# Richmond Road Upgrade, Marsden Park

## Submissions report

Transport for NSW | November 2024

Version Control: April 2021 report updated November 2024

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Prepared by Jacobs and Transport for NSW

# Document controls

## Approval and authorisation

| Document status | Date | Prepared by | Reviewed by |
|---|---|---|---|
| Collaborative draft | 03/02/2021 | Jacobs | Jacobs |
| Final draft | 25/03/2021 | Jacobs | Jacobs |
| Final for determination | 09/04/2021 | Jacobs | Transport for NSW |
| Updated(1) | 05/09/2024 | Transport for NSW | Transport for NSW |

*(1) Updated following determination to reflect minor changes in scope comprising:*

- *Confirmation of noise mitigation eligibility*
- *Updated consideration for flood compensatory storage area*
- *Amendments to Richmond Road and Charles Thompson Boulevard intersection configuration*

*Note: No further updates to the standalone specialist assessments have been carried out for this project, nor further quantitative assessment of environmental impacts, as part of this (November 2024) document revision.*

# Executive summary

## The proposal

Transport for NSW proposes to upgrade about 1.6 kilometres of Richmond Road between Elara Boulevard and Heritage Road in Marsden Park (the proposal). The proposal is located in the Blacktown Local Government Area (LGA).

Key features of the proposal would include:

- A dual carriageway with two lanes in each direction and a central median wide enough to accommodate six lanes in the future
- Raising the road by about five metres to improve the function of the road as a flood evacuation route
- Provision of two metre wide shoulders on both sides of the road
- Provision of a separate left-in and left-out access roads to Marsden Park Precinct (MPP) to the west
- Provision of a new four-way signalised intersection about 800 metres north of Elara Boulevard, to provide access to MPP to the west and Marsden Park North Precinct (MPNP) to the east
- Provision of bus bays and bus priority measures at the new four-way signalised intersection
- Provision of a three metre wide shared user path on the western side of the road
- Relocation and/or adjustments to public utilities and street lighting
- Road drainage infrastructure including new culverts
- Ancillary work including safety barriers, signage, line marking and environmental protection work
- Landscaping and rehabilitation work
- Temporary ancillary facility comprising a site compound.

The construction of the proposal is expected to start in early 2026 and expected to take about 24 months to complete.

## Display of the Review of Environmental Factors

Transport for NSW prepared a review of environmental factors (REF) to assess the potential environmental impacts of the proposal. The REF was publicly displayed for 42 days between 2 November 2020 and 11 December 2020 on the Transport for NSW project website and made available for download. The website link was advertised in the Hawksbury Gazette and Hawksbury Courier, and in the community update which was distributed to the local community.

In addition to the above public display, an invitation to comment and copy of the REF was sent directly to Blacktown City Council, State Emergency Service (SES) and Clydesdale developer.

Due to the COVID-19 pandemic, Transport for NSW replaced the face to face community information session with an online live session. This session was on 12 November 2020 between 4pm and 6pm and made available on the Roads and Maritime website. The latest information and updates on the proposal are available at https://www.transport.nsw.gov.au/projects/current-projects/richmond-road-upgrade-between-elara-boulevard-and-heritage-road-marsden.

## Summary of issues and responses

A total of 45 submissions were received in response to the display of the REF. This included submissions from three government agencies, one State Minister and 41 from the community.

An email acknowledging receipt of the REF for comment was received from the SES, with no specific issues or comments raised.

The submission from the State Member for Londonderry requested information in response to an attached email received from a local resident.

Sydney Water's submission detailed their assets within and near the proposal and their need for ongoing consultation and access to these assets during and post works of the proposal.

The main issues raised and responses to those issues are summarised below.

### *Need for the proposal*

Concern was raised in relation to the inability of the proposal to address broader network congestion issues. However, the need for the proposal was not to address the broader network congestion, but rather address the access and congestion issues expected in relation to the Clydesdale and Marsden Park Precinct (MPP) and Marsden Park North Precinct (MPNP) developments, and to satisfy flood evacuation objectives.

### *Traffic and Transport*

Driver frustration, excessive delays with traffic lights and the need for greater public transport were raised as issues of concern. The proposal was designed to reduce congestion resulting from the future development of the adjoining MPP and MPNP. The proposal provides for specific vehicle movements modelled to improve efficiency and reduce congestion for the current and future expected population. The proposal is targeted at improving local road network conditions and contributing to providing a flood evacuation route.

The proposal would improve road safety and road network performance.

### *Engagement*

Submissions were received from two residents outlining concerns that residents were not adequately notified during the proposal design development and assessment. The Community Update - July 2019 was delivered to over 5800 properties, emails, newspaper advertisements, web updates and social media campaigns. The exhibition period was also extended by two weeks to provide additional time for feedback.

### *Flood evacuation*

Concerns were raised that the proposal would not address the flood risk. The proposal has been designed in consultation with the SES and Infrastructure NSW (INSW) to provide flood evacuation capacity for a one in 500 year flood event.

### *Out of scope*

18 submissions requested upgrades to areas outside the scope of the proposal. The identified need for the proposal is addressed by the proposed design. Broader network constraints are being assessed by Transport for NSW including a series of proposed upgrades currently being assessed at Garfield Road East, Garfield Road West, Denmark Link Road and further widening of sections of Richmond Road between the M7 Motorway and Elara Boulevard. The timing for these broader network upgrades is governed by funding allocation.

## Changes to the proposal

The following design changes were identified after display of the REF, during detailed design including (refer Figure 3-1):

- Northern extension:
  This design change involves a temporary road diversion to facilitate the construction of the proposed southbound carriageway. This design change results in an extension of the northern boundary of the proposed upgrade 40 metres in length and about 26 metres west to the width of the future road reserve.
- Realignment of drainage culvert:
  Moving the drainage culvert discharge located east of the roadway to discharge south by about 50 metres. Moving the discharge south would assist in reducing the impact to land at the downstream end (east side) by combining the two cross-drains from under Richmond Road into one discharge point, thereby reducing severance impacts.
- Updated noise mitigation measures:
  In accordance with Environmental safeguard NV17 of the REF, Transport has undertaken further assessment of reasonable and feasible operational noise mitigation within the Marsden Park precinct.
- Review of flood compensatory storage area requirement:
  Transport has undertaken a comprehensive flood modelling for all Transport projects within the same floodplain area and re-assessed the requirement for a flood compensatory storage area according to the updated Department of Planning & Environment decisions and consultation with relevant agencies. The outcome of this assessment was that the flood compensatory storage area was not warranted.
- Additional right turning lanes added to north and south bound of the Richmond Road at Charles Tompson Boulevard Intersection:
  Transport has undertaken additional traffic modelling based on the new developments in Marsden Park and found that additional storage capacity would be required at the right turning lanes and left turning lanes of Richmond Road at Charles Tompson Boulevard Intersection.

## Next steps

Transport for NSW as the determining authority will consider the information in the REF and this submissions report and make a decision whether or not to proceed with the proposal.

Transport for NSW will inform the community and stakeholders of this decision and where a decision is made to proceed will continue to consult with the community and stakeholders prior to and during the construction phase.

# Contents

# Tables



# Figures



# Appendices

# 1. Introduction and background

## 1.1 The proposal

A more detailed description of the Richmond Road upgrade, Marsden Park is found in the Richmond Road upgrade, Marsden Park Review of Environmental Factors (REF) prepared by Transport for NSW in October 2020 (Transport for NSW 2020).

Transport for NSW proposes to upgrade about 1.6 kilometres of Richmond Road between Elara Boulevard and Heritage Road in Marsden Park (the proposal) (refer Figure 1-1). The proposal is located in the Blacktown Local Government Area (LGA).

Key features of the proposal would include (refer Figure 1-2):

- A dual carriageway with two lanes in each direction and a central median wide enough to accommodate six lanes in the future
- Raising the road by about five metres to improve the function of the road as a flood evacuation route
- Provision of two metre wide shoulders on both sides of the road
- Provision of a separate left-in and left-out access roads to Marsden Park Precinct (MPP) to the west
- Provision of a new four-way signalised intersection about 800 metres north of Elara Boulevard, to provide access to MPP to the west and Marsden Park North Precinct (MPNP) to the east
- Provision of bus bays and bus priority measures at the new four-way signalised intersection
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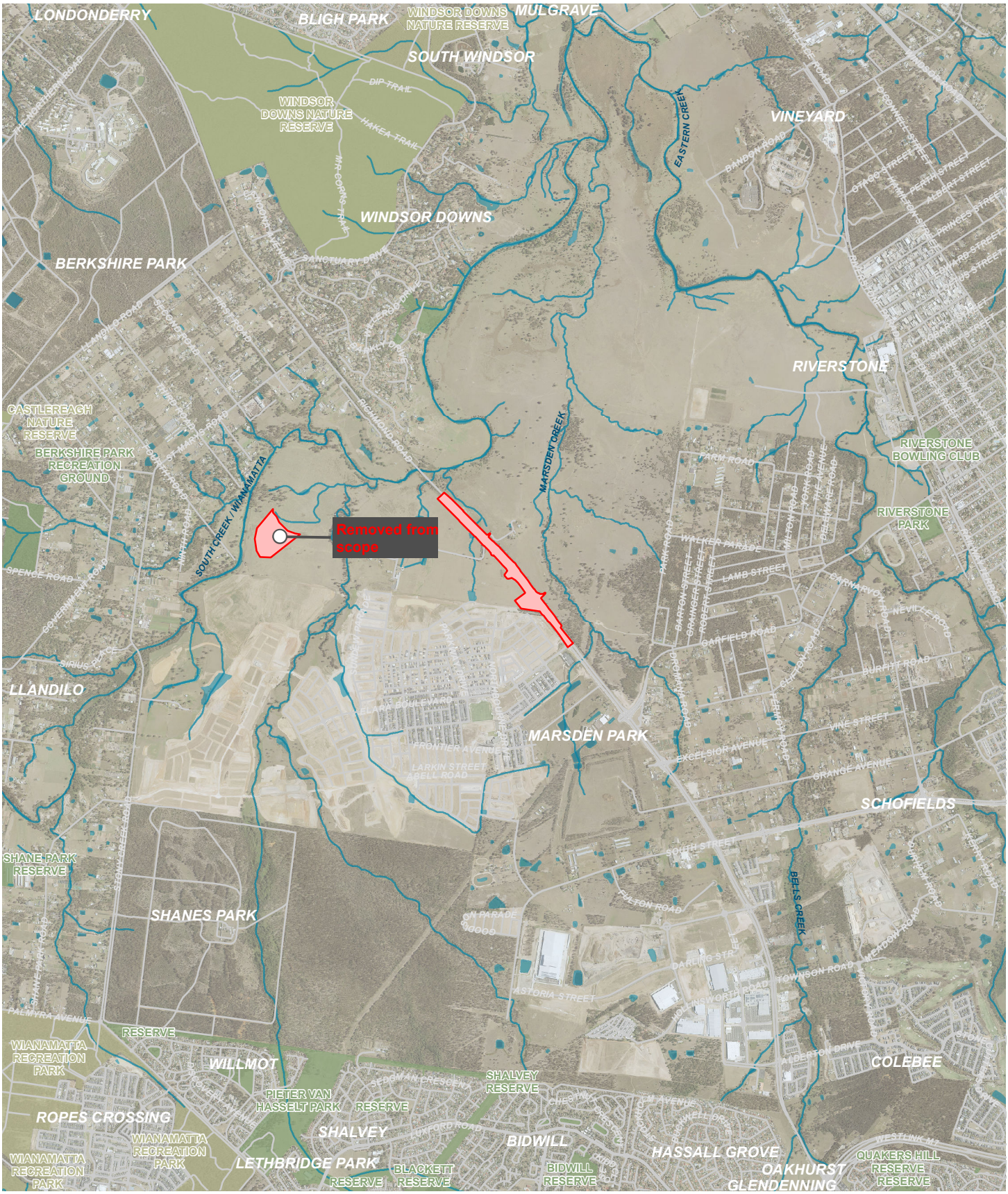
- Road drainage infrastructure including new culverts
- Ancillary work including safety barriers, signage, line marking and environmental protection work
- Landscaping and rehabilitation work
- Temporary ancillary facility comprising a site compound.

The construction of the proposal is expected to start in early 2026 and expected to take about 24 months to complete.

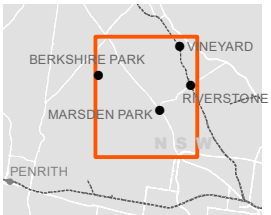



Legend

- Proposal area
- Watercourse
- Waterbody
- NPWS reserve
- Local parks

0 1 2 km

1:45,000 at A4

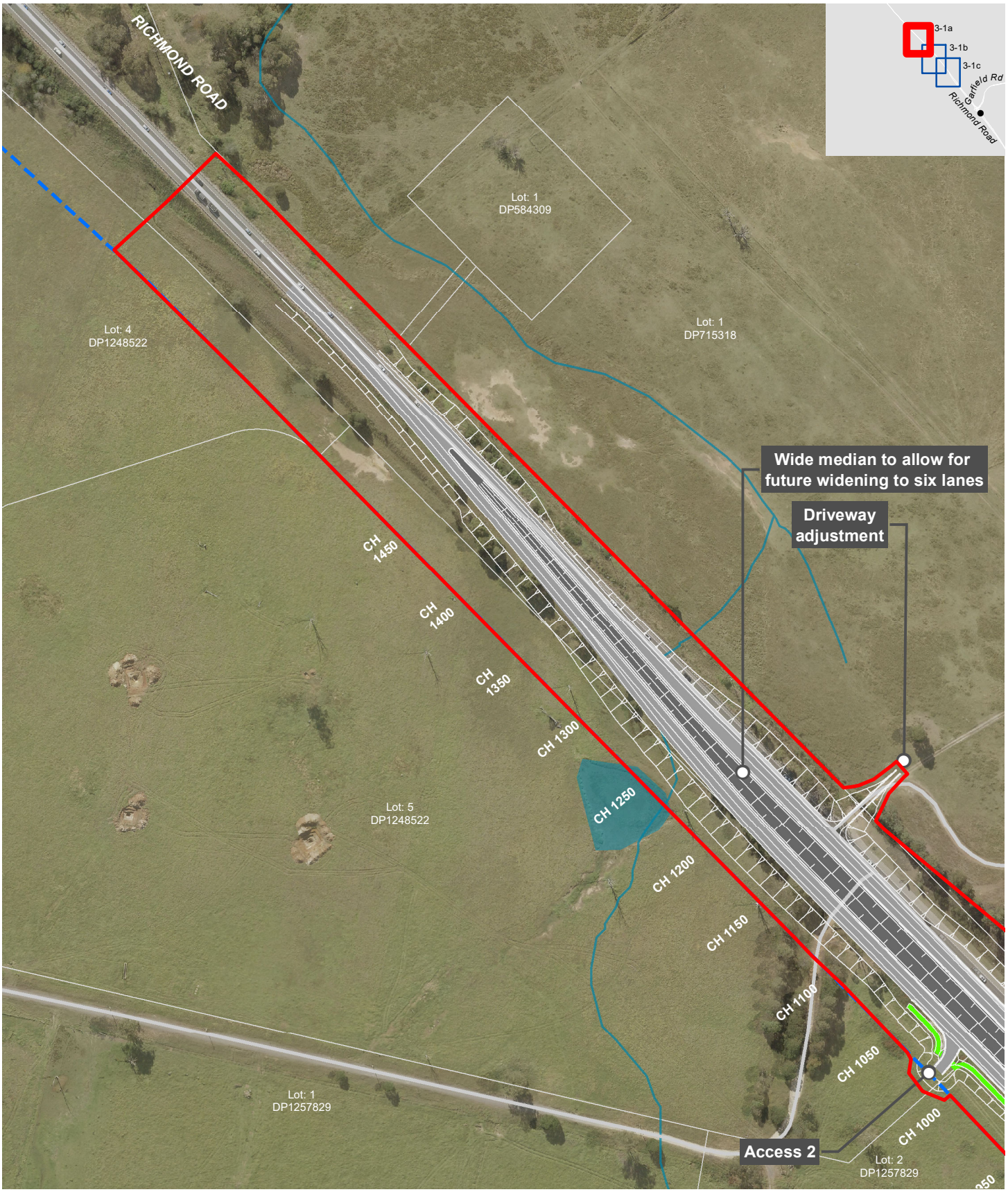



**Data sources**

Jacobs 2020
Ausimage 2018
NSW Spatial Services 2020

GDA94 MGA56
Version: 15/10/2020

**Figure 1.1** Location of the proposal




Legend

- Construction footprint
- Median
- Road pavement
- Shared path
- Proposed future road reserve boundary
- Design
- Watercourse
- Waterbody
- Cadastre

0 50 100 m

1:3,000 at A4

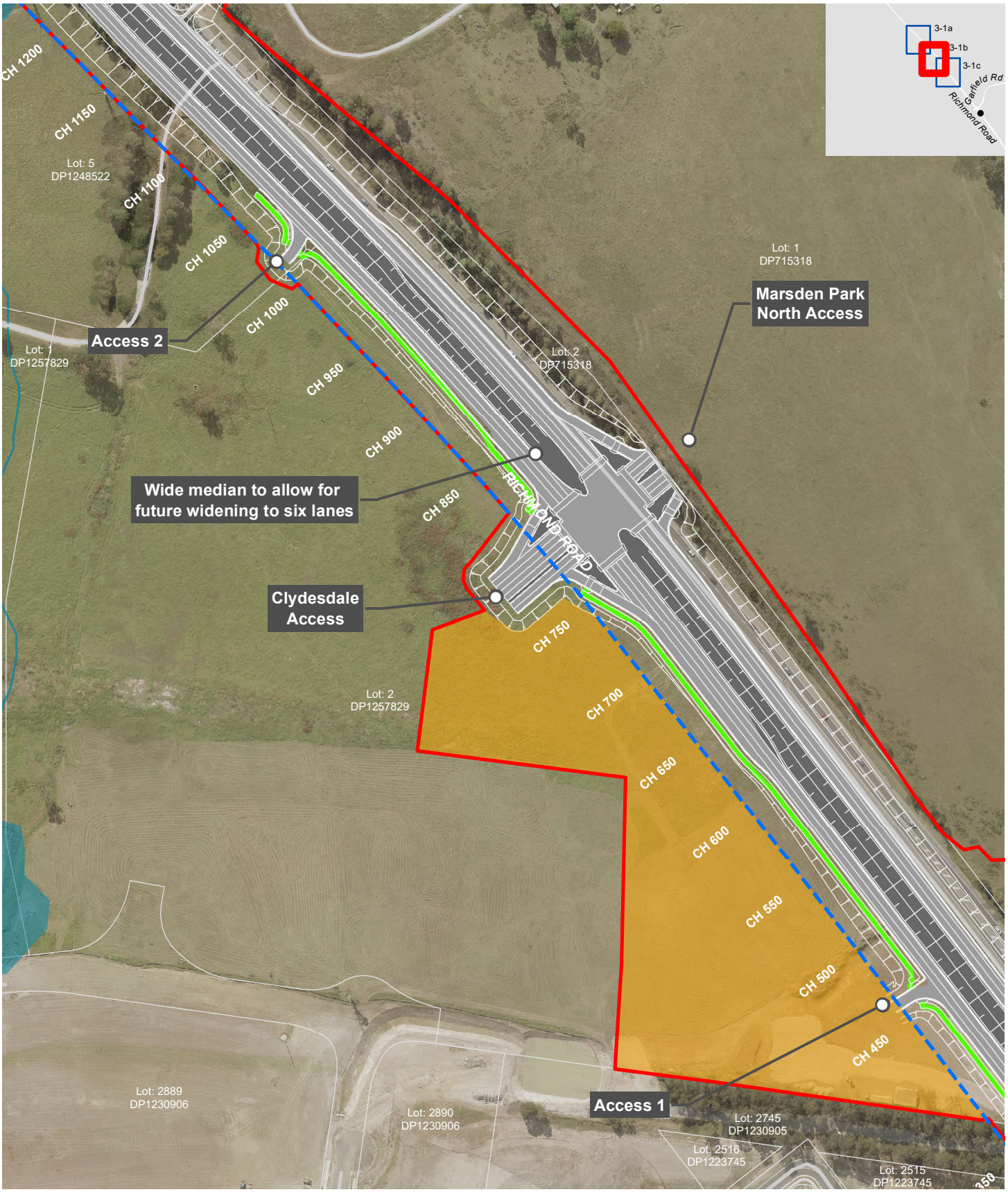
VINEYARD
BERKSHIRE PARK
RIVERST
N S W
MARSDEN PARK

**Data sources**

Jacobs 2020
Ausimage 2018
NSW Spatial Services 2020

GDA94 MGA56
Version: 15/10/2020

**Figure 1-2a** Key features of the proposal

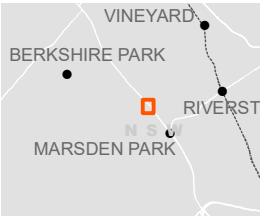



Legend

- Construction footprint
- Ancillary facility
- Median
- Road pavement
- Shared path
- Proposed future road reserve boundary
- Design
- Watercourse
- Waterbody
- Cadastre

