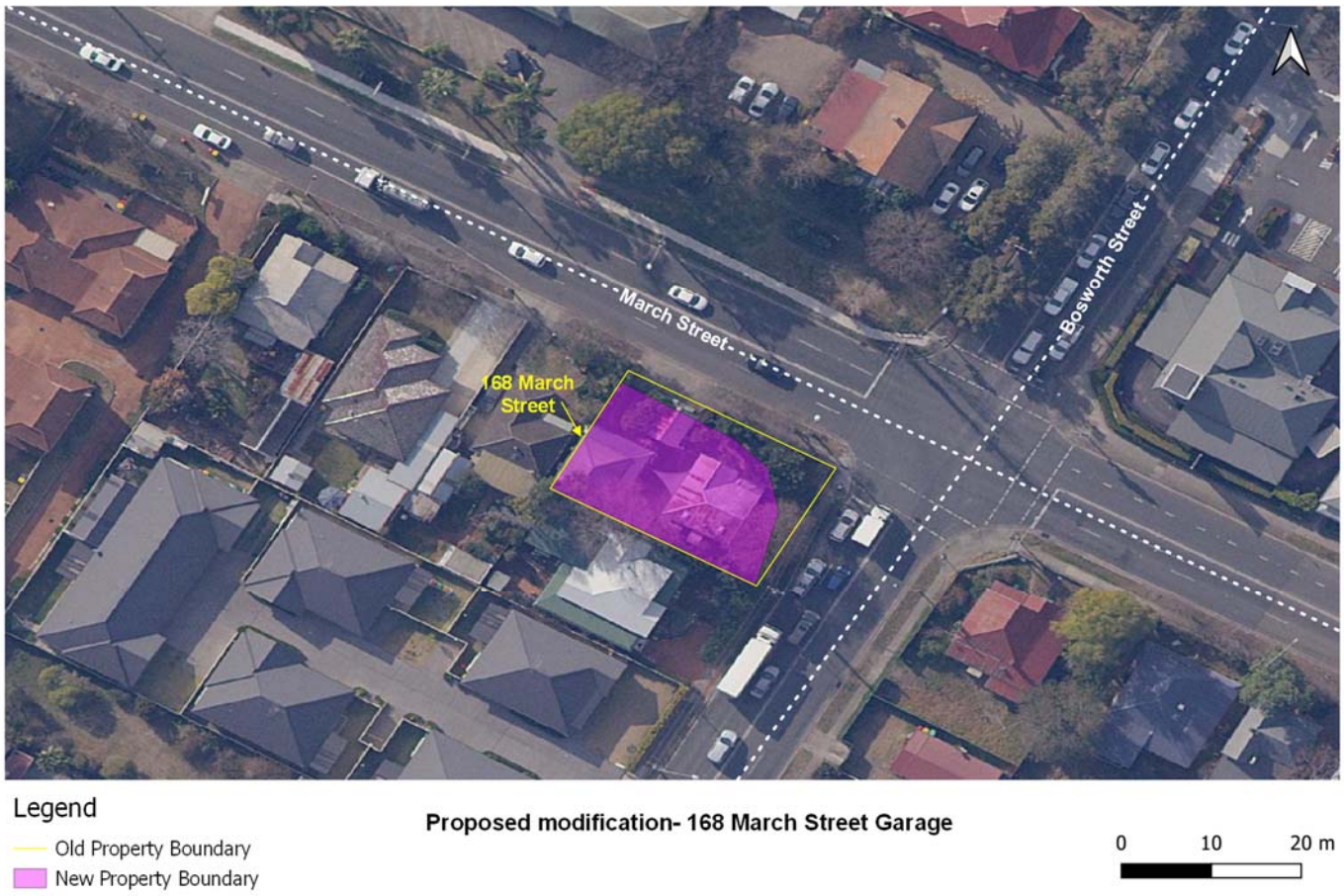


Figure 1-3: The proposed modification

1.2 Purpose of the report

This addendum review of environmental factors (REF) has been prepared by DM Roads on behalf of Transport for NSW. For the purposes of these works, Transport for NSW 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 is to be read in conjunction with the Project REF and previous addendums for this project listed in Section 1.1. The purpose of this addendum REF is to describe the proposed modification, to document and assess the likely impacts of the proposed modification on the environment, and to detail mitigation and management measures to be implemented.

The description of the proposed work and assessment of associated environmental impacts has been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000, *Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979* (*Is an EIS Required?* guidelines) (DUAP, 1995/1996), *Roads and Road Related Facilities EIS Guideline* (DUAP, 1996), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

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

- Section 5.5 of the EP&A Act including that Transport for NSW examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

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 necessity 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.
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report.
- 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, subject to the EPBC Act strategic assessment approval, to make a referral to the Australian Government Department of Agriculture, Water and the Environment for a decision by the Australian Government Minister for the Environment 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 *Richmond Bridge Approaches- Intersection Upgrade at March Street and Bosworth Street, Richmond* REF addresses the strategic need for the project, the project objectives and the options that were considered. The proposed modification described and assessed in this addendum REF is consistent with the strategic need for the project.

The proposed modification is needed to facilitate the efficient construction of the Project, specifically to allow for the adjustment and relocation of utilities, for the road way widening and construction of the kerbing and footpath as outlined in the Project Design.

2.2 Proposal objectives and development criteria

Section 2.3 of the Project REF identifies the proposal objectives and development criteria that apply to the proposed modification.

- Reduce congestion and improve traffic flow
- Improve accessibility and efficiency for freight and private vehicles
- Improve safety for motorists, cyclists and pedestrians
- Minimise socio-economic and environmental impacts.

The proposed removal of additional existing street trees and vegetation along March Street, and demolition and rebuilding of the garage at 168 is needed to relocate utilities, kerbing and footpath adjustments for the expanded roadway. While it is unlikely that this modification would result in environmental impacts not already considered in the Project REF, the process of reassessment seeks to ensure this is the case.

2.3 Alternatives and options considered

2.3.1 Methodology for selection of preferred option

Each option for the proposal was evaluated against the proposal objectives outlined in the Project REF.

2.3.2 Identified options

The following options have been considered in the preparation of this addendum REF:

- ‘Do Nothing’ option
- Preferred option- removal of additional street trees and vegetation, as well as demolition and reestablishment of the garage at 168 March Street to allow for utilities, kerbing and footpath relocation.

2.3.3 Analysis of options

Option 1: 'Do nothing'

The 'do nothing' option was not considered a feasible alternative as it would not allow for suitable widening of the road corridor and relocation and adjustments of utilities, kerbing and footpath needed to achieve the project objectives. The relocation of utilities, kerbing and footpath is a fixed requirement of the project and the associated construction activities are unavoidable. Therefore the 'do nothing' option has not been considered further.

Option 2: Remove additional street trees and vegetation, and demolish and re-build the garage at 168 March Street (like-for-like)

Advantages

- The proposal objectives outlined in the Project REF can be met
- Allows for the relocation and adjustment of utilities, kerbing and footpath and the required property adjustments for the road way expansion.

Disadvantages

- The preferred option would require the removal of an additional thirty (30) street trees and other shrubs
- Minor visual amenity impacts from the removal of street trees and vegetation.

2.4 Preferred option

The preferred option is **Option 2**, to remove the street trees and vegetation, and allow the demolition and reestablishment of the garage at 168 March Street to facilitate widening of the road corridor and the relocation and adjustment of utilities, kerbing and footpath on the northern and southern side of March Street. From a review of the Project REF and design documents, the street trees and vegetation was within the corridor that was assessed in Section 6.9 of the Project REF, however these specific impacts were not detailed.

3. Description of the proposed modification

3.1 The proposed modification

Transport for NSW proposes to modify the *Richmond Bridge Approaches- Intersection upgrade at Bosworth Street and March Street, Richmond* to remove thirty street trees and demolishing and rebuilding a garage along March Street to allow for the widening of the road corridor and the relocation and adjustment of utilities, kerbing and footpath. The proposed modification is shown in Figure 1-2 and Figure 3-1.

Key features of the proposed modification would include:

- The removal of an additional 30 street trees along March Street
- The removal of vegetation in the corridor, particularly in the Transport for NSW owned lot (1/DP518997) at the north-west corner of March Street and Bosworth Street
- The demolition and like-for-like re-building of a garage at 168 March Street.

Figure 3-1: Key features of the proposed modification

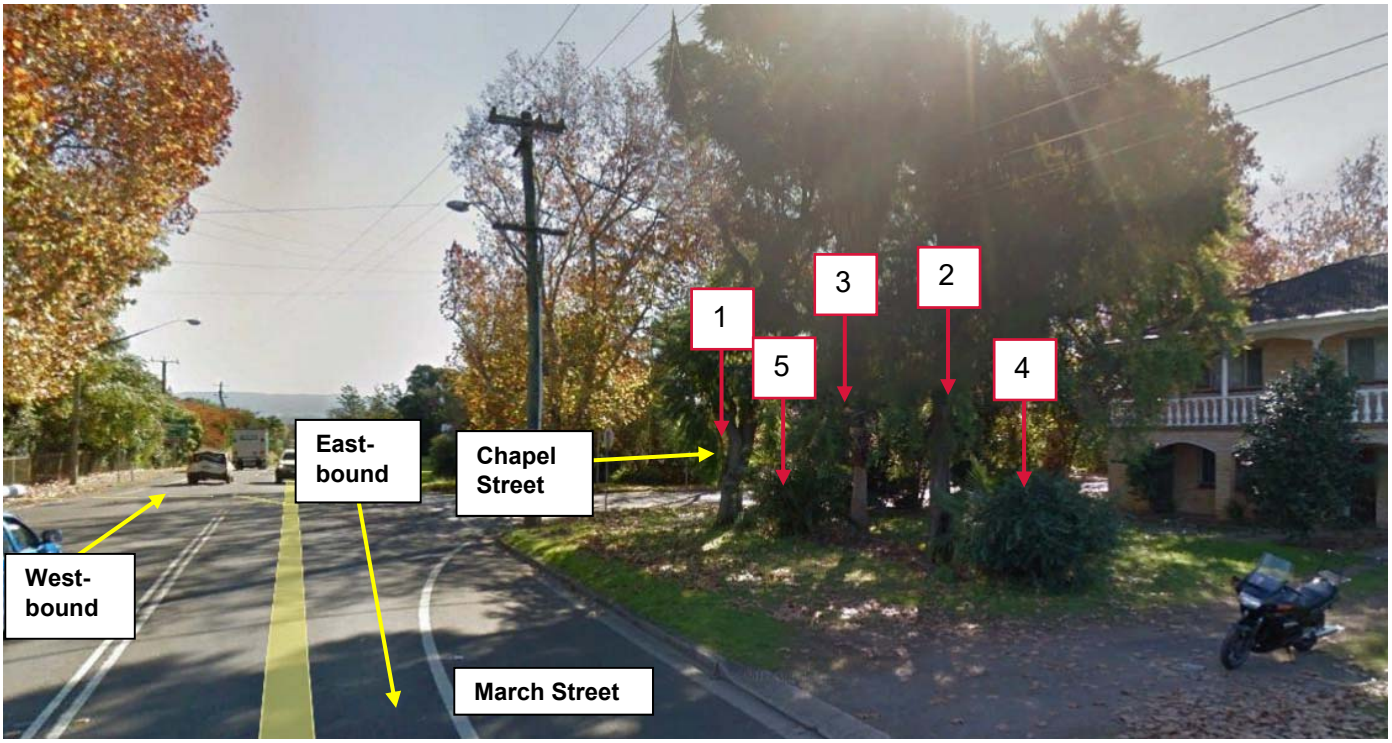


Figure 3-2: Key features of the proposed modification

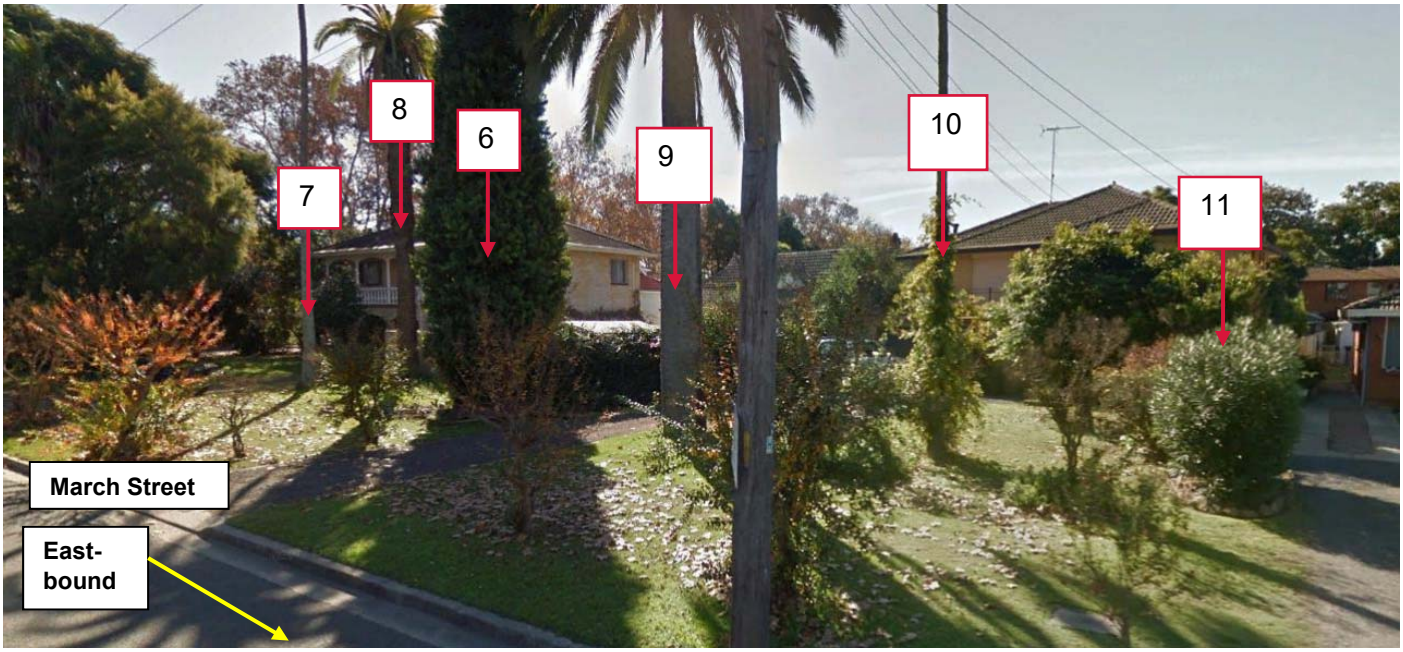


Figure 3-3: Key features of the proposed modification

Figure 3-4: Key features of the proposed modification

Figure 3-5: Key features of the proposed modification

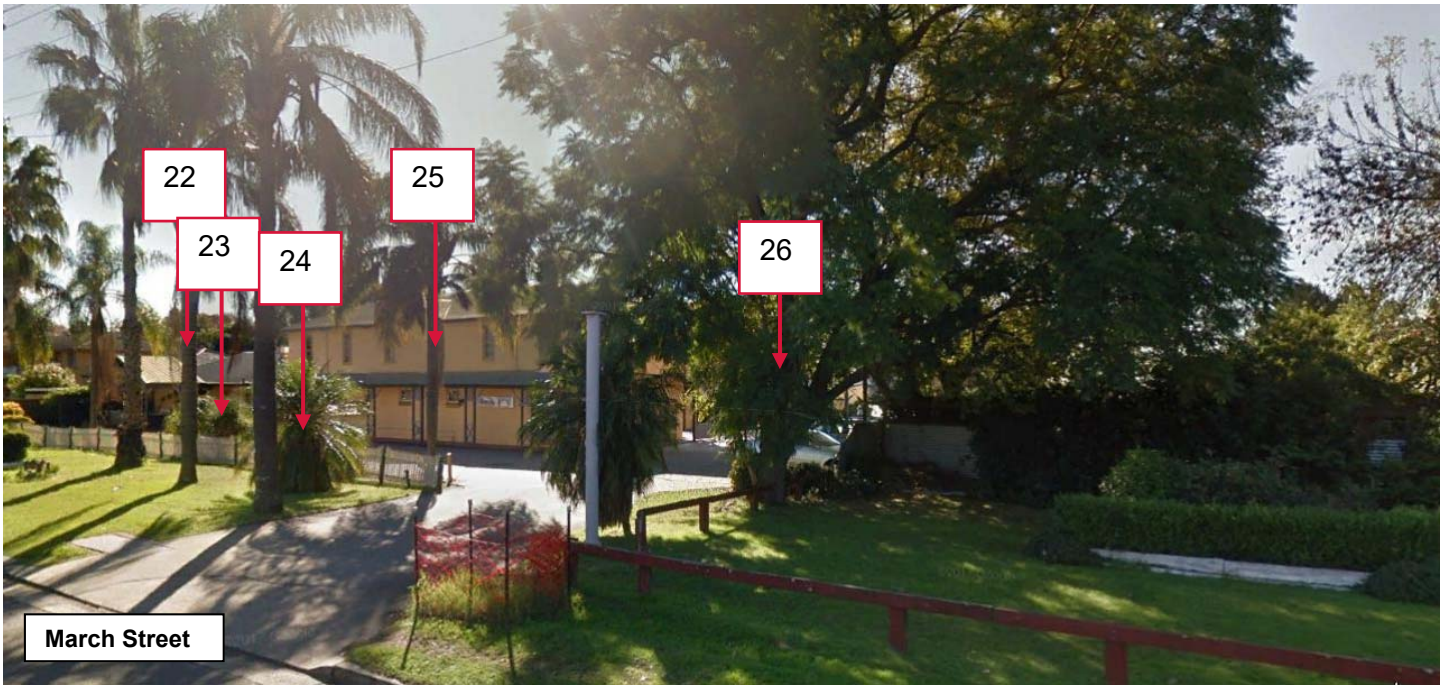


Figure 3-6: Key features of the proposed modification

Figure 3-7: Key features of the proposed modification

Figure 3-8: Key features of the proposed modification

Figure 3-9: Key Features of the proposed modification

3.2 Construction activities

3.2.1 Work methodology

The work methodology outlined in Section 3.3.1 of the Project REF remains generally consistent with the approach that will be used for the proposed modification, particularly with regard to the tree removal.

The demolition and rebuilding of the garage will involve the following methodology:

- Implement environmental protection measures (i.e. erosion and sediment controls)- to be maintained throughout demolition and rebuilding
- Install temporary traffic controls such as safety barriers and signage
- Demolish the existing garage structure
- Recycle and dispose of any demolition waste as per the Waste Classification Guidelines (EPA, 2014)
- Rebuild the garage.

3.2.2 Construction hours and duration

Tree removal will occur during standard construction hours where possible, being:

- Monday to Friday, 7am to 6pm
- Saturday, 8am to 1pm
- Sunday and Public Holidays, no work.

In addition, some night works may be required for the proposed modification where trees cannot be removed safely during the day. This is consistent with the Project REF detailing that night and weekend work would also be required. All out of hours work would be subject to the appropriate approvals including road occupancy licenses, out of hours work permits and construction staging. When out of hours work is required, work would be carried out in accordance with procedures documented in the Environment Protection Authority (EPA) Interim Construction Noise Guideline (DECC 2009),and managed through the implementation of a Construction Noise and Vibration Management Plan.

Demolition of the garage is expected to take around one week, with reconstruction of the garage expected to take around three weeks. The tree removal and demolition of the garage would occur within the estimated 12-18 month overall project duration.

3.2.3 Plant and equipment

Plant and equipment used to remove the trees would generally comprise:

- Chainsaws
- Stump grinder (if necessary)
- Mulcher
- Various hand tools and equipment
- Tree bracing and climbing equipment
- Elevated work platform
- Excavator
- Tipper trucks to remove waste

- Delivery trucks to deliver materials.

3.2.4 Earthworks

No substantial earthworks are required for the proposed modification.

3.2.5 Source and quantity of materials

Minor amounts of building materials (including but not limited to bricks, mortar, concrete) are required to rebuild the garage at 168 March Street. The quantity of building materials is no expected to put a strain on the supply of building material or resources.

3.2.6 Traffic management and access

The modification will not alter the approach to traffic management and access outlined in section 3.3.6 of the Project REF. Standard traffic management measures would be employed to minimise short-term traffic impacts that could be expected during the removal of trees. These measures would be identified in the traffic management plan (TMP) for the Project and would be developed in line with the *Roads and Maritime's Traffic Control at Works Sites Manual (Roads and Traffic Authority 2018)* and *Roads and Maritime G10 Specification for Traffic Management (Roads and Maritime 2011).*

Access to surrounding properties would remain unaffected for the duration of the project.

3.3 Ancillary facilities

The project site compounds are located at the corner of March Street and Bosworth Street (Location 1) and Kurrajong Road and Old Kurrajong Road (Location 2) and will not be affected by the proposed modification.

3.4 Public utility adjustment

The proposed modification would not likely require any additional impacts to public utility adjustment required for the project.

Public utility adjustments have been described in the Project REF.

3.5 Property acquisition

The modification does not require any additional acquisition of private property beyond what has already been acquired as stipulated in 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

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of 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 of the tree removal and the garage relocation is for the Richmond Bridge Approaches – Intersection upgrade at Bosworth Street and March Street and is to be carried out on behalf of Transport for NSW, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP), State Environmental Planning Policy (State and Regional Development) 2011 or State Environmental Planning Policy (State Significant Precincts) 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 Chapter 5 of this addendum REF.

Other SEPPs

The proposed modification triggers one other state planning policies in relation to the reconstruction of the garage, however it does not alter the consideration given to the relevant planning policies outlined in Section 4.1 of the Project REF, particularly as ISEPP (as outlined in Section 4.1.1) overrides all other SEPP and LEP requirements.

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

The demolition and rebuilding of the garage is necessary as the current garage frontage exists outside of the property boundaries. As such the garage needs to be moved back to within the property. To do this the garage will need to be demolished and rebuilt like for like within the property boundaries.

The necessary reconstruction of the garage cannot meet the Complying Development requirements for a detached development (SEPP Exempt and Complying Development Division 4, Sub-division 2, Clause 3.23), as primary road set-back requirements cannot be met. The requirements of this section of the SEPP is outlined below.

Division 4, Sub-division 2, Clause 3.23 -

(5) Primary road setbacks – A detached garage or carport that is accessed from a primary road must have a minimum setback as shown in the following table:

Primary road setback of dwelling house	Minimum required garage or carport setback from primary road
<4.5m	5.5m
4.5m or more	At least 1m behind the building line of the dwelling house

This set back requirement cannot be met as there is insufficient space to construct a like for like replacement of the garage on the property with a complying primary setback.

Division 4, Sub-division 2, Clause 3.21 (10) outlines the set-backs to Classified Roads. March Street is classified as a State Road and therefore, under this SEPP, if no set-back is specified in another environmental planning instrument, the set-back should be a minimum of nine metres. The existing garage and proposed location of the reconstructed garage cannot comply with the nine metre set-back requirements, as there is not enough room on the property to move the garage back to meet the set-back requirements. It should be noted that a number of existing structures are currently located along this section of March Street within the nine metre set-back and therefore, the reconstructed garage would not be the only structure that is not currently meeting this set-back building line along this section of the State Road.

Division 4, Sub-division 2, Clause 3.21 (2)(c) states that a detached development (such as a garage) must have a minimum set-back from a side boundary of 900 millimeters where a lot width at the building line is between six to eighteen metres. Notwithstanding Division 4, Sub-division 2, Clause 3.21 (3) states that the 900-millimetre set-back may not be complied with if the building wall is of masonry construction and does not have a window facing that boundary. The proposed garage is a brick construction with no windows on the property side of the garage and therefore can comply with this Clause.

No other set-back requirements listed in this Clause apply to this detached development. It should also be reiterated that the garage is a reconstruction of an existing structure to set it behind the property boundary and move it from the road reserve.

4.1.2 Local Environmental Plans

Hawkesbury Local Environmental Plan (LEP 2012)

The proposed modification is located within the Hawkesbury LGA, as is the Project, and development within this area is controlled by Hawkesbury City Council under the Hawkesbury Local Environmental Plan (LEP) 2012. The trees to be removed are located in land zoned B2 (Local Centre) and SP2 (Infrastructure) under the Hawkesbury Local Environment Plan.

