# Appendix I Urban design and visual impact assessment

# Roads and Maritime Services

## Showground Road upgrade between Carrington Road and Old Northern Road, Castle Hill

## Urban design report and landscape character and visual impact assessment

February 2014

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# 1. Introduction

## 1.1 Purpose of this report

NSW Roads and Maritime Services (Roads and Maritime) is planning to widen a 1.5 kilometre stretch (approximately) of Showground Road, between Carrington Road and Pennant Street in Castle Hill (the proposal). The proposal is located about 24 kilometres north-west of the Sydney central business district.

Showground Road runs between Old Northern Road and Windsor Road and is one of the main access roads to the Castle Hill centre, which includes the Castle Towers Shopping Centre. It is generally a four-lane road between Old Northern Road and Pennant Street, and between Carrington Road and Windsor Road. The section between Pennant Street and Carrington Road is generally one lane in each direction and is congested in peak periods.

A concept design for the proposal is currently being developed by Roads and Maritime.

GHD Pty Ltd (GHD) has been engaged by Roads and Maritime to prepare a Review of Environmental Factors (REF) for the project. The REF is intended to document the likely impacts of the proposal on the environment and detail the protective measures to be implemented.

This report summarises an assessment of impacts from the proposal on landscape character and the visual environment of the proposal site and the wider context. Following the assessment, a strategy to manage landscape character and visual impacts has been developed. This comprises a strategy and principles to mitigate identified landscape character and visual impacts for the ongoing design of the project. The assessment that has been undertaken will form part of the REF. The strategies and initiatives that have been developed will be considered and integrated into the ongoing design of the project.

As explained in the Roads and Maritime *Guideline for Landscape Character and Visual Impact Assessment* (Roads and Maritime 2013), a landscape character and visual assessment is a tool used to identify and assess the significance of the effects of change resulting from a development, on both the landscape, and on people's views and visual experience.

A landscape character and visual assessment is a combination of two separate but closely related aspects. The first is the assessment of landscape effects, that is: understanding the effects on the landscape as a resource, and includes consideration of its character and quality. The second is assessment of visual effects, that is: understanding the effects on specific views and on visual amenity in general.

The central purpose of a landscape character and visual assessment is to identify potentially adverse impacts at the project planning stage and to propose measures to avoid or mitigate such impacts.

The following definitions have been used in this report:

- The 'proposal site' refers to the area that would be directly impacted by the proposal, and includes a five metre construction footprint to the north and south of the proposal.
- The 'study area' consists of land in the vicinity of, and including, the proposal site. The study area is a wider area surrounding the proposal site, including land that has the potential to be indirectly impacted by the proposal. The study area includes a 10 metre wide buffer to the north and south of the proposal site.

Note that the maps presented within the report are reproduced at a larger scale in Appendix A.

## 1.2 Methodology for assessment

The methodology employed for the assessment of the site and context comprised:

a. A review of project objectives.

b. Contextual analysis undertaken through desktop studies and site surveys. The desktop studies included a review of Geographical Information System (GIS) data sets and aerial photography. The site survey and photography was undertaken during November 2013. The contextual analysis includes description and evaluation of the qualities and sensitivities of the baseline landscape and visual environment. This process included definition of Landscape Character Zones (LCZs) based on common features and qualities observed at a local scale, as well as a determination of the visibility of the project and identification of viewpoints.

c. Assessment of landscape character impacts. The significance of impacts was evaluated as a product of:

   – The sensitivity or value of the LCZ to change.
   – The magnitude of likely impacts from the project on that LCZ.

d. Assessment of visual impacts. The significance of impacts was evaluated as a product of:

   – The sensitivity or value of the identified viewpoints (visual receptors) to change.
   – The magnitude of likely impacts from the project on those receptors.

e. Development of a mitigation strategy to be incorporated into the further planning and design of the project. This strategy is developed as a set of principles and strategies that would be discussed with the project design team and integrated into the design process.

The *Guideline for Landscape Character and Visual Impact Assessment* explains that sensitivity is a product "the qualities of an area, the number and type of receivers and how sensitive the existing character of the setting is to the proposed change". The variation in sensitivity of LCZs or receptors (primarily landscape character and views) is based on variables such as: the level of screening existing between the residential property and the subject site; whether windows provide views to the site; and whether outdoor recreation spaces achieve views to the site.

The *Guideline for Landscape Character and Visual Impact Assessment* defines magnitude as "the nature of the project". Impact magnitude was evaluated based on variables such as: the quality of the impacts, scale of impact, the geographic extent of the impact, duration and reversibility of particular impacts, cumulative impacts, and the likelihood of occurrence of impacts.

Impact significance is determined by comparing the receptor sensitivity and effect magnitude using an Impact Significance Matrix (refer Table 1).

Whilst assessment of landscape and visual values and effects is largely a qualitative matter, assessment against a scale enables more relevant and reproducible evaluation and comparison of sensitivity of receptors and magnitude of effects. The ratings produced are always compared to assessments based on professional judgement and if found to be significantly inconsistent, are further analysed with a higher level of scrutiny.

Table 1 - Impact Significance Rating (from Roads and Maritime *Guideline for Landscape Character and Visual Impact Assessment*)

| Sensitivity | Magnitude | | | | |
|---|---|---|---|---|---|
| | High | Moderate | Low | Negligible |
| 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 |

## 1.3 Scope and limitations

This report relies on the Concept Design prepared by Roads and Maritime, provided on 20 January 2014.

The residents or tenants of identified vantage points have not been consulted in relation to this project or their opinions on likely landscape or visual impacts. The assessment of impacts on private properties relies on professional judgement based on observations made in the vicinity of those properties.

This assessment is intended to inform the REF being prepared by GHD, and to set out a number of urban design objectives and principles which will guide the further development of the design and address landscape character and visual impacts identified.

The area of study for the assessment takes in the site and the broader study area, within which the proposed development may influence landscape character and visual amenity.

Landscape and visual assessment requires qualitative (subjective) judgements to be made. The assessment process aims to be objective and describe any changes factually. Potential changes as a result of the project have been defined, however the significance of these changes requires qualitative (subjective) judgements to be made. The conclusions of this assessment therefore combine objective measurement and subjective professional interpretation.

The proposal requires acquisition of some land along the proposal site. Strip acquisition of land from three properties along the northern side of Showground Road (a width of about five metres) was undertaken by Roads and Maritime in 2010. Strip acquisition of land from nine properties along the southern side of the proposal site (a width of about five metres) was undertaken by Transport for NSW in early 2013 for work associated with the North West Rail Link project. This land will be transferred to Roads and Maritime. In addition, as part of the Voluntary Planning Agreement, QIC has agreed to dedicate strips of land between Kentwell Avenue and Pennant Street along the northern side of the proposal site for road widening purposes. As these acquisitions have been undertaken, the impacts have not been considered in this assessment.

As part of the North West Rail Link project a train station will be located about 300 metres from the western end of the proposal site. It will be located within land owned by The Hills Shire Council near the former council chambers and Castle Hill Showground.

## 1.4 Assumptions

The assessment includes consideration of impacts from both the construction and operation of the project, from a range of potential impact generators, including: traffic; alteration of vegetation; and so on. At the time of the assessment specific information about a number of potential impact generators was not specifically known, as described below.