0 50 100 m

1:3,000 at A4

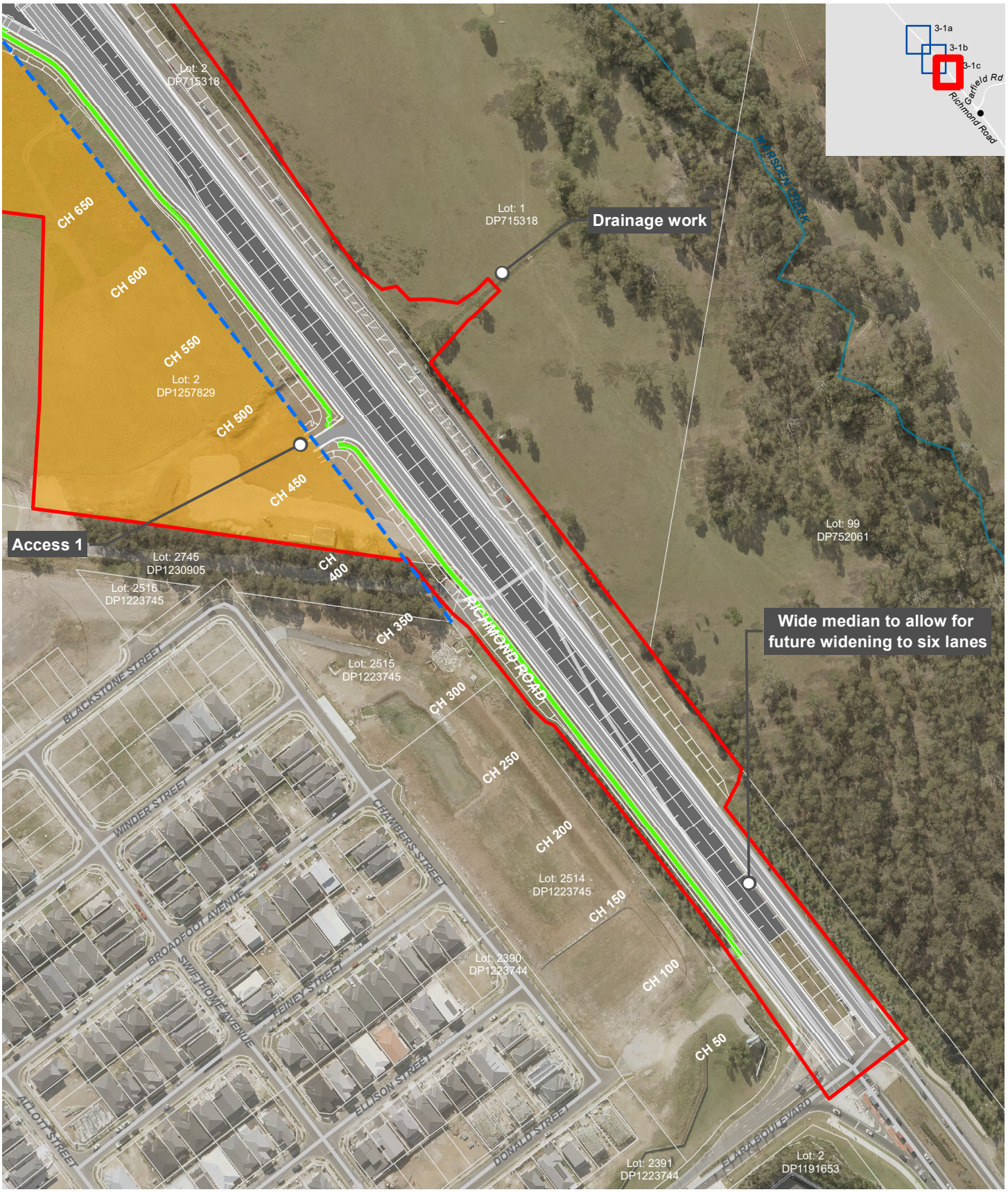



**Data sources**

Jacobs 2020
Ausimage 2018
NSW Spatial Services 2020

GDA94 MGA56
Version: 15/10/2020

**Figure 1-2b** Key features of the proposal

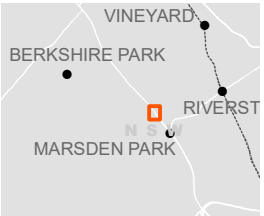



Legend

- Construction footprint
- Ancillary facility
- Median
- Road pavement
- Shared path
- Proposed future road reserve boundary
- Design
- Watercourse
- Waterbody
- Cadastre

0 50 100 m

1:3,000 at A4




**Data sources**

Jacobs 2020
Ausimage 2018
NSW Spatial Services 2020

GDA94 MGA56
Version: 15/10/2020

**Figure 1-2c** Key features of the proposal

## 1.2 REF display

Transport for NSW prepared a REF to assess the potential environmental impacts of the proposal. The REF was publicly displayed for 42 days between 2 November 2020 and 11 December 2020 on the Transport for NSW project website and made available for download. The website link was advertised in the Hawksbury Gazette and Hawksbury Courier, and in the Community Update distributed to the local community.

In addition to the above public display, an invitation to comment and copy of the review of environmental factors was sent directly to Blacktown City Council, State Emergency Service (SES) and Clydesdale developer.

Due to the COVID-19 pandemic, Transport for NSW replaced the face to face community information session with an online live session. This session was on 12 November 2020 between 4pm and 6pm and made available on the Roads and Maritime website. The latest information and updates on the proposal are available at https://www.transport.nsw.gov.au/projects/current-projects/richmond-road-upgrade-between-elara-boulevard-and-heritage-road-marsden.

## 1.3 Purpose of the report

This submissions report relates to the REF prepared for the Richmond Road upgrade, Marsden Park, and should be read in conjunction with that document.

The REF was placed on public display and submissions relating to the proposal and the REF were received by Transport for NSW. This submissions report summarises the issues raised and provides responses to each issue (Chapter 2). It details investigations carried out since finalisation of the REF (Chapter 3), describes and assesses the environmental impact of changes to the proposal (Chapter 4) and identifies new or revised environmental management measures (Chapter 5).

No proposal changes are proposed that would require the preparation of a preferred infrastructure report.

Two revisions have been made to the assessment of impact as described in the REF, one refining the outcome of the noise assessment to match updated development conditions and one reconsidering the use of a flood compensatory storage area. Minor additional environmental management measures have been proposed - one for biodiversity, one for the removal of the flood storage area, three for landscaping and one for property impacts.

# 2. Response to issues

Transport for NSW received 45 submissions, accepted up until the 11 December 2020. Table 2-1 lists the respondents and each respondent's allocated submission number. Table 2-1 also indicates where the issues from each submission have been addressed in this report.

Table 2-1: Respondent issue responses

| Respondent | Section number where issues are addressed | Respondent | Section number where issues are addressed |
|---|---|---|---|
| **Individual** | | | |
| 1 | 2.2, 2.3.1 | 27 | 2.2 |
| 2 | 2.2 | 28 | 2.2, 2.3.3, 2.6 |
| 3 | 2.2 | 29 | 2.3.3 |
| 4 | 2.2 | 30 | 2.2, 2.6 |
| 5 | 2.2 | 31 | 2.3.3 |
| 6 | 2.3.1, 2.3.3, 2.6 | 32 | 2.6 |
| 8 | 2.3.3 | 33 | 2.6 |
| 9 | 2.6 | 35 | 2.2 |
| 10 | 2.6 | 36 | 2.2 |
| 11 | 2.2 | 38 | 2.2, 2.5, 2.6 |
| 12 | 2.3.1, 2.6 | 39 | 2.2, 2.5 |
| 13 | 2.6 | 40 | 2.2 |
| 14 | 2.6 | 41 | 2.2, 2.4 |
| 15 | 2.2 | 42 | 2.2, 2.3.1, 2.3.3, |
| 16 | 2.2, 2.6 | 43 | 2.2, 2.5, 2.6 |
| 17 | 2.3.3 | 44 | 2.3.3 |
| 18 | 2.2, 2.3.2 | **Government** | |
| 19 | 2.6 | 7 | 2.1 |
| 20 | 2.6 | 34 | 2.3.3 |
| 21 | 2.6 | 37 | 2.7 |
| 22 | 2.3.2 | **Minister** | |
| 23 | 2.2, 2.3.3 | 45 | 2.2, 2.3.3, 2.4, 2.5 |
| 24 | 2.6 | | |
| 25 | 2.3.2, 2.3.3, 2.6 | | |
| 26 | 2.3.3 | | |

## 2.1 Overview of issues raised

A total of 45 submissions were received in response to the display of the REF. This included submissions from three government agencies, one State Minister and 41 from the community.

An email acknowledging receipt of the REF for comment was received from the SES, with no specific issues or comments raised.

Sydney Water's submission detailed their assets within and near the proposal and their need for ongoing consultation and access to these assets during and post works of the proposal.

The submission from the State Member for Londonderry requested information in response to an attached email from a local resident.

Each submission has been examined individually to understand the issues being raised. The issues raised in each submission have been extracted and collated, and corresponding responses to the issues have been provided. Where similar issues have been raised in different submissions, only one response has been provided. The issues raised and Transport for NSW response to these issues forms the basis of this chapter.

### 2.1.1 Blacktown City Council issues

The key issues raised by Blacktown City Council include:

- Integration of landscaping with adjoining future urban development
- Water quality control
- Landscape design
- Landscape batters and maintenance
- Flooding
- Non-Aboriginal heritage.

### 2.1.2 Community issues

Concerns were raised regarding congestion on the broader road network north of the M7, with extensive delays from Elara Boulevard, inadequate access points from the M7 northbound and too many traffic lights causing delays. Concern was also raised that the proposal does not adequately address the congestion issues, and that the proposal should be six lanes and extended further north.

### 2.1.3 Facebook Session issues

The key issues raised by the community during the Facebook session included:

- Taking too long for upgrades
- Upgrade does not address the network congestion
- Upgrades for North West Growth Area (NWGA) need to be managed holistically
- Network upgrade is overdue, traffic generated by the current population exceeds network capacity
- Proposal just moves the bottleneck north
- Upgrade needs to be six lanes now
- Upgrade should extend to M7 to the south and Berkshire Park to the north of the proposal
- How are wildlife impacts being managed.

## 2.2 Issue 1, Need for the proposal

### *Submission number(s)*

1, 2, 3, 4, 5, 9, 11, 15, 16, 18, 20, 23, 27, 28, 38, 39, 40, 42, 43, 45

### *Issue description*

- Upgrade does not address the major network congestion
- Upgrade should extend to Northern Road and south of Elara Boulevard
- Upgrade should include duplication of South Creek bridge for flood evacuation and traffic congestion
- Other portions of the network should take priority
- Upgrade taking too long.

### *Response*

The need for the proposal is not to address the broader network congestion, but rather address the imminent access and congestion issues expected in relation to the Clydesdale and Marsden Park Precinct (MPP) and the proposed Marsden Park North Precinct (MPNP) developments, and to satisfy flood evacuation objectives.

Richmond Road is one of the main north-south arterial roads for Sydney's north-west, providing a vital link for freight and commuters between Blacktown and Richmond. It has been predicted that over the 10 years following 2020, about 33,000 homes would be constructed in the surrounding area.

Richmond Road south of Elara Boulevard to Bells Creek has been progressively upgraded to two lanes in each direction with a wide median to allow for future upgrade to three lanes in each direction. The section of Richmond Road north of Elara Boulevard, comprising the proposal, is currently one lane in each direction without a median and does not have the capacity to meet the current and projected traffic volumes.

There is an increasing demand on Richmond Road to provide connectivity for the NWGA. The proposal would provide access to the MPP to the west and the MPNP to the east. Current access to the MPP is via Elara Boulevard and is heavily congested. Without additional access points to the development areas, congestion would increase. Traffic modelling indicates that Richmond Road does not have the capacity for current traffic and would fail to operate efficiently with the increased traffic volumes that would be generated by the adjoining developments of MPP and MPNP.

Richmond Road forms part of a regional flood evacuation route for Bligh Park and Windsor Downs, located about three and 4.7 kilometres north of the proposal respectively. Infrastructure NSW (INSW) and State Emergency Services (SES) identified that raising Richmond Road was required to relieve the high demand on the south western boundary to improve flood evacuation routes for the Hawkesbury-Nepean Valley.

Budgetary considerations enable this proposal to provide tangible improvements in the short-term, whilst not inhibiting investigation and future upgrades to address the broader network congestion issues.

## 2.3 Issue 2, Traffic and transport

### 2.3.1 Safety

***Submission number(s)***

1, 6, 12, 42

***Issue description***

- Excessive congestion and delays are leading to driver frustration affecting road safety
- Need speed cameras on Richmond Road.

***Response***

The proposal is designed to reduce congestion resulting from the future development of the adjoining MPP and MPNP. The proposal provides for specific vehicle movements modelled to improve efficiency and reduce congestion for the current and future traffic generation. The proposal is targeted at improving local network conditions and providing a flood evacuation route.

The proposal would improve road safety and road network performance. Key traffic and safety features of the proposal include:

- Dedicated deceleration/turning lanes on Richmond Road at all intersections, allowing through traffic to maintain speed, and avoiding delays while waiting for turning vehicles
- Improved horizontal and vertical alignments to provide improved and consistent driving conditions
- Improved pedestrian and cyclist access via a shared path
- Consistent widened shoulder for on-road cyclists
- Additional lanes facilitating overtaking.

Additional network upgrades are actively being planned, assessed and delivered by Transport for NSW in consultation with the community and other government agencies (including Councils, DPIE and INSW), to address the broader network congestion issues. Proposals in the NWGA include upgrades to Garfield Road East and West, Denmark Link Road, Townson and Burdekin Road, Richmond Road at M7 and Richmond Rd north of this proposal.

Transport for NSW commits to investigating optimisation of the traffic light phasing of the proposal to improve congestion and promote streamlined movement which should minimise driver frustration and improve road safety. Installation of speed cameras on Richmond Road does not form part of the proposal. The need for speed cameras on State Roads are assessed on an as need basis by Transport's Network and Safety Section.

### 2.3.2 Public transport

***Submission number(s)***

18, 22, 25

***Issue description***

- There should be more public transport through this area to minimise congestion
- There should be a train station at Marsden Park.

### *Response*

Public transport networks are designed and managed by Transport for NSW in consultation with bus operators, DPIE and the local Councils. However, the project team is working closely with DPIE regarding the transport requirements for the NWGA with a view to provide an integrated transport network that provides for active and passive transport options, including public transport.

At this stage, there is no proposal for a train station at Marsden Park. The nearest Metro Station is at Tallawong which is about 9km from the proposal site.

## 2.3.3 Design

### *Submission number(s)*

6, 8, 9, 10, 17, 22, 23, 24, 25, 26, 28, 29, 31, 34, 35, 36, 39, 42, 44, 45

### *Issue description*

- Upgrade should be six lanes
- More traffic lights will worsen congestion. Lights should be phased to minimise stopping and encourage travel at the speed limit and environmental impact
- Merging traffic north of Clydesdale will create a hazard
- Alternate route for trucks is required
- Overpass/underpass should be considered to avoid the extensive number of traffic lights
- No parking signs needed north of Elara Boulevard
- Extend and upgrade shared footpath/cycleway to connect to South Creek bridge to St Marys Road at Berkshire
- Upgrade/duplicate South Creek Bridge for increased traffic capacity.

### *Response*

The proposal is designed to accommodate the future traffic from MPP and MPNP, not intended to address broader network congestion of through traffic. Therefore, traffic signals are required at selected locations in order to facilitate these major state government led development areas. Traffic phasing will be refined to optimise efficient movements.

Traffic assessment provided in Appendix L of the REF indicates the proposal will improve the localised projected traffic congestion up to 2036 and provide adequate intersection performance to accommodate the future MPP and MPNP. The proposal is not designed to address general network congestion. The traffic assessment suggests that the proposed upgrades at Garfield West and extension of Bandon Road from the intersection with Elara Boulevard and Richmond Road will contribute to rerouting of MPP traffic to reduce volumes of Richmond Road. In addition, the proposal provides adequate space in the median to accommodate two additional traffic lanes in the future.

Providing six lanes as part of this proposal would not improve overall network congestion until it is combined with other planned upgrades north and south of the proposal. There are some practical issues to consider in upgrading to six lanes now, because the six lanes of traffic would have to be merged over a safe distance to four lanes first and then two lanes, over a considerable distance, making it unviable without upgrading the South Creek Bridge. Future expansion to six lanes will be coordinated with other planned network upgrades.

‘No parking’ signs will be provided north of Elara Boulevard.

Richmond Road will remain as a designated freight route and no alternative routes exist in the vicinity for trucks to be able to get in and out of the M7 Motorway to service expanding industrial, commercial and residential developments in future precincts along the road corridor.

Upgrading South Creek bridge would be considered as part of the long term plans to upgrade and widen Richmond Road to St Mary's Road. Traffic capacity needs would be modelled and assessed as part of this investigation and design.

Currently the shared user path ends at the intersection of Richmond Road and Elara Boulevard. The proposed upgrade of Richmond Road would see the extension of the western shared user path for the entire length of the road upgrade. Further extension of shared user path would be considered as part of future stages of Richmond Road widening and upgrade.

The proposal has been designed and assessed against Transport for NSW road safety guidelines to ensure safety of design, therefore all merging lanes provide appropriate line of sight and length to provide safe use.

## 2.4 Issue 3, Engagement

### *Submission number(s)*

38, 43, 45 (all same respondent), 41

### *Issue description*

- Affected residents were not adequately notified during the upgrade design and assessment.

### *Response*

Prior to the commencement of design and environmental impact assessment, a Community Update – July 2019 was distributed widely and extended beyond those directly affected and captured the local community for the Garfield Road West, Garfield Road East, Denmark Link Road and Richmond Road upgrade projects focused on the Marsden Park and Riverstone areas. The Community Update was delivered to over 5800 properties.

In addition, other measures used to reach the wider community in the NWGA included:

- About 350 emails to registered stakeholders informing them of consultation
- Two advertisements for each project in local newspapers (Hawkesbury Courier and Hawkesbury Gazette)
- Two media releases
- Two web updates
- Two social media campaigns (with information of the extended consultation period).

In addition, the REF was publicly displayed for 42 days between 2 November 2020 and 11 December 2020 on the Transport for NSW project website and made available for download. The website link was advertised in the Hawksbury Gazette and Hawksbury Courier, and in the community update which was distributed to the local community.

In addition to the above public display, an invitation to comment and copy of the REF was sent directly to Blacktown City Council, State Emergency Service (SES) and Clydesdale developer.

Due to the COVID-19 pandemic, Transport for NSW replaced the face to face community information session with an online live session. This session was on 12 November 2020 between 4pm and 6pm and made available on the Roads and Maritime website. The latest information and updates on the proposal are

available at https://www.transport.nsw.gov.au/projects/current-projects/richmond-road-upgrade-between-elara-boulevard-and-heritage-road-marsden.

## 2.5 Issue 4, Flood evacuation

### *Submission number(s)*

38, 39, 43, 45

### *Issue description*

- Upgrade/duplicate South Creek Bridge for improved flood evacuation
- The existing flood evacuation routes do not work, they flood and do not have the capacity, to get residents out in time
- More people will be trapped in the flood zone.

### *Response*

The proposal was designed in consultation with SES and Infrastructure NSW (INSW) to provide flood evacuation route for a one in 500 year flood event.