The garage replacement is located in land zoned B2 (Local Centre). The garage will essentially be a like-for like replacement of the existing garage, so that it is set back from the property boundary to allow for the proposed Project to be constructed within Transport for NSW land. The Hawkesbury Council LEP notes the following about the building of complying development:

To be complying development, the development must—

(a) be permissible, with development consent, in the zone in which it is carried out, and

(b) meet the relevant deemed-to-satisfy provisions of the *Building Code of Australia*, and

(c) have an approval, if required by the *Local Government Act 1993*, from the Council for an on-site effluent disposal system if the development is undertaken on unsewered land.

The building of the garage is permissible with development consent within the residential lot at 168 March Street zoned R2 and is not located over any existing or adjusted utilities. Relevant deemed to satisfy requirements Performance Requirements must be met and the structure must be verified by evidence of suitability and/or expert Judgement. Safeguards LUP4 in Section 7.1 details further how compliance of these provisions will be demonstrated to title holder. An onsite effluent disposal system is not required for this development.

The Development Control Plan of Hawkesbury City Council has the following requirements for complying development:

Requirement for Complying Development	Comment/compliance
Be permissible, with consent, in the land use zone which it is carried out	The building of the garage is permissible with development consent within the residential lot at 168 March Street zoned R2
Meet the relevant deemed to satisfy provisions of the *National Construction Code*	Relevant Performance Requirements must be met and the structure must be verified by evidence of suitability and/or expert Judgement. Safeguard LUP4 detailed in Section 7.1 details further how compliance of these provisions will be demonstrated to title holder.
Have an approval, if required by *Local Government Act 1993*, from Council for an on-site effluent disposal system if the development is undertaken on unsewered land	An onsite effluent disposal system is not required for this development.
Must not be on land that is critical habitat of an endangered species, population or ecological community (identified under the *Threatened Species Conservation Act 1995*- replaced by *Biodiversity Conservation Act 2016* or the *Fisheries Management Act 1994*)	The modification is not located on any critical habitat
Not be on land within a wilderness area (identified under the *Wilderness Act 1987*), or	The modification is not located on land within a wilderness area
Not be designated development	The modification is not designated development
Not be on land that comprises, or on which there is, an item of environmental heritage (that is listed on the State Heritage Register or in Schedule 5 of LEP 2012 or that is subject to an interim heritage order under the *Heritage Act 1977*)	The modification is not located on land that comprises or where the is an item of environmental heritage
Not require concurrence (except a concurrence of the Director-General of the Office of Environment and Development in respect of development that is likely to significantly affect a threatened species, population, or ecological community, or its habitat (identified under the *Threatened Species Conservation Act 1995*- replaced by *Biodiversity Conservation Act 2016*))	The modification does not require concurrence

Requirement for Complying Development	Comment/compliance
Not be on land identified as an environmentally sensitive area for exempt or complying development (as defined in clause 3.3 of LEP 2012)	The modification is not located on land identified as environmentally sensitive area

As detailed in Section 4.1.1, the ISEPP overrides the consent requirements of the Hawkesbury LEP and Council approval is not required for the reconstruction of the garage. As the detached garage is essentially a like for like reconstruction, to ensure the structure is fully within the private property boundary, there is no requirement to obtain Council approval for the structure. The garage construction would also be required to comply with the Building Code of Australia requirements.

4.2 Other relevant NSW legislation

The proposed modification will not alter the relevance or applicability of other NSW legislation listed in Section 4.4 of the Project REF.

Under the scope of the modification, no additional permit, licence or approval will be required under the legislative acts assessed in Appendix A of the Project 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 Australian 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 Appendix B and Chapter 6 of the addendum REF.

A referral is not required for proposed road actions that may affect nationally listed threatened species, endangered ecological communities and migratory species. This is because requirements for considering impacts to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

Potential impacts to these biodiversity matters are also considered as part of Chapter 6 of the addendum REF and Appendix B.

Findings – matters of national environmental significance (other than biodiversity matters)

The assessment of the proposed modification's impact on matters of national environmental significance and the environment of Commonwealth land found that there would be no change to the findings of the determined activity and would be unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land. A referral to the Australian Government Department of the Environment and Energy is not required.

4.4 Confirmation of statutory position

The proposed modification is categorised as development for the purpose of a road and 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. The proposed modification can be assessed under Division 5.1 of the EP&A Act. Consent from Council is not required.

5. Consultation

Section 5 of the Project REF outlines the approach and outcomes of stakeholder and community consultation undertaken to date. This staged approach comprised:

- **Consultation carried out during the Richmond Bridge and Approaches congestion study**
  Broad consultation with respect to the Richmond Bridge and Approaches Congestion Study (which preceded the proposal) has been ongoing since July 2012. This included consultation with the broader community, including invitation for submissions, community workshops and direct interviews with members of identified local organisations and associations.

- **Consultation carried out during the preparation of the Project REF (September- November 2015)**
  Table 5-1 of the Project REF summarises the consultation activities undertaken for the Project. In addition to general community consultation activity, feedback on the detailed Project proposal was sought from the community via the *Have your Say* (HYS) process. Table 5-2 of the Project REF summarises the key issues raised in the feedback received from the community.

- **Consultation carried out during the preparation of Addendum REF 1- Kentucky Fried Chicken (KFC) Sign removal and replacement (June - July 2018)**

  Section 5.1 of the Addendum REF summarises the consultation activities undertaken for the modification. Consultation with KFC and Hawkesbury City Council was sought for the modification. Table 5-1 of the Addendum REF 1- Kentucky Fried Chicken (KFC) Sign removal and replacement summarises the key issues raised through consultation.

- **Consultation carried out during preparation of Addendum 3- Vegetation and tree removal and property adjustments**
  Section 5.1 of this Addendum REF summarises the consultation activities undertaken for the modification. Consultation with Hawkesbury City Council and community consultation was sought for the modification. Section 5.2 summarise the key issues raised and feedback collected from the community.

5.1 Consultation strategy

The consultation approach for the proposed modification sought to build on the substantial consultation previously undertaken for the Project REF.

The project team provided initial information to the surrounding community (775 properties) about the area that would be affected by vegetation removal via a notification in January 2020. Residents immediately adjacent to where additional trees are proposed to be cleared were then doorknocked to inform them of the additional trees identified for removal and get their feedback. Information about the need to remove street trees was emailed in February to property owners where Transport for NSW is carrying out property boundary adjustments. A notification was sent the broader community (775 properties) requesting feedback on the need to remove an additional 30 street trees in May 2020.

A summary of the communication and consultation activities includes::

- Start of work notification (Appendix F) which indicated the area for vegetation removal. It was delivered on 14 January 2020 to 775 properties in and around the Project and was also emailed to the project stakeholder database.

- A doorknock of properties immediately adjacent to where trees are proposed to be removed as part of the Project on 20 January 2020. This informed residents about the start of work, the need for additional street trees to be removed and, in some conversations, the mention of possible future changes to planned night work arrangements (increasing from two nights to five nights). A Sorry We Missed You calling card (Appendix F) was left in letterboxes where people were not home.
- Follow up meetings, emails and phone discussions between December 2019 and April 2020 with property owners where property adjustments were about to take place about the need to remove trees from inside and just outside of their properties.
- Consultation with Hawkesbury City Council under ISEPP about the proposed modification as per the requirements of clause 14 of the ISEPP.
- Transport for NSW received an enquiry from the Member for Hawkesbury's office on 20 January asking about the vegetation removal plans. DM Roads provided maps (Figures 3-1 and 1-2) to indicate which trees were to be removed. No response was received from this consultation.
- A notification (Appendix F) was distributed to the community in and around the Project on 8 May 2020askingfor feedback about on the proposed additional tree removal.

5.2 Consultation outcomes

ISEPP consultation

Consultation with Hawkesbury City Council was undertaken under ISEPP clause 14 for the proposed modification as stated in Section 5.1. A summary of the key issues raised during the consultation with Council is listed in Table 5-1.

In addition to ISEPP consultation, on 10 October 2019 DM Roads met with an arborist from Hawkesbury City Council at the project location to discuss the proposed modification. At this meeting it was agreed that there were no alternative design options available to retain the trees. Therefore, the modification was deemed as the only conceivable course of action for the project.

Issues that have been raised as a result of ISEPP consultation are outlined below in Table 5-1.

Table 5-1: Issues raised through ISEPP consultation

Agency	Issue raised	Response / where addressed in addendum REF
Hawkesbury City Council	Ensuring that protected trees aren't removed	Further consultation with Hawkesbury council in the form of a letter from DM Roads to the General Manager of council addressing the issues raised. A Heritage tree on Chapel Street, in the consultation with council, has been removed from the scope of this Addendum REF for further assessment. No protected trees are expected to be affected by vegetation removal.
Hawkesbury City Council	Whether the community is aware of the extent of tree removal	Further consultation with Hawkesbury City council and the community was carried out. Addressed within Section 5.2

Community feedback about the additional tree removal

The surrounding community (775 homes/businesses) and stakeholder organisations were informed about the vegetation removal via a notification on 14 January 2020 (Appendix F). The notification included a map

showing the area to be impacted by vegetation changes. One enquiry, about whether trees in front of a particular property would be removed, was received in response to the notification. A question from the Member for Hawkesbury's office about which trees would be removed was also received after the notification was issued. Detailed maps were provided to the MP's office but no further questions were received.

The owners of properties where boundary adjustments were about to take place did not express any concerns about the removal of street trees although one property owner mentioned a preference for a large tree on their property to be removed and a street tree on the nature strip out the front to be retained – neither tree will be removed as part of the Project.

Information and a request for feedback from the surrounding community (775 properties) was made via a project notification (Appendix F) in May 2020. Two responses were received with no objections to the proposal. One of these residents requested the replacement plantings not be too big so as to cause, line of sight safety issues, and should fit in with the local character.

A summary of feedback in response to various consultation and communication activities is provided in Table 5-2 below.

Table 5-2 Feedback from community consultation

Unique identifier for each address	Consultation / communication activity	Feedback received
1	12/12/19 – doorknock about property adjustments.	Resident was not concerned about the need to remove street trees.
2 (unit within an apartment complex)	14/1/20 – incoming phone call in response to January notification.	Resident asked if a roundabout will be installed at the intersection of March and Chapel Streets and whether the trees outside her property will be removed. No roundabout is planned and only the trees on the other side of March Street near this property will be removed.
3	15/01/20 – meeting to discuss property adjustments.	The owners asked if a large tree within the property could be removed as part of the work. They were advised it cannot be removed but it may be trimmed. Owners requested that the crepe myrtle on the street outside be retained. They were advised that this tree was not due for removal as part of the Project.
4, 5, 6 (each were from individual units within apartment buildings)	20/1/20 – doorknock of properties to discuss the start of work, the need to remove street trees and the possibility of working five nights a week.	4 – This resident supported the tree removal approach as it would improve the line of sight for people exiting their driveways. 5 and 6 – no concerns raised.

Unique identifier for each address	Consultation / communication activity	Feedback received
7, 8, 9, 10, 11, 12, 13, 14, 15	20/01/20 – a Sorry We Missed You Calling card was left when people were not at home during the doorknock of properties to discuss the start of work, the need to remove street trees and the possibility of working five nights a week.	No feedback received.
16 (owner of the complex)	30/01/20 – outgoing phone call (voicemail was left) regarding property boundary adjustments, start of work and planned tree removal.	No feedback in response to the voicemail.
17	03/02/20 – email to resident about property boundary adjustments and detailed information about upcoming tree removal in the street and outside this property.	The owner wished the project team well. No concerns raised about tree removal.
3	05/02/20 – reminder email to resident about upcoming property boundary adjustment work including the removal of street trees (excluding the crepe myrtle immediately outside this property).	No further comments about the tree removal approach.
18	05/02/20 – phone discussion about upcoming property boundary adjustment work including the need to remove trees from the property and along the street.	Respondent was supportive of the proposal and requested that trees out the front be removed. The trees are due for removal as part of the Project.
17, 8, 9, 18, 3, 19, 20 (owner of the complex), 21	06/02/20 – construction update (including specific details of where trees will be removed) to work zone email list, which is mostly made up of the properties where boundary adjustments are to occur.	No follow up feedback or questions received about tree removal.
8	10/02/20 – email about upcoming property boundary adjustment including upcoming removal of street trees.	No feedback received about planned tree removal.
22	16/03/20 – outgoing phone call and then an email to explain the removal of additional street trees including the large trees outside this property	Owner was neutral about the trees being removed and asked whether the trees out the front were on their property or government land. They were told the trees are on land owned by Transport for NSW.
23	08/05/20 – incoming phone call in response to notification requesting feedback on the need to remove an additional 30 street trees	Resident felt that, while the existing street trees are lovely, the intersection upgrade is essential and the replacement plantings will hopefully fit in with the local character and not be too big so as to cause a safety problem.

Unique identifier for each address	Consultation / communication activity	Feedback received
24	08/05/20 – incoming phone call in response to notification requesting feedback on the need to remove an additional 30 street trees	Resident asked if trees outside this property would need to be removed. They were advised that these trees did not need to be removed but that many other trees along March Street and parts of Bosworth Street would need to be removed. Resident had no objections.

5.3 Ongoing or future consultation

The surrounding community (775 properties) will be notified about the timing for the vegetation removal work. We will continue to work with Council to develop the landscape plan.

The project team will continue to inform directly impacted residents and the surrounding community with project updates throughout the project.

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 to the Intersection upgrades at March Street and Bosworth Street, Richmond. 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 EIS Guideline* (DUAP, 1996) and *Is an EIS required?* (DUAP, 1999) as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000. The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 are also considered in Appendix B.

Site-specific safeguards and management measures are provided to ameliorate the identified potential impacts.

6.1 Landscape character and visual impact

6.1.1 Methodology

A detailed landscape character and visual impact assessment was carried out for the project as part of the REF by Corkery Consulting. The landscape character and visual impact assessment was carried out in accordance with the Roads and Maritime (2013) *Environmental Impact Assessment Guidance Note: Guidelines for landscape character and visual impact assessment.*

The landscape character and visual assessment in the Project REF did not consider the impacts of the removal of thirty (30) street trees along March Street that is the subject of this modification to the Project REF. Therefore, a supplementary Visual Impact Assessment (VIA) Report was prepared for the proposed modification in accordance with the Roads and Maritime (2013*) Environmental Impact Assessment Guidance Note: Guidelines for landscape character and visual impact assessment*.

The proposal's overall level of impact on the existing landscape character of the area (generally defined as the areas built, natural and cultural sense of 'place') was determined through consideration of the landscape's sensitivity to visual change and the magnitude of the proposal. Similarly, the proposal's overall predicted level of visual impact was determined through consideration of the visual sensitivity of key representative viewpoints and the magnitude of the proposal.

Visual sensitivity and magnitude are broadly defined as follows:

- Visual sensitivity – refers to the quality of the view and how sensitive it is to any changes that would result from the proposal. The sensitivity of viewers varies significantly depending on context of the view and activity of the viewer (e.g. residence, workplace, shops, school, recreation/open space, etc.) and importance of the view to the viewer
- Magnitude – refers to the scale, form and character of the proposal. In the case of visual impact assessment, it also takes account of how far the proposal is from the viewer.

6.1.2 Existing environment

The Project REF detailed that the landscape character of the area is predominantly defined by a variety of single and double-storey residential buildings and a small number of commercial developments located on the eastern corner of the March Street and Bosworth Street intersection.

The Project REF concluded that given the existing March Street and Bosworth Street intersection's setting within a suburban environment, the overall sensitivity of its landscape character was considered moderate. Therefore, the proposed upgrade of the intersection was determined to likely have a moderate impact on the existing landscape character of the area due to the establishment of additional road paving surfaces and the removal of roadside trees.

The Project REF detailed that these negative landscape character impacts could be offset by the implementation of the mitigation measures detailed in the REF such as re-establishing trees and planting native grasses, in accordance with the landscape plan.

It is noted in the Project REF that an avenue of large Melaleuca trees border the western edge of Bosworth Street, to the north of the intersection and are an aspect of the landscape character. These trees would not be affected by the proposed modification.

6.1.3 Potential impacts

Construction

The proposed modification involves the removal of thirty (30) street trees along March Street, as well as a patch of vegetation on a Transport for NSW owned lot (1/DP518997). The modification also involves the demolition and replacement of the garage at 168 March Street. This modification is necessary to accommodate the road widening, and utilities adjustment work. Removal of the trees will reduce the screening of residents and pedestrians to traffic on March Street and would expose the footpath and house frontages to motorists and businesses in the area. The replacement of the garage will temporarily expose 168 March Street to pedestrians and residents.

An assessment of the proposal's impact on existing landscape character and visual amenity during construction is provided in the following sections.

As outlined in Section 6.4.2, the sensitivity of the existing landscape character of the area surrounding the proposal is considered to be 'moderate'. In the context of the landscape character assessment, the proposed construction work at the March Street and Bosworth Street intersection would likely have a 'moderate' impact on the existing landscape character of the area.

Operation

The proposed modification would result in minor visual changes to the streetscape on the approaches to the March Street and Bosworth Street intersection. The visual changes associated with this addendum REF would be those associated with the removal of roadside trees on March Street. However, as the trees are largely exotic and erratically grouped along the road verge, their removal is not expected to have a significant effect on the overall character of the landscape.

As the garage at 168 March Street is expected to be replaced like for like, the visual impacts of this have been considered negligible. Therefore, this part of the modification has not been assessed in the supplementary visual impact assessment.

The supplementary Visual impact assessment considered the same key view situations from which proposed works could be viewed from as the Project REF:

- Views from vehicles travelling westbound along Kurrajong Road
- Views from vehicles travelling eastbound along March Street

- Views from vehicles travelling both northbound and southbound along Bosworth Street
- Views from within residences fronting Kurrajong Road, March Street and Bosworth Street near the intersection
- Views from pathways along Kurrajong Road, March Street and Bosworth Street
- Views from within adjoining commercial development.

Eighteen viewpoints were assessed in the Project REF, fourteen of these sites were re-assessed for the proposed modification (Figure 6-1). Viewpoints 6, 7, 8 and 18 as identified in the Project REF were considered irrelevant to the modification as they would not be affected by tree removal.

The assessment of the visual impact on these viewpoints has considered the sensitivity of the view (that is, the quality of the view and how it would be affected by the proposal) and the magnitude of the proposal within that view (that is, the physical size and scale of the change and its proximity to the viewer). The combination of sensitivity and magnitude was then used to derive the visual impact rating (refer to Table 6-8).

Table 6-8 Landscape character and visual impact matrix (source: Roads and Maritime 2013)

		Magnitude					
Sensitivity		High	High to Moderate	Moderate	Moderate to Low	Low	Negligible
	High	High	High	Moderate / High	Moderate / High	Moderate	Negligible
	Moderate	Moderate / High	Moderate / High	Moderate	Moderate	Moderate / Low	Negligible
	Low	Moderate	Moderate	Moderate / Low	Moderate / Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

The potential visual impacts of the proposal were assessed for viewpoints in terms of their sensitivity to change and the magnitude of the proposed changes that would be seen from the viewpoint. These impacts are summarised in Table 3-9.

The visual impact assessment identified that the impact from the proposal would generally be moderate as impacts to sensitive receivers can be mitigated with the re-establishment of street landscaping. For moving traffic on both sides of the road, the overall impact would be low. For residents and pedestrians located on the northern side of March Street the sensitivity of the modification would be high, however the magnitude of works would be moderate. For businesses located on March Street, their sensitivity and magnitude of the modification was deemed to be moderate.

The removal of trees from the road verge on March Street is unlikely to have any significant visual impacts on motorists travelling east or west along March Street, or on local businesses. The removal of the trees would potentially impact residents and pedestrians by decreasing the amount of screening they receive from traffic on March Street. However, the replacement of these trees with others would in the long term mitigate the majority of visual impacts caused by the proposed modification.

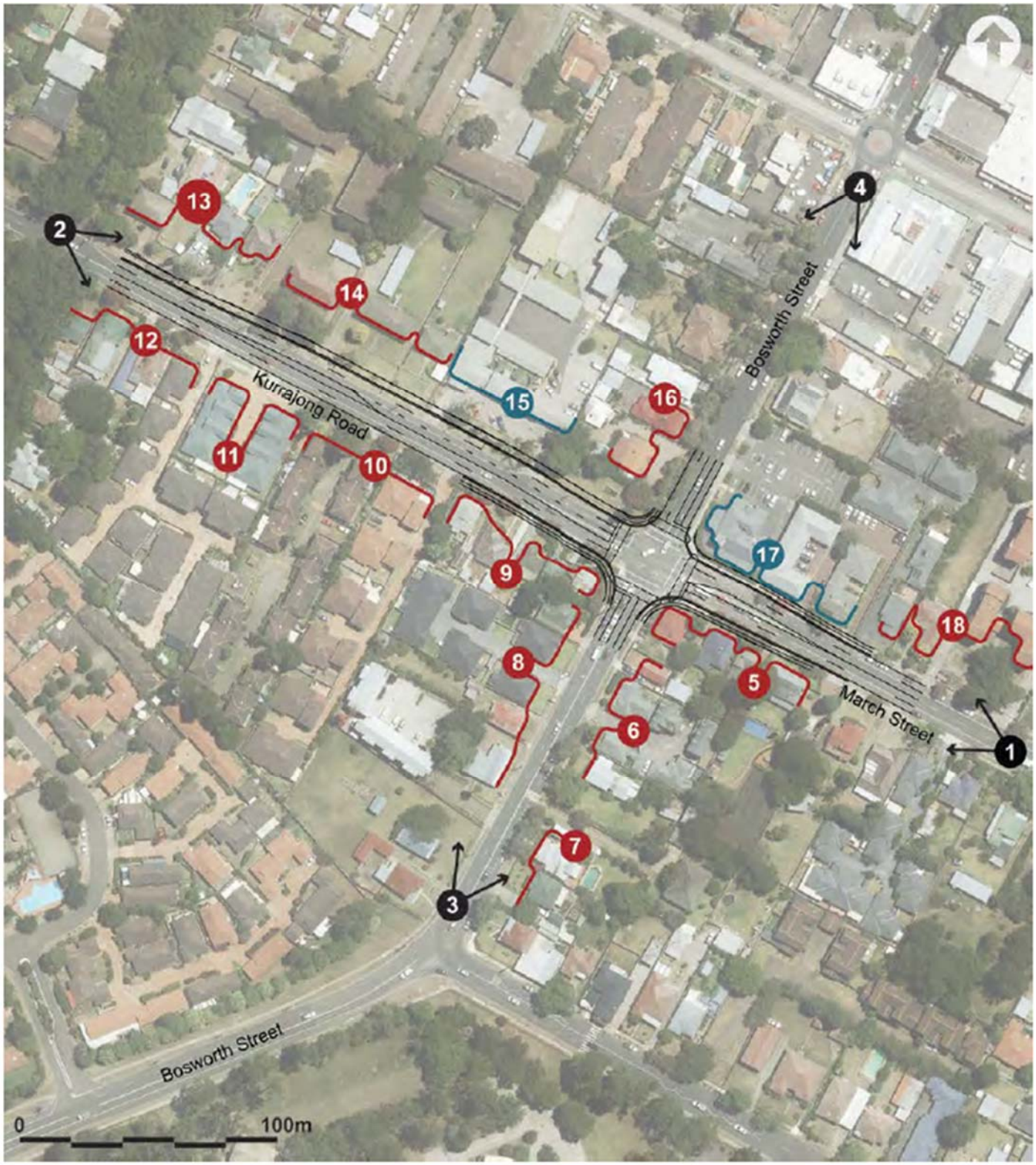


Figure 6-1 Key view situations outlined in the Project REF.

