



DENMARK LINK ROAD

Landscape Character and Visual Impact Assessment

Prepared by:



Prepared for:





This report has been prepared for



by



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01 INTRODUCTION

1.1 BACKGROUND

The NSW Government has proposed a road network to support the forecast growth in the North West Growth Area in western Sydney. Over the next ten years, 33,000 homes will be provided in the area and once fully developed, the area will be home to around 250,000 people.

To deliver the North West Growth Corridor Road Network Strategy, Transport for NSW is working with Blacktown City Council to develop local plans to improve traffic flow, within the Riverstone Town Centre and to the Westminster Street bridge.

A new local link road connection has been identified between Garfield Road West and the Westminster Street bridge at Schofields. The Denmark Link Road proposal forms part of the Riverstone Traffic Improvements Package (3 proposals in total) which will provide a light vehicle bypass route around the existing rail level crossing in Riverstone.

This package of work has been identified as part of short term works until a grade separation of the level crossing can be completed (20+ years). The link road will alleviate traffic congestion along Garfield Road West around the railway level crossing at Riverstone. This road will provide an alternative local connection for light vehicles to cross the Richmond railway line and avoid the need to enter Riverstone Town Centre.

Key benefits of the proposal include:

- Reducing the congestion and delays that are currently being experienced at the Garfield Road railway level crossing at Riverstone
- Providing a second local road connection for motorists wishing to use the Westminster Street Bridge, alleviating congestion on Garfield Road
- Aligning with the future traffic needs for the area.



Figure 1.1 The general setting of the site has a strong semi-rural character with horse paddocks being a dominant feature.

1.2 METHODOLOGY

Preparation of this report has involved both desk-top analysis and a site visit, and is consistent with Roads and Maritime guidelines as outlined in:

Guidelines for landscape character and visual impact assessment No. EIA-N04 Version 2.1, December 2018.

The assessment is based on both the landscape character impact and the visual impact. The landscape character impact is based on the aggregate of an area's built, natural and cultural character and sense of place. In this regard, it is measured by the combination of the area's sensitivity and magnitude (scale, character and distance). As part of the sensitivity assessment, public perception of the proposal, its absorption capacity and the area's significance whether local, regional or national have been taken into account.

For example, commercial properties are generally considered less sensitive than private residences, and heritage properties are generally considered more sensitive than residential properties. Transient type spaces are generally considered less sensitive compared to spaces that people stay in for longer durations.

The visual impact is based on specific viewpoints taking into consideration the sensitivity of the viewer as well as the visual effect or magnitude of the proposal based on scale, distance, contrast etc.

The impact that the proposal will have on the particular location has been assessed relative to the general setting. In relation to viewpoints, this report assesses specific relevant viewpoints; however, in the case that a desirable viewpoint cannot be assessed due to accessibility restrictions, the next nearest accessible viewpoint has been identified and assessed.

It should be noted that even though the assessment may discuss high impacts, the nature of this proposal is limited in its scale, compared to works of a larger nature.

Table shown below illustrates how the level of sensitivity and magnitude are combined to achieve an overall level of impact for both the landscape character impact and the visual impact.

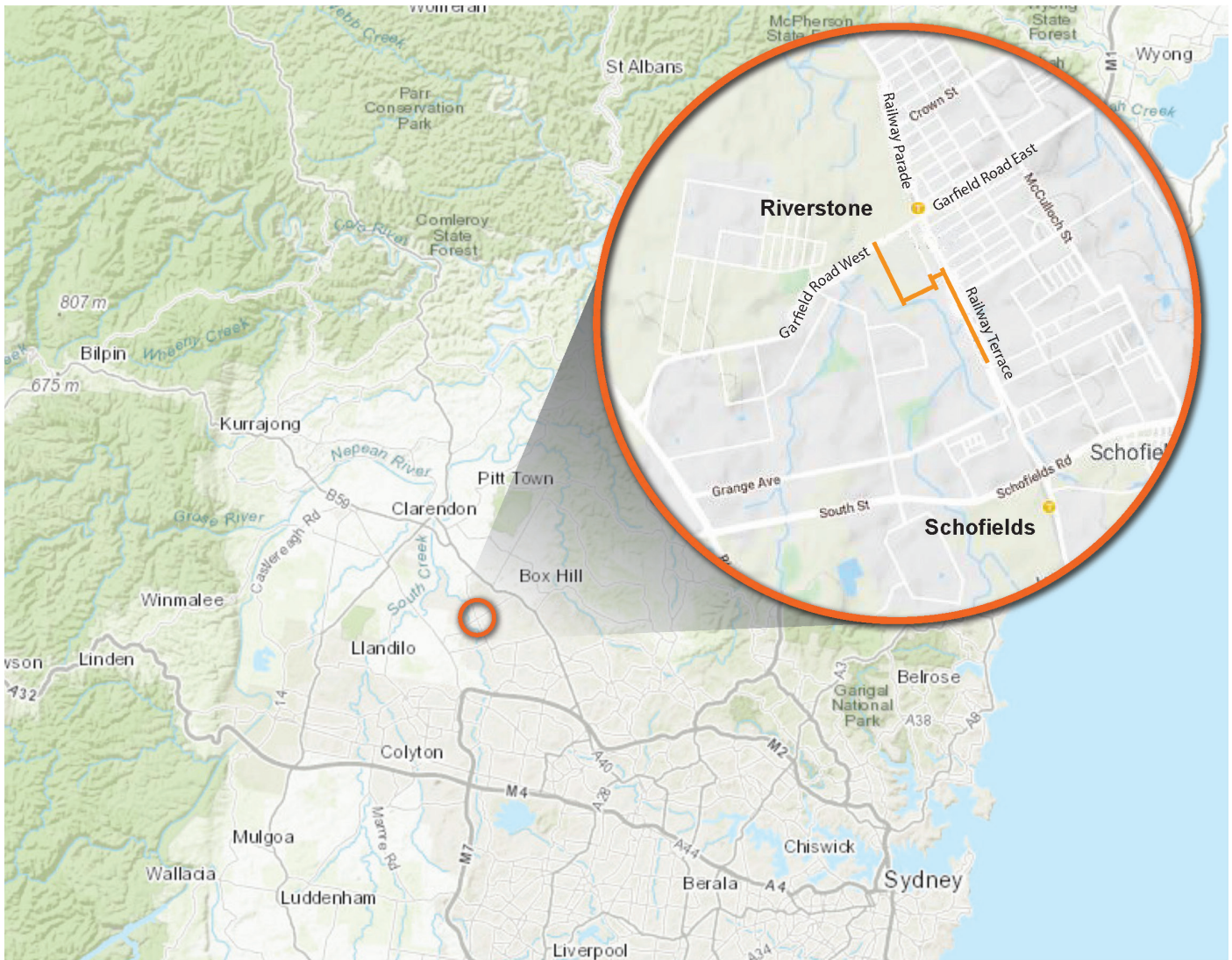
It should be noted that the ratings are measured relative to each other, rather than being assigned through an absolute scale. Hence the resulting rating is project specific and identifies those areas with the highest and lowest impacts.

		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

Table 1.1 Visual Impacts Rating Table, example illustrating the resulting impact as a combination of sensitivity and magnitude.

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Legend

— Proposal

Figure 1.2 The general location of the proposal is illustrated in the above plan. Map source: Google

1.3 STUDY AREA

The study area comprises a two kilometre by 700m wide section, south of Garfield Road West and west of Railway Terrace in Riverstone.

1.4 THE PROPOSAL

Denmark Link Road would provide a connection from Garfield Road West at Riverstone via Denmark Road intersection to West Parade. West Parade would be extended to the Westminster Street bridge at Schofields. The proposal would connect to the existing traffic lights operating at the Westminster Street and Railway Terrace intersection. The link is about 1.5 kilometres long.

Key features of the proposal include:

- A new right-turn bay along Garfield Road West eastbound for traffic waiting to enter Denmark Road at Riverstone
- Improvements to the existing Denmark Road including new road pavement and kerbing at the northern extent, and a new section of road at the southern extent
- A new two-lane link road (one lane in each direction) about 380 metres long between Denmark Road and Carlton Street
- Improvements to Carlton Street between the new link to the south and Trevithick Street to the north, including new road pavement and kerbing
- Improvements to Trevithick Street between Carlton Street and West Parade, including new road pavement and kerbing
- Two new T-intersections for the new link at Denmark Road and Carlton Street, and modifications to three existing T-intersections
- Improvements to West Parade south of Trevithick Street, including new pavement and kerbing, and a new section of road to connect near the Westminster Street Bridge at Schofields
- Drainage works including sections of kerb, open drainage and a new reinforced concrete box culvert at the crossing of the Eastern Creek tributary on West Parade
- Introduction of street lighting (single pole) at each intersection along the proposal works
- New line marking and signage.

Additional features of the proposal include:

- Utility adjustments (primarily minor power pole relocations),
- Minor property access adjustments such as reforming of driveway accesses
- Temporary ancillary facilities including a site compound on the south-east corner of the Garfield Road West / Denmark Road intersection
- Rehabilitation of disturbed areas following construction.

1.5 PURPOSE OF THIS REPORT

KI Studio Pty Ltd has been commissioned by Hills Environmental to prepare a landscape character and visual impact assessment to identify the potential visual impacts the proposal would have on the surrounding areas and to identify strategies to mitigate any identified impacts.

