Transport Roads & Maritime Services

Showground Road upgrade: Carrington Road to Old Northern Road, Castle Hill

Review of Environmental Factors

Volume 1 - Main report and Appendix A to C

MARCH 2014

RMS xx .xxx ISBN xxxxxxxxxxx

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Executive summary

The proposal

NSW Roads and Maritime Services (Roads and Maritime) proposes to upgrade about 1.5 kilometres of Showground Road, between Carrington Road and Old Northern Road (referred to as 'the proposal' for the purposes of this report). 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 work on both sides of the existing carriageway to create a four-lane divided carriageway between Rowallan Avenue and Kentwell Avenue.
  - Widen the carriageway and undertake associated work 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, Pennant Street and Barwell Avenue.
- 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 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.

Needs

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.

The proposal is needed to address:

- Current congestion experienced by motorists on Showground Road (especially during peak periods and Saturdays).
- Predicted traffic growth as a result of development in the Castle Hill centre (particularly as a result of the expansion of Castle Towers Shopping Centre).
- General growth in local and regional traffic.

Traffic measurements indicate that current midblock flows between Carrington Road and Pennant Street are operating at capacity during the weekday afternoon traffic peak. The daily traffic volumes recorded east of Cecil Avenue indicate that traffic along Showground Road is growing at a rate of about 3.2 per cent a year. It is expected that this level of growth will be maintained as a result of proposed employment, residential and commercial developments in the region.

Options considered

Options considered for the upgrade of Showground Road included widening the carriageway from two to four lanes from the outside of the road corridor, which would result in extensive property adjustments, and widening the carriageway from the inside by maximising the use of the existing carriageway. The selection of the preferred option took into account social, environmental and economic factors as well as stakeholder input and is considered to best achieve the proposal objectives.

Statutory and planning framework

Clause 94 of *State Environmental Planning Policy (Infrastructure) 2007* permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for the purpose of a road and is to be carried out by Roads and Maritime, development consent from The Hills Council is not required. The proposal needs to be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). A review of environmental factors (REF) has been prepared as part of the assessment process.

Community and stakeholder consultation

Consultation with potentially affected property owners, relevant government agencies and other stakeholders has been undertaken. In November 2013, a community update brochure was released informing the community about the commencement of design and the REF. Information about the proposal has also been placed on the Roads and Maritime project website.

Roads and Maritime consulted with The Hills Shire Council in September 2013 and in February 2014 in accordance with the requirements of ISEPP. A Value Engineering and Risk Management Workshop was held on 16 October 2013 with representatives of relevant government agencies and key stakeholders. The workshop provided an opportunity for key stakeholders to provide an input to the design and assessment of the proposal.

Roads and Maritime will continue to consult with the community and stakeholders throughout development of the proposal. In particular, the REF will be placed on public display and comments

invited. Submissions received as a result of the display will be addressed in a formal submissions report and considered when finalising the concept design and during development of the detailed design.

Environmental impacts

The beneficial effects of the proposal would include:

- Reduced travel times and congestion.
- Improved intersection performance.
- Improved road safety for all road users.
- Provision of pedestrian and cyclist facilities.
- Improved stormwater drainage.

Potential environmental impacts during construction and operation of the proposal include:

- Construction phase traffic impacts, due to increased heavy vehicle movements on the existing road network.
- Indirect impacts to non-Aboriginal heritage items.
- Construction experienced by properties adjacent to the proposal site.
- Loss of informal on-street parking along Showground Road.
- Temporary disruptions to traffic flow and access during construction.
- Minor vegetation removal.

Adverse environmental effects would be adequately minimised, managed and mitigated through the implementation of safeguards outlined in this REF. These would include a construction noise and vibration management plan, biodiversity management plan, soil and water management plan and traffic management plan.

Justification and conclusion

The proposal is required to accommodate expected traffic growth associated with development in the Castle Hill centre (particularly the expansion of Castle Towers Shopping Centre), and the surrounding area.

The proposal is considered to be consistent with national, state and local strategies and plans as it would lead to improved efficiency and safety of the local road network.

While there would be some environmental impacts as a consequence of the proposal, they have been avoided or minimised wherever possible through design and site-specific safeguards. The beneficial effects are considered to outweigh the mostly temporary adverse impacts and risks associated with the proposal.

The proposal is subject to assessment under Part 5 of the EP&A Act. This REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for an environmental impact statement to be prepared and approval to be sought for the proposal from the Minister for Planning and Infrastructure under Part 5.1 of the EP&A Act. The proposal is unlikely to affect threatened species, populations or ecological communities or their

habitats, within the meaning of the *Threatened Species Conservation Act 1995* or *Fisheries Management Act 1994* and therefore a species impact statement is not required. The proposal is also unlikely to affect Commonwealth land or have an impact on any matters of national environmental significance, therefore a referral to the Department of the Environment for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999* is not required.

Display of the review of environmental factors

The REF documents can be accessed in the following ways during the display of the REF:

Internet

The documents will be available as pdf files on the Roads and Maritime Services website at rms.nsw.gov.au/roadprojects.

Display

The review documents can be viewed at the following locations:

- The Hills Shire Council

  3 Columbia Court

  Baulkham Hills NSW 2153

  Monday to Friday between 8.30am and 4.30pm

- Castle Hill Library

  Cnr Castle Street and Pennant Street

  Castle Hill NSW 2154

  Monday to Friday between 10am and 8pm

  Saturday between 10am and 5pm

  Sunday between 1pm and 5pm

How can I make a submission?

To make a submission on the proposal, please send your written comments to:

Roads and Maritime Services project manager:

Matty Mathivanar

PO Box 973 Parramatta NSW 2124

showgroundroadupgrade@rms.nsw.gov.au

Privacy information

All information included in submissions is collected for the sole purpose of assisting in the assessment of this proposal. The information may be used during the environmental impact assessment process by relevant Roads and Maritime Services staff and its contractors.

Where the respondent indicates at the time of supply of information that their submission should be kept confidential, Roads and Maritime Services will attempt to keep it confidential. However there

may be legislative or legal justification for the release of the information, for example under the *Government Information (Public Access) Act 2009* or under subpoena or statutory instrument.

The supply of this information is voluntary. Each respondent has free access at all times to the information provided by that respondent but not to any identifying information provided by other respondents if a respondent has indicated that the representation should be kept confidential.

Any respondent may make a correction to the information that they have provided by writing to the same address the submission was sent.

The information will be held by the Roads and Maritime Services, 27-31 Argyle Street, Parramatta NSW 2150.

What happens next?

Following the submissions period, Roads and Maritime will collate submissions. Acknowledgement letters will be sent to each respondent. The details of submission authors will be retained and authors will be subsequently advised when project information is released.

After consideration of community comments Roads and Maritime will determine whether the proposal should proceed as proposed, or whether any alterations to the proposal are necessary. The community will be kept informed regarding this Roads and Maritime determination.

If the proposal goes ahead, Roads and Maritime proceeds with final design and tenders are called for construction of the proposal.

If you have any queries, please contact Matty Mathivanar, the Roads and Maritime project manager, on 02 8848 2465.

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Appendices

1. Introduction

1.1 Proposal identification

1.1.1 Overview

NSW Roads and Maritime Services (Roads and Maritime) proposes to upgrade about 1.5 kilometres of Showground Road, between Carrington Road and Old Northern Road in Castle Hill (referred to as 'the proposal' for the purposes of this report). The proposal is located about 24 kilometres north-west of the Sydney central business district (refer Figure 1.1).

Showground Road runs between Old Northern Road and Windsor Road. 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.

Showground Road is one of the main access roads to the Castle Hill centre, which includes the Castle Towers Shopping Centre (Castle Towers). Queensland Investment Corporation (QIC), which owns Castle Towers, has development consent to increase the floor area of the centre by about 54 per cent. Development consent was granted by The Hills Shire Council in February 2011 (Development Consent 297/2008/HB).

The proposal is needed to address the existing congestion experienced by motorists, especially during peak times and Saturdays. It is also needed in response to the projected growth in local and regional traffic, as well as the additional traffic generated by development in the Castle Hill centre, which includes the expansion of Castle Towers. The proposal is needed to satisfy condition number 34 of Development Consent 297/2008/HB. It is the subject of a Voluntary Planning Agreement executed on 12 September 2013 by QIC, Roads and Maritime, and The Hills Shire Council.

1.1.2 Key features

The key features of the proposal are shown in Figure 1.2 and 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 work on both sides of the existing carriageway to create a four-lane divided carriageway between Rowallan Avenue and Kentwell Avenue.
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- Provide left-in/left-out restrictions at the intersection of Showground Road and Britannia Road.

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- 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.

It is anticipated that construction of the proposal would start in late 2015 and would take about 18 months to complete.