- It has been assumed that standard industry practices would be employed during construction to limit dust generation or other visual nuisance. Therefore, such impacts have not been considered in this assessment.
- Specifics about the lighting design (including siting and scale of light structures) were not known. It has been assumed that the number of lighting structures and the amount of light spill would be similar to what exists.
- It has been assumed that the existing above-ground transmission lines will remain above-ground, although they will be relocated within the road easement to accommodate the proposal.
- It has been assumed that future development of the local area would be generally in accordance with planning intents.
- At the time of this assessment it was understood that there were to be no acoustic barriers or screen fencing proposed as part of the project. The extent and location of other types of barriers which may affect views from the road (such as safety barriers) are not known at this time.
- At the time of this assessment it was understood that there were to be no billboard or pylons signs proposed as part of the project. These items have therefore not been considered as potential impact generators.
- It is assumed that concrete slabs will exist beneath the designated median strips, preventing any opportunities for large planting through the medians.

# 2. Proposal overview

## 2.1 Proposal objectives

The identified objectives for the proposal are to:

- Meet current and future traffic demands on Showground Road to the year 2026 and beyond.
- Sustain growth in Sydney's north-west.
- Reduce travel times and congestion.
- Improve the performance of intersections.
- Improve road safety for all road users.
- Provide pedestrian and cyclist facilities.
- Maximise the use of the existing road formation.
- Minimise impacts on the environment and properties.
- Integrate with the current and future character of the area.

## 2.2 The proposal

The proposal involves upgrading Showground Road for a distance of about 1.5 kilometres from about 75 metres east of the intersection with Carrington Road, to the intersection with Old Northern Road. The typical cross section of the proposal consists of two lanes in each direction with a concrete median located between the eastbound and westbound carriageways.

The key features of the proposal include:

- Widen and upgrade about 1.5 kilometres of Showground Road from a two-lane partially divided carriageway to a four-lane divided carriageway, to connect with the existing four-lane section west of Carrington Road and east of Pennant Street, including:
  - Upgrade the existing carriageway and undertake drainage amplification and pavement strengthening work to create a four-lane divided carriageway between Carrington Road and Rowallan Avenue.
  - Widen the carriageway and undertake associated works to the north to create a four-lane divided carriageway between Rowallan Avenue and Kentwell Avenue.
  - Widen the carriageway and undertake associated works on both sides of the existing carriageway to create a four-lane divided carriageway between Kentwell Avenue and Pennant Street.
- Modify the intersections of Showground Road with Britannia Road, Rowallan Avenue, Cecil Avenue, Kentwell Avenue/Cheriton Avenue and Pennant Street.
- Provide left-in/left-out restrictions at the intersection of Showground Road and Britannia Road.
- Provide new sets of traffic lights at the intersections of Showground Road with:
  - Rowallan Avenue.
  - Kentwell Avenue/Cheriton Avenue.
- Remove the existing pedestrian controlled traffic lights at the intersection of Showground Road and Cecil Avenue.
- Modify the existing signals at the intersection of Showground Road and Pennant Street.

- Provide bus priority measures in the eastbound direction at the intersections of Showground Road with Rowallan Avenue, Kentwell Avenue and Pennant Street.
- Construct a 2.5 metre wide shared footpath and cycleway along the northern side of Showground Road between Carrington Road and Pennant Street.
- Construct a 1.5 metre wide footpath along the southern side of Showground Road.
- Construct a median with varying width.
- Adjust property accesses to be compatible with the road widening proposal.
- Relocate and/or adjust utility services that are in conflict with the road widening proposal.

At the start and end point of the proposal site, the work would be tied-in to the existing alignment of Showground Road. Activities to tie the proposal into the existing alignment would include pavement work to create consistent levels between existing and new surfaces. The extent of tie-in work would be determined during detailed design. The shared footpath and cycleway would be extended beyond pavement tie-ins to the west to maintain connectivity between the proposal and existing and future shared pathways.

Retaining walls will be constructed at selected points along the proposal site, between the road alignment and private property boundaries. The extent of retaining walls is limited, with all walls less than one metre high.

Realisation of the proposal would mean there would no longer be opportunities for dedicated on-street parking along Showground Road.

## 2.3 Construction activities

It is anticipated that construction would start in 2015 and would take about 18 months to complete (weather permitting). The construction workforce is expected to fluctuate, peaking at about 100 personnel per day. It is anticipated that construction would be largely carried out during standard construction working hours.

A range of plant and equipment would be used during construction of the proposal. About 10 heavy vehicles would be required on-site per day, resulting in around 40 heavy vehicles movements in and out of the site per day.

The construction compound would include portable buildings with amenities (such as lunch facilities and toilets), secure and bunded storage areas for site materials, including fuel and chemicals, office space for on-site personnel, and associated parking.

The location of the compound site is currently being confirmed. These facilities would be located:

- In areas not prone to flash flooding and more than 40 metres from a watercourse.
- More than 50 metres from residential dwellings.
- In previously disturbed areas that do not require the clearing of native vegetation.
- In plain view of the public to deter theft and illegal dumping.
- Outside the drip line of trees and on level ground wherever possible.

Construction sites would be securely fenced with temporary fencing.

Upon completion of construction, the temporary site compound, work areas and stockpiles would be removed, the site cleared of all rubbish and materials and rehabilitated.

## 2.4 Property adjustments

The proposal would result in minor adjustments to a number of private properties adjoining the proposal site (refer Figure 1). Property adjustments will be limited to construction of new driveways, pathways, and masonry walls, and reparation to disturbed garden beds, letterboxes, and fencing.

Driveway access to all existing properties along Showground Road will be maintained, although as a result of the proposed concrete central median, access to properties would be limited to left-in and left-out.

## 2.5 Preliminary Urban Design Investigation

A *Preliminary Urban Design Investigation* (UDI) was undertaken by Roads and Maritime in 2007. The UDI provided a brief overview of the local context and included descriptions of the proposal site characteristics. These descriptions have, to the extent practical, been incorporated into the contextual analysis provided Section 3.

The UDI also set out a preliminary list of desirable design principles, as follows:

- The integrated design of the corridor, together with the posted speed, should be in response to the essential desired character of this corridor. This may mean the concept design (including the road and urban design) will change throughout the corridor.
- The concept design should build upon and reinforce the essential qualities and characteristics of the local area and that of the corridor. Where required, the urban and landscape qualities of the corridor should be improved or upgraded.
- Design of the corridor should reinforce the posted speed regime, therefore creating a 'self-explaining road'.
- Horizontal carriageway alignments should be designed in response to essential characteristics of the road reserve.
- Future lane configurations ideally should be contained within existing kerb alignments.
- Existing property boundaries should remain unchanged wherever possible.
- Verge width and design should be determined in response to all requirements (eg services, footpath and/or shared path, signs, light poles and appropriately scaled street trees).
- Design of medians (where included) should be in response to their location within the corridor.

These principles have been considered and incorporated as appropriate into the design objectives and principles developed at Section 6 of this report.


Figure 1 - Proposed property adjustments

## 2.6 Landscape concept plans

Landscape concept plans were prepared by Hills Shire Council (dated 31.05.11). These plans precede the current concept design drawings, but the principles are still relevant for consideration.

The plans indicate grass and street planting through the new median strips. However, it is understood that this would not be viable as the medians would be built over existing pavement and slabs.

The plans also identify a number of recommended plant species.