This report forms part of the **Denmark Link Road - Review of Environmental Factors** as a specialist study. In addition, this report would inform Transport for NSW, other agencies and the community about the likely landscape character and visual impacts of the proposed proposal and what mitigation strategies, if required, have been considered. The results of this assessment provide an indication of expected impacts.

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 Proposal

Figure 1.3 Aerial photo indicating the location (orange line) of the proposal in its setting

02 CONTEXTUAL ANALYSIS

2.1 GENERAL SETTING

The proposal is located in the western outskirts of Sydney's metropolitan area, in the suburbs of Riverstone which forms part of the Blacktown City Council Local Government Area (LGA). It is on the rural outskirts of Sydney, 9km north-west of Blacktown, within the rapidly developing North West Growth Area.

It is part of the Cumberland Lowlands that are characterised by gently rolling hills and some extensive areas of relatively flat land.

The proposal extends from Westminster Street at the southern end to Garfield Road West at the northern end, through predominantly semi-rural residential properties. The semi-rural landscape with its strong greenery and creek setting is picturesque and contributes to the identity of the area.

At the southern end, the proposal interfaces with the suburb of Schofields, with a pocket of residences in modern single storey villas.



Figure 2.1 View of West Parade, note the informal road verges giving it a rather rural character.



Figure 2.2 Extensive horse paddocks convey a strong rural character to the study area.



Figure 2.3 View of Denmark Road with its informal verges and semi-rural residential properties.



Figure 2.4 Modern single storey villas define the southern end of the study area.

2.2 PLANNING CONTEXT

The Greater Sydney Region Plan - A Metropolis of Three Cities prepared by the Greater Sydney Commission in 2018 builds on the The Sydney Metropolitan Strategy - "A Plan for Growing Sydney" and sets a vision to 2056.

"To meet the needs of a growing and changing population the vision seeks to transform Greater Sydney into a metropolis of three cities:

*The Western Parkland City
The Central River City
The Eastern Harbour City."*

The proposal is located within the Western Parkland City, specifically within the North West Growth Area- a district strategically identified to support the Government's vision for Sydney's future and its urban development opportunities. The planned western Sydney airport, will be a major catalyst for growth for this area.

A number of precincts have been identified within this district, specifically Riverstone which includes a new precinct planned for Sydney's North West Growth Area West Schofields-West Schofields. The Department of Planning, Industry and Environment, in collaboration with Blacktown City Council, has prepared a draft masterplan that will guide the precinct's creation for West Schofields.

The draft masterplan sets out strategies to protect the environment and manage flooding, to guide the area's revitalisation as a safe and attractive place for people to live, work and play.

The study area is situated in lands designated by the masterplan as playing fields, with the Eastern Creek designated as Environmental Protection. This will have an impact on the land use of the area in the future (in about one or two decades).

In addition, Transport for NSW is currently planning the upgrade of Garfield Road West which interfaces the proposal at the northern end of the study area.



Figure 2.5 Excerpt from the West Schofields Masterplan exhibition brochure.

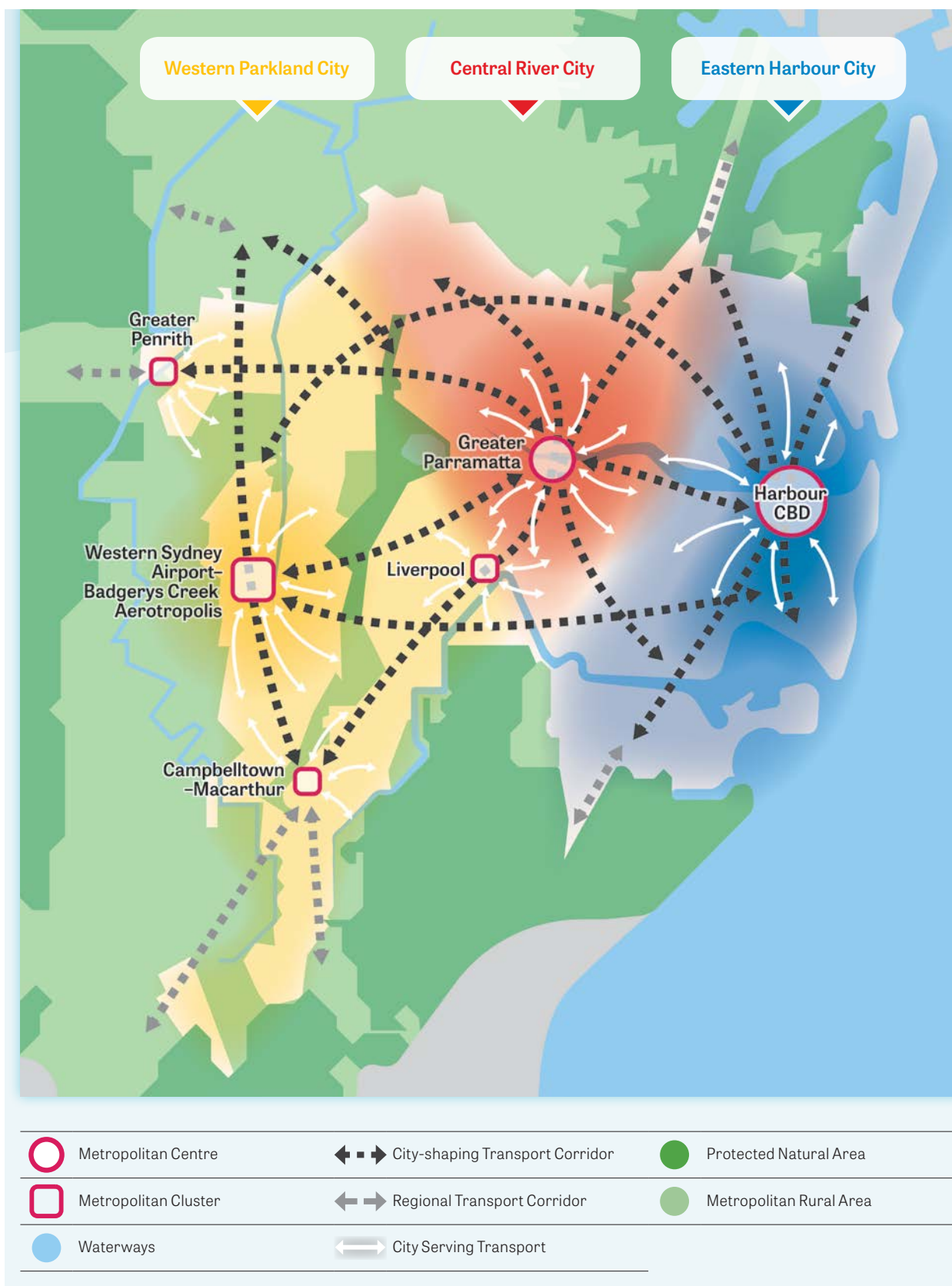


Figure 2.6 Excerpt from the Greater Sydney Region Plan, 2018

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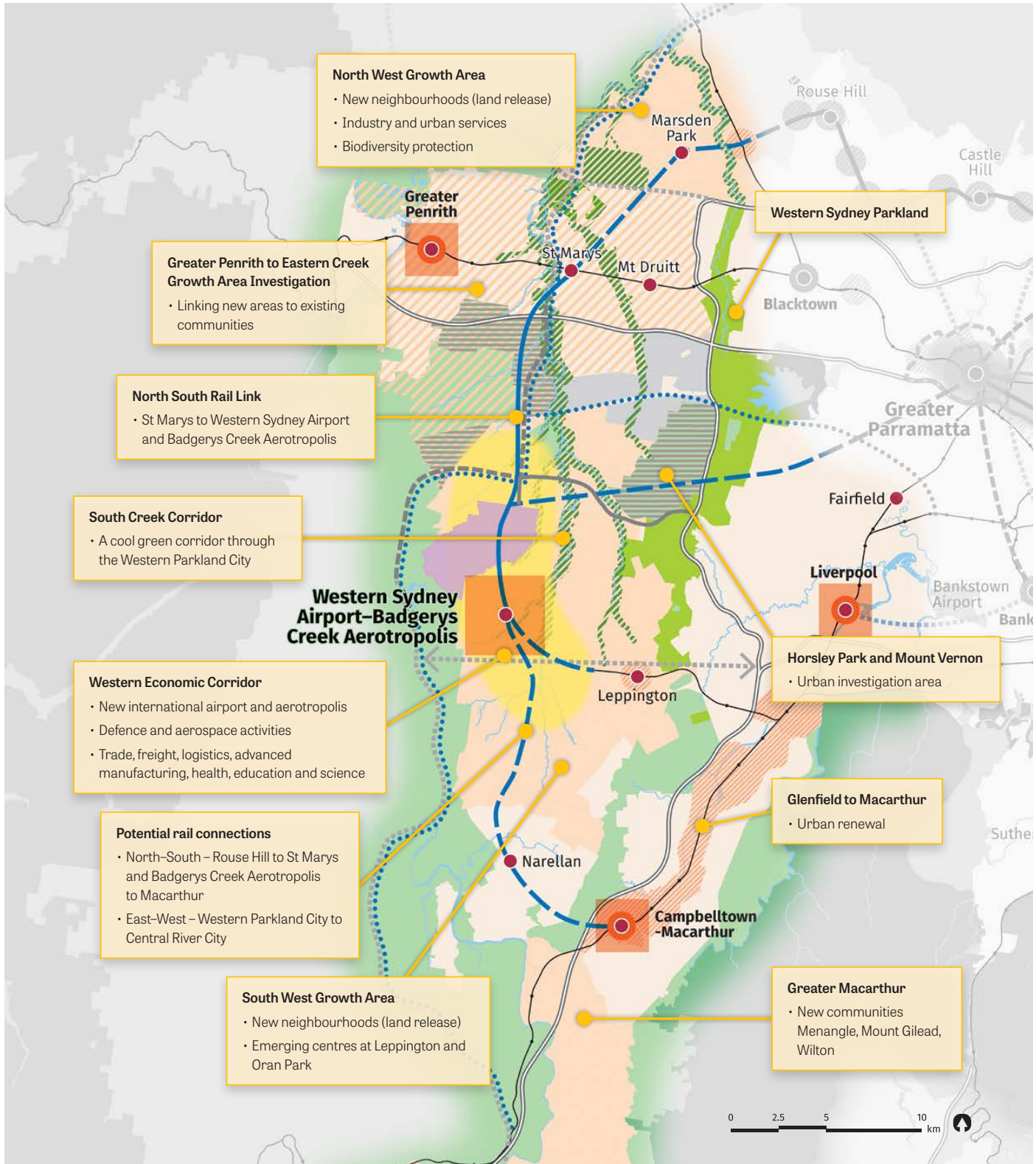