The following definitions have been used in this report:

- The 'proposal site' refers to the area that may be directly impacted by the proposal, and includes the land within a five metre buffer on either side of the road corridor in which construction activities would occur, and an area for the construction of two drainage pipelines outside the Showground Road corridor (refer Figure 1.2).
- 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 (for example, as a result of any noise impacts). The study area includes a 10 metre wide buffer to the north and south of the proposal site.

1.1.3 Location and context

The proposal is located within The Hills Shire local government area and Roads and Maritime Sydney region. The study area within which the proposal site is located includes a mix of residential, commercial, recreation, education and other institutional land uses. The proposal site is mostly located within the existing road corridor of Showground Road.

The proposal site is surrounded mainly by residential and commercial land uses. Adjoining land uses include:

- Residential dwellings (mainly detached) and scattered commercial activities to the north.
- A mix of detached dwellings, residential apartment buildings and commercial activities to the south.

Castle Towers is located about 200 metres from the eastern end of the proposal site.

Further information on the existing environment of the proposal site is provided in section 6.

1.2 Purpose of the report

This review of environmental factors (REF) has been prepared by GHD Pty Ltd (GHD) on behalf of Roads and Maritime Sydney region. Under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), Roads and Maritime is the proponent and the determining authority for the proposal.

The purpose of the REF is to describe the proposal; document the likely impacts of the proposal on the environment; and detail the protective measures to be implemented.

The description of the proposal and associated environmental impacts have been undertaken in context of Clause 228 of the Environmental Planning and Assessment Regulation 2000, the *Threatened Species Conservation Act 1995* (TSC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 111 of the EP&A Act. Section 111 requires Roads and Maritime to examine, and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of an activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared, and approval to be sought from the Minister for Planning and Infrastructure, under Part 5.1 of the EP&A Act.
- The significance of any impact on threatened species, as defined by the TSC Act or FM Act, and therefore the requirement for a species impact statement.
- The potential for the proposal to significantly impact a matter of national environmental significance or Commonwealth land, and therefore the need to make a referral to the Australian Government Department of the Environment (for a decision by the Minister for the Environment) as to whether assessment and approval is required under the EPBC Act.

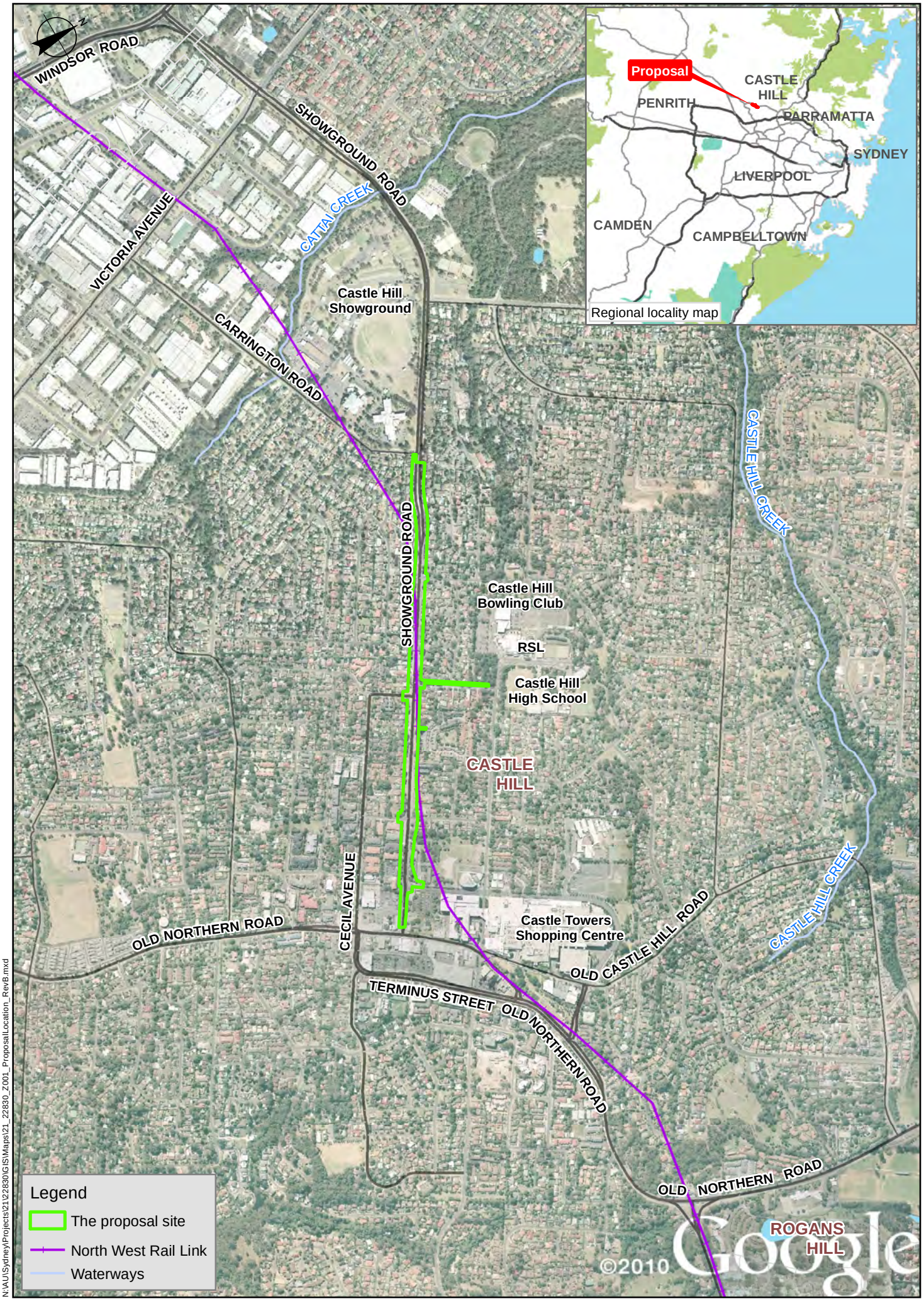

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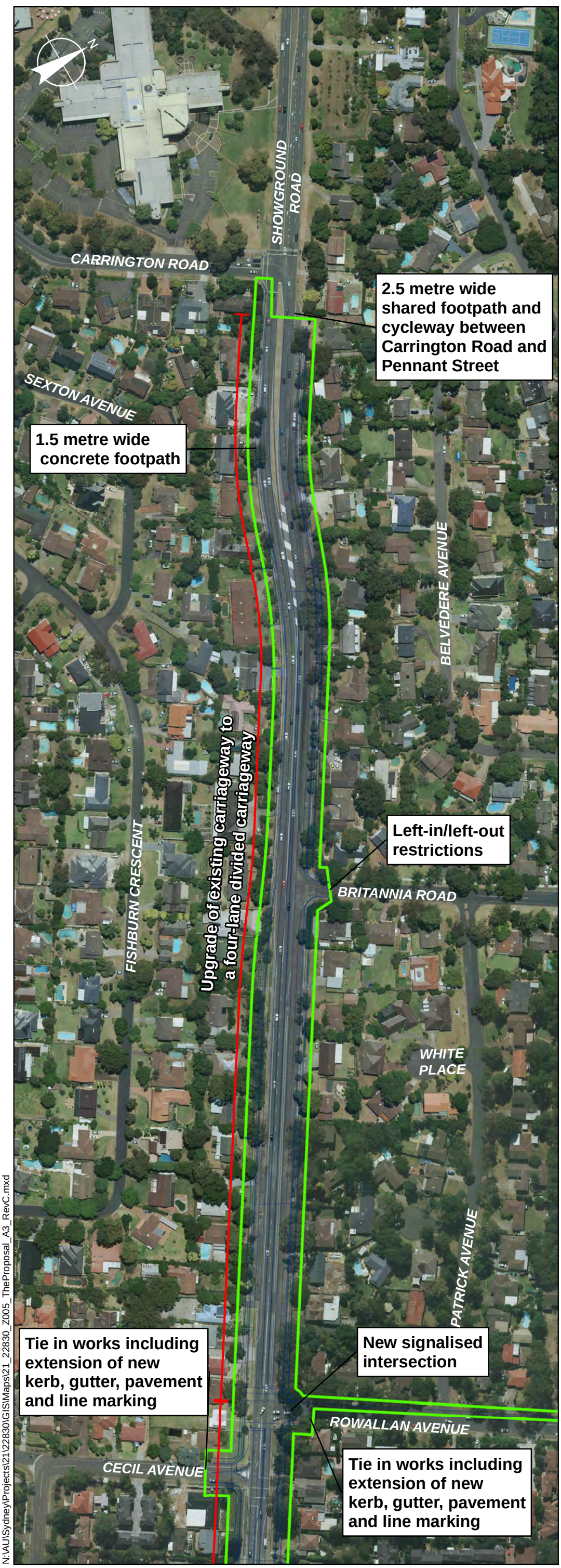
Figure 1.1
Proposal location



