Richmond Road Upgrade, Marsden Park

Urban Design, Landscape Character and Visual Impact Assessment

Review of Environmental Factors (REF)

Prepared for Jacobs

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Quality Assurance

Richmond Road Upgrade, Marsden Park
Urban Design, Landscape Character and Visual Impact Assessment
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Project Number

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02

Prepared By

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Reviewed By

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Project Principal

Matthew Easton

Date of Issue

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Revisions

Rev	Date	Details	Prepared By	Reviewed By	Project Principal
01	12 August 2020	Review of Environmental Factors	MN	ME	ME
02	21 October 2020	Review of Environmental Factors	MN	ME	ME

Executive Summary

Transport for NSW (TfNSW) proposes an upgrade of Richmond Road north of Elara Boulevard in Marsden Park by widening the existing road from two lanes to four (two lanes in each direction). The proposal would see the capacity for vehicles on Richmond Road increased whilst also providing new shared user path for pedestrians and cyclists. The total length of the proposal is approximately 1.6km, see figure 3.

The Landscape character and visual assessment forms part of the REF prepared for the proposal, and assesses the proposals impacts of landscape character and its visual implications. Through this assessment process key areas of impact are defined and proposals for addressing the impacts determined.

Key features of the proposal 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 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 Marsden Park Precinct to the west and Marsden Park North Precinct to the east (MPNP).
- 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 of public utilities and street lighting.
- Road drainage infrastructure including a new culvert
- Ancillary work including safety barriers, signage, line marking and environmental protection work.
- Landscaping and rehabilitation work.
- Offsite compensatory flood storage area.
- Temporary ancillary facilities include site compounds and stockpile sites.

Design Guidelines

In developing the urban design, landscape character and visual assessment the design has been undertaken in accordance with a number of TfNSW (Formerly RMS) guidelines in order to inform the design process and its outcomes. These guidelines included:

- Road Design Guidelines
- Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment - EIA-N04. 2018.
- Beyond the Pavement, Urban Design Policy, Procedures and Design Principles, Roads and Maritime January 2014
- Landscape Guidelines, Roads and Maritime, December 2018

Context

An understanding of the roads context is essential to ensure the responses proposed are informed and reflect the planning and uses which occur within the vicinity of the corridor. A review of context was undertaken which encompasses:

- Land use
- Heritage
- Vegetation
- Topography and drainage

Urban Design Strategy

In developing a design response which addresses the impacts to landscape character and the visual environment a number of principles were developed.

Principle 1 – Contribute to the overall landscape structure and revitalisation of the region

Principle 2 – Respect the land uses and built form of the corridor

Principle 3 – Connecting modes and communities

Principle 4 – Fit the landform of the corridor

Principle 5 - Responding to natural pattern

Principle 6 – Protect and enhance the heritage and cultural values of the corridor

Principle 7 - Designing an experience in movement

Principle 8 - Creating self-explaining road environments

Principle 9 - Achieving integrated and minimal maintenance design

As part of the proposal concept design development, the urban design strategy developed responses to the:

- landscape treatment of the formation
- surface treatment to paths, and medians
- the nature and placement of roadside furniture, and
- the planting design required to integrate the proposal to achieve a contextually responsive design outcome.

Landscape Character and Visual Assessment

The landscape character assessment identified three character zones:

- LCZ1 - Residential Landscape
- LCZ2 – The Road Corridor, and
- LCZ3 – Rural / Open Pasture

Findings

The landscape character assessment reveals Richmond Road and the precincts are in transition, with new developments being constructed adjacent to Richmond Road. This transitional landscape has been assessed as reducing the sensitivity to change as this is a key element of its character as the entire precinct changes from a rural context to an urban context. Landscape character impacts of the proposal were found to generally be of a moderate to high impact on the road

corridor due to the extent of change proposed. Where the impacts on the rural and residential precincts were assessed as low and moderate respectively reflecting the degree of change which is envisioned to occur within the precinct independent of the road.

The visual impacts of the proposal have been assessed as predominantly moderate to low reflecting the scale of change and increase in the alignment footprint and the substantial change in character proposed for the precinct as part of the planning for Marsden Park and Marsden Park North.

Two additional viewpoints have been assessed to reflect the construction of a flood storage offset area. This was assessed to be negligible to low to moderate impact.

These findings reflect the proximity of residential receptors to either the road corridor or the flood storage offset and the proposal for new infrastructure within a changing rural landscape setting over which these residential properties overlook.

A number of key mitigation measures are summarised which will assist in mitigating the impacts. These impacts will be taken forward into the detailed design to ensure impacts are minimised. Mitigation measures include:

- Integration of earthworks profiles with surrounding landscape
- Refinement of built elements to reduce visual prominence and visual bulk
- Retention of existing vegetation
- Provision of screen planting to control and limit views to the new alignment among others.

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Figures

1 Introduction

1.1 Background

Transport for NSW (TfNSW) proposes to upgrade about 1.6 kilometres of Richmond Road north of Elara Boulevard in Marsden Park by widening the existing road from two lanes to four (two lanes in each direction). Other proposed works include a wide central median to facilitate additional lanes in the future, new traffic signals, bus bays and a new shared user path.

1.2 Project Description

The proposal is located at Marsden Park, 41km north west of Sydney and located within the Blacktown Local Government Area (LGA). The proposal is to upgrade about 1.6 kilometres of Richmond Road in Marsden Park. The key features of the proposal 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 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 Marsden Park Precinct to the west and Marsden Park North Precinct to the east (MPNP).
- 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 of public utilities and street lighting.
- Road drainage infrastructure including a new culvert
- Ancillary work including safety barriers, signage, line marking and environmental protection work.
- Landscaping and rehabilitation work.
- Offsite compensatory flood storage area.
- Temporary ancillary facilities include site compounds and stockpile sites.

1.3 Purpose of Report

Tract Consultants Pty Ltd has been commissioned by Jacobs to provide an Urban Design, Landscape Character and Visual Impact Assessment (LCVIA) for the widening of Richmond Road at Marsden Park. As part of this process a review of the design is to be undertaken and recommendations made as to its integration within the road corridor.

This assessment and recommendations will form part of the Review of Environmental Factors (REF) submission for the assessment of the works.

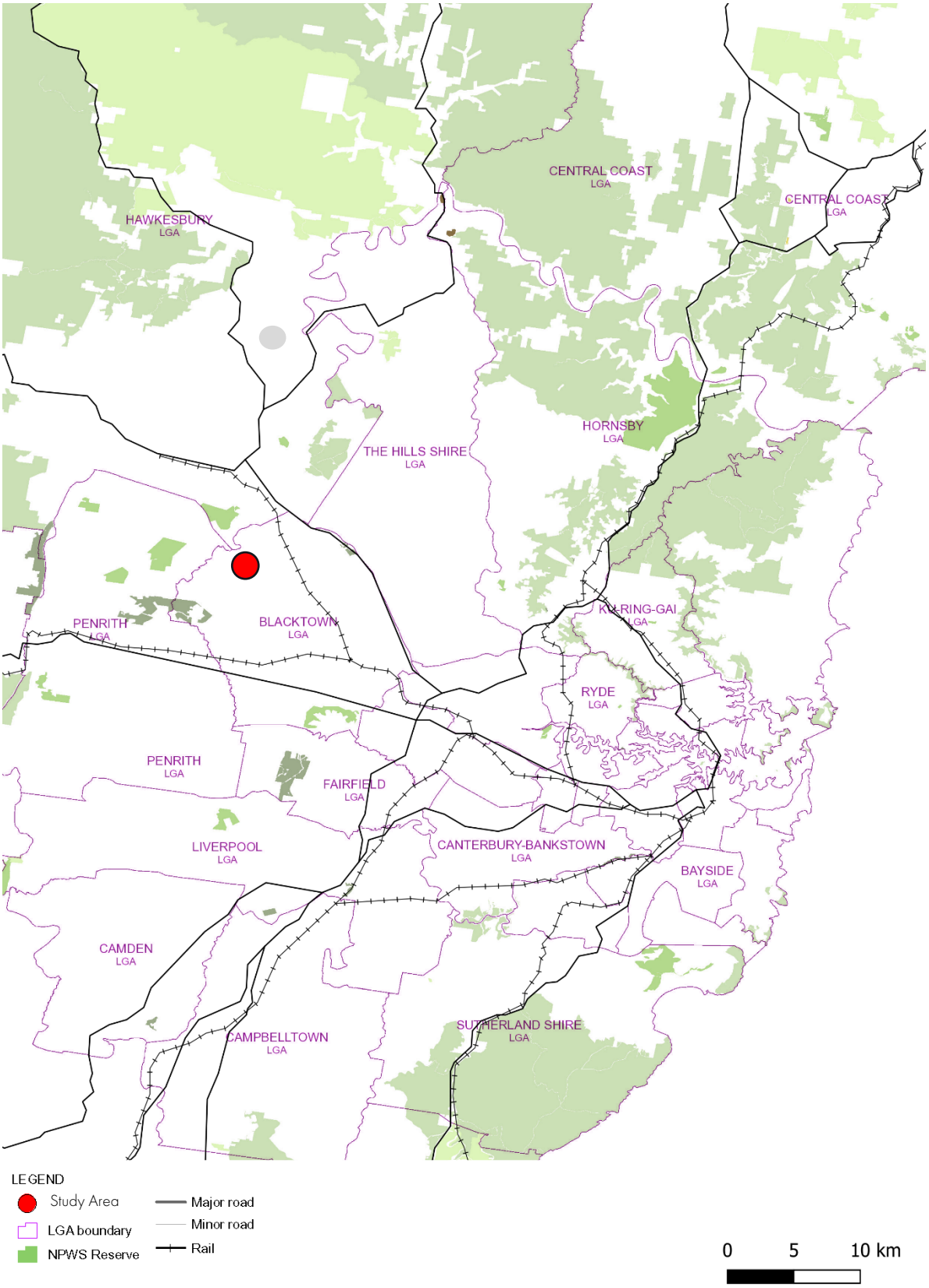

Figure 1 – Regional Context Plan

2 Context

2.1 Location

The proposal is located at Marsden Park, 41km north west of Sydney and located within the Blacktown Local Government Area (LGA). Richmond Road (MR537) is a north-south arterial state road (figure 2) connecting Blacktown to Richmond. It provides a key link from the M7 Motorway and to the Sydney Business Park located in Marsden Park The proposal passes through the North West Priority Growth Area and links strategic centres Blacktown and Windsor.

Figure 3a - Local Context Plan – Road Corridor indicates the local context of the road proposal and its relationship to new residential developments in Marsden Park. It extends from Elara Boulevard to the north west 1300 metres to the approaches of the South Creek Bridge embankment.

In addition to the road alignment works a flood storage area to the north west of Clydesdale House is also proposed to offset flooding impacts from the works. The location of this work is captured in Figure 3b and is offset some 1500 metres from the corridor and is separated from the road by the proposed housing development and an unnamed tributary of South Creek. The area is zoned environmental management and is separated from development by an overhead transmission line. The flood storage area will comprise about 8.3 hectares of excavation that will be grassed and serve as flood storage in the event of a flood.

Figure 2 – Richmond Road looking East from Elara Boulevard

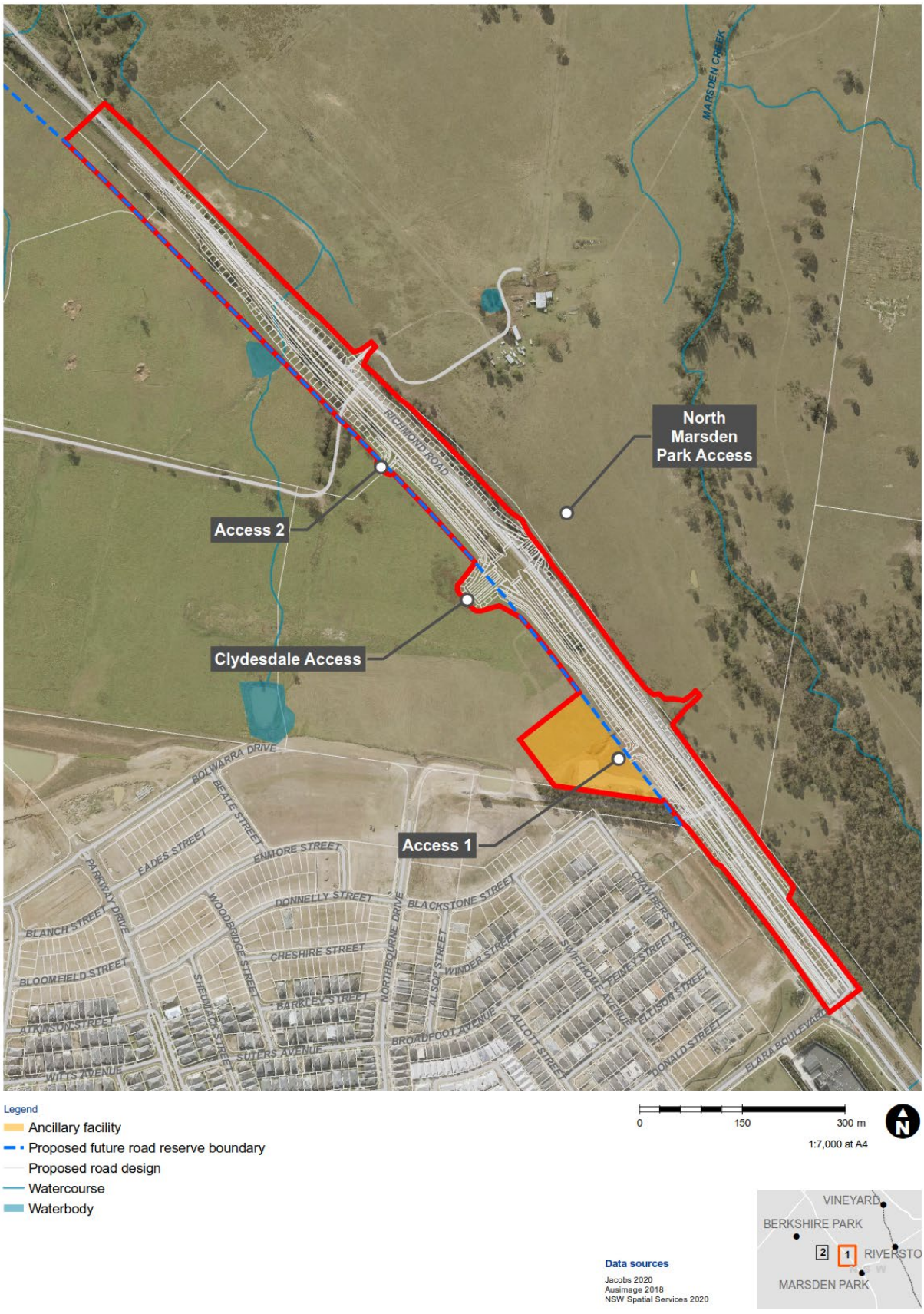

Figure 3a - Local Context Plan – Road Corridor – Sheet 1(Jacobs, 2020)

Figure 3b – Local Context Plan – Flood Storage – Sheet 2 (Jacobs, 2020)

2.2 Land Zoning

The land use zoning of an area has the potential to influence the overall character and feel of the place.

The Marsden Park area is part of the North West Growth Area which is subject to significant growth and changes in land use. As a result of this substantial changes in character and context can be expected with masterplans for both Marsden Park (Figure 4) and Marsden Park North (Figure 5) having been prepared. The assessment and design of the corridor must both considered this and the current environmental context as part of its assessment.

Marsden Park, south of the Richmond Road alignment, has been rezoned as part of the North West Growth Areas planning and falls under the State Environment Planning Policy (Sydney Region Growth Centres) 2006. The overall masterplan for the precinct and present planning is depicted in the latest zoning figure 6a. As part of this change in use the site will provide for up to 10,300 new homes, a new town centre and two village centres, schools, and an open space network. Critically along the Richmond Road frontage two key uses are anticipated. Medium density residential, 25 dwellings per hectare, and water management. The requirements of this zoning are discussed later.

The location of the flood offset area has been located within the Marsden Park Masterplan area and is set within Environmental Management lands, refer Figure 6b.

Marsden Park North is still the subject of rezoning and is under consideration. As part of the rezoning proposal the redevelopment would permit 6250 dwellings, three local centres and business areas, as well as broadscale open space networks. The master plan indicates that adjacent Richmond Road for the length of the proposal will be addressed by commercial land-uses. This zoning is yet to be gazetted within the Local Environment Plan for the region.