Table 6-9 Visual Impact Assessment

Key View situations	Sensitivity of the viewer	Magnitude of proposed modification within the view	Potential visual impact	Recommended mitigation measures to reduce visual impact
1. Motorists travelling west along March Street	**Low** Motorists travelling at 60km/h distinguish intersection from approx. 150m away. Total view time approx. 9 secs	**Moderate** Views to additional road pavement and removal of roadside trees along March Street	The removal of trees would leave sections of the northern and southern side of March Street bare. Exposing the pathway and frontages of existing houses.	Re-establish avenue of street trees at the completion of works
2. Motorists travelling east along March Street	**Low** Motorists travelling at 60km/h distinguish intersection from approx. 250m away. Total view time approx. 15 secs	**Moderate** Views to additional road pavement and removal of roadside trees along March Street	The removal of trees would leave sections of the northern and southern side of March Street bare. Exposing the pathway and frontages of existing houses.	Re-establish avenue of street trees at the completion of works
3. Motorists travelling north along Bosworth Street	**Low** Motorists travelling at 60km/h distinguish intersection from approx. 175m away. Total view time approx. 11 secs	**Low** Views of pavement and houses fronting the intersection increased	The removal of trees and vegetation would leave sections of the intersection bare, exposing the frontages of houses and pathway.	Re-establish avenue of street trees at the completion of works
4. Motorists travelling south along Bosworth Street	**Low** Motorists travelling at 50km/h distinguish intersection from approx. 175m away. Total view time approx. 13 secs	**Low** Views of pavement and houses fronting the intersection increased	The removal of trees and vegetation would leave sections of the intersection bare, exposing the frontages of houses and pathway.	Re-establish avenue of street trees at the completion of works
5. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly in front of residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street. Views to traffic would increase.	Re-establish avenue of street trees at the completion of works
9. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly in front and opposite residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street. Residences and foot path on the opposite side of the road would also be more exposed.	Re-establish avenue of street trees at the completion of works
10. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly opposite residences	Residences and foot path on the opposite side of the road would be exposed.	Re-establish avenue of street trees at the completion of works
11. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly opposite residences	Residences and foot path on the opposite side of the road would be exposed.	Re-establish avenue of street trees at the completion of works

12. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly in front of residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street.	Re-establish avenue of street trees at the completion of works
13. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly in front of residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street. Views to traffic would increase.	Re-establish avenue of street trees at the completion of works
14. Residences fronting March Street	**High** Residents	**Moderate** Removal of street trees directly in front of residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street. Views to traffic would increase.	Re-establish avenue of street trees at the completion of works
15. Motel fronting March Street	**Moderate** Employees and customers	**Moderate** Removal of street trees directly in front of business	The modification would reduce the amount of screening the motel receives from traffic on March Street. Views to traffic would increase.	Re-establish avenue of street trees at the completion of works
16. Residences fronting intersection	**High** Residents	**Moderate** Removal of street trees directly in front of residences	The modification would reduce the amount of screening residential properties receive from traffic on March Street.	Re-establish avenue of street trees at the completion of works
17. Shops fronting March Street and intersection	**Moderate** Employees and customers	**Moderate** Removal of street trees directly opposite business	The modification would reduce the amount of screening businesses receive from traffic at the intersection.	Re-establish avenue of street trees at the completion of works

6.1.4 Safeguards and management measures

No additional landscape of visual impact safeguards will be required for the proposed modification.

6.2 Other impacts

Additional and changes to the safeguards and management measures are shown in *italics* and blue text.

6.2.1 Existing environment and potential impacts

<table>
<tr><th>Environmental factor</th><th>Existing environment</th><th>Potential impacts</th></tr>
<tr><td>Noise and Vibration</td><td>A specialist assessment of noise and vibration impacts carried out for the proposal as part of the Project REF.

Monitoring of background noise levels at the Project site indicated the following:

<table>
<tr><th rowspan="2">Monitoring location</th><th rowspan="2"></th><th colspan="3">Background noise levels (dB)</th></tr>
<tr><th>$L_{A10\ 15min\ 50th\ percentile}$</th><th>$L_{A90\ 15min\ 100th\ percentile}$</th><th>$L_{A10\ 15min}$</th></tr>
<tr><td rowspan="3">162 March Street</td><td>Day</td><td>70</td><td>56</td><td>67</td></tr>
<tr><td>Evening</td><td>67</td><td>50</td><td>64</td></tr>
<tr><td>Night</td><td>61</td><td>33</td><td>62</td></tr>
</table>

The construction Noise Management Levels (NML), in consideration of the Interim Construction Noise Guideline (ICNG) (DECC 2006) were established as follows:</td><td>The modification works would result in additional noisy work being undertaken closer to receivers along March Street than assessed in the Project REF. To determine the potential noise impacts arising from the proposed modification, a noise assessment using the Construction Noise and Vibration Estimator (Roads and Maritime, 2016) was carried out (Appendix D).

The modelling inputs included:
Type of works – Corridor clearing (tree removal)
Noise receiver category – R3, developed settlements (urban and suburban areas), based on noise monitoring conducted for the Project REF noise and vibration assessment
Noise management level (NML) (dB(A)) - Day 66/Evening 55 /Night 38
Representative distance – 5 Metres (residential)
Line of sight – Yes

The noise estimator determined that a receiver located at about 5 metres from the activity may experience a total SPL $L_{AEQ\ (15\ Minute)}$ of 91dB(A).</td></tr>
</table>

<table>
<tr><th>Environmental factor</th><th>Existing environment</th><th>Potential impacts</th></tr>
<tr>
<td></td>
<td>
<table>
<tr><th>Receiver type</th><th>Time of day</th><th>NML</th></tr>
<tr><td rowspan="3">Residential</td><td>Day</td><td>66</td></tr>
<tr><td>Evening</td><td>55</td></tr>
<tr><td>Night</td><td>38</td></tr>
</table>
Exceedances of the noise management levels are predicted to occur at all of the assessed nearest noise sensitive receivers. These exceedances would occur during all work carried out during the day time, evening and night time periods, with the largest exceedances expect to occur during daytime earth works and pavement work.
Owing to the need to keep the road open during peak periods, it would be necessary to carry out some of the more intrusive works outside of normal construction hours, including some night works. It is predicted that some of these works will exceed noise management levels.
Given the small offset distance between the proposed work and the nearest vibration sensitive receivers it is likely that construction vibration levels at some receivers would exceed the human comfort criteria listed in Table 6-5 of the Project REF. Where vibration intensive equipment is used in closer proximity to residential and heritage listed properties it is possible that the lowest values for property damage could be exceeded.
</td>
<td>
These estimations are generally consistent with the findings of the Project REF's noise and vibration assessment which found that:

Receivers located in close proximity to the proposal area would experience noise levels that would exceed the 'highly noise affected' construction noise management level of 75 dB(A).
Predicted exceedances of the noise management levels at the nearest sensitive receivers do not indicate that the proposed work should not be carried out. Rather, the exceedances indicate that all feasible and reasonable work practices should be implemented to reduce noise impacts on these sensitive receivers.

As a result of the proposed modification extra mitigation measures may be necessary, such as individual briefings, phone calls and specific notifications to residents.
The safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential impacts arising from the proposed modification with the following additions:
Where possible, carry out the tree removal during standard work hours (7am to 6pm) or alternatively Out of Hours Work periods 1 or 2.
</td>
</tr>
</table>

Environmental factor	Existing environment	Potential impacts
		Out of hours construction noise in out of hours period 1(Mon-Fri 6pm-10pm; Sat 7am-8am &1pm-10pm, Sun/Public Holidays 8am-6pm) shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month. *Night time construction noise in out of hours period 2 (Mon-Fri 10pm-7am, Sat 10pm-8am, Sun/Public Holidays 6pm-7am) shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.*
Traffic and Transport access	Detailed traffic modelling and investigations for the Richmond Bridge and Approaches strategy are detailed in Section 6.2 of the Project REF. The Project REF was based upon the review of the following three studies, as well as desktop searches: • Richmond Bridge and Approaches Congestion Study – Stage 1 (Roads and Maritime 2012) • Richmond Bridge and Approaches Congestion Study – Long-term Options Report (Roads and Maritime 2012) • Richmond Bridge and Approaches Congestion Study – Preferred Short-term and Long-term Options Report (Roads and Maritime 2013).	Completion of the proposed modification is not anticipated to result in significant impacts to the performance of the existing road network. Lane closures would be required for the removal of some of the trees. Additionally, the availability of on-street parking will be reduced while the activity is underway. The safeguards outlined in the Project REF would be implemented to ensure minimal impacts to the road network. Pedestrian access along the northern side of March Street would be restricted for a short time during the tree removal. Traffic controllers and

Environmental factor	Existing environment	Potential impacts
	In summary, the potential and likely impacts arising from the construction of the Project were most notably: • A temporary minor increase in traffic along haulage routes • The works are not anticipated to have a significant impact to the performance of the road network • Delays for road users owing to traffic lane closures, the implementation of roadwork speed limits and/or when manual traffic control is on operation to facilitate the movement of construction vehicle as required • Temporary impacts on pedestrian traffic, due to footpath realignments • Temporary impacts of cyclists potential to impact on cyclist movements in the proposal area, as cyclists travelling along the affected roads would need to move further into the adjacent traffic lane in order to travel around the construction worksite • Temporary and permanent loss of street parking • Intermittent and temporary disruption to private property access. • Bus services travelling along affected roads would be subject to minor delays and increased travel times as a result of increased congestion at intersections due to the implementation of roadwork speed limits and/or short-term traffic control.	spotters would be used to assure that access remains available during this period and access would be reinstated as soon as possible. The proposed modification is not expected to result in traffic and access impacts exceeding those characterised in the Project REF. Therefore, safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential impacts of the modification.
Non-Aboriginal Heritage	The Project REF identified seven registered heritage items within or immediately adjacent to the project, all of which were of local heritage significance on the Hawkesbury Local Environmental Plan 2012 (Hawkesbury LEP). The Project REF concluded that overall, the level of impact on non-Aboriginal heritage items would be relatively minor. Additional mitigation measures for managing heritage items were added to the project in Addendum REF 2. Despite this, risk to heritage items remains low and would be reduced to an acceptable level through the implementation of mitigation measures detailed in Project REF.	The proposed modification is not expected to directly impact any item of heritage significance. The potential impacts to non-aboriginal heritage items from the modification are considered to be negligible compared to the already approved project components, therefore no further mitigation measures are proposed.

Environmental factor	Existing environment	Potential impacts
Aboriginal Heritage	A desktop assessment of known Aboriginal heritage records and previous archaeological investigations was carried out for the Project area on the 26/09/2019. This assessment included a search of OEH Aboriginal Heritage Information Management System (AHIMS). Six recorded sites were identified within a three-kilometre radius around the combined Richmond Bridge Approaches Proposals. These included an open campsite, axe grinding grooves, shelters and non-specified sites. 	The proposed modification would not have direct impacts on any known Aboriginal heritage sites and in light of the historic land uses and associated levels of disturbance, no areas were identified as having archaeological potential within the study area. An extensive search of the AHIMS database was carried out on the 26/09/2019. The Aboriginal cultural heritage assessment result (Appendix E) supports the view that the proposal is unlikely to harm any known Aboriginal object or cultural heritage values. In addition, it is considered unlikely that any further surface or subsurface Aboriginal 'objects' would be located within the proposed modification site. The safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential impacts arising from the proposed modification.

Environmental factor	Existing environment	Potential impacts
	The key findings of the survey were that the Project site has been substantially disturbed from past clearing and road construction activities, and no areas within the proposal area were identified as having archaeological potential.	
Topography, geology and soils	The *Richmond Bridge Approaches-Intersection upgrade at March Street and Bosworth Street REF* included a desktop analysis of topography, geology and soils of the study area based on existing topographic and geological maps, database searches and other publicly available information. This assessment determined that: • The proposal site has a low risk of AS/PASS impacts • The removal of vegetation and ground disturbance has the potential to expose ASS (if present) and increase the possibility of erosion and sedimentation. Ultimately the assessment found that construction and operation of the project to be unlikely to result in impacts to topography, geology and soils that could not be managed via the implementation of the recommended safeguards and management measures.	The proposed modification would not have any additional impacts greater than those described in the Project REF. The safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential impacts arising from the proposed modification.
Contaminated land	A desktop contamination assessment of the study area was conducted for the *Richmond Bridge Approaches-Intersection upgrade at March Street and Bosworth Street).* The assessment determined that: • The nearest registered contaminated site on the NSW EPA database is located over six kilometres north-west • A search of registered groundwater wells located within one kilometre (approximate) of the proposal identified four bores it is anticipated that the likely depth of groundwater within the study area would be encountered at about eight metres below the ground surface • Three Environmental Protection Licences (EPLs) were confirmed within a 5 kilometre radius of the proposal these include two sewage treatment plants and one water filtration plant.	The proposed modification is not expected to alter the assessment of contaminated land and risk conducted for the Project REF. The safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential impacts arising from the proposed modification.

<table>
<tr><th>Environmental factor</th><th>Existing environment</th><th>Potential impacts</th></tr>
<tr><td></td><td>
<table>
<tr><th>Number</th><th>Name</th><th>Location</th><th>Type</th><th>Status</th><th>Issued date</th></tr>
<tr><td>190</td><td>SYDNEY WATER CORPORATION</td><td>CNR BELLS LINE OF ROAD & CROOKED LANE, NORTH RICHMOND, NSW 2754</td><td>POEO licence</td><td>Issued</td><td>25-May-00</td></tr>
<tr><td>1726</td><td>SYDNEY WATER CORPORATION</td><td>BLACKTOWN ROAD, RICHMOND, NSW 2753</td><td>POEO licence</td><td>Issued</td><td>25-May-00</td></tr>
<tr><td>5425</td><td>SYDNEY WATER CORPORATION</td><td>GROSE VALE ROAD, NORTH RICHMOND, NSW 2754</td><td>POEO licence</td><td>Issued</td><td>19-Jun-00</td></tr>
</table>
A review of the Hawkesbury City Council flood level maps indicates that the proposal site is located within the probable maximum flood level.
The assessment also considered potential contamination sources, the following which would remain relevant for the proposed modification:
Exhaust particulates and hydrocarbons released from motor vehicles on March Street and Bosworth Street
Unlawfully dumped waste at proposal site
The low risk of acid sulfate soils.
The conclusions drawn from the assessment were that most potential sources, and therefore the relative contamination risk, would be low.
</td><td></td></tr>
<tr><td>Socio-economic</td><td>An assessment of the potential socio-economic impacts was previously conducted for the Project. In summary, and with reference to the proposed modification:
No land acquisition or property adjustment is required</td><td>The proposed modification is not expected to result in socio-economic appreciably different from those characterised in the Project REF. The proposed modification may result in temporary reductions in</td></tr>
</table>

Environmental factor	Existing environment	Potential impacts
	• No public transport facilities or services are in direct proximity to the work site • Changes in conditions for cyclists near to construction works, particularly where road shoulders and/or kerbside traffic lanes on the approach to the March Street and Bosworth Street intersection are temporarily closed or narrowed • Changed access for pedestrians near to construction activities, particularly where footpath realignments are required at March Street and Bosworth Street. This may impact on perceptions of safety for some pedestrians, including • children, the elderly and people with mobility difficulties • Temporary changes to property access for residents and local businesses that have direct access onto March Street and Bosworth Street roads near to the proposed works • Temporary loss of or restrictions to on-street parking within or near to the construction footprint which may require some people to walk further to access residential, commercial or community uses • The majority of properties near to the proposal have access to off-street parking, which would assist in minimising potential impacts on surrounding residential, commercial and community properties.	amenity around the intersection of March Street and Bosworth Street, but for the most part would: • Not impact on existing public transport routes or access to bus stops on Kurrajong Road. • Not impacts pedestrian or cyclist access along Old Kurrajong Road • Not impacts on parking within the area during its establishment or operation • Not affected existing property access • Not require the disruption of utilities. As most of the impacts are temporary /short term, the safeguards largely focus on appropriate communications with residents and businesses on the Project and ancillary activity. This approach is considered appropriate and relevant to address the proposed modification, and together is considered sufficient to address the potential impacts to socio-economic aspects arising from the proposed modification.
Land use and property	An assessment of the land use and property impacts aligned with this proposed modification, and derived from studies in support of the *Richmond Bridge Approaches- March Street and Bosworth Street Intersection REF,* determined that: • The proposed modification is located within the Hawkesbury LGA with land zoned SP2(Infrastructure), R2 (Low Density Residential), B2 (Local Centre) under Hawkesbury LEP.	The proposed modification would not change any land use or cause any property impacts relating to the approved project. Therefore, the land use and property impacts are considered to be similar to those described and approved in the Project REF and would be managed in accordance with the safeguards in Section 7. One additional safeguard is required to

Environmental factor	Existing environment	Potential impacts
	• Land uses in the area surrounding the proposed modification comprises existing road infrastructure (e.g. road pavement, drainage and guard rails), utility easements (comprising overhead electricity supplies, water mains and telecommunications infrastructure), residential and other privately-owned property and vacant land located within the existing road reserve. • Amenity related impacts associated with the proposal are not considered to be of an extent, magnitude or duration that would have the potential to impact on the current use of nearby properties. • The proposed reconstructed garage is not located over any existing or adjusted utilities.	provide that the re-built garage at 168 March Street is structurally sound. *The contractor will provide the following to the land owner at 168 March Street:* *I. evidence of structural integrity to the property owner at 168 March Street, in the form of a certificate provided by a structural engineer stating that the new garage is structurally sound and compliant with the Building Code.* *II. A deed or a letter outlining that the garage was a lawful development assessed under Part 5 of the EP&A Act. This document would include a property adjustment plan.*
Biodiversity	The biodiversity assessment conducted for the project summarised the biodiversity values of existing environment adjoining the Project site. An additional biodiversity assessment was carried out for the project in 2018 by Biosis (Appendix G), this assessment re-confirmed the biodiversity values outlined in the Project REF. Adding the need for assessment of the Heritage London Plane Tree, previously addressed in this addendum REF. Both reports generally found the following: • A review of existing broad scale vegetation mapping identified six native vegetation communities within two kilometres of the study area, five of which are listed as a threatened ecological community under the then TSC Act and/or the EPBC Act • The proposal area consists of roadside plantings of exotic and native trees, including Crepe Myrtle (*Lagerstroemia indica*), Broad-leaved Paperbark (*Melaleuca quinquenervia*) and Milkflower Cotoneaster (*Cotoneaster coriaceus*), as well maintained gardens situated along existing footpaths and within residential properties	The Project REF concluded that the vegetation located within the study area is not commensurate with a native vegetation community and was not observed to contain any important wildlife habitat resources. The impacts of the proposed modification are therefore considered to be similar to those described in the Project REF. Therefore, no additional safeguards are proposed in addition to those found in Section 7.

Environmental factor	Existing environment	Potential impacts
	• No native fauna habitat was identified at the project site in the form of nests, hollows or suitable habitat trees • Existing vegetation that would be affected by the proposal was all identified as planted natives, or exotic species • There were no major wildlife corridors located within the proposal area • Threatened flora species identified within the area were considered to have either a low potential to occur or are unlikely to occur in the proposal area due to the absence of these non-cryptic species and/or the absence of suitable habitat for these species • The majority of the fauna species identified within the area were considered unlikely to, or have low potential to occur within the proposal area (54 species); however, one species- the Grey headed Flying Fox (listed as vulnerable under the then TSC Act and EPBC Act)- is considered to have a moderate potential to occur based on the habitats present and their condition • Appropriate hygienic measure to minimise potential of soil borne and plant pathogens spread.	
Water Quality and Hydrology	An assessment of the potential impacts to water quality and hydrology was conducted for the *Richmond Bridge Approaches- Intersection upgrade at March Street and Bosworth Street, Richmond* and is summarised as follows: • Two surface waterways are located in the vicinity of the proposal area. These comprise Pughs Lagoon and the Hawkesbury River, which are located about 500 metres and 2.3 kilometres to the north-west of the proposal, respectively • The existing road drainage for this intersection consists of a conventional urban pit and pipe network that drains east and west from Bosworth Street (i.e. the western side drains towards Chapel Street) • The west-draining flows eventually discharge into Pughs Lagoon, approximately 500 metres north-west of Bosworth Street. The eastern side of	The proposed modification is not expected to result in impacts to water quality and hydrology not already characterised in the Project REF. Therefore, water quality and hydrology impacts are considered to be similar to those described in the Project REF and would be managed in accordance with safeguards in Section 7.

Environmental factor	Existing environment	Potential impacts
	the intersection drains east towards East Market Street before draining to the north east along East Market Street towards Bensons Lane Sporting Complex • The kerb inlet pit located on the corner of Bosworth Street and March Street north appears to have an offset sump and limited pipe cover with twin 225 diameter pipes draining towards March Street east • The proposal is located in the flood plain of the Hawkesbury River. A review of Hawkesbury City Council's (2011) Approximate Flood Extents of the Hawkesbury River indicates that the proposal is located outside of the flood extent for a 100 year Average Recurrence Interval (ARI) event. However, the area would be inundated during the Probable Maximum Flood (PMF) • Given the distance to natural waterways, and the topography.	
Air quality	An assessment of the potential impacts to air quality was conducted for the Project REF and is summarised as follows: • Ambient air quality within the proposal area is likely to be primarily affected by local air emission sources. These include exhaust emissions from vehicles using the existing road network, particulate emissions (dust) from wind erosion from exposed areas and agricultural activities occurring on nearby rural land. • No manufacturing or other emitting industry is located near to the proposed work. Therefore, air quality in the study area is likely to reflect the typically rural residential nature of the area. • The nearest sensitive receivers are: o Seven residential properties five metres from the proposed work o Commercial premises between five and sixty metres from the proposed work o The Uniting Care Hawkesbury Village located about fifty-five metres from the proposed work.	The proposed modification is not expected to result in additional impacts to air quality exceeding those characterised in the Project REF. The safeguards and management measures outlined in the Project REF are considered sufficient to address the potential impacts arising from the proposed modification.

Environmental factor	Existing environment	Potential impacts

	• Primary sources of emissions of airborne particulate matter from the construction of the proposal would include.
	  o Wind erosion from unsealed surfaces and stockpiles
	  o The loading/unloading of construction vehicles along paved and unsealed haulage routes and other work areas
	  o Vehicle (exhaust) emissions.
	• The volume of dust generated during a typical work day is anticipated to be small and is not expected to result in a significant reduction in local air quality at the nearest sensitive receivers.
	• The focus of air quality management is to control dust emissions and mitigate impacts to ensure the proposal does not result in exceedances of air quality criteria at sensitive receptors.	

Resource use and waste	An assessment of the waste and resource management aspects of the Project was conducted and is summarised as follows: • Various waste streams are likely to be generated by the project and the waste management hierarchy defined in the Waste Avoidance and Resource Recovery Act 2001 is considered relevant • The existing road network currently generates minimal waste • The proposed wok would generate various waste streams from the demolition of medians and existing road pavements and kerbside areas (i.e. grasses and topsoils) • Construction would also generate waste streams typical of road construction and general wastes and sewage from site compounds and offices • Wastes would be classified, managed, transported and disposed of in accordance with the Waste Classification Guidelines (DECCW 2008).	The proposed modification is not expected to result in material differences to the waste and resources management impacts assessed in the Project REF. There will be an increase in the amount of green wastes generated by the proposal as a result of the modification. The waste generated from the demolition of the garage on 168 March Street would create a different type of waste material than what would have otherwise been described for the roadworks in the Project REF. Prior to the commencement of the demolition process, a hazardous materials survey would be carried out to determine the presence of potential hazardous materials. All demolition would be carried out in accordance with the recommendations of the hazardous materials survey.

Environmental factor	Existing environment	Potential impacts
		The safeguards and mitigation measures outlined in the Project REF are generally considered sufficient to address the potential impacts arising from the proposed modification. Minor alterations to safeguard W2 are required to include a hazardous materials survey for the garage at 168 March Street. This amended safeguard is as follows: Prior to demolition, a hazardous materials survey must be carried out to determine the presence of hazardous materials in the house at 164 March Street *and within the garage at 168 March Street.*
Greenhouse gas emissions and climate change	The Project REF'S conducted an assessment of greenhouse gas emissions and climate change and determined that various types of greenhouse gas emissions would be produced including: • Carbon dioxide, methane and nitrous oxide generated from liquid fuel use in plant and vehicles (diesel, petrol) • Embedded emissions associated with the manufacture and delivery of construction materials • Methane generated from land filling any carbon-based waste. Given the nature of the proposal, it would not be possible to completely avoid the generation of greenhouse gas emissions during construction (due to the need to consume energy and resources). Overall, construction related greenhouse gas emissions associated with the proposal would be relatively minor comparable with similar road upgrade projects.	The operation of chainsaws and chipper/mulcher during the removal of the street trees and vehicle use traveling to and from site not expected to result in a material increase in greenhouse gas emissions and/or increase in climate change risk not already assessed in the Project REF. It is expected that the safeguards and mitigation measures outlined in the Project REF are sufficient to address the potential impacts arising from the proposed modification.