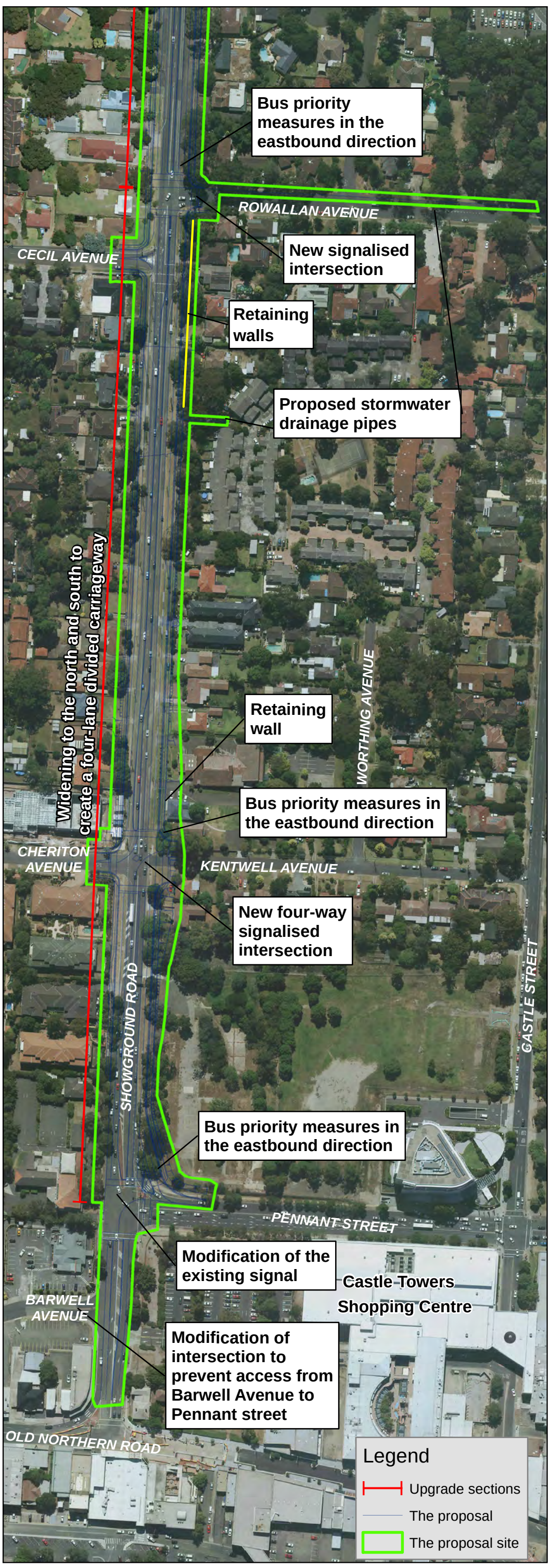


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Figure 1.2
Key features of the proposal

2. Need and options considered

2.1 Strategic need for the proposal

2.1.1 Need for the proposal

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 (around the end of 2019), Showground Road will also provide a key road traffic link to Showground and Castle Hill stations.

Traffic monitoring indicates that current mid-block flows between Carrington Road and Pennant Street are operating at capacity during the weekday afternoon traffic peak. The daily traffic volumes recorded east of Cecil Avenue indicate that traffic along Showground Road is growing at a rate of about 3.2 per cent a year. It is expected that this level of growth will be maintained as a result of proposed employment, residential and commercial development in the region. Intersection performance analysis indicates that a number of intersections within the proposal site operate at an unsatisfactory level of service during peak periods. Existing traffic conditions and intersection performance are discussed further in section 6.2 and Appendix C.

The proposal is required to address the existing congestion experienced by motorists and to improve the operating performance of the roadway. The proposal is also needed to meet the projected traffic growth up to and beyond the year 2026. This growth would occur as a result of general growth in local and regional traffic and additional traffic generated by development in the Castle Hill centre, which includes the expansion of Castle Towers.

2.1.2 Expansion of Castle Towers

Castle Towers, which is owned by QIC, is one of Sydney's largest shopping centres. A development application to expand the centre by 60,000 square metres and 3,085 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 worked closely with The Hills Shire Council to assess the development application. 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.

Condition number 34 of the development consent relates to the road and traffic work required to support the development, including work to Showground Road.

Voluntary planning agreement

Under Section 93F of the EP&A Act, a planning agreement is a voluntary agreement or arrangement between a planning authority and a developer. Under such an agreement, the developer is required to dedicate land free of cost, pay a monetary contribution, and/or provide any other material public benefit, to be used for or applied towards a public purpose.

In respect of the proposal, QIC, Roads and Maritime and The Hills Shire Council entered into an agreement and executed a Voluntary Planning Agreement on 12 September 2013, which is governed by Subdivision 2 of Division 6 of Part 4 of the EP&A Act ('the Agreement').

The Agreement means that QIC will make two monetary contributions to Roads and Maritime. Clause 5(a) of the Agreement specifies that 'RMS must carry out the upgrade to Showground Road between Pennant Street and Carrington Road to four lanes and associated intersection work including any minor modifications to council's side roads substantially in accordance with the Agreed Concept Design.'

2.1.3 Consistency with relevant strategies and plans

The consistency of the proposal with relevant strategies and plans is summarised below.

NSW 2021: A plan to make NSW number one

NSW 2021 (NSW Government, 2011) is a 10-year plan with goals and targets to build NSW's economy; provide quality services; renovate infrastructure; restore government accountability; and strengthen the environment and communities. It lists a number of actions to achieve its goals and targets including:

- Reduce travel time.
- Improve road safety.
- Protect our natural environment.

The proposal would assist in achieving the goal of reducing travel times by increasing the capacity of Showground Road and reducing congestion.

The proposal would improve road safety by improving traffic flow and turning arrangements. The proposal has also been designed to minimise impacts on the natural environment as documented in this REF. The proposal is therefore consistent with *NSW 2021*.

Sydney's metropolitan planning

The *Metropolitan Plan for Sydney 2036* (NSW Government, 2010) integrates land use, urban and transport planning to provide a framework for sustainable growth and development across Sydney to 2036. The plan identifies that Castle Hill is one of Sydney's 'Major Centres', and the Major Centre for Sydney's north-west. A Major Centre is defined by the plan as an important retail and business centre for the region, containing community facilities and higher density residential development within one kilometre of the centre.

The Metropolitan Plan is currently being updated. The draft *Metropolitan Strategy for Sydney* (NSW Government, 2013) was released for public comment in May 2013. Once the strategy is finalised, it will supersede the current Metropolitan Plan.

The draft strategy identifies a number of key places to focus new housing and jobs alongside good transport connections. It continues to recognise Castle Hill's role as a Major Centre. One of the strategies involves extending the Global Economic Corridor to connect with the Parramatta CBD in the west, and Castle Hill and Norwest in the north-west.

The continued growth and development of Castle Hill centre will result in an increase in traffic demand on major regional road links. The proposal will improve traffic flows and access to the centre, and is therefore consistent with metropolitan planning.

Metropolitan Transport Plan: Connecting the City of Cities

The *Metropolitan Transport Plan: Connecting the City of Cities* (NSW Transport and Infrastructure, 2010), combined with the Metropolitan Strategy, aims to accelerate transport infrastructure roll out and planning processes to meet present and future demands. Western Sydney will experience significant growth in population and jobs in the future, and efficient, frequent and reliable public transport to the region's centres will be required. The proposal, which forms part of a regional bus route between Hornsby and Blacktown, is consistent with the Metropolitan Transport Plan.

Draft North West Subregional Strategy

The draft *North West Subregional Strategy* (Department of Planning, 2007) translated the objectives of the NSW Government's Metropolitan Strategy, and the then State Plan, to the local level. The Subregional Strategy is currently in draft form and will be finalised after the review of the Metropolitan Strategy. When finalised, the North West Subregional Strategy will continue to guide land-use planning until 2031 in The Hills, Blacktown, Blue Mountains, Hawkesbury and Penrith local government areas.

The draft subregional strategy identifies a number of key directions and actions for the north-west region, including some relating to transport improvements that are relevant to the proposal, for example:

- Relieve congestion, capacity and maintenance issues by improving subregional self-containment on demand of transport networks.
- Extend the transport networks to connect the fast growing centres of Rouse Hill and Castle Hill to other centres.
- Manage traffic and improve key corridors between the Castle Hill Major Centre and Norwest Specialised Centre.
- Improve access to the western Sydney employment hub.
- Improve freight connections to Port Botany and economic gateways.