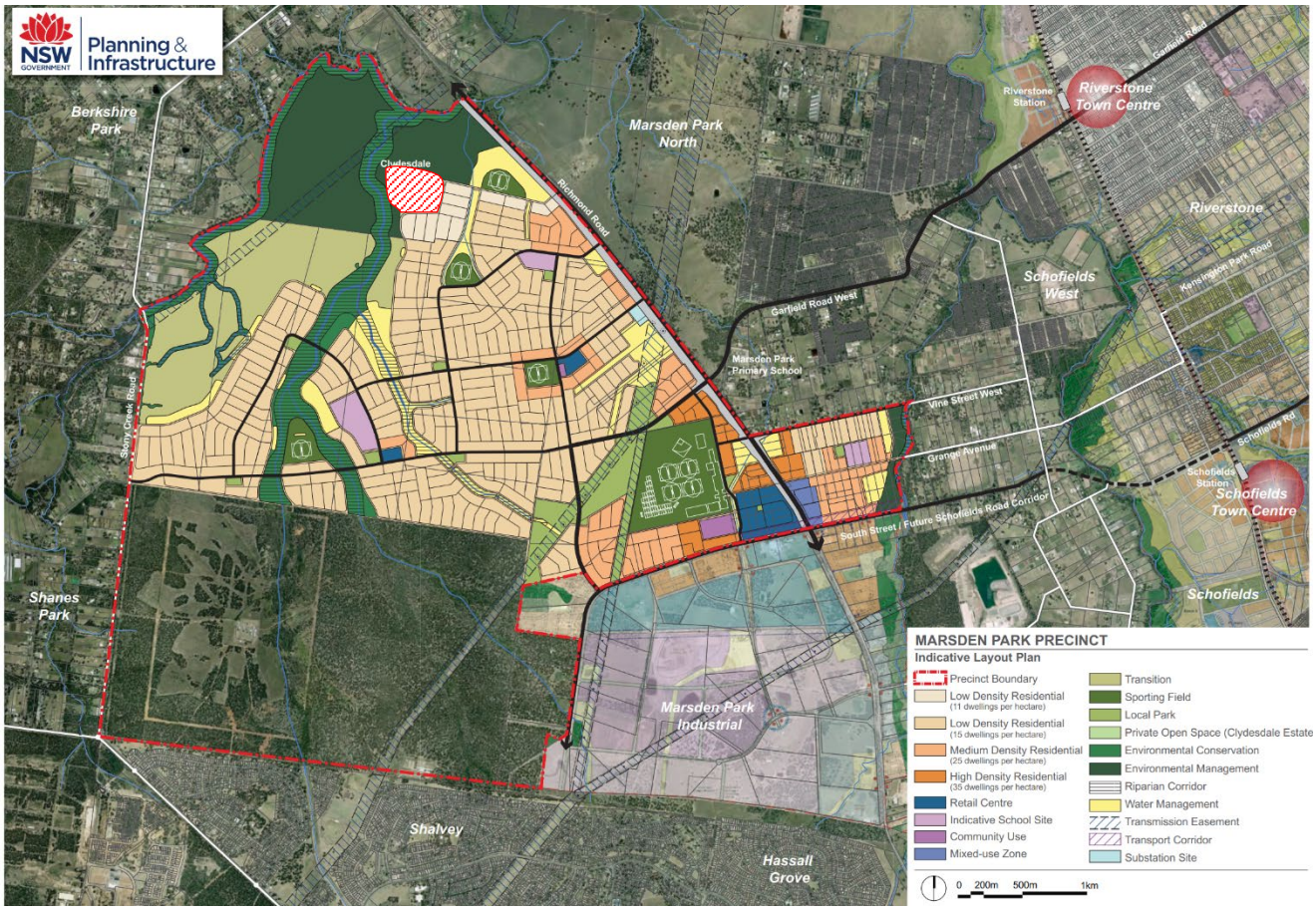

Figure 4 – Marsden Park Precinct - Masterplan

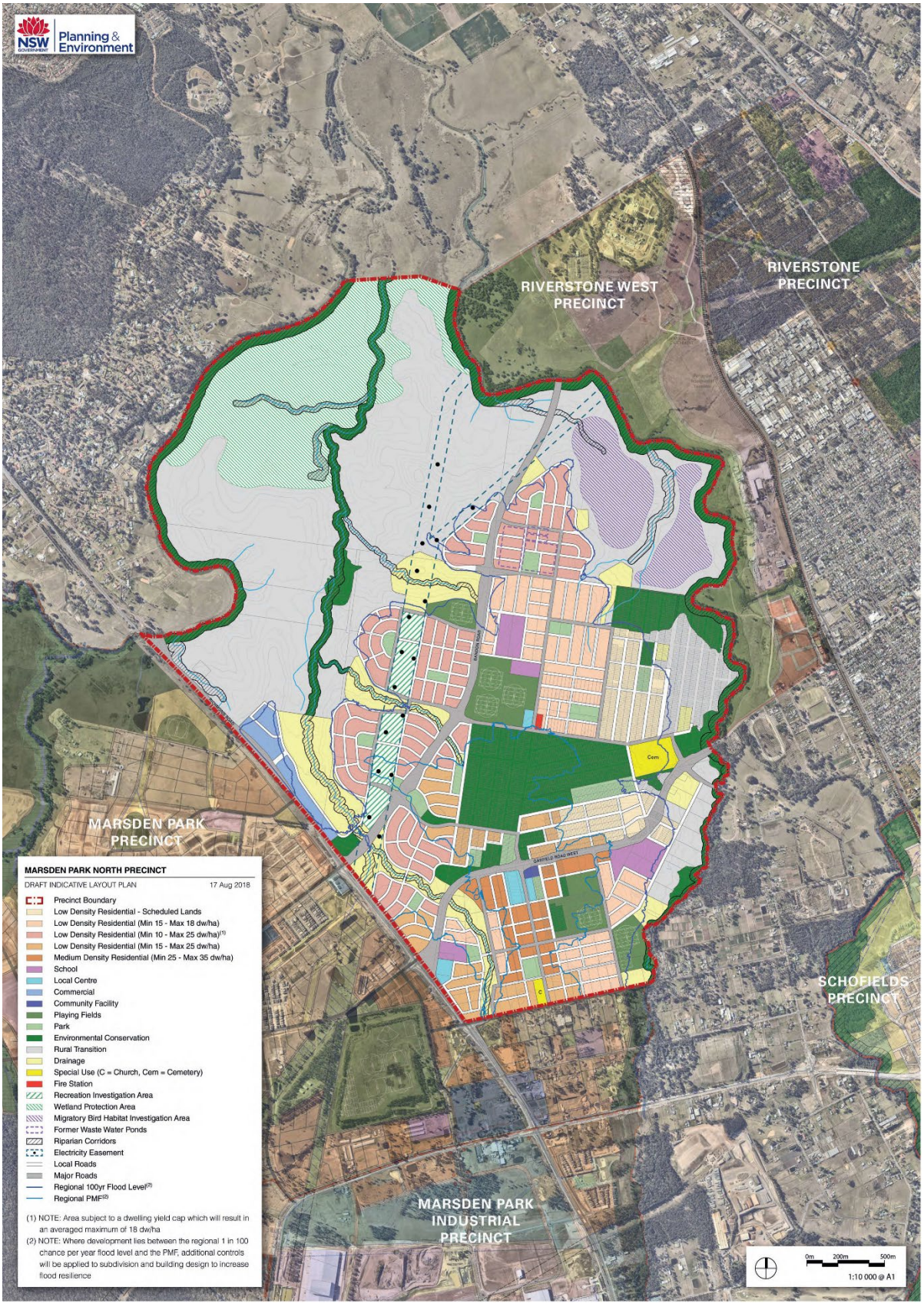

Figure 5 – Marsden Park North Precinct - Masterplan

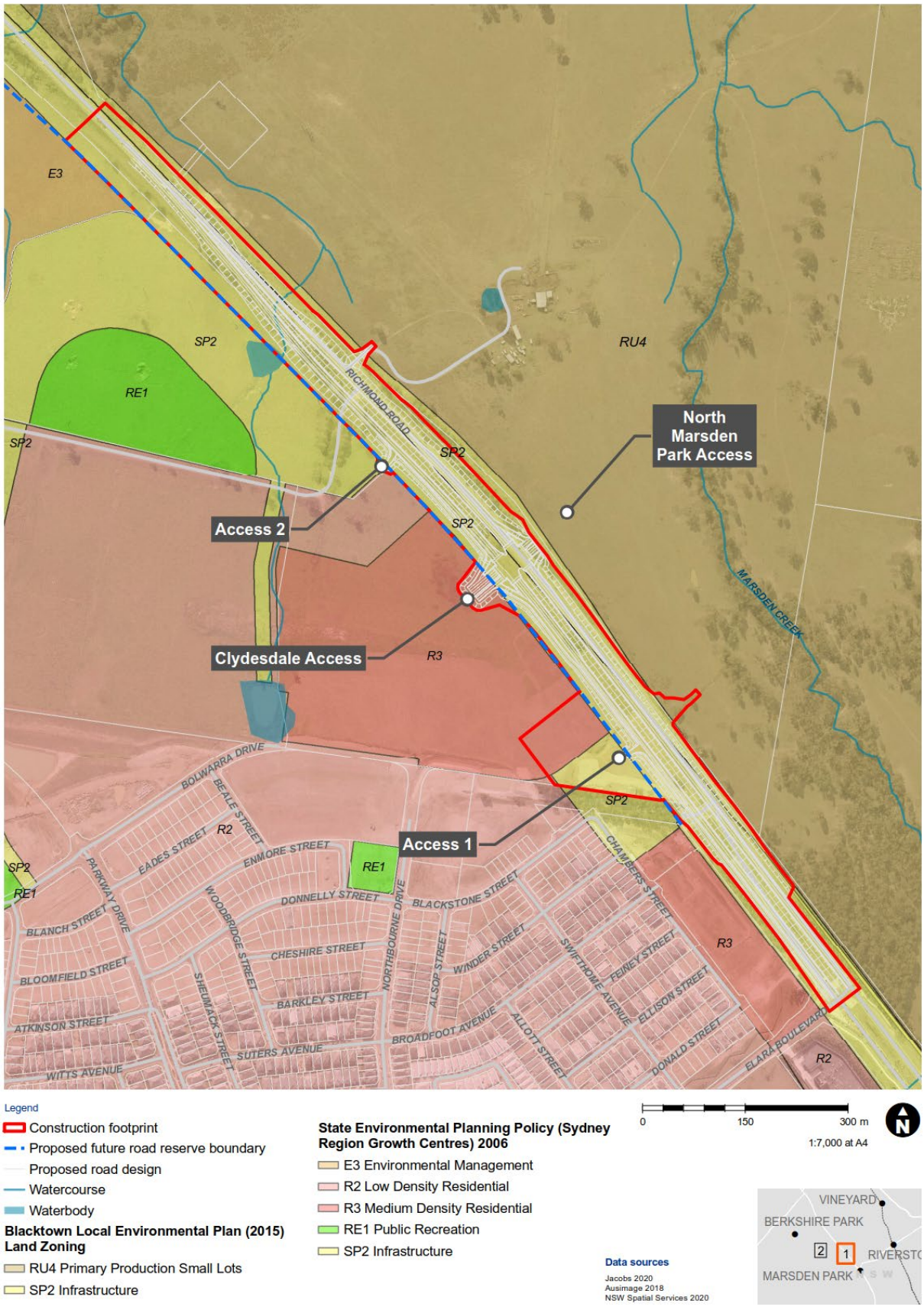

Figure 6a – Land Zoning Map -Road Corridor - Sheet 1 (Jacobs 2020)

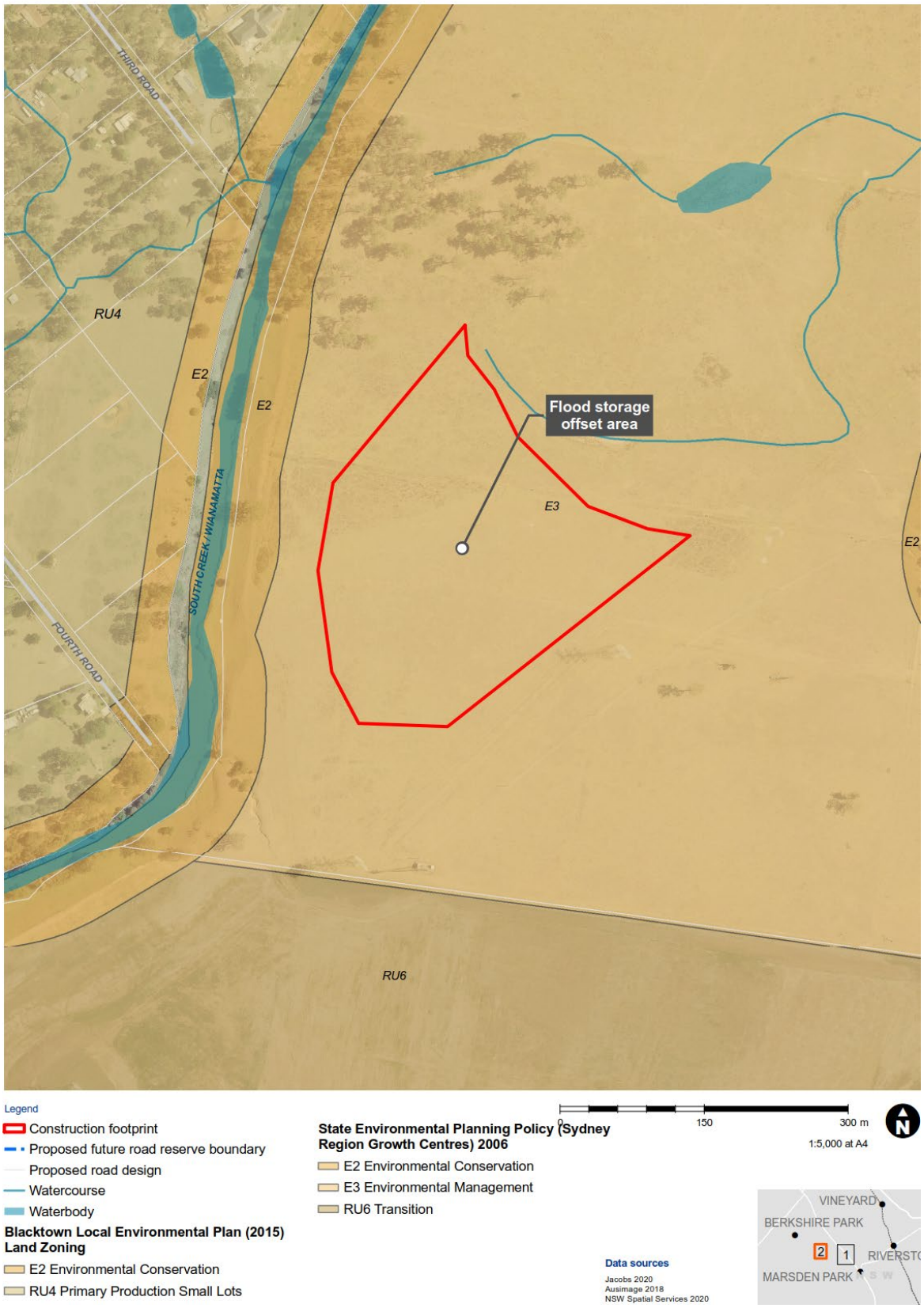

Figure 6b – Land Zoning Map – Flood Offset Area – Sheet 2 (Jacobs 2020)

There are two dominant land uses one either side of the alignment, these are:

- R3 Medium Density Residential on the southern side of the alignment being developed as part of the development of Marsden Park
- RU4 Primary Production Small Lots, located on the northern side of the corridor, refer figure 6. This area however appears likely to be developed and the land adjacent the corridor developed as commercial lands, (refer figure 5)

In addition to these:

- SP2 Infrastructure defines Richmond Road and the proposed alignment, and

The flood storage area to the north west of the alignment is located on lands zoned

- E3 Environmental Management

The uses that are currently zoned adjoining the corridor have the following characteristics

2.2.1 R3 Medium Density Residential

Medium Density development to date has not been developed along the corridor and so its character and relationship to the road is yet to be realised.

As identified in State Environmental Planning Policy (Sydney Region Growth Centres) 2006, the objectives of this zone are:

- To provide for the housing needs of the community within a medium density residential environment.
- To provide a variety of housing types within a medium density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To support the well-being of the community, by enabling educational, recreational, community, religious and other activities where compatible with the amenity of a medium density residential environment.

2.2.2 RU4 Primary Production Small Lots

This rural interface currently forms the basis of the northern interface of the road corridor and provides a strong connection to the landscape.

Objectives of zone as defined in Blacktown LEP, 2015 are:

- To enable sustainable primary industry and other compatible land uses.
- To encourage and promote diversity and employment opportunities in relation to primary industry enterprises, particularly those that require smaller lots or that are more intensive in nature.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To ensure that development does not prejudice the orderly and economic development of future urban land.
- To ensure that development is sympathetic to the ecological attributes of the area.

Figure 7 – View of Rural Lands

2.2.3 SP2 Infrastructure

Two forms of infrastructure have been identified within the study area. These are the road corridor itself and the drainage corridors and systems serving the developing communities. The later of these is still to be developed and so is yet to contribute to the character of the corridor.

As identified in Appendix 12 of State Environmental Planning Policy (Sydney Region Growth Centres) 2006, the objectives of this zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

Figure 8 – Road Corridor

2.2.4 E3 Environmental Management

As identified in Appendix 12 of State Environmental Planning Policy (Sydney Region Growth Centres) 2006, the objectives of this zone are:

- To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- To provide for a limited range of development that does not have an adverse effect on those values.

2.2.5 Future Zoning

The precincts surrounding Marsden Park are subject to change with the Marsden Park and Marsden Park North precinct developments. The zone will likely change from a rural zone to an urban development with residential, open space and commercial activity.

The urban design response for the alignment needs to respond to these existing and future characters to facilitate and enable the achievement of their planning objectives.

2.3 Heritage

2.3.1 Aboriginal Heritage

The original inhabitants of the Hawkesbury district were the Darug tribe of Aboriginals, also spelt as Dharug or Daruk. The river, which they called Derrubbin was a focal point as a source of food, including fish, eels, water birds, & mussels: and transport, in the form of bark canoes. Yams, a staple food, grew along the banks of the river. The acquisition of these lands by settlers resulted in conflict lasting from 1789 to 1805. (Attenbrow 2010, p15).