Figure 2.7 Excerpt from the Greater Sydney Region Plan, 2018

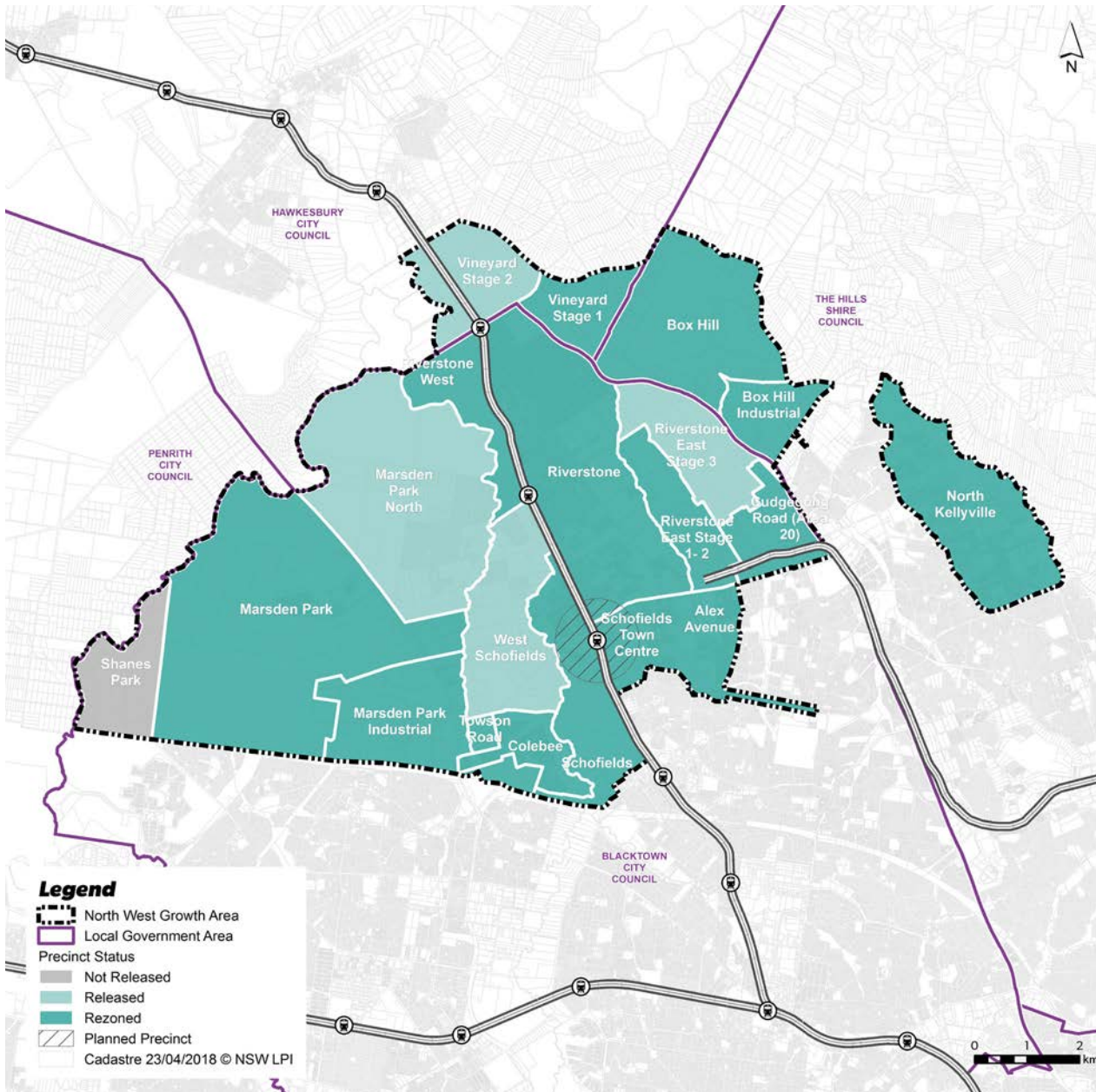


Figure 2.8 Excerpt from the West Schofields Masterplan illustrating the North West Growth Area and the individual precincts

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Figure 2.9 Draft West Schofields Masterplan illustrating the various land uses of the area. The most northern zone (2) is where the study area is located.

2.2 LAND USE

The general proposal interfaces with two predominant land uses, SRGC (Sydney Region Growth Centres) 2006 towards the northern and southern end and Primary Production Small Lots wedged between these two areas.

Within the SRGC zone, there is a pocket of dense bushland defined by a creek line feeding into Eastern Creek, which is about 200m to the west.

The SRGC zone at the northern is located to the north of Garfield Road West and contains predominantly pasture lands and a small pocket of residences fronting the road.

Within the Primary Production Small Lots is a pocket designated as Public Recreation, a sporting facility which houses Basil Andrews Park.

The SRGC zone to the south includes a new residential area with contemporary homes.



Figure 2.10 Pasture land at the northern end of the study area.



Figure 2.11 Primary Production Small Lots, dominated by residences with horse paddocks.



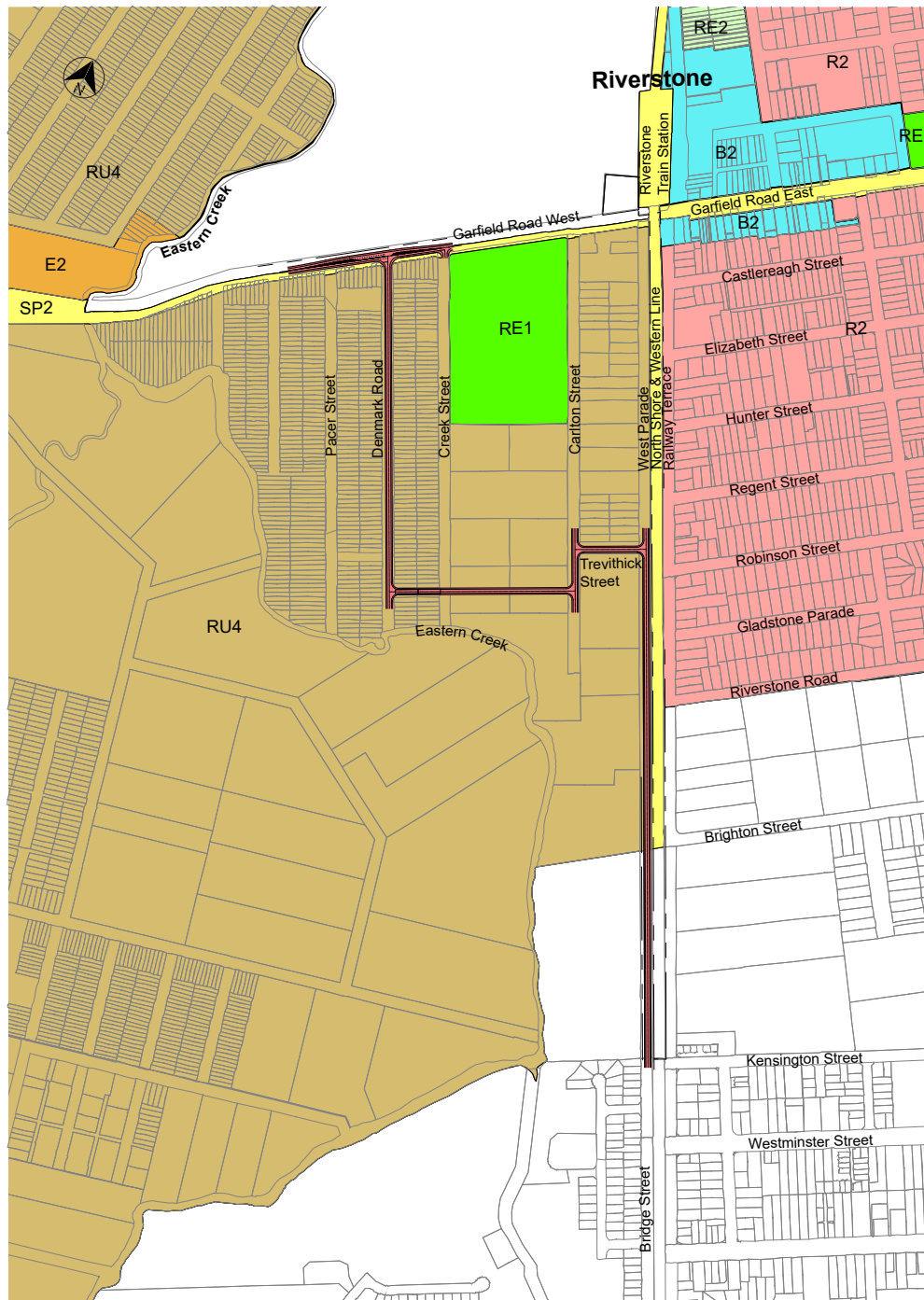
Figure 2.13 Dense bushland towards the southern end of the study area.