When Richmond Road upgrade is extended from the proposal to St Mary's Road, the existing bridge over South Creek would be elevated to about relative level (RL) 20.0 metres Australian Height Datum (AHD), being about 1.5 metres above the elevation of the designated flood evacuation level of Bligh Park. This minimum road elevation is approximately equal to the one in 500 year flood level due to Hawkesbury Nepean River flooding.

## 2.6 Issue 5, Out of scope

### *Submission number(s)*

6, 9, 10, 12, 13, 14, 16, 19, 20, 21, 24, 25, 28, 30, 32, 33, 38, 43

### *Issue description*

- Upgrades are required at M7/Rooty Hill Road North, M7/Windsor Castlehill Freeway, M7/Richmond Road, Bolwarra Drive
- Traffic signals need adjusting at Marsden Park intersection at Bunnings
- More exits to/from Marsden Park and M7 needed to reduce congestion on Richmond Road
- Direct connection to Vineyard Railway Station required from the proposed new signalised intersection
- Improved access arrangements at Garfield Road east
- Shared path/cycleway at Garfield Road east
- Property impacts for Garfield Road east proposal.

### *Response*

These issues and works are out of scope of the proposal. The identified need for the proposal (refer to Section 2.1) is addressed by the proposed design. Broader network constraints are being assessed by Transport for NSW including a series of proposed upgrades currently being assessed at Garfield Road East, Garfield Road West, Denmark Link Road and further widening of sections of Richmond Road

between the M7 Motorway and Elara Boulevard. The timing for these broader network upgrades is governed by funding allocation.

Transport for NSW is working collaboratively with DPIE to identify the infrastructure requirements and develop a Road Network Strategy for the NWGA.

Transport for NSW is aware of delays experienced by motorists at the intersection of Richmond Road/Rooty Hill Road North/M7 and is currently investigating this matter including traffic modelling and an environmental impact assessment separately to this proposal.

The current project investigations extend along Richmond Road between Alderton Drive/Langford Road, Marsden Park and Yarramundi Drive, Glendenning, as well as Rooty Hill Road North between Luxford Road and the M7 Off Ramp.

The community will be kept informed as the investigations progress.

## 2.7 Blacktown City Council issues

Responses to issues raised by Blacktown City Council in response to the exhibition of the REF are summarised in Table 2-2.

Table 2-2: Blacktown City Council issues

| Issue raised | Response |
|---|---|
| Richmond Road should be widened to six lanes from the M7 Motorway to the future Bandon Road intersection. Four lanes from M7 to Elara Boulevard are inadequate for the current traffic volumes and will worsen with the future residential development. | Transport for NSW and DPIE are working on a Road Network Strategy to support existing and proposed precincts in the NWGA. The main focus of this strategy is Richmond Road upgrade between the M7 Interchange and St Marys Road. Further road widening in the broader network of Richmond Road would be considered as part of this strategy and would form a separate assessment. |
| Public art should be incorporated into the Richmond Road upgrade in accordance with Council's public art policy. | The road widening proposal provides limited space to safely install public art. However, post construction should Council wish to propose public art installation within the road reserve, Transport for NSW would assist where possible in facilitating an appropriate and safe installation where suitable. |
| **Civil design plans** | |
| Taper at chainage 100 should be longer, see Austroads standards. | The existing taper has been designed in accordance with Austroads Part 3 Section 4.12.2 (1:5 exit taper). The taper at chainage 100 is an existing bus bay / bus lane. The bus bay is currently not in use so there is no merge occurring at this location. No change to the existing taper is proposed. |
| Share path at the intersection at chainage 460 should be aligned to the desire line. | The desire line of the shared path at the intersection at chainage 460 will be amended. |

| Issue raised | Response |
|---|---|
| Intersection at chainage 460 should have a flare on the departure side to avoid vehicles clipping the corner. | Flare at intersection departure is not required. There is a low risk of vehicles clipping the corner as the kerb is 2.0 metres from the edge of traffic lane. |
| Intersection at chainage 800, align pedestrian crossings to move pedestrians away from a vulnerable location at the end of the median nose. | Pedestrian crossings have been provided in accordance with Austroads, Australian Standards and Transport for NSW standards. No change to intersection pedestrian crossings proposed. |
| Shared path at chainage 1025 should be aligned to the desire line. | The desire line of the shared path at the intersection at chainage 1025 will be amended. |
| Shared path should not end in the middle of nowhere at chainage 1075. | The northbound shared path has been updated to show a taper into the on-road cycle path. Signage will be installed to restrict pedestrian access north of Access Road 2 intersection. |
| Cuts in the vicinity of the Clydesdale property are in highly dispersive clay that has a history of land slips. Precautions need to be taken to avoid future slips. | The design of cut batters has considered the existing geotechnical conditions. |
| Pavement arrows at chainage 1200 – 1250 are the wrong way around. | The pavement arrows have been amended. |
| Typical cross sections do not indicate the property boundary. Landscaping and drainage structures need to be contained within the property boundary or they will disappear when adjoining development occurs. | Proposed landscaping and drainage structures are contained within the future road reserve boundary. All proposed works must be contained with the approved construction footprint as defined in the REF. Transport for NSW has liaised with the Clydesdale Developer to interface with the finished surface levels of the adjoining development. |
| The minimum requirement for Transit Lanes (6.7m?) should be adopted throughout - the lane widths vary throughout with no obvious reasoning. | The proposal is consistent with the existing upgraded sections of Richmond Road. |
| Use of yellow painted lines is required in lieu of no stopping sign posts. | ‘No stopping’ signs are included in the proposal in accordance with Transport for NSW requirements (Technical Direction TDT 2002/12C).<br>Richmond Road will remain a Classified Road under regulation of Transport for NSW. |
| **Flooding and water management** | |
| The stormwater management strategies should demonstrate how they relate to the proposed | The stormwater management strategy has been developed in consideration of existing |

| Issue raised | Response |
|---|---|
| precinct strategies and achieve the Growth centres DCP outcomes | and planned development within the adjoining development precincts. This has included:<br>• The sizing of the transverse drainage to manage flood related impacts on both existing and planned development upstream of the road corridor within the MPP with due consideration of a range of flood events up to the Probable Maximum Flood.<br>• The discharge of runoff from the road corridor at locations that are consistent with those identified in the Water Cycle and Flood Management Strategy for the MPNP.<br>• The provision of stormwater quality control measures in the form of vegetated swales are designed to ensure that the discharge of pollutants from the road corridor is no worse than present day conditions. |
| The design should show the planned adjoining land uses to ensure an integrated landscape and urban design outcome. | There is currently no approved land use plan for MPNP. The proposal water management plan has been designed to maintain the existing offsite drainage impacts with regard to water quality, quantity and velocities. Dedicated drainage systems of the MPP have been incorporated into the proposal in consultation with the developer. The proposal must adhere to the Transport for NSW urban design and landscape requirements of the NSW Government's "Beyond the Pavement". The proposal has considered Council's landscaping and urban design guidelines and incorporated where possible to provide integration with adjoining approved development, but primarily focusing on landscaping and visual impact assessment of the proposal itself. |
| The proposed infrastructure is not to have adverse flood impacts on surrounding land. | The flood assessment provided in Appendix K of the REF confirms the proposal will not result in adverse flood impacts. |
| Ensure suitable mitigation measures are implemented | The flood mitigation measures are discussed in the Richmond Road Upgrade, Marsden Park Detailed Design - Flooding Assessment (in Appendix K of the REF) |
| The water quality strategy is based on not making it worse than agricultural land use. The water quality targets should be consistent with | The water quality targets set out in the Growth Centres DCP are more appropriate for urban development within the precincts |

| Issue raised | Response |
|---|---|
| the Growth Centres Development Control Plan (DCP). | and not for linear infrastructure projects such as the upgrade of Richmond Road.<br>Water quality controls in the form of vegetated swales have been incorporated into the proposed road upgrade as they are well suited to linear infrastructure. The vegetated swales are designed to limit annual average pollutant loads to no greater than those discharging from the road corridor under present day conditions in order to ensure that there is no environmental impact on the receiving waterways.<br>The indicative layout of the proposed vegetated swales is shown in Appendix D of this report. |
| **The design is based on 1:2 batters which will be difficult to maintain. If the design is amended then the compensatory flood storage excavation volume will need to be increased.** | The project is no longer using a compensatory flood storage excavation area. |
| **The compensatory flood storage excavation area must be free draining and not overlap with previously approved compensatory flood storage excavation for other development. Details of the compensatory flood storage area are to be provided as part of the road design project and restrictions on title registered to prevent future filling/reduction in flood storage over this area.** | The project is no longer using a compensatory flood storage excavation area. |
| **Noise Walls** | |
| Where noise attenuation is required through the development assessment process, earth mounding and landscaping should be adopted in the first instance. | There are no noise walls proposed at this stage. Should future modelling prior to construction trigger the need for noise walls, Blacktown City Council's policy will be considered in design along with Transport for NSW Noise Mitigation Manual. |
| Where site constraints do not allow for mounding, a noise wall should be landscaped in accordance with Council's "Eyes on Blacktown Landscape Strategy". | |
| **Landscaping and Open Space** | |
| Shared paths should be constructed on both sides of Richmond Road and positioned directly at the back of kerb with a width of 3.6 m to assist with maintenance | A shared path has been provided on the western side of the road to be consistent with the existing sections of Richmond Road. |
| There should be no soft landscaping placed directly behind the kerb line – this infrastructure is costly, difficult to maintain and generally fails. | Currently the design provides soft landscaping beyond the kerb in order to improve visual amenity and urban design. |

| Issue raised | Response |
|---|---|
| Shared path abutting the back of kerb is not acceptable - needs to be moved away from road to allow for landscaping between kerb and path, refer comments below regarding soak stone. | This is to be further discussed with Blacktown Council before finalising the design for construction.<br>The landscape proposal as shown in the REF documents would be further developed with the detailed road design in consultation with Blacktown Council to take account of maintenance and clear zone requirements, while maintaining the overarching principles of greening of road corridors.<br>The objective is to provide shade trees and a softer interface with the adjoining urban development. |
| Opportunity to further maximise tree planting along embankments and within central median, where there are no identified impacts on site lines or clear zones. | |
| Street trees to be installed between edge footpath/ shared user path and road reserve hinge points. | |
| Design to maximise large avenue and shade trees, i.e. large trees in centre of median. Tree between kerb and paths, trees between path and road reserve boundary. | |
| Screen planting zone or landscape zone required from outside row of tree to Noise wall or property boundary. | Screen planting is provided throughout the road reserve outside the shared path in response to the batter profiles and need to provide screening and robust setting for the adjoining development. |
| Richmond Road has street trees within hinge points of road reserve. This section is a good example of the extent of street trees required for Garfield Rd West & East. | Noted. |
| Incorporate landscape design principles in accordance with Council's guidelines. | The landscape plan is generally consistent with Council's landscape guidelines. The landscape plan has been designed to align with Transport for NSW guidelines:<br>• Beyond the Pavement Urban Design Policy<br>• Procedures and Design Principles 2020<br>• Landscape Guideline 2018<br>Transport for NSW will liaise with Blacktown City Council prior to finalising the detailed landscape design. |
| Coordinate typical details with the Western Sydney Planning Partnership Street Design Guidelines | Landscape design has considered Transport for NSW landscape guidelines and adopts typical good practice principles with the intention to enhance canopy coverage and reduce the heat island effect. The street design guidelines will be considered as part of the detailed design. |
| Should consider passive irrigation of landscaping/street trees. | Passive irrigation has not been incorporated to date. This will need to be reviewed |

| Issue raised | Response |
|---|---|
| | against drainage and pavement performance. Opportunities to enhance passive irrigation will be considered at detailed design. |
| This road is a key regional flood evacuation route. Location and type of tree planting should consider the need to clear fallen trees in major storm flood events as this could impact on evacuation capacity | Tree species and location have been selected based on Transport for NSW's specifications for road safety and urban design. |
| Fill embankment batters of 1:2 won't be maintained and a no/low maintenance type planting design should be implemented. | Fill embankments will not be turfed, instead they will be planted out with low maintenance native plants. |
| Turf batters should be no greater than 1:6 and garden batter areas should be no greater than 1:4. | Batters throughout the proposal are a maximum of 1:2 due to physical constraints. Low maintenance planting will be used instead of turf. |
| The road configuration should allow for tree planting in the ultimate design - ie future road widening should not result in trees being removed | Location of large tree planting is designed in the middle of the median, to allow for future road widening while minimising the removal of large established trees. |
| Consultation with landscape maintenance contractor to ensure proposed landscaped treatments are feasible to maintain. | A Landscape Management Plan has been prepared that addresses the practical maintenance requirements. |
| The impact of a no/low maintenance planting outcome will need to be considered for its impact on planned adjoining residential land uses. | The proposal extends to the road reserve boundary only and will not affect any development outside this boundary.<br>The proposed landscaping treatment will positively contribute and not impede any adjoining development. No landscaping is proposed outside the road reserve. |
| Road cross sections must show the road reserve and ultimate property boundaries to ensure proposed tree planting is within the road reserve. Reliance of trees within private property to achieve the intent of Council to maximise tree canopy within road reserves will not be accepted. | |
| Tree selection, changes from "Gateway" trees to "more randomly centred "broadscale trees" to "broadscale drainage trees. Landscape Design Principles require consistent large avenue trees. | The naming of tree planting typologies is typically to differentiate landscape character principles. Trees are planted as rows between the verge and shared path to create a formal tree planting character along the length of the project, regardless of tree species. Beyond this, the trees are planted in clusters to screen Marsden Park properties from viewing the road corridor.<br>A formal avenue is not proposed at this stage. However, these details are to be worked out and agreed between Transport for NSW and Blacktown City Council before the final design for construction. |

| Issue raised | Response |
|---|---|
| Consideration must be given to having parking bays and areas so that vehicles can be parked to undertake maintenance and not impact on traffic flows. | Although not a parking bay, a two metre wide shoulder is provided with two through lanes at 3.5 metre wide each to allow for breakdown. The road cross section proposed is consistent with the existing sections of Richmond Road. |
| Detailed landscape plans are to be submitted to Council for review prior to final approval. As part of the landscape plans, we require information on tree planting which includes the locations of trees to be planted along with their size and species type. We also require information on any trees that are proposed to be removed as part of the proposal. | Landscape plans specifying tree species and location of trees to be planted, were provided as part of the REF exhibition. Detailed design landscape plans will show locations of trees to be removed and planted, with schedules detailing the pot sizes and species to be planted.<br>Transport for NSW will liaise with Blacktown City Council prior to finalising the detailed landscape design. |
| A landscape maintenance program and costs to provide this service are to be provided for our consideration. | Noted. |
| A final handover process is to be in place for all landscape work, with a 2-year maintenance and establishment period, as part of practical completion arrangements. | Noted and agreed. |
| The eastern side of Richmond Road is biodiversity (noncertified) so it will require an ecological assessment. There are a lot of endangered *Grevillea juniperina* plants along the Richmond Road verge. | About 38 *Grevillea juniperina* individuals have been identified within non-certified land in the existing REF construction footprint. The proposed amended construction footprint reduces the impact in non-certified land to four individuals. This impact was assessed as not significant in the Biodiversity Assessment provided in Appendix E to the REF and Appendix A to this report. |
| There is a dam in the construction area that will require a dewatering plan and this area may also need to be mapped for Green and Golden Bell Frogs. | This non-certified land has been assessed in the Biodiversity Assessment provided in Appendix E and summarised in Chapter 6.4, noting a low potential to occur:<br>“The habitats in the study area are not considered suitable for this species and the Golden Bell Frog has not been recorded from the locality since 1999 when it was found at Merrylands. Records have not been made at other former habitats in the locality since the 1970s”. |
| We don’t support the construction or installation of water sensitive urban design (WSUD) infrastructure or rock walls etc. as they are difficult to access and maintain. | Noted. However, in order to minimise the land area and impact of discharge water from the proposal, drainage outlets require a degree of WSUD measures. The design incorporates low maintenance grassed |

| Issue raised | Response |
|---|---|
| | swales to minimise Blacktown City Council maintenance requirements. |
| **Heritage**[1] | |
| Proposed mitigation measures in REF are supported. Transport for NSW should coordinate its Section 60 application with input from Heritage NSW and Clydesdale developer. | Noted. |
| No objection to proposed management of Aboriginal heritage. | Noted. |
| The detailed design and future construction of that section of Richmond Road in front of Clydesdale should have regard to the implications of the following requisites imposed on the developer of Clydesdale:<br>• Interpretive treatment of the Entrance Drive | Transport for NSW has been and continues ongoing liaison with the Clydesdale developer. The developer has been directly contacted to provide comment on the proposal to ensure integration.<br>The proposal extends to the road reserve boundary only. Any work the developer proposes/requires as part of their consent will be contained within their property boundary and not impact the proposal.<br>There is no capacity with the proposal area to accommodate any additional interpretative signage, landscaping or structure not already included in the design.<br>The proposed shared path and landscaping treatment of the proposal will positively contribute and not impede any landscaping, heritage or urban design proposed by the developer. |
| • Relocation of the stone entrance piers, walls and gate | |
| • Compliance with Marsden Park Precinct Development Control Plan which provides an avenue of screen planting fronting onto Clydesdale Estate | |
| • The proposed treatment of the shared cycleway/pedestrian track that is to be constructed parallel to Clydesdale Heritage Drive as an interpretive feature for the original entrance drive. | |
| • Production of an information board for installation at the front of the estate in proposed Lot 11, in a landscaped open space, or common area that is accessible to the public, in the vicinity of Clydesdale Heritage Drive's junction with Richmond Road. | |
| Transport for NSW should coordinate with the Clydesdale developer to integrate the heritage design requirements issued as conditions of consent, including:<br>• The interpretive accessway to run parallel to Clydesdale Heritage Drive along with appropriate interpretation<br>• Potential relocation of the entrance gates<br>• Landscape treatment for the front of the estate. | As above. |

| Issue raised | Response |
| --- | --- |
| Transport for NSW should also liaise with the developer to coordinate with the developers Section 60 requirements potentially related to:<br>• Landscape buffers<br>• Driveway width, surface materials and drainage<br>• Any fencing<br>• Driveway junction at the existing stone gates at Richmond Road and tree planting to interpret historic planting. | Transport for NSW will continue to liaise with the Clydesdale developer and incorporate consistent design requirements where possible. |

[1] additional comments provided in relation to other Transport for NSW projects are out of scope of this Submission Report and not included.

# 3. Changes to the proposal

## 3.1 Change 1 – Northern extension

### 3.1.1 Description

The proposed design change involves a temporary road diversion to facilitate the construction of the proposed southbound carriageway. This design change results in an extension of the northern boundary of the proposed upgrade 40 metres in length and about 26 metres west to the width of the future road reserve (refer Figure 3-1). The works required at the northern extension include:

- Ground disturbance to provide earthworks foundations
- Filling to construct earthworks embankment
- Cut earthworks around embankment to maintain surface drainage
- Temporary sediment basin and access track.

## 3.2 Change 2 – Realignment of drainage culvert

### 3.2.1 Description

The proposed drainage culvert discharge located east of the roadway has been amended to shift the discharge south about 50 metres to reduce the footprint of impact to land at the downstream end (east side) by combining the two cross-drains from under the road into one discharge point, thereby minimising severance impacts. The alignment reduces the discharge area from 50 metres to 35 metres, further narrowing eastward as shown in Figure 3-1. The proposed works remain as described in the REF and include:

- Clearing to allow construction of culvert outlet and open drain realignment
- Cut earthworks for open drain connection.

## 3.3 Change 3 – Updated noise mitigation measures

### 3.3.1 Description

In accordance with Environmental safeguard NV17 of the REF, Transport has undertaken further assessment of reasonable and feasible operational noise mitigation within the Marsden Park precinct. The receivers considered and not considered for mitigation are outlined in the assessment section below.

## 3.4 Change 4 – Updated consideration for flood compensatory storage area

### 3.4.1 Description

Due to decisions and statements made by the Department of Planning and Environment (DPE) since 2022, an additional assessment of the impacts of Transport projects on flood behaviour in the Hawkesbury-Nepean River Floodplain at Windsor was undertaken by Lyall & Associates in November 2023 on behalf of Transport, in consultation with Blacktown City Council and DPE. The assessment considered the cumulative impact of Transport road upgrades in the area and concluded that the use of flood

compensation storage areas for the proposal would not be warranted. The flood compensation storage area described in the REF will no longer be implemented as part of the project.