A number of Indigenous heritage items have been identified in close proximity to the proposal. The potential impacts of the proposal on these Aboriginal Heritage sites are discussed in further detail in the Review of Environmental Factors (REF) and Aboriginal Archaeological Survey Report.

2.3.2 European Heritage

In 1810, five 'Macquarie Towns' were established by Governor Macquarie. The towns were developed as market towns located near a navigable river and to contain town and pasture lots. The aim of the townships was to provide the settlers with ways to assist each other, provide security and easy access to trade routes for farm produce. In the years leading up to the establishment of these towns, roads and clearing of vegetation for agricultural purposes was undertaken in what is now known as the Blacktown LGA. Marsden Park takes its name from a former priest and landowner in the area, Samuel Marsden.

There are three local and state government heritage items within Marsden Park including a number of heritage houses (Figure 11). The heritage homestead of Clydesdale, is the only state heritage listed item within the precinct and encompasses 'Clydesdale' house, barn, cottage and farm landscape which are located on the floodplain of South Creek, shown in red hatch on Figure 4. Clydesdales significance relates to it be one of the last remaining pre 1840s homesteads within the Hawkesbury region.

Figure 9 – View of Clydesdale (Source: Daily Telegraph)

Figure 10 – View of Clydesdale Estate Entry

As part of the heritage importance of Clydesdale consideration needs to be given to the landscape setting and view lines from Richmond Road. The 2017 Conservation Management Plan (CMP) and the 2016 Marsden Park Development Control Plan (DCP outline requirements for this which include):

- ensuring that new plantings within the road corridor do not restrict the significant view corridor from Richmond Road back towards Clydesdale House
- being sympathetic to view lines from Homestead yard and working hub across the floodplain towards Richmond Road

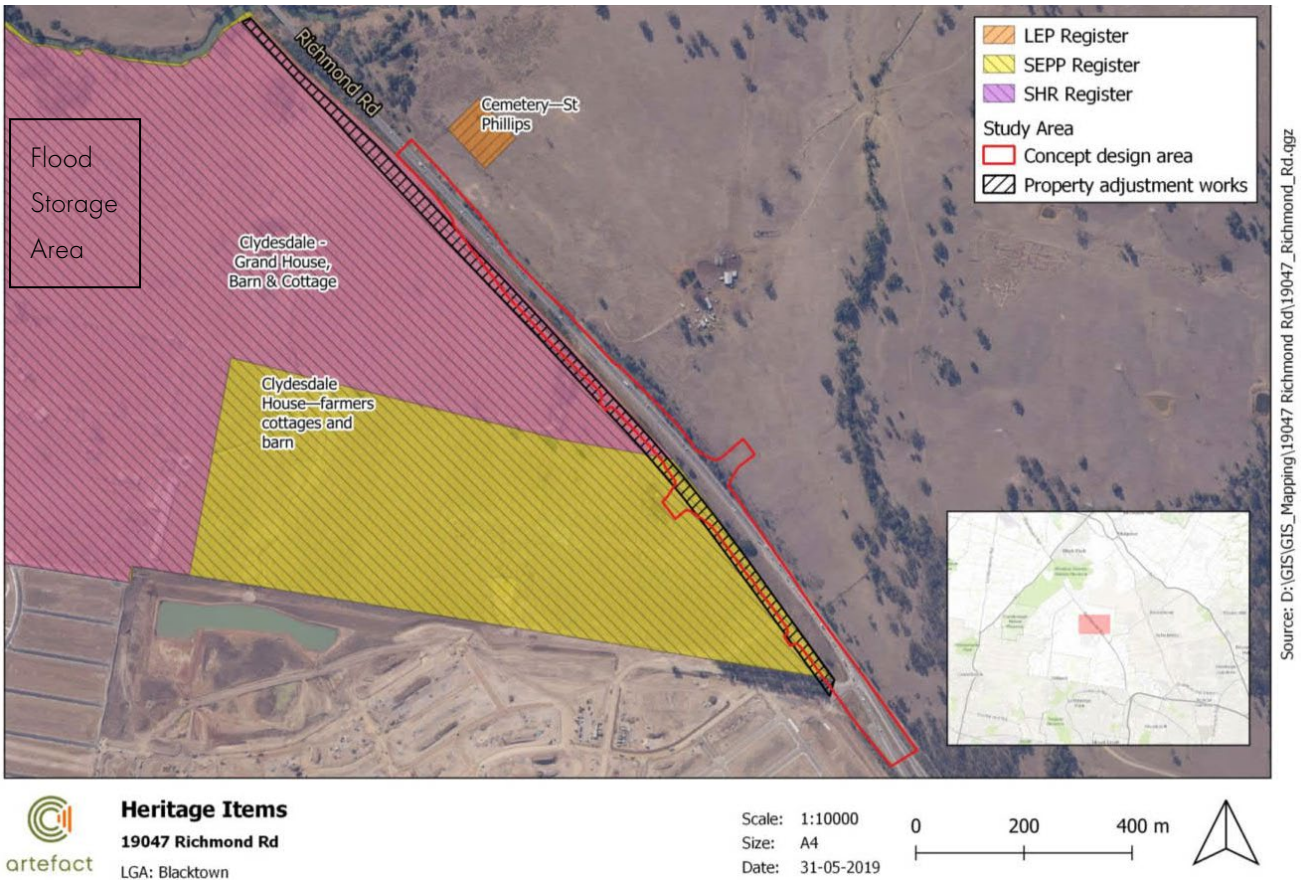

Figure 11 - Heritage items (Artefact, 2019)

2.4 Vegetation

Located on the western portion of the Cumberland Plain, vegetation in the study area is comprised mostly of Castlereagh Scribbly Gum Woodland. The surrounding landscape consists of scattered pockets of Shale Gravel Transition Forest, Alluvial Woodlands and Freshwater Wetlands.

Vegetation of the corridor consists of predominantly cleared floodplain and a transition to patches of woodland within the northern portion of the study area. The study area contains substantial weed infestation.

The study area is comprised of two Plant Community Types (PCTs). The vegetation communities are detailed in depth in the Biodiversity Report.

Figure 12 – View of site vegetation

2.5 Topography and Drainage

2.5.1 Landform

The general elevation along the proposal's alignment ranges between 10 and 30 metres above sea level. The landform and hydrology are interconnected with the area comprising an alluvial plain of the Hawkesbury Nepean River System, refer figure 13 for Topography and Drainage map.

2.5.2 Drainage

Marsden Park is located on the floodplain of the Hawkesbury Nepean River System. The proposals corridor is located adjacent to and within the catchment of South Creek, a second order ephemeral creek. South Creek flows from Mount Annan in the south to the north and feeds into the Hawkesbury River in Windsor. The Richmond Road crosses South Creek, just to the west of where the proposal ties in and is depicted in figure 14.

The alignment of the corridor and the proposal has been strongly influenced by the Flood regime of South Creek, as the alignment has been designed as a flood evacuation route for the areas to the west including Richmond. A flood offset area has also been considered which is depicted figure 6b and is offset from the corridor some 1500 metres.

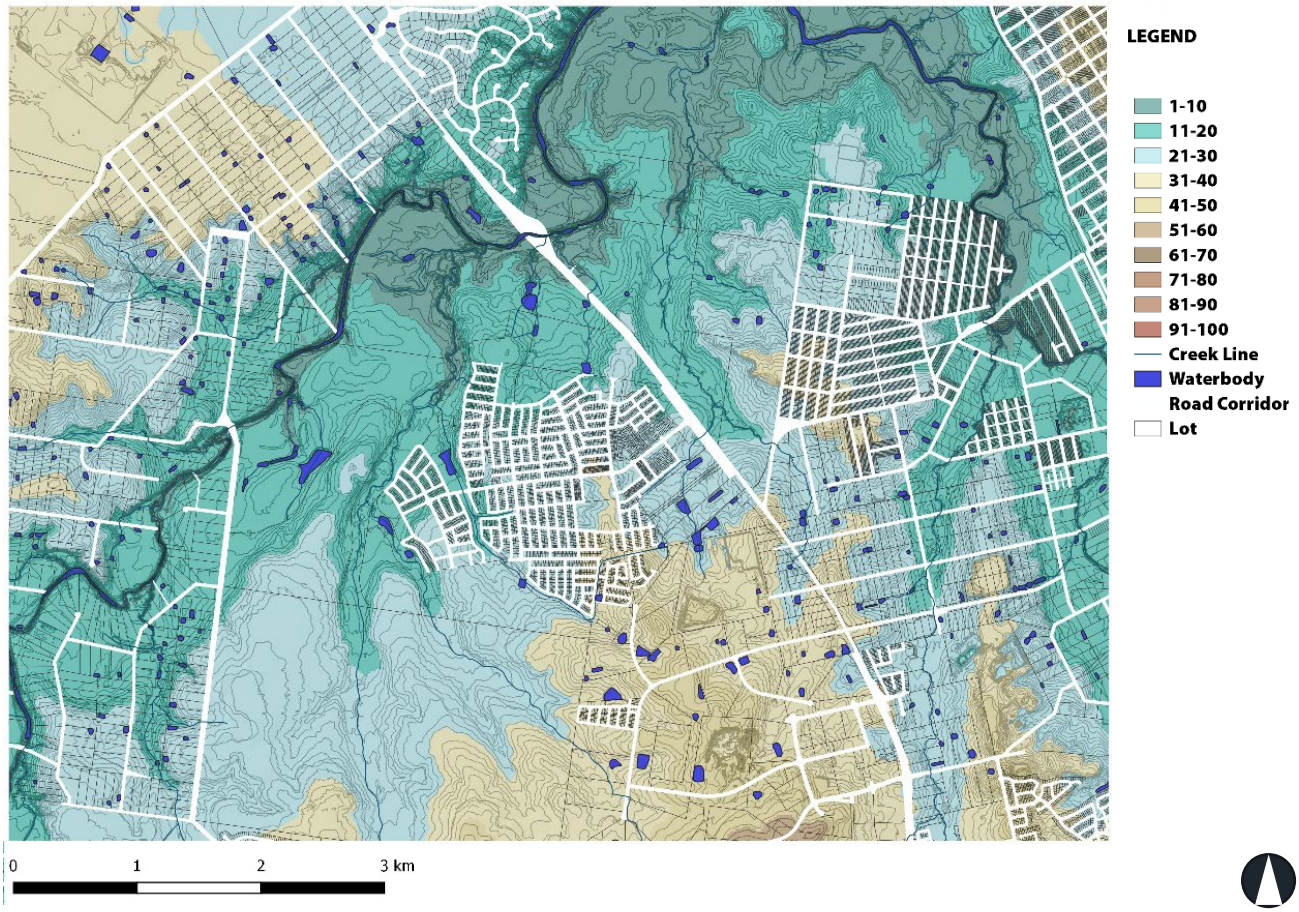

Figure 13 – Topography and Drainage Map

Figure 14 – View from South Creek Bridge looking east

3 Concept Design

The design response for the proposal needs to reflect both the character of the landscape through which the proposals alignment passes, as well as the broader landscape, addressing environmental, visual, and physical constraints as part of a holistic design solution. The context of which is changing and consequently needs to be assessed in relation to the current and future uses of the site.

The development of the urban and landscape design response needs to consider several guidelines (figure 16) which inform the undertaking of the landscape character and visual assessment report as well as the development of the overall concept. These include:

- Road Design Guidelines
- Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment - EIA-N04. 2018.
- Beyond the Pavement, Urban Design Policy, Procedures and Design Principles, Roads and Maritime January 2014
- Landscape Guidelines, Roads and Maritime, December 2018

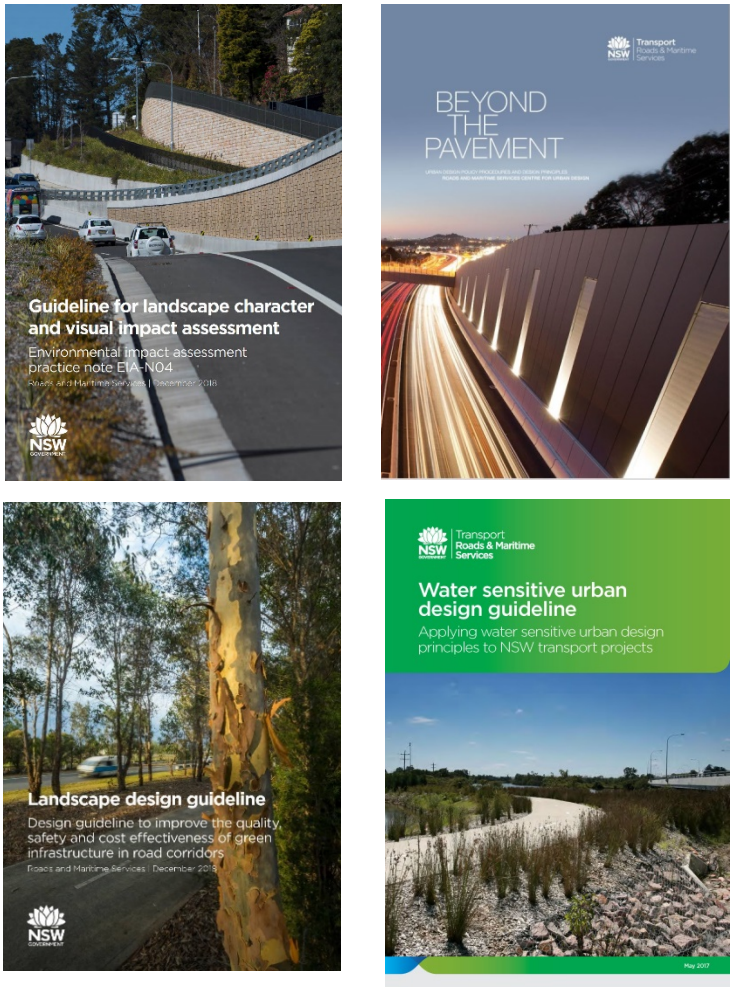

Figure 15 – Guideline Covers

In addition to the Roads and Maritime Services Guidelines, Blacktown Council also have two guidelines which relate to the development of the public domain and landscape precincts which are to be used to inform the design. These guidelines include:

Eyes on Blacktown – Landscape Design Manual – This provides typical details which are used within the public domain and should be followed where appropriate within the road verge to enable ongoing management of the streetscape by Council in accordance with the maintenance regimes.

Eyes on Blacktown – SP2 Landscape Design Principles – This provides guidance on the development of drainage networks within the public domain to ensure that the facilities provide a dual use function maximising parkland while fulfilling a vital stormwater function. Its applicability to the road corridor is limited due to the nature of the proposed development, however, the road corridor does interface with a number of the SP2 drainage lands and should seek to integrate these principles where possible.

The nature of these two guidelines is focused on detail rather than concept and so these documents will be taken forward as part of the detailed design and engagement with Council.

To achieve the requirements of these guidelines, several principles and objectives have been developed to inform the design development of the corridor.

3.1 Urban and Landscape Design Principles and Objectives

The following objectives are derived from the nine urban design principles defined in the Road and Maritime Services urban design policy - Beyond the Pavement. They reflect both the unique character of the road, its rural context and key issues which adjoin it.

3.1.1 Principle 1 – Contribute to the overall landscape structure and revitalisation of the region

Objectives

- Develop an alignment which permits the ongoing development of the Marsden Park Precinct through the provision of upgraded capacity and intersections to service the new and expanding residential precincts
- Design an alignment which is responsive to its landscape setting and does not detract from it
- Minimise negative physical impacts on drainage corridors and open space networks associated with these.

3.1.2 Principle 2 – Respect the land uses and built form of the corridor

Objectives

- Minimise the footprint of the corridor to limit impacts to adjoining vegetation, communities, and farm holdings
- Respond to the ecological communities of the area and landscape character of the corridor
- Minimise the intrusion of road-related elements on the local landscape

3.1.3 Principle 3 – Connecting modes and communities

Objectives

- Provide safe and efficient access to the developing residential communities
- Provide flood free access which maintains access in all weather

- Provide attractive and comfortable active transport opportunities both within the alignment and connecting to the broader local context and networks, where a need has been identified.

3.1.4 Principle 4 – Fit the landform of the corridor

Objectives

- Consider the relationship between road, and landscape minimising the overall scale of fills and cut along the alignment
- Minimise the footprint of the corridor to limit impacts to adjoining vegetation communities
- Provide a formation which addresses local flood events.

3.1.5 Principle 5 - Responding to natural pattern

Objectives

- Preserve existing cultural patterns within the landscape where evident within the corridor
- Vary the gradient of earthworks to provide visual interest and reflect characteristics of the surrounding landform and landscape.

3.1.6 Principle 6 – Protect and enhance the heritage and cultural values of the corridor

Objectives

- Preserve the integrity of heritage items and areas of cultural importance to the local community
- Avoid, where possible areas of identified historic and Aboriginal heritage and cultural value
- Acknowledge and respond to the heritage and cultural values of the Marsden Park Precinct, in particular the heritage values of Clydesdale House
- Acknowledge and respond to Aboriginal values and places in the broader landscape
- Consider the interpretation of the heritage areas along the corridor.

3.1.7 Principle 7 - Designing an experience in movement

Objectives

- Minimise disruption to the visual qualities of the land use
- Use landscape to frame or define views from the road, providing a backdrop and context to the road in what is a rapidly changing environment.

3.1.8 Principle 8 -Creating self-explaining road environments

Objectives

- Provide plantings that reinforce the character and connections of the corridor with the adjoining development
- Provide a landscape design which reflects the needs and performance requirements of intersections along the corridor
- Provide a landscape that facilitates the comfort and enjoyment of active transport uses along the corridor by clearly defining the active transport routes from the road alignment itself.