Figure 2.12 Modern single storey villas define the southern end of the study area, near Westminster Street.

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Legend

Zones

E2 Environmental Conservation	R2 Low Density Residential	RE1 Public Recreation
RE2 Private Recreation	RU4 Primary Production Small Lots	SP2 Infrastructure

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 Proposal	 Cadastre 19/01/16 © Blacktown City Council
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Figure 2.14 Excerpt from the Blacktown City Council LEP 2015 showing the land use in the vicinity of the proposal site.

2.3 HERITAGE

There is one heritage item that will be directly impacted by the project, Hebe Farm, a heritage item of local significance which is currently administered under the Sydney Region Growth Centres State Environment Planning Policy (Sydney Growth Centres SEPP), Schofields.

No other heritage items are located within the study area. It should be noted that a brick culvert built in the later 19th century is located within the rail corridor and immediately adjacent to the study area.

The archaeological potential in the northern part of the study area is considered nil (Garfield Road West to West Parade) and as low to moderate in the southern section (Hebe Farm). Refer to **Denmark Link Road Project - Non-Aboriginal (Historical) Statement of Heritage Impact**

The report states:

“The proposed works would directly impact some of the heritage values of Hebe Farm. Within the development footprint portion of Hebe Farm, all extant features, the tree lined avenue and former entrance to Hebe Farm, the vegetation along the railway corridor, as well as any surviving archaeological resource would be removed”.

Other heritage items further afield are located along West Parade near and within the Riverstone town centre.

Source:

- Denmark Link Road Project - Non-Aboriginal (Historical) Statement of Heritage Impact
- Blacktown City Council LEP 2015



Figure 2.15 Hebe Farm, c. 1900. Source: Blacktown Memories. Source: Denmark Link Road Project - Non-Aboriginal (Historical) Statement of Heritage Impact.

Item	Address	Listing	Significance	Proximity to study area
Hebe Farm	14 Bridge Street	SEPP, Schedule 5	Local	Within study area
House	38 Railway Terrace	Blacktown LEP 2015 I67	Local	170m
Riverstone Station	Riverstone Parade	SHR #01237	State	300m
Riverstone General Cemetery	Garfield Road West	Blacktown LEP 2015 I97	Local	757m

Table 2.1 A summary of heritage items within and near the study area


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Heritage

 Item - General

 Item - Archaeological

 Hebe Farm (SEPP, former LEP)

 Culvert

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 Cadastre 28/03/2014 © Blacktown City Council

Figure 2.16 Excerpt from the Blacktown City Council LEP 2015 showing the heritage listed properties in the vicinity of the proposal site.

2.4 VEGETATION

The native vegetation within the study area generally consists of Shale Plains Woodland or Alluvial Woodland. The Shale Plains Woodlands have been highly modified as a result of past and current land uses, including extensive clearing for pasture land and residential development both of which have resulted in significant clearing.

The Alluvial Woodlands are strongly defined by the Eastern Creek corridor.

There are two pockets of remnant Shale Plains Woodland vegetation within the study area east and north of the Eastern Creek corridor. Both are considered of visual importance.

The pocket to the north is predominantly defined by mature stands of trees with a grassed understorey while the pocket to the east consists predominantly of dense forest type structure with a strong shrub and understorey layer.

Other areas within the study area have been widely cleared and heavily disturbed by fragmentation weed infestation, tracks/roads, pasture land clearing and urban development.



Figure 2.17 Dense bushland setting of the eastern pocket of Shale Plains Woodland interfacing with the corridor. The setting contributes to the scenic quality of the area.



Figure 2.18 The Primary Production Small Lots includes mature stands of Eucalypts giving the area a strong green framework. View looking towards the northern Shale Plains Woodland pocket interfacing with the corridor.



Figure 2.19 View towards Eastern Creek showing the Alluvial Woodlands corridor defining the skyline and creek line.

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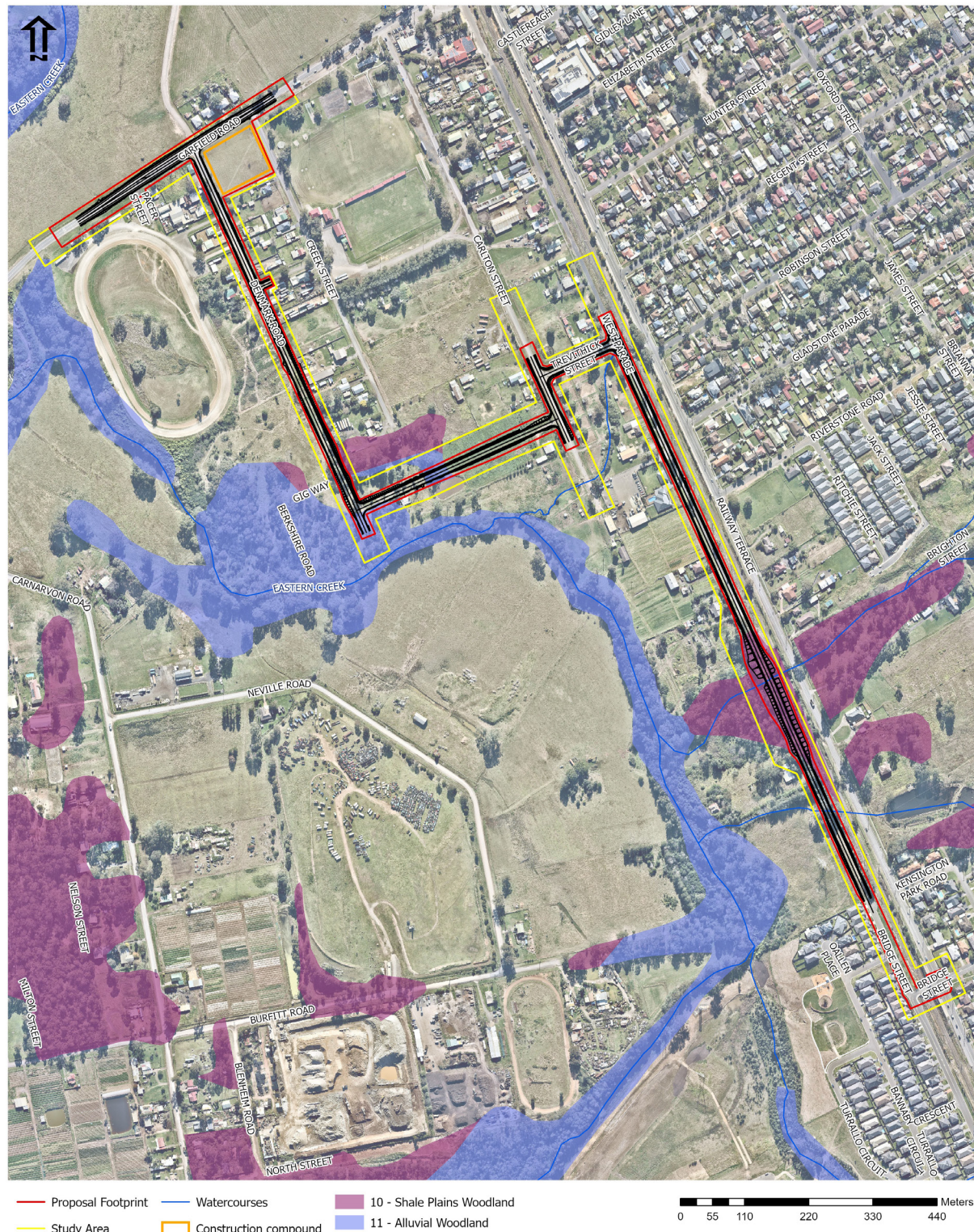


Figure 2.20 Map illustrating the two main vegetation typologies of the study area. Note how the Eastern Creek corridor is defined by Alluvial Woodlands.

2.5 TOPOGRAPHY & DRAINAGE

The topography within the study area is predominantly flat to the north and slightly more undulating to the south. The landscape is typical of the Shale Plain Woodland and defined by its situation running adjacent to the Eastern Creek catchment with the landform predominantly rising to the east side of the creek.

The extension of West Parade to the south would cross the tributary feeding into Eastern Creek. At the northern end, the topography gently falls towards the west, interfacing with Eastern Creek.

Downstream, Eastern Creek joins Bells Creek which then flows north into South Creek and into the Hawkesbury River.