## 3.5 Change 5 – Updated Traffic Assessment and amendment to the intersection configuration at Richmond Road and Charles Tompson Boulevard

Transport undertook additional traffic modelling to consider the new developments in Marsden Park adjacent to the project area. The results of the assessment indicated that the intersection at Richmond Road and Charles Tompson Boulevard would experience additional traffic volume and required additional capacity compared to what had been presented in the Project REF. The right turning lanes from Richmond Road to the eastern and western side of the intersection have been duplicated to improve capacity (from one right turning lane to two right turning lanes) and the left turning lanes from Richmond Road have been lengthened to cater for the additional traffic demand.


**Figure 3.1** Proposed construction footprint amendments


Legend

- Proposed amended construction footprint
- Existing REF construction footprint
- Ancillary facility
- Proposed future road reserve boundary
- Proposed road design
- Watercourse
- Waterbody

0 150 300 m

1:7,000 at A4


**Data sources**

Jacobs 2020
Ausimage 2018
NSW Spatial Services 2020

GDA94 MGA56
Version: 9/04/2021

**Figure 3.2** Proposed updated proposal

# 4. Environmental assessment

## 4.1 Biodiversity

A Biodiversity Assessment Addendum was prepared by Jacobs (2021) (refer Appendix A) to assess the impact of the proposed changes. The significance assessments for biodiversity within the proposal area has been derived from the Richmond Road Upgrade Marsden Park Biodiversity Assessment Report (BAR) (Jacobs, 2020). This biodiversity assessment should be read in conjunction with that report. The key findings are summarised below.

The northern extension falls within Biodiversity certified land under the Biodiversity Certification of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (Growth Centres SEPP), and the drainage culvert discharge relocation falls on non-certified land. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP. The Biodiversity Certification Order provides that any developments or activities proposed to be undertaken within certified areas do not need to carry out assessment of impacts on threatened species, populations and ecological communities, or their habitats, that would normally be required by Parts 3, 4 or 5 of the *Environmental Planning and Assessment Act 1979.* Therefore, only impacts from the drainage culvert discharge relocation requires assessment of significance under NSW and Commonwealth impact assessment legislation.

### 4.1.1 Existing environment

The proposed amended construction footprint areas represent vegetation and habitat consistent with the existing REF construction footprint.

The drainage culvert discharge relocation contains exotic grassland, two *Eucalyptus moluccana,* four *Melaleuca decora* and four *Grevillea juniperina* subsp. *juniperina* individuals. The species composition of exotic grassland in the new area is consistent with that of the previous BAR (Jacobs, 2020). No Plant Community Types are present in the amended portion of the construction footprint. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP.

### 4.1.2 Methodology

The assessment was based on a site inspection carried out on 22 January 2021 and limited to the drainage culvert discharge relocation area. The site inspection involved a site walk over and targeted threatened plant species meanders. No detailed ecological surveys were carried out. This assessment updates the initial BAR carried out in June 2020 (Jacobs, 2020).

### 4.1.3 Potential impacts

The amended construction footprint would require additional removal of highly disturbed, exotic vegetation within certified and non-certified land and native tree species on non-certified land.

No Plant Community Types (PCT) would be subject to additional direct impacts from the amended construction footprint. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP.

During the detailed field inspection undertaken for this amended construction footprint in the culvert drainage area, additional individuals and habitat for *Grevillea juniperina* subsp. *Juniperina* were identified in the existing REF construction footprint (shown as yellow hatching in Figure 4-1), increasing the existing proposal impact on this species in non-certified land from 20 to 38 individuals. The proposed amended construction footprint reduces the number of *Grevillea* impacted in non-certified land to four.

The native vegetation to be removed in the amended construction footprint of the culvert drainage area is consistent with the original construction footprint vegetation composition, providing potential habitat for the same threatened species identified in Section 3.6.2 of the BAR (Jacobs, 2020). The proposed amended construction footprint reduces the clearing the amount of *Eucalyptus moluccana* trees from four to three. Therefore, the threatened species impacts remains consistent with the assessment outcomes for the affected species detailed in the BAR (Jacobs, 2020).

Total impacts of the existing and proposed amended construction footprint are shown in Table 4-1 (non-certified areas). Table 4-2 shows the amended construction footprint in the certified area including the culvert drainage area.

Table 4-1: Impacts on vegetation in amended construction footprint (non-certified areas)

| Vegetation description | BC Act | EPBC Act | Existing REF construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Not assigned to PCT, comprises non-native highly disturbed areas – cleared paddocks, road verges, table drains, road embankments, ploughed paddocks etc. | - | - | 1.48 | 1.46 |
| Mix of mature, native tree species (*Eucalyptus moluccana, Eucalyptus amplifolia, Angophora floribunda, Melaleuca decora* and *Eucalyptus tereticornis*) | - | - | 0.13 | 0.13 |
| *Grevillea juniperina* subsp. *juniperina* | V | - | 38 individuals | 4 individuals |
| | | Total | 1.61 | 1.59 |

Table 4-2: Impacts on vegetation in amended construction footprint (certified areas)

| Vegetation description | BC Act | EPBC Act | Existing REF construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849) (Critically Endangered Ecological Community (BC Act): Cumberland Plain Woodland in the Sydney Basin Bioregion) | CEEC | - | 0.83 | 0.83 |
| Mix of mature, native tree species (*Eucalyptus moluccana, Eucalyptus crebra, Acacia decurrens, Eucalyptus amplifolia, Angophora floribunda*, *Eucalyptus tereticornis and Casuarina cunninghamiana*) | - | - | 0.27 | 0.27 |

| Vegetation description | BC Act | EPBC Act | Existing REF construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Not assigned to PCT, comprises non-native highly disturbed areas – cleared paddocks, road verges, table drains, road embankments, ploughed paddocks etc. | - | - | 21.86 (includes off-site flood storage area) | 22.13 (includes off-site flood storage area) |
| | | Total | 22.96 | 23.23 |

### 4.1.4 Revised safeguards and management measures

The safeguards included in the BAR (Jacobs, 2020) for the REF remain applicable. Additional proposed safeguards are provided in Table 4-3.

Table 4-3: Proposed additional safeguards

| Impact | Environmental safeguard | Responsibility | Timing | Reference |
|---|---|---|---|---|
| Fauna habitat | The fallen log within the proposed amended culvert drainage footprint should be translocated outside of the construction footprint | Construction contractor | Construction | Additional measure |

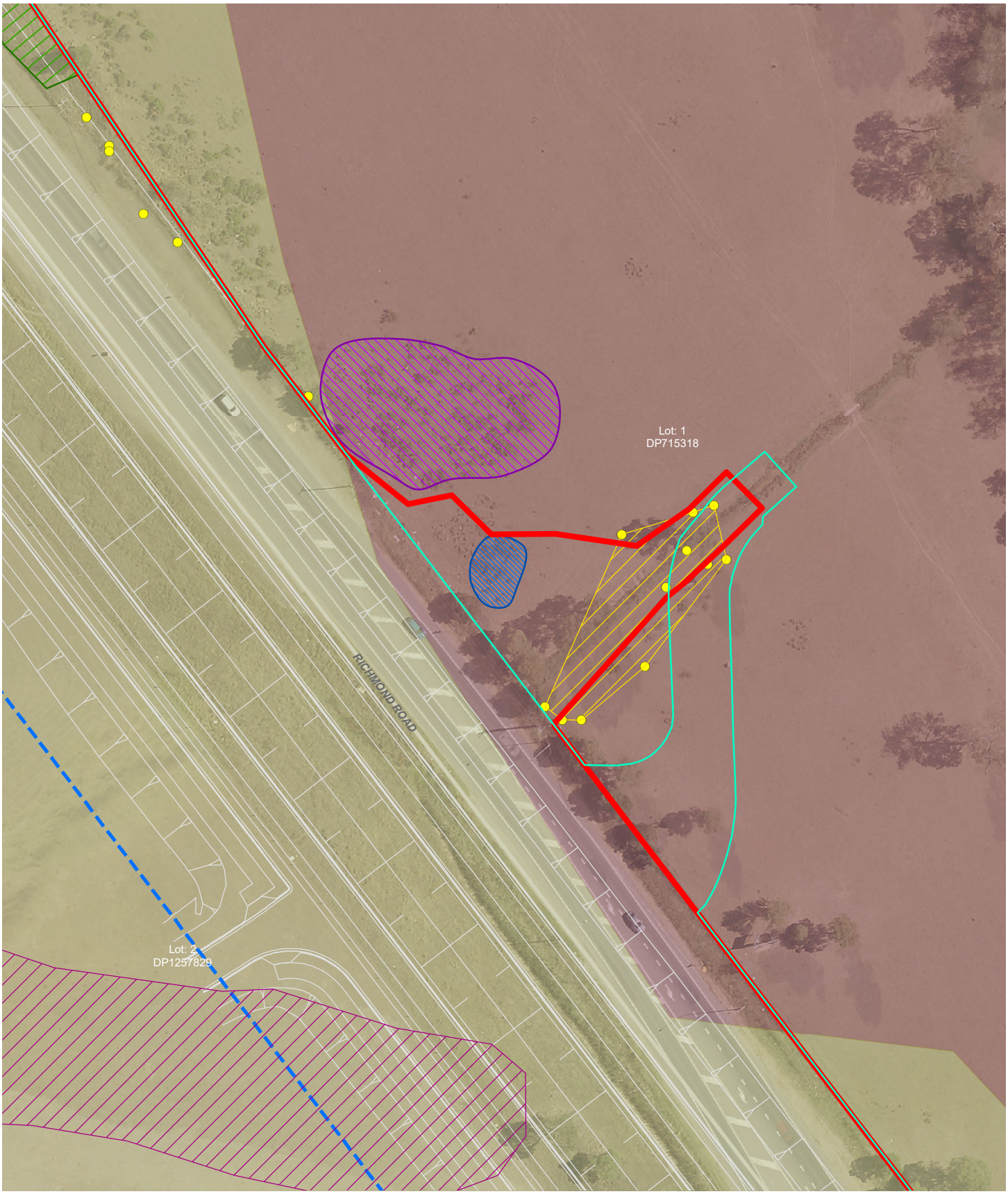



**Figure 4.1** Amended drainage culvert footprint

## 4.2 Aboriginal heritage

A report was prepared by Kelleher Nightingale Consulting (2021) (refer to Appendix C) to assess the impact of the proposed modifications. The significance assessment for heritage items within the proposal area and in the vicinity of the works was derived from the 2019 (Kelleher Nightingale Consulting; 2019) and 2020 addendum (Kelleher Nightingale Consulting, 2020). This heritage assessment should be read in conjunction with those reports. The key findings are summarised below.

### 4.2.1 Potential impacts

The two locations of the proposed amended construction footprint were assessed as part of archaeological survey assessment completed in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI Stages 2) for the Richmond Road Upgrade from Elara Boulevard to Heritage Road (Kelleher Nightingale Consulting, 2019).

No Aboriginal objects or sites were identified in the two locations.

### 4.2.2 Revised safeguards and management measures

The impact of the proposed amended construction footprint is consistent with the findings of the Richmond Road Upgrade from Elara Boulevard to Heritage Road Aboriginal Archaeological Survey Report (Kelleher Nightingale Consulting, 2019).

No further Aboriginal archaeological assessment or additional mitigation measures are required.

## 4.3 Non-Aboriginal heritage

A Heritage Assessment Memo was prepared by Artefact (2021) (refer to Appendix B) to assess the impact of the proposed changes. The significance assessment for heritage items within the proposal area and in the vicinity of the works was derived from the 2019 Statement of Heritage Impact (SoHI) (Artefact, 2019) and 2020 Addendum SOHI (Artefact, 2020). This heritage assessment should be read in conjunction with those reports. The key findings are summarised below.

### 4.3.1 Potential impacts

The proposed northern extension of the construction footprint extends approximately 15 metres into the Clydesdale State Heritage Register (SHR) curtilage. This is consistent with the 2019 assessment area (Artefact, 2019), which included property acquisition and relocation of the Clydesdale property boundary about 10 to 15 metres to the west of its current location.

Physical works associated with the northern extension include:

- Clearing to provide earthwork foundations
- Filling to construct earthworks embankment
- Cut earthworks around embankment associated with proposed drainage culvert
- Temporary sediment basin and access track.

The original 2019 SOHI (Artefact, 2019) reached the following conclusions on the heritage impacts of the project:

- Moderate physical impact to ‘Clydesdale – House, Barn, Cottages and Farm Landscape’
- Moderate visual impact on ‘Clydesdale – House, Barn, Cottages and Farm Landscape’

- Neutral physical impact to ‘St Phillips Church Cemetery’
- Minor visual impact to ‘St Phillips Church Cemetery’
- Potential impact to areas assessed as demonstrating nil-low potential to contain archaeological relics.

The 2020 Addendum report (Artefact, 2020) found that:

*The additional works not assessed in the 2019 SoHI… would result in negligible to minor physical impact and minor visual impact to ‘Clydesdale – House, Barn, Farm and Landscape’.*

*The additional works not assessed in the 2019 SoHI would have nil physical and visual impacts on the significance of the ‘St Phillips Church Cemetery’.*

*There is no expectation that significant archaeological remains would be located within the study area.*

The proposed drainage culvert realignment to the east of the southern end of the proposal would not be located within the curtilage of any heritage item. The proposed works would be physically separated from ‘Clydesdale – House, Barn, Cottages and Farm Landscape’ by Richmond Road. Direct heritage impacts from the additional drainage works are nil.

Minor amendments to the design at the northern end of the proposal may result in a change in setting through the addition of the proposed 40 metre tie-in linking to Richmond Road. Impact to the heritage significance of Clydesdale, however, would be negligible. Similarly, the proposed drainage culvert realignment would have limited visual impact on the Clydesdale item as it is visually and physically separated from the item by Richmond Road. The indirect visual impact of the additional area on listed heritage items is considered to be negligible.

Overall, the additional impacts of the proposed amended construction footprint are considered to be consistent with the 2019 SoHI (Artefact, 2019), which identified that physical works, property boundary adjustment, and visual changes would result in moderate physical and visual impact to the ‘Clydesdale – House, Barn, Cottages and Farm Landscape’ heritage item.

The additional construction footprint would have nil physical or visual impacts on the St Phillips Church cemetery, given there is no encroachment upon the curtilage of the item, and would not alter the overall impact of the project to this item.

The 40 metre extension to the north is constrained to already highly disturbed road and roadside surfaces, and negligibly extends westward into an area of the Clydesdale item previously identified in the Conservation Management Plan (GBA Heritage, 2017) as having no archaeological potential, supported by later assessments. The earthworks thus have nil potential to impact significant archaeological remains based on the available information and assessments.

The earthworks required for the establishment of the culvert are proposed to take place in an area which is not close to any listed or identified archaeological items and is in an area identified as having nil archaeological potential in a 2015 (amended 2017) archaeological study of the precinct carried out by Artefact (Artefact; 2015).

Accordingly, the two changes to the construction footprint will have nil potential to impact significant archaeological remains, remaining consistent with previous assessments.

### 4.3.2 Revised safeguards and management measures

This assessment has found that additional construction footprint not assessed in the 2019 SoHI (Artefact, 2019) or 2020 addendum (Artefact, 2020) would result in negligible additional adverse impacts to ‘Clydesdale – House, Barn, Farm and Landscape’ consistent with earlier assessments.

The additional construction footprint not assessed in the 2019 SoHI or 2020 addendum would have nil additional physical and visual impacts on the significance of the 'St Phillips Church Cemetery'.

There is no expectation that significant archaeological remains would be located within the additional construction footprint area, which is consistent with the conclusions reached in the previous assessments.

In addition to the recommendations of the 2019 SoHI and 2020 addendum, this heritage assessment recommends the following:

- The heritage assessment memo (Artefact 2021) should be attached to the Submissions Report provided to Transport for NSW for their approval for the proposal to proceed
- This heritage assessment memo should be included with the 2019 SoHI and 2020 addendum SoHI with a Section 60 application under the *Heritage Act 1977* to Heritage NSW for works and property boundary adjustments within the SHR curtilage of 'Clydesdale – House, Barn, Farm and Landscape'

No additional mitigation measures or safeguards are proposed.

## 4.4 Noise

The noise assessment in the REF showed that 75 residences were potentially eligible for noise mitigation; however, some of these eligible residences were future dwellings that either had not been constructed or approved for construction. Responsibility for mitigation for these future receivers ultimately lies with the developer.

In accordance with Environmental safeguard NV17 of the REF, Transport has undertaken further assessment of reasonable and feasible operational noise mitigation within the Marsden Park precinct.

- NV17: *Further assessment of reasonable and feasible operational noise mitigation will be assessed and determined when information regarding the location and size of the future buildings in Marsden Park Precinct is better understood.*

This assessment shows that pre-existing residences located at 23, 25, 27, 29, 31, 33, 35, 37, 39 and 41 Chambers Street Marsden Park should be considered for noise mitigation.

Residences at 1, 3, 5, 7, 13, 15, 17 and 19 Chambers Street as well as No. 35 Ellison Street and No. 36 Feiney Street are not being considered for noise mitigation. These houses are currently being used as display houses and not expected to become available to the public until after the new houses located between Chambers Street and Richmond Road are constructed which will provide noise shielding from traffic noise.

The noise report in the REF also identified Northbourne Public School as potentially requiring consideration of noise mitigation. Eligibility of noise mitigation for the school is based on an internal noise level, not an external noise level as is the case for residences.

The external noise level predicted for Northbourne Public School was 57 dBA in the REF at the worst affected façade for the design year (10 years after opening). Typically a building of masonry construction would provide a noise reduction around 25dBA however based on a worst case scenario of 20dBA the internal noise level is expected to be 37dBA. This is below the internal noise level criterion of 40dBA as per EPA's guideline "Road Noise Policy" and therefore noise mitigation would not be required.

### 4.4.1 Revised safeguards and management measures

Due to the safeguard NV17 being fulfilled with the above assessment, the safeguard has been removed.

## 4.5 Flooding

At the time of the drafting of the Project REF in 2020, applicable legislation regarding to flood impacts (clause 20 of the State Environmental Planning Policy (Sydney Regional Growth Centres) 2006) were previously interpreted by the NSW Land and Environment Court as preventing any unmitigated increase in flood levels resulting from development, no matter how small the increase was. This formed the basis of including the requirement for a flood compensatory storage area as part of the project.

In early 2022, the Department of Planning and Environment (DPE) issued indicative template conditions of approval which included allowable tolerances for levels of flood increases resulting from State Significant linear type infrastructure projects. Later that year, DPE issued a post-exhibition finalisation report entitled "*Riverstone West Precinct – Amendments to State Environmental Policy (Precincts – Central River City) 2021 and State Environmental Planning Policy (Precincts – Western Parklands City) 2021*" which included acceptable tolerance levels regarding cumulative flood impact levels associated with developments (being that increases of between 3mm and 9mm in peak flood levels are acceptable) and included changes to the SEPPs.

Based on these developments, an assessment of the impact of Transport projects on flood behaviour in the Hawkesbury-Nepean River Floodplain at Windsor was undertaken by Lyall & Associates in November 2023 on behalf of Transport. The assessment included the cumulative impact of Transport road upgrades within the same floodplain area, including:

- Bandon Road Upgrade
- Garfield Road West Upgrade
- Richmond Road Upgrade at Marsden Park (this project)
- Richmond Road crossing of South Creek
- The Driftway Upgrade
- New Richmond Bridge

The assessment found that the cumulative effects of the five road upgrade projects would result in a maximum increase in flood levels of 1 millimetre, with the Richmond Road Upgrade at Marsden Park contributing to approximately 12.5% of this increase.

In accordance with the merits-based approach set out in the NSW Government's Flood Risk Management Manual (2023), the assessment found that the recapture of floodplain storage associated with the road upgrades cannot be justified on social, economic or ecological grounds. Furthermore, the assessment found that the projects would provide a net benefit in terms of reducing the impact that flooding has on the local community, inclusive of individual owners and occupiers of flood prone property, by increasing the time they would have to take action and evacuate, thereby reducing flood damages and risk to life.