3.1.9 Principle 9 - Achieving integrated and minimal maintenance design

Objectives

- Develop a consistent approach to the design of soft landscaping along the alignment which is responsive to the character and feel of the road environment with which it connects as well as the character of the corridor through which it passes. Planting design Principles to be consistent with those outlined in the 'Landscape Design Guideline: Design guideline to improve the quality, safety and cost effectiveness of green infrastructure in road corridors (Roads and Maritime, 2018)"
- Provide plantings to frame views and guide the driver along the alignment, provide a backdrop and screen in part to the development that is adjacent
- Provide a landscape consistent with the landscape requirements of the Eye on Blacktown Landscape Guidelines
- Avoid the small narrow strips less than 1m in width for planting in order to provide a robust and manageable landscape along the corridor.

3.2 Proposal

The proposed scope of the project involves upgrading approximately 1.6 kilometres of Richmond Road north of Elara Boulevard in Marsden Park. The upgrade section will provide additional capacity to introduce a new signalised intersection (located at 800 m north of Elara Boulevard) to interface with Marsden Park and Marsden Park North local road networks.

Key features of the upgrade 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 road as a flood evacuation route.
- Provision of a new four-way signalised intersection about 800 metres north of Elara Boulevard, to provide access to Marsden Park Precinct to the west and Marsden Park North Precinct to the east (MPNP).
- 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.
- Offsite compensatory flood storage area.

The following design response is focused on the alignment and the urban and landscape design response to address its impacts and integration with the broader community. The offsite flood storage is not described as part of the alignment response as it is removed from the focus of the works and its design is responsive to its floodplain context, rather the urban road context.

The design of the offsite flood storage maintains the general character of the existing floodplain as it continues the grassland environment of the open and flat to undulating character of the floodplain itself.

3.3 Design Responses

In developing a design response for the Richmond Road Upgrade alignment, the fit of the road with its context has been considered as part of an integrated design solution for the project involving input from all disciplines.

As part of the proposal's concept design development, the urban design strategy has developed responses to the integration with the overall setting through the management of materials and forms (refer to appendix B for landscape concept plans). This has been achieved through a review of the:

- landscape treatment of the formation
- surface treatment to paths, and medians
- the nature and placement of roadside furniture, and
- the planting design required to integrate the proposal to achieve a contextually responsive design outcome.

As part of the development of the Urban and Landscape Design for the proposal an overall landscape strategy has been developed. This has included the identification of landscape precincts to inform the overall character development along sections of the route and the landscape responses associated with these precincts. The strategy developed has considered both future precinct character and its current character as the landscape solution needs to be responsive to the needs of both.

As part of the overall design consideration has been given to Government policy to ensure the integration of green infrastructure to reduce the heat island effect associated with urban development, increase the tree cover of Western Sydney and enhance the general environmental qualities of key infrastructure projects.

3.3.1 Landscape Design Precincts

The proposal has been divided in to three distinct character precincts as part of the overall review process and development of design philosophy for the alignment. This is depicted in Figure 16 – Precinct Plan and landscape strategy.

The precincts reflect a simplified contextual character of the proposal, and the key attributes which will be emphasised as part of the overall integration of the proposal.

The flood storage area is located to the north west of the alignment and as such is removed from the alignment and so is not captured as part of the precinct plan. It is located within an Environmental Management zone on the floodplain of South Creek and as such falls within a grassland open space setting. The design response for this element is consistent with the setting as it comprises relatively flat landscape profiles with a grassland cover.

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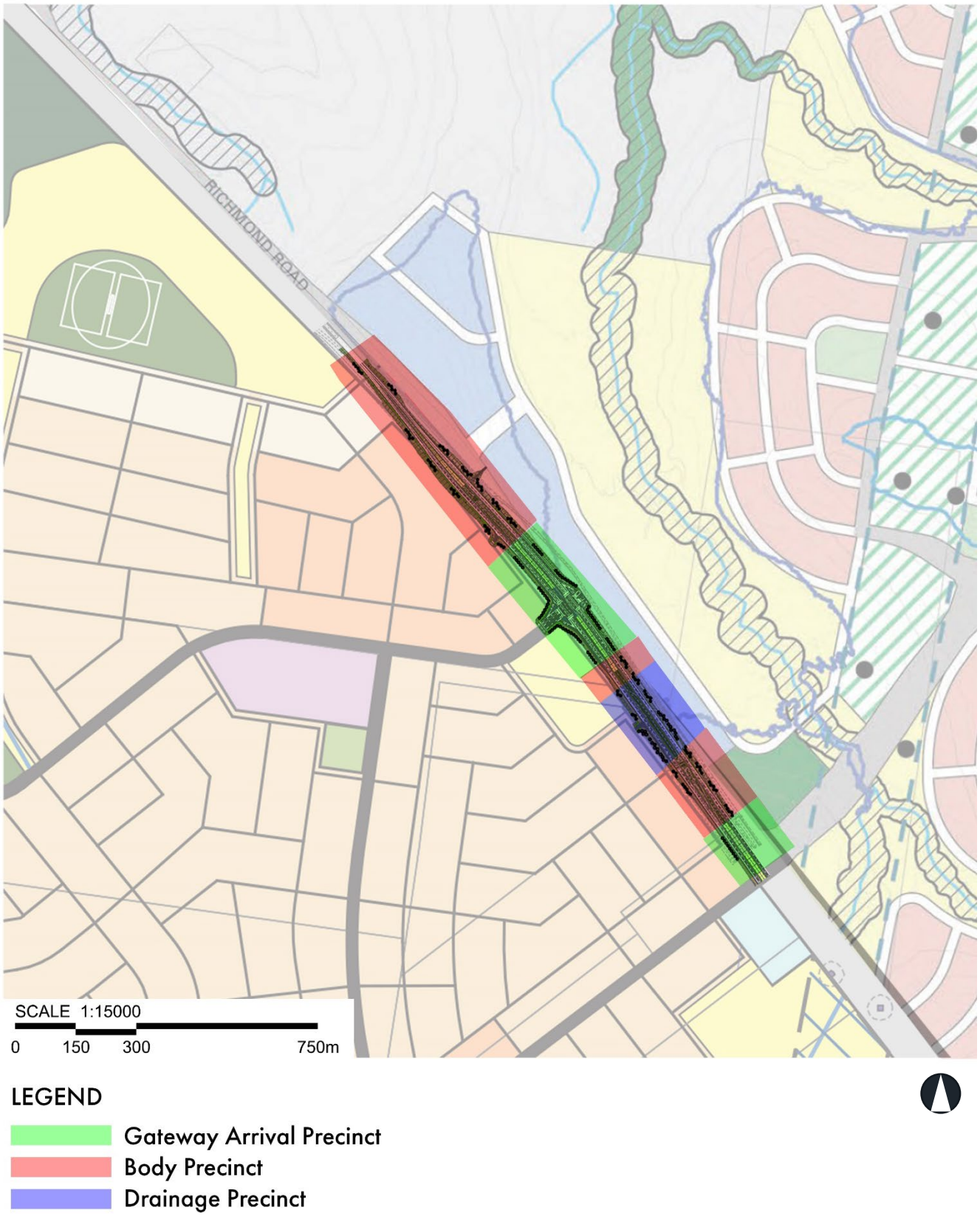

Figure 16 – Precinct plan

Precinct 1 – Gateway/ Arrival Precinct

Gateway precincts are responsive to the new urban form of the corridor which is proposed as part of the growth centres planning. It reflects the conflict or intersection point of Richmond Road and the key access interfaces with the adjoining land uses. The design response has been to formalise the canopy planting within the corridor in response to the changing conditions. In doing so it marks the impending change by introducing a level of order and control into the landscape. It is anticipated that at these points the adjoining residential estate is likely to implement its own landscape response adjoining the road corridor which is likely to include planting. The proposal of this structured approach provides for future landscape intervention by the adjacent Marsden Park and Marsden Park North precincts.

Precinct 2 - Body Precinct

The body precinct reflects the main character of the corridor. The existing corridor has a reasonable presence of canopy trees within the corridor which provide a loose tree lined character, many of which will be lost as part of the corridors development. The proposal is to provide a similarly informal character to the planting but will seek to replicate this unique character along the length of the precinct. The concept will see this precinct provide a green veil/screen to the adjoining development. This will filter views both to and from the corridor, enabling the overall structure of development to be discerned without it being the focus. The adoption of median planting is also proposed to help reduce the scale and dominance of the road corridor within the landscape. Adjacent sections of the corridor provide a similar feel and character. Figure 17 depicts a recently updated section of the corridor with canopy planting concentrated in the verge, where other older sections have a combination of median and verge planting refer figure 18.

Figure 17 – View from Langford Drive showing Richmond Road alignment and its landscape treatment.

Figure 18 - View of Richmond Road

Precinct 3 - Drainage Precinct

This precinct is dominated by its service role. The Marsden Park Masterplan identifies two points which intersect with the corridor to be used for drainage services. The design of the corridor at these points should be responsive to the subdivision's response. The focus of which is anticipated to be basins and riparian vegetation. In keeping with the riparian character of this land use, the landscape design proposes a change in vegetation type to reflect both the presence of water and the nature and feel of the spaces adjacent.

3.3.2 Integration Strategy

The following Landscape Strategy Plan, shown in Figure 21, develops the precinct definition and project principles and objectives to define the detailed urban and landscape design response.

The strategy is then broken down into its elements to outline the issues and responses adopted within the corridors' design development. Elements discussed include:

- Grading
- Vegetation
- Lighting
- Safety Barrier and Fences
- Signage

3.3.3 Grading

The grading of the alignment has sought to achieve a flood free route which has seen the alignment elevated above the present road profile.

Development of the design should seek to grade the batters of the formation to integrate and blend with the adjoining landform. The topography of the landscape is flat to undulating and so significant or abrupt changes in grade would create an awkward setting along the corridor. Where possible, the grade of the alignment should seek to avoid property impacts to surrounding precincts, minimise the need for road barriers and provide a smooth transition enabling the ground to flow over the alignment.

At the western limits grades will transition to 2h:1v to tie into the existing formation minimise footprint as the height of the formation increases as the corridor crosses south creek.

The development of the drainage is an integral element of the grading design as drainage is proposed to be through open channels which line the formation. The integration of table drains, and swales should adopt broad wide profiles which avoid the abrupt and harsh geometry of typical table drains with batter slopes consistent with the recommended maximum grades.

3.3.4 Vegetation

Vegetation within the corridor consists of scattered remnants and regenerating local plant communities. The landscape response to the corridors development takes its cues from both the character of the present alignment, a low key country road experience, and that of the road corridor to the east, depicted in Figure 19, which has developed in response to the changing land use. Inspiration is also drawn from the upgrade of Windsor Road which has also sought to integrate the expanded road corridor into a changing rural landscape context to the north of the Richmond Road alignment. This has been achieved from the adoption of the native community and inclusion of median planting in order to breakdown the scale of the expanded road corridor, refer figure 20. The landscape concept is presented in the Landscape Strategy Plan (Figure21) and Landscape Concept Plans in Appendix B.

Figure 19 – View looking to Garfield Road West showing existing landscape character of previous Richmond Road upgrades

Figure 20 - View of Windsor Road, Rouse Hill

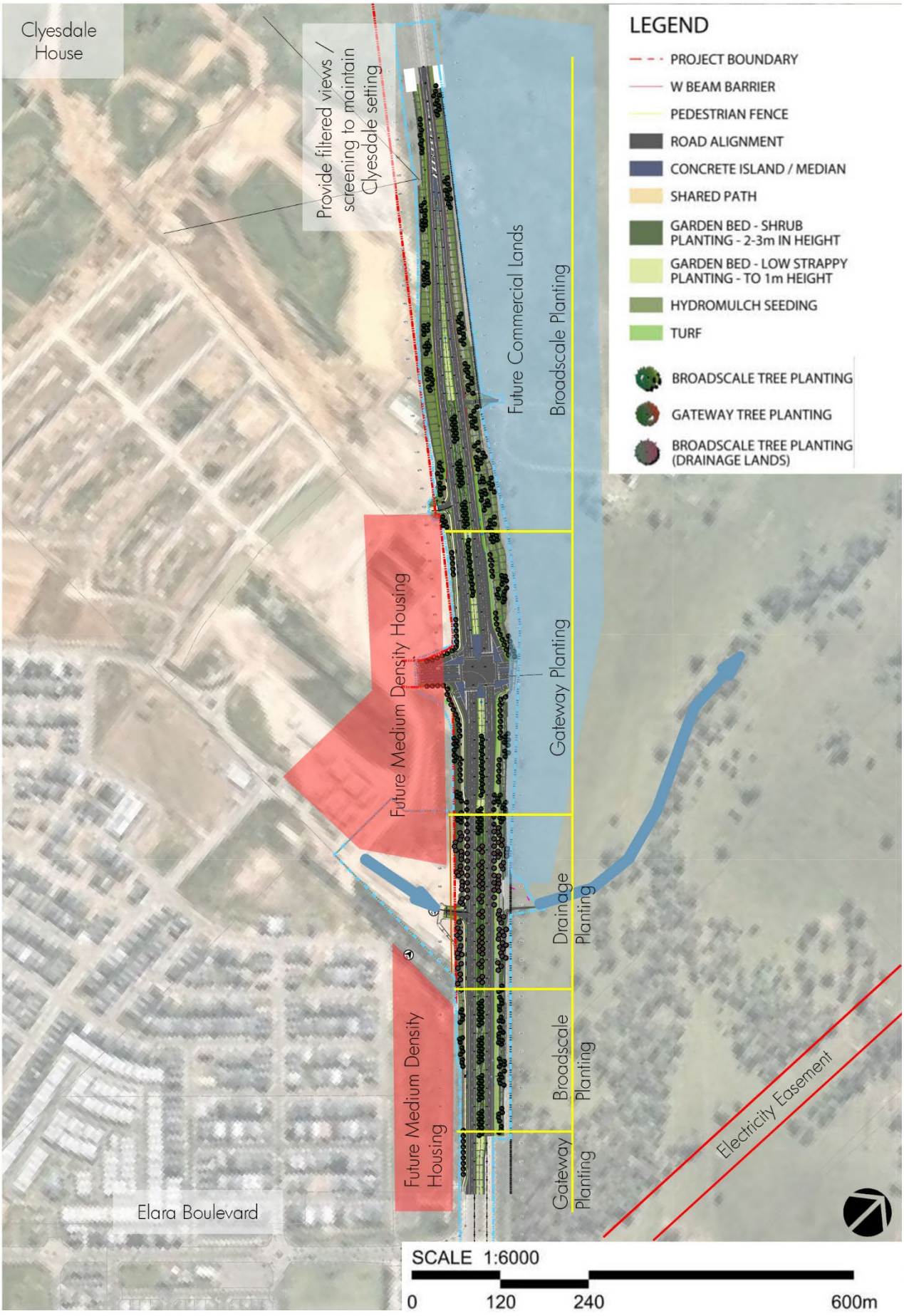

Figure 21 – Landscape Strategy Plan

A key element of the response will be the establishment of a canopy within both the verge and median to help define the corridor, enable filtered views and connections to the adjacent lands, as well as partially screening the road corridor from the adjoining use. Species proposed are derived from the Shale Gravel Transition Forest and are proposed to include:

Common Name	***Scientific Name***
Canopy Trees	
Broad-leaved Ironbark	*Eucalyptus fibrosa*
Grey Box	*Eucalyptus moluccana*
Forest Red Gum	*Eucalyptus. Tereticornis*
Paperbark	*Melaleuca decora*
Shrub Layer	
A sparse shrub layer is usually present which includes	
Blackthorn	*Bursaria spinosa*
	Daviesia ulicifolia
Peach Heath.	*Lissanthe strigose*

This is typified by the section of existing southern sections of Richmond Road between Alderton Drive and Bells Creek/Summerland Crescent.

Landscape Treatments

A variety of landscape treatments will be adopted to enable the implementation of the overall Urban and Landscape Design Strategy. Landscape treatments need to be:

- Robust and durable to minimise ongoing maintenance inputs
- Cost effective, and
- Maintainable meeting operational and safety needs

Treatment types would include:

- Hydromulch as a surface application to establish permanent vegetation cover and prevent erosion. Hydromulch is the hydraulic application of mulch matrix, sprayed onto the soil as a slurry which sets to form a layer of protection from erosion.
- Turfing is the application of grass rolls as a verge or broader landscape treatment. Typically, turf will be used as the margin between shared path and road and at areas where amenity is high such as at intersections.
- Planting can be undertaken as individual specimen plantings such as street tree and broad scale tree planting or as garden beds consisting of a prepared mulched bed and the mass planting of shrub and grass species. The use of garden beds would be utilised in areas of high visual prominence, such as verges and intersections; and where instant plant densities are required to provide stability and minimise weed growth such as in the median and/or drains.

The following plan extract and section, Figures 22 and 23 illustrate the overall landscape design intent for the corridor, depicting both the drainage and broadscale treatments of the corridor.