Figure 2.22 View near Riverstone Road. The topography rises towards the east with a series of east-west ridges.



Figure 2.21 Rising topography at the southern end of the study area, with Westminster Street defining a prominent ridge.



Figure 2.23 Lowlands adjacent to Eastern Creek.

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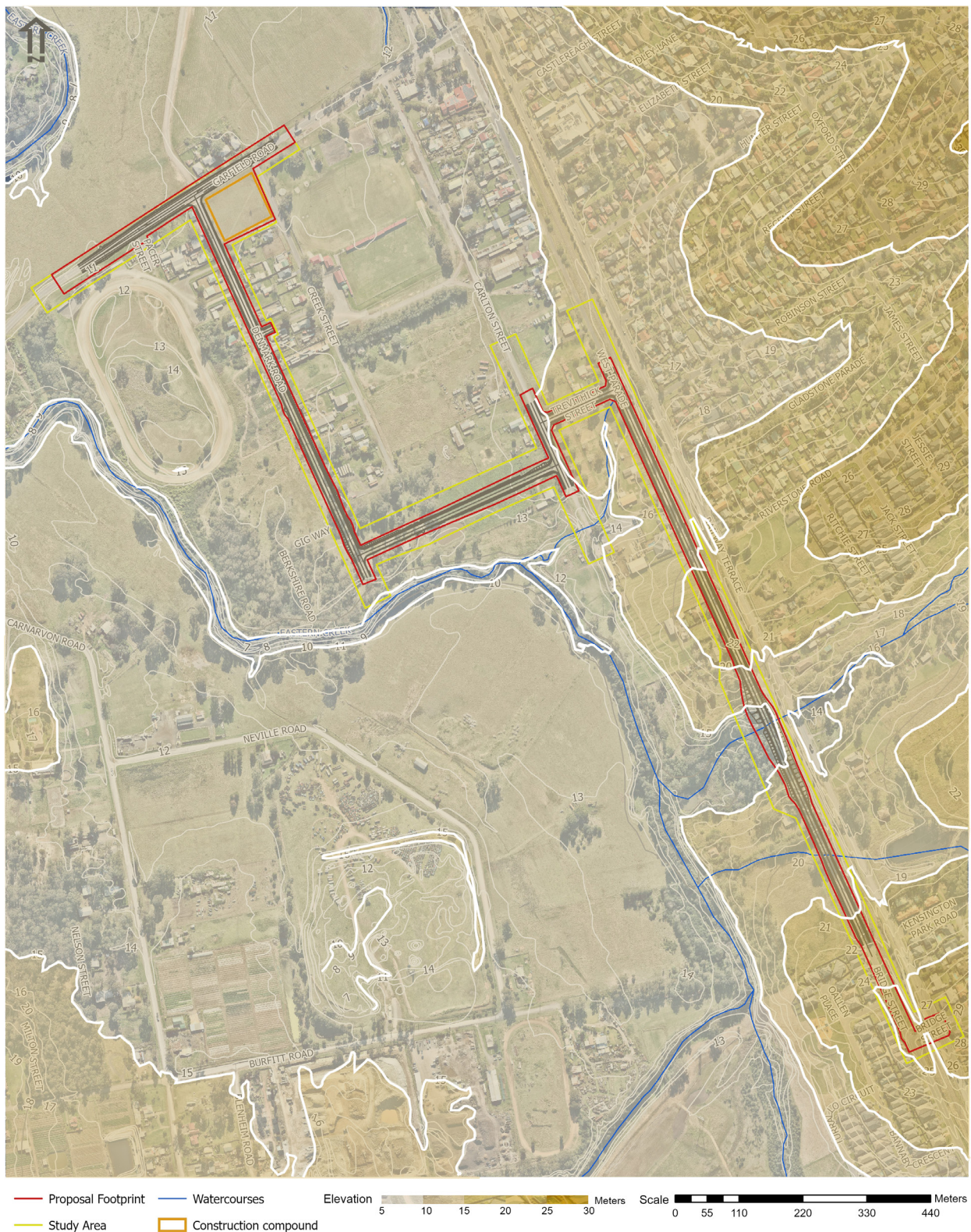


Figure 2.24 Contour map of the proposal area. The topography rises most prominently to the east with a series of ridges and valleys running east-west. The areas surrounded by Eastern Creek are dominated by a floodplain.

03 LANDSCAPE CHARACTER IMPACT ASSESSMENT

3.1 LANDSCAPE CHARACTER ZONES

The purpose of identifying landscape character zones is to identify areas of similar character to facilitate assessment and provide a description of each zone, giving the proposal its context and interface.

This section also discusses the sensitivity values for each landscape character zone. The sensitivity assessment has been based on Transport for NSW's Environmental Impact Assessment Practice Note - Guidelines for Landscape Character and Visual Impact Assessment No. EIA-N04, Version 2.1 Issue (December 2018).

The sensitivity value refers to the qualities of a particular character zone, which may include the 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. Eight character zones have been identified, each with its distinct qualities.

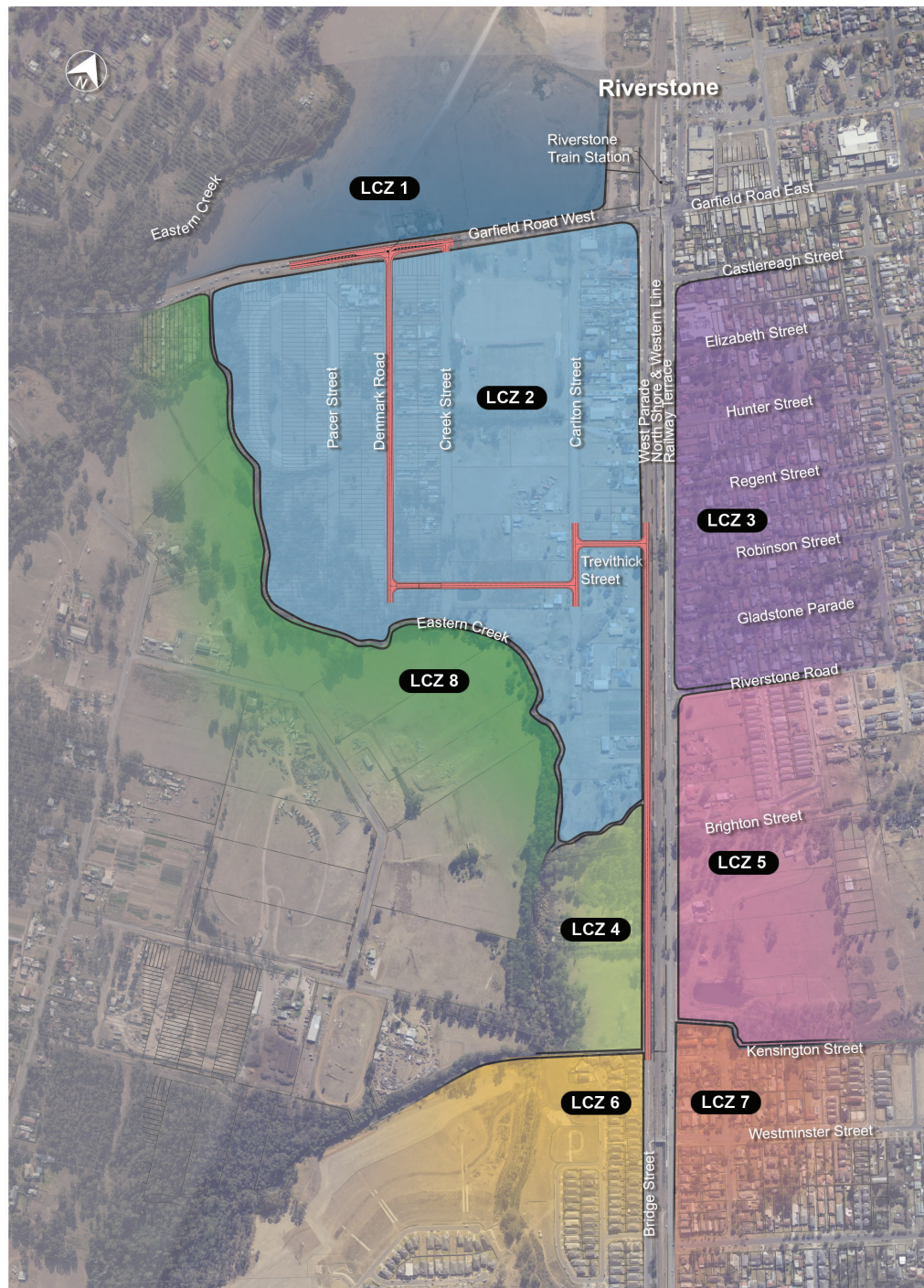
Landscape Character Zone 1 - SRGC- Pasture Lands

Location	North of Garfield Road West, is an expansive area of grassland predominantly devoid of any trees.
Natural Environment	Disturbed natural environment through extensive clearing in the form of pasture land with single stands of trees.
Built Environment	Pastureland fencing. This zone also includes a pocket of four single storey weatherboard cottages fronting Garfield Road West.
Spatial Character	Open grounds with expansive views to the north. Eastern Creek defines the western boundary of this zone.
Infrastructure	No major infrastructure noted during the site visit.
Sensitivity	The sensitivity of this area is considered high. Its open character with vistas to Eastern Creek defined by skyline trees contribute to the somewhat scenic quality of the area. This is further underpinned by the residential pocket within this zone which would be sensitive to change.