The draft subregional strategy recognises the need to improve the road network to cope with future population growth in the region. Improvements will include providing additional road capacity across the network in areas that experience high levels of congestion; implementing Strategic Bus Corridors; and investigating options to extend the North West Rail Link. The proposal is consistent with the draft strategy and the key directions outlined above.

NSW Long Term Transport Master Plan

The *NSW Long Term Transport Master Plan* (Transport for NSW, 2012) provides a framework for addressing transport challenges across NSW over the next 20 years. The master plan is designed to guide the prioritisation of available funds to deliver maximum benefits to NSW. It integrates transport with wider land use planning, including the Metropolitan Strategy.

The master plan includes 220 short, medium and long-term actions that are focused on transforming the NSW transport system over the next 20 years. These include:

- Integrating modes to meet customer needs by integrating ticketing systems.
- Improving the capacity and reliability of legacy transport networks, accommodating growth, tackling congestion on major corridors and reshaping Sydney's CBD.
- Developing new infrastructure as communities grow to attract jobs and support liveability.

- Providing better cross regional links, improved service levels, choice and more reliable and safe travel.
- Supporting efficient and productive freight routes to ensure industries remain competitive and operate efficiently.
- Addressing state wide challenges across the transport network such as disadvantage, safety and innovative technology.

The master plan recognises the need to sustain growth in greater Sydney by completing road and bus upgrades in Western Sydney. This challenge would be overcome by optimising access to the North West Rail Link through the provision of bus priority on surrounding road networks.

The proposal is consistent with the master plan as it supports one of the key measures for 'congestion management across greater Sydney's road network with targeted measures to reduce congestion, better use of existing road capacity and improve road safety'.

State Infrastructure Strategy 2012-2032

The *State Infrastructure Strategy 2012-232,* released by Infrastructure NSW in December 2012, details the State's infrastructure needs for the next 20 years. The strategy recognises that major arterial roads across the wider Sydney road network will require improvement, and that there will be value in addressing peak hour congestion 'hotspots'. Although the proposal is not specifically listed in the strategy, it is considered to be consistent with this goal.

National Road Safety Strategy 2011-2020

The *National Road Safety Strategy 2011-2020* (Australian Transport Council, 2011) aims to reduce death and serious injury on Australian roads. A target of this strategy is to reduce fatalities and crashes by at least 30 per cent between 2011 and 2020.

The proposal would contribute to achieving this target by upgrading Showground Road near Castle Hill centre; and improving traffic flow and the operation of key intersections. It would reduce the potential for vehicle incidents.

The proposal has been designed in accordance with Austroads road design guidelines and Roads and Maritime supplements for safe road operation. During construction, traffic management measures, such as reduced speed limits, would be implemented to ensure safe conditions for passing motorists and workers on-site.

NSW Bike Plan

The *NSW Bike Plan 2010* is a comprehensive plan to encourage people to ride more often and safely. It includes a number of actions to promote and improve cycling which are relevant to the proposal. One of these actions includes providing shared pedestrian and cycle off-road facilities in all appropriate locations as part of State road projects in the Greater Metropolitan Region.

The proposal is consistent with this plan, as it would involve provision of a permanent shared off-road footpath and cycleway on the northern side of the road.

North West Rail Link Corridor Strategy

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. The *North West Rail Link Corridor Strategy* (Department of Transport and the Department of Infrastructure and Planning, 2013)

provides a guide for future development around the North West Rail Link's eight stations. It provides a vision for how the areas surrounding the stations could be developed to integrate them with the surrounding road network, and future residential and commercial development. The corridor strategy includes a structure plan for each station precinct.

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 previous council chambers and Castle Hill Showground.

The 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.

The structure plan for Showground Station proposes that the Showground precinct will include a new local centre near the train station, which could provide retail, restaurants, boutique offices, apartments and cultural facilities. More intensive employment development is predicted within the nearby Castle Hill Trading Zone around Victoria Avenue. The plan also notes that Showground Station will be a park and ride station, and will include a 600 space car parking facility.

The plan recognises the importance of Showground Road as one of the main access roads to Showground Station.

The proposal would reinforce Showground Road's role as a primary access road to the Castle Hill centre and Showground and Castle Hill stations. It would improve traffic flows and access to these areas (including pedestrian and cyclist access), and is therefore consistent with the corridor strategy.

The Hills 2026 Community Strategic Direction

The *Hills 2026 Community Strategic Direction* was released by The Hills Shire Council in 2006 to provide a 20-year strategic plan for The Hills local government area. The 'Balanced Urban Growth' theme is relevant to the proposal, particularly outcome 1: 'I can get where I need to go'. Relevant strategies under this outcome are:

- 1.3 Provide traffic management solutions that promote safer roads and minimise traffic congestion.
- 1.4 Provide effective, safe and well managed local roads and transport infrastructure.

Consistent with this strategy, the proposal would support the expansion of Castle Towers, and would facilitate provision of an effective, safe and well managed local road network around Castle Hill centre.

The Hills Shire Council's Roads and Traffic Blueprint

The widening of Showground Road to a minimum of two lanes in each direction is one of the key projects shown on The Hills Shire Council's *Roads and Traffic Blueprint*. The proposal is therefore consistent with the blueprint.

2.2 Existing road and infrastructure

2.2.1 Showground Road

Showground Road is a State road with a posted speed limit of 60 kilometres per hour. It extends for a distance of about 3.2 kilometres between Windsor Road to the west, and Old Northern Road to the east. Showground Road 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.

At its south-eastern end, Showground Road forms the western arm of a signal controlled T-intersection with Old Northern Road. The carriageway is typically around 22 metres wide, providing one 3.5 metre wide traffic lane in each direction.

Between Carrington Road and Pennant Street, Showground Road is generally a two-lane, two-way road. The section of Showground Road between Windsor Road and Carrington Road is a four-lane divided carriageway. The section between Pennant Street and Old Northern Road is generally two lanes in each direction with an additional slip lane in the westbound direction providing access to Pennant Street.

Within the study area, the existing road carriageway varies in width from about 16 metres (between Carrington Road and Rowallan Avenue) to about 12 metres (between Rowallan Avenue and Pennant Street) (refer Photograph 2.1).

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 cyclist facilities include on-road lanes within the sealed shoulder areas on Showground Road and Cecil Avenue.

Photograph 2.1 Showground Road viewed east from Rowallan Avenue

Parking

Informal on-street car parking for around 155 cars is currently available along Showground Road within the sealed shoulders between Carrington Road and Kentwell Avenue, at the western end of the proposal site. Parking is provided along both sides of Showground Road, with the shoulder along the northern side up to eight metres wide in some locations. Vehicles also use this wide shoulder to pass other vehicles waiting to turn right into Cheriton Avenue from Showground Road.

Bus services

A number of bus services (Hillsbus and Busways) operate along Showground Road. Six services run through the proposal site, including the following return services:

- 604 Castle Hill to Parramatta.
- 619 Rouse Hill Town Centre to Macquarie Park.
- 715 Seven Hills to Castle Hill.
- 745 St Marys to Castle Hill.
- T60 Castle Hill to Parramatta
- T70 Castle Hill to Blacktown.
- T71 Castle Hill to Blacktown.

There are eight bus stops located along Showground Road within the vicinity of the proposal site:

- On the northern side of Showground Road:
  - Stop 215417 – located about 70 metres east of the Carrington Road intersection.
  - Stop 215418 – located about 30 metres west of Britannia Road.
  - Stop 215419 – located about 75 metres east of Rowallan Avenue.
  - Stop 215420 – located about 50 metres west of Kentwell Avenue
- On the southern side of Showground Road:
  - Stop 215427 – located about 50 metres east of the Carrington Road intersection.
  - Stop 215426 – located on the opposite side of the road to stop 215418.
  - Stop 215425 – located on the opposite side of the road to stop 215419, about 30 metres east of Cecil Avenue.

– Stop 215424 – located about 30 metres west of Cheriton Avenue.

2.2.2 Existing intersections

Within the proposal site, the roads which intersect Showground Road are local roads, with the exception of Pennant Street. Pennant Street is a two-way divided carriageway providing access to Castle Towers and Castle Hill Public School. Pennant Street functions as a sub-arterial road and bus corridor, with two lanes generally provided in each direction.

Local roads within the vicinity of the proposal site are described in Table 2.1.