Environmental factor	Existing environment	Potential impacts
	Climate change risks are generally considered to be minor and would be readily manageable through the application of standard mitigation measures that have been adequately designed to respond to the potential occurrence of the increased frequency and severity of rainfall events.	

6.2.2 Safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Noise and Vibration	Where possible, carry out the tree removal and garage works during standard work hours (7am-6pm) or alternatively Out of Hours Work Period 1 (6pm-10pm).	Construction Contractor	Construction	Additional safeguard
Noise and Vibration	Out of hours construction noise in out of hours period 1(Mon-Fri 6pm-10pm; Sat 7am-8am &1pm-10pm, Sun/Public Holidays 8am-6pm) shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month.	Construction Contractor	Construction	Additional safeguard
Noise and Vibration	Night time construction noise in out of hours period 2 (Mon-Fri 10pm-7am, Sat 10pm-8am, Sun/Pub Holidays 6pm-7am) shall be limited to two consecutive nights except for where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.	Construction Contractor	Construction	Additional safeguard
Resource use and waste	Prior to demolition, a hazardous materials survey must be carried out to determine the presence of hazardous materials in the house at 164 March Street and within the garage at 168 March Street.	Construction contractor	Pre-construction, construction	Addendum REF Best Practice

Impact	Environmental safeguards	Responsibility	Timing	Reference
Property impacts	*The contractor will provide the following to the land owner at 168 March Street:* *I. evidence of structural integrity to the property owner at 168 March Street, in the form of a certificate provided by a structural engineer stating that the new garage is structurally sound and compliant with the Building Code.* *II. A deed of letter outlining that the garage was a lawful development assessed under Part 5 of the EP&A Act. This document should include a property adjustment plan.*	Construction Contractor	Construction	Additional Safeguard

6.3 Cumulative impacts

The proposed modification is not considered to increase any cumulative impacts additional to those identified for the approved project.

6.3.1 Potential impacts

The proposed modification is not expected to result in material increase in potential cumulative environmental impacts assessed in the Project REF. The proposed modification is unlikely to result in an increase in traffic and transport impacts such that additional mitigation measures are necessary. No additional biodiversity impacts are expected as a result of the removal of street trees along March Street.

No significant vegetation or habitat will be impacted by the proposed modification despite the cumulative increase in vegetation loss. The noise and vibration impacts arising from the Project, including the proposed modification, will not exacerbate similar impacts from other projects occurring along the broader Kurrajong and March Street corridor. The safeguards and mitigation measures outlined in the Project REF are considered sufficient to address the potential cumulative impacts arising from the proposed modification.

7. Environmental management

7.1 Environmental management plans

A number of safeguards and management measures have been identified to minimise adverse environmental impacts, including social 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 Contractors Environmental Management Plan (CEMP) and applied during the construction and operation of the proposed modification.

7.2 Summary of safeguards and management measures

Environmental safeguards and management measures for the Richmond Bridge Approaches- Intersection upgrade at March Street and Bosworth Street, Richmond are summarised in Table 7-1. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font. The safeguards and management measures will be incorporated into the detailed design phase of the proposed modification, the CEMP and implemented during construction and operation of the proposed modification, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment.

Table 7-1: Summary of safeguards and management measures. Additional safeguards and management measures identified in this addendum REF are included in bold and italicised font.

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
General					
GEN1	General	All environmental safeguards must be incorporated within the following: • Detailed design stage • Contract specifications for the proposal • Contractor's Environmental Management Plan.	Project Manager	Pre-construction	G36
GEN2	General	A risk assessment must be carried out on the proposal with the Transport for NSW Regional Environmental Staff, prior to construction. The recommendations of the risk assessment are to be implemented.	Project Manager and Regional Environmental Staff	Pre-construction	G36

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		A review of the risk assessment must be carried out after the initial audit or inspection to evaluate is the level of risk chosen for the project is appropriate Any work 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.		After first audit	
GEN3	General	All businesses and residences likely to be affected by the proposed work must be notified at least five working days before the start of the proposed activities.	Project Manager	Pre-construction	G36
GEN4	General	Environmental awareness training must be provided, by the contractor,to all field personnel and subcontractors.	Construction Contractor	Pre-construction and during construction as required	G36
Noise and vibration					
NV1	Construction noise	A Construction Noise and Vibration Management Plan (CNVMP) would be prepared as part of the CEMP. This plan would include, but would not be limited to, the following: • A map indicating the locations of sensitive receivers including residential properties, and clear protocols for communicating with affected residents with regard to likely exceedances of construction noise limits, and the frequency and duration of these events • Procedures for prior notification of nearby residents in advance of high noise construction activities and work outside of standard hours • Procedures for notifying residents about the program of work, duration of works including high noise activities, noise management and mitigation methods, and complaints procedure	Construction Contractor	Construction	Project REF

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Management measures to minimise potential noise impacts from mobile, high noise construction activities such as concrete cutting • Mitigation measures to avoid noise and vibration impacts associated with truck movements during construction • A process for assessing the performance of the implemented mitigation measures, including a noise and vibration monitoring program for sensitive receivers • A process for documenting and resolving issues and complaints • A process for updating the plan when activities affecting construction noise and vibration change. • Identify in toolbox talks where noise and vibration management is required • Implement EPA Interim Construction Noise Guidelines (DECCW 2009).			
NV2	Construction noise	• Locate compressors, generators, pumps and any other fixed plant as far from residences as possible and behind site structures • Alternatives to reversing alarms will be considered for site equipment subject to Work Health Safety compliance requirements and risk assessments • Vehicle delivery times will be scheduled where feasible to the recommended construction hours to minimise noise impacts from heavy vehicle movements and deliveries.	Construction Contractor	Construction	Project REF
NV3	Construction noise	• Any out of hours work would comply with G36 community notification requirements specified within	Construction Contractor	Pre-construction	G36 Project REF *Roads and Maritime Construction Noise*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		the *Roads and Maritime Construction Noise and Vibration Guidelines.* • Communications material such as the project website and community notification would include a contact person and phone number to enable complaints to be received and responded to.			*and Vibration Guidelines*
NV4	Construction vibration	If a complaint relating to vibration is received, attended monitoring would be carried out to assess whether criteria are being met. If monitoring identifies that criteria are being exceeded, then all work is to be scaled back until an acceptable vibration level can be reached in consultation with the affected resident.	Construction Contractor	Construction	G36 Project REF
NV5	Construction vibration	Pre-condition surveys are to be conducted at heritage listed properties situated in close proximity to work zones, specifically 190 March Street (Item I72), 35 Bosworth Street (Item I4), 162 March Street (Item I483), 160 March Street (Item I482), 158 March Street (Item I69), and 155 March Street (Item I71).	Construction Contractor	Pre-construction	Project REF
NV6	Noise and Vibration	Where possible, carry out the tree removal and garage works during standard work hours (7am-6pm) or alternatively Out of Hours Work Period 1 (6pm-10pm).	Construction Contractor	Construction	Additional safeguard
NV7	Noise and Vibration	Out of hours construction noise in out of hours period 1(Mon-Fri 6pm-10pm; Sat 7am-8am &1pm-10pm, Sun/Public Holidays 8am-6pm) shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month.	Construction Contractor	Construction	Additional safeguard
NV8	Noise and Vibration	Night time construction noise in out of hours period 2 (Mon-Fri 10pm-7am, Sat 10pm-8am, Sun/Pub Holidays 6pm-7am) shall be limited to two consecutive nights except for where	Construction Contractor	Construction	Additional safeguard

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		there is a Duration Respite. For night work these periods of work should be separated by not less than one week and 6 nights per month. Where possible, high noise generating works shall be completed before 11pm.			
Traffic, transport and access					
TTA1	Construction traffic management	A detailed traffic management plan would be prepared in accordance with Traffic Control at Work Sites (Roads and Traffic Authority 2010) and QA Specification G10 Control of Traffic (Roads and Traffic Authority 2005) to provide a comprehensive and objective approach to minimize any potential impacts on road network operations during construction. The traffic management plan would include measures to minimise heavy vehicle usage on local roads. Where practicable, deliveries of plant and materials would be carried out outside of peak traffic periods.	Construction Contractor	Pre-construction and construction	G10 Project REF
TTA2	Construction traffic management	The Construction Contractor would review the proposed timing of construction works at each of the intersection upgrade locations, with the objective of minimising the potential for cumulative traffic impacts.	Construction Contractor	Pre-construction and construction	Project REF
TTA3	Construction traffic management	Consultation would be carried out with emergency services. Emergency vehicle access would be maintained at all times for the duration of construction.	Construction Contractor	Pre-construction and construction	Project REF Best Practice
TTA4	Public transport	Access to bus stop locations would be maintained during construction wherever possible in consultation with bus operators (Busways).	Construction Contractor	Pre-construction and construction	Project REF Best Practice
TTA5	Public transport	Consultation with Transport for NSW and Busways would be carried out prior to commencement of any works that would impact on existing bus stop locations. This consultation would include selection of temporary and permanent bus stop locations (where required).	Construction Contractor	Pre-construction and construction	Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		Updates on the location of temporary and permanent bus stops would be provided to the community during the construction period to ensure disruption is minimized.			
TTA6	Road user delay	The community would be kept informed about upcoming road construction activities. Notifications would include advertisements in the local media and prominently placing advisory notices and/or variable message signs.	Construction Contractor	Construction	Project REF Best Practice
TTA7	Pedestrian access	Safe pedestrian access around the worksite would be provided by the construction contractor (in consultation with Transport for NSW and Hawkesbury City Council) and capture within the traffic management plan.	Construction Contractor	Pre-construction and construction	Project REF Best Practice
TTA8	Pedestrians and cyclists	Signage outlining pedestrian and cyclist diversion routes would be displayed during construction (where required).	Construction Contractor	Construction	Project REF Best Practice
TTA9	Property access	Access to affected residential properties and businesses would be maintained during construction and temporary property access would be provided to residences and businesses where required. The management of property access would be considered by the construction contractor and detailed as part of the final staging plan for the proposal.	Construction Contractor	Pre-construction and construction	Project REF Best Practice
TTA10	On-street parking	The parking of light construction vehicles (eg staff vehicles) would be restricted to designated areas within the proposed construction compounds, wherever possible to minimise the proposal's impact on the existing parking supply within the study area.	Construction Contractor	Construction	Project REF Best Practice
Aboriginal Heritage					
AH1	Discovery/ disturbance of previously unrecorded Aboriginal sites	In the event of an unexpected find of Aboriginal cultural heritage, work will cease in the affected area and the Standard Management Procedure – Unexpected Archaeological Finds (Roads and Maritime 2012) will be implemented. This would include stopping all work in the vicinity of the find and contacting Transport for NSW 's Aboriginal Cultural Heritage Advisor or the relevant Transport for NSW Environmental Officer immediately to identify the	Construction Contractor	Construction	G36 *Standard Management Procedure – Unexpected Archaeological Finds*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		appropriate course of action. Work would not recommence until receipt of written approval from Transport for NSW.			
Landscape character and visual impact					
LCVI1	Visual amenity impact – vegetation removal	Existing roadside trees should be retained where possible to minimise the potential landscape character and visual impact of the works. Where roadside trees cannot be retained, re-planting is to be carried out in accordance with the proposed Landscape Plan (Appendix F of Project REF).	Construction Contractor	Construction	Project REF
LCVI2	Visual amenity impact –vegetation removal	Tree planting is to be carried out where feasible outside of the clear zone. Frangible screen planting within the clear zone will assist to reduce the impact of the works on the existing landscape character.	Construction Contractor	Construction	Project REF
LCVI3	Visual impacts of construction activities	The work site will be left in a tidy manner at the end of each work day.	Construction Contractor	Construction	Project REF Best Practice
LCVI4	Visual impacts of construction activities	Where appropriate, fencing with material attached (eg shade cloth) would be provided around the construction compound to screen views of the construction compounds from adjoining properties.	Construction Contractor	Construction	Project REF Best Practice
LCVI5	Visual impacts of construction activities	Where required, lighting for night-time work would comply with relevant Australian Standards, including AS4282-1997 (*Control of the obtrusive effects of outdoor lighting*).	Construction Contractor	Construction	Project REF Best Practice
Topography, geology and soils					
S1	Soil and Water Quality	An Erosion and Sediment Control Plan would be prepared and incorporated into the CEMP. The plan would be prepared in accordance with Landcom's (2004) *Managing Urban Stormwater: Soils and Construction* and would include, but not be limited to: • Identify the site catchment, high risk areas and sensitive areas (eg ground disturbance areas)	Construction Contractor	Pre-Construction	G36 Project REF Best Practice *Managing Urban Stormwater: Soils and Construction (Landcom 2004)*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Confirm the size of the above areas and catchments • Proposed staging plans for the proposal to ensure appropriate erosion and sediment controls measures are possible • The likely run-off from each worksite and direction of on and off site water flow • Diversion of clean water around the work site. • The locations and sizing of sediment sumps and associated drainage • A mapped plan identifying the above.			
S2	Soil and Water Quality	The Erosion and Sediment Management Plan and the Acid Sulfate Soil Management Plan, will be sent to the Transport for NSW Environmental Manager for review and verification, prior to the commencement of any construction.	Construction Contractor	Pre-Construction	G38
Contaminated land					
CL1	Potential exposure of contamination to site workers, public and environmental receptors	In the event of an unexpected find of contaminated materials, work would cease in the vicinity of the find and the unexpected contamination find procedure followed.	Construction Contractor	Construction	G36 Best Practice
Socio-economic					
SE1	Community consultation	A Communication Engagement Plan (CEP) will be prepared and will include (as a minimum): • Requirements to provide details and timing of proposed activities to affected residents • Contact name and number for complaints.	Construction Contractor	Pre-construction	G36 Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Procedure to notify nearby land users for changed conditions during the construction period such as traffic, pedestrian and driveway access. The communications plan will be prepared in accordance with G36 requirements and Roads and Maritime Community Engagement and Communications Manual (Roads and Maritime 2012).			
SE2	Socioeconomic	The times and duration of any disruptions to vehicular movements accessing the KFC drive thru lane would be negotiated between Transport for NSW and KFC prior to sign installation	Transport for NSW	Construction	Safeguard 30A Addendum REF 1-KFC sign
SE3	Property access	During construction, access to properties within the proposal area will be maintained. Temporary property access will be provided to residences and businesses where required. Consultation will be undertaken with the Best Western Colonial Motel and KFC Richmond to ensure access is maintained for pedestrians and vehicles at these sites.	Construction Contractor	Construction	Project REF Best Practice
SE4	Emergency vehicle access	Access will be maintained for emergency vehicles near construction areas. Transport for NSW will consult with emergency services throughout construction to ensure that potential impacts are identified and appropriately managed.	Construction Contractor	Construction	Project REF Best Practice
Land use and property					
LUP1	Direct land use and property impacts	Land directly affected during the establishment and operation of the construction compounds would be restored to its pre-construction condition.	Construction Contractor	Construction	Project REF Best Practice
LUP2	Property acquisition	All land acquisitions would be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms) Compensation Act 1991*.	Transport for NSW	Pre-Construction	Project REF Best Practice
LUP3	Leasing of private land	Landowner consent would be sought before the establishment of the construction compounds or any other ancillary facilities on private property. The construction compounds would not be established until a signed lease	Construction Contractor	Pre-Construction	Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		agreement has been received from the relevant Landowner. Transport for NSW would be consulted before contacting any landowners about the temporary leasing of their land.			
LUP4	Property impacts	*The contractor will provide the following to the land owner at 168 March Street:* *I. evidence of structural integrity to the property owner at 168 March Street, in the form of a certificate provided by a structural engineer stating that the new garage is structurally sound and compliant with the Building Code.* *II. A deed of letter outlining that the garage was a lawful development assessed under Part 5 of the EP&A Act. This document should include a property adjustment plan.*	Construction Contractor	Construction	Additional Safeguard
Biodiversity					
FF1	Clearing limits / Habitat trees	Clearing limits would be marked out by a surveyor prior to the commencement of works and would be clearly demarcated.	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines*
FF2	Clearing limits / Habitat trees	All works are to comply with Roads and Maritime *Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects*.	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines*
FF3	Noxious weeds	Develop and implement a weed management plan including specific measures in accordance with the regulations set out under the *Biosecurity Act 2015.*	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines* *Biosecurity Act 2015*

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
FF4	Noxious weeds	A machinery hygiene procedure would be implemented to prevent spread of weeds.	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines*
FF5	Noxious weeds	Weeds are to be kept separate from general green waste and appropriately disposed of.	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines*\
FF6	General	Locate temporary infrastructure (plant sites and offices etc.) in cleared areas away from vegetation, outside of the dripline of trees. Erect bunting around the dripline of trees to prevent stockpiling in tree protection zones.	Construction Contractor	Construction	G36 Project REF Best Practice *Biodiversity Guidelines*
Water quality and hydrology					
WQ1	Water quality management	Soil and water management measures would be incorporated in the CEMP in accordance with the requirements of Roads and Maritime contract specification G38 before the start of construction. These measures will address the: • Roads and Maritime Code of Practice for Water Management (1999), the Roads and Maritime Erosion and Sedimentation Procedure. • The NSW Soils and Construction – Managing Urban Stormwater Volume 1 “The Blue Book” (Landcom, 2004) and Volume 2 (DECC, 2008). • Roads and Maritime Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011.	Construction Contractor	Pre-Construction	G36 Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Roads and Maritime Technical Guideline: Environmental Management of Construction Site Dewatering, 2011. • Erosion and Sediment Management Procedures (P143P), Nov 2008.			
WQ2	Water quality management	Before the start of work, an Erosion and Sediment Control Plan (ESCP) is to be prepared in accordance with the requirements of the Blue Book and reviewed by the Transport for NSW Environment Officer. The ESCP is also to address the following as a minimum: • A procedure to routinely monitor the BOM weather forecast and identification of additional controls to be implemented ahead of rain • A procedure for routine inspection and maintenance of erosion and sediment controls • Nominated concrete washout areas away from watercourses and drainage • Nominated spill kit locations • Progressive stabilisation plan • Stockpiles are to be restricted to the identified construction compounds, and managed in accordance with Roads and Maritime Stockpile Site Management Guideline, RMS Environmental Protection (Management System) QA Specification G36 and RMS Vegetation QA Specification R178 • Any dewatering required would be in accordance with Roads and Maritime Environmental Management of Construction Site Dewatering 2011 • Controls are to be implemented at exit points to minimise tracking soil and particulates onto pavement surfaces	Construction Contractor	Construction Contractor	G36 Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Any material transported onto pavements would be swept and removed at the end of each working shift and before rainfall.			
Air quality					
AQ1	Dust and air quality management	Dust emissions during construction of the proposal would be minimised through the implementation of standard mitigation measures, which would include (but would not be limited to) the following: • Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust • Work (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely • Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation • Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Stockpile Site Management Guideline (2011) • Communications material such as the project website and Community notification would include a contact person and phone number to enable complaints to be received and responded to • The Erosion and Sediment Control Plan would be reviewed for adequacy in response to any dust complaints.	Construction Contractor	Construction	G36 Project REF Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
Non-Aboriginal heritage					
NAH1	Potential impact on listed heritage items	The works footprint is to remain within detailed design footprint, and is to avoid any direct impact on known listed heritage items except where the house at 162 March Street is used for the purpose of an office.	Construction Contractor	Construction	G36 Project REF Best Practice Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds procedure
NAH2	Unexpected archaeological remains	If unexpected archaeological remains are uncovered during the works, all works must cease in the vicinity of the material/find and the steps in the Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds procedure must be followed. Transport for NSW Senior Regional Environmental Officer must be contacted immediately.	Construction Contractor	Construction	Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds procedure
NAH3	Inductions	Environmental awareness is to include responsibilities under heritage legislation and the contractors CEMP. Training is to include details about the heightened risk of finding unexpected elements of rail infrastructure when excavating throughout the Project.	Construction Contractor	Pre-Construction	G36 Project REF Addendum REF Best Practice
NAH4	Potential impact on 162 March Street	The house at 162 March Street must only be utilised for office use. No alterations are to be made to any part of the structure or fittings (internal or external) and all staff that will access the office must be trained in the appropriate use of the house.	Construction Contractor	Construction	Addendum REF Best Practice
Resource use and waste					
W1	Resource use and waste	The following resource management hierarchy principles are to be followed:	Construction Contractor	Construction	G36 *Waste Classification Guidelines* (EPA, 2014)

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• Avoid unnecessary resource consumption as a priority. • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery). • Disposal is carried out as a last resort (in accordance with the • *Waste Avoidance & Resource Recovery Act 2001)*. All waste would be disposed of in accordance with the EPA Waste Classification Guidelines (2014) at an appropriately licensed waste facility. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. Procurement would endeavour to use materials and products with a recycled content where that material or product is cost and performance effective.			
W2	Resource use and waste	Prior to demolition, a hazardous materials survey must be carried out to determine the presence of hazardous materials in the house at 164 March Street and within the garage at 168 March Street.	Construction Contractor	Pre-construction, construction	Addendum REF Best Practice
Greenhouse gas emissions and climate change					
GCC1	Construction greenhouse gas emissions	• Plant and equipment would be switched off when not in use • Vehicles, plant and construction equipment would be appropriately sized for the task and properly maintained so as to achieve optimum fuel efficiency • Materials would be delivered with full loads and would come from local suppliers, where possible	Construction Contractor	Construction	G36 Best Practice

No.	Impact	Environmental safeguards	Responsibility	Timing	Reference
		• The energy efficiency and related carbon emissions would be considered in the selection of vehicle and plant equipment.			
Cumulative environmental impacts					
CEI1	Cumulative impacts from concurrent developments	The CEMP would be updated as required to incorporate potential cumulative impacts from surrounding development activities as they become known. This would include a process to review and update mitigation measures as new work begins or if complaints are received.	Construction Contractor	Pre-Construction	Best practice

7.3 Licensing and approvals

All relevant licenses, permits, notifications and approvals needed for the March Street and Bosworth Street Intersection Upgrade 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 underlined and/or struck out font.

Table 7-2: Summary of licensing and approval required

Instrument	Requirement	Timing
Road Occupancy Licence	Prior to changing traffic conditions, a Road Occupancy Licence (ROL) must be obtained from the Traffic Management Centre (TMC) or local council.	Prior to changing traffic conditions.

8. Conclusion

8.1 Justification

Transport for NSW propose to upgrade the intersection of March Street and Bosworth Street in Richmond. The work was identified as part of the preferred short-term solution for the broader Richmond Bridge and Approaches strategy to alleviate traffic congestion on Richmond Bridge and its approach roads.

A Review of Environmental Factors (REF) was prepared by Jacobs and DM Roads and assessed by Transport for NSW in accordance with the old Part 5 of the Environmental Planning and Assessment Act 1979. The Project, and the activities described in the REF, was approved by Transport for NSW on 26 August 2016.

The addendum REF has considered the potential environmental and community impacts from the proposed removal of 30 street trees, clearing of vegetation from the Transport for NSW owned lot (1/DP518997), and demolition and reestablishment of the garage at 168 March Street, and has determined that the impacts arising can be effectively minimised and managed by implementing the mitigation measures outlined in section 7.

While this addendum REF describes some limited changes to the approved activity, the overall Project objectives remain unchanged. It is therefore concluded that the modification is justified and would not alter the view that the Project can proceed subject to the implementation of the safeguards identified.

8.2 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 Project, including the proposed modification, together with the impact mitigation and management measures detailed in the Project REF allow for the proper management, development and conservation of natural and artificial resources. The main object of the Project is to improve the safety and transport efficiency of the intersection. Where possible throughout the design of the Project, management and conservation of natural resources has been incorporated. This has included optimising the road design to reduce the clearing footprint as far as possible. The works are wholly within the existing road reserve with impacts on existing rural residential land uses restricted to construction phase only. The incorporation of the proposed modification into the broader Project plan has not altered the approach to achieving this objective.
1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in	The approach to ecologically sustainable development is considered in Section 8.2.1 to 8.2.4 below.