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Landscape Character Zone

LCZ 1 SRGC- Pasture Lands

LCZ 2 Semi-Rural

LCZ 3 Riverstone Residential

LCZ 4 Hebe Farm

LCZ 5 Semi-Rural Large Plots

LCZ 6 Growth Centre Residential

LCZ 7 Schofields Residential

LCZ 8 Floodplain

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 Cadastrate 19/01/16 ©Blacktown City Council

Figure 3.1 Map illustrating the various landscape character zones surrounding the proposal site

Landscape Character Zone 2 - Semi-Rural

Location	North end of study area, south of Garfield Road West, defined by a semi-rural character. This area belongs to the outskirts of Riverstone.
Natural Environment	Disturbed natural environment in the form of a semi-rural zone with a mix of endemic and non-endemic vegetation.
Built Environment	Predominantly single storey residences in the form of modest cottages and fibreboard residences, including a number of shed type structures supporting the semi-rural/commercial land use.
Spatial Character	Flat low lying area with a somewhat open character with limited built form. Vistas to creek lines and established vegetation define the skyline to the west.
Infrastructure	Informal local roads with overhead power lines and no street lighting alongside the road verges. No footpaths present in this area.
Sensitivity	The sensitivity of this area is considered high due to the residential land use and its somewhat scenic semi-rural character contributing to its sense of place.



Landscape Character Zone 3 - Riverstone Residential

Location	Situated to the east of Landscape Character Zone 2, this area is defined by a well established residential neighbourhood.
Natural Environment	Disturbed natural environment in the form of a residential zone with a mix of endemic and non-endemic vegetation.
Built Environment	Single and double storey detached homes in various architectural styles set on modest plots of land.
Spatial Character	Gently rising topography to the east with a well established residential suburban character.
Infrastructure	Local roads with limited street lighting and overhead powerlines alongside the road verges.
Sensitivity	The sensitivity of this area is considered high due to its residential land use.



Landscape Character Zone 4 - Hebe Farm

Location	This area flanks the railway line and is wedged between Eastern Creek and Railway Terraces. It includes the Hebe Farm and is dominated by greenery either as bushland with mature endemic trees and a dense understorey or as open pastureland.
Natural Environment	To the north, fairly undisturbed bushland setting along a tributary creekline to Eastern Creek. The southern edge is defined by pastureland.
Built Environment	The northern section of this zone includes the Hebe Farm. The farm includes a single storey cottage, well screened by vegetation.
Spatial Character	Low lying ground that is enclosed due to the dense bushland with mature trees and undergrowth defining a riparian corridor. Open character at the southern end.
Infrastructure	Major overhead transmission line situated towards the southern end of this zone.
Sensitivity	The sensitivity of this area is considered high. The high rating is driven by the heritage values and the scenic qualities of the setting providing a strong sense of greenery.



Landscape Character Zone 5 - Semi-Rural Large Plots

Location	Directly east of Landscape Character Zone 4, this zone is defined by large lots with grassland and stands of trees.
Natural Environment	Disturbed natural environment in the form of pasture lands with stands of trees and freestanding single and double storey homes on large plots, providing a green and leafy character.
Built Environment	Large single and double storey residences with brick facades and hipped roofs with generous setbacks from the street.
Spatial Character	The green and leafy quality with semi-open scenic vistas to the surrounding landscape.
Infrastructure	Local road with overhead powerlines and streetlights.
Sensitivity	The sensitivity of this area is considered high due to its residential land use and scenic quality.



Landscape Character Zone 6 - Growth Centre Residential

Location	Situated at the southern end of the proposal, this zone is part of a newly developed residential area.
Natural Environment	Highly manicured grounds with grassed understorey that has been recently established.
Built Environment	Modern single storey brick facade villas with hipped roofs.
Spatial Character	The grassed and leafy quality provides a manicured setting typical of a contemporary suburban setting. The rising topography to the south provides for an elevated position with vistas to the landscape beyond.
Infrastructure	Local road with underground powerlines, streetlights and devoid of pedestrian paths.
Sensitivity	The sensitivity of this area is considered high due to its residential land use being sensitive to change.



Landscape Character Zone 7 - Schofields Residential

Location	Well established residential neighbourhood situated southeast of the proposal and within the suburb of Schofields.
Natural Environment	Extensive manicured gardens with a grassed understorey. Variety of endemic and non-endemic species present.
Built Environment	Combination of large freestanding residences, semi-detached homes and terraces. Residences are either single or double storey, generally well set back from the road.
Spatial Character	Suburban character with open vistas along streets provided by the generous setbacks with an elevated position.
Infrastructure	Major arterial road with overhead powerlines and street lighting.
Sensitivity	The sensitivity of this area is considered high due to the dominant residential land use.



Landscape Character Zone 8 - Floodplain

Location	South of Landscape Character Zone 2 and to the south of Eastern Creek.
Natural Environment	Pastureland used as horse paddocks with isolated stands of trees. The edge of this zone is defined by Eastern Creek with a strong riparian corridor and a continuous ribbon of vegetation with mature trees.
Built Environment	Some fencing is present and isolated structures.
Spatial Character	Open character with scenic vistas towards Eastern Creek.
Infrastructure	No infrastructure present except for some fencing.
Sensitivity	The sensitivity of this area is considered moderate. This is driven on the one hand by its land use and isolated character, whilst on the other its scenic qualities make it more susceptible to change.



3.2 LANDSCAPE CHARACTER IMPACT ASSESSMENT

The table below identifies the landscape character impact for each zone:

LANDSCAPE CHARACTER ZONE	SENSITIVITY LEVEL	MAGNITUDE OF IMPACT	LANDSCAPE CHARACTER IMPACT
ZONE 1 - SRGC PASTURE LANDS	High: scenic setting with open vistas and a pocket of established residences.	Low: the magnitude of impact to most of this zone is negligible, yet the pocket of residences fronting Garfield road would likely experience a low magnitude of impact. This is due to the widening of the road and the formalisation of the intersection, creating a more urban environment. Hence a low rating has been assigned to this zone.	Moderate. The proposal would have no major impact on the functioning, identity or general character of the area. It should be noted that Garfield Road West is a fairly busy road.
ZONE 2 - SEMI-RURAL	High: sensitive land use combined with a somewhat scenic semi-rural quality.	High: the functioning, sense of place and identity of this zone would change from a quiet informal road to a somewhat busy thoroughfare with formalised kerbs and gutter. This will strongly reinforce the urbanity of the area. Sections of the new road will be built where there are currently paddocks, thereby fragmenting the current land use. Street lighting would contribute to the urbanity of the area.	High. A major impact is expected towards the southern precinct of this zone, resulting in a high impact. The additional traffic will change the general quiet setting this area currently has.
ZONE 3 - RIVERSTONE RESIDENTIAL	High: Sensitive environs driven by the residential land use and well established character, giving this neighbourhood its identity.	Negligible: the proposal would provide a beneficial effect by reducing traffic volume along Railway Terrace. This would create a quieter environment and enhance the identity and functioning of the area.	Negligible. The overall effect is considered beneficial, with the streetscape quality along Railway Terrace slightly improving. The overall sense of place will not dramatically change, yet the reduction in noise is considered a positive development and may encourage walking to the town centre.

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LANDSCAPE CHARACTER ZONE	SENSITIVITY LEVEL	MAGNITUDE OF IMPACT	LANDSCAPE CHARACTER IMPACT
ZONE 4 - HEBE FARM	High: This zone is highly sensitive, driven by the heritage value of the Hebe Farm and the visual qualities of the bushland setting. The bushland provides a strong backdrop to surrounding areas. This zone is environmentally sensitive to change.	High: the proposal would interface with this zone, changing its character and isolation. Even though great sections within this zone would be retained, its proximity to the proposal would influence its identity, character and environmental functioning. It should be noted that only the most eastern extent of the Hebe Farm would be directly impacted by the proposal.	High. The character of this zone would be greatly transformed. However, its visual quality would become more present to road users using the new road. The zone would be fragmented into a smaller bushland/pastureland section and the integrity of the Hebe Farm would be impacted.
ZONE 5 - SEMI-RURAL LARGE PLOTS	High: this zone's identity with large lots and a green outlook provides a less urban character compared to other zones.	Low: the proposal would have two effects. One benefiting its sense of place by reducing traffic volume and the other partially losing the current green outlook to the west due to the removal of mature vegetation within Landscape Character Zone 4. Hence a low rating since the magnitudes are both beneficial and detrimental.	Moderate. The character and functioning of the area will be retained. Its visual quality would be compromised whilst the noise pollution in the area would be reduced.
ZONE 6 - GROWTH CENTRE RESIDENTIAL	High: recently established residential area. Its land use is sensitive to change, situated in a quiet cul-de-sac. Hence the high rating.	Moderate: the amenity of the streetscape would be changed by it becoming a throughway with increased traffic numbers. This would result in additional noise pollution and change the perceived safety of the streetscape.	Moderate to high. Although the functioning of the area would not be dramatically changed, the character of the streetscape would.