## 2.7 Potential impacts

In general terms, the likely impact of the proposal on the landscape and visual environment is expected to be relatively limited as the proposal ultimately represents a lateral extension of an existing road, and the extent of new road would be located within the existing road easement.

Change resulting from the proposal would primarily affect owners, residents, and tenants of properties adjoining the proposal site, and future road users.

Based on what is known of the proposal and the landscape and visual environments it sits within, the following are considered the main potential impact generators.

### Construction activity and storage

During construction, the positioning of plant and equipment along the alignment and the presence of a construction compound within the view of neighbouring properties and existing road users would affect views from adjoining properties and from road users. Earthworks would also expose subsoil during the construction period that would be visible in the landscape. The use of lighting towers during night work may result in light spill impacting adjoining properties and residents.

### Vegetation clearing

The proposal would result in the removal of vegetation existing along the edges of the proposal site. This would include removal of planted exotic trees, planted non-endemic native trees and locally endemic tree species. Some of the vegetation that would be removed is visually important in that it either contributes to the amenity and character of the local area, or screens views from adjoining properties to the road.

### Increased traffic activity

Whilst in the future there would be increases in traffic along the route (including higher volumes of pedestrians and cyclists along the proposed shared path), and a reduction in separation between properties and traffic, an increase of some measure would likely occur regardless of whether or not the proposal was realised. Ultimately the proposal would provide increased capacity which, as well as enabling greater traffic volumes, would theoretically decrease frequency of traffic congestion and accidents, potentially resulting in a positive visual impact.

# 3. Contextual analysis

## 3.1 General

Showground Road provides a major road link between the Castle Hill shopping centre/commercial precinct (Castle Hill centre) and Sydney's North West Growth Centre. It provides a link between the Castle Hill centre to the east, and the Castle Hill Trading Zone (located around Victoria Avenue), Norwest, and the Bella Vista business park to the west. Once the North West Rail Link is constructed (about the end of 2019), Showground Road will also provide a key road traffic link to Showground and Castle Hill stations.

Showground Road is a State road with a posted speed limit of 60 kilometres per hour. It carries around 37,000 vehicles per day and functions as an arterial road providing access to Castle Hill to the east and surrounding residential and employment areas to the west. Castle Towers is located about 200 metres from the eastern extent of the proposal site.

At its eastern end, Showground Road forms the western arm of a signal controlled T-intersection with Old Northern Road. Between Carrington Road and Pennant Street, Showground Road is generally a two-lane, two-way road and the carriageway varies in width from about 16 metres (between Carrington Road and Rowallan Avenue) to about 12 metres (between Rowallan Avenue and Pennant Street).

A median strip, which is about 220 metres long and up to about five metres wide, separates the lanes between the intersection with Carrington Street and about 160 metres west of the intersection with Britannia Road.

A concrete pedestrian footpath is located on the northern side of the road between Rowallan Avenue and Pennant Street, and pedestrian crossings are provided at signal controlled intersections. No pedestrian footpaths are provided along the northern or southern sides of Showground Road to the west of Rowallan Avenue.

Existing cycling facilities include on-road lanes that are provided within the sealed shoulder areas on Showground Road and Cecil Avenue.

## 3.2 Planning intent for area

Than land zoning map from *The Hills Local Environmental Plan 2012* (LEP) is reproduced in Figure 2. The map shows the following:

- The land around the commercial centre at Old Northern Road is designated as Mixed Use. This designation extends to the intersection with Pennant Street on both sides of Showground Road, and includes the currently vacant land between Pennant Street and Kentwell Avenue on the northern side of the road. The LEP intends for development in this zone to integrate business, commercial, residential, retail, and other development, and to provide for high density housing integrated with civic space.
- The land on the southern side of Showground Road between the Pennant Street intersection and Cheriton Avenue intersection is designated as High Density Residential. The LEP intends for development in this area to provide a variety of housing types within a high density residential environment.
- The land from the Cheriton Avenue and Kentwell Avenue intersection, west to near the intersection with Rowallan Avenue is designated as Medium Density Residential. The LEP intends for development in this area to provide a variety of housing types within a medium density residential environment.

- The land from the intersection with Rowallan Avenue west to the intersection with Carrington Road is designated as Low Density Residential. The LEP intends for development in this area to provide for the housing needs of the community within a low density residential environment; to enable other land uses to meet day to day needs of residents; and to maintain the existing low density residential character of the area.

The land designations will, once realised, reinforce the existing recognisable transition from commercial centre, through high and medium density residential development, to low density residential development. The zoning also reflects distinct transitions between the zones generally in conjunction with existing traffic intersections along Showground Road.

## 3.3 Other projects in the local area

### North West Rail Link Corridor

Construction of the North West Rail Link is underway. Eight new train stations will be built, including a station within the Castle Hill centre (Castle Hill Station) and near the Castle Hill Showground (Showground Station). The area surrounding the new train stations is predicted to provide 27,400 new homes and 49,500 new jobs by 2036.

Castle Hill Station will be located about 430 metres from the eastern end of the proposal site. It will be located within the Castle Hill centre, next to Castle Towers and beneath Arthur Whitling Park. Showground Station will be located about 300 metres from the western end of the proposal site. It will be located within land owned by The Hills Shire Council near the former Council chambers and Castle Hill Showground.

The draft structure plan for Castle Hill Station proposes that the Castle Hill precinct will continue as the major centre for Sydney's north-west. Castle Hill will increase its retail offerings to remain a major retailing hub; extend the amount of commercial offices; increase residential density near the station; and become a major transport hub, with the train station and bus interchange at Arthur Whiting Park.

The plan identifies a number of transport, movement and accessibility initiatives that will need to be delivered to ensure safe and attractive movement to, from and within the centre. The plan notes that a key connectivity issue is pedestrian access along Showground Road.

The plan recognises Showground Road as a primary road and gateway to Castle Hill centre. It provides for further medium and high density residential uses along the road in the vicinity of the centre.

### Expansion of Castle Towers Shopping Centre

Castle Towers Shopping Centre is one of Sydney's largest shopping centres. A development application to expand the centre by 60,000 square metres and 3085 parking spaces was approved in February 2011 by The Hills Shire Council. After the redevelopment, Castle Towers will have 170,000 square metres of active floor space, making it the third largest shopping centre in Australia.

Roads and Maritime identified that the two-lane section of Showground Road would need to be upgraded to accommodate the increase in traffic (about 27 per cent) expected as a result of the expansion of Castle Towers.

It is understood that the land between Pennant Street and Kentwell Avenue will largely be developed for carparking facilities as part of the Castle Hills Towers expansion. It is understood that the existing houses on the north-eastern and north-western corners of the Kentwell Avenue and Showground Road intersection will be removed to accommodate this development.