Object	Comment
decision-making about environmental planning and assessment.	
1.3(c) To promote the orderly and economic use and development of land.	The Project would assist in the coordination of the orderly economic use and development of land for the region and along this important transition corridor, both for business and tourism. The incorporation of the proposed modification into the broader Project plan has not altered the approach to achieving this objective.
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 Project has been designed to minimise impacts on the environment, including threatened species, populations and ecological communities and their habitats. Additional measures would be developed to manage and offset impacts during and after construction. The incorporation of the proposed modification into the broader Project plan will not alter the approach to meeting this objective.
1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	Sustainable management of non-aboriginal heritage is addressed in Sections 6.2. The proposed modification has been designed to minimise any potential impacts on the built and cultural heritage of the study area.
1.3(g) To promote good design and amenity of the built environment.	Not relevant to the proposed modification
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 proposed modification
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 proposed modification
1.3(j) To provide increased opportunity for community participation in environmental planning and assessment.	The development process for the intersection upgrade at March Street and Bosworth Street, Richmond and the Project has involved consultation with relevant government agencies, non-government agencies, community members and stakeholders. Consultation specific to the proposed modification has been conducted and will continue during the construction phase.

8.2.1The precautionary principle

The precautionary principle deals with certainty in decision making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

Alternative design options were considered as assessed to reduce the risk of serious and irreversible impacts on the environment, including avoiding significant environmental aspects, where feasible.

The detailed assessment of potential environmental impacts has sought to minimise impacts of the proposal on the environment. Where information has been lacking, a conservative approach has been adopted for the assessment. Safeguards would be implemented during construction and operation of the proposal. No safeguards have been postponed as a result of a lack of scientific certainty.

8.2.2 Intergenerational equity

Intergenerational equity provides that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The proposal would provide improved road infrastructure for future generations. Should the proposal not proceed, the principle of intergenerational equity may be compromised as future generations would inherit a lower level of service by the road transport network. Traffic congestion and associated travel times on Richmond Bridge and its approach roads could increase as a result of an increase in traffic volume over time.

The proposal would also benefit future generations by ensuring that road safety is improved, with this being a positive benefit for all road users.

8.2.3 Conservation of biological diversity and ecological integrity

The conservation of biological diversity and ecological integrity provides that the diversity of genes, species, populations and communities, as well as the ecosystems and habitats to which they belong, must be maintained and improved to ensure their survival.

An assessment of the existing local environment has been carried out to identify and manage any potential impact of the proposal on local biodiversity. The potential impacts of the proposal on biodiversity would be limited to the construction phase and would involve the removal of planted native and exotic vegetation from the area surrounding the proposal.

All vegetation and habitats that would be affected by the proposal are in very poor condition. Safeguards and management measures to minimise the extent of native vegetation clearing by the proposal are provided in section 6.9.4.

The proposal would not significantly fragment or isolate any existing large patches of vegetation and would not compromise biological diversity or ecological integrity. No significant impacts to flora and fauna species were identified.

8.2.4 Improved valuation, pricing and incentive mechanisms

Improved valuation, pricing and incentive mechanisms provide that cost to the environment should be factored into the economic costs of a proposal. This REF has examined the environmental consequences of the proposal and identified mitigation measures for areas which have the potential to experience adverse impacts.

Requirements imposed and terms of implementation of these mitigation measures would result in an economic cost to Transport for NSW. The implementation of mitigation measures would increase both capital and operating costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

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 activity.

This has included consideration where relevant, of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, 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 Federal 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 the addendum REF best meets the project objectives, but would still result in some impacts on Landscape character and visual amenity. Safeguards and management measures as detailed in this addendum REF would ameliorate or minimise these expected impacts. The proposed modification would also allow for road-way widening and adjustment of utilities, kerbing and footpath. On balance the proposed modification is considered justified and the following conclusions are made.

Significance of impact under NSW legislation

The proposed modification would not result in a change to the findings of the project REF [also refer to the submissions report and any other previous addendum REFs if relevant] 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 Biodiversity Development Assessment Report or 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.

Significance of impact under Australian legislation

The proposed modification would not likely 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 Australian Government Department of Agriculture, Water and the Environment is not required.

9. Certification

This addendum review of environmental factors 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.

Prepared by:

Aidann Stathis
Graduate Environmental Scientist
Hutchison Weller Pty Ltd on behalf of DM Roads
Date: 18 May 2020

Reviewed by:

Cameron Weller
Senior Environmental Scientist
Hutchison Weller Pty Ltd on behalf of DM Roads
Date: 18 May 2020

I have examined this addendum review of environmental factors and accept it on behalf of Transport for NSW.

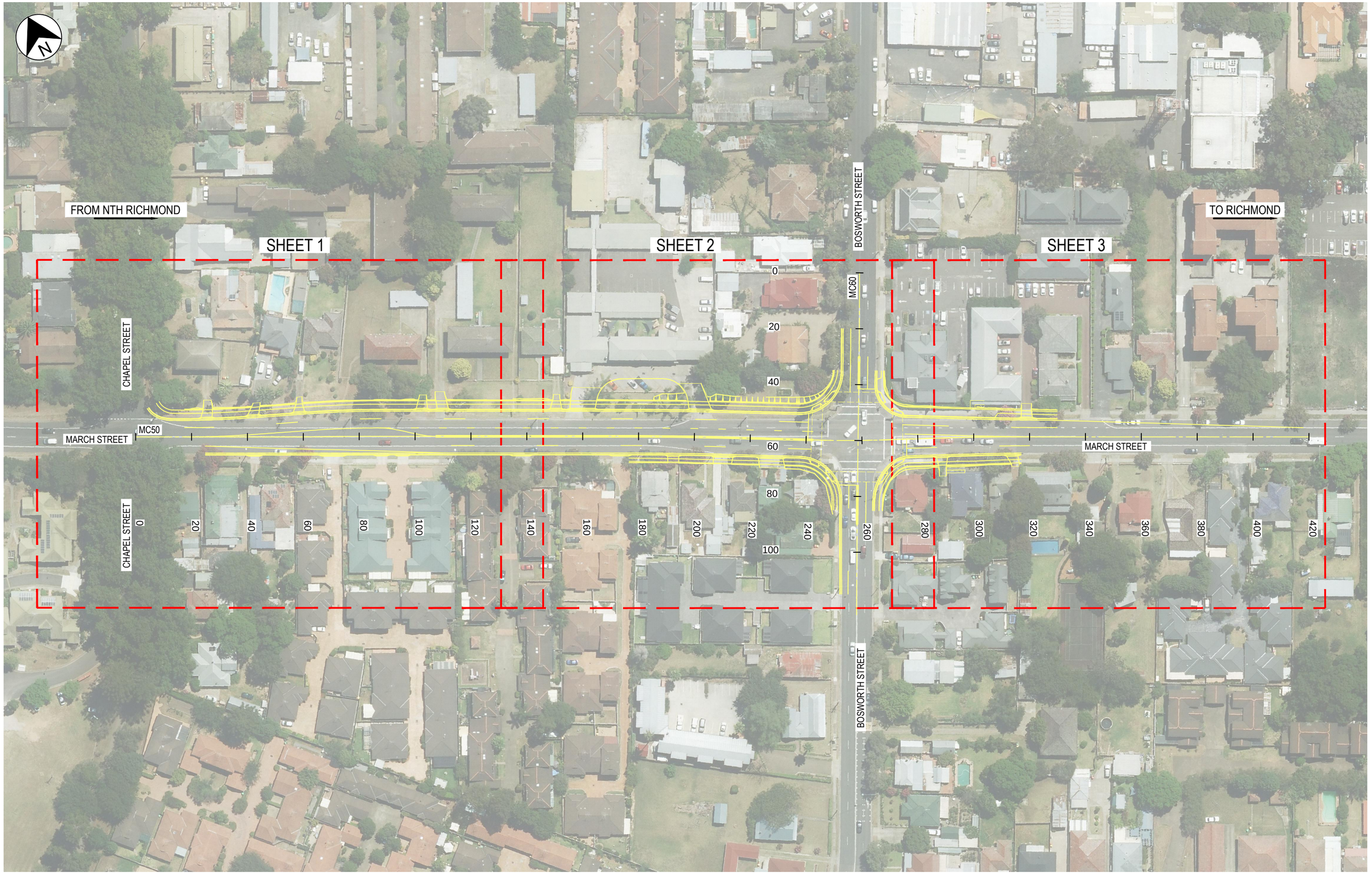
Name: Georgia Barnes
Position: Transport for NSW - Contract Relationship Manager - West Zone, Sydney Maintenance
Date: 20 May 2020

Terms and acronyms used in this addendum REF

Term / Acronym	Description
BC Act	*Biodiversity Conservation Act 2016* (NSW).
CEMP	Construction / Contractor's environmental management plan
EIA	Environmental impact assessment
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.
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
FM Act	*Fisheries Management Act 1994* (NSW)
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LoS	Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers.
NES	Matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
Roads and Maritime	NSW Roads and Maritime was dissolved by the Transport Administration Amendment Bill in August 2019, all function are now managed by Transport for NSW
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)
QA Specifications	Specifications developed by Transport for NSW for use with road work and bridge work contracts let by Transport for NSW.

Appendix A

Drawings



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REV	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVAL
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TITLE	INITIAL	DATE
DRAFTSPERSON	SG	22.03.16
DRAFTING CHECK	JE	22.03.16
DESIGNER	MJ	22.03.16
DESIGN CHECK	JE	22.03.16
PACKAGE MANAGER	BDP	22.03.16
PROJECT MANAGER	DB	22.03.16

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:1250 12.5 0 12.5 25 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: A.H.D.

CLIENT
NSW GOVERNMENT Transport Roads & Maritime Services

CONTRACTOR
DM Downermouchel

DESIGNER
JACOBS
100 Christie Street
St Leonards, SYDNEY, NSW 2065
AUSTRALIA
Tel: (02) 9928 2100 Fax (02) 9928 2500
Web: www.jacobs.com

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 – MARCH STREET/BOSWORTH STREET
KEY PLAN

FOR CONSTRUCTION

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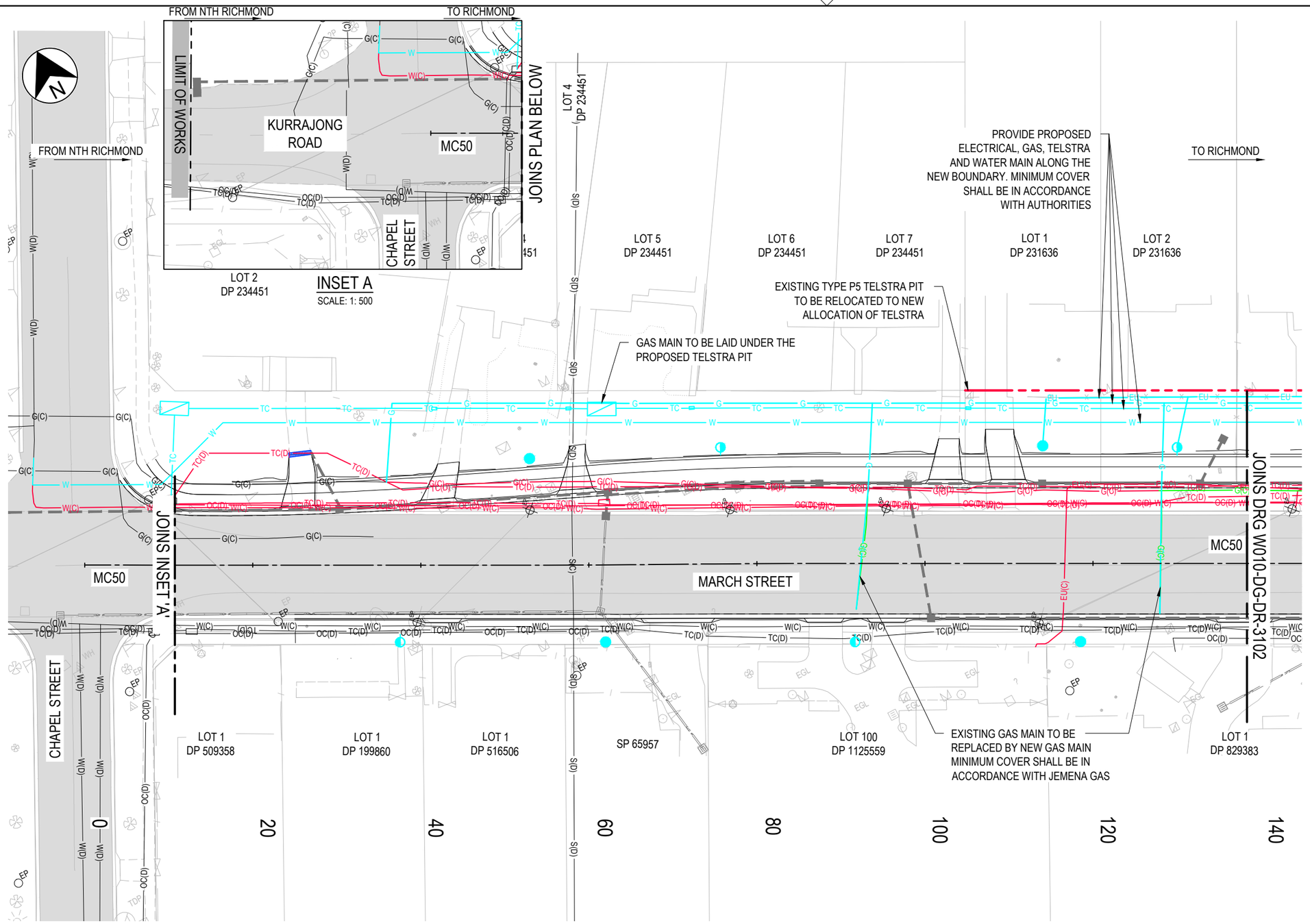
IMP	DS2014/005516	
STATUS	DRAWING No	REV
IFC	NB00042-W010-DG-RD-3011	1



LEGEND

REFERENCE ONLY

- EXISTING PAVEMENT
- EXISTING CADASTRAL BOUNDARY
- LOT 1 — CADASTRAL LOT NUMBER
- DP 782485 — DEPOSITED PLAN NUMBER
- EXISTING FENCE
- PROPOSED BOUNDARY

UTILITY STATUS BY COLOUR

- EXISTING UTILITY TO PRESERVE
- EXISTING UTILITY TO ABANDON
- EXISTING UTILITY TO REMOVE
- UTILITY ADJUSTMENT

UTILITY TYPE

- EU-10 — UTILITY CONFLICT ID REFER TO DR-1141
- UTILITY TYPE (REFER LEGEND)
- EXISTING QUALITY LEVEL (REFER NOTE 2)
- TC(C) — TELEPHONE LINE (UNDERGROUND)
- W(C) — WATER MAIN
- S(D) — SEWER MAIN
- G(C) — GAS MAIN
- EU(D) — ELECTRICAL LINE (UNDERGROUND)
- TC(C) — TELECOM LINE (TELSTRA / OPTUS / NBN)
- OC(D) — OPTICAL FIBRE
- TCS(C) — TRAFFIC CONTROL SIGNAL
- SEWER MANHOLE
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- TPL — TELEPHONE POLE
- WH — WATER HYDRANT
- POWER & COMMUNICATIONS POLE
- PROPOSED POWER POLE
- PROPOSED POWER POLE WITH LIGHT
- STAY CABLE AND ANCHOR
- PROPOSED COMMUNICATIONS PIT
- EXISTING POLE TO REMOVE
- E — ELECTRICAL PIT TO REMOVE
- PROPOSED TRAFFIC CONTROL SIGNAL (TCS)

DRAINAGE & WATER QUALITY

- STORMWATER PIT
- STORMWATER HEADWALL
- EXISTING STORMWATER PIPE
- NEW STORMWATER PIPE

NOTES:

1. FOR GENERAL NOTES REFER NB00042-W010-RD-DG-3003.
2. SPATIAL POSITION QUALITY LEVEL;
   (B) - ACCURATE TO 0.3m PLAN, 1.0m VERT
   (C) - ACCURATE TO 1.0m PLAN, 1.0m VERT
   (D) - SEVERAL METRES IN PLAN, NO VERT (DIGITISED)
3. UTILITY LOCATION PLAN IS PRELIMINARY ONLY AND HAS BEEN DEVELOPED WITH THE EXISTING UTILITY SURVEY PROVIDED BY RMS AND DBYD PLANS.
4. OVERHEAD POWERLINES NOT SHOWN FOR CLARITY.
5. HOUSE CONNECTION UTILITIES NOT SHOWN FOR CLARITY.
6. UTILITY INFORMATION SHOWN ON PLANS DOES NOT DEPICT ANY MORE THAN THE PRESENCE OF A SERVICE, BASED ON AVAILABLE DOCUMENTARY EVIDENCE. THE PRESENCE OF A UTILITY SERVICE, ITS SIZE AND LOCATION SHOULD BE CONFIRMED BY FIELD INSPECTION, PRIOR TO THE COMMENCEMENT OF ROADWORKS AND THE RELEVANT UTILITY PLANS OBTAINED BY DIALLING PH 1100 OR FAX 1300652077 (DIAL BEFORE YOU DIG). CAUTION SHOULD BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.
7. ALL OF THE ABANDON SERVICES CAN BE REMOVED WHERE THESE ABANDON SERVICES ARE IMPACTED BY THE PROPOSED DESIGN.
8. THE PROPOSED ELECTRICAL LINE, POWER POLES AND LIGHT POLES SHOWN ON THIS DRAWING ARE INDICATION. PLEASE REFER TO APPROVED LEVEL 3 DESIGN DRAWING FOR THE FINAL DESIGN OF THE ELECTRICAL RELOCATION AND LIGHTING WORKS.
9. THE ALLOCATIONS OF UNDERGROUND UTILITIES MUST FOLLOW THE DESIGN GUIDE FROM STREET OPEN CONFERENCE.

REV	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVAL
1	22.03.16	ISSUED FOR CONSTRUCTION	ST	BDP	CT

0 5 10 15 20 25 mm ON A3 ORIGINAL

This Drawing may have been prepared using colour and may be incomplete if copied

TITLE	INITIAL	DATE
DRAFTSPERSON	CM	22.03.16
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DESIGNER	DS / HT	22.03.16
DESIGN CHECK	JE	22.03.16
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PROJECT MANAGER	DB	22.03.16

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:200 2 0 2 4 AT A3
SCALE 1:500 5 0 5 10 AT A3

CO-ORDINATE SYSTEM: MGA Zone 56 | HEIGHT DATUM: A.H.D.

CLIENT: Transport Roads & Maritime Services (NSW Government)

CONTRACTOR: Downermouchel

DESIGNER: JACOBS
100 Christie Street
St Leonards, SYDNEY, NSW 2065
AUSTRALIA
Tel: (02) 9928 2100 Fax (02) 9928 2500
Web: www.jacobs.com

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 – MARCH STREET/BOSWORTH STREET
UTILITY COORDINATION PLAN
SHEET 1

FOR CONSTRUCTION

PHASE	RMS REGISTRATION No	
IMP	DS2014/005516	
STATUS	DRAWING No	REV
IFC	NB00042-W010-DG-UT-3101	1

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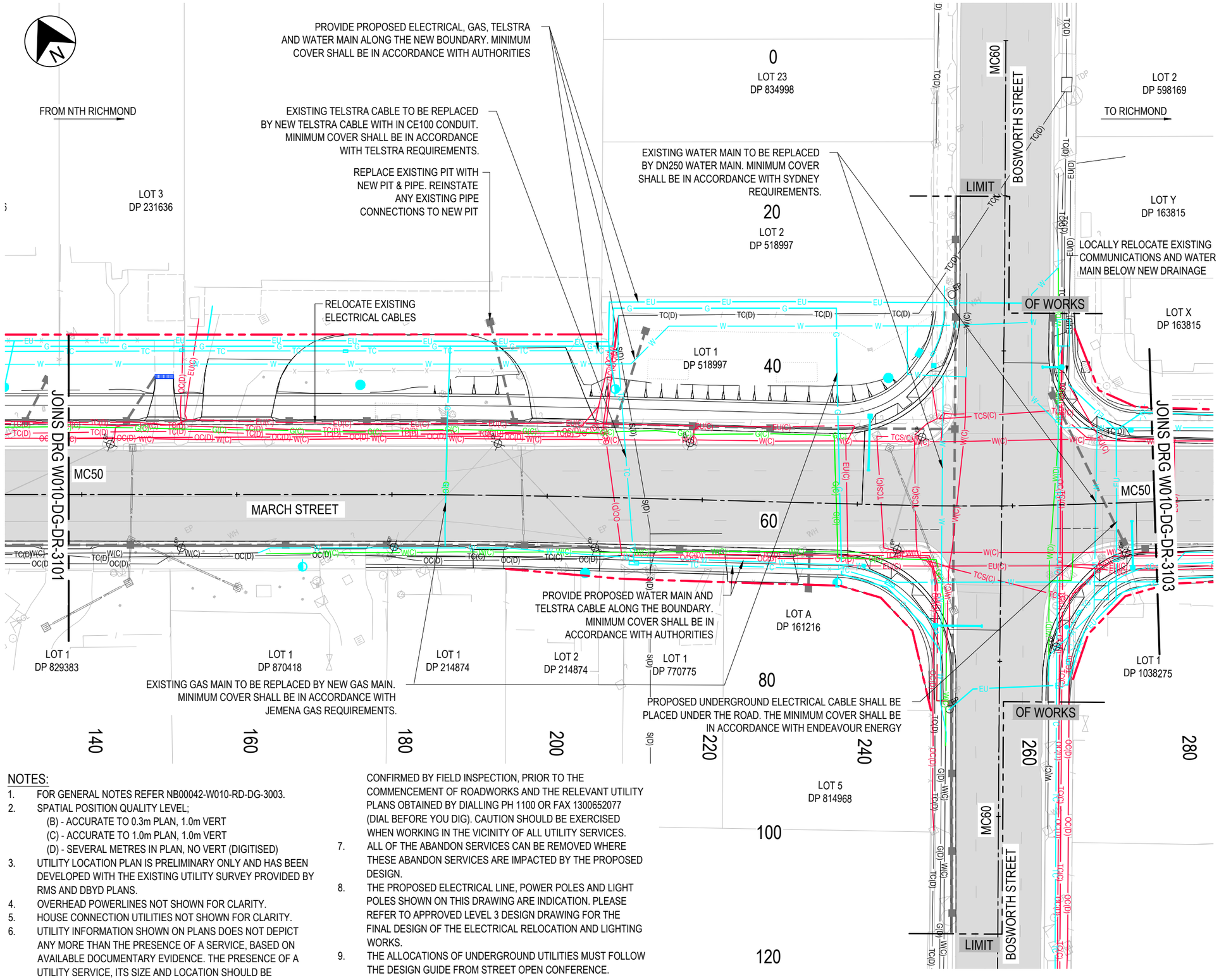

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5. HOUSE CONNECTION UTILITIES NOT SHOWN FOR CLARITY.
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8. THE PROPOSED ELECTRICAL LINE, POWER POLES AND LIGHT POLES SHOWN ON THIS DRAWING ARE INDICATION. PLEASE REFER TO APPROVED LEVEL 3 DESIGN DRAWING FOR THE FINAL DESIGN OF THE ELECTRICAL RELOCATION AND LIGHTING WORKS.
9. THE ALLOCATIONS OF UNDERGROUND UTILITIES MUST FOLLOW THE DESIGN GUIDE FROM STREET OPEN CONFERENCE.

REV	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVAL
1	22.03.16	ISSUED FOR CONSTRUCTION	ST	BDP	CT

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DRAFTING CHECK	JE	22.03.16
DESIGNER	DS / HT	22.03.16
DESIGN CHECK	JE	22.03.16
PACKAGE MANAGER	BDP	22.03.16
PROJECT MANAGER	DB	22.03.16

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SCALE 1:500 5 0 5 10 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: A.H.D.