LANDSCAPE CHARACTER ZONE	SENSITIVITY LEVEL	MAGNITUDE OF IMPACT	LANDSCAPE CHARACTER IMPACT
ZONE 7 - SCHOFIELDS RESIDENTIAL	High: well established residential neighbourhood.	Negligible: there would be a reduction in traffic volume along Railway Terrace resulting in a noise reduction. The outlook to some residences along the northern end of this zone may change due to impacts to Landscape Character Zone 4 in relation to vegetation loss. This however is considered minor.	Negligible. The overall identity, character and functioning of this zone would remain. The change in the road environment is considered beneficial to this zone.
ZONE 8 - FLOODPLAIN	Moderate: open pastureland within a scenic setting.	Low: the magnitude of impact would be very limited with minor noise pollution influencing the sense of place within this zone. Its functioning and visual character would be fully retained.	Low to moderate: the sense of place would not be greatly impacted.

Summary of Landscape Character Impacts

The adjacent table summarises the landscape character impact for each of the identified landscape character zones. Two of the eight zones have been identified with a high landscape character impact, Zones 2 and 4. The high impact is predominantly due to the proposal creating a fundamental 'shift' to the current setting. In both cases the general scenic quality of each zone would be generally retained, yet its character would be transformed into a more urbanised setting, changing its identity and sense of place.

A moderate to high rating has been identified for Landscape Character Zone 6, driven predominantly by the increase in traffic and the change from a local street with cul-de-sac becoming a local distributor. This would change the sense of place of this zone to some extent.

Landscape Character Zones 1 and 5 would likely experience a moderate impact. In each case it is a different set of parameters that influence the rating. For Landscape Character Zone 1, the widening of the intersection, formalising this section of road and creating a more significant intersection are key factors, whilst for Landscape Character Zone 5 it is the loss of vegetation within Zone 4 that adversely impacts the current green outlook these residences have.

In the low to moderate category would be Landscape Character Zone 8. The proposal would have some impact, yet it is limited to potential noise issues.

In the case of Zone 3 and 7, the amenity of both zones is considered to be improved to some extent. The reduction of traffic and therefore noise levels is considered complementary to the desired character of these zones.

Overall, the proposal would have a wide range of impacts, from high to negligible. The overall setting is considered highly sensitive and this is why in a number of instances the resulting impacts are either high or moderate to high.

The wide range of impacts is a direct result of how each zone interfaces with the proposal and how it changes the current setting. Generally, all zones to the east of the railway line would benefit to some extent through a reduction in traffic along Railway Terrace.

In contrast to this, landscape character zones west of the railway line would be transformed from quiet, 'hidden' settings to a more active and noisy environment. This would impact the amenity and identity of these zones and hence the higher ratings.

It should be noted however that the proposal is of a mid-term temporary nature until the West Schofields Masterplan is implemented within the study area.

Character zones		Sensitivity	Magnitude	Impact
1	SRGC pasture lands	High	Low	Moderate
2	Semi-rural	High	High	High
3	Riverstone Residential	High	Negligible	Negligible
4	Hebe Farm	High	High	High
5	Semi-rural large plots	High	Low	Moderate
6	Growth Centre Residential	High	Moderate	Moderate to high
7	Schofields Residential	High	Negligible	Negligible
8	Floodplain	Moderate	Low	Low to moderate

3.3 MITIGATION MEASURES

The following recommendations are proposed as mitigation strategies for each individual landscape character zone.

LANDSCAPE CHARACTER ZONE	LANDSCAPE CHARACTER IMPACT	MITIGATION MEASURE
ZONE 1 - SRGC PASTURE LANDS	Moderate.	Consider planting of frangible vegetation and stands of trees to frame the intersection and reinforce a sense of place.
ZONE 2 - SEMI-RURAL	High.	<p>The introduction of screen planting in front of private properties would help mitigate the urbanisation of the area.</p> <p>Consider introducing table top drain and WSUD measures to retain a more informal character, in line with the current situation.</p>
ZONE 3 - RIVERSTONE RESIDENTIAL	Negligible.	No mitigation strategy identified.
ZONE 4 - HEBE FARM	High.	<p>Retain the existing overgrown vegetation surrounding the heritage setting of the Hebe Farm cottage. Introduce new planting adjacent to the new road fronting Hebe Farm to mitigate removal of vegetation and provide visual screening between the proposal and Hebe Farm Cottage.</p> <p>Ensure protection measures for the culvert during construction. Evaluate strategies to maximise the retention of trees. Identify the condition of mature trees with an arborist report to identify important and less important trees.</p> <p>Retain mature trees along the eastern section of the proposed road to mitigate impacts to surrounding areas, including the railway line.</p>
ZONE 5 - SEMI-RURAL LARGE PLOTS	Moderate.	It is important to retain mature trees along the eastern section of Landscape Character Zone 4, adjacent to the railway line to limit the effect of vegetation removal within Landscape Character Zone 4. This will greatly contribute to retaining the green outlook to the west for residences within this zone.
ZONE 6 - GROWTH CENTRE RESIDENTIAL	Moderate to high.	Evaluate opportunities to introduce additional greenery to enhance the streetscape character. Additional shrubs and small tree planting would convey a greener character.
ZONE 7 - SCHOFIELDS RESIDENTIAL	Negligible.	No mitigation strategy identified.
ZONE 8 - FLOODPLAIN	Low to moderate.	No mitigation strategy identified.

04 VISUAL IMPACT ASSESSMENT

4.1 VISIBILITY OF THE PROPOSAL

In order to assess the visual impact, a Visual Envelope Map (VEM) of the proposal's visual catchment from the surrounding area has been prepared. The visual catchment is defined either by topographical features, built form elements or screening vegetation if appropriate.

There would be limited visibility of the proposal outside the proposed road corridor due to built form elements, vegetation screening and in some instances topographical features. The most exposed areas directly interface with the corridor. The Eastern Creek corridor provides an effective visual screen to the areas south and west of the proposal.

For residences on the eastern side of the railway, the visual exposure is limited due to the separation with the proposal in the form of a railway corridor. In some cases, vegetation and embankments provide effective visual screening, limiting this exposure.



Legend

 Proposal

Figure 4.1 Visual envelope map illustrating the visibility of the proposal. Note the limited visibility to the north of the proposal site

4.2 SELECTED VIEWPOINTS

The visual impact assessment has been based on selected representative viewpoints from the immediately surrounding visually exposed areas. Ten viewpoints have been selected from various locations. The viewpoint locations were selected to include the various situations the proposal interfaces, including heritage sites, residential development, rural residential settings, typical street views etc.



Figure 4.2 Viewpoint 1 - View looking from the corner of Denmark Road and Garfield Road West.



Figure 4.3 Viewpoint 2 - View looking southeast along Denmark Road. Note the informal verges of the streetscape.



Figure 4.4 Viewpoint 3 - View looking south at the end of Denmark Road. In the distance the riparian corridor of Eastern Creek can be seen.



Figure 4.5 Viewpoint 4 - View looking south along Carlton Street, north of Trevithick Street. Residences flank Carlton Street.



Legend



Proposal



Viewpoint

Figure 4.6 Map illustrating the location of viewpoints selected for the assessment



Figure 4.11 Viewpoint 5 - View looking east along Trevithick Street. In the foreground is Carlton Street.



Figure 4.12 Viewpoint 6 - View looking west from Carlton Street along the proposed new alignment.



Figure 4.7 Viewpoint 7 - View along West Parade in the vicinity of Riverstone Road, looking north.



Figure 4.8 Viewpoint 8 - View looking at the bushland setting from the end of West Parade.



Figure 4.9 Viewpoint 9 - View from the cul-de-sac at Bridge Street looking north towards the Hebe Farm.



Figure 4.10 Viewpoint 10 - View from Bridge Street looking north towards the cul-de-sac.

4.3 VISUAL SENSITIVITY

The following visual sensitivity has been assessed for each of the viewpoints identified as outlined in the table below.

View	Description of setting	Sensitivity of view	
V01	Residential property fronting an arterial road within a semi-rural setting with open district views.	M	Moderate; although the land use is sensitive, the setting fronts a busy road, thereby limiting its appeal to visually interface with the setting for prolonged viewing periods.
V02	Primary production area with a mix of modest single storey homes and commercial properties fronting a quiet local street. The area has a sense of informality, giving its semi-rural character.	M	Moderate; the setting has a limited visual appeal and the combination of commercial and residential use limits the visual sensitivity, allowing for a higher absorption capacity.
V03	Primary production area with a combination of residential and commercial land use, set within a scenic landscape.	H	High; the scenic setting with vistas towards Eastern Creek, combined with the residential land use, makes this viewpoint more sensitive. Hence the high rating.
V04	Local road through primary production area with a combination of residences and light industry fronting the street.	L	Low; the setting has a limited scenic quality albeit its semi-rural character. This, in combination with the transient nature of the viewpoint, limits the sensitivity rating.
V05	Primary production area with private residence fronting a local road.	M	Moderate; the setting has a limited scenic quality albeit its semi-rural character. This, in combination with the limited interface of the residence with the streetscape makes the viewpoint less sensitive compared to viewpoint 03.