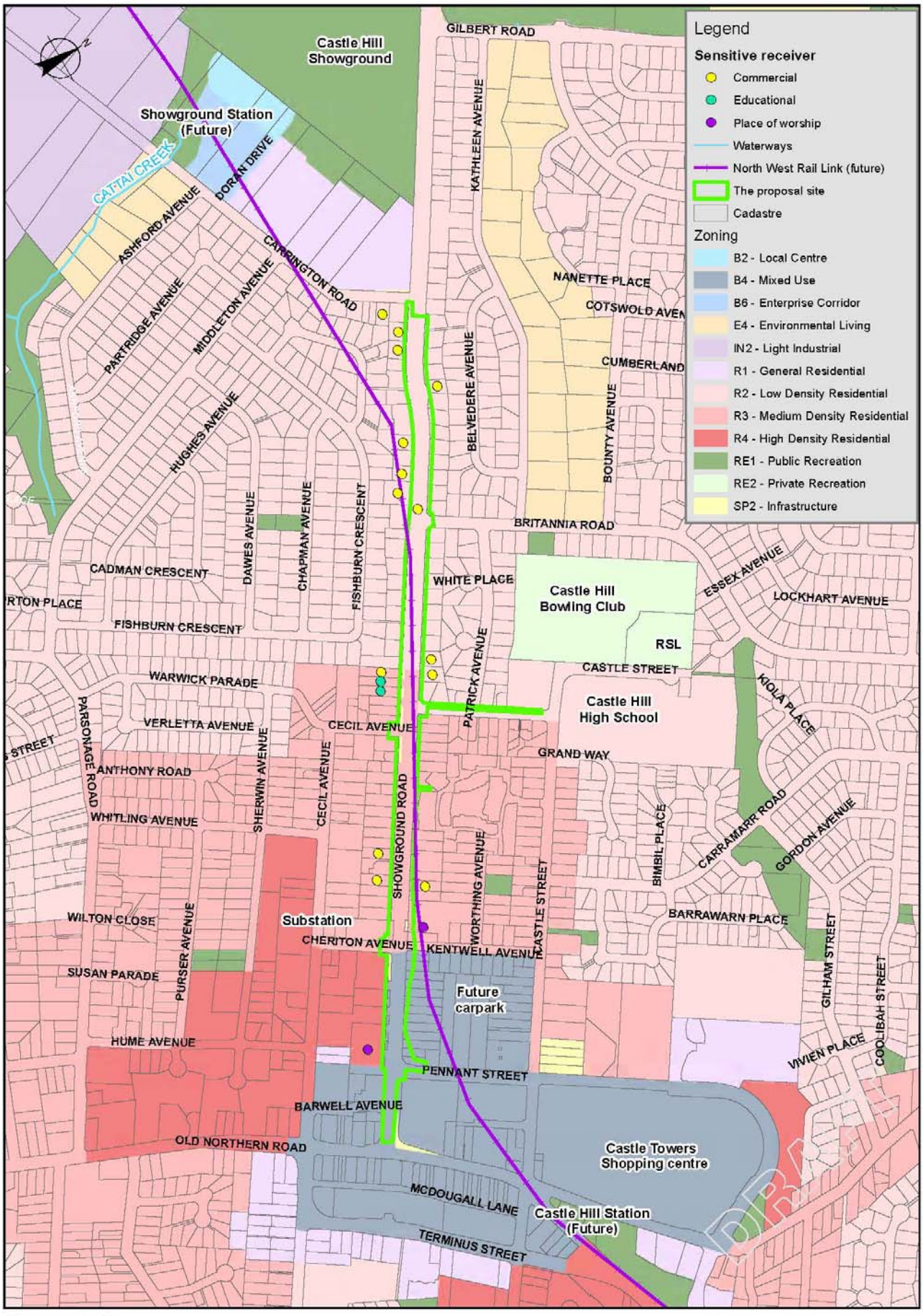


Figure 2 - Map showing proposal site over land use zoning map from Council's LEP

## 3.4 Landscape description

### 3.4.1 Topography

Topography is a distinguishing feature of the local area. There is a substantial difference in level from the eastern extent of the proposal site, which coincides with a local hill, and the western extent, which coincides with a local low point. The noticeable ascent or descent along the route is memorable, and provides visual interest for the road user in so far as presents a sequence of viewsheds and ultimately contributes to a diversity of experience (refer Figure 3).


Figure 3 - View west from near 110 Showground Road

### 3.4.2 Important vegetation

Some vegetation screening exists along the proposal site partially or wholly screening views of the proposal site (refer Figure 4). Generally, the vegetation is highly fragmented and consists mainly of sparse mature trees and exotic vegetation. Examples of existing vegetation within and adjoining the proposal site are provided at Figure 5 and Figure 6.

Existing street trees are mostly non-native or are not endemic to the area, and include Jacaranda (*Jacaranda mimosifolia*), Western Australia Red Gum hybrid (*Eucalyptus sp*) and Murraya (*Murraya paniculata*). There are also native species present that may be endemic to the area, such as Spotted Gum (*Corymbia maculata*). There are also numerous cultivar and horticultural species such as Bottlebrush (*Callistemon sp.*) and Grevillea (*Grevillea sp.*).

Some of the trees are large and mature, and appear to be remnant rather than planted. These include six Blue Gums (*Eucalyptus saligna*); four Blackbutts (*Eucalyptus pilularis*); and seven Turpentine (*Syncarpia glomulifera*) trees, two of which are within the road reserve, and five of which are in an adjoining garden. These trees are characteristic canopy species of the native vegetation communities that would once have naturally occurred within the study area. One threatened flora species was recorded - Wallangarra White Gum (*Eucalyptus scoparia*).

Gardens within the study area are highly modified and generally comprise mown lawns, with small shrubs and occasional canopy trees, alongside driveways and hardstand parking areas.


Figure 4 - Trees (likely to be removed and likely to be retained) along proposal site


Figure 5 - View west from near 76 Showground Road

Figure 6 - View west from near 48 Showground Road

### 3.4.3 Built form

There is a diversity of built form along the route. For the extent between the intersection with Carrington Road and the intersection with Cheriton Avenue/Kentwell Avenue, the built form is predominantly detached housing on standard lots. Some of the houses have been adapted to accommodate commercial uses, and feature typical property improvements such as signage and increased parking areas.

The detached residential housing transitions into medium density residential development in the form of multi-unit developments between the intersection with Cheriton Avenue and the intersection with Pennant Street. Some medium density housing (including townhouses) is interspersed with the detached housing between the intersection with Rowallan Avenue and the intersection with Kentwell Avenue.

At the eastern-most end of the proposal site, built form is predominantly low rise commercial development (in the form of shops and offices). This area exhibits typical qualities of such development: a mixture of building widths, zero building setbacks, extensive signage and external marketing.

The local area is punctuated by a number of heterotopic uses, including two churches, and a heritage listed police building. Of these uses, only the Wesley Church is visually prominent.

Beyond the immediate vicinity, the local area could generally be described as typical suburban development, comprising a range of residential densities (although predominantly low density) interspersed with clusters of commercial, civic, educational and recreational facilities.

# 4. Landscape character analysis

## 4.1 Landscape character zones

The study area within which the proposal site is located generally transitions through a number of recognisable character zones (refer Figure 7). The landscape character zones and prominent landscape features identified and described below collectively define the overall character for the part of the local area through which the proposal passes. Collectively the character of the area is typical of an area of suburban residential development adjoining a commercial centre. In particular, the transition from commercial centre, through medium and high intensity development, into low density residential development is a defining characteristic of the local area. This defining character, a result of the collective arrangement of the character zones is made unique by the overlay of the other landscape features: the visually important vegetation along the route; the heritage buildings, and church punctuating the local area.

The character zones identified partially coincide with the land use planning map for the area (refer Figure 2). The land use designations and character zones effectively reinforce the intended urban structure of the local area – a sequential transition from low-density residential, through medium density residential, through to commercial use. Such a coincidence contributes to the legibility of the road and the sense of place for the local area.