CLIENT: NSW Government — Transport Roads & Maritime Services

CONTRACTOR: Downermouchel

DESIGNER: JACOBS
100 Christie Street
St Leonards, SYDNEY, NSW 2065
AUSTRALIA
Tel: (02) 9928 2100 Fax (02) 9928 2500
Web: www.jacobs.com

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 – MARCH STREET/BOSWORTH STREET
UTILITY COORDINATION PLAN
SHEET 2

FOR CONSTRUCTION

PHASE	RMS REGISTRATION No	
IMP	DS2014/005516	
STATUS	DRAWING No	REV
IFC	NB00042-W010-DG-UT-3102	1

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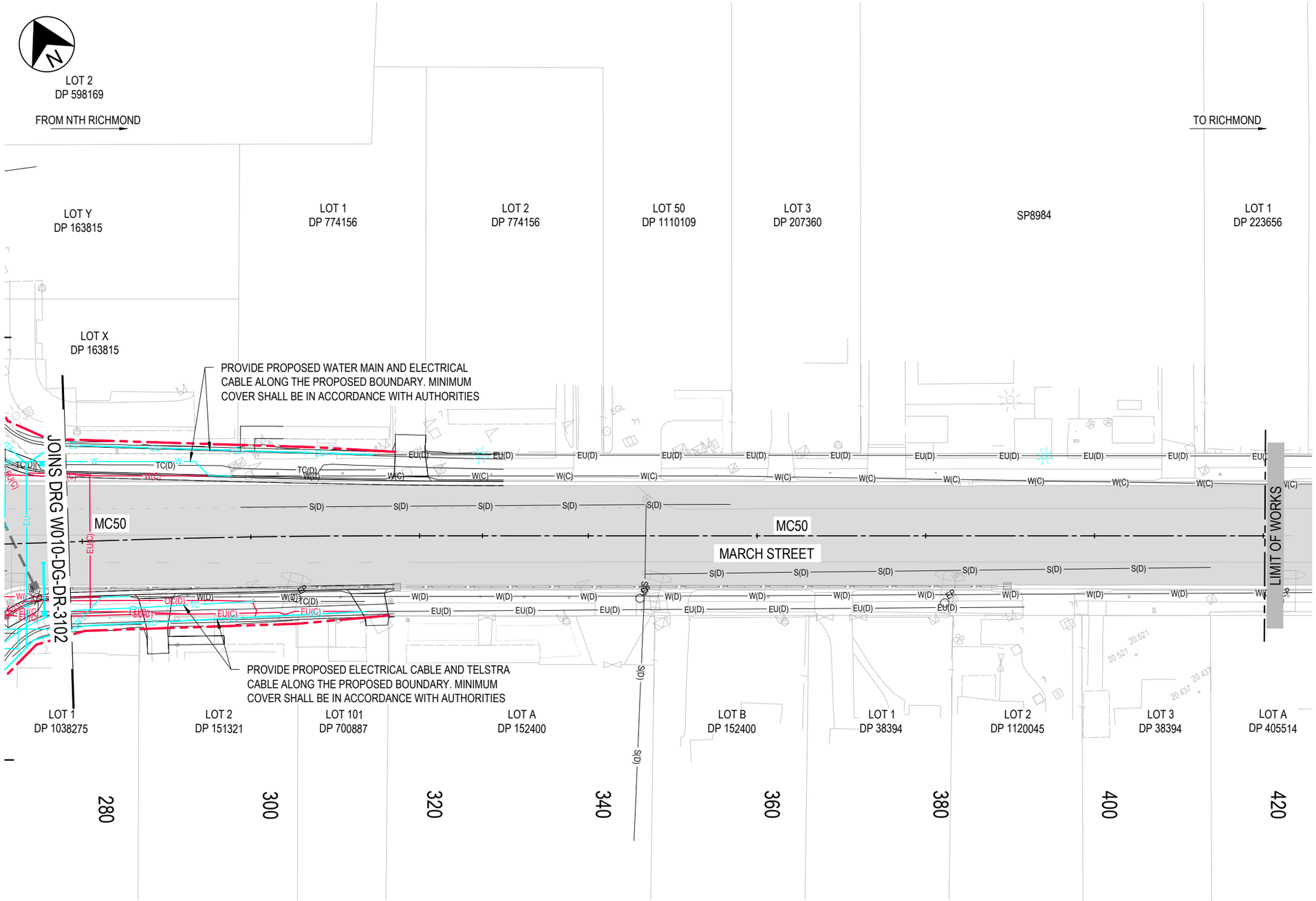

LEGEND

REFERENCE ONLY

- EXISTING PAVEMENT
- EXISTING CADASTRAL BOUNDARY
- LOT 1 — CADASTRAL LOT NUMBER
- DP 782485 — DEPOSITED PLAN NUMBER
- EXISTING FENCE
- PROPOSED BOUNDARY

UTILITY STATUS BY COLOUR

- EXISTING UTILITY TO PRESERVE
- EXISTING UTILITY TO ABANDON
- EXISTING UTILITY TO REMOVE
- UTILITY ADJUSTMENT

UTILITY TYPE

- EU-10 — UTILITY CONFLICT ID REFER TO DR-1141
- UTILITY TYPE (REFER LEGEND)
- EXISTING QUALITY LEVEL (REFER NOTE 2)
- TC(C) — TELEPHONE LINE (UNDERGROUND)
- W(C) — WATER MAIN
- S(D) — SEWER MAIN
- G(C) — GAS MAIN
- EU(D) — ELECTRICAL LINE (UNDERGROUND)
- TC(C) — TELECOM LINE (TELSTRA / OPTUS / NBN)
- OC(D) — OPTICAL FIBRE
- TCS(C) — TRAFFIC CONTROL SIGNAL
- SEWER MANHOLE
- EP — EXISTING POWER POLE
- COMMUNICATIONS
- TPL — TELEPHONE POLE
- WH — WATER HYDRANT
- POWER & COMMUNICATIONS POLE
- PROPOSED POWER POLE
- PROPOSED POWER POLE WITH LIGHT
- STAY CABLE AND ANCHOR
- PROPOSED COMMUNICATIONS PIT
- EXISTING POLE TO REMOVE
- E — ELECTRICAL PIT TO REMOVE
- PROPOSED TRAFFIC CONTROL SIGNAL (TCS)

DRAINAGE & WATER QUALITY

- STORMWATER PIT
- STORMWATER HEADWALL
- EXISTING STORMWATER PIPE
- NEW STORMWATER PIPE

NOTES:

1. FOR GENERAL NOTES REFER NB00042-W010-RD-DG-3003.
2. SPATIAL POSITION QUALITY LEVEL;
   (B) - ACCURATE TO 0.3m PLAN, 1.0m VERT
   (C) - ACCURATE TO 1.0m PLAN, 1.0m VERT
   (D) - SEVERAL METRES IN PLAN, NO VERT (DIGITISED)
3. UTILITY LOCATION PLAN IS PRELIMINARY ONLY AND HAS BEEN DEVELOPED WITH THE EXISTING UTILITY SURVEY PROVIDED BY RMS AND DBYD PLANS.
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PROJECT MANAGER	DB	22.03.16

ORIGINAL DRAWING AT A3 SIZE
SCALE 1:500 5 0 5 10 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: A.H.D.

CLIENT: NSW Government Transport Roads & Maritime Services

CONTRACTOR: Downermouchel

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PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 – MARCH STREET/BOSWORTH STREET
UTILITY COORDINATION PLAN
SHEET 3

FOR CONSTRUCTION

PHASE	RMS REGISTRATION No	
IMP	DS2014/005516	
STATUS	DRAWING No	REV
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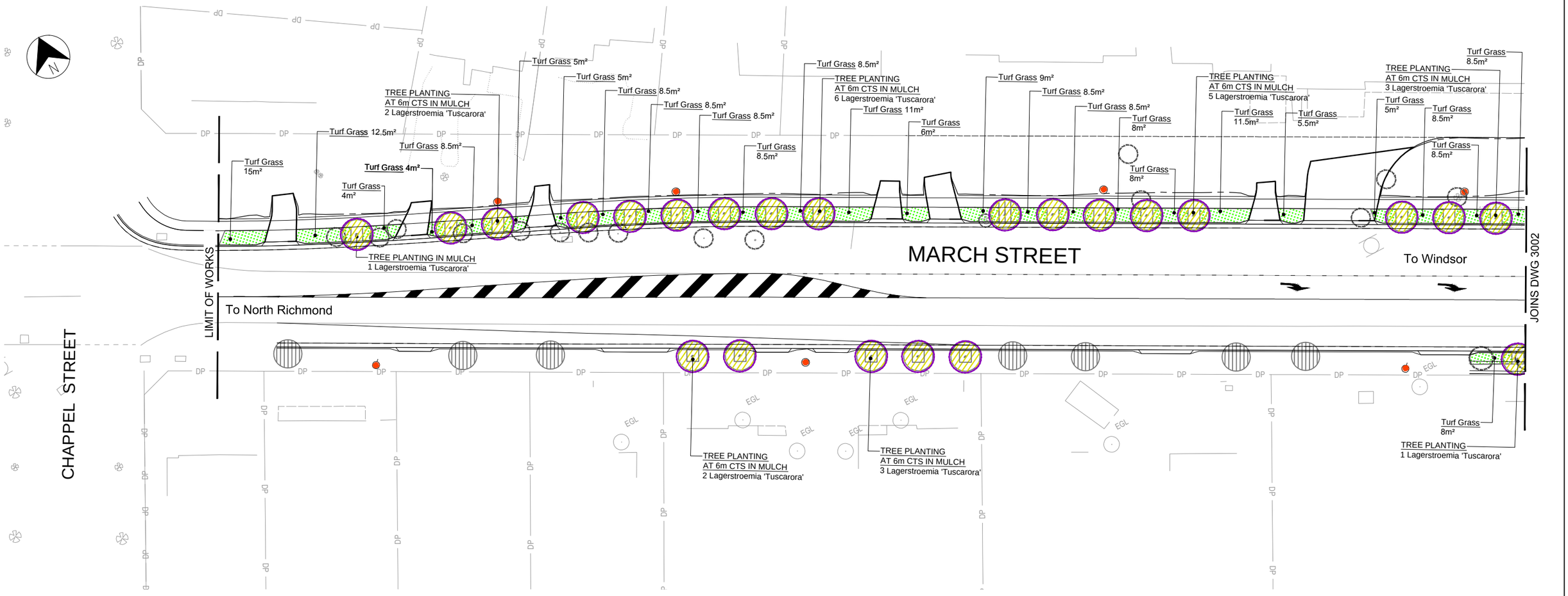

LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPERTY BOUNDARY
- POWER POLES
- TREES TO BE REMOVED
- EXISTING TREES RETAINED
- PLANTING TYPE 1 SMALL TREES - Refer Details 1+4+5
- PLANTING TYPE 2 NATIVE GRASS - Refer Detail 2
- PLANTING TYPE 3 TURF GRASS - Refer Detail 3

Note

1. GENERAL

The landscape drawings are to be read in conjunction with the Engineer's drawings and Project Landscape Specification R179. The Contractor is to locate and record the extent, direction and depth of all utilities and services within the area of the works. The Contractor is not to excavate within 1m of existing underground services without prior approval of Principal. Retain and protect existing trees noted for retention on the landscape drawings.

2. SETOUT

All setting out is to be approved by Principal prior to works.

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	DESIGN CHECK	NC	22.03.16
	PACKAGE MANAGER	NC	22.03.16
	PROJECT MANAGER	NC	22.03.16

ORIGINAL DRAWING AT A3 SIZE
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1:500 AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: A.H.D.

CLIENT: NSW Transport Roads & Maritime Services
CONTRACTOR: Downermouchel
DESIGNER: JACOBS
LANDSCAPE ARCHITECT: Corkery Consulting Landscape Architecture Urban Design

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 - MARCH STREET/BOSWORTH STREET
LANDSCAPE PLAN
SHEET 1 OF 3

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
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FOR CONSTRUCTION

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IMP	DS2014/005514	
STATUS	DRAWING No	REV
IFC	NB00042-W010-DG-LS-3001	1

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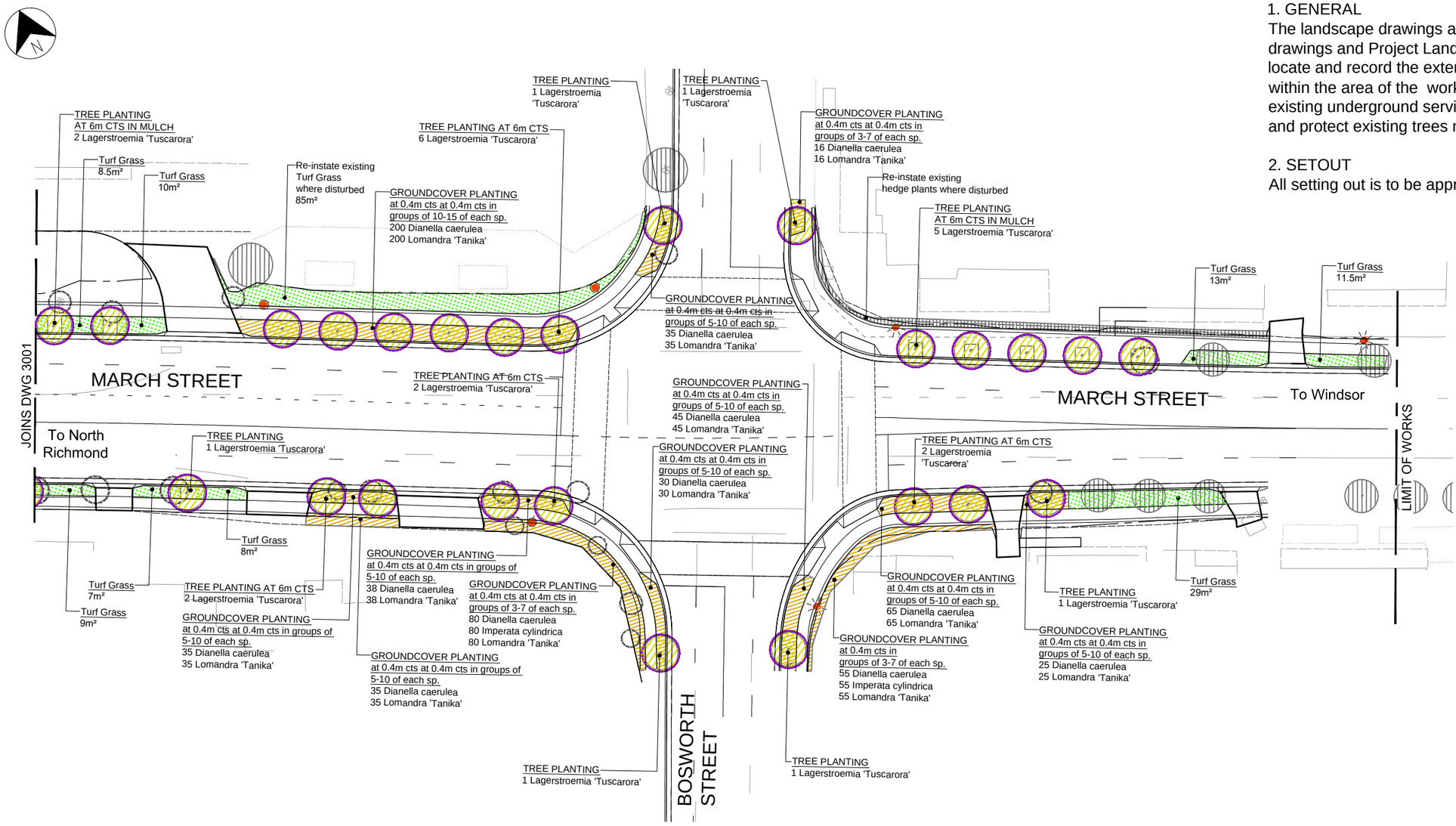

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- PLANTING TYPE 2 — NATIVE GRASS - Refer Detail 2
- PLANTING TYPE 3 — TURF GRASS - Refer Detail 3

PLANT SCHEDULE

BOTANICAL NAME	COMMON NAME	LA-3001	LA-3002	TOTAL	POT SIZE	MATURE HT (M)
Trees						
Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crepe Myrtle	23	25	48	75L	4
Grasses/ Groundcovers						
Dianella caerulea	Flax Lily	0	660	660	140mm	0.5
Imperata cylindrica	Bladys Grass	0	135	135	Tube	0.8
Lomandra longifolia 'Tanika'	Tanika Mat-rush	0	660	660	140mm	0.5
Turf Grass						
Cynodon dactylon (m2)	Common couch	195	181	376	NA	

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ORIGINAL DRAWING AT A3 SIZE

0 10 20m

1:500 AT A3

CO-ORDINATE SYSTEM: MGA Zone 56 HEIGHT DATUM: A.H.D.

CLIENT: NSW Government Transport Roads & Maritime Services

CONTRACTOR: Downermouchel

DESIGNER: JACOBS

LANDSCAPE ARCHITECT: Corkery Consulting Landscape Architecture Urban Design

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 - MARCH STREET/BOSWORTH STREET
LANDSCAPE PLAN
SHEET 2 OF 3

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STATUS	DRAWING No	1
IFC	NB00042-W010-DG-LS-3002	

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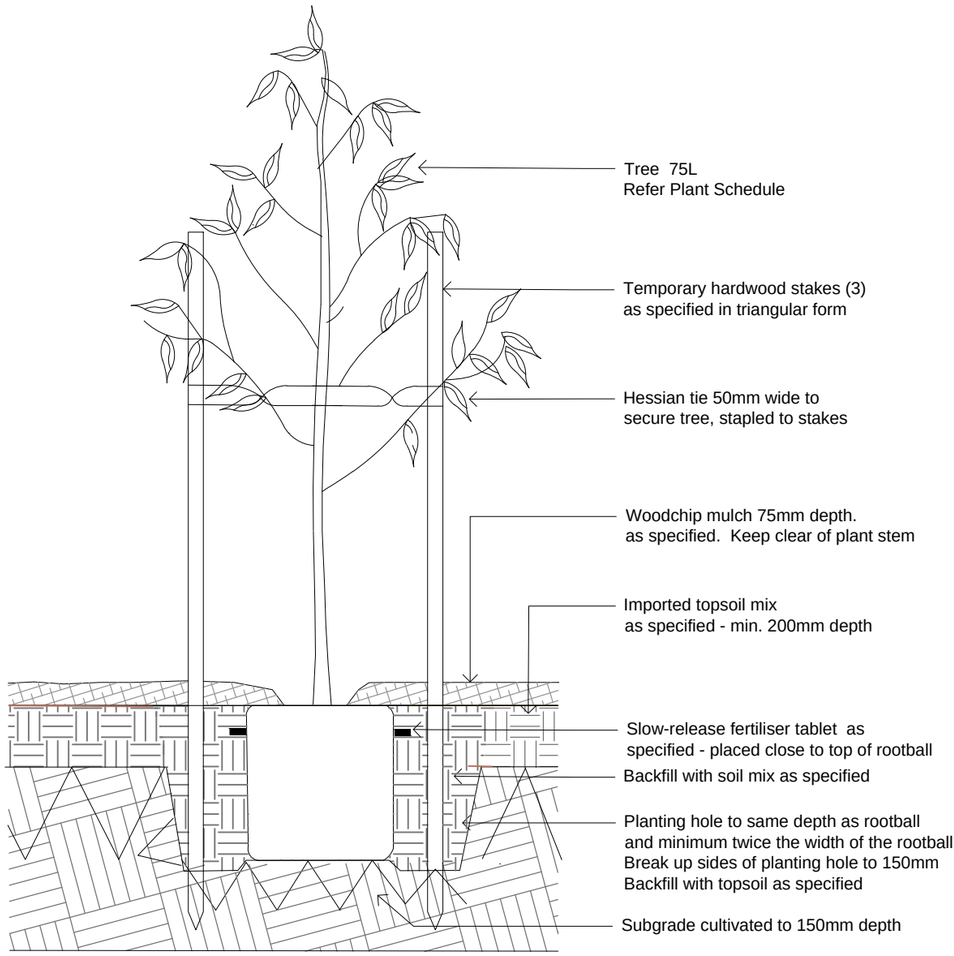
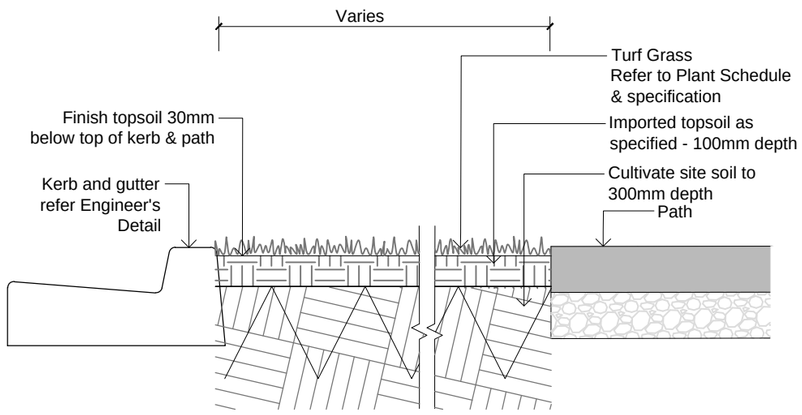
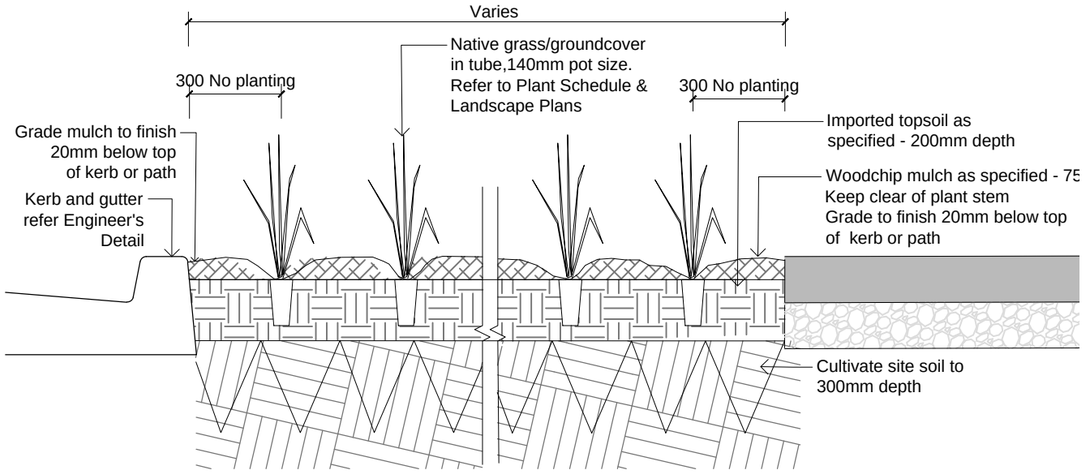


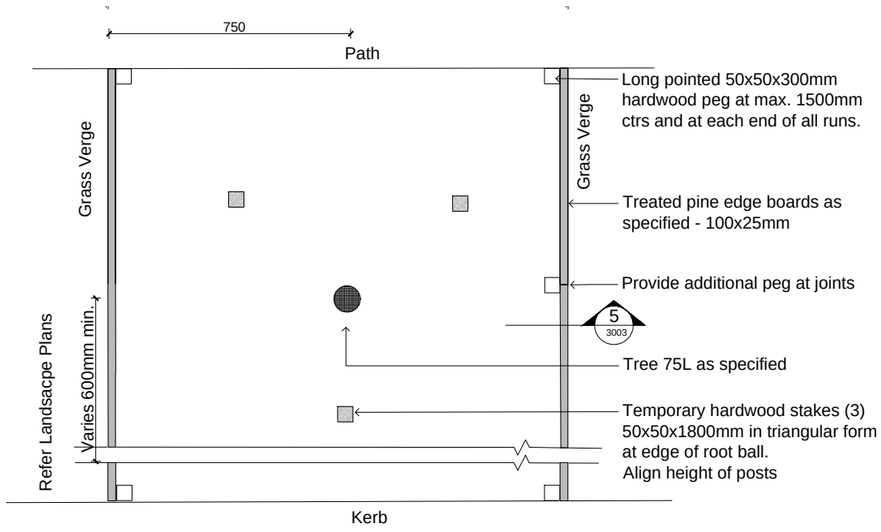
1 / 3003 PLANTING TYPE 1 : 75L TREE
Detail Section Scale 1:20



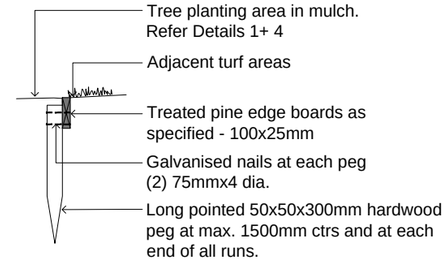
3 / 3003 PLANTING TYPE 3: TURF GRASS
Detail Section Scale 1:20



2 / 3003 PLANTING TYPE 2 : NATIVE GRASS
Detail Section Scale 1:20



4 / 3003 TIMBER EDGE FOR TREE PLANTING IN GRASS VERGE Detail Plan Scale 1:20



5 / 3003 TIMBER EDGE
Detail Section Scale 1:20

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PROJECT MANAGER	NC	22.03.16

ORIGINAL DRAWING AT A3 SIZE
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: A.H.D.