Table 2.1 Intersections within the proposal site

Road	Existing intersection features
Carrington Road	Carrington Road functions as a local road providing access to the Castle Hill Trading Zone and industrial area. Carrington Road forms a signal controlled T-intersection with Showground Road at its northern end. The sign posted speed limit on Carrington Road is 50 km/h.
Britannia Road	Britannia Road is a two-way, two-lane local road. It forms a T-intersection with Showground Road on the northern side of the proposal site. It provides access to residential properties along the road, and connects with Tuckwell Road about 1 km to the north-east of the proposal site.
Rowallan Avenue	Rowallan Avenue is a two-way, two-lane local road. It forms a T-intersection with Showground Road on the northern side of the proposal site. It provides access to residential properties along the road, and connects with Castle Street about 250 m to the north-east of the proposal site. Castle Street provides access to Castle Hill RSL and Castle Hill High School.
Cecil Avenue	Cecil Avenue is a two-way, two-lane local road. It provides access to residential properties along the road. About 120 m from the proposal site, the road turns to the east and runs parallel with Showground Road, providing an alternate link to Castle Hill centre (via Old Northern Road).
Kentwell Avenue, Cheriton Avenue	Kentwell Avenue and Cheriton Avenue intersect with Showground Road via a four-way intersection. Kentwell Avenue is a two-way, two-lane local road on the northern side of the proposal site. It provides access to residential properties, and connects to Castle Street about 240 m to the north-east of the proposal site. Cheriton Avenue is a two-way, two-lane local road on the southern side of the proposal site. It provides access to residential properties and Endeavour Energy's Cheriton Avenue Zone Substation, and connects to Cecil Avenue about 140 m to the south-west of the proposal site.
Pennant Street	Pennant Street is a four-lane dual carriageway. Pennant Street connects Showground Road with Old Northern Road to the north-east of the proposal site, and provides access to Castle Towers, the Castle Hill Police Station, Castle Hill Primary School and residential properties to the north of McMullen Avenue.
Barwell Avenue	Barwell Avenue is a two-way, two-lane local road. At its northern end, it forms a left-in/left-out T-intersection with Showground Road on the southern side of the proposal site. At its southern end it forms the northern approach of a roundabout with Cecil Avenue. Barwell Avenue provides access to commercial and retail development, including a fast food restaurant with a drive-through facility.

Road	Existing intersection features
Old Northern Road	Old Northern Road forms the southern and northern approaches to a signal controlled T-intersection with Showground Road. To the north of Showground Road, Old Northern Road functions as a local road with one traffic lane provided in each direction. Old Northern Road provides access to Castle Hill centre to the north of Showground Road and has a sign-posted speed limit of 40 km/h.

2.3 Proposal objectives

The objectives of 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.

2.4 Alternatives and options considered

2.4.1 Original option

Condition number 34 of Development Consent 297/2008/HB required QIC to undertake a range of upgrade works to Showground Road between Carrington Road and Old Northern Road based on a concept design developed by Roads and Maritime. This involved widening Showground Road from two to four lanes from the outside, with provision of a wide median to enable any future road widening to occur within the constructed footprint.

2.4.2 Identified options

The options considered are described below.

Option 1 - Do nothing

The 'do nothing' option involves not undertaking the proposal and retaining the two-lane section of Showground Road between Carrington Road and Pennant Street.

Option 2 – Widen from the outside

Option 2 was the initial concept design developed by Roads and Maritime, which involves widening Showground Road from two to four lanes from the outside, and includes a wide median separating the east and westbound traffic lanes.

Option 3 – Widen from the inside

Option 3 involves widening Showground Road by maximising the use of the existing carriageway, and providing a narrower central median.

2.4.3 Analysis of options

Option 1 (do nothing) would not meet the objectives of the proposal. It would not respond to the current and future traffic demand associated with general growth in local and regional traffic and additional traffic generated by the expansion of Castle towers. Furthermore, it would not meet the requirements of condition number 34 of Development Consent 297/2008/HB, the Voluntary Planning Agreement, or broader strategic planning undertaken by the NSW Government and The Hills Shire Council. Therefore, this option was not selected.

Option 2 (widening from the outside) would meet current and future traffic needs as well as the conditions of Development Consent 297/2008/HB. However, it would result in a comparatively greater impact on properties and would require extensive property adjustment work and utility relocation. Therefore, this option was not selected.

Option 3 (widening from the inside) maximises use of the existing road formation and minimises property and community impacts. It would meet current and future traffic needs as well as the conditions of Development Consent 297/2008/HB. It would have a comparatively lower impact on properties and utility services. The option was also considered to be the most cost effective option.

Table 2.2 provides a summary of whether each option meets the objectives of the proposal.

Table 2.2 Analysis of options against proposal objectives

	Does option meet the objective?		
Objective	**1**	**2**	**3**
Meet current and future traffic demands on Showground Road to the year 2026 and beyond	No	Yes	Yes
Sustain growth in Sydney's north-west.	No	Yes	Yes
Reduce travel times and congestion	No	Yes	Yes
Improve the performance of intersections	No	Yes	Yes
Improve road safety for all road users	No	Yes	Yes
Provide pedestrian and cyclist facilities	No	Yes	Yes
Maximise the use of the existing road formation	No	Partially	Yes
Minimise impacts on the environment and properties	No	No	Yes
Integrate with the current and future character of the area	Yes	Partially	Yes

2.5 Preferred option

The preferred option is option 3, which would involve upgrading the existing two-lane road to a four-lane divided carriageway, for about 1.5 kilometres, between east of Carrington Road and Old Northern Road. The new carriageway would connect with the existing four-lane section of road west of Carrington Road.

Further information on the preferred option is provided in section 3.

2.6 Design refinements

The following design refinements were investigated and later adopted as part of the concept design:

- Extend the shared footpath and cycleway to west of the proposal site to link with the existing and planned shared footpath (proposed by Transport for NSW as part of the North West Rail Link project) and provide better connectivity.
- Provide a consistent road alignment and median east of Cecil Avenue for better urban design outcomes.
- Adjust the shared footpath and cycleway in certain sections to minimise impacts on identified ecological and heritage constraints.
- Provide an additional right turn bay from Showground Road into Pennant Street. This would improve the operation of this intersection to a level of service C during the morning, evening and Saturday peak periods for both 2016 and 2026.
- Provide a revised three-phase arrangement for the Kentwell Avenue and Showground Road intersection. This would improve the operation of this intersection to a level of service B during the morning peak for both 2016 and 2026 and level of service C during the evening and Saturday peaks for 2016 and 2026.
- Provide a physical separation on Showground Road opposite Barwell Avenue, separating the through and right turn lanes. This treatment is required for road safety purposes in order to prevent vehicles from Barwell Avenue entering the right turn lane to Pennant Street by cutting across two through lanes.

3. Description of the proposal

3.1 The proposal

The proposal involves the upgrade of Showground Road over 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 key features of the proposal are summarised below and are illustrated in Figure 1.2.

- 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 work on both sides of the existing carriageway to create a four-lane divided carriageway between Rowallan Avenue and Kentwell Avenue.
  - Widen the carriageway and undertake associated work 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, Pennant Street and Barwell Avenue.
- 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.
- 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.

3.2 Design

A description of the concept design is provided below and is illustrated in Figure 3.1. Detailed concept design plans are included in Appendix A. The design would be further refined during the detailed design phase.

3.2.1 Design criteria

The concept design was prepared in accordance with a Design Management System certified under *AS/NZS ISO 9001:2008 Quality Management Systems – requirements*, and with reference to:

- *Guide to Road Design – Austroads* (Austroads, 2009).
- Roads and Maritime Austroads Guide Supplements.
- *Road Design Guide – Roads and Traffic Authority of NSW* (RTA, undated).
- *Beyond the Pavement - Roads and Traffic Authority of NSW urban design policy, procedure and design principles* (RTA, 2009).

The design criteria for the proposal are summarised in Table 3.1.

Table 3.1 Design criteria

Criteria	Description
Carriageway	Four-lane divided
Proposed posted speed	60 km/h
Lane widths	3.5 m (measured to face of kerb) 3.2 m to 3.5 m inside lane (measured to face of kerb)
Median	Varies in width with minimum being 0.6 m
Minimum horizontal curve radii	150 m
Design vehicles for turning at intersections	14.5 m long rigid bus and check for 19 m long semi-trailer
On road cycleway	No
Allowance for B-doubles	No
Shared footpath and cycleway	2.5 m
Footpath	1.5 m
Cross drainage	1 in 100 year average recurrence interval (ARI).
Pavement drainage	1 in 10 year ARI

3.2.2 Engineering constraints

The engineering constraints to the design and construction of the proposal include:

- Using the existing road formation west of Rowallan Avenue.
- Taking into account the road's concrete base in the existing trafficable lanes.
- Existing underground utilities, in particular the existing 132 kilovolt underground electrical cables and associated structures.
- Maintaining drive-way access to existing properties.
- Maintaining bus stops.
- Minimising acquisition requirements.
- Taking into account heritage listed buildings in the vicinity of the proposal site (described in section 6.8).
- Taking into account the mature street trees within the proposal site.

- Maintaining traffic flow along Showground Road during construction.

3.2.3 Major design features

The proposal involves widening the existing two-lane carriageway to a four-lane divided carriageway, resulting in the provision of two traffic lanes in each direction.