### Character Zone A

This zone comprises predominantly low density detached residential development, but incorporates a number of commercial uses within existing residential buildings. The zone extends along the southern side of the proposal site between Carrington Road and Cheriton Avenue; and along the northern side from the western extent of the proposal to near the Cecil Avenue intersection (where it transitions into LCZ E, a mixed residential area).

As noted in the UDI, the road alignment in this character area is essentially straight, and residences are well setback from the carriageway, with direct access. The existing road shoulder areas through this zone are substantial, contributing to a sense of spaciousness for road users. The road verges are simple and well proportioned.

The road follows the gentle undulations of the landform, with each rise (ridgeline) defining a viewshed of about 200 metres. Figure 8 provides a typical view in this character zone.

Vegetation within private properties contributes to the amenity and character of the route, both for residents and for road users. The more substantial vegetation aids in screening views from a number of adjoining properties to the road, and also reinforces the transition in landscape character along the proposal site (from commercial centre to low density residential, and beyond to open space).

Two houses (74 and 107 Showground Road) are identified as heritage properties (refer Figure 13 and Figure 14). Both are historic houses, set in formal gardens. Whilst not particularly prominent, both make a positive contribution to the landscape character of the local area and the visual amenity of road users. These houses are considered collectively as the level of sensitivity and magnitude of impacts would be similar for both.

The heritage property between Pennant Street and Old Northern Road is not considered a valuable landscape feature as it presents as a carpark and no heritage values obviously contribute to the landscape or visual environment.

### Character Zone B

This zone comprises a section of predominantly medium density residential development on the southern side of the proposal site, between Cheriton Avenue and Pennant Street intersection. This zone is defined by relatively new multi-unit developments. As noted in the UDI, the character of residential developments in this zone differs to the other zone, with newer, higher density apartment and townhouse developments.

Setbacks are minimal with a lack of appropriately scaled vegetation either within the properties or within the road reserve. The scale and density of development is consistent with the commercial centre to the east, around Old Northern Road. Figure 9 provides a typical view in this character zone.

Vegetation through this character zone is limited to a number of large trees along the footpath and is less prominent than in LCZ A.

### Character Zone C

This zone incorporates an area comprising the commercial centre at the eastern end, and defined by a mix of commercial development. The zone extends along the southern side of the proposal site, from Pennant Street to the eastern extent of the proposal site, and includes the commercial premises on Old Northern Road in proximity of the proposal site. Commercial signs, especially the McDonalds sign, are prominent visual elements in this character area. Figure 10 provides a typical view in this character zone. Vegetation through this LCZ is almost completely absent.

### Character Zone D

This zone lacks a predominant character. It includes an area dominated by carparking between Old Northern Road and Pennant Street, on the northern part of the proposal site; and an area of currently vacant land between Pennant Street and Kentwell Avenue, also on the northern part of the proposal site. This area will be developed to accommodate parking associated with the Castle Towers Expansion project. Overall, the area is likely to change in the near future to be one more defined by commercial uses. Figure 11 provides a typical view in this character zone.

Vegetation through this LCZ is reasonably prominent with a number of large trees along the road, and visible trees within the adjoining properties. It is likely that the extent of vegetation will be greatly reduced when land in this area is developed.

### Character Zone E

This is the area of mixed residential uses on the northern part of the proposal site between Kentwell Avenue and near the intersection with Cecil Avenue. This zone can be best described as predominantly low density detached residential, with some multi-unit residential (although the latter is not particularly prominent). Figure 12 provides a typical view in this character zone.

The prominent Wesley Church contributes substantially to the character of this zone. The Wesley Church is a visually prominent and recognisable element along the route, and is an important landmark that contributes to the legibility and memorability of the route. It is also identified as a heritage property. The prominence of the church is heightened by: the contrast of activity compared to its context; distinctive architectural features; and by the high levels of activity temporally associated with the church. Churches are also highly valued facilities and symbols in cities.

The extent of vegetation and its contribution to the character and amenity of the route varies through this LCZ, with a definite increase in visually important vegetation nearer to the boundary with LCZ A.


Figure 7 - Landscape character zones and features along proposal site

Figure 8 - View west from near 81 Showground Road (within LCZ A)

Figure 9 - View south, from intersection with Cheriton Avenue (towards LCZ B)


Figure 10 - View to commercial centre, from intersection with Pennant Street (towards LCZ C)

Figure 11 - View across vacant land east of Kentwell Avenue (within LCZ D)

Figure 12 - View east from near 59d Showground Road (within LCZ E)

Figure 13 - 74 Showground Rd (within LCZ A)

Figure 14 - 107 Showground Road (within LCZ A)

## 4.2 Landscape character impact assessment

The preceding section identifies the landscape character zones and prominent landscape features along the proposal site. The following tables describe and rate the sensitivity of each LCZ and the likely magnitude of change for each LCZ. Combined, this will enable a determination of likely impact significance for each landscape receptor.

### Table 2 - Impact assessment for Character Zone A

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Moderate**<br><br>The character of this LCZ is reasonably consistent and predominantly residential. It includes some attractive features, particularly the roadside vegetation which makes an important contribution to the character and amenity of the area and is reasonably vulnerable to change.<br><br>Considering their heritage values and the contributions they make to the landscape and visual environment, combined with the fact that there is little screening at the front of both properties, the sensitivity of each heritage property is considered to be moderate.<br><br>The sensitivity to change of the landscape character generally is tied to the sensitivity of change of the receptors described above. Ultimately however, the LCZ would be moderately sensitive to the type of change that will result from the proposal and have a reasonable capacity to accommodate change. |
| Magnitude | **Moderate**<br><br>Although the exact extent of tree removal is not yet determined, it appears that the magnitude of impact on the vegetation varies. In some instances the impact is low - where vegetation is affected but the change has little impact on the landscape and visual environment. In some instances the impact is moderate or high - where visually important vegetation is removed and there is a noticeable impact on the landscape and visual environment.<br><br>The magnitude of impact on other landscape features and the character as a whole would be low, owing largely to the fact that the proposal is an extension of an existing road within the road reserve.<br><br>Overall, the magnitude of impact on this LCZ is likely to be moderate. |
| Impact significance rating | **Moderate** |

### Table 3 - Impact assessment for Character Zone B

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Low**<br><br>The character of this LCZ is less consistent and less valuable. The LCZ incorporates less distinctive landscape features and, because it is of limited extent, the character is generally less memorable or |

| Consideration | Rating and comment |
|---|---|
| | important.<br><br>The church has a limited exposure to the road corridor and as such is not particularly sensitive to change. |
| Magnitude | **Low**<br><br>There will be little impact on vegetation or other landscape features within this LCZ owing largely to the fact that the proposal is an extension of an existing road within the road reserve. Some trees will be removed but the loss would not be significant in terms of overall character. |
| Impact significance rating | **Low** |

### Table 4 - Impact assessment for Character Zone C

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Low**<br><br>This LCZ does not have a unique or memorable character and, given its urban nature and the fact that other developments are expected in the vicinity, it has a low vulnerability to change of the type expected from the proposal. |
| Magnitude | **Low**<br><br>Again, there will be little impact on vegetation or other landscape features within this LCZ owing largely to the fact that the proposal is an extension of an existing road within the road reserve. |
| Impact significance rating | **Low** |