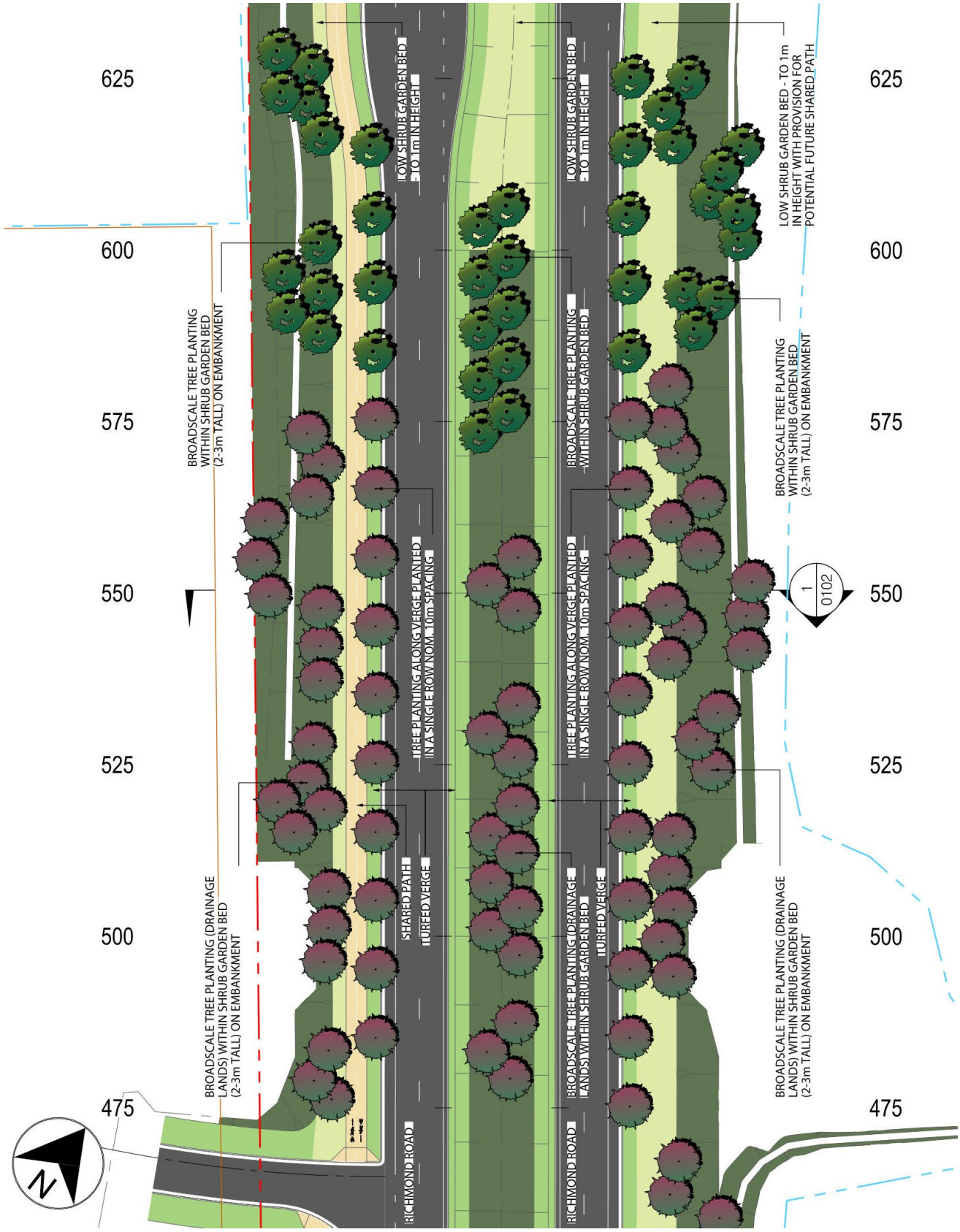

Figure 22 Typical Section of alignment depicting drainage and broadscale planting

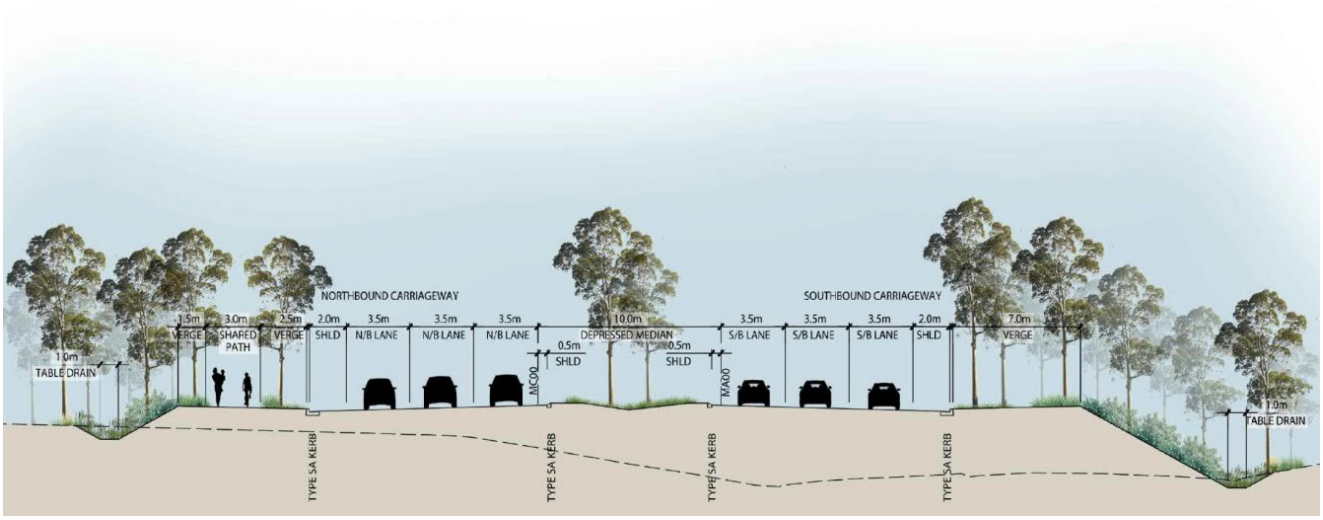

Figure 23 Typical Cross section of Proposed Richmond Road

3.3.5 Other Structures
3.3.6 Lighting

The current alignment of Richmond Road is largely unlit as it passes through the proposed upgrade area. A previously upgraded portion of Richmond Road for Sydney Business Park development has provided the principles for lighting to reflect the urbanisation of the corridor. The proposal for the Richmond Road upgrade would be to reflect the already upgraded portion of Richmond Road as is reflected in Figure 24.

Lighting as part of previous upgrades has adopted a standard gooseneck streetlight set back behind the shared path or verge. The location of these lighting structures have considered clear zones and potential conflicts. The design of lighting should seek to minimise the need for lighting and ensure that light spillage into residential properties is minimised or avoided as per AS4282- 1997.

Figure 24 – View of Richmond Road showing typical lighting layout after previous upgrades

3.3.7 Safety Barriers and Fencing

Generally, the alignment avoids the need for safety barriers through the width of formation, particularly the verge, which means that batter slopes fall outside the clear zone requirements

Safety barriers have been provided where required along the main alignment where the transition from dual carriageway to single carriageway occurs.

Barriers may be required in relation to the offset of drainage swales from the shared path, a combination of offset and batter slope. Opportunities to eliminate the need for such structures will be reviewed as part of the detailed design to reduce the need for physical barriers that provide a layer of visual distraction within the landscape.

Pedestrian fencing is proposed where a steep level change exists. Opportunities to reduce the need for this should be explored to reduce the number of structural elements within the landscape. The design intent should seek to limit pedestrian fencing to areas where a vertical drop is present or its transition from this to a traversable slope of 1:4 or flatter.

3.3.8 Signage

Signage is largely to be installed in accordance with the requirements of standards. Care needs to be taken to ensure the extent of signage is kept to a minimum and that the signage is integrated with the overall design of the alignment. The following strategies should be adopted:

- 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.
- Rationalise the number of signage structures.

4 Assessment Methodology

This section of the report outlines the methodology adopted, which is consistent with *Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment - EIA-N04,* and is used to review the proposal and assess the impacts and effects of the proposed road alignment on the road user (primarily motorists), and any potential properties with views to the road.

4.1 Landscape character and impact assessment

To assess landscape character the local context of the site is divided into a number of units to assist in understanding the local context and the implications of the proposal. These include defining the landscape character zones (zones of similar spatial or character properties), and the analysis of changes to these zones as a result of the proposal.

Landscape character is defined as:

"The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place."

(Transport for NSW, 2018).

The proposal is assessed in terms of its impacts on these character zones and the impact ranked in terms of sensitivity to change. This assessment differs from a visual assessment in that it assesses the overall impact of a proposal on an area's character and sense of place.

4.2 Visual Impact Assessment

The Visual Impact Assessment involves the assessment of the visibility of the project. For the purposes of the study, visibility is considered in the following way:

Visibility

The view field of a corridor or object is composed of static receptors, i.e. those that adjoin the road corridor and mobile receptors which are those that travel along the corridor or adjacent to it. The impacts of the two groups are unique in that the time and frequency of the exposure differ. The extent from which views can be obtained is referred to as the 'view catchment'.

Static Receptors

Static receptors occur within the visual catchment of the corridor i.e. they are points, which have a view of or can be viewed from the corridor. The corridor of the proposal is visually defined by both the topography and vegetation and built structures of the corridor.

Mobile Receptors

Mobile receptors are the users of the corridor; in this instance the vehicles, pedestrians and cyclists that travel along part or the whole alignment. Their experience of the space is short term. Mobile receptors constitute the main visual receptors of the proposed works.

4.3 Landscape character and visual assessment matrix

Landscape character and visual assessment are equally important. The landscape character assessment helps determine the overall impact of a proposal on an area's character and sense of place including all built, natural, and cultural aspects, covering towns, countryside, and all shades between. The visual impact assessment helps define the day to day visual effects of a proposal on people's views.

To quantify these impacts, it is important to assess two qualities in relation to a viewpoint. These are: - Sensitivity and Magnitude

Sensitivity refers to the qualities of an area, the type number and type of receivers, and how sensitive the existing character of the setting is to the proposed change. For example, a pristine natural environment will be more sensitive to change than a built-up industrial area.

Magnitude refers to the nature of the project. For example, a large interchange would have a very different impact on landscape character than a localised road widening in the same area (Roads and Maritime, 2018).

Table 1 summarises the ranking of the assessment of these two criteria and how they are combined to provide an overall impact assessment.

Table 1 – Landscape Character and Visual Impact Assessment Matrix

		Magnitude			
		High	*Moderate*	*Low*	*Negligible*
Sensitivity	*High*	High Impact	High - Moderate	Moderate	Negligible
	Moderate	High - Moderate	Moderate	Moderate – low	Negligible
	Low	Moderate	Moderate – low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

5 Landscape Character Assessment

5.1 Landscape Character Assessment

This section of the report reviews the physical attributes of the character zones and the proposal's potential impacts. As part of the character assessment, the assessment has reviewed the alignment of the bypass and its context and classified it into a number of differing character zones.

The following differing character zones were identified.

- LCZ1 - Residential Landscape
- LCZ2 – The Road Corridor, and
- LCZ3 – Rural / Open Pasture

Figure 25 illustrates the distribution of these character zones and their relationship to the proposal.

A review of planning controls was also undertaken prior to the assessment. This identified that no listed cultural or visual landscape character units were identified under the LEP 2015. However, the study area and more broadly the Marsden Park District is anticipated to develop from a semi-rural landscape to a residential and commercial focused landscape. Areas surrounding Clydesdale Estate are culturally and visually significant and will be retained amongst a changing landscape character. The change in character is required to be consistent with principles identified in SEPP (Sydney Regional Growth Centres) 2006.

Figure 25 – Landscape Character Zone Plan

5.2 Landscape Character Zone Definitions

5.2.1 LCZ1 – Residential Landscape

Figure 26 – Character of Elara development

Figure 27 – View looking south towards Elara development

LCZ1- Residential Landscape character zone is defined by the residential areas of Marsden Park including new residential precincts. Elara Boulevard provides a significant connection to a new residential subdivision named Elara. This development, part of the Marsden Park Precinct, extends approximately 500m north along Richmond Rd connecting to across the South Creek floodplain.

The new residential development developed to date is largely uniform low-density residential development consisting of single and two storey dwellings. The lots within this subdivision are of approximately 400 square metres.

Whilst the currently developed properties adjacent the road appear are low density residential the final plan indicates the strip between current dwellings and the road will be infilled with medium density development. This appears to be comprised of buildings with a maximum of three storeys in scale per Blacktown City Council Growth Centre Precincts DCP (2018) and depicted in Figure 28. The relationship between built form and road will be important and needs to be considered in how the area is assessed and the landscape strategies developed to mitigate these findings.

Figure 28 – BCC Growth Centre Precincts Urban streetscape principles (BCC Growth Centre DCP, 2018)

Sensitivity: Moderate to High

The existing residential landscape is set quite far back from the proposed corridor, providing a buffer of landscape between the current road network and the development fronting it and the corridor. However, the ultimate design sees development occurring a lot closer to the corridor. This is to be medium density housing, in reviewing the impact of the changes we have assessed it as moderate to high reflecting a residential address which fronts an arterial road.

Magnitude: Moderate

Magnitude of change is moderate as the alignment moves both further south closer to the residential frontage but also sees an expansion in footprint from the undivided road to divided. The formation is also raised above the existing alignment making it more visually prominent.

Summary: Moderate

Overall impact has been assessed as moderate reflecting the residential land use and change in scale. Marsden Park and Marsden Park North residential precincts continue to develop and will provide an opportunity to integrate and reduce impacts on the residential character.

5.2.2 LCZ2 – The Road Corridor

Figure 29 – View of the floodplain along Richmond Rd, Marsden Park looking east

LCZ2- The Road Corridor connects the character zones. It functions as a distinct precinct with its own distinct character dominant be road elements including drainage swales, cuttings, and scattered remnant vegetation. It provides a defined border between the residential landscape and rural / open space character.

Sensitivity: Moderate

Richmond Road presents views of the open landscape character as it crosses the South Creek floodplain and approaches a two-lane rural road which is characterised by scattered remnant trees and a largely rural outlook. The corridor is experienced by heavy vehicle traffic from Richmond travelling east to the M7 Motorway and by local traffic visiting the developing Sydney Business Park and adjoining suburbs. All users are transient and so only gain changing views for short periods of time. This ephemeral nature of experience reduces the sensitivity that the user is likely to experience. Its sensitivity has been assessed as moderate.

Magnitude: High

The proposed works sees a sizeable increase in the scale and extent of the road pavement within the corridor and the reduction in landscape zones outside of the pavement that define the corridor. As part of the upgrade project the elevation profile of the road will be raised to ease the flood risk to the corridor. The pavement extent is doubled and the formation width trebled. Its impact is considered high.

Summary: Moderate to High

The overall impact of the character of the road corridor is considered to be moderate to high and will need careful integrated planning to ensure the development is responsive to existing character and the community it will serve.

5.2.3 LCZ3 – Rural / Open Pasture

Figure 30 – View of rural / open pasture landscape from Richmond Road looking north

LCZ3 – Rural / Open Pasture occurs on the northern side of Richmond Road, and along the edges of South Creek to the south of the corridor. This landscape is characterised by large open grasslands of pasturegrasses and scattereed remnant trees. To the north of the corridor, within this landscape, a small number of residential properties overlook Richmond Road at a distance.

Plans for Marsden Park North see this rural landscape developed and commercial development located along the northern edge of the roads corridor. This development will limit both the scenic values that exist now and the relationship of the road to landscape.

The development of flood offset works occur within this zone to the west of the alignment and are offset from the corridor by 1500 metres. The nature of these works involves reprofiling the surface to enhance flood storage. The surface treatment however is returned to pasture and the scale and nature of embankments are kept to a minimum.

Sensitivity: Low

The current scenic setting to the north of the alignment is proposed to be developed, and consequently the precinct is expected to experience change. This change in planning provides a level of robustness to the sensitivity of the site as the proposed development will occur in the knowledge of what the road is or is becoming. Sensitivity is consequently considered to be low.

To the west the rural nature of the site is visible both across South Creek from Fourth and Third Streets and looked over by the developing subdivision to its east. As an open grassland setting it is sensitive to change.

Magnitude: Low

The construction of the corridor sees most of the expansion shift to the southern side of the corridor. While there is a doubling of the number of lanes and a lifting of levels the impact on the grassland is considered low as the area is earmarked for development.

The western section of land associated with the flood offset works, is impacted over a substantial area. However, the nature of the works consists of reprofiling of the ground plain to enhance flood storage. Batters will be shallow and profiles simple meaning they will fit comfortably within the landscape. The magnitude of change is considered low.

Summary: Low

The overall impact of the landscape character is considered to be low, given the changing context and the scale of changes that are proposed.

5.3 Landscape Character Assessment Summary

Three landscape character units have been identified and assessed as part of the character study:

- LCZ1 - Residential Landscape
- LCZ2 - The Road Corridor
- LCZ3 - Rural / Open Pasture

The visual assessment reveals Richmond Road is in a transition stage, with new developments being constructed adjacent Richmond Road. The Elara precinct to the south has begun construction on its residential community and Marsden Park North is also due to begin construction in the future. The assessment summary is determined by two key factors, sensitivity, and magnitude. Sensitivity is assessed based upon exposure to the proposal, where exposure is more focused or for a longer duration the sensitivity rating will be higher. Magnitude is determined based upon the potential impact to the existing landscape. On this basis the Road Corridor was assessed as high sensitivity and magnitude due to the extent of change proposed. The rural / open pasture landscape was assessed as negligible because of its distance from the road proposal and the determination the proposal will have no immediate impacts. The Residential landscape has a moderate sensitivity based on its exposure to the proposal however it is noted due to the nature of the setback from the proposal to the residential properties the exposure is minimised.

A summary of the landscape character assessment is presented in Table 2.