Between the western extent of the proposal site (near Carrington Road) and Rowallan Avenue, the proposal would involve upgrading the road within the existing road formation. Between Rowallan Avenue and Pennant Street, widening is proposed on both sides of the existing carriageway using land that has been acquired to the road widening boundary.

The main design features of the proposal are described below and are illustrated in Figure 3.1.

Horizontal and vertical alignment

The horizontal alignment of the proposal would follow the existing road alignment with widening varying between zero and 6.6 metres depending on the section of the proposal.

Between Carrington Road and Rowallan Avenue, the existing horizontal alignment would be retained.

Between Rowallan Avenue and Kentwell Avenue, the road would be widened within the existing road reservation by up to about 6.5 metres on both sides.

Between Kentwell Avenue and Pennant Street, the road would be widened by up to 6.5 metres on the northern side within land to be dedicated by QIC for road widening purposes as per the VPA requirement. The road would be widened to the south by up to 6.6 metres and tapered to meet the existing kerb line about 100 metres east of Cheriton Avenue.

A maximum pavement build-up of about 500 millimetres would be required between 100 metres east of Carrington Road to about 50 metres west of Britannia Road to improve the vertical profile of the existing road. The vertical profile of the remaining sections of the existing carriageway would generally increase by up to 200 millimetres to avoid impacts to underground utilities.

Typical cross section

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 general traffic lanes (that is, the lanes located adjacent to the central median) would be 3.2 to 3.5 metres wide, while the kerbside lanes would be 3.3 metres wide. The central median would be between 0.6 and 6.9 metres wide. Typical cross sections of the proposal are shown in Figure 3.2.

A concrete off-road shared footpath and cycleway would be provided on the northern side of Showground Road between Carrington Road and Pennant Street. This pathway would be 2.5 metres wide connecting with the existing pathway just to the east of the intersection of Showground Road and Carrington Road and extending east along Showground Road up to the intersection with Pennant Street. A 1.5 metre wide concrete pedestrian footpath would be provided on the southern side of the Showground Road.

The proposed arrangements of each of the intersections located within the proposal site are described in section 3.2.4.

Tie-ins

At the start and end points 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.