### Table 5 - Impact assessment for Character Zone D

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Low**<br><br>Again, this LCZ does not have a unique or memorable character and, given the likely redevelopment of the area, it has a low vulnerability to change of the type expected from the proposal. |
| Magnitude | **Low**<br><br>Again, there will be little impact on vegetation or other landscape features within this LCZ owing largely to the fact that the proposal is an extension of an existing road within the road reserve. |
| Impact significance rating | **Low** |

Table 6 - Impact assessment for Character Zone E

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Moderate-High**<br><br>The character of this LCZ is varied but is largely defined by the prominent Wesley Church. Because of its prominence, its contrast with the surrounding built form, its visual accessibility, and the high levels of associated activities, the Church is highly sensitive to change.<br><br>The remainder of the LCZ and other features such as vegetation have only a low sensitivity to change.<br><br>Overall, the LCZ can be seen to have a moderate-high sensitivity to change. |
| Magnitude | **Low**<br><br>The magnitude of impact of the proposal on the Wesley Church is likely to be low. Whilst there will be some property adjustment (in the form of a new retaining wall and driveways), the visual setting and appearance of the church will not be substantially affected<br><br>The magnitude of impact on other landscape features and the character as a whole would be low, owing largely to the fact that the proposal is an extension of an existing road within the road reserve.<br><br>Overall, the magnitude of impact on this LCZ is likely to be low. |
| Impact significance rating | **Moderate** |

## 4.3 Summary of landscape impacts

The impacts on LCZs B, C, and D are expected to be of low significance, largely because the LCZs (their overall character and the key landscape features within them) are not particularly sensitive to change and the magnitude of change is expected to be low.

Impacts on LCZs A and E are expected to be of moderate significance. The sensitivity of each LCZ is higher as a result of the importance of key landscape features (visually important trees and heritage buildings within LCZ A, and the prominent Wesley Church within LCZ E), and the likely effects on those features from the proposal.

# 5. Visual analysis

## 5.1 Visual receptors

The visual catchment of the proposal site is generally limited to adjoining land, and the westward extension of Showground Road. Some views towards the site may be achievable from further afield, but such views are unlikely to be noticeably affected by the proposal. For this reason, there is no value in preparing a visual catchment map for the assessment. Key views are shown on Figure 19.

There are no identified views along the route or towards the route that are of regional, or even local importance. There are however a number of views which either: contribute to the visual experience of road/pathway users; contribute to the visual amenity of residents and workers in the local area; or aid with legibility and memorability of the local area. These views include:

- Views towards the former Council building site for westbound traffic, from about 150 metres east of Carrington Road. Although the Council building has been removed the importance of the view may increase or decrease depending on future development at the site.
- Views toward the Wesley Church for traffic in both directions, between Kentwell Avenue and about 100 metres west of the church (refer Figure 15).
- Views toward the commercial centre at the intersection of Showground Road and Old Northern Road (refer Figure 16).
- Where they exist, views towards the road from properties adjoining the road (refer Figure 17).


Figure 15 - View to Wesley Church


Figure 16 - View to commercial centre, from intersection with Pennant Street

Figure 17 - View south to intersection with Carrington Road


Figure 18 - View north to intersection with Pennant Street

Visual receptors are individuals and/or groups of people whose views may be affected by the proposal. The most sensitive visual receptors are described below and identified on Figure 22. Observations about the sensitivity of the receptors and the likely impact magnitude are discussed at Section 5.2 below.


Figure 19 - Key views towards and from proposal site

### VR01 – Adjoining residents

Residents of properties adjoining the proposal site may have their outlook towards the proposal affected. The type and extent of impact depends largely on the quality of view or screening the residents currently enjoy, and the extent that will be changed. Impacts on residents will likely result from: construction activity and storage; substantial changes to existing screening vegetation; reductions in distance between receptors and traffic (resulting from the widening of the road); and increased numbers of pedestrians and cyclists passing receptors (along the proposed shared path).

Whilst some houses are elevated above road level, the visibility of the road is principally a consequence of the presence or absence of screening vegetation between building and road. In the main, the relationship in terms of elevation does not noticeably affect the sensitivity of the residents.

As with residents, commercial tenants and their visiting customers may have their outlook towards the proposal site affected. The sensitivity of these receptors will however be lower than residential receptors as their expectation of and interest in the outlook is less.

Figure 20 - View to 77 Showground Road, illustrating potential views from properties to road

### VR02 – Wesley Church attendees

People attending the Wesley Church may have their outlook towards the proposal site affected.

This population is unique in that they are attending the church for a particular purpose (religious activity) which in many ways contrasts with typical urban activity such as traffic, construction, and so on.

The population is also unique in that the activity they participate in is temporal and temporally defined – it happens at particular times, for limited periods.

### VR03 – Road users

Road users include all those travelling along the route (or part of the route), and include pedestrians and cyclists along the footpath and shared path. Their visual experience of the route depends on a range of variables, such as traffic activity, views, and sequences of views. The proposal, once constructed, will have limited impacts on this visual experience, except to affect traffic density.

The key landmarks that contribute to the legibility, memorability, and experience of the route are shown on Figure 21 and include:

- The former Council building located at the south-western corner of the intersection of Showground Road and Carrington Road. Although this building has been removed, it is relevant to acknowledge as any replacement development may act as a feature in the landscape.
- The Wesley Church and associated buildings near the intersection with Kentwell Avenue, recognisable by it architecture, clear views to the church, and prominent sign (refer Figure 15).
- The commercial centre which is prominently located at the eastern end of Showground Road and terminates the view for east-bound travellers from near the intersection of Kentwell Avenue (refer Figure 16). Whilst not particularly attractive, its prominence and the associated activity make this centre visually prominent and a defining element of the landscape.

Key transitions that contribute to the legibility and experience of the route are shown on Figure 21 and include:

- The intersection at Showground Road and Carrington Road, which defines the transition between the residential development of LCZ C, and the more open character of land to the west (refer Figure 17). The development associated with the North West Rail Link project may transform the landscape qualities of land to the west of this intersection and in so doing, may lessen the significance of the intersection as a transition point in the local landscape.
- The intersection with Pennant Street, which marks the transition between LCZs B and C. It is noted however, that this transition point might ultimately be relocated west, to the intersection of Cheriton and Kentwell Avenue, once planned development to the east of this intersection is realised. This intersection will then mark the transition between mixed use and high density development, to medium density, predominantly residential development (refer Figure 18).


Figure 21 - Landmarks and transitions along proposal site

## 5.2 Visual impact assessment

The preceding section identified those visual receptors along the proposal route. This section will describe the sensitivity rating of each receptor and the likely magnitude of change of each receptor. Combined, this will enable a determination of likely impact significance for each landscape receptor.