CLIENT: NSW Government Transport Roads & Maritime Services
CONTRACTOR: Downermouchel
DESIGNER: JACOBS
LANDSCAPE ARCHITECT: Corkery Consulting Landscape Architecture Urban Design

PROJECT
HAWKESBURY CITY COUNCIL
RMS STEWARDSHIP MAINTENANCE CONTRACT - SYDNEY WEST
RICHMOND BRIDGE APPROACHES
SITE 3 -MARCH STREET/BOSWORTH STREET
LANDSCAPE DETAILS
SHEET 3 OF 3

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
14-008-PLNT.dwg

FOR CONSTRUCTION

PHASE	RMS REGISTRATION No	
IMP	DS2014/005514	
STATUS	DRAWING No	REV
IFC	NB00042-W010-DG-LS-3003	1

Appendix B

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 may cause minor short-term environmental impacts on the local community, such as potential landscape and visual amenity impacts from the removal of street trees in a predominantly residential area. However, the potential impacts would be minimised via the implementation of the safeguards detailed in the Project REF and this addendum REF, CEMP and CNVMP.	Minor short-term negative
b. Any transformation of a locality? The proposed modification would not transform the locality. The site would be remediated upon completion of the works.	Nil
c. Any environmental impact on the ecosystems of the locality? The proposed modification is not anticipated to have impacts on the ecosystem of the locality. Any potential impacts would be minimised via the implementation of the safeguards detailed in the Project REF and this addendum REF.	Nil
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The proposed modification would not reduce the aesthetic, recreational, scientific or other environmental quality of the locality.	Nil
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? The proposed modification involves the removal of a tree that is part of a LEP heritage item however the potential impacts to the item as a whole would be minimised via the implementation of the safeguards and mitigation measures detailed in section 6.2.	Minor negative
f. Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act* 1974)? The proposed modification would not impact on the habitat of any protected fauna.	Nil
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The proposed modification would not endanger and species of animal, plant or other life form, whether living on land, in water or in the air.	Nil
h. Any long-term effects on the environment? No long-term negative effects on the environment are expected as a result of the proposed modification.	Nil
i. Any degradation of the quality of the environment? The proposed modification will have no impact on the degradation of the quality of the environment.	Nil

Factor	Impact
j. Any risk to the safety of the environment? No risk to the safety of the environment is expected because of the proposed modification.	Nil
k. Any reduction in the range of beneficial uses of the environment? There would be no reduction in the range of beneficial uses of the environment arising from the proposed modification.	Nil
l. Any pollution of the environment? The proposed modification would potentially cause minor noise pollution however, these impacts would be minimised with the implementation of the safeguards provided in the Project REF and this addendum REF, CEMP and CNVMP.	Short term negative
m. Any environmental problems associated with the disposal of waste? The proposed modification would generate additional green waste. It is not anticipated that there would be any environmental problems associated with the disposal of waste.	Negligible
n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The proposed modification would not significantly increase demands on resources, which are in, or likely to become in short supply.	Nil
o. Any cumulative environmental effect with other existing or likely future activities? There are no known existing or likely future activities that would result in cumulative effects.	Nil
p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? The proposed modification would not impact on coastal processes and coastal hazards.	Nil

Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, 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 Water, Agriculture and the Environment.

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?	Nil
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 C

Statutory consultation checklists

ISEPP

Certain development types

Development type	Description	Yes / No	If 'yes' consult with	ISEPP clause
Car Park	Does the project include a car park intended for the use by commuters using regular bus services?	No	Hawkesbury City Council	ISEPP cl. 95A
Bus Depots	Does the project propose a bus depot?	No	Hawkesbury City Council	ISEPP cl. 95A
Permanent road maintenance depot and associated infrastructure	Does the project propose a permanent road maintenance depot or associated infrastructure such as garages, sheds, tool houses, storage yards, training facilities and workers' amenities?	No	Hawkesbury City Council	ISEPP cl. 95A

Development within the Coastal Zone

Issue	Description	Yes / No / NA	If 'yes' consult with	ISEPP clause
Development with impacts on certain land within the coastal zone	Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	N/A	N/A	ISEPP cl. 15A

Note: See interactive map here: ***https://www.planning.nsw.gov.au/policy-and-legislation/coastal-management***. Note the coastal vulnerability area has not yet been mapped.

Note: a certified coastal zone management plan is taken to be a certified coastal management program

Council related infrastructure or services

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s).	ISEPP clause
Stormwater	Are the works likely to have a *substantial* impact on the stormwater management services which are provided by council?	No	Hawkesbury City Council	ISEPP cl.13(1)(a)
Traffic	Are the works likely to generate traffic to an extent that will *strain* the capacity of the existing road system in a local government area?	No	Hawkesbury City Council	ISEPP cl.13(1)(b)

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s).	ISEPP clause
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	Hawkesbury City Council	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?	No	Hawkesbury City Council	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?	No	Hawkesbury City Council	ISEPP cl.13(1)(e)
Road & 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	Hawkesbury City Council	ISEPP cl.13(1)(f)

Local heritage items

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s)	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 heritage significance of the item/area are more than *minor* or *inconsequential*?	Yes, Impacts are not expected.	Hawkesbury City Council.	ISEPP cl.14

Flood liable land

Issue	Potential impact	Yes / No	If 'yes' consult with local Council(s)	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	Hawkesbury City Council State Emergency Service	ISEPP cl.15

Public authorities other than councils

Issue	Potential impact	Yes / No	If 'yes' consult with	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*, or on land acquired under that Act?	No	DPIE	ISEPP cl.16(2)(a)
National parks and reserves	Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No	DPIE	ISEPP cl. 16(2)(b)
Aquatic reserves and marine parks	Are the works adjacent to an aquatic reserve or a marine park declared under the *Marine Estate Management Act 2014*?	No	Department of Industry	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	Sydney Harbour Foreshore Authority	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	Rural Fire Service	ISEPP cl.16(2)(f)
Artificial light	Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	No	Director of the Siding Spring Observatory	ISEPP cl. 16(2)(g)

Issue	Potential impact	Yes / No	If 'yes' consult with	ISEPP clause
Defence communications buffer land	Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	No	Secretary of the Commonwealth Department of Defence	ISEPP cl. 16(2)(h)
Mine subsidence land	Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	No	Mine Subsidence Board	ISEPP cl. 16(2)(i)

Growth Centres SEPP

Issue	Potential impact	Yes / No	If 'yes' consult with	SEPP clause
Clearing native vegetation	Do the works involve clearing native vegetation (as defined in the *Local Land Services Act 2013)* on land that is not ***subject land*** (as defined in cl 17 of schedule 7 of the *Threatened Species Conservation Act 1995*)?	No	Department of Planning, Industry and Environment	SEPP 18A

Appendix D

Noise estimator tool results

Construction Noise Estimator

Please input information into yellow cells
Please pick from drop-down list in orange cells

Project name	Richmond Bridge Approaches site 3
Scenario name	Tree Removal
Receiver address	March Street
Select area ground type	Developed settlements (urban and suburban areas)
Select type of background noise level input	Representative Noise Environment

		Representative Noise Environment	User Input
Noise area category		R3	
RBL or L_{A90} Background level (dB(A))	**Day**	50	
	Evening	45	
	Night	40	
$L_{Aeq(15minute)}$ Noise mangement level (dB(A))	**Day**	60	
	Day (OOHW)	55	
	Evening	50	
	Night	45	

Is all plant at the same representative distance to the receiver? Y/N	Y
Representative distance (m)	5

All at Representative Distance

Steps:
1. Enter project name (cell C9).
2. Enter scenario name (cell C10).
3. Enter receiver address (cell C11).
4. Select area ground type (cell C12) - water, undeveloped green fields (e.g. rural areas with isolated dwellings) or developed settlements (e.g. urban and suburban areas)
5. Select the type of background noise level input - Representative noise environment (to make assumptions) or user input (where noise monitoring data is available):
   (a) where representative noise environment is selected - select the appropriate noise area category (cell C16). The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
   (b) where user input is selected - enter the measured background noise level for each time period (cells D17 to D19).
6. Is all plant at the same representative distance to the receiver? Select Y or N (cell C24):
   (a) where Y is selected - enter the representative distance in cell C25.
   (b) where N is selected - go to step #7
7. For the scenario (e.g. shallow excavation), select plant from the drop-down list in cells A28 to A47 (e.g. dump trucks + excavator).
   (a) enter quantity for each selected plant in cells D28 to D47.
   (b) where N is selected from step #6 - enter the distance to receiver for each individual plant in cells E28 to E47.
   (c) is there line of sight to receiver? select from drop down list in cells F28 to F47. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier.
8. Identify the level above background and/or noise mangement level (see rows 57 to 62).
9. Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list.
10. Identify and implement feasible and reasonable additional mitigation measures (see rows 63 to 65).
11. Document a summary report detailing:
   (a) project description (including location, duration, hours of work, construction methodology, plant , potentially impacted receivers, etc.).
   (b) background noise levels.
   (c) noise management levels .
   (d) predicted noise levels for each time period.
   (e) sleep disturbance affected distance for night works.
   (f) mitigation measures.
   (g) team member responsible for implementing mitigation measures and managing noise and vibration.

Type/ model plant (See Sources Sheet)	SWL L_{Aeq} (dB(A))	SPL @7m (dB(A))	Quantity	Individual distance to receiver (m)	Is there line of sight to receiver? Y/N	Quantity correction (dBA)	Shielding correction (dBA)	Distance used in calculation (m)	Contribution SPL (dB(A))
4-5hp Chainsaw	114	89	2	5	Yes	3	0	5	95
40-50hp Tub grinder & mulcher	116	91	1	10	Yes	0	0	5	94
Small Hand Tools	105	80	2	5	Yes	3	0	5	86
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888
					Yes	0	0		-888

Total SPL $L_{Aeq(15minute)}$ (dB(A))	***98***

		Residential receiver	*Non-residential receivers*						
			Classroom at schools and other educational institutions	*Hospital wards and operating theatres*	*Place of worship*	*Active recreation*	*Passive recreation*	*Industrial premise*	*Offices, retail outlets*
Noise Management Level (dB(A))	**Standard hours**	***60***	**55**	**65**	**55**	**65**	**60**	**75**	**70**
	Day (OOHW)	***55***	**55**	**65**	**55**	**65**	**60**	**75**	**70**
	OOHW Period 1	***50***		**65**	**55**	**65**	**60**	**75**	**70**
	OOHW Period 2	***45***		**65**	**55**			**75**	**70**
Level above background (dB(A))	**Standard hours**	***48***							
	Day (OOHW)	***48***							
	OOHW Period 1	***53***							
	OOHW Period 2	***58***							
Level above NML (dB(A))	**Standard hours**	***38***	**43**	**33**	**43**	**33**	**38**	**23**	**28**
	Day (OOHW)	***43***	**43**	**33**	**43**	**33**	**38**	**23**	**28**
	OOHW Period 1	***48***		**33**	**43**	**33**	**38**	**23**	**28**
	OOHW Period 2	***53***		**33**	**43**			**23**	**28**
Additional mitigation measures	**Standard Hours**	***N, V, PC, RO***	**N, V, PC, RO**	**N, V, PC, RO**	**N, V, PC, RO**	**N, V, PC, RO**	**N, V, PC, RO**	**N, V, PC, RO**	**N, V, PC, RO**
	Day (OOHW)	***V, IB, N, R1, DR, PC, SN***	**V, IB, N, R1, DR, PC, SN**	**V, IB, N, R1, DR, PC, SN**	**V, IB, N, R1, DR, PC, SN**	**B, N, R1, DR, PC,**	**3, N, R1, DR, PC**	**V,N, R1, DR**	**3, N, R1, DR, PC, SN**
	OOHW Period 1	***V, IB, N, R1, DR, PC, SN***		**V, IB, N, R1, DR, PC, SN**	**V, IB, N, R1, DR, PC, SN**	**B, N, R1, DR, PC,**	**3, N, R1, DR, PC**	**V,N, R1, DR**	**3, N, R1, DR, PC, SN**
	OOHW Period 2	***AA, V, IB, N, PC, SN, R2, DR***		**AA, V, IB, N, PC, SN, R2, DR**	**AA, V, IB, N, PC, SN, R2, DR**	**V, IB, N, PC, SN, R2, D**			**IB, N, PC, SN, R2, DR**

Abbreviation	Measure
N	Notification (letterbox drop or equivalent
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Appendix E

AHIMS searches and PACHCI assessment

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : RBA site3

Client Service ID : 430027

Aidann Stathis

13/357 Military Road
Mosman New South Wales 2088

Attention: Aidann Stathis

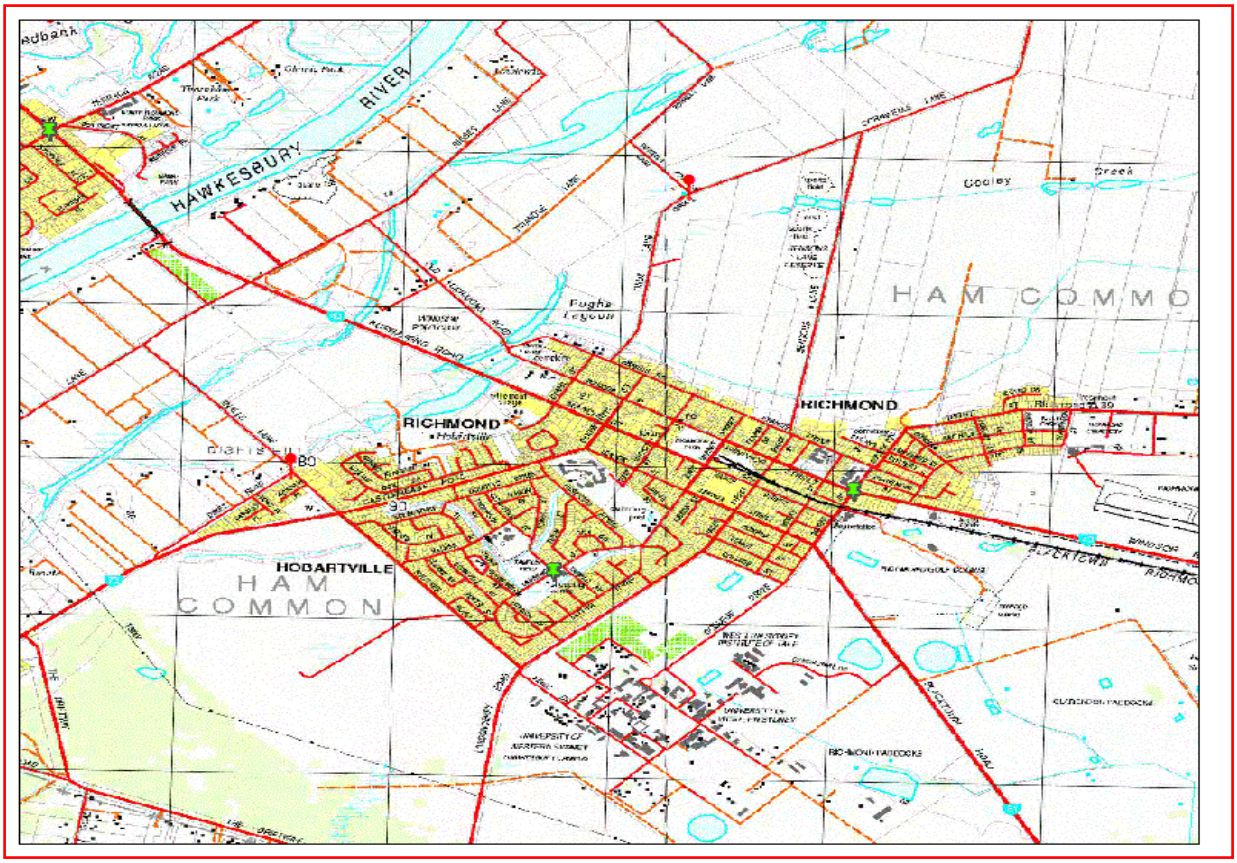
Email: aidann@hutchisonweller.com

Date: 24 June 2019

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -33.6153, 150.7186 - Lat, Long To : -33.5792, 150.7758 with a Buffer of 50 meters, conducted by Aidann Stathis on 24 June 2019.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

6	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : RBA site3

Client Service ID : 430027

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2478	Beaumont Ave (BA-OS-1)	AGD	56	288750	6281670	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Phil Hunt					**Permits**		
52-2-0851	Wilton Allens Creek Bridge Site 8	AGD	56	288420	6279900	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	384,1738
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**		
45-5-1062	Richmond Markerplace 1;RM 1;	AGD	56	291260	6279650	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Doctor.Jo McDonald					**Permits**	838,963	
45-5-2404	RWP 1;	AGD	56	292850	6278450	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Stephanie Garling					**Permits**	938	
45-5-2740	ISF	AGD	56	291750	6280900	Open site	Valid	Artefact : -		3327
	Contact	**Recorders**	Ms.Alison Nightingale					**Permits**		
45-5-5239	Markwell Place AFT 1	GDA	56	288331	6278754	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Milicich					**Permits**		

Report generated by AHIMS Web Service on 26/09/2019 for Aidann Stathis for the following area at Lat, Long From : -33.6153, 150.7186 - Lat, Long To : -33.5792, 150.7758 with a Buffer of 50 meters. Additional Info : MWREF. Number of Aboriginal sites and Aboriginal objects found is 6


4552478
Old Kurrajong Road
Kurrajong Road
Chapel Street
Bosworth Street
March Street
4552740
5220851
4551062
4555239
4552404
N
0
250
500 m
Legend
Heritage Sites
4551062
4552404
4552478
4552740
4555239
5220851
Footprint
Ancillary Site Location 2
Ancillary Site Location 1

Transport
Roads & Maritime
Services

Tuesday 1 October, 2019

Georgia Barnes
Project Manager
Roads and Maritime Services

Dear Georgia,

Preliminary assessment results for the 'Richmond Bridge and Approaches – Addendum 2 and Ancillary Sites' based on Stage 1 of the *Procedure for Aboriginal cultural heritage consultation and investigation* (the procedure).

The project, as indicated in the checklist attached was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project works are within the existing road corridor (disturbed zone).
- The project is unlikely to harm known Aboriginal objects or places (AHIMS sites).
- The AHIMS search did not indicate moderate to high concentrations of Aboriginal objects or places in the study area.
- The study area does contain landscape features that indicate the presence of Aboriginal objects, based on the Office of Environment and Heritage's *Due diligence Code of Practice for the Protection of Aboriginal objects in NSW* and the Roads and Maritime Services' procedure, however, the cultural heritage potential of the study area appears to be reduced due to past disturbances in the form of the construction of the existing roads within the study area.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

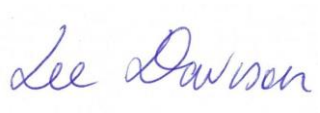
If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

Please ensure that works remain within the designated areas as per the REF.

RMS staff and/or contractors should be aware of the potential of Aboriginal objects (including skeletal remains) being discovered during the course of the project, if this occurs all works in the vicinity of the find must cease. Follow the steps outlined in the Roads and Maritime Services' *Unexpected Archaeological Finds Procedure*.

For further assistance in this matter please do not hesitate to contact me.

Yours sincerely



Lee Davison
Aboriginal Cultural Heritage Officer
Sydney

Appendix F

Community Consultation

January 2020

Intersection improvements at March and Bosworth Streets, Richmond from Tuesday 21 January 2020

The Australian and NSW governments are improving traffic flow and reducing congestion on the Kurrajong Road, March Street and Bells Line of Road approaches to Richmond Bridge. Transport for NSW has completed the first two stages of this upgrade at the Kurrajong Road and Old Kurrajong Road intersection at Richmond and the Bells Line of Road and Grose Vale Road intersection at North Richmond. Road users in this area are now benefiting from improved travel times in the area.

We are now starting work on the final stage of these improvements at the March and Bosworth Street intersection, Richmond. Work will begin from **Tuesday 21 January** and will continue for the rest of 2020.

Key features of the upgrade include:

- a new dedicated right turn bay for vehicles travelling east on March Street and turning right to travel south on Bosworth Street
- vehicles travelling west on March Street will not be able to turn right on to Bosworth Street
- extending the 'No Stopping' and restricted parking zones on both sides of March Street between Chapel Street and approximately 100 metres east of Bosworth Street.

We have included a map on the next page to show the above changes, which will take place progressively throughout the work. We will continue to update you as work progresses.

Our work schedule

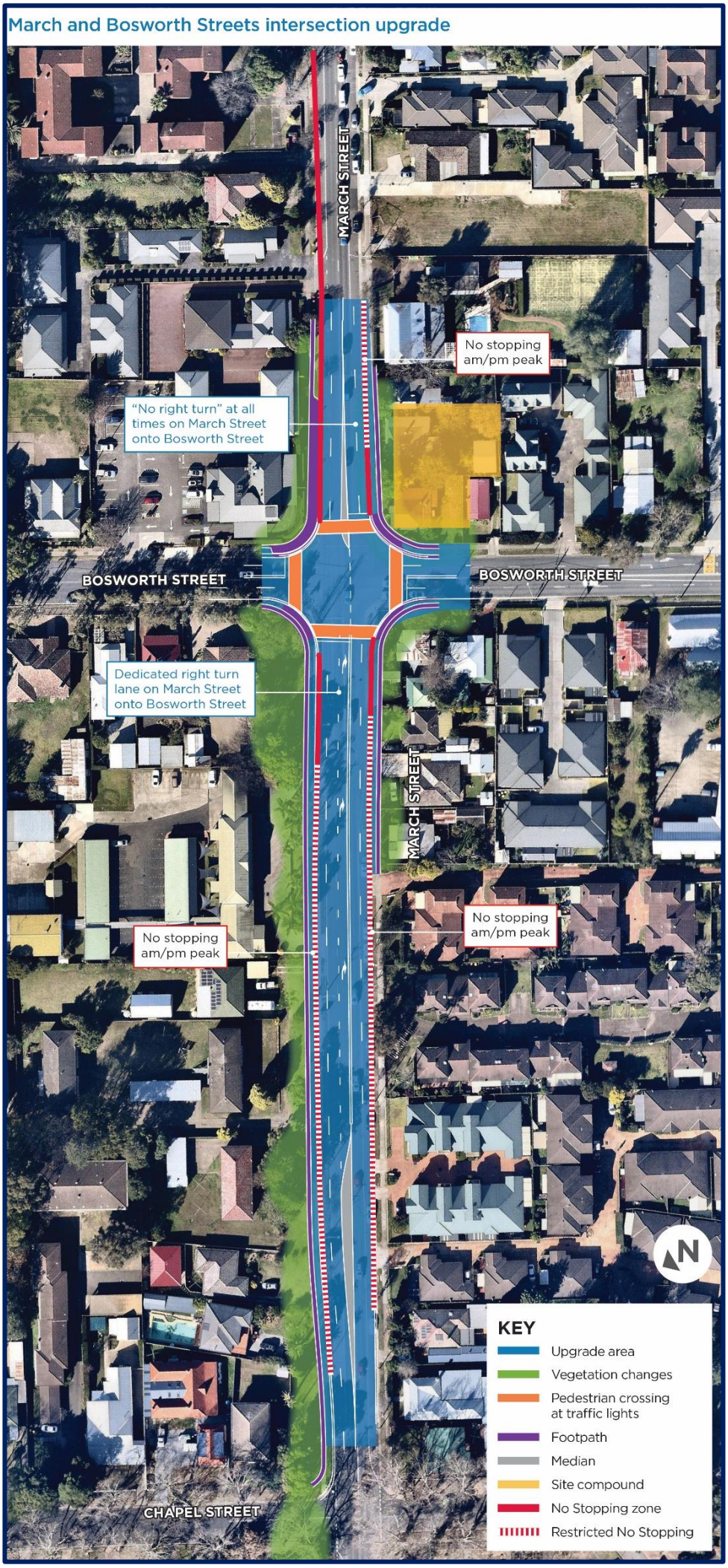
We will start the intersection upgrade with site preparation work. This work includes:

- utility investigations to locate underground utility services and utility relocation
- site surveys
- demolition work to prepare and establish a site compound
- installing barriers and fencing
- adjusting some nearby property boundaries
- removing some vegetation

These activities will start from **Tuesday 21 January** and we expect to complete this work by early April.