Table 2 – Landscape Character Assessment Summary

Character Definition	Sensitivity	Magnitude	Summary
LCZ1 - Residential Landscape	Moderate to High	Negligible	Negligible
LCZ2 - The Road Corridor	High	High	High
LCZ3 - Rural / Open Pasture	Negligible	Negligible	Negligible

6 Visual Impact Assessment

6.1 Visual Receptors and Viewpoints

The experience of the viewers varies according to the duration, field of view and nature of exposure to the proposal.

In assessing the visual impact, the visual range has been considered to be the effective distance where a viewer can be influenced by changes in traffic movement and discern individual details such as signage and planting elements. This distance varies in relation to the topography and effectiveness of screening vegetation however the quality of detail in the landscape typically deteriorates rapidly for distances greater than 200 metres.

Typically, the viewpoints have considered the impact of those overlooking the proposal. Of the adjoining observers it is the residential users who would be the most sensitive to change. These are generally the primary viewpoint assessed. In some instances, other viewers have been considered including the road user. Where differences in sensitivities of viewers exists the worst case, assessment is the stated value in terms of Sensitivity, Magnitude and overall visual impact. The specific rating of the individual viewers is stated as part of the detailed assessment in Section 6.4.

6.2 Visual Catchment

The visual catchment of the proposal is well defined due to the topography of the site and clear barriers to sightlines, including vegetation, built form etc. Generally, the catchment is above the corridor to the north and below it in the south however, this will change as the road is elevated with the upgrade. It is defined by the first line of residential development which overlooks the corridor. This is depicted in the following visual catchment plan in Figure 27.

6.3 Viewpoints

Several viewpoints have been identified which capture the key areas of potential visual impact associated with the proposal. These relate to key residential or public areas which overlook the corridor.

In total eight viewpoints have been identified which provide an overview of the level of impact and their nature. These viewpoints are identified in the following Visual Impact Assessment Plan shown in Figure 31.

The assessment of these views provides:

1. An image of the outlook, including a tone indicating the approximate location of the proposal and its scale (depicted in a yellow tone).
2. A brief description of the view and the proposal
3. An assessment of sensitivity
4. An assessment of magnitude
5. An assessment and explanation of impact

Figure 31 Visual Impact Assessment Plan

6.4 Key Viewpoints

6.4.1 VP1 – Garfield Road West

Figure 32 – View from Garfield Road West looking Southwest

View: Looking southwest across Richmond Road to the Marsden Park Residential precinct from Garfield Road West

Sensitivity: Low

View from Garfield Road intersection reveals a transitory experience which is considered to be of low sensitivity, due to the limited term of exposure and focus of the road user.

Magnitude: Negligible

The proposal introduces a road formation into the background of the view, some 500 metres from the vantage point. As part of this process some vegetation will be removed and a new formation introduced. The physical changes from this is not considered to be visible from this viewpoint due to the vegetation present between the proposed works and the viewpoint. As a result, the impacts have been assessed to be negligible.

Summary: Negligible

This viewpoint is removed from the alignment by about 500 metres but experiences an open outlook across an agricultural or treed landscape with housing and the Blue Mountains in the background. The proposal is likely to have a negligible impact on this outlook as the introduction of road infrastructure is beyond the field or view or screened by vegetation cover.

6.4.2 VP2 – Blackstone Street

Figure 33 – View from Blackstone Street looking north to Richmond Road

View: Looking west from Blackstone Street to Richmond Road

This presents the current view from the existing housing addressing Richmond Road. Between the viewpoint and Richmond Road are a stand of regenerating eucalypts beyond which is construction work associated with the expansion of the new suburb.

Sensitivity: Low

As a residential address this viewpoint is sensitive to the potential for increased traffic. However, planning indicates that four storey flat buildings are proposed for the zone between the viewpoint and housing and so impacts are considered short term and low, due to the changing environment of the housing estate.

Magnitude: Low

The proposal introduces a road formation into the background of the view, some 100 metres from the vantage point. While this adjusts both the elevation and scale of the road, the proposed development to occur between the viewpoint and the viewer will screen this. Consequently, the magnitude of change is considered to be low.

Summary: Low

This viewpoint is removed from the alignment by about 100 metres within a changing context. The impacts of the proposal within this context are considered to be low.

6.4.3 VP3 – View from the former Clydesdale driveway

Figure 34 – View from driveway looking north west

Figure 35 – View from driveway looking East

View: View from the former Clydesdale driveway

The viewpoint is set at the entry drive of Clydesdale and provides the view to the east and north west from this point. Set within the road corridor, the two images illustrate the transition from cutting to fill at the western limits of the proposal. Looking east the alignment will be lifted to match the height of the existing cutting. To the west the alignment falls and joins the existing road alignment just beyond the existing stand of trees.

Sensitivity: Low

Set within the road alignment the viewers are transitory in nature or are residents yet to arrive as part of the redevelopment of the Clydesdale Estate. The sensitivity to change is consequently considered low.

Magnitude: Moderate

The proposal expands and raises the existing road formation shifting its alignment closer to the viewer. The vegetation to the south of the corridor will be cleared as part of the proposal whereas to the north at the top of the cutting it has the potential to be retained. Filling will lift the road alignment several metres above the existing so that the cutting is largely filled and the road set close to the former natural ground level before it extends to the west on the fill and transitions back down to the existing road alignment. The impacts of these changes are considered moderate within the context of a changing landscape.

Summary: Low to Moderate

Located at the former entry to Clydesdale the view is set within the road corridor and will see both loss of vegetation and changes in the scale of formation. This occurs within the context of a changing landscape and so is assessed as low to moderate.

6.4.4 VP4 – View from north of the Richmond Road looking towards Marsden Park North

Figure 36 – View from Richmond Road looking north

View: Looking north across Marsden Park North development area

This viewpoint is located at the western limit of the development and looks to the north. It reveals an open pastureland which is proposed to be redeveloped as an urban precinct as part of the Marsden Park North proposal. To the right of the view a residential building which currently overlooks the Richmond Road alignment to the west but is currently shielded by a small cutting from views of the alignment to the south. The view assessed is the reverse of that shown in that the impact of the proposal on the pastureland and residential property are assessed, as the proposals changes are within the road corridor not the viewed land.

Sensitivity: Low

The sensitivity of the view from this property would traditionally be anticipated to be moderate to high sensitivity, as the impacts are on a residential outlook. However, this needs to be assessed in the context of the changing land use which would see commercial development fill this space. The impact is consequently considered to be low for a viewer set within this landscape

Magnitude: Moderate

The proposal will see the alignment lifted reducing the screening afforded by the cutting and increasing the prominence of the fill embankment west beyond this point. The increase in width will see a reduction in the vegetation screening presently afforded the existing alignment. The impact is consequently considered moderate.

Summary: Moderate to Low

This viewpoint is considered to have moderate to low sensitivity reflecting the level of changed proposed adjoining the corridor and the presence of an existing road corridor.

6.4.5 VP5 – View overlooking Richmond Road and Clydesdale entry facing east

Figure 37 – View looking east overlooking Clydesdale Estate

View: Views from Park Road looking west towards Richmond Road and South Creek

The view set within the existing corridor reveals both the presence of a small cut and vegetation growing within the corridor. The proposal sees the alignment lifted to more closely match the top of cutline reducing the visual screening afforded by the cut to the existing alignment.

Sensitivity: Low

Predominantly experienced by the road user the proposal will see the corridor lifted several metres to better reflect the natural ground line of the cutting but then extending this westward. As the viewpoint of a transitory viewer the impact of the proposal is considered to have a low impact on the road user, when assessed in relation to the broader changes proposed adjoining the corridor.

Magnitude: Moderate

The proposal increase the scale and elevation of the road formation. A wide median will enable this to be broken down minimising the apparent scale of the corridor. The magnitude of change is considered moderate.

Summary: Moderate to Low

This viewpoint is set within the alignment and is considered to have a low sensitivity but moderate scale of change in relation to the increase scale of the road infrastructure from the existing two lane corridor. This results in a moderate to low impact

6.4.6 VP6 – View overlooking Marsden Park Precinct Development approaching Elara Boulevard

Figure 38 – View from Richmond Road looking southeast

Figure 39 – View from Richmond Road looking east

This viewpoint captures the relationship between the existing housing established within the Marsden Park Precinct and the Richmond Road. This indicates a clear setback between the road and residential development which is planned to be infilled with medium density development. While currently elevated above the alignment the proposal sees the existing alignment lifted to ensure flood immunity which will see levels rise 1 to 2m in this location.

Sensitivity: Low

The view is essentially an eastbound road user and so consequently a transitory viewpoint of low sensitivity. However, looking back is the residential precinct of Marsden Park. As a residential precinct it will be sensitive to change, however the substantial setback, (about 100m), and the proposed change in land use in front of these residential properties will reduce the sensitivity. Overall sensitivity is consequently assessed as low for all views.

Magnitude: Moderate

The proposal will increase the scale and elevation of the road formation bringing the formation up into view of the surrounding residences. A wide median however will assist in breaking down the extent of tarmac visible to the road user and resident alike which will aid in mitigating the overall increase in scale of the corridor. The impact of these changes are considered to be moderate

Summary: Low to Moderate

This viewpoint is set at the eastern end of the corridor and will experience an increase in scale of road formation and its elevation. Its context is changing and so sensitivities have been determined to be low. The magnitude of change is moderate reflecting the modification of an existing road corridor and so overall the impact is assessed as moderate to low.

6.4.7 VP7 – View from Richmond Road west of Elara Boulevard

Figure 40 – Views from Richmond Road looking west from Elara Boulevard

View: Looking west along Richmond Road west of Elara Boulevard

The photo captures the transition from the existing divided carriageway to two-way single lane road. The proposal will see the addition of a bike lane beyond the kerb and the widening and movement of the overall alignment to the south. In addition, the southern verge is expected to change in the coming years as medium density four storey flats are built adjoining the alignment.

Sensitivity: Low

The view is that of the road corridor user, be that private car, public transport, freight, or pedestrian or cyclist. The viewer is transitory and so will not have a constant impact. The viewpoint is considered to be low in sensitivity as a result of the transitory nature of the viewer and the broader impacts of the adjoining development.

Magnitude: Moderate

The proposal introduces an increased width to the existing road formation resulting in both removal of vegetation to the south of the corridor but also an expansion in the extent of pavement evident to the viewer. The latter is both influenced by the realignment of the road to the south, the construction of additional lanes and the lifting of the alignment to facilitate flood immunity. Despite these changes the magnitude of change is considered to be moderate within the broader changing context of the corridor and its adjoining land uses

Summary: Moderate to Low

This viewpoint is set within the existing alignment with views both to the changing land use but also along the corridor.

The impact of the proposal within this context has been assessed as moderate to low.

6.4.8 VP8 – View from Park Road looking west towards Richmond Road and South Creek

Figure 41 – View from Park Road looking west towards Richmond Road and South Creek

View: Looking from Park Road looking west towards Richmond Road and South Creek

This viewpoint is set to the north east of the proposal and looks across the land of the Marden Park North Subdivision. The foreground illustrates the remnant native community within the Park Road corridor with a largely open pastureland beyond. Richmond Road is within the midground where the canopy begins again some 1.8 kilometres from the viewer.

Sensitivity: Low

As a rural street with housing to east of the viewpoint there is a potential for a moderate to high sensitivity. However, the distance from the proposal and the future planning provisions for the space in between mean that the sensitivity of the viewpoint is considered to be low

Magnitude: Negligible

The terminates just within view of this view point some 1.8 kilometres away. The scale of changes at the western end of the proposal are limited as a result of the need to tie in with the existing road. At the distance of the viewer, the impact is considered to be imperceptible and consequently is identified as negligible.

Summary: Negligible

While the sensitivity had the potential to be higher, the changing future character of the site has limited its impact and has been assessed as low, and the distance of the view point from the proposal and the fact that it overlooks the tie in with existing road alignment see the magnitude assessed as negligible leading to a negligible rating overall.

Flood Storage Offset

In additional to the road corridor as part of the project works the construction of additional flood storage on the floodplain is required. This is offset from the road some 1500m on the floodplain of South Creek beyond the Clydesdale House. The location on the floodplain reduces visibility as it is removed from both the Richmond Road corridor and also the subdivision to the east.

6.4.9 VP9 – View from Third Road looking south east

Figure 42 – View from Third Road looking southeast towards South Creek and Marsden Park

View: Looking from Third Road looking south east across South Creek towards flood offset area.

This viewpoint is set to the west of the proposed offset area and is elevated. The heavily treed nature of this location however limits views to the floodplain.

Sensitivity: Negligible

As a rural street with rural residential housing, the viewpoint is likely to be sensitivity to changes. However, the density of vegetation cover limits the ability to view the site. It is consequently considered to be Negligible.

Magnitude: Low

The proposed flood storage offset area is located on the floodplain which is not visible due to vegetation cover. The scale of changes is minor in relation to the scale of the space and involve reprofiling of the surface and then grassing. The impacts of these changes are considered low as there is limited change in outlook.

Summary: Negligible

While the sensitivity had the potential to be higher, had there been limited canopy cover, the present condition however blocks views and has seen the viewpoint assessed as of negligible sensitivity, and the magnitude assessed as low due to the limited scale of the works proposed leading to a negligible rating overall.

6.4.10 VP10 – View from Fourth Road looking east

Figure 43 – View from Fourth Road looking east towards Marsden Park across South Creek

View: Looking from Fourth Road looking east across South Creek towards flood offset area.

This viewpoint is set to the west of the proposed offset area and at a similar elevation. The open flat nature of the site is what is intended as the end use and will sit between the creek bank and overhead power lines.

Sensitivity: Moderate

As a rural street with rural residential housing, the viewpoint is likely to be sensitivity to changes. Properties are removed from the proposed work area by a distance of at least 250 metres and predominantly have vegetation between them and the proposed work site and so will have a filtered outlook. The sensitivity has been assessed moderate.

Magnitude: Low

The proposed flood storage offset area is located on the floodplain which is at a similar level to the viewpoint. The scale of changes are minor in relation to the scale of the space and involve reprofiling of the surface and then grassing. The impacts of these changes are considered low as general profile and finish are maintained.

Summary: Low to Moderate

While the setting has a level of sensitivity to it the scale of works and the distance and filtering of view contribute to limit the sensitivity, the scale of works is low and so an overall impact is considered to be low to moderate.

6.5 Visual Assessment Summary

A total of eight viewpoints have been assessed in relation to the road corridor works and two additional viewpoints in relation to flood storage offset works associated with the proposal.

A range of viewpoints has been considered reflecting the nature of land-use and the likely interaction that will occur in relation to the proposal and existing development. The viewpoints selected provide a range of receptors including residents, road users, open space users which reflect a broader cross section of community who will experience changes as a result of the proposal.

The overall magnitude of the proposal has been assessed as low to moderate. This reflects the establishment of a new alignment in relatively close proximity to a rapidly changing landscape including the development of Marsden Park to the south of the alignment and Marsden Park North to the north. Both developments are resulting in transformative change to precinct and so the change of the road corridor is consistent with these changes. At this stage the final land uses are still be developed.

Of the eight viewpoints, along the road corridor, the range of visual impact ratings determined is as follows:

- Three viewpoints have been assessed as having a moderate to low visual impact
- One viewpoint as low visual impact
- Two viewpoints as negligible visual impact, reflecting viewpoints which were taken at a significant distance from the corridor but none the less were considered as potentially being impacted by the proposal.
- Two viewpoints as low to moderate visual impact.

Typically views of residential receptors have been assessed as experiencing a higher impact that transitory views. However in this assessment the changing nature of the development and development proposed between the viewer and the road corridor has been considered to reduce the sensitivity and so sensitivity has generally been considered low along the alignment and from the differing viewpoints.

Magnitude of change has generally been assessed as moderate and so initiatives which reduce the scale and bulk of the road alignment and its formation will be key factors in mitigating the impact of the proposal. Mitigation of this impact can be achieved by landscape strategies which influence grading and slope of batters as well as the placement and type of vegetation.

For the two viewpoints assessed to determine the impacts of the flood storage offset area, the impacts range from negligible to low to moderate. This reflects views which vary from fully screened to partially filtered views and a proposal for what is essentially minor profiling of the floodplain and reinstatement of its grassland to enhance flood storage. The impacts in this location are consequently considered manageable and pose a minimal risk to the community and adjoining residences.

Landscape and urban design mitigation strategies have been developed from the outcomes of the landscape character and visual assessments, as a way of mitigating the potential impacts, and have been incorporated into the Urban Design Strategy in Chapter 3. These mitigation measures, as well as those to be further considered in detailed design stage of the proposal are discussed in the following Chapter 7. As the landscape mitigation measures develop over time their effectiveness will be enhanced as the planting matures.

Table 3 below summarises these impacts.

Table 3 - Visual Assessment Summary

Viewpoint	Sensitivity	Magnitude	Impact
Road Corridor			
VP1	Low	Negligible	Negligible
VP2	Low	Low	Low
VP3	Low	Moderate	Low to Moderate
VP4	Low	Moderate	Low to Moderate
VP5	Low	Moderate	Low to Moderate
VP6	Low	Moderate	Low to Moderate
VP7	Low	Moderate	Low to Moderate
VP8	Low	Negligible	Negligible
Flood Storage Offset Area			
VP9	Negligible	Low	Negligible
VP10	Moderate	Low	Low to Moderate

7 Mitigation Measures

7.1 Mitigation Measures

Mitigation measures are treatments developed as part of an overall integrated design process that are recommended to reduce the impacts of a proposal. Mitigation measures are captured in the design to address environmental requirements such as protection of identified vegetation or fauna species; water quality issues; noise etc.