### Table 7 - Impact assessment for Visual Receptor 01 (Adjoining residents)

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Low-Moderate**<br><br>The sensitivity of adjoining residents will vary, depending on: the amount of screening vegetation that exists and will remain between the receptor and the road; and depending on the setback of the viewing location (usually the house) from the road.<br><br>Residents whose views are currently screened and will continue to be screened (ie no substantial vegetation to be removed), will have a low sensitivity to change.<br><br>Residents whose views are not currently screened will have a low-moderate sensitivity to change. Residents whose views are currently screened but will have their screening affected by the proposal will have a moderate sensitivity to the proposal. Figure 22 identifies these residences. |
| Magnitude | **Moderate**<br><br>The magnitude of change that will be experienced by these receptors will also vary. Whilst the road will not extend beyond the exiting road easement, removal of vegetation and construction activity will have a varying degree of impact, as will the reduction in separation between receptors and traffic. |
| Impact significance rating | **Moderate** |

### Table 8 - Impact assessment for Visual Receptor 02 (Wesley Church attendees)

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Moderate**<br><br>People attending the Wesley Church are considered to be particularly sensitive to change due to the unique type of amenity experienced by and valued by these receptors. |
| Magnitude | **Moderate**<br><br>The magnitude of change resulting from the proposal will be relatively low during operation of the proposal. The magnitude of impact during construction may be higher, depending on the siting of stockpiles and storage areas. |
| Impact significance rating | **Moderate** |

Table 9 - Impact assessment for Visual Receptor 03 (Road users)

| Consideration | Rating and comment |
|---|---|
| Sensitivity | **Moderate**<br><br>Road users generally are considered to be moderately sensitive to change, particular in terms of impacts on the visual experience, on the legibility of the route, and on the overall landscape character. |
| Magnitude | **Low**<br><br>The magnitude of change on road users during the operation of the road will be low, with only minor changes in the existing horizontal and vertical alignment. The expected reduction in traffic congestion is likely to have a positive impact. Maintaining views to identified landmarks and maintaining or enhancing the identified transition points would maintain or enhance the legibility of the route. |
| Impact significance rating | **Moderate-Low** |


Figure 22 – Sensitive visual receptors likely to be affected by removal of existing screening

## 5.3 Summary of visual impacts

The groups of receptors identified would be subjected to impacts of moderate or moderate-low significance. The magnitude of impacts, and thus significance does vary within each group of receptors depending particularly on the extent of visually important vegetation that will be removed.

# 6. Urban design response

This section sets out a number of recommended design measures which will respond to the assessment presented above by identifying design interventions which can mitigate potential impacts described and rated above.

As none of the LCZs or visual receptors identified would be exposed to anything greater than impacts of moderate significance, it would not be critical to implement possible mitigation measures. However, doing so would further reduce likely impacts and result in a superior design outcome.

Also, included below are design responses which do not directly constitute mitigation measures, but rather are presented as recommendations to improve the urban design outcomes generally, contributing to a better integrated, safer, more legible, and ultimately more valued contribution to the public domain.

## 6.1 Roads and Maritime urban design objectives and principles

The Roads and Maritime Services *Urban Design Policy* identifies the following design outcomes relevant to any infrastructure project. These objectives are fundamental to the development of proposal-specific objectives.

- Infrastructure should fit sensitively into the built, natural and community environments through which they pass, be well designed and contribute to the character and functioning of the area.
- Infrastructure should contribute to the accessibility and connectivity of people within regions and communities.
- Infrastructure should contribute to the overall quality of the public domain for the community and all road users.

These objectives are reflected in a set of more specific principles that are to assist in integrating urban design and engineering on the proposal.

- Contributing to urban structure and revitalisation.
- Fitting with the built fabric.
- Connecting modes and communities.
- Fitting with the landform.
- Responding to natural pattern.
- Incorporating heritage and cultural contexts.
- Design roads as an experience in movement.
- Creating self-explaining road environments.
- Achieving integrated and minimal maintenance design.

## 6.2 Proposal-specific urban design objectives and principles, and mitigation measures

Through adaptation of these objectives and principles, and with consideration of the assessment set out in this report, the following key design objectives have been identified to inform the ongoing design of this proposal and to mitigate the impacts identified.

### 6.2.1 Objective 1

**Maintain the fundamental elements which define the character of the local area and the experience of the road user**

- Maintain views to identified landmarks and heritage properties, and avoid impacts on the setting of those properties.
- Maintain and emphasise identifiable transitions along the route and employ treatments which contribute to distinction of character areas.
- Ensure the varying vertical and horizontal road geometry is maintained where possible to conserve the varied and sequential visual experience of the journey.
- Protect and incorporate landscaping treatments which reflect the qualities of identified character zones and which reinforce the planned structure of the local area.
- Ensure signage, utilities, and other structures are sited and designed to avoid adverse impacts of the views along the route.

### 6.2.2 Objective 2

**Enable the sensitive integration of the proposal into the landscape context**

- Minimise the extent of disturbance and vegetation clearance required to facilitate the upgrade of the road corridor, with particular effort to maintain visually important roadside vegetation.
- Avoid substantial vertical deviations which would require construction of retaining walls, substantial batters, or other barriers.
- Limit the impact of construction activity and storage on the landscape and visual environment, particularly in relation to sensitive receptors.
- Incorporate visual cues particularly with regard to the transition of land uses and character zones.

### 6.2.3 Objective 3

**Maximise safety of road and path users**

- Avoid potential conflicts between different transport mode users, such as cyclists and drivers.
- Ensure the appropriate application of CPTED (Crime Prevention Through Environmental Design) principles to provide high levels of surveillance, avoid opportunities for entrapment, and enhance perceptions of safety.

## 6.3 Urban design strategies and initiatives

The above objectives and principles have been developed into a set of more specific recommendations for design strategies and initiatives. These strategies and initiatives should be considered in the further design of the proposal, in conjunction with other design considerations.

### A. Construction activity and storage

Take all practical measures to ensure construction equipment, stockpiles, and other visible elements are located away from key views to or from the identified visual receptors. Where such equipment or stockpiles are to be located in a visually prominent locations (including along

road shoulders) for any reasonable period of time, incorporate screening measures and practices to ensure sites are kept tidy.

Ensure temporary lighting required during the construction period is sited and designed to avoid light spill into residential properties and identified sensitive receptors.

### B. Retention of visually important vegetation

As the design of the proposal proceeds, the precise extent of disturbance on visually important vegetation along the route should be determined. Consideration should then be given to practical measures to enable retention of that vegetation.

Where visually important vegetation requires removal to accommodate the shared path, consider narrowing of the path at those locations to enable tree retention.

To compensate for removal of visually important tree planting, locate new planting where it is safe and practical to do so. Such locations include remaining road verges, such as in front of 101-119 Showground Road.

### C. Tree planting opportunities along path

Explore opportunities to realign the shared path against the kerb or the property boundary to enable consolidation of path verges into a single 1.18 metre wide verge. This would be sufficient to accommodate some tree planting, which would contribute to screening of proposal, contribute to visual amenity, and provide shade to path users.

Any new planting along or near paths should have open trunks to avoid opportunities for concealment; should avoid conflict with lighting and transmission lines; should not contribute to branch and leaf litter on path; and should be maintained to ensure branches do not obstruct path.

### D. Lighting and signage

Employ shields to avoid light spill into residential properties and identified sensitive receptors.

Avoid locating permanent signage in a manner which may impede views to identified landmarks and heritage properties.

### E. Emphasising land use and character zones

Where new planting is to be incorporated, ensure it is locally occurring and of a species and composition which reflects the character zone it is within (generally transitioning from a greater variety and informal compositions through the residential areas, to more formal and less diverse planting through the approach to the commercial centre and around commercial uses).