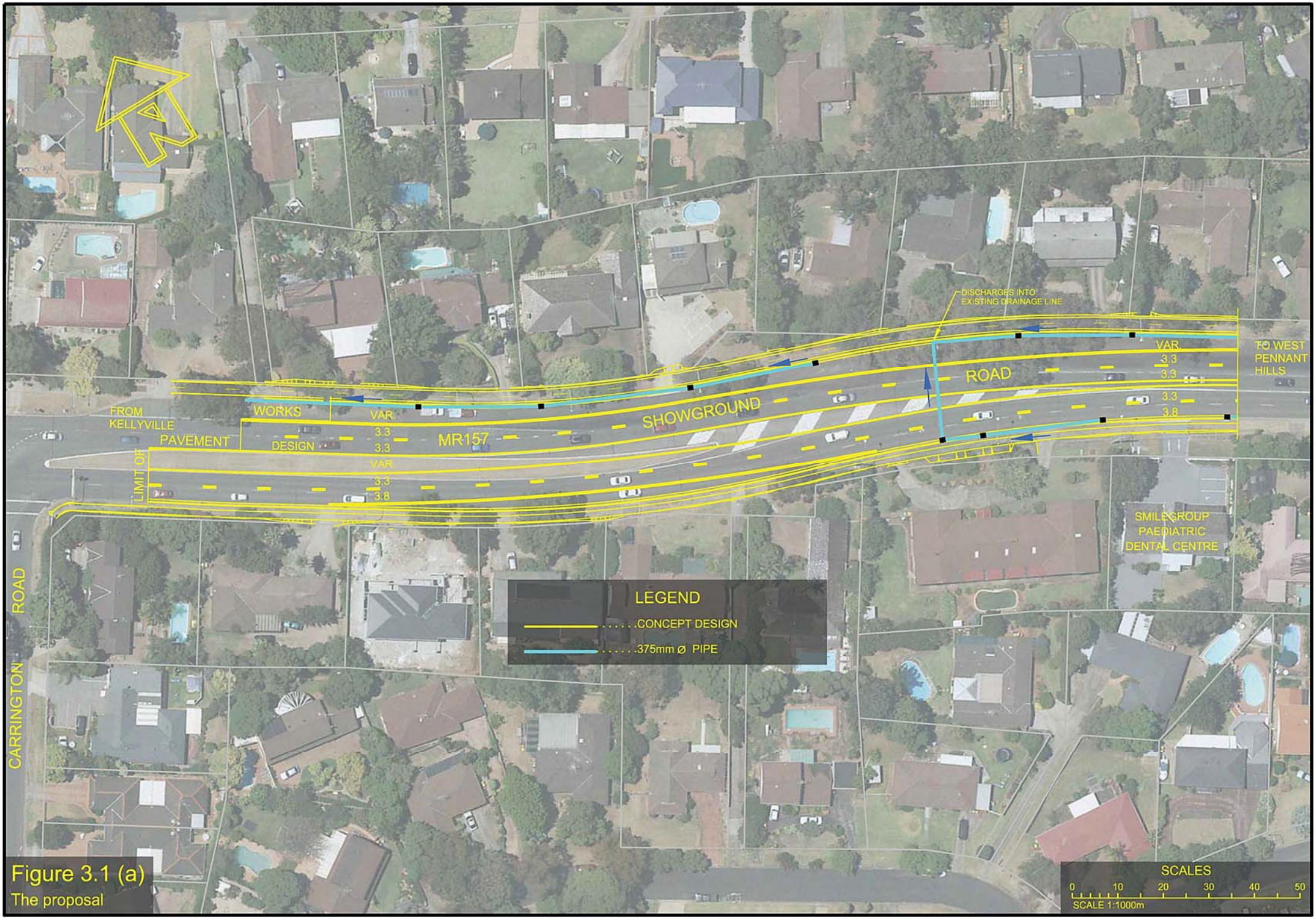

Figure 3.1 (a)
The proposal

Figure 3.1 (b)
The proposal

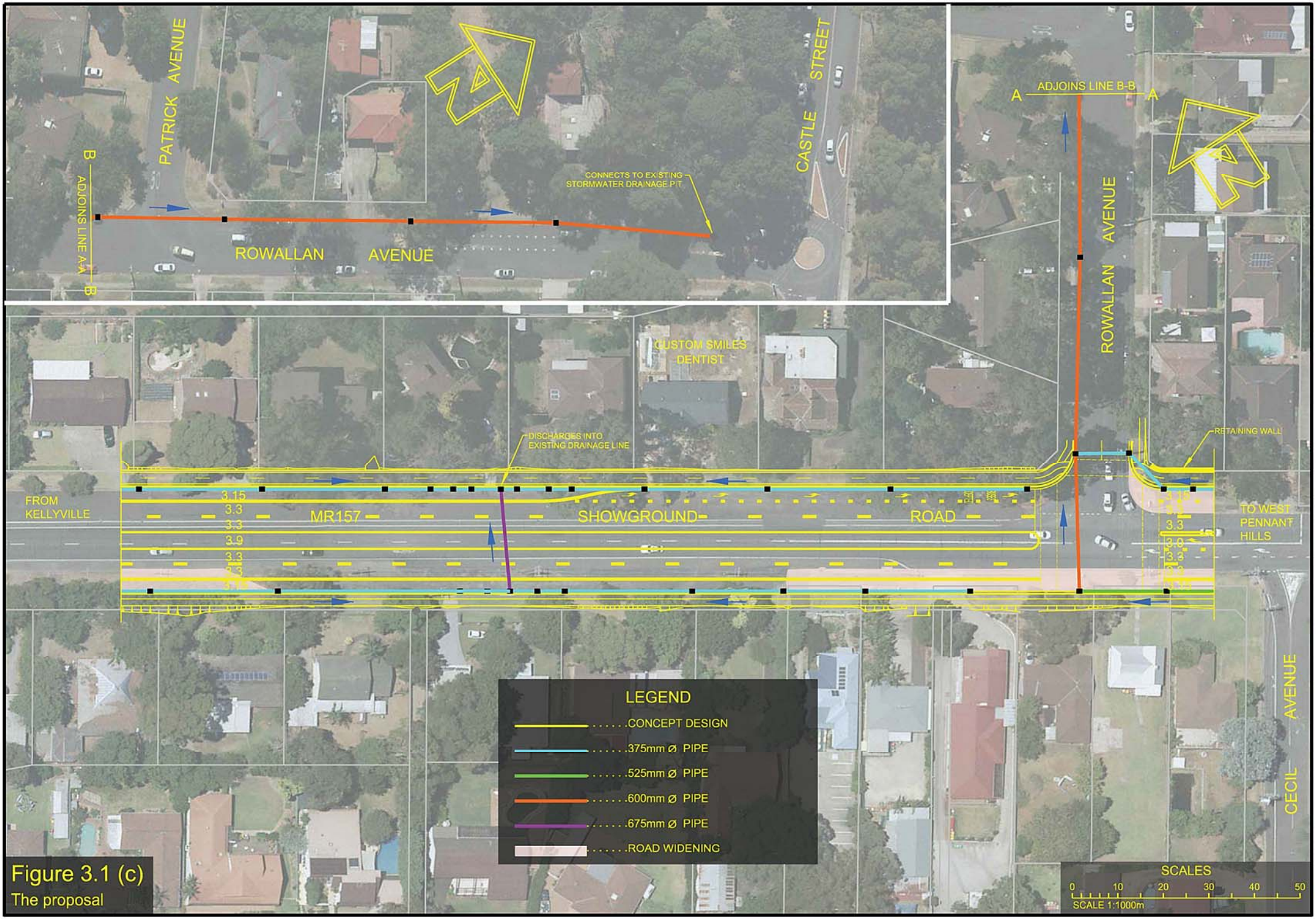

Figure 3.1 (c)
The proposal

Figure 3.1 (d)
The proposal

Figure 3.1 (e)
The proposal

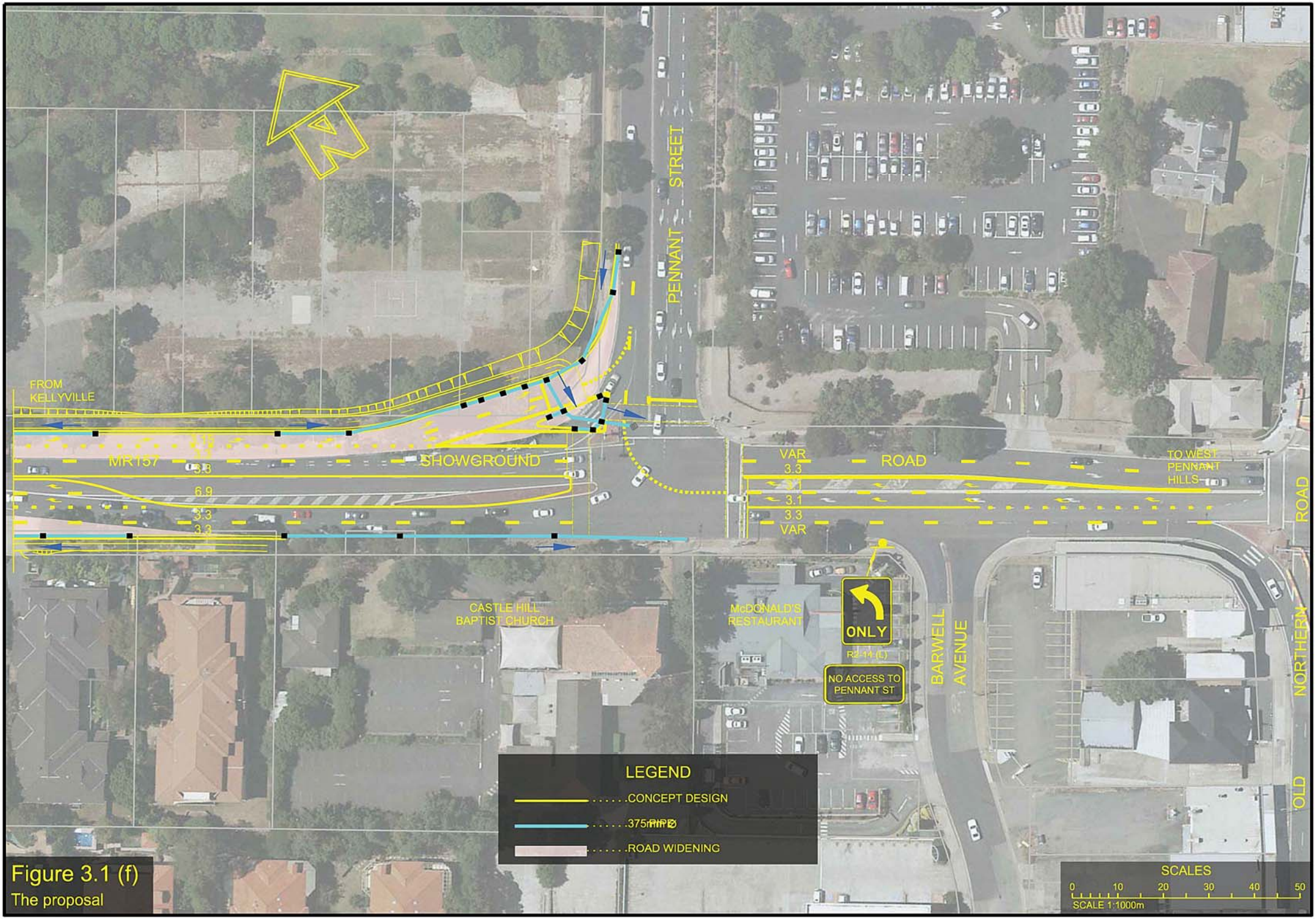

Figure 3.1 (f)
The proposal

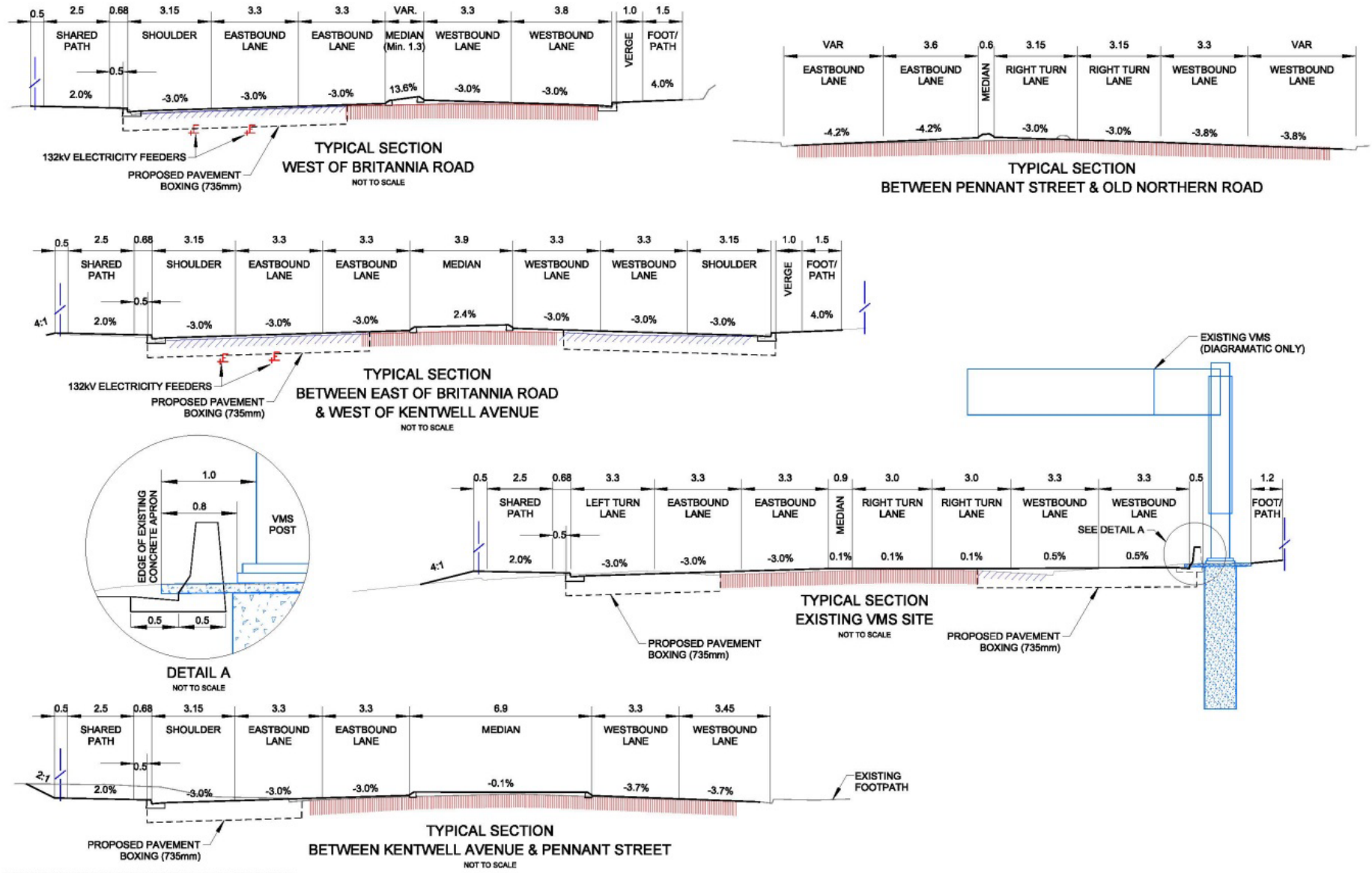

Figure 3.2 Typical cross section of the proposal

3.2.4 Intersections

General

Lane widths at the intersections along Showground Road would be the same as the mid-block widths (generally 3.3 metres wide). Turning lanes at intersections would be about three metres wide. Descriptions of each of the intersections to be upgraded as part of the proposal are provided below.