The mitigation measures discussed here address visual and landscape character impacts and those issues addressed as part of the overall urban design response. They may relate to specific viewpoints or address the overall impact of the proposal. Mitigation measures also aim to reduce impacts on the existing landscape character through consideration of existing site features, cultural and environmental heritage.

The urban design Objectives and Principles along with the overall landscape strategy identified in Chapter 3 incorporate several measures that are proposed and designed to reduce the impacts of the proposal. The key mitigation strategies are summarised below, (Table 4), and address both design and construction issues.

Table 4 – Mitigation Measures

Issue	Stage	Recommendation
General Design Integration - standard project safeguards	Design	Ongoing integrated project development will follow TfNSW integrated project development processes, including with urban designers as part of the project team.
	Design	Blacktown City Council, Eyes on Blacktown – Landscape Design Manual and SP2 Landscape Design Principles; and TfNSW Urban Design Policy (Beyond the Pavement)' and Urban Design Guidelines will be used to guide design development of the project.
	Design	The urban design objectives, principles and concept design strategy presented in the urban design report for the REF will form the basis for future design development and consultation with stakeholders.
Earthworks	Design	Integrate with adjoining landform through adoption of appropriate grades, avoiding sharp transition in profile
	Construction	Stabilise/revegetate as works progress to limit erosion and visual impacts through early integration with surrounding vegetation
Retention of Existing vegetation	Design	Design the proposal to avoid impact to prominent trees and vegetation communities where possible Existing threatened species will be retained and protected wherever possible Minimise clearance extent where possible
	Construction	Clearly define clearance limits and exclusion zones to protect vegetation cover

Table 5 – Mitigation Measures Continued

Issue	Stage	Recommendation
Revegetation	Design	Vegetation communities to respond to existing communities and landscape character Utilise local provenance material Provide screen planting within corridor to limit visibility of the proposal from adjoining residential properties Screen and allow views consistent with the CMP for Clydesdale Estate.
	Construction	Progressively implement revegetation works to limit erosion and to establish vegetation Utilise cleared material as part of revegetation works
Minimise road furniture and signage	Design	Provide minimum signage requirements and limit structural elements to provide and open and permeable setting
	Construction	Look for opportunities to minimise designed signage,
Lighting	Design	Limit extent of lighting and potential for light spill
	Construction	Limit night works and provide lighting which minimises spill
View management	Design	Provide visual screening within the road corridor to limit the visual impact of the proposal in areas identified as moderate or high impact Provide sense of space and openness associated with the agricultural landscape Control views as required as part of the CMP of the Clydesdale Estate
	Construction	Retain vegetation beyond the footprint to retain any existing screening
Ancillary Facilities	Design	Setout compounds to limit impacts, consider screening and location of key structures which provide the greatest impact
	Construction	Maintain compound in a tidy and well-presented manner. Provide and maintain screening
	Construction	Progressively throughout the work, where feasible and reasonable, the ancillary facility sites will be returned to at least their pre-construction state

8 Conclusion

The proposal for the Richmond Road Upgrade project involves the upgrading of the Richmond Road corridor from a two-lane undivided carriageway into dual carriageway of two lanes in either direction with a wide median to accommodate additional lanes in the future. The alignment adopted has been selected to achieve a flood free route.

In developing an integrated design response for the proposal, the development of urban design and landscape objectives and principles has occurred which responds to the landscape character and visual context of the study area. These objectives have been developed to ensure that the relationship between the proposal and the surrounding developing urban precinct is adequately considered and addressed in the design response.

The urban design, and the landscape concept has been developed to achieve an integrated outcome that helps fit the project as sensitively as possible into its context and to minimise the impacts of the project on the future character of the area. Mitigation measures discussed in chapters 3 and 7 would be implemented in the detailed design process to ensure these objectives are realised.

The urban design response comprises three-character responses as part of its overall strategy to relate to the evolving context of the road corridor. These include:

- Gateway precincts - Which mark key entry and decision points into and out of the developing precinct
- Broadscale (Body) precincts – Which provide screening and structure to the corridor to protect views both along the corridor and into / from the developing estate
- Drainage precinct – Which responds to the specific environmental and engineering requirements of the cross-drainage environment, emphasising the presence of water.

Landscape Character Assessment

Three landscape character units have been identified and assessed as part of the character study:

- LCZ1 – Residential landscape
- LCZ2 – The Road Corridor
- LCZ3 – Rural / Open pasture

The landscape character assessment reveals Richmond Road and the precincts are in transition, with new developments being constructed adjacent to Richmond Road. This transitional landscape has been assessed as reducing the sensitivity to change as this is a key element of its character as the entire precinct changes from a rural context to an urban context. The proposal was assessed as having a moderate to high impact on the road corridor due to the extent of change proposed. Where the impacts on the rural and residential precincts were assessed as low and moderate respectively reflecting the degree of change which is envisioned to occur within the precinct independent of the road.

Visual Impact Assessment

Eight viewpoints have been assessed along and looking towards the road corridor. The visual impacts of the proposal have been assessed as predominantly moderate to low reflecting the scale of change and increase in the alignment footprint and the substantial change in character proposed for the precinct as part of the planning for Marsden Park and Marsden Park North.

Two additional viewpoints have been assessed to reflect the construction of a flood storage offset area. This was assessed to be negligible to low to moderate impact.

These findings reflect the proximity of residential receptors to either the road corridor or the flood storage offset and the proposal for new infrastructure within a changing rural landscape setting over which these residential properties overlook.

While no impacts were assessed as high, a range of mitigation measures have been proposed to ensure the impacts are minimised and possible the landscape response screens the proposal or defines it, moderating the impacts of the proposal.

A number of key mitigation measures have been provided to ensure the proposal results in an acceptable landscape proposal and visual impact assessment. These proposals are to be taken forward into the detailed design to ensure the design is optimised and responds to its context.

9 Bibliography

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Appendices

Appendix A	Vegetation Species
Appendix B	Landscape Concept Plans

Appendix A Vegetation Species

	Botanical Name	Common Name
TREES	*Eucalyptus fibrosa*	Red ironbark
	Eucalyptus moluccana	Grey box
	Eucalyptus tereticornis	Forest red gum
UNDERSTOREY	*Brunoniella australis*	Blue Trumpet
	Bursaria spinosa	Native blackthorn
	Desmodium varians	Slender Tick-trefoil
	Dichondra repens	Kidney weed
	Microlaena stipoides var stipoides	Weeping meadow grass
	Themeda australis	Kangaroo Grass
Shale Gravel Transition Forest		
	Botanical Name	Common Name
TREES	*Corymbia maculata*	Spotted gum
	Eucalyptus crebra	Narrow-leaved ironbark
	Eucalyptus eugenioides	Thin-leaved stringybark
	Eucalyptus fibrosa	Red ironbark
	Eucalyptus moluccana	Grey box

	Eucalyptus tereticornis	Forest red gum
	Melaleuca decora	White feather honeymyrtle
UNDERSTOREY	*Acacia decurrens*	Black wattle
	Acacia parramattensis	Parramatta wattle
	Aristida vagans	Threeawn Speargrass
	Bursaria spinosa	Native blackthorn
	Brunoniella australis	Blue Trumpet
	Cheilanthes sieberi subsp. Sieberi	
	Daviesia ulicifolia	Gorse bitter pea
	Desmodium varians	Slender Tick-trefoil
	Dichelachne micrantha	Shorthair Plumegrass
	Dichondra repens	Kidney weed
	Exocarpos cupressiformis	Native cherry
	Lissanthe strigosa	Peach heath
	Lomandra multiflora subsp. multiflora	Many-flowered Mat-rush
	Microlaena stipoides var stipoides	Weeping meadow grass
	Opercularia diphylla	Opercularia diphylla
	Pratia purpurascens	White root
	Themeda australis	Kangaroo Grass
	Wahlenbergia gracilis	Australian Bluebell

Appendix B Landscape Concept Plans

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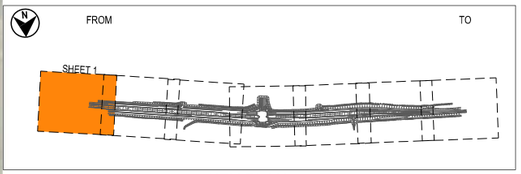

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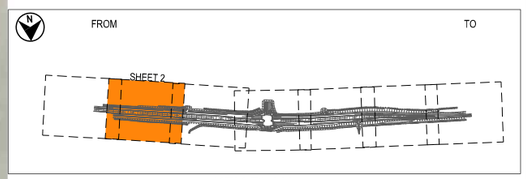

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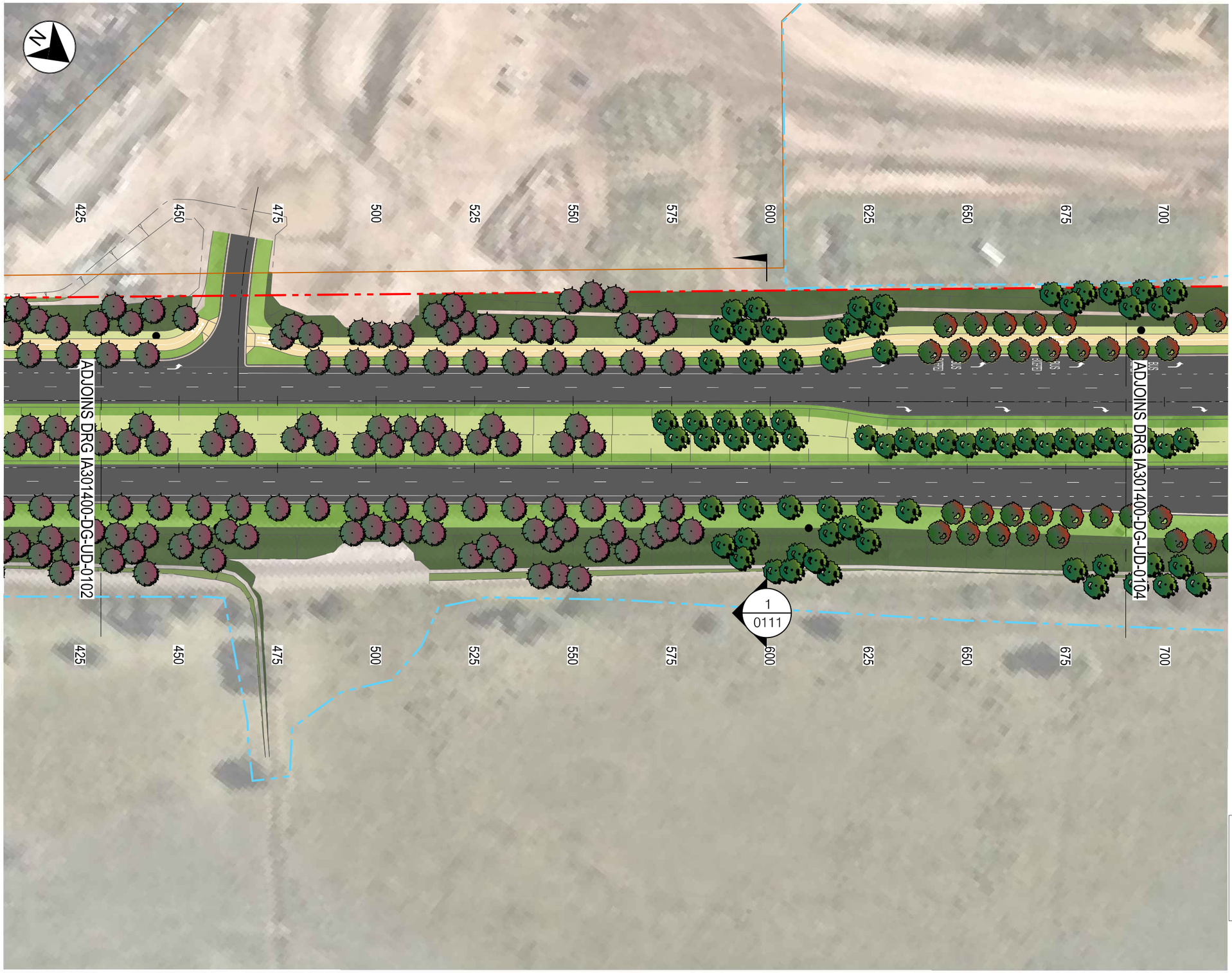

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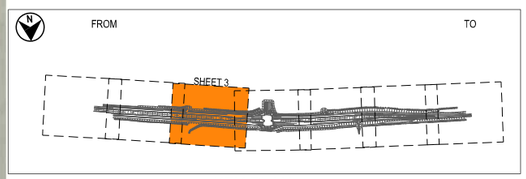

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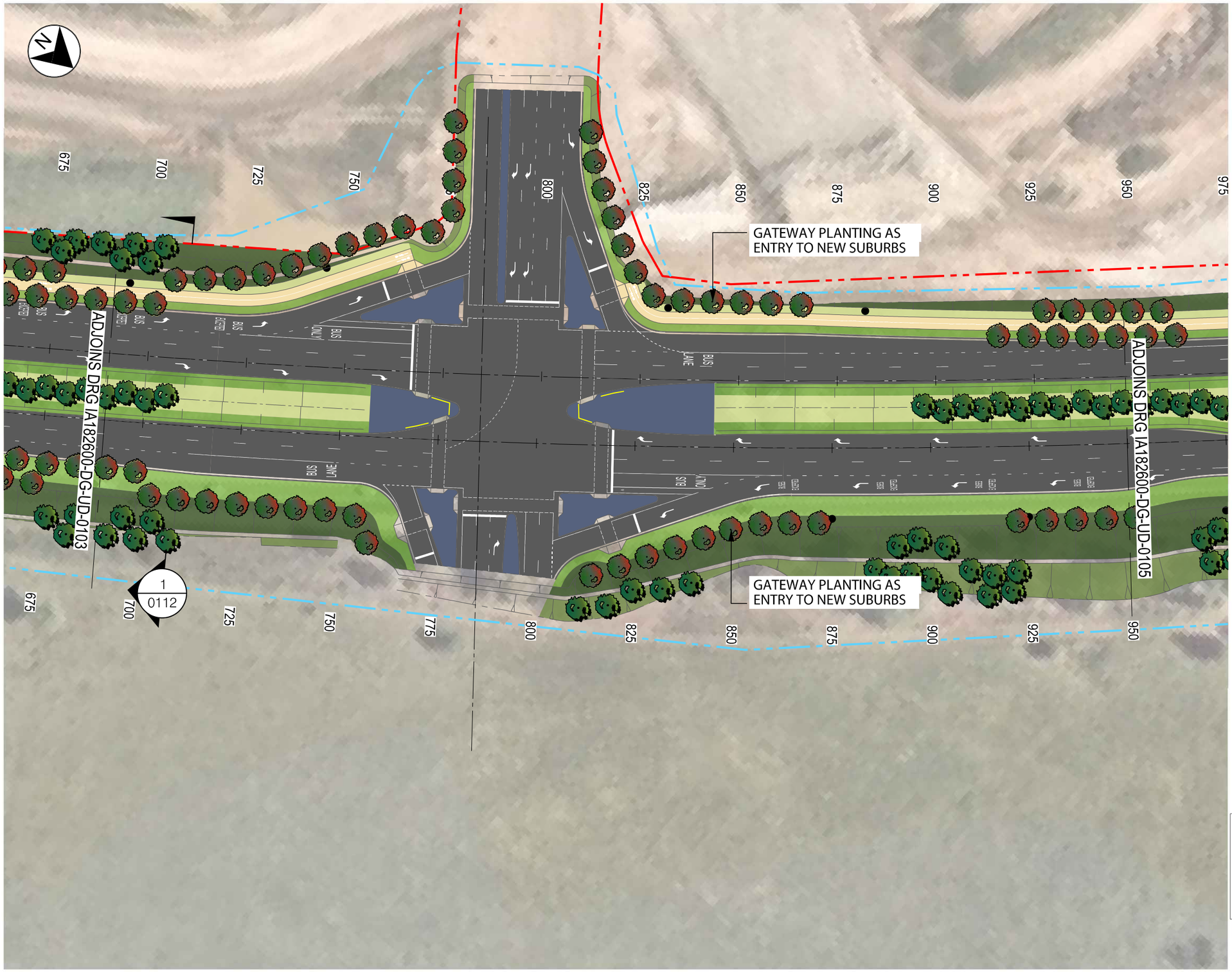

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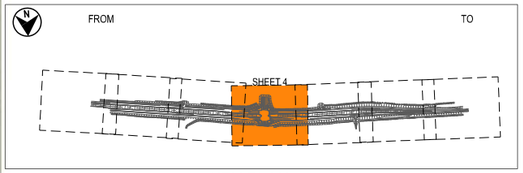

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tract consultants pty ltd
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t 02 9954 3733 | f 02 9954 3825
Tract Jacobs

PLOT DATE / TIME: —-
PLOT BY: MNenadic

	TITLE	NAME	DATE
	DRAWN	M. NENADIC	09.10.20
	DRG CHECK	M. EASTON	09.10.20
	DESIGN	M. EASTON	09.10.20
	DESIGN CHECK	M. EASTON	09.10.20
	DESIGN MNGR	M. EASTON	09.10.20
	PROJECT MNGR	K. LAU	09.10.20