Consider employing a different pavement treatment to the part of the footpath and shared path which extend east beyond Cheriton Avenue and Kentwell Avenue intersection (identified as a future transition point). A more elaborate use of colours and textures, or incorporation of higher quality finished would emphasise transition into a more intense environment and would mark the approach to the commercial centre.

Ensure quality of finishes and treatments can be viably maintained over time.

### F. Shared path safety

To avoid conflict between cyclists/pedestrians on shared path and cars emerging from driveways, ensure sightlines are maintained between path and driveways.

Consider treatment (materials or colours) where the shared path crosses driveways to provide a visual cue to remind cyclists to look out for reversing cars.

Ensure existing or new planting along the shared path or footpath do not provide opportunities for entrapment, and promote casual surveillance from the road and adjoining properties.

# 7. Conclusions and recommendations

This report summarises a comprehensive landscape character and visual impact assessment of the subject site and the wider context. Following the analysis a set of urban design objectives and principles were identified and developed into a set of strategies and initiatives. The assessment that has been undertaken will form part of the REF. The strategies and initiatives that have been developed will be considered and integrated into the ongoing design of the proposal.

The assessment identified the following outcomes of the proposal as potential impact generators:

- Temporary construction activity and storage.
- Vegetation clearing.
- Enabling future increases in traffic activity.

It was however determined that impacts on the landscape and visual environment were likely to be limited by the fact that the proposal principally comprises a widening of an existing road, with minimal variation in horizontal or vertical alignment, and no requirement for fencing, substantial retaining walls, barriers, or other elements which frequently contribute to impacts on the landscape and visual environment.

The study area within which the proposal site is located generally transitions through a number of recognisable landscape character zones (LCZs) (refer Figure 7). The LCZs and prominent landscape features identified collectively define the overall character for the part of the local area through which the proposal passes. Of the LCZs only LCZ A and E are expected to be subjected to impacts of anything greater than low significance The sensitivity of these LCZs was higher as a result of the importance of key landscape features (visually important trees and heritage buildings within LCZ A, and the prominent Wesley Church within LCZ E), and the likely effects on those features from the proposal.

Within the study area a number of distinct visual receptors were identified, namely residents along the route, attendees of the Wesley Church, and road users generally (Figure 19). It was found that the groups of receptors identified would be subjected to impacts of moderate or moderate-low significance. It was noted however that the magnitude of impacts, and thus significance does vary within each group of receptors depending particularly on the extent of visually important vegetation that will be removed.

Following the assessment of impacts a number of design responses which would mitigate or remove impacts were developed. Also provided were design responses which do not directly constitute mitigation measures, but rather are presented as recommendations to improve the urban design outcomes generally, contributing to a better integrated, safer, more legible, and ultimately more valued contribution to the public domain.

The following design objectives were recommended:

1. **Maintain the fundamental elements which define the character of the local area and the experience of the road user.**
2. **Enable the sensitive integration of the proposal into the landscape context.**
3. **Maximise safety.**

Those objectives and associated principles were developed into a set of more specific recommendations for design strategies and initiatives relating to:

**A. Construction activity and storage.**

**B. Retention of visually important vegetation.**

**C. Tree planting opportunities along path.**

**D. Lighting and signage.**

**E. Emphasising land use and character zones.**

**F. Shared path safety.**

The above strategies and initiatives have been communicated with the core project team and the viability of each considered with regard to project budget and other potentially competing requirements (such as traffic safety). The strategies and initiatives will inform the REF and be identified as recommended mitigation measures.

Viable strategies and initiatives will be developed in conjunction with the detailed design of the proposal and in collaboration with all related disciplines (civil engineering, structural engineering, lighting engineering, etc).

# 8. Terms and abbreviations

The following table provides definitions for key terms and abbreviations used in this report. Where appropriate, Roads and maritime Service standard definitions have been adopted.

| Terms and abbreviations | Definition |
|---|---|
| Cumulative effects | Additional effects caused by the proposal when considered in conjunction with other proposed developments. |
| Landscape | All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure. |
| Landscape character | The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place |
| Landscape character zone | An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately adjacent. |
| Landscape feature | A component, part or feature of the landscape that is prominent or eye-catching, e.g. hills, buildings, vegetation. |
| Landscape quality | Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition. |
| Landscape receptor | Elements that define the landscape, including aesthetic qualities, particular features, and its character, likely to be affected by the proposal. |
| Landscape value | Areas of formally designated landscape that through national or local consensus, reflect the value placed by society on particular environments and/or their features. |
| Magnitude | The measurement of the scale, form and character of a development proposal when compared to the existing condition. In the case of visual assessment this also relates to how far the proposal is from the viewer. Combined with sensitivity, magnitude provides a measurement of impact. |
| Visual receptor | Person and/or viewer group who will be affected by changes in views or visual amenity, as a result of the proposal. |
| Sensitivity | The sensitivity of a landscape character zone or view and its capacity to absorb change. In the case of visual impact this also relates to the type of viewer and number of viewers. Combined with magnitude, sensitivity provides a measurement of impact. |
| Study area | The visual catchment extending 5km from the subject site. |
| Urban deign | Urban design in Roads and Maritime is the process and product of designing projects so that they: fit sensitively with the built natural and community environment; contribute to the functioning of the community; and contribute to the quality of the public domain for the community and road users. Architects, engineers, environmental experts, landscape architects, planners and urban designers are all involved in urban design. Urban designers are generally landscape architects and architects that have extended their expertise into the field of urban design. |
| Viewing locations | Viewing locations are used in this report to typify the views experienced by potentially sensitive visual receptors throughout the visual catchment of the proposal. Viewing locations in this report often represent a viewing area, rather than one exact point. |
| Visual amenity | The value of a particular area or view in terms of what is seen. |

# 9. References

The following reference materials have informed this report:


- Roads and Maritime, 2013. *Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment*. Roads and Maritime Services, March 2013.
- Roads and Traffic Authority (RTA), 2009. *Beyond the Pavement, RTA Urban Design Policy, Procedures and Design Principles*. (Hereafter referred to as the "Urban Design Policy").
- Roads and Traffic Authority, 2007. *Showground Road Preliminary Urban Design Investigation.*
- The Hills Shire Council, 2012. *The Hills Local Environmental Plan 2012.*

# Appendices

# Appendix A – Figures from report reproduced at larger scale


Figure 23 - Figure 1 from report reproduced


Figure 24 - Figure 4 from report reproduced


Figure 25 - Figure 7 from report reproduced


Figure 26 - Figure 19 from report reproduced


Figure 27 - Figure 21 from report reproduced


Figure 28 – Figure 22 from report reproduced

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| Rev No. | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| A | Nick McGowan | Rima Exikanas | | Amanda Raleigh | | 16/12/13 |
| 0 | Nick McGowan | Rima Exikanas |  | Amanda Raleigh |  | 7/02/14 |

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| Rev No. | Author | Reviewer | | Approved for Issue | | |
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| | | Name | Signature | Name | Signature | Date |
| A | R Exikanas | A Raleigh | | A Raleigh | | 15/11/2013 |
| 0 | R Exikanas | A Raleigh | | A Raleigh | | 7/02/2014 |
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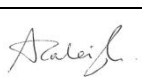
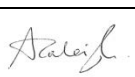
| 2 | R Exikanas | A Raleigh |  | A Raleigh |  | 12/03/2014 |

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