Britannia Road intersection

The existing T-intersection would be converted to a left-in and left-out only intersection by introducing a concrete median on Showground Road to separate the east and westbound traffic. The tie-in work on Britannia Road would involve extending the new kerb and gutter over a length of about 15 metres, as well as pavement and line marking. The proposed intersection arrangement is illustrated in Figure 3.3.

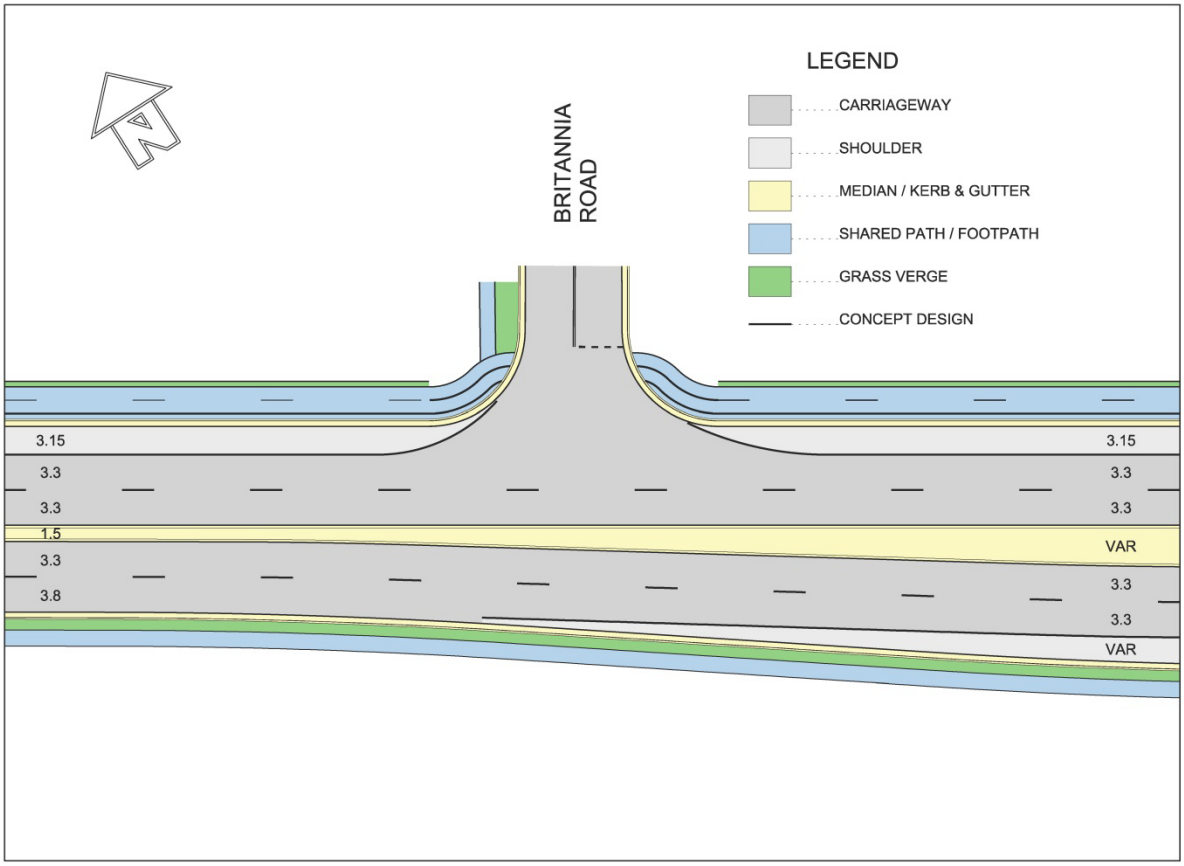

Figure 3.3 Britannia Road intersection

Rowallan Avenue intersection

A new signalised intersection would be provided including:

- A 3.15 metre wide left slip lane in the eastbound direction providing access to Rowallan Avenue.
- A three metre wide right turn lane in the westbound direction providing access to Rowallan Avenue.

- Tie-in work on Rowallan Avenue for about 10 metres, including extension of new kerb and gutter, pavement, line marking and downstream drainage connection.

The proposed intersection arrangement is illustrated in Figure 3.4.

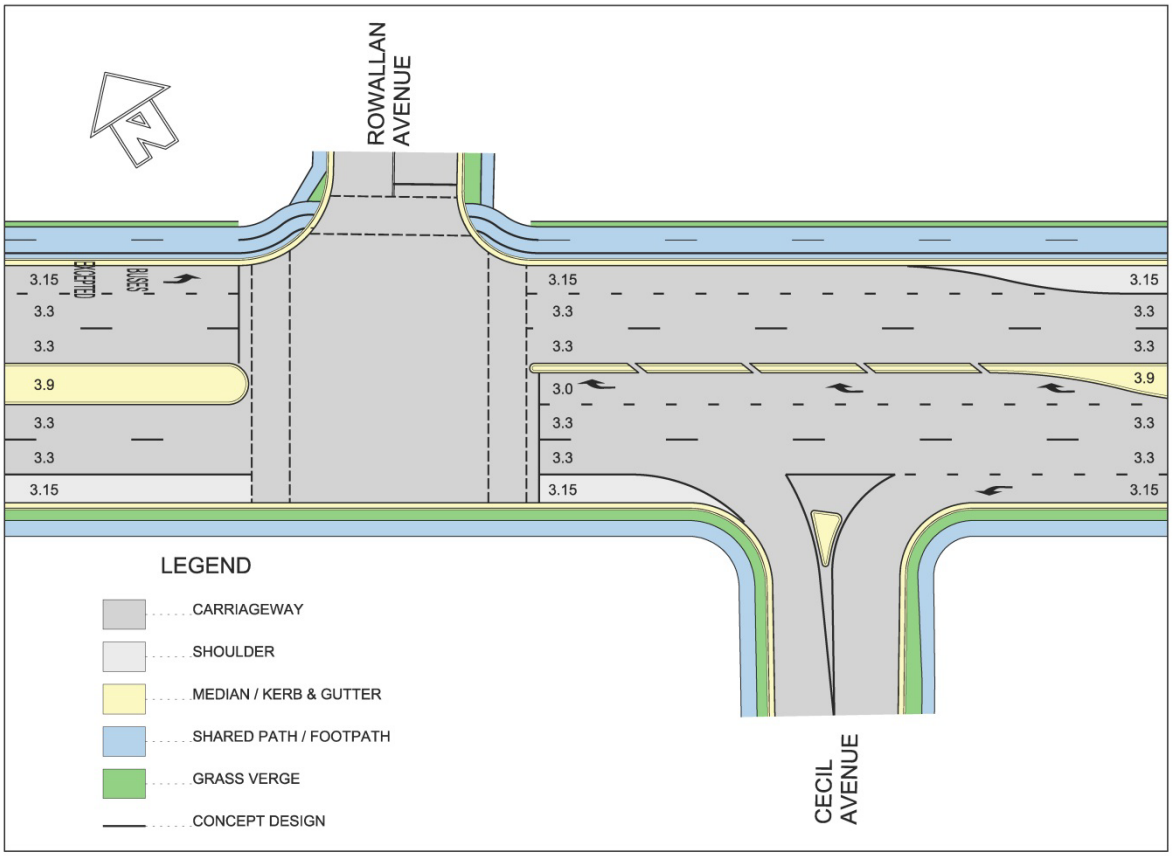

Figure 3.4 Rowallan Avenue and Cecil Avenue intersections

Cecil Avenue intersection

The existing left-in and left-out only arrangement at this intersection would be retained, but the pedestrian controlled signal east of the intersection would be replaced with the new signals at Cecil Avenue. The tie-in work on Cecil Avenue would involve extending the new kerb and gutter over a length of about 20 metres as well as pavement and line marking.

The proposed intersection arrangement is illustrated in Figure 3.4.

Kentwell Avenue/Cheriton Avenue intersection

A new four-way signalised intersection including:

- A 3.15 metre wide left slip lane in the eastbound direction providing access to Kentwell Avenue.
- A three metre wide right turn lane in the eastbound direction providing access to Cheriton Avenue.
- Two three metre wide right turn lanes in the westbound direction providing access to Kentwell Avenue.
- Tie-in