View	Description of setting	Sensitivity of view	
V06	Residence in semi-rural setting with scenic outlook.	H	High; the semi-rural character and the somewhat secluded location makes this viewpoint more sensitive. This, underpinned by the scenic green character, reinforces the high rating.
V07	Residence in semi-urban setting fronting a local street and railway line.	M	Moderate; the residences focus would likely be away from the street and railway corridor, thereby limiting these viewing periods. Hence a moderate sensitivity rating.
V08	Bushland setting with extensive stands of mature trees and lush vegetation understorey. This area includes part of the Hebe Farm.	H	The visual quality of the setting is considered high and the historic value of the property contributes to a high sensitivity rating, even if the viewpoint is of a transient nature with few viewers.
V09	Open pasture land surrounded by bushland and a residential area. Parts of Hebe Farm are visible in the background.	L	<p>Low; limited number of viewers on a primary production landscape. Viewing periods may be of a moderate duration, hence the low rating.</p> <p>Although the Hebe Farm has a higher visual sensitivity, it should be noted that a strong vegetative curtilage surrounds great extents of the property, thereby limiting the effect of the proposal.</p>
V10	Residential area with contemporary homes fronting local street.	M	Moderate; there is limited visual interface of the properties with the viewscape as these homes do not focus out towards the street.

The general area is moderately sensitive with limited pockets of high sensitivity due to historic items and somewhat scenic qualities from certain vantage points.

4.4 MAGNITUDE OF VISUAL CHANGE

Each viewpoint has been assessed in regard to the perceived magnitude of change with a description of the likely visual effects of the proposal.

View	Element of proposal visible	Magnitude of change		Nature of impact
V01	Intersection of Denmark Road with Garfield Road West clearly visible from close range.	L	The existing paved areas would be widened and the intersection would be formalised with the introduction of turning lanes. However, this intervention is considered limited and would not strongly contrast to the existing situation.	Adverse
V02	Streetscape view along Denmark Road from close range.	M	Moderate, sections of the proposal would be clearly visible, yet its overall effect is limited. This is partially due to the existing situation already providing for a local road, hence the visual contrast is limited.	Adverse
V03	Partial view of the overall proposal from close range.	H	Visual character of the setting would dramatically change from a semi-rural to a semi-suburban setting, with a new local road dissecting the existing property. Panoramic vistas to Eastern Creek would be impacted from the property and night time lighting would be seen in the distance.	Adverse
V04	Sections of modified road along Carlton Street visible from close range.	M	Moderate. Similar to Viewpoint 02, the proposal would modify an existing streetscape. The higher volume of traffic is a key factor contributing to the moderate rating. The introduction of night time lighting would contrast with the current situation.	Adverse
V05	Direct view of the proposal along Trevithick Street.	H	High. Although the overall magnitude of change is considered low with the modifications proposed to an existing road, the night time effect would likely create glare issues that would strongly contrast with the existing situation, in particular at 54 Carlton Street. This is due to the higher traffic volume expected and the introduction of street lighting, hence the high rating.	Adverse

View	Element of proposal visible	Magnitude of change		Nature of impact
V06	Sections of the proposal would be visible from close range in the form of a new road.	H	High. The introduction of a new road would strongly contrast with the existing setting, hence a high rating. This is further underpinned by the introduction of street lighting at the intersection with Carlton Street.	Adverse
V07	Partial view of the proposal with minor changes to the existing road.	M	Moderate, there would be limited visual contrast to the existing situation. The additional traffic volume is a key contributor to the moderate rating.	Adverse
V08	New road clearly visible in the foreground.	H	High. The removal of existing mature vegetation and the introduction of a new road in the heritage and bushland setting would be in high contrast to the current outlook.	Adverse
V09	Partial view of the proposal with a new road seen from close range. Hebe Farm is in the background.	H	High. The introduction of a new road would be in stark contrast with the existing setting. The new road would have a limited effect on the Hebe Farm due to strong vegetative screening.	Adverse
V10	Local street converted into thoroughfare, limited impact to the existing street formation.	L	Low. Although there is minimal change to the road formation, the increase in traffic volume would have some visual impact. Hence, the low rating.	Adverse

4.5 VISUAL IMPACT

The resulting visual impact for each identified viewpoint has been outlined in the table below. The assessment does not consider visual impacts during construction as these would be of a temporary nature.

View	Sensitivity	Magnitude	Visual impact	Comments
V01	Moderate	Low	Low to moderate. There is some transformation of the intersection, including additional paving for turning lanes and signage. The scale is considered small as it is a modification of a current intersection.	Limited visual impact. The wider intersection would have a marginal effect on the setting.
V02	Moderate	Moderate	Moderate. The existing street would be somewhat formalised with a roll top kerb being introduced and the road widened, yet this change is considered limited. The moderate visual impact is driven by the visual change from a quiet street to a thoroughfare and the wider road.	The limited visual sensitivity of the viewer contributes to this moderate rating.
V03	High	High	High. The introduction of a new road in this sensitive setting results in a high visual impact.	The impact is also experienced at night time with glare from through traffic, highly contrasting with the existing situation.
V04	Low	Moderate	Low to moderate. The streetscape would be partially formalised with the introduction of a roll top kerb. The additional vehicular traffic would visually detract from the current situation.	Although not a fundamental change, the visual quality of the viewpoint would be altered with a more formal streetscape.
V05	Moderate	High	Moderate to high. As with viewpoint 04, the streetscape would be more formal and the additional traffic visually detract from the existing situation. In addition, night time glare from vehicles travelling down Trevithick Street would interface with the residence.	Trevithick Street interfaces with Carlton Street as a T junction with private properties flanking the intersection.

View	Sensitivity	Magnitude	Visual impact	Comments
V06	High	High	High. The setting would be transformed with the introduction of a new road, resulting in a strong visual contrast.	The interface of the property (in particular the residence) and the new road is important to mitigate visual impacts. Visual screening is considered critical to achieve a buffer zone.
V07	Moderate	Moderate	Moderate. The visual quality of the setting would not fundamentally change, however, the widening of the road, formalisation of the verges with a roll top kerb and additional traffic contribute to the moderate rating.	Limited opportunity for visual mitigation except for some verge planting.
V08	High	High	High. The nature and visual quality of the setting would be changed. The removal of stands of mature trees and impact to Hebe Farm would contribute to the high rating.	A careful assessment of the vegetation is recommended to identify potential mitigation measures. Mitigation measures should also consider impacts to Hebe Farm and viewers along the railway line and beyond.
V09	Low	High	Moderate. Even though the proposal would introduce a contrasting element, the limited visual sensitivity of the site limits the visual impact. For the Hebe Farm, it is the limited visual exposure that contributes to limiting the visual impact.	The proposal would change the visual setting, introducing a new element. The low sensitivity rating contributes to the moderate visual impact rating. For the Hebe Farm it is important to limit the visual exposure to the new road.
V10	Moderate	Low	Low to moderate. The visual effect of the proposal is limited, predominantly driven by the additional traffic volume.	The impact is greater from a landscape character than a visual point of view. This is due to additional factors such as noise, safety and sense of place being changed, compared to additional traffic.

4.6 MITIGATION MEASURES

The following recommendations are proposed as mitigation strategies for each individual landscape character zone.

View	Visual impact	Mitigation Strategy
V01	Low to moderate.	Consider frangible planting where possible in front of private properties. This would provide some visual screening and create a sense of distance to the road.
V02	Moderate.	The introduction of screen planting in front of private properties would provide a visual buffer with the streetscape.
V03	High.	Maximise retention of mature trees and evaluate opportunities for tree planting along verges and within private properties. Consider introducing informal kerb arrangements, introducing WSUD and naturalising the verges as much as possible to counteract the urban character of the road.
V04	Low to moderate.	Limited impact. Consider introducing informal kerb arrangements (table drain), introducing WSUD and naturalising the verges as much as possible. This would provide more visual continuity with Carlton Street. Limit the amount of signage as much as possible to retain a semi-rural character.
V05	Moderate to high.	Introduce vegetative screening to limit the visual effect of night time glare. Consider table top drain to retain a more informal streetscape character.
V06	High	Introduce vegetative screening in the form of shrubs and other plantings to limit visual exposure of the roadway.
V07	Moderate	Evaluate opportunities to introduce additional greenery to enhance the streetscape character and provide some visual screening.
V08	Moderate to high	It is important to retain mature trees along the eastern section of the road to mitigate impacts to surrounding areas including the railway line. Introduce street trees along the western verge to create a visual buffer between the new road and Hebe Farm. Identify important trees for retention.
V09	Moderate	Introduce street trees along western verge to create a visual separation between road and retained pasture land. This would also introduce a further vegetative buffer with the Hebe Farm and enhance the streetscape.
V10	Low to moderate	Evaluate opportunities to introduce additional greenery to enhance the streetscape character and provide some visual screening.

05 CONCLUDING COMMENTS

The proposal's implementation would result in some noteworthy landscape character impacts to the general study area. It should be noted however, that this result is greatly driven by the scenic quality and therefore the low absorption capacity of the existing landscape. For a number of landscape character zones, the impact would be either positive or low to moderate.

It is noteworthy to mention that the existing landscape would experience some transformation in the future resulting in the area becoming open recreation space, resulting in the removal of the proposal long term.

In regards to the visual impact, most viewpoints resulted in a low to moderate or moderate visual impact. Two of the assessed viewpoints resulted in a high impact and another two with a moderate to high impact. Although the proposal would result in some high visual impacts, the number of viewers is very low.

To achieve a successful outcome, both visually and from a landscape character point of view, it is important that the recommended mitigation strategies are considered as part of the design development. This would provide a better proposal outcome and deliver a more sensitive response to the site and those impacted.