With the above assessment in mind, the use of a flood compensatory storage area has been reconsidered and will no longer be implemented as part of this project. As part of this assessment, Blacktown City Council, the Department of Planning and Environment, Reconstruction Authority NSW, and the Department of Climate Change, Energy, the Environment and Water were consulted with. NSW State Emergency Services have also been consulted by Transport for NSW directly.

### 4.5.1 Revised safeguards and management measures

The following changes to safeguards have been implemented.

Safeguards H5 and H6 are removed as a flood compensatory storage area is no longer being used.

No additional safeguards are proposed.

## 4.6 Traffic and Transport

Transport undertook additional traffic modelling to consider the new developments in Marsden Park adjacent to the project area including Marsden Park North Precinct and Marsden Park Precinct. The results of the assessment indicated that the intersection at Richmond Road and Charles Tompson Boulevard would require additional capacity compared to what had been presented in the Project REF.

The following changes have been made to the design:

- Duplication of the right- turning lane from Richmond Road south bound into Charles Tompson Boulevard west bound (from one lane to two lanes)
- Duplication of the right-turning lane from Richmond Road north bound to the proposed eastern side development. (from one lane to two lanes)
- Extension of the left-turning lanes from Richmond Road north bound and south bound into Charles Tompson Boulevard and eastern side development.

These changes would not result in an extension of the REF boundary and therefore the existing REF assessment is considered sufficient to cover the changes.

No changes to existing safeguards or mitigation measures are proposed.

# 5. Environmental management

The REF for the Richmond Road upgrade, Marsden Park identified the framework for environmental management, including safeguards and management measures that would be adopted to avoid or reduce environmental impacts (Chapter 7.2 of the REF).

After consideration of the issues raised in the public submissions and changes to the proposal, the safeguard and management measures have been revised. One additional safeguard was identified for biodiversity, one for the flood offset area, three for landscaping and one for property impacts.

Should the proposal proceed, environmental management will be guided by the framework and measures outlined below.

## 5.1 Environmental management plans (or system)

A number of safeguards and management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposal. Should the proposal proceed, these management measures would be incorporated into the detailed design and applied during the construction and operation of the proposal.

A Construction Environmental Management Plan (CEMP) will be prepared to describe safeguards and management measures identified. The CEMP will provide a framework for establishing how these measures will be implemented and who would be responsible for their implementation.

The CEMP will be prepared prior to construction of the proposal and must be reviewed and certified by environment staff, prior to the commencement of any on-site works. The CEMP will be a working document, subject to ongoing change and updated as necessary to respond to specific requirements.

The CEMP would be developed in accordance with the specifications set out in:

- QA Specification G36 – Environmental Protection (Management System)
- QA Specification G38 – Soil and Water Management (Soil and Water Plan)
- QA Specification G40 – Clearing and Grubbing
- QA Specification G10 – Traffic Management.

## 5.2 Summary of safeguards and management measures

The REF for the Richmond Road upgrade, Marsden Park identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the issues raised in the public submissions, the environmental management measures for the proposal (refer to Chapter 7.2 of the REF) have been revised. Should the proposal proceed, the environmental management measures in Table 5-1 will guide the subsequent phases of the proposal. Additional and/or modified environmental safeguards and management measures to those presented in the REF have been underlined and deleted measures, or parts of measures, have been struck out.

Table 5-1: Summary of environmental safeguards and management measures

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| GEN1 | General - minimise environmental impacts during construction | A CEMP will be prepared and submitted for review and endorsement of the Transport for NSW Environment Manager prior to commencement of the activity.<br><br>As a minimum, the CEMP will address the following:<br>• Any requirements associated with statutory approvals<br>• Details of how the project will implement the identified safeguards outlined in the REF<br>• Issue-specific environmental management plans<br>• Roles and responsibilities<br>• Communication requirements<br>• Induction and training requirements<br>• Procedures for monitoring and evaluating environmental performance, and for corrective action<br>• Reporting requirements and record-keeping<br>• Procedures for emergency and incident management<br>• Procedures for audit and review.<br>The endorsed CEMP will be implemented during the undertaking of the activity. | Contractor/Transport for NSW project manager | Pre-construction/detailed design | Section 4.8 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| GEN2 | General - notification | All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity. | Contractor/Transport for NSW project manager | Pre-construction | Core standard mitigation measure NV2 |
| GEN3 | General – environmental awareness | All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular 'toolbox' style briefings.<br>Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:<br>• Aboriginal heritage<br>• Non-Aboriginal heritage<br>• Protected biodiversity<br>• Noise sensitive receiver | Contractor/Transport for NSW project manager | Pre-construction/detailed design | Additional safeguard |
| **Traffic and Transport** | | | | | |
| TT1 | Traffic and transport | A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Roads and Maritime, 2008). The TMP will include:<br>• Confirmation of haulage routes | Contractor | Detailed design / Pre-construction | Section 4.8 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | • Measures to maintain access to local roads and properties<br>• Site specific traffic control measures (including signage) to manage and regulate traffic movement<br>• Measures to maintain pedestrian and cyclist access<br>• Requirements and methods to consult and inform the local community of impacts on the local road network<br>• Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads.<br>• Parking arrangements for construction staff<br>• A response plan for any construction traffic incident<br>• Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic<br>Monitoring, review and amendment mechanisms. | | | |
| TT2 | Property access - during construction | Access to properties will be maintained during construction. Where that is not feasible, temporary alternative access arrangements will be provided following consultation with affected landowners and the relevant local road authority. Any disruptions to property access and traffic | Transport for NSW and Contractor | Construction | Additional standard safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | will be notified to landowners at least five days prior in accordance with the relevant community consultation processes outlined in the TMP. | | | |
| TT3 | Reduce speeds, traffic delays and disruptions during construction | Road users and local communities will be provided with timely, accurate, relevant and accessible information about changed traffic arrangements and delays owing to construction activities. | Transport for NSW and Contractor | Construction | Additional standard safeguard |
| TT4 | Reduce speeds, traffic delays and disruptions during construction | Construction site traffic will be managed to minimise movements during peak periods. | Transport for NSW and Contractor | Construction | Additional standard safeguard |
| TT5 | Reduce speeds, traffic delays and disruptions during construction | Clear wayfinding and safety signage will be provided to direct and guide vehicles not related to the proposal during road construction work. This will be supplemented by variable message signs to advise drivers of traffic diversions, speed restrictions or alternative routes. | Transport for NSW and Contractor | Construction | Additional safeguard |
| TT6 | Impacts to the regional road network | The most disruptive work (such as work that requires lane closures) will be carried out at night where practicable, to minimise potential impacts on the regional road network. | Transport for NSW and Contractor | Construction | Additional safeguard |
| TT7 | Parking | All staff parking will be provided on-site and not on surrounding local streets. | Transport for NSW and Contractor | Construction | Additional safeguard |
| TT8 | Site access and egress | All vehicles will enter and exit construction sites in a forward direction, where feasible and reasonable. | Transport for NSW and Contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| **Noise and vibration** | | | | | |
| NV1 | Noise and vibration | A Noise and Vibration Management Plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will generally follow the approach in the Interim *Construction Noise Guideline* (ICNG) (DECC, 2009) and identify:<br>• All potential significant noise and vibration generating activities associated with the activity<br>• Nearby sensitive receivers<br>• Feasible and reasonable mitigation measures to be implemented, taking into account *Beyond the Pavement: urban design policy, process and principles* (Roads and Maritime, 2014)<br>• A monitoring program to assess performance against relevant noise and vibration criteria<br>• Arrangements for consultation with affected neighbours, sensitive receivers and NSW SES including notification and complaint handling procedures<br>• Contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. | Construction contractor | Pre-construction | Core standard safeguard NV1<br>Section 4.6 of QA *G36 Environment Protection* |
| NV2 | Notification | All sensitive receivers (eg schools, local residents) likely to be affected will be notified prior to commencement of any work associated with the activity that may | Construction contractor | Construction | Core standard safeguard NV2 |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | have an adverse noise or vibration impact. The notification will provide details of:<br>• The proposal<br>• The construction period and construction hours<br>• Contact information for proposal management staff<br>• Complaint and incident reporting<br>• How to obtain further information. | | | |
| NV3 | Construction noise and vibration assessments | Location and activity specific noise and vibration impact assessments should be carried out prior to (as a minimum) activities:<br>• With the potential to result in noise levels above 75 dBA at any receiver<br>• Required outside Standard Construction Hours likely to result in noise levels in greater than the relevant Noise Management Levels<br>• With the potential to exceed relevant criteria for vibration.<br>The assessments should confirm the predicted impacts at the relevant receivers in the vicinity of the activities to aid the selection of appropriate management measures, consistent with the requirements of the CNVG. | Construction contractor | Construction | Additional safeguard |
| NV4 | Staff induction | Construction staff will be inducted and educated regarding management of noise impacts. | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| NV5 | Out of hours work | Where works are required outside standard construction hours, construction programming will be developed in consultation with Transport for New South Wales to minimise noise impacts – this may include agreement on completing construction in as short a time as possible or implementing time and duration restrictions and respite periods. | Construction contractor | Construction | Additional safeguard |
| NV6 | Compounds with long term work | Place as much distance as possible between the plant or equipment and residences and other sensitive land uses, particularly at site compounds. | Construction contractor | Construction | Additional safeguard |
| NV7 | Compounds with long term work | Hoarding, or other shielding structures, should be used where receivers are impacted near compounds or fixed work areas with long durations. To provide effective noise mitigation, the barriers should break line of sight from the nearest receivers to the work and be of solid construction with minimal gaps. | | | |
| NV8 | Vibration | Where practical, schedule the use of vibration intensive equipment during standard construction hours | Construction contractor | Construction | Additional safeguard |
| | | Avoid multiple vibration intensive activities occurring at the same time. | | | |
| NV9 | Noise and vibration | Where possible, work outside of standard construction hours will be planned so that noisier works are carried out in the earlier part of the evening or night time | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| NV10 | Construction machinery noise | Examine the different types of machines that perform the same function and compare the noise level data to select the least noisy machine. For example, rubber wheeled tractors can be less noisy than steel tracked tractors. | Construction contractor | Construction | Additional safeguard |
| NV11 | Construction machinery noise | Select appropriately sized equipment for the task rather than using large equipment when not necessary. | | | |
| NV12 | Construction machinery noise | Reduce throttle setting and turn off equipment when not in use. | | | |
| NV13 | Construction machinery noise | Regularly inspect and maintain equipment to ensure it is in good working order. Also check the condition of the mufflers. | | | |
| NV14 | Construction machinery noise | Where acceptable from a work health and safety perspective, quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and 'smart' reversing alarms) will be used particularly during out of hours activities. | | | |
| NV15 | Monitoring | Monitoring should be carried out at the start of new noise and vibration intensive activities to confirm that actual levels are consistent with the predictions and that appropriate mitigation measures from the CNVG have been implemented. | Construction contractor | Construction | Additional safeguard |
| NV16 | Noise complaints | All noise complaints will be investigated and appropriate mitigation measures implemented where practicable to minimise further impacts. | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| ~~NV17~~ | ~~Operational noise mitigation~~ | ~~Further assessment of reasonable and feasible operational noise mitigation will be assessed and determined when information regarding the location and size of the future buildings in Marsden Park Precinct is better understood.~~ | ~~Transport for New South Wales~~ | ~~Detailed design / pre-construction~~ | ~~Additional safeguard~~ |
| **Non-Aboriginal heritage** | | | | | |
| NAH1 | Construction management | A Non-Aboriginal Heritage Management Plan (NAHMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to avoid and mitigate impacts to Non-Aboriginal heritage. | Contractor | Detailed design/pre-construction | Section 4.10 of QA *G36 Environment Protection* |
| NAH2 | Unexpected finds | *The Standard Management Procedure - Unexpected Heritage Items* (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered.<br>Work will only re-commence once the requirements of that Procedure have been satisfied. | Contractor | Detailed design/pre-construction | Section 4.10 of QA *G36 Environment Protection* |
| NAH3 | Section 60 permit | A Section 60 permit must be obtained from the NSW Heritage Division of OEH for proposed impacts within the curtilage of Clydesdale – House, Barn, Cottage and Farm Landscape. | Transport for NSW | Pre-construction | Additional safeguard |
| NAH4 | Induction | Non-Aboriginal heritage awareness training will be provided for all contractors | Contractor | Pre-construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | and personnel before commencement of construction to outline the values of the place, avoidance procedure, and contacts (site manager, RMS heritage officer) for reporting unexpected archaeological finds or inadvertent impacts to the heritage item. | | | |
| NAH5 | Screen planting | New vegetation plantings along Richmond Road must take into consideration the vegetation management policies of the 2017 Conservation Management Plan (CMP) and the 2016 Marsden Park Development Control Plan (DCP). This includes ensuring that new plantings within the road corridor do not restrict the significant view corridor from Richmond Road back towards Clydesdale House, whilst being sympathetic to view lines from Homestead yard and working hub across the floodplain towards Richmond Road. | Transport for NSW | Pre-construction | Additional safeguard |
| NAH6 | Screen planting | Replanting or regeneration of native extant vegetation and grasses should occur along the road alignment and around the floodplain offset area to mitigate impact on the views and setting within the study area | Transport for NSW | Pre-construction | Additional safeguard |
| NAH7 | Photographic record | A photographic archival recording should be prepared of the proposal area and significant view lines prior to commencement of work | Transport for NSW | Pre-construction | Additional safeguard |
| NAH8 | Access 2 design | Design of the new entrance to Clydesdale ‘Access Road 2’, should consider design elements sympathetic to the significance values of Precinct 3, including timber | Transport for NSW | Pre-construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | fences and tubular metal gates. New vegetation plantings along Heritage Road must take into consideration the vegetation management policies of the CMP and the Marsden Park DCP, including significant view lines from Richmond Road across the floodplain to Clydesdale House and views along Entrance Drive and from Entrance Drive across surrounding paddocks. | | | |
| NAH9 | Lookout | Further design for the proposal should consider the feasibility of safely and effectively integrating a lookout and interpretation point on the southern side of Richmond Road overlooking the floodplain setting | Transport for NSW | Pre-construction | Additional safeguard |
| NAH10 | Additional work | Any work not assessed in this document will require additional heritage assessment and potentially an application for revised or new approvals under the H*eritage Act 1977*. Examples of additional work not assessed in this document include the location of compound sites, stockpile sites, ancillary facilities, and installation of services or temporary vehicle access routes not specified in the preliminary strategic design | Transport for NSW | Pre-construction | Additional safeguard |
| **Biodiversity** | | | | | |
| B1 | Removal of vegetation | A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime's *Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects* (RTA, 2011) and | Construction contractor | Detailed design/pre-construction | Section 4.8 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | implemented as part of the CEMP. It will include, but not be limited to:<br>• Pre-clearing survey<br>• Unexpected find procedure<br>• Inductions<br>• Vegetation removal protocols<br>Exclusion zones. | | | |
| B2 | Unexpected finds | The unexpected species find procedure is to be followed under *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) if threatened ecological communities, not assessed in the biodiversity assessment, are identified in the proposal site. | Construction contractor | Construction | Additional safeguard |
| B3 | Vegetation removal | Vegetation removal will be undertaken in accordance with Guide 4: Clearing of vegetation and removal of bushrock of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011). | Construction contractor | Construction | Additional safeguard |
| B4 | Pre-clearance surveys | Pre-clearing surveys will be undertaken in accordance with Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011). | Construction contractor | Construction | Additional safeguard |
| B5 | Induction | All personnel working on site will receive training to ensure awareness of requirements of the Flora and Fauna Management Plan and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the | Contractor | Detailed design / pre- construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | vicinity of areas identified biodiversity values that are to be protected. | | | |
| B6 | Weeds and pathogens | Any soil or other materials imported to the site for use in restoration or rehabilitation will be certified free from weeds and pathogens, or obtained from sources that demonstrate best practice management to minimise weed and pathogen risks. | Construction contractor | Construction | Additional safeguard |
| | | Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). | Construction contractor | Construction | Additional safeguard |
| | | Pathogens will be managed in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). | Construction contractor | Construction | Additional safeguard |
| B7 | Exclusion zones | Exclusion zones will be set up at the limit of clearing (i.e. the edge of the impact area) in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). | Construction contractor | Construction | Additional safeguard |
| B8 | Aquatic habitat | Aquatic habitat will be protected in accordance with *Guide 10: Aquatic habitats and riparian zones* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011) and Section 3.3.2 *Standard precautions and mitigation measures* of the *Policy and guidelines for fish habitat* | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | *conservation and management Update 2013* (DPI (Fisheries NSW) 2013). | | | |
| B9 | Fauna injury | Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA 2011). | Contractor | Construction | Additional safeguard |
| B10 | Fauna habitat | The fallen log within the proposed amended culvert drainage footprint should be protected from impact during construction and relocated near to the drainage line post-construction. | Contractor | Pre-construction, post-construction | Additional safeguard |
| **Hydrology, flooding and water quality** | | | | | |
| H1 | Soil and water management plan | A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction. | Construction Contractor | Pre-construction | Core standard safeguard SW1<br>Section 2.1 of QA *G38 Soil and Water Management* |
| H2 | Erosion and sediment control plan | A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan.<br>The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather. | Construction Contractor | Pre- construction | Core standard safeguard SW2<br>Section 2.2 of QA *G38 Soil and Water Management* |
| H3 | Sediment basins | For the catchment located between the proposed intersection and the northern end | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | of the limit of work towards South Creek, one sediment basin of 220 cubic metres will be required.<br><br>The maximum allowable area to be disturbed at any one time within this catchment is about 1.3 hectares. If it is found to be not practical by the contractor, then a supplementary basin could be located within the construction footprint at about Chainage 1300m with an approximate size of 250 cubic metres. These sediment basins will be located as far downslope as possible to maximise the catchment area that they treat. | | | |
| H4 | Contaminants entering receiving environments during construction | Control measures to minimise the risk of water pollution will be included in the ESCP. The following measures will be included to limit sediment and other contaminants entering receiving waterways:<br><br>• No stockpiles of materials or storage of fuels or chemicals will be located adjacent to the existing culverts<br>• Vehicles and machinery will be properly maintained to minimise the risk of fuel/oil leaks<br>• Routine inspections of all construction vehicles and equipment will be undertaken for evidence of fuel/oil leaks<br>• All fuels, chemicals and hazardous liquids will be stored within an impervious bunded area in accordance | Construction contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | with Australian standards and NSW EPA Guidelines<br>• All water discharges will be undertaken in accordance with Transport for NSW's Water Discharge and Re-use Guideline<br>• Emergency spill kits will be kept on-site at all times. All staff will be made aware of the location of the spill kit and be trained in its use<br>• Construction plant, vehicles and equipment will be refuelled off-site, or in designated re-fuelling areas located at a minimum distance of 50 metres from drainage lines or waterways<br>• Groundwater encountered during the construction of the proposal will be managed in accordance with the requirements of the Waste Classification Guidelines (DECCW 2009) and Transport for NSW's Water Discharge and Re-use Guideline<br>• Stabilised surfaces will be reinstated as quickly as practicable after construction<br>• Material transport from site to surrounding pavement surfaces will be minimised<br>Soil and water management measures will be identified in consultation with relevant government agencies and Councils and will be consistent with the principles and practices detailed in Managing Urban Stormwater: Soils and Construction, 2004 (known as the Blue Book). | | | |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| ~~H5~~ | ~~Flood storage offset area~~ | ~~The flood storage offset area will be provided in accordance with the following specifications:~~<br>~~• Volume of excavation no less than 82,500m$^3$~~<br>~~• The maximum and minimum grades within the excavated area are to be 3% and 1%, respectively~~<br>~~• Runoff from the excavated area is to drain to the depression which has been formed along the southern and eastern boundaries of the MPP compensatory storage area.~~ | ~~Construction contractor~~ | ~~Construction~~ | ~~Additional safeguard~~ |
| ~~H6~~ | ~~Flood storage offset area~~ | ~~If the excavated material from the compensatory flood storage is not used as part of the proposal, then it would be placed on land which lies outside the area which is subject to backwater flooding from the Hawkesbury-Nepean River during a 1% AEP flood event.~~ | ~~Construction contractor~~ | ~~Construction~~ | ~~Additional safeguard~~ |
| **Topography, geology, soils and contamination** | | | | | |
| SC1 | Accidental spill | A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime *Code of Practice for Water Management* (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and | Contractor | Detailed design/Pre-construction | Section 4.3 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | containment, notification of emergency services and relevant authorities (including Transport for NSW and EPA officers). | | | |
| SC2 | Stockpile management | Stockpiles will be designed, established, operated and decommissioned in accordance with the Roads and Maritime Stockpile Site Management Guideline 2015. | Construction contractor | Construction | Additional standard safeguard |
| SC3 | Soil stabilisation and restoration | The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with:<br>• Landcom's Managing Urban Stormwater: Soils and Construction series<br>• RTA Landscape Guideline<br>Roads and Maritimes' Guideline for Batter Stabilisation Using Vegetation (2015). | Construction contractor | Construction | Additional standard safeguard |
| SC4 | Land contamination | 'Unexpected finds protocol' must be incorporated in the CEMP. | Construction contractor | Construction | Additional standard safeguard |
| SC5 | Groundwater | If groundwater is encountered during excavations and dewatering is undertaken, water should be tested and disposed of at an appropriately licensed facility | Construction contractor | Construction | Additional safeguard |
| **Aboriginal heritage** | | | | | |
| AH1 | Aboriginal heritage management plan | An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the *Procedure for Aboriginal cultural heritage consultation and investigation* (Roads and Maritime, 2012) and *Standard Management Procedure - Unexpected* | Construction contactor | Detailed design/pre-construction | Section 4.9 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | *Heritage Items* (Roads and Maritime, 2015) and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented for managing impacts on Aboriginal heritage. The AHMP will be prepared in consultation with all relevant Aboriginal groups. | | | |
| AH2 | Impacts to Aboriginal heritage | Construction within the Clydesdale property must be undertaken in accordance with the measures relating to Aboriginal heritage in the Clydesdale Estate Conservation management Plan (GBA Heritage 2016). | Construction contractor | Construction | Section 4.9 of QA *G36 Environment Protection* |
| AH3 | Permit to harm | Consult with relevant AHIP holders to complete the proposed works in these areas under their respective permits.<br><br>Any works undertaken within existing AHIP areas must be undertaken in accordance with AHIP conditions. | Transport for NSW | Pre-construction | Additional safeguard |
| AH4 | Item protection | MPAS6 (AHIMS 45-5-5003) and C-ST-1 (AHIMS 45-5-2753) must be demarcated on the AHMP, and temporary fencing installed along the proposal boundary at this location to ensure no inadvertent impact. | Construction contractor | Construction | Additional safeguard |
| AH5 | Unexpected finds | *The Standard Management Procedure - Unexpected Heritage Items* (Roads and Maritime, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal | Construction contactor | Construction | Section 4.9 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | remains, is found during construction. This applies where Roads and Maritime does not have approval to disturb the object/s or where a specific safeguard for managing the disturbance (apart from the Procedure) is not in place.<br>Work will only re-commence once the requirements of that Procedure have been satisfied. | | | |
| AH6 | Induction | All personnel working on site will receive training to ensure awareness of requirements of the AHMP and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of identified Aboriginal heritage items. | Construction contractor | Construction | Additional standard safeguard AH3 |
| AH7 | Additional Aboriginal heritage impacts | Any further impacts proposed beyond those assessed in this REF or beyond the boundary of the assessed areas will be subject to further assessment including consultation with Aboriginal stakeholders. | Transport for NSW | Construction | Additional safeguard |
| **Landscape character and visual** | | | | | |
| LC1 | Urban design | The Design Principles and Concept Design Strategy provided in *Urban Design, Landscape Character and Visual Impact Assessment* (Tract, 2020) form the basis of future design development including:<br>• Reinstate visual buffer planting between Richmond Road and nearby residential properties | Transport for NSW | Detailed design/pre-construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | • Screen and allow views consistent with the plan for Clydesdale Estate<br>• Maximise tree planting in the verges around intersections to maintain or reinstate the character of the road corridor. | | | |
| LC2 | Urban Design | Blacktown City Council, Eyes on Blacktown – Landscape Design Manual and SP2 Landscape Design Principles; and Transport for NSW Urban Design Policy (Beyond the Pavement)' and Urban Design Guidelines will be used to guide design development of the proposal. | Transport for NSW | Detailed design/pre-construction | Additional safeguard |
| LC3 | Signage | • Signage is to be installed in accordance with the requirements of standards<br>• Signage is kept to a minimum<br>• Avoidance of signage structures on the skyline and within key views and vistas by considering placement or the incorporation of landscape beyond the structure as a backdrop. | Transport for NSW | Detailed design/pre-construction | Additional safeguard |
| LC4 | Lighting | • Limit extent of lighting<br>• Lighting will be designed to minimise light spill into residential properties and sensitive receptors in accordance with AS4282- 1997. | Transport for NSW | Detailed design | Additional safeguard |
| LC5 | Lighting | • Temporary lighting will be sited and designed to avoid light spill into | Construction Contractor | Construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | residential properties and identified sensitive receptors. | | | |
| LC6 | Barriers | • Minimise the use of safety barriers and pedestrian fencing where possible | Transport for NSW | Detailed design | Additional safeguard |
| LC7 | Visual impact of work sites | • proposal work sites, including construction areas and supporting facilities (such as storage compounds and offices) will be managed to minimise visual impacts, including appropriate fencing or screening (eg. use of shade cloth), storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials. | Contractor | Construction | Additional safeguard |
| LC8 | Visual impact of work sites | • Compound and ancillary facilities will be decommissioned and the sites rehabilitated to their existing condition or as otherwise agreed with the landowner as soon as possible | Construction contractor | Construction | Additional safeguard |
| LC9 | Earthworks | • Integrate with adjoining landform through adoption of appropriate grades, avoiding sharp transition in profile (where possible) | Transport for NSW | Detailed design | Additional safeguard |
| LC10 | Earthworks | • Stabilise/revegetate as works progress to limit erosion and visual impacts through early integration with surrounding vegetation | Construction contractor | Construction | Additional safeguard |
| LC11 | Retention of existing vegetation | • Avoid impact to prominent trees and vegetation communities where possible<br>• Existing threatened species will be retained and protected wherever possible | Transport for NSW | Detailed design | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | • Minimise clearance extent where possible | | | |
| LC12 | Retention of existing vegetation | • Clearly define clearance limits and exclusion zones to protect vegetation cover | Construction contractor | Construction | Additional safeguard |
| LC13 | Revegetation | • Replanting to respond to existing communities and landscape character<br>• Utilise local provenance material<br>• Provide screen planting within corridor to limit visibility of the proposal from adjoining residential properties<br>• Screen and allow views consistent with the CMP for Clydesdale Estate. | Transport for NSW | Detailed design | Additional safeguard |
| LC14 | Revegetation | • Progressively implement revegetation works to limit erosion and to establish vegetation<br>• Utilise cleared material as part of revegetation works | Construction contractor | Construction | Additional safeguard |
| LC15 | Tree Removal | • Trees to be removed will be identified on the detailed landscape plan to be shared with Council. | Transport for NSW | Detailed design | Additional safeguard |
| LC16 | Maintenance | • Transport for NSW to liaise with Council regarding finalisation of the detailed landscape design | Transport for NSW | Pre-construction | Additional safeguard |
| LC17 | Irrigation | • Consideration will be given to passive irrigation of landscaping during detailed design | Transport for NSW | Detailed design | Additional safeguard |
| **Socio-economic, land use and property** | | | | | |
| SE1 | Socio-economic | A Communication Plan (CP) will be prepared and implemented as part of the CEMP to help provide timely and accurate | Contractor | Detailed design/pre-construction | Core standard safeguard SE1 |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | information to the community during construction. The CP will include (as a minimum):<br>• Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions<br>• Contact name and number for complaints.<br>The CP will be prepared in accordance with the *Community Involvement and Communications Resource Manual* (RTA, 2008). | | | |
| SE2 | Property acquisition | All property acquisition will be carried out in accordance with the *Land Acquisition Information Guide* (Roads and Maritime, 2012) and the *Land Acquisition (Just Terms Compensation) Act 1991.* | Transport for NSW | Pre-construction and construction | Additional safeguard |
| SE3 | Property acquisition and lease | All partial acquisitions and associated property adjustments will be carried out in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and the Land Acquisition Reform 2016 in consultation with landowners.<br>Transport for NSW will offer a Personal Manager for each acquisition and consult with affected property owners to ensure they understand the acquisition process and are aware of the potential adjustments required to properties as part of the proposal. | Transport for NSW | Prior to construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| **Air quality** | | | | | |
| AQ1 | Impacts on air quality during construction | An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to:<br>• Potential sources of air pollution<br>• Air quality management objectives consistent with any relevant published EPA and/or OEH guidelines<br>• Mitigation and suppression measures to be implemented<br>• Methods to manage work during strong winds or other adverse weather conditions<br>A progressive rehabilitation strategy for disturbed areas. | Contractor | Detailed design/pre-construction | Section 4.4 of QA G36 Environment Protection |
| AQ2 | Dust emissions during construction | Incorporates the air quality measures below into the Construction Environmental Management Plan (CEMP) prepared for the Proposal. | Construction contractor | Pre-construction | Additional safeguard |
| AQ3 | Dust emissions during construction | Site planning and work practices:<br>• Plan site activities so that machinery and dust causing activities are located away from receptors, as far as is possible<br>• Ensure all vehicles, plant, and equipment operate in a proper and efficient manner<br>• Switch off all vehicles, plant and equipment when not in-use for extended periods of time | Construction contractor | Prior to and during construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | • Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable<br>• Minimise drop heights from loading and handling equipment<br>• Implement the use of water-carts for dust suppression where necessary to prevent off-site dust emissions<br>• Review and modify activities as appropriate to mitigate the level of dust generated during inclement weather conditions<br>• Installation of perimeter screening around long-term compound sites and storage areas<br>• Regularly water stockpiles and wherever possible and practical, limit the quantity of dispersive materials stored on-site<br>• Reduce or halt stockpiling activities during inclement weather conditions.<br>Limit the amount of cleared and exposed areas to the extent practical. | | | |
| AQ4 | Dust emissions during construction | Haulage of materials:<br>• In the event that material tracking onto roads is identified a street sweeper should be provided on-site and deployed on an as needed basis. Rumble grids should also be considered should tracking be a persistent problem<br>• Haulage vehicles should be regularly cleaned and should not be arriving at | Construction contractor | Prior to and during construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | site with loose material. Where issues arise, additional off-site cleaning should be implemented associated with the wider proposal<br>• Ensure that all loads are covered<br>Impose and signpost suitable maximum on-site speed limits to limit the generation of dust. | | | |
| AQ5 | Dust emissions during construction | Community consultation:<br>• Implement a stakeholder communications plan that includes community engagement before work commences<br>• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary<br>• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken<br>• Make the complaints log available to the applicable determining authority when requested<br>Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation. | Construction contractor | Prior to and during construction | Additional safeguard |
| AQ6 | Dust emissions during construction | Inspections and adaptive measures:<br>• Carry out regular site inspections to monitor compliance with the AQMP, record inspection results, and make | Construction contractor | During construction | Additional safeguard |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | these records available to the determining authority as requested<br>• Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. | | | |
| **Other impacts** | | | | | |
| OI1 | Waste | A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:<br>• Measures to avoid and minimise waste associated with the proposal<br>• Classification of wastes and management options (re-use, recycle, stockpile, disposal)<br>• Statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions<br>• Procedures for storage, transport and disposal<br>• Monitoring, record keeping and reporting.<br>The WMP will be prepared taking into account the *Environmental Procedure - Management of Wastes on Roads and Maritime Services Land* (Roads and | Contactor | Detailed design/pre-construction | Section 4.2 of QA *G36 Environment Protection* |

| No. | Impact | Environmental safeguards | Responsibility | Timing | Reference |
|---|---|---|---|---|---|
| | | Maritime, 2014) and relevant Transport for NSW Waste Fact Sheets. | | | |
| OI2 | Utilities | Prior to the commencement of work:<br>• The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners<br>If the scope or location of proposed utility relocation work falls outside of the assessed proposal scope and footprint, further assessment will be undertaken. | Contactor | Detailed design/pre-construction | Additional safeguard |

## 5.3 Licensing and approvals

No additional licenses and approvals are required for the proposed changes to the construction footprint. The license and approvals for the proposal are listed in Table 5-2.

Table 5-2: Summary of licensing and approval required

| Instrument | Requirement | Timing |
|---|---|---|
| *Roads Act 1993* | A Road Occupancy Licence would need to be obtained as necessary prior to construction commencing. | Prior to start of the activity |
| Heritage Act 1977 (s60) | Permit to carry out activities within the curtilage of the Clydesdale Estate SHI from the Heritage Council of NSW. | Prior to start of the activity |
| *National Parks and Wildlife Act 1974* (s90) | Transport for NSW would consult with relevant AHIP holders to complete the proposed work in these areas under their respective permits. Any work carried out within existing AHIP areas must be undertaken in accordance with AHIP conditions. | Prior to start of the activity |

# 6. References


Artefact Heritage, 2015. Marsden Park North Precinct Non Aboriginal Archaeological Assessment, (amendments 2017)

Artefact, 2020. Richmond Road SoHI Addendum: Heritage Memo

Artefact, 2019. Richmond Road Upgrade, Elara Boulevard to Clydesdale Non-Aboriginal Statement of Heritage Impact (SoHI)

Artefact, 2021. Richmond Road Upgrade: Heritage Impact Assessment Memo

GBA Heritage, 2017. Clydesdale Estate Conservation Management Plan

Jacobs, 2020. Richmond Road Upgrade Marsden Park Biodiversity Assessment, October 2020

Jacobs, 2021. Richmond Road Biodiversity Memo 23.03.21

Kelleher Nightingale Consulting Pty Ltd, 2020. Richmond Road Upgrade Elara Boulevard to Heritage Road Aboriginal Archaeological Survey Report Stage 2 PACHI Addendum

Kelleher Nightingale Consulting Pty Ltd, 2019. Richmond Road Upgrade Elara Boulevard to Heritage Road Aboriginal Archaeological Survey Report Stage 2 PACHI

Transport for NSW, 2020. Richmond Road Upgrade, Marsden Park Review of Environmental Factors, Transport for NSW October 2020

# Appendix A

## Biodiversity Memo

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23 March 2021

Attention: Matty Mathivenar and Alana Watts
Transport for NSW

Project Name: Richmond Road Upgrade Marsden Park
Project Number: IA301400

**Subject: Richmond Road Upgrade Marsden Park - Biodiversity Assessment Addendum**

## 1. Introduction

### 1.1 Background

Transport for NSW propose to upgrade about 1.6 km of Richmond Road north of Elara Boulevard in Marsden Park (the proposal). A Review of Environmental Factors (REF) was prepared to describe the proposal, document its likely environmental impacts, and detail the measures that would be implemented to mitigate and manage any potential impacts. A full description of the proposal is provided in Section 3 of the exhibited REF (Transport for NSW, 2020). A Biodiversity Assessment Report (BAR) was previously carried out to support the REF (Jacobs, 2020).

### 1.2 Proposed amendments to the proposal

Since exhibition of the REF, amendments to the design have been made extending outside the previously assessed construction footprint. Figure 1-1 indicates the revised construction footprint and ecological constraints identified as relevant to the proposal. Amendments comprise an extension of the proposal 40 metres to the north and about 26 metres to the west into the current Lot 4 DP1248522, and the relocation of the proposed drainage culvert discharge to the south approximately 50 metres in Lot 1 DP715318 (refer Figure 1-1).

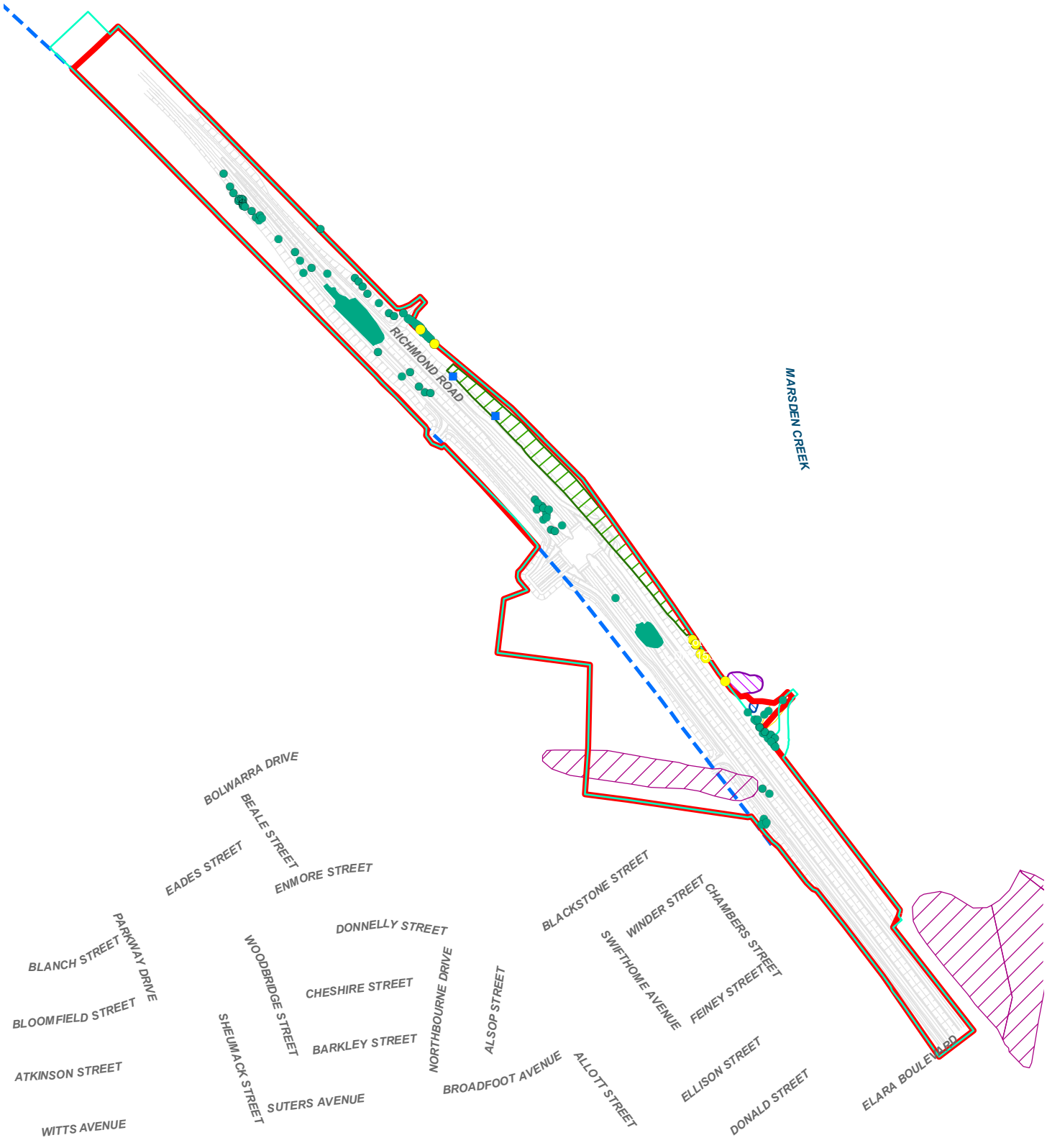


**Figure 1-1** Biodiversity constraints

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The northern extension falls within Biodiversity certified land under the Biodiversity Certification of the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006*, and the drainage culvert discharge relocation falls on non-certified land. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP. The Biodiversity Certification Order provides that any developments or activities proposed to be undertaken within certified areas do not need to undertake assessment of impacts on threatened species, populations and ecological communities, or their habitats, that would normally be required by Parts 3, 4 or 5 of the *Environmental Planning and Assessment Act 1979.* Therefore, only impacts from the drainage culvert discharge relocation requires assessment of significance under NSW and Commonwealth impact assessment legislation.

### 1.3 Scope and methodology

The purpose of this assessment is to identify and assess the changes to, or additional impacts of the proposal as a result of, the proposed amendments to the exhibited proposal in relation to biodiversity. This assessment is based on a site inspection carried out on 22 January 2021 and limited to the drainage culvert discharge relocation area. The site inspection involved a site walk over and targeted threatened plant species meanders. No detailed ecological surveys were undertaken. This assessment updates the initial BAR undertaken in June 2020 (Jacobs, 2020). Database searches have not been redone and it is assumed that the information documented in the original BAR is still relevant (Jacobs, 2020).

The legislative and policy framework for this additional assessment is as described in Section 1.4 of the BAR (Jacobs, 2020).

## 2. Existing environment

The area added to the construction footprint is largely consistent with the description of the existing environment in 6.4.2 of the REF (Transport for NSW, 2020). Any changes to the existing environment in the amended construction footprint of the drainage culvert area only are discussed below.

### 2.1 Native vegetation

The additional construction footprint area at the drainage culvert is subject to agricultural use and is mostly clear of natural vegetation.

The drainage culvert discharge relocation contains exotic grassland, two *Eucalyptus moluccana,* four *Melaleuca decora* and four *Grevillea juniperina* subsp. *juniperina* individuals. The species composition of exotic grassland in the new area is consistent with that of the previous BAR (Jacobs, 2020). No Plant Community Types are present in the amended portion of the study area. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP.

### 2.2 Threatened plant species

Four *Grevillea juniperina* subsp. *juniperina* individuals *(*Vulnerable species under the NSW *Biodiversity Conservation Act 2016)* were identified within the drainage culvert discharge relocation area.

Based upon the habitat observed during the site inspection, the new area included in the construction footprint are unlikely to serve as habitat for any other threatened flora species.

### 2.3 Threatened animal species

A hollow log was identified within the amended construction footprint. However, no live or dead Cumberland Plain land snails were found on inspection. Given the log is located within exotic grassland, which is unlikely to provide suitable habitat for this species.

The two *Eucalyptus moluccana* and four *Melaleuca decora* trees to be removed provide potential foraging habitat for the threatened species, the Grey-headed Flying-fox (*Pteropus poliocephalus*) (vulnerable BC Act and EPBC Act) , Little Lorikeet (*Glossopsitta pusilla*) (vulnerable BC Act), Swift Parrot (*Lathamus discolor*) (endangered BC Act; critically endangered EPBC Act), Eastern False Pipistrelle (Falsistrellus tasmaniensis) (vulnerable BC Act), Eastern Freetail-bat (Mormopterus norfolkensis) (vulnerable BC Act), Greater Broad-nosed Bat (Scoteanax rueppellii) (vulnerable BC Act), Large Bentwing-bat (*Miniopterus orianae oceanensis*) (Vulnerable BC Act), Large-eared Pied Bat (*Chalinolobus dwyeri*) (vulnerable BC Act and EPBC Act), Little Bent-wing Bat (*Miniopterus australis*) (vulnerable BC Act) and Southern Myotis (*Myotis macropus*) (vulnerable BC Act) identified and assessed in Section 3.6.2 of the BAR (Jacobs, 2020).

Based upon the habitat observed during the site inspection, the small, degraded amended construction footprint area is unlikely to serve as habitat for any other threatened fauna identified and assessed in Appendix B of the BAR (Jacobs, 2020).

### 2.4 Habitat values

Although not serving as habitat for threatened species, the hollow log present within the amended construction footprint serves as potential habitat for other bird and reptile species in the vicinity.

### 2.5 Aquatic habitat

The hydrological environment of the amended portion of the construction footprint is limited to a drainage line in the drainage culvert discharge relocation. This does not classify as Class 1 (major key fish habitat), Class 2 (moderate key fish habitat) or Class 3 (minimal key fish habitat).

There is a lack of permanent flow, and the site is characterised by weed proliferation and evidence of physical disturbance. As such, the drainage line is in highly degraded condition and is not considered suitable for threatened frog species or other threatened aquatic species.

### 2.6 Matters of National Environmental Significance

The additional construction footprint area contains no Threatened Ecological Communities (TECs), and therefore there are no impacts anticipated.

The amended construction footprint area represents the same potential threatened species habitat as previously assessed in the BAR, (Jacobs, 2020). In accordance with Section 3.9.2 of the BAR three threatened animal species listed under the EPBC Act are considered moderately likely to use the habitats in the amended construction footprint area for foraging: the Swift Parrot (listed as critically endangered), the Large-eared Pied Bat (listed as vulnerable) and the Grey-headed Flying-fox (listed as vulnerable).

No threatened plants listed under the EPBC Act are considered to have a moderate or higher likelihood of occurring.

Of the migratory species identified from database searches, only the Fork-tailed Swift and White-throated Needletail are considered moderately likely to fly over the amended construction footprint area but would not use it as habitat and therefore no impacts are anticipated.

## 3. Construction impacts

Direct impacts have been calculated using the boundary of the amended construction footprint area in accordance with the BAR (Jacobs, 2020).

### 3.1 Removal of vegetation

The amended construction footprint would require additional removal of highly disturbed, exotic vegetation within certified and non-certified land and native tree species on non-certified land. However, no PCTs would be subject to additional direct impacts from the amended construction footprint. The amended construction footprint does not affect any mapped 'native vegetation' under the Growth Centres SEPP.

During more detailed field inspection of the amended construction footprint in the culvert drainage area, additional individuals and habitat for *Grevillea juniperina* subsp. *Juniperina* were identified in the existing REF construction footprint (shown as yellow hatching in Figure 3-1), increasing the existing proposal impact on this species in non-certified land from 20 to 38 individuals. The proposed amended construction footprint reduces the number of *Grevillea* impacted in non-certified land to four.

Total impacts of the existing and proposed amended construction footprint are shown in Table 3.1 and Table 3.2. Figure 3-1 shows the amended construction footprint in the culvert drainage area.

**Table 3.1: Impacts on vegetation in amended construction footprint (non-certified areas)**

| Vegetation description | BC Act | EPBC Act | Original construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Not assigned to PCT, comprises non-native highly disturbed areas – cleared paddocks, road verges, table drains, road embankments, ploughed paddocks etc | - | - | 1.48 | 1.46 |
| Mix of mature, native tree species (*Eucalyptus moluccana, Eucalyptus amplifolia, Angophora* | - | - | 0.13 | 0.13 |

| Vegetation description | BC Act | EPBC Act | Original construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| *floribunda, Melaleuca decora* and *Eucalyptus tereticornis*) | | | | |
| *Grevillea juniperina* subsp. *juniperina* | V | - | 38 individuals | 4 individuals |
| | | Total | 1.61 | 1.59 |

**Table 3.2: Impacts on vegetation in amended construction footprint (certified areas)**

| Vegetation description | BC Act | EPBC Act | Original construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion (PCT 849) (Critically Endangered Ecological Community (BC Act): Cumberland Plain Woodland in the Sydney Basin Bioregion) | CEEC | - | 0.83 | 0.83 |
| Mix of mature, native tree species (*Eucalyptus moluccana, Eucalyptus crebra, Acacia decurrens, Eucalyptus amplifolia, Angophora floribunda, Eucalyptus tereticornis and Casuarina cunninghamiana*) | - | - | 0.27 | 0.27 |

| Vegetation description | BC Act | EPBC Act | Original construction footprint (hectares) | Amended Construction footprint (hectares) |
|---|---|---|---|---|
| Not assigned to PCT, comprises non-native highly disturbed areas – cleared paddocks, road verges, table drains, road embankments, ploughed paddocks etc | - | - | 21.86 (includes off-site flood storage area) | 22.13 (includes off-site flood storage area) |
| | | Total | 22.96 | 23.23 |

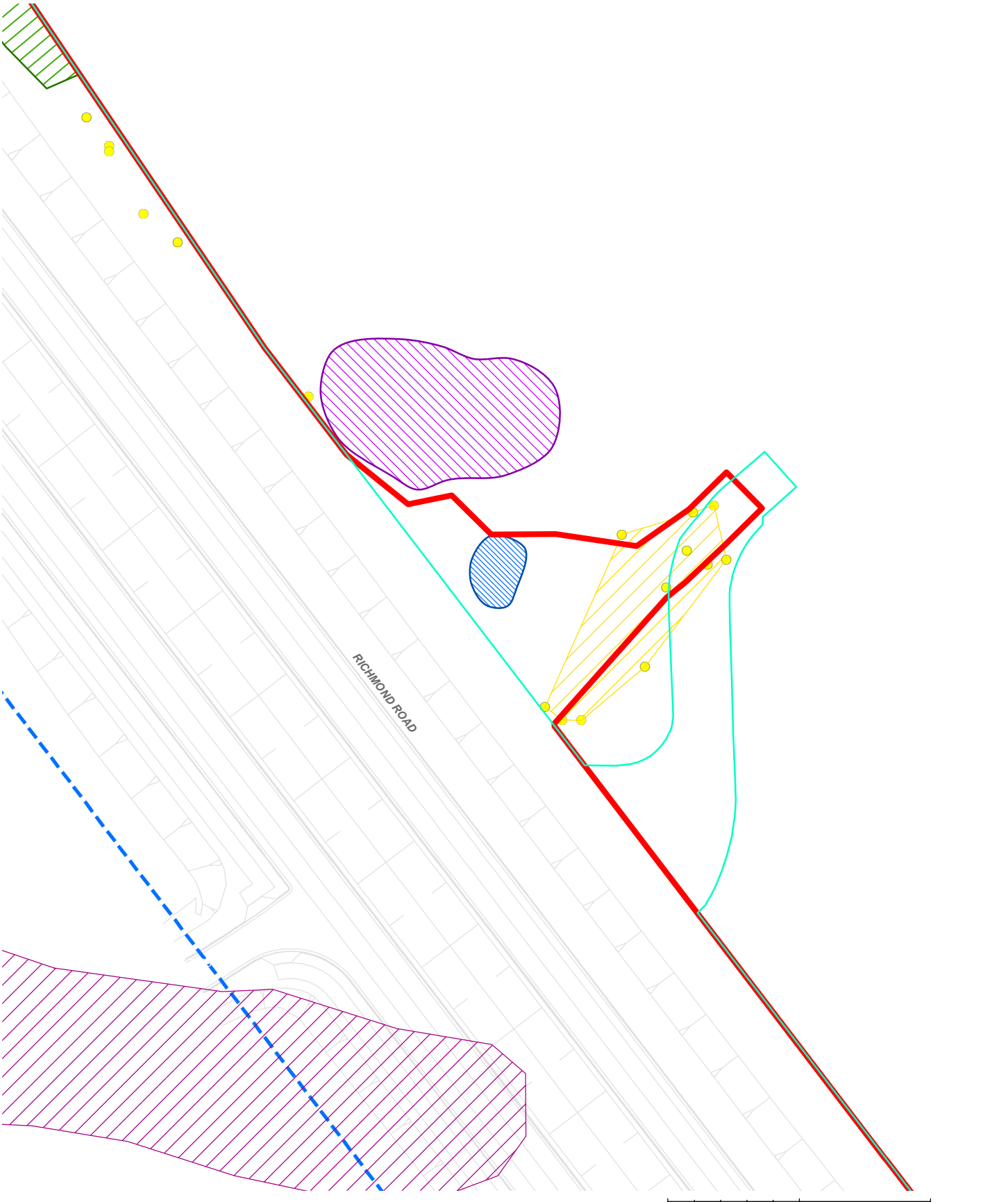



**Figure 3.1** Amended drainage culvert footprint

### 3.2 Removal of threatened species and habitat

The amended construction footprint decreases the impact on *Grevillea juniperina* subsp. *juniperina* from 38 individuals to four individuals on non-certified land (

).

The native vegetation to be removed in the amended construction footprint of the culvert drainage area is consistent with the original construction footprint vegetation composition, providing potential habitat for the same threatened species identified in Section 3.6.2 of the BAR (Jacobs, 2020). The proposed amended construction footprint reduces the clearing the amount of *Eucalyptus moluccana* trees from four to three. Therefore the threatened species impacts remains consistent with the assessment outcomes for the affected species detailed in the BAR (Jacobs, 2020).

There would be no other additional impacts to threatened species resulting from the amended construction footprint.

#### 3.2.1 Assessments of significance

Assessments of significance were undertaken for threatened species under the BC Act and for Matters of National Environmental Significance under the EPBC Act in the study area in Appendix A of the BAR (Jacobs, 2020). Given the small decreased impact on threatened fauna habitat, and the decreased impact on *Grevillea juniperina* subsp. *juniperina* by the amended proposal, the BAR assessment ratings of significance remain relevant.

### 3.3 Removal of habitat values

The amended construction footprint would result in the direct removal of hollow log habitat for non-threatened bird and reptile species in the vicinity.

### 3.4 Indirect impacts

The amended construction footprint is unlikely to significantly change the extent or magnitude of indirect construction impacts that are documented in the BAR (Jacobs, 2020).

## 4. Revised management and mitigation measures

Management and mitigation measures in addition to those of the BAR (Jacobs, 2020) to address potential additional impacts of the proposed amended construction footprint are outlined in Table 4.1.

**Table 4.1:** Mitigation measures for amended proposal

| Impact | Environmental safeguard | Responsibility | Timing | Reference |
|---|---|---|---|---|
| **Fauna habitat** | The fallen log within the proposed amended culvert drainage footprint should be protected from impact during construction and relocated near to the drainage line post-construction. | Construction contractor | Pre-construction, post-construction | Additional safeguard |

## 5. Offset strategy

The amended construction footprint does not qualify for offsets as documented in Section 6 of the BAR (Jacobs, 2020).

## 6. Conclusion

The amended proposal will decrease impacts on biodiversity values from what was reported in the BAR (Jacobs, 2020). Namely, the amended construction footprint reduces impact on *Grevillea juniperina* subsp. *juniperina* from 38 individuals to four individuals. The population size in the locality is likely very large and the loss of these plants is unlikely to result in a significant impact to this species.

There will be a slight decrease in the habitat impact of the amended construction footprint, requiring the removal of one less *Eucalyptus* sp. tree compared to the existing construction footprint. The assessment outcomes for these species detailed in the BAR (Jacobs, 2020) remains valid.

The remaining area of the amended proposal sites contains exotic grassland of little ecological value.

## 7. References

Jacobs. (2020). *Richmond Road Upgrade Marsden Park Biodiversity Assessment, October 2020*

Transport for NSW 2020, *Richmond Road Upgrade, Marsden Park Review of Environmental Factors*, October 2020

# Appendix B

## Non-Aboriginal Heritage Memo

25 March 2021

Matty Mathivanar
Project Development Manager
Transport for New South Wales

Dear Matty,

**Re: Richmond Road Upgrade: Heritage Impact Assessment Memo**

## Project background

As part of the Richmond Road Upgrade Project, Transport for New South Wales (TfNSW) are proposing to upgrade 1.64 kilometres of Richmond Road north of Elara Boulevard (the proposal). The proposal includes the extension of the existing four lane dual carriageway north of Elara Boulevard, new signalised intersection providing additional access to the Marsden Park and Marsden Park North precincts, and a shared user path. A Statement of Heritage Impact (SoHI) was prepared by Artefact in 2019, and a subsequent Addendum SoHI (Artefact, August 2020) for inclusion in the Review of Environmental Factors (REF).

The subject of this Heritage Impact Assessment (HIA) memo are two areas outside the assessed REF construction footprint, as shown in Figure 1. This HIA memo will be included with the REF Submissions Report.

The investigation area for this memo is located within Marsden Park, contained within the Blacktown Local Government Area (LGA) in the Greater Sydney region and approximately 41km north west of Sydney. This SoHI should be read in conjunction with the 2019 SoHI and 2020 Addendum SoHI (Artefact 2020). The historical background, detailed significance assessments, and detailed archaeological assessment included in the 2019 SoHI and 2020 addendum SoHI have not been replicated here.

## Proposed works

Jacobs, on behalf of TfNSW, are assessing modifications to the proposed construction footprint that will add a minor additional extension at the 'tie-in' between the upgraded section of Richmond Road with the existing road in the north, and an amended alignment of the proposed drainage culvert to the east of the southern end of the proposal. The need for the additional northern extension resulted from construction staging and the need to tie-in the new works with the existing road. The design process considered the optimal location for the drainage culvert, which led to the selection of the current location for the drainage line to the east of the southern end of the project area.

An overview of the proposed works in these areas is provided below.

### Northern extension – 40m extension of the northern construction footprint

The northern extension is to allow the construction of a temporary road diversion which is required to facilitate the construction of the future southbound carriageway. The works required at the northern extension are:

- Clearing to provide earthwork foundations
- Filling to construction earthworks embankment
- Cut earthworks around embankment to maintain surface drainage
- Temporary sediment basin and access track.

### Drainage Culvert - 61m extension east, varying 9-35m width

The drainage culvert layout has been optimised to reduce impact to land at the downstream end (east side) by combining the two cross-drains from under the road in to one discharge point, thereby minimising severance impacts. The drainage culvert works area approximately 61m long and between 9m and 35m wide. The works required at the drainage culvert are:

- Clearing to allow construction of drainage culvert outlet and open drain realignment
- Cut earthworks for open drain connection.

The investigation areas are illustrated in Figure 2 and Figure 3 below.

**Figure 1. Overview of changes to project boundary following REF, indicated in red**

**Figure 2. Detail of northern upgrade extension provided by Jacobs on behalf of client. Note REF boundary in dark green and proposed changes in cyan**

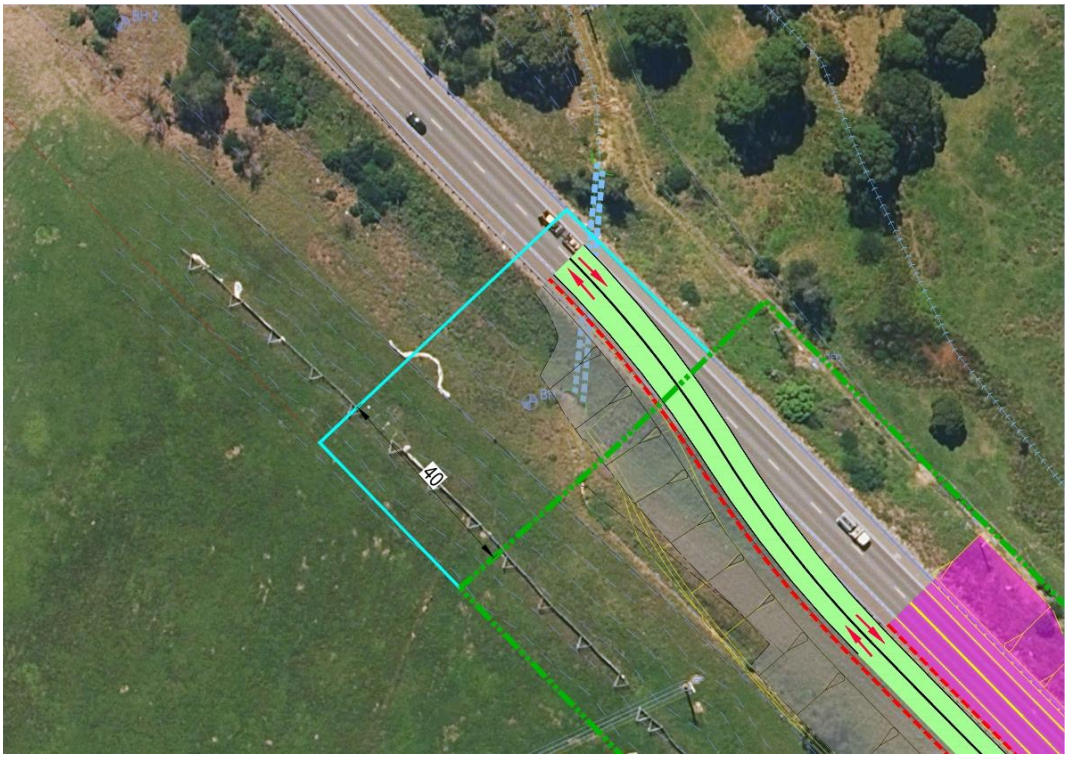
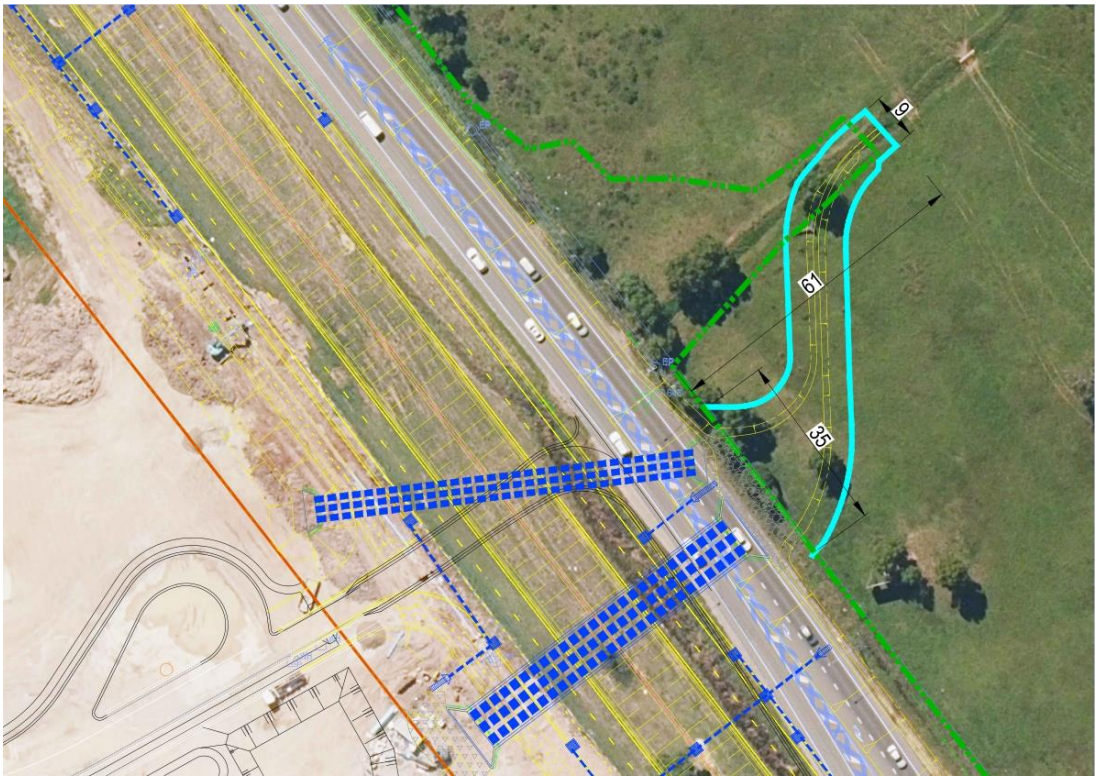



**Figure 3. Detail of Culvert works provided by Jacobs on behalf of client. Note REF boundary in dark green and proposed changes in cyan**



# Heritage impact assessment

## Heritage Significance assessment

The following significance assessment for heritage items within the project area and in the vicinity of the works has been derived from the 2019 SoHI and 2020 addendum SOHI. This heritage memo should be read in conjunction with those reports.

**Clydesdale – House, Barn, Cottage and Farm Landscape**

The curtilage of the State Heritage listed item 'Clydesdale – House, Barn, Cottage and Farm Landscape' (#0064) is located within the proposed site boundary. The following statement of significance has been excerpted from the State Heritage Register:

> *Clydesdale has State significance as one of a series of pre 1840s homesteads in the Hawkesbury area which contributed substantially to the agricultural and pastoral economy of the region, and the understanding of the historical development of colonial New South Wales and the pastoral era of the Cumberland Plain. Its landscape feature remain relatively intact, including significant remnant woodlands, Aboriginal relics, two cemeteries (both resting places for the early pioneers of Clydesdale and the district), and its original entry avenue off Richmond Road. The entrance avenue is still discernible for its individual approach and is an example of colonial landscape design that opposed the principles practiced in England during the early 19th century. The house retains its original relationship to its landscape setting and farm and is the only remaining example of the lowland model of homestead siting in the Blacktown area and one of three remaining examples intact on the Cumberland Plain. The site derives additional significance for its use as one of only two Marist seminaries in Australia for training South Sea Islander priests in the 1860s, and as a RAAF convalescent home during the 1940s.*

**Setting and character *of Clydesdale***

The 2017 Conservation Management Plan (CMP) for Clydesdale, prepared by Graham Brooks & Associates (GBA) assessed the overall character of Clydesdale, and the paddocks and floodplain north of Entrance Avenue, as elements of high significance. The 2019 SoHI reaffirms that Clydesdale is notable for its rural landscape setting. The setting and the visual relationship between the Clydesdale Homestead, gardens, the surrounding landscape contributes to the state significance of the item under the NSW Significance Assessment, as outlined in the original report. Despite residential development occurring to the east and south of the Clydesdale Homestead, the floodplain setting is primarily intact to the north.

**St Phillips Church Cemetery**

The locally listed heritage item, Cemetery – St Philips, is located within 100m of the proposed site boundary, and is included as item I37 on the Blacktown LEP 2015. The following statement of significance has been prepared by Artefact for the St Phillips Church Cemetery[1]:

> *Archaeological remains of the St Phillips Church and Cemetery have historical, associative, social and research significance at a state level as they are directly*

[1] Artefact, 2019.

*associated with both the descendants of prominent Aboriginal figure Maria Lock and the state significant Clydesdale Estate. In addition, the remains are considered to have aesthetic significance at a local level due to extant headstones associated with the cemetery. Maria Lock was the sister of Colebee, the first Aboriginal land grantee at Richmond Road (the state significant Colebee and Nurragingy land grant). She was educated at the nearby Native Institute and married Robert Lock in the first officially sanctioned marriage between a convict and an Aboriginal woman. Descendants of the Lock family continue to play an important role in the Aboriginal community today. Archaeological remains of the St Phillips Church and Cemetery are also considered to be a rare example of a burial ground associated with individuals of both European and Aboriginal descent.*

## Heritage impact of proposed works

The proposed northern extension of the construction footprint extends approximately 15 metres into the Clydesdale SHR curtilage. This is consistent with the 2019 assessment area (as seen in Figure 1), which included property acquisition and relocation of the Cydesdale property boundary approximately 10-15 metres to the west of its current location.

Physical works associated with the road tie-in include:

- Clearing to provide earthwork foundations
- Filling to construction earthworks embankment
- Cut earthworks around embankment associated with proposed drainage culvert
- Temporary sediment basin and access track.

The original 2019 SOHI reached the following conclusions on the heritage impacts of the project:

- Moderate physical impact to 'Clydesdale – House, Barn, Cottages and Farm Landscape'
- Moderate visual impact on 'Clydesdale – House, Barn, Cottages and Farm Landscape'
- Neutral physical impact to 'St Phillips Church Cemetery'
- Minor visual impact to 'St Phillips Church Cemetery'
- Potential impact to areas assessed as demonstrating nil-low potential to contain archaeological relics.

The 2020 addendum report found that:

> *The additional works not assessed in the 2019 SoHI… would result in negligible to minor physical impact and minor visual impact to 'Clydesdale – House, Barn, Farm and Landscape'.*
>
> *The additional works not assessed in the 2019 SoHI would have nil physical and visual impacts on the significance of the 'St Phillips Church Cemetery'.*
>
> *There is no expectation that significant archaeological remains would be located within the study area.*

The proposed drainage culvert to the east of the southern end of the proposal would not be located within the curtilage of any heritage item. The proposed works would be physically separated from 'Clydesdale – House, Barn, Cottages and Farm Landscape' by Richmond Road. Direct heritage impacts from the additional drainage works are **nil.**

Minor amendments to the design at the northern end of the road upgrade may result in a change in setting through the addition of the proposed 40m tie-in linking to Richmond Road. Impact to the heritage significance of Clydesdale, however, would be negligible. Similarly, the proposed drainage culvert would have limited visual impact on the Clydesdale item as it is visually and physically separated from the item by Richmond Road. The indirect visual impact of the additional area on listed heritage items is considered to be **negligible.**

Overall, the additional impacts of the proposed amended construction footprint are considered to be consistent with the 2019 SoHI impact assessment, which identified that physical works, property boundary adjustment, and visual changes would result in moderate physical and visual impact to the 'Clydesdale – House, Barn, Cottages and Farm Landscape' heritage item.

The additional construction footprint would have **nil** physical or visual impacts on the St Phillips Church cemetery, given there is no encroachment upon the curtilage of the item, and would not alter the overall impact of the project to this item.

## Archaeological assessment

### Land use phases

The 2019 SoHI identified the following land use phases (which encompass various historical phases), which were applied to the addendum study area and are also applicable to the expanded project boundary:

- Phase 1: 1813-1850: Early land clearance and farming
    - Walter Lang's land grant (1813-1819)
    - Charles Tompson expansion of Clydesdale (1819-1840)
    - St Phillips Church and Cemetery formation (1840s)
- Phase 2: 1850-1880: Intensive flooding and decline in farming
- Phase 3: 1880-present: Livestock breeding, grazing, and dairy farming
    - Upgrades for vehicles and livestock transport (1880s-1919)
    - Subdivision of Clydesdale (1933-1942)
    - RAAF occupation and upgrades to utilities (1942-1947)
    - Land clearance (1947-1975)
    - Upgrades of Richmond Road, new South Creek Bridge, development (1979-present).

### Assessment of archaeological potential

The 2019 SoHI identified that the study area had nil-low potential to contain archaeological remains:

- **Nil-low potential** for former structures and features containing artefact bearing deposits, such as wells, cesspits, rubbish dumps and occupation deposits

- **Nil-low potential** for archaeological remains associated with former infrastructure including fences and former road alignments and surfaces
- **Nil-low potential** for archaeological remains associated with the earliest agricultural development of the study area.

The assessment concluded that the proposal had nil-low potential to impact significant archaeological remains. The 2020 addendum reached the same conclusions, and no significant archaeological remains were anticipated in the study area.

### Impact of proposed works

The proposed amended construction footprint constitutes two minor additions to the REF proposal boundary, including a 40m extension to the north for a tie-in with the existing road, and the realignment of the proposed culvert to the east of the southern end of proposal. The 40m extension to the north is constrained to already highly disturbed road and roadside surfaces, and negligibly extends westward into an area of the Clydesdale item previously identified in the CMP as having no archaeological potential, supported by later assessments. The earthworks thus have nil potential to impact significant archaeological remains based on the available information and assessments.

The earthworks required for the establishment of the culvert are proposed to take place in an area which is not proximate to any listed or identified archaeological items and is in an area identified as having nil archaeological potential in a 2015 (amended 2017) archaeological study of the precinct undertaken by Artefact.[2]

Accordingly, it is assessed that the two additions to the REF construction footprint will have **nil** potential to impact significant archaeological remains, remaining consistent with previous assessments.

## Conclusions and recommendations

This HIA memo has found that additional construction footprint not assessed in the 2019 SoHI or 2020 addendum would result in **negligible** additional adverse impacts to 'Clydesdale – House, Barn, Farm and Landscape' consistent with earlier assessments.

The additional construction footprint not assessed in the 2019 SoHI or 2020 addendum would have **nil** additional physical and visual impacts on the significance of the 'St Phillips Church Cemetery'.

There is no expectation that significant archaeological remains would be located within the additional construction footprint area, which is consistent with the conclusions reached in the previous assessments.

In addition to the recommendations of the 2019 SoHI and 2020 addendum, this heritage assessment recommends the following:

- This heritage assessment memo should be attached to the Submissions Report provided to TfNSW for their approval for the proposal to proceed
- This heritage assessment memo should be included with the 2019 SoHI and 2020 addendum SoHI with a Section 60 application under the *Heritage Act 1977* to Heritage NSW

[2] Artefact Heritage, *Marsden Park North Precinct Non Aboriginal Archaeological Assessment*. 2015 (amendments 2017).

for works and property boundary adjustments within the SHR curtilage of ‘Clydesdale – House, Barn, Farm and Landscape’

# Appendix C

## Aboriginal Heritage Memo

Kelleher Nightingale Consulting Pty Ltd

Level 10
25 Bligh St
Sydney NSW 2000
**p** 02 9232 5373

12 March 2021

Matty Mathivanar
Transport for NSW
Level 7, 27 Argyle Street
Parramatta NSW 2150

Dear Matty,

**RE. Richmond Road Upgrade – Elara Boulevard to Heritage Road**
**Consistency Assessment – Aboriginal Heritage**

Kelleher Nightingale Consulting has reviewed the Richmond Road Upgrade, Elara Road to Heritage Road footprint (Consistency Assessment Construction Boundary) in reference to proposed boundary adjustments and the Review of Environmental Factors (REF) related to the Aboriginal heritage assessment detailed in *Richmond Road Upgrade from Elara Boulevard to Heritage Road Aboriginal Cultural Heritage Assessment Report* (March 2019) and addendum (June 2020).

**Assessment**
Two locations were identified where the construction boundary has changed slightly since the finalisation of the REF (shown as Construction Boundary Adjustments on Figure 1). Changes include extension of the northern extent of the proposed upgrade by 40 metres to allow the construction of a temporary road diversion which is required to facilitate the construction of the proposed southbound carriageway. The proposed drainage culvert discharge located east of the roadway has also been amended to shift discharge south approximately 50 metres to reduce the footprint of impact to land at the downstream end (east side). This will be achieved by combining the two cross-drains from under the road into one discharge point, thereby minimising severance impacts.

The two locations were assessed as part of archaeological survey assessment completed in accordance with the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI Stages 2) for the Richmond Road Upgrade from Elara Boulevard to Heritage Road.

No Aboriginal objects/sites were identified in the two locations.

**Result**
The two locations are consistent with the findings of the Richmond Road Upgrade from Elara Boulevard to Heritage Road Aboriginal Archaeological Survey Report (as per the REF).

No further Aboriginal archaeological assessment is warranted.

If you have any questions, please do not hesitate to contact me on 02 9232 5373.

Yours sincerely

Dr Matthew Kelleher
Director/Archaeologist

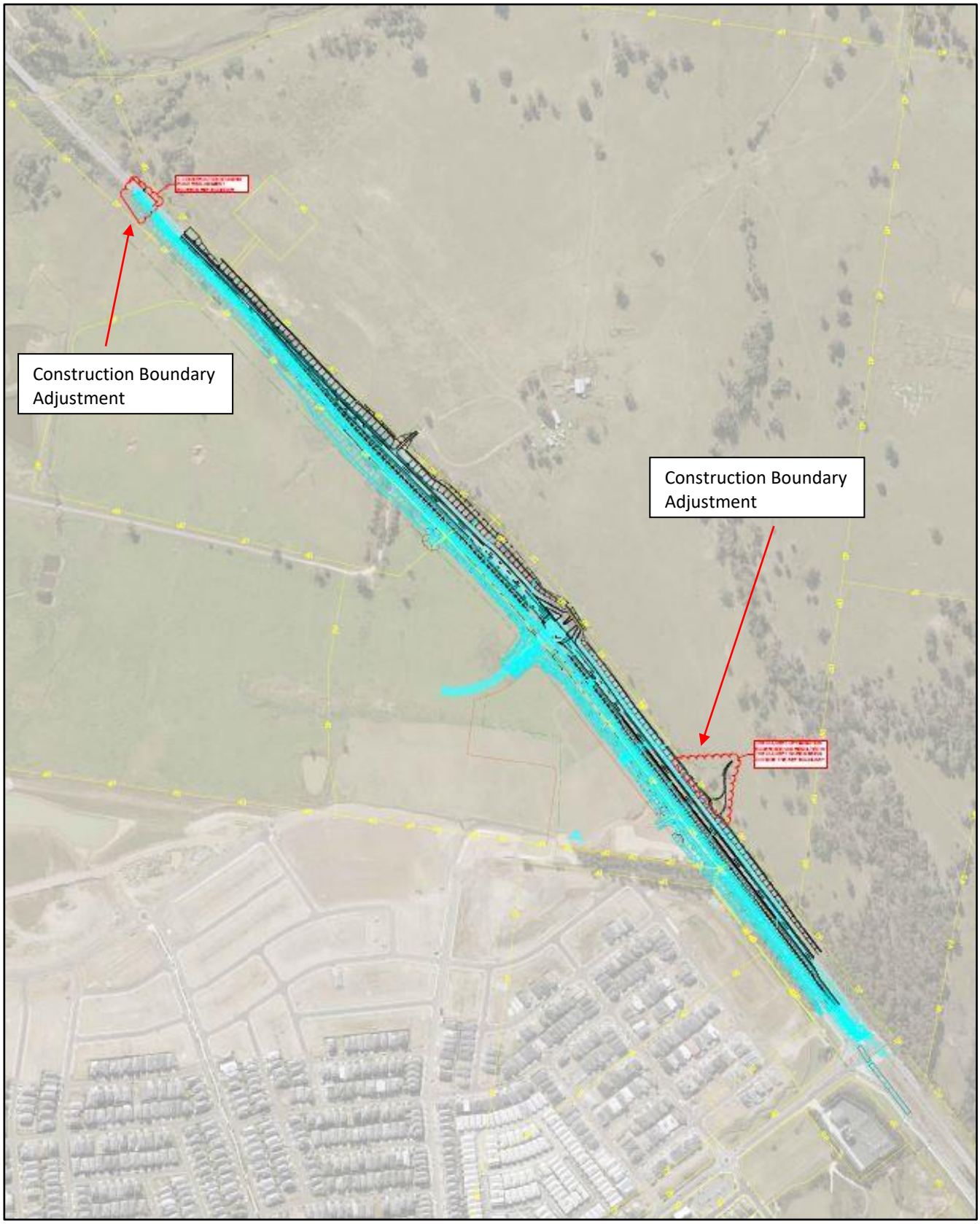
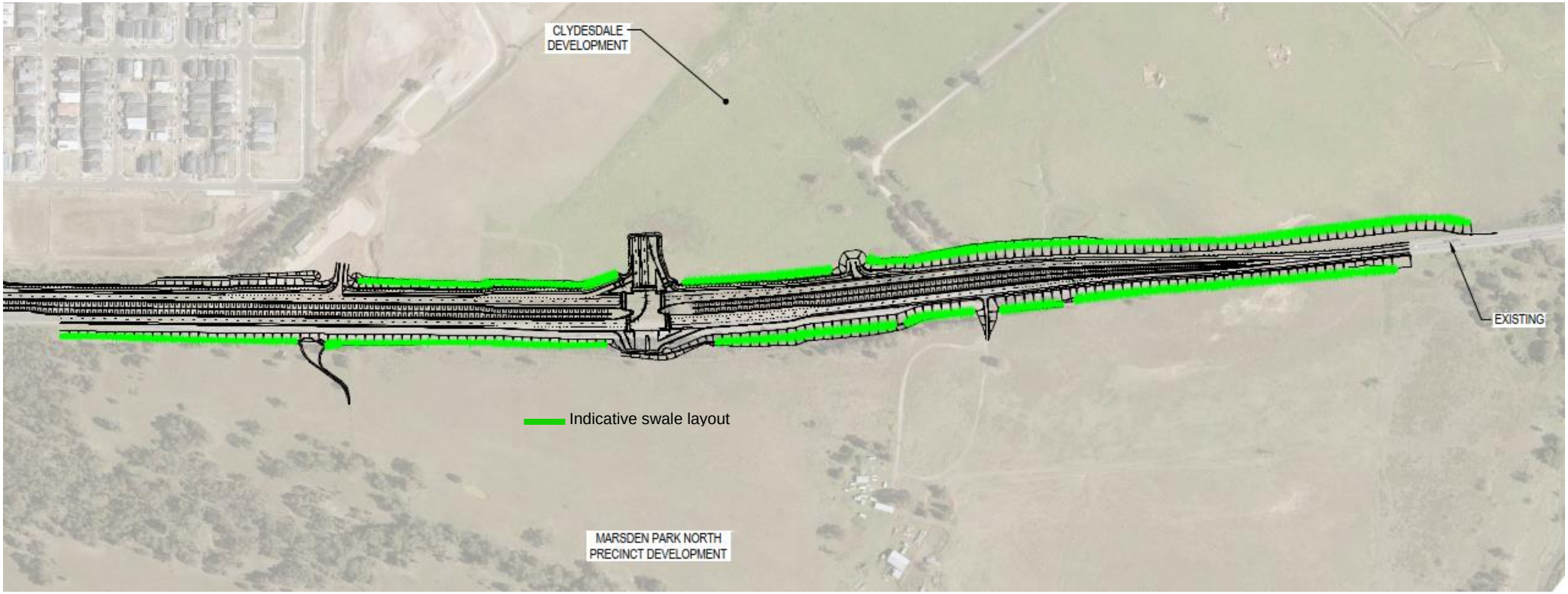



**Figure 1. Consistency Assessment Construction Boundary review**

# Appendix D

## Indicative Swale Layout


CLYDESDALE
DEVELOPMENT
EXISTING
Indicative swale layout
MARSDEN PARK NORTH
PRECINCT DEVELOPMENT