Our day work hours will be from **7am** to **6pm Mondays** to **Fridays** and **8am** to **1pm** on **Saturdays**. Our night work hours will be from **8pm** to **5am** between **Sunday** and **Friday**, weather permitting. We will not work on public holidays.

We will only work up to two night shifts per week at this stage. Up to five nights per week will be required in the future to minimise disruption to the road network and reduce the overall length of time we are working in the area. We will ensure we notify residents and businesses before changing our working schedule to include any increased amount of night work shifts.



How will the work affect you?

Our work may be noisy at times, but we will do everything we can to minimise its impact, including completing the noisier tasks by **11pm**.

To minimise disruption to residents, businesses and road users, we will not work more than two nights in any week.

Traffic changes

There will be temporary traffic changes during our work hours to ensure the work zone is safe.

Please keep to speed limits and follow signs and traffic controllers' directions. For the latest traffic updates, you can call 132 701, visit livetraffic.com or download the Live Traffic NSW App.

Contact

If you have any questions, please contact our delivery partner DM Roads on 1800 332 660, nsw_projects@dmroads.com.au.

For more information on our projects, visit rms.work/richmond improvements

Thank you for your patience during this important work.

131 450

If you need help understanding this information, please contact the Translating and Interpreting Service on **131 450** and ask them to call us on 1800 332 660.

January 2020

Sorry we missed you

Richmond Intersection Improvements

Transport for NSW will begin work to improve the March and Bosworth Street intersection from Tuesday 21 January 2020.

We stopped by today to explain the upcoming utility relocation work, property boundary adjustments and vegetation removal.

If you have any questions about the project, please call our delivery partner DM Roads on 1800 332 660 or email nsw_projects@dmroads.com.au

For more information on the project, visit rms.work/richmond improvements

131 450 If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 332 660.

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131 450 If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 413 640.

January 2020

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Transport for NSW will begin work to improve the March and Bosworth Street intersection from Tuesday 21 January 2020.

We stopped by today to explain the upcoming utility relocation work, property boundary adjustments and vegetation removal.

If you have any questions about the project, please call our delivery partner DM Roads on 1800 332 660 or email nsw_projects@dmroads.com.au

For more information on the project, visit rms.work/richmond improvements

131 450 If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 413 640.

May 2020

Vegetation removal on the March and Bosworth Streets intersection upgrade, Richmond

The Australian and NSW governments are improving traffic flow and reducing congestion on the March and Bosworth streets intersection.

What is happening?

We began some early work on this project in February. We recently completed property adjustments for identified properties on March Street. We are continuing property adjustment work at the intersection. We have also started removing some trees and vegetation, in line with the project's approval.

Our work over the coming months includes:

- continuing property adjustments near the intersection
- utility investigations to locate underground utility services and utility relocation
- installing barriers and fencing
- removing vegetation
- excavation work to relocate underground utilities

Addendum to the Review of Environmental Factors

Following community consultation, Transport for NSW approved the Review of Environmental Factors (REF) for this project in August 2016. The REF is based on the project's concept design which identified 35 trees to be removed to make way for the intersection upgrade.

Since 2016, we have progressed the detailed design which has identified the need to remove an additional 30 trees within the project area.

These trees are located where we need to adjust and relocate utilities, and build a new kerb and footpath for the road widening that will ease congestion and improve travel times in the area.

We are now preparing to amend the REF for the project, to remove these additional trees. The report will also propose additional mitigation measures to reduce the visual impact of removing these trees. This will include planting new trees and vegetation as part of the project's landscape design.

A draft landscaping plan from the REF is shown on the next page and we will continue to engage with Council and the community before finalising the design.

Contact

If you have any questions or comments about the proposed tree removal or our landscaping plan, you can contact our delivery partner DM Roads at any time.

If you would like your feedback considered in the Addendum to the REF, please provide feedback by **Friday 15 May 2020** on the details below:

Phone: **1800 332 660**
Email: **nsw_projects@dmroads.com.au**
For more information on our projects, visit **rms.nsw.gov.au.**

131 450

If you need help understanding this information, please contact the Translating and Interpreting Service on 131 450 and ask them to call us on 1800 332 660.

Additional tree removal

The additional 30 trees that have been identified for removal are marked by blue circles in the map below. The trees are exotic species located on Transport land at the edge of the road and on the nature strip. We have engaged with residents with an identified tree in front of their property about this proposed tree removal.

Replacement landscaping plans

A new pedestrian footpath will be built on the northern side of March Street. The new footpath will be lined with turf and small tree plantings. A draft landscaping plan is shown below and we are working with landscape designers and Hawkesbury City Council to further develop our plan and choose plants that best fit with the character of the local area.

Appendix G Biodiversity Report

20 December 2018

Olivia Davies
DM Roads
166 Epping Rd
LANE COVE NSW 2066

Dear Olivia,

Re: Biodiversity assessment for March Street and Bosworth Street upgrade works, Richmond, NSW

Project no. 28950

Biosis Pty Ltd was commissioned by DM Roads to complete a biodiversity assessment to describe the ecological values associated with the proposed works for upgrades to the March St/Bosworth Street intersection, Richmond NSW (Appendix 1; Figure 1).

Biosis understands that DM Roads proposes to undertake the upgrades to decrease traffic congestion and wait times associated with Richmond Bridge (the project). These works will result in the removal of vegetation from both sides of the road extending from the March Street/Bosworth Street intersection to the March Street/Chapel Street intersection. These works are one section of larger works to improve road conditions along all approaches to Richmond Bridge.

This ecological assessment will form part of a Review of Environmental Factors (REF) to be prepared by DM Roads, on behalf of NSW Roads and Maritime Service (Roads and Maritime), under Division 5.1 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

Under Section 5.5 of the EP&A Act, a determining authority, in its consideration of an activity, has a duty to examine and take into account all matters affecting or likely to affect the environment. For the purposes of Part 5.1 of the EP&A Act, Section 7.8 of the NSW Biodiversity Conservation Act 2016 (BC Act), it states that an activity is to be regarded as an activity likely to significantly affect the environment if it is likely to significantly affect threatened species. Section 7.3 of the BC Act provides tests for determining whether an activity is likely to significantly affect threatened species or ecological communities, or their habitats.

In addition to the consideration of threatened species under Section 7.3 of the BC Act, other factors that must be taken into account when preparing a REF are listed in Clause 228 of the Environmental Planning and Assessment Regulation 2000. The purpose of the REF is therefore to determine if the proposed activity is likely to have a significant impact on the environment and/or threatened species, and determine if a higher level of assessment is required. If the proposed activity is likely to have a significant impact on the environment, an Environmental Impact Statement (EIS) is required. If the significant impact is on threatened species, the EIS may be dispensed with or accompanied by a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR).

The primary objective of this ecological assessment is to identify the presence of any threatened ecological communities within the study area and where applicable, assess the impacts of the project on any threatened species, populations and/or ecological communities (biota), or their habitat, listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Tim Donnan (Environmental Consultant) of DM Roads on 26 October 2018, in addition to a site assessment undertaken 20 November 2018.

Background

The study area is approximately 0.82 hectares and is defined by the land associated with the road corridor on both sides of March Street from Bosworth Street to 10 metres past Chapel Street (Figure 1). The study area primarily consists of road surface with vegetation occurring on both side of the road. The study area occurs within the Hawkesbury Local Government Area (LGA) and is zoned, SP2 Infrastructure. The surrounding land use consists of commercial and residential properties located within the suburb of Richmond NSW.

Regional soil landscape mapping indicates that the study area occurs on the Richmond soil landscape (Bannerman and Hazelton 1990). The Richmond fluvial soil landscape is characterised by quaternary terraces of the Nepean and Georges Rive. This landscape has been extensively cleared pf vegetation and subjected to intensive urbanisation. The underlying soil and geology do not reflect the floristic composition of the vegetation communities observed due to the clearing that has been seen within the study area.

Method

Database and literature review

Prior to undertaking the field investigation, information provided by DM Roads as well as other key information was reviewed, including:

- Commonwealth Department of the Environment and Energy (DEE) Protected Matters Search Tool for matters of national environmental significance listed under the EPBC Act.
- NSW Office of Environment and Heritage (OEH) BioNet Atlas of NSW Wildlife, for items listed under the BC Act.
- The NSW Department of Primary Industries (DPI) Spatial Data Portal FM Act listed threatened species, populations and communities.
- NSW DPI WeedWise database for *Biosecurity Act 2015* (Biosecurity Act) listed Priority listed weeds for the Fairfield Local Council Area within the Greater Sydney Local Land Services region.
- *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands* (Tozer et al. 2010).

The implications for the project were assessed, in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999*.
- *Environmental Planning and Assessment Act 1979*.
- *Biodiversity Conservation Act 2016.*
- *Local Land Services Act 2016.*
- *Biosecurity Act 2015.*

Field investigation

A field investigation of the study area was undertaken on 20 November 2018 by Averill Wilson (Ecologist) accompanied by Tim Donnan of DM Roads. Vegetation within the study area was surveyed using the random meander technique (Cropper 1993) over one person hours.

A habitat-based assessment was completed to determine the presence of suitable habitat for threatened species previously recorded (OEH 2018) or predicted to occur (Commonwealth of Australia 2018) within 5 kilometres. This list was filtered according to species descriptions, life history, habitat preference and soil preference to determine those species most likely to be present within the study area.

Results

Vegetation communities

Prior to the site inspection, Biosis confirmed the study area has not been previously mapped (Tozer et al 2010) as the study area and surrounds have been extensively cleared and lacks vegetation.

The vegetation within the study area was found to be highly disturbed due to previous clearing associated with residential development within Richmond. Within the northern side of the road the vegetation consisted of planted street and landscape trees within roadside verges and gardens consisting primarily of Glaucous Cotoneaster *Cotoneaster glaucophyllus* Crepe Myrtle *Lagerstroemia indica,* Poplar *Populus* sp., Oleander Shrub *Nerium oleander* and Cocos Palm *Syagrus romanzoffian* with an understorey of Kikuyu *Cenchrus clandestina* and Panic Veldt Grass *Ehrharta erecta.* Various exotic species including Common Peppercress *Lepidium africanum,* Fireweed *Senecio madagascariensis,* Fleabane *Conyza* sp., Milk thistle *Sonchus oleraceus* and, Paddy's Lucerne *Sida rhombifolia* were located throughout grassy areas. Natives in the site were restricted to primarily planted species including Broad Leaved-paperbark *Melalueca quinquenervia,* Cabbage Tree Palm *Livistona australis,* Crimson Bottlebrush *Callistemon citrinus* and one Narrow-leaved Ironbark *Eucalyptus crebra* with incidences of Sprawling Bluebell *Wahlenbergia gracilis* and Weeping Meadow Grass *Microlaena stipoides* throughout grassy areas.

The southern side of the road contains 14 Crepe Myrtle trees planted within the roadside verge, with groundcover dominated by by Kikuyu and various exotic species including Common Peppercress, Fleabane and Milk thistle.

All vegetation within the study area has been assessed as containing 0.45 hectares of Mixed Plantings and does not form part of a native vegetation community (Figure 1).

Threatened species

Background searches identified 20 threatened flora species and 53 threatened fauna species recorded (OEH 2017) or predicted to occur (DEE 2017) within 5 kilometres of the study area.

No threatened flora species were recorded during the site investigation. Due to the small size of the study area, the survey effort was considered comprehensive to discount presence of threatened species. Habitat present within the study area is considered unlikely to support threatened flora species due to its disturbed state and current condition.

Threatened microbats Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris,* Eastern Freetail-bat *Mormopterus* norfolkensis, Large-eared Pied Bat *Chalinolobus dwyeri,* Eastern False Pipistrelle *Falsistrellus tasmaniensis*, Southern Myotis *Myotis macropus,* Greater Broad-nosed Bat *Scoteanax rueppellii,* Eastern Bentwing-bat *Miniopterus schreibersii oceanensis* and Little Bentwing-bat *Miniopterus australis* have been previously recorded in low numbers within the locality. However, during the site inspection, it was determined that no suitable threatened microbat habitat was present within the study area.

No hollow bearing trees or nests were identified within the study area. The study area could be used for occasional foraging purposes, however, given the size of the study area and vegetation within the locality in better condition this vegetation would not be considered important habitat for any threatened species.

The habitat present within the study area was not considered likely to support any of the threatened species known (OEH 2018) or predicted to occur (DEE 2018) within 5 kilometres of the study area. Based on the size and nature of the study area, the survey effort was considered adequate to assess habitat presence for threatened species, in particular threatened microbat and frog species

Heritage Tree

A single London Plane Tree *Plantanus x acerifolia* located on the north-western corner of March St and Chapel street intersection has been identified as a heritage item, forming a part of the 'Avenue of trees east and west side of street' (Hawkesbury Council 2012). This tree has been assessed as having minimal biodiversity value and will require a tree protection zone of 15 metres. It is understood that works will be undertaken within the TPZ of this tree.

Priority weeds

The Biosecurity Act outlines biosecurity risks and impacts, which in relation to the current assessment includes those risks and impacts associated with weeds. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes:

- The introduction, presence, spread or increase of a pest into or within the State or any part of the State.

A pest plant that has the potential to:

- Out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.
- Harm or reduce biodiversity.

The Biosecurity Act introduces the concept of Priority Weeds. A Priority Weed is any weed identified in a local strategic plan, for a region that includes that land or area, as a weed that is or should be prevented, managed, controlled or eradicated in the region. Where a local strategic plan means a local strategic plan approved by the Minister under Division 2 of Part 4 of the *Local Land Services Act 2013*.

The Biosecurity Act also introduces the General Biosecurity Duty, which states:

- *All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.*

Two Priority Weeds for the Greater Sydney LLS, which includes the Hawkesbury LGA, were recorded in the study area, and one species assessed as an Environmental Weed are listed in Table 1, along with their associated Biosecurity duty.

Table 1 Priority weeds within the study area

Status	Weed species	Relevant Biosecurity Act duty	Biosecurity obligation
Priority	*Asparagus aethiopicus* Asparagus fern	General biosecurity duty	Minimise – Treatment required to prevent spread likely to result following disturbance / vegetation clearing

Status	Weed species	Relevant Biosecurity Act duty	Biosecurity obligation
Priority	*Senecio madagascariensis* Fireweed	General biosecurity duty	Minimise – Treatment required to prevent spread likely to result following disturbance / vegetation clearing
Environmental	*Ipomoea cairica*	General biosecurity duty	Minimise – Treatment required to prevent spread likely to result following disturbance / vegetation clearing

If there is a chance of disturbance to the species listed above as a result of the works, that has the potential to result in their spread within and/or out of the study area, all practical steps should be taken to control and eradicated the weeds prior to and following vegetation removal.

Soil borne and plant pathogens

No signs of *Phytophthora cinnamomi* (Phytophthora) or Myrtle Rust were observed within the study area during the ecological assessment. A pathogen risk assessment has been undertaken to determine the level of risk of accidental introduction into the study area associated with project activities.

Table 2 Pathogen risk assessment for March St/Bostworth St upgrades

Pathogen	Risk	Proposed mitigation	Amedned risk
Phytophthora	Low, vegetation did not exhibit signs	Ensure all vehicles and plant are clean and free of soil, mud, debris and plant material before entering the Project area.	Negligible risk based on adherence to proposed mitigation actions in this report.
Myrtle Rust	Low, vegetation did not exhibit signs	Ensure all plant used in the operation of tree felling and trimming cleaned and sterilised before and after use.	Negligible risk based on adherence to proposed mitigation actions in this report.

There is a negligible risk of introduction of soil borne or plant pathogens to the study area provided that all proposed mitigation actions in this report are adhered to. Recommendations designed to prevent the accidental introduction of plant pathogens into the study area can be found in the recommendations section below.

Impact assessment

The proposed road upgrade works involved the following impacts to ecological features:

- Removal of approximately 0.45 ha of Mixed Plantings.
- Removal of approximately 0.45 ha poor quality foraging habitat for highly mobile threatened fauna.
- Indirect impact to a heritage tree containing minimal biodiversity value.

Recommendations

Overall, the ecological impacts are considered minor in nature, and compliance with recommendations below will ensure that no long term impacts occur from the works.

Based on the above outlined ecological impacts, and to avoid any potential indirect impact to any Commonwealth or NSW listed threatened biota, the following recommendations have been made. The principal aim is to minimise disturbance to any existing native vegetation and fauna habitat:

- A London Plane Tree has been identified as a heritage item within the study area. It is recommended that:
  - the tree should be assessed by a qualified and suitably experienced arborist to confirm that works will not significantly impact the tree
  - a heritage assessment is completed by a suitably qualified heritage specialist to assess the impacts of the proposed works on this item
- Appropriate erosion and sediment control measures will be installed to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding ecological values including threatened species.
- Site sheds, amenities building and stockpiling or storage of construction materials, should be located within areas assessed within this report. Any impacts outside of the study area will require additional ecological assessment prior to commencement.
- Where possible, any trees to be retained should be protected in accordance with Australian Standard AS4970 – 2009 Protection of trees on development sites, during construction, operation and decommissioning of the site compound.
- Two priority and one environmental weed within the Greater Sydney Local Land Council were identified within the study area (Table 1). All practical steps should be taken to control and eradicate the weeds (to a local landfill depot) from the study area and minimise spread into adjacent bushland.
- All work vehicles should undertake appropriate hygienic measure to minimise potential of soil borne and plant pathogens spread. Minimise soil transport in and out of the study are and provide appropriate wash down facilities to remove soil from vehicles and equipment following works.

I trust that this advice is of assistance to you however please contact me if you would like to discuss any elements of this ecological advice further.

Yours sincerely

Averill Wilson

Ecologist

References

Bannerman, SM and Hazelton PA 1990. *Soil Landscapes of the Penrith 1:100 000 Sheet.* Soil Conservation Service of NSW, Sydney.

Cropper et al 1993.. Management of Endangered Plants. CSIRO Australia, Melbourne.

DEE 2018. Protected Matters Search Tool. Australian Government Department of the Environment, Water, Heritage & the Arts, Canberra. Accessed 04/12/2018 at https://www.environment.gov.au/epbc/protected-matters-search-tool

DPI 2018. NSW WeedWise: Greater Sydney Local Land Services region.

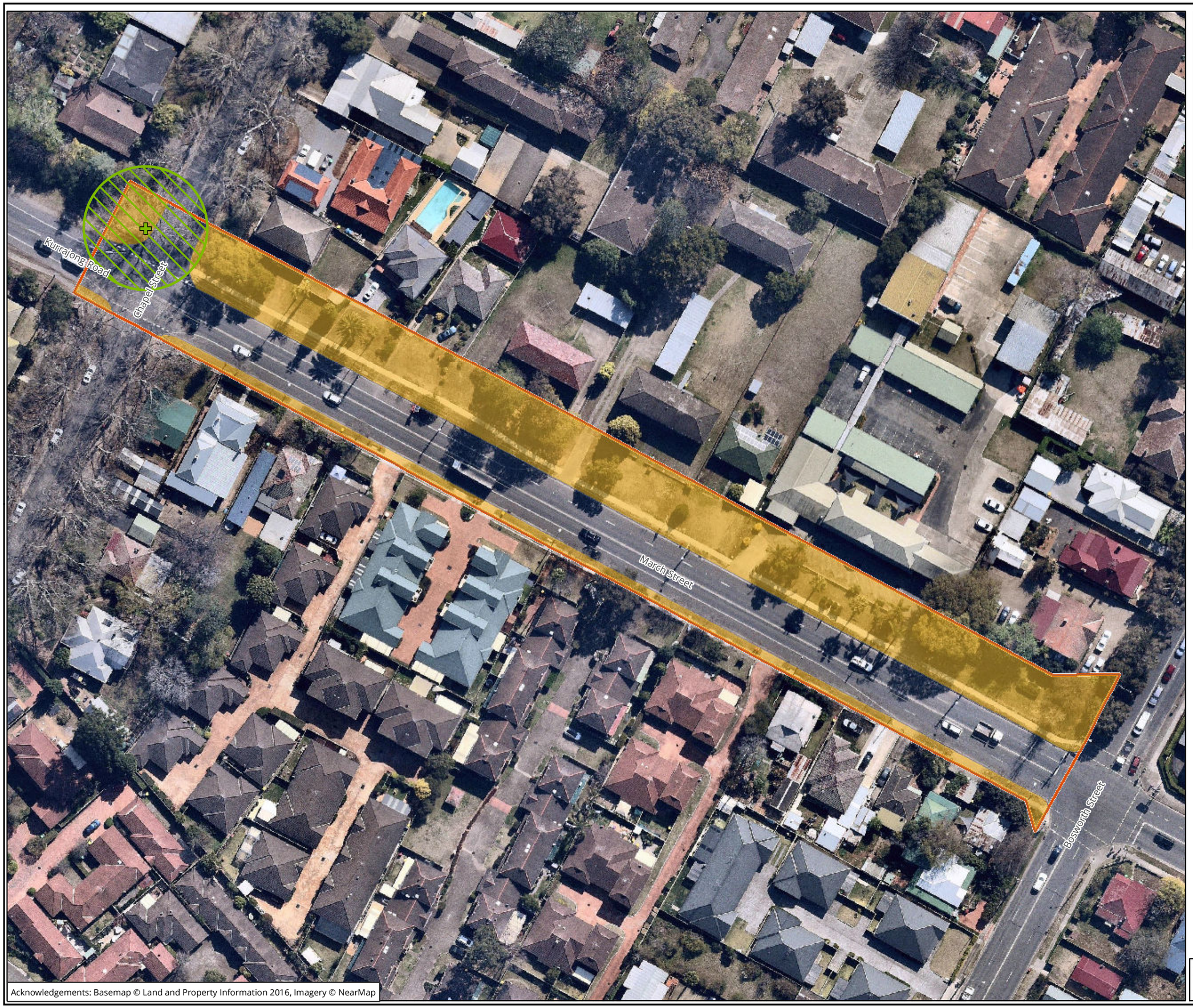
Hawkesbury City Council 2012. Hawkesbury Local Environment Plan 2012. Hawkesbury, NSW

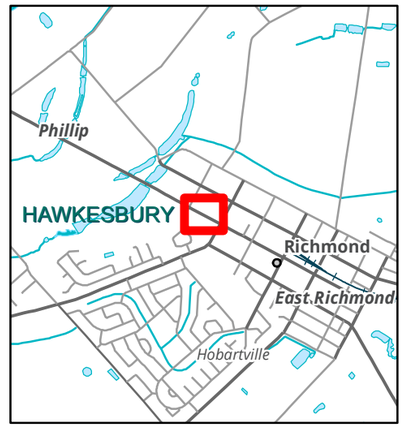
OEH 2018. BioNet the website for the Atlas of NSW Wildlife.

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P 2010. Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. *Cunninghamia,* 11, 359-406.

Appendices

Appendix 1 Figure 1





Legend

- Study area

Vegetation communities

- Mixed plantings
- Heritage tree
- Tree protection zone

Figure 1: Ecological values in the study area

0 8.5 17 25.5 34 42.5

Metres

Scale: 1:850 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28950
Date: 07 December 2018,
Checked by: AIHW, Drawn by: AEDM, Last edited by: amurray
Location:P:\28900s\28950\Mapping
28950_F1_EcologicalValues

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap

Appendix 2 Plates

Figure 2 Exotic plantings on northern end of ride

Figure 3 Planted Broad-leaved Paperbark on northern side of road

Figure 4 Planted exotic species on northern side of road'

Figure 5 Heritage item London Plane Tree on corner of March St and Chapel St

Figure 6 Planted Crepe Myrtle on southern side of road

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