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PLAN — SHEET 4 OF 7

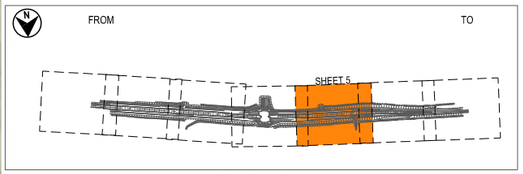
A3

RMS REGISTRATION No. DS2020/000286 — PART UD

ISSUE STATUS: DESIGN FOR REF
EDMS No.:
SHEET No.: UD-0104
REV: 1

LEGEND

- PROJECT BOUNDARY
- EXISTING BOUNDARY
- REF BOUNDARY
- COMPOUND BOUNDARY
- W BEAM BARRIER
- PEDESTRIAN FENCE
- ROAD ALIGNMENT
- CONCRETE ISLAND / MEDIAN
- SHARED PATH
- GARDEN BED - SHRUB PLANTING - 2-3m IN HEIGHT
- GARDEN BED - LOW STRAPPY PLANTING - TO 1m HEIGHT
- HYDROMULCH SEEDING
- TURF
- BROADSCALE TREE PLANTING
- GATEWAY TREE PLANTING
- BROADSCALE TREE PLANTING (DRAINAGE LANDS)
- DRAINAGE CHANNEL - GRASS
- DRAINAGE CHANNEL - ROCK
- DRAINAGE PIT



KEY PLAN
NTS

NOT FOR CONSTRUCTION

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
	0	01.06.2020	DESIGN FOR REF	ME
	1	09.10.2020	DESIGN FOR REF	ME

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER
IA301400-DG-UD-0105

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Tract Jacobs

PLOT DATE / TIME ----
PLOT BY MNenadic

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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RICHMOND ROAD UPGRADE, MARSDEN PARK URBAN DESIGN
PLAN SHEET 5 OF 7

A3

RMS REGISTRATION No. DS2020/000286
PART UD
ISSUE STATUS DESIGN FOR REF
EDMS No.
SHEET No. UD-0105
REV 1

LEGEND

- PROJECT BOUNDARY
- EXISTING BOUNDARY
- REF BOUNDARY
- COMPOUND BOUNDARY
- W BEAM BARRIER
- PEDESTRIAN FENCE
- ROAD ALIGNMENT
- CONCRETE ISLAND / MEDIAN
- SHARED PATH
- GARDEN BED - SHRUB PLANTING - 2-3m IN HEIGHT
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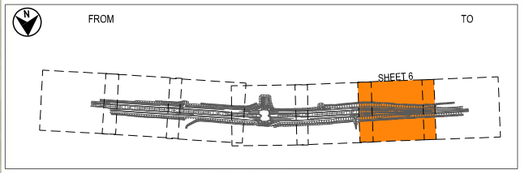
- TURF
- BROADSCALE TREE PLANTING
- GATEWAY TREE PLANTING
- BROADSCALE TREE PLANTING (DRAINAGE LANDS)
- DRAINAGE CHANNEL - GRASS
- DRAINAGE CHANNEL - ROCK
- DRAINAGE PIT



KEY PLAN
NTS

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150mm ON A3 SIZE ORIGINAL

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
	0	01.06.2020	DESIGN FOR REF	ME
	1	09.10.2020	DESIGN FOR REF	ME

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER
IA301400-DG-UD-0106

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Tract
Jacobs

PLOT DATE / TIME ----
PLOT BY MNenadic

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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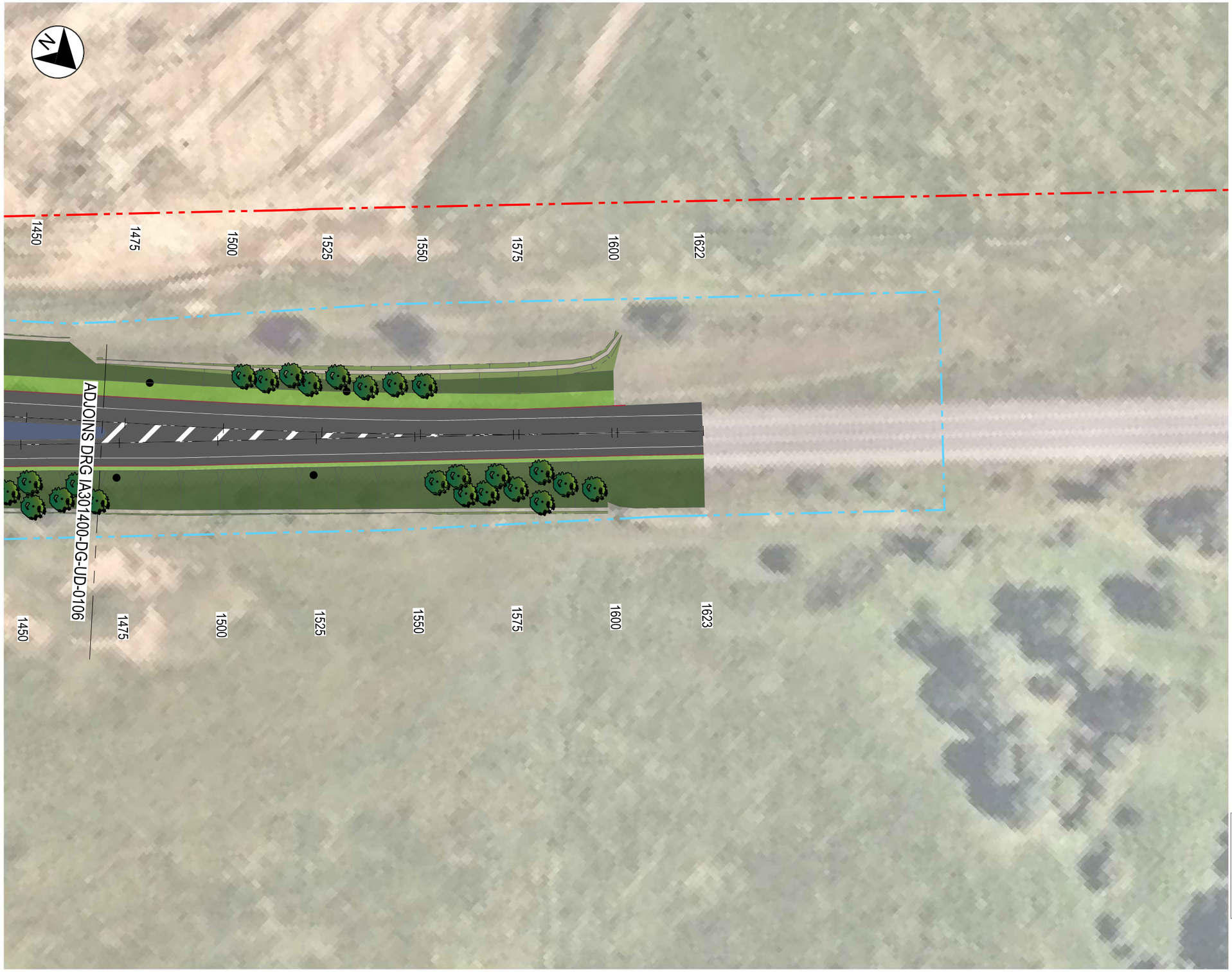
PLAN SHEET 6 OF 7

A3

RMS REGISTRATION No. DS2020/000286
PART UD
ISSUE STATUS DESIGN FOR REF
EDMS No.
SHEET No. UD-0106
REV 1



LEGEND

- PROJECT BOUNDARY
- EXISTING BOUNDARY
- REF BOUNDARY
- COMPOUND BOUNDARY
- W BEAM BARRIER
- PEDESTRIAN FENCE
- ROAD ALIGNMENT
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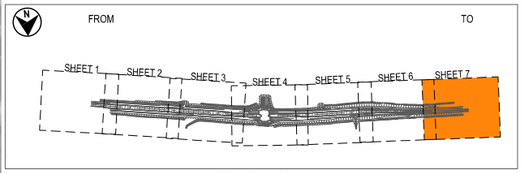
- BROADSCALE TREE PLANTING (DRAINAGE LANDS)
- DRAINAGE CHANNEL - GRASS
- DRAINAGE CHANNEL - ROCK
- DRAINAGE PIT



KEY PLAN
NTS

NOT FOR CONSTRUCTION

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0 5 10 15 20 25 30 35 40 145 150mm ON A3 SIZE ORIGINAL

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

REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
0	01.06.2020	DESIGN FOR REF	ME
1	09.10.2020	DESIGN FOR REF	ME

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING

SCALE 1:1000 10 0 10 20 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER: IA301400-DG-UD-0107

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north sydney 2060 NSW australia
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Tract
Jacobs

PLOT DATE / TIME: ---
PLOT BY: MNenadic

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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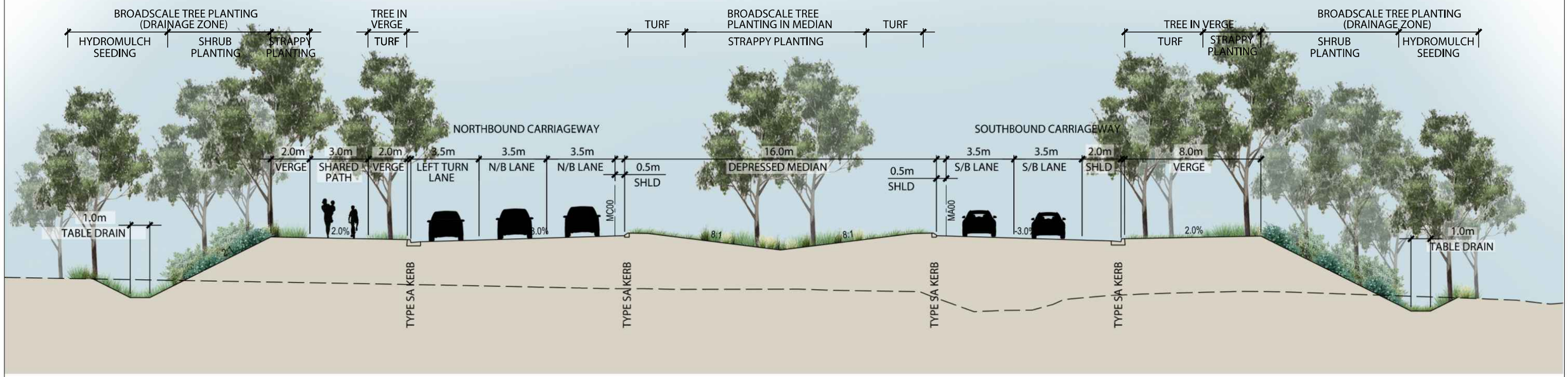
RICHMOND ROAD UPGRADE, MARSDEN PARK URBAN DESIGN
PLAN
SHEET 7 OF 7

A3

RMS REGISTRATION No. DS2020/000286
PART UD
ISSUE STATUS: DESIGN FOR REF
EDMS No.:
SHEET No. UD-0107
REV 1



1 RICHMOND ROAD UPGRADE - CH 400
SECTION 1:200

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

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PROJECT BREAKDOWN STRUCTURE

JACOBS DOCUMENT NUMBER
IA301400-DG-UD-0110

PLOT DATE / TIME ---- PLOT BY MNenadic

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RICHMOND ROAD UPGRADE,
MARSDEN PARK
URBAN DESIGN
SECTION SHEET 1 OF 3

A3

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
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	1	09.10.2020	DESIGN FOR REF	ME

SCALES ON A3 SIZE DRAWING
SCALE 1:200 2 0 2 4 AT A3

CO-ORDINATE SYSTEM MGA ZONE 56
HEIGHT DATUM AHD

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tract consultants pty ltd
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north sydney 2060 NSW australia
t 02 9954 3733 | f 02 9954 3825
Tract Jacobs

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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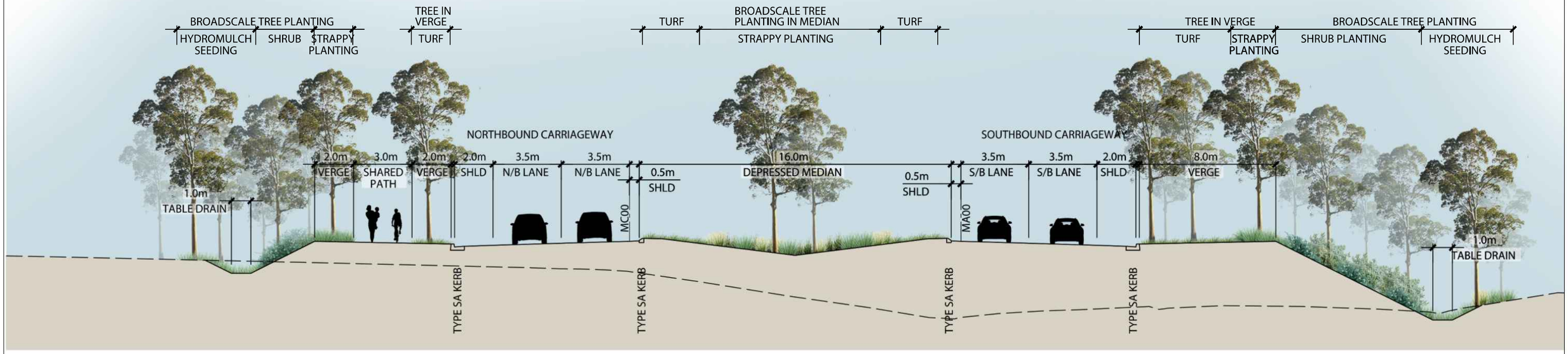
RMS REGISTRATION No. DS2020/000286
PART UD
ISSUE STATUS DESIGN FOR REF
EDMS No.
SHEET No. UD-0110
REV 1



1 RICHMOND ROAD UPGRADE - CH 600
SECTION 1:200

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50mm ON A3 SIZE ORIGINAL

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
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	1	09.10.2020	DESIGN FOR REF	ME

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:200 2 0 2 4 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER
IA301400-DG-UD-0111

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Tract Jacobs

PLOT DATE / TIME ---- PLOT BY MNenadic

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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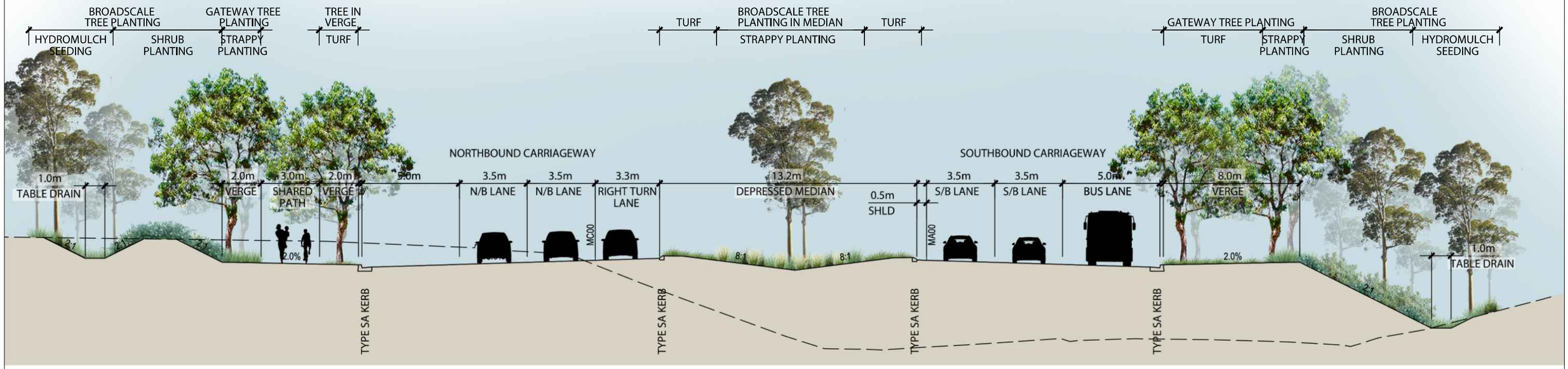
URBAN DESIGN
SECTION SHEET 2 OF 3

A3

RMS REGISTRATION No. DS2020/000286 PART UD

ISSUE STATUS: DESIGN FOR REF
EDMS No.
SHEET No. UD-0111
REV 1



1 RICHMOND ROAD UPGRADE - CH 715
SECTION 1:200

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

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H:\~2020\220-0025-00 - Richmond Rd Upgrade\- In\2020-04-21 Sheet layout (Jacobs)\d0362181\X-IA301400-DM-GE-A3-TRACT-SHEET.dgn

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	REV	DATE	AMENDMENT / REVISION DESCRIPTION	APPROVAL
	0	01.06.2020	DESIGN FOR REF	ME
	1	09.10.2020	DESIGN FOR REF	ME

PROJECT BREAKDOWN STRUCTURE

SCALES ON A3 SIZE DRAWING
SCALE 1:200 2 0 2 4 AT A3

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

JACOBS DOCUMENT NUMBER: IA301400-DG-UD-0112

DRAWINGS / DESIGN PREPARED BY
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north sydney 2060 NSW australia
t 02 9954 3733 | f 02 9954 3825
Tract Jacobs

PLOT DATE / TIME: ----
PLOT BY: MNenadic

TITLE	NAME	DATE
DRAWN	M. NENADIC	09.10.20
DRG CHECK	M. EASTON	09.10.20
DESIGN	M. EASTON	09.10.20
DESIGN CHECK	M. EASTON	09.10.20
DESIGN MNGR	M. EASTON	09.10.20
PROJECT MNGR	K. LAU	09.10.20

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RICHMOND ROAD UPGRADE,
MARSDEN PARK
URBAN DESIGN
SECTION
SHEET 3 OF 3

A3

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PART UD
ISSUE STATUS: DESIGN FOR REF
EDMS No.
SHEET No. UD-0112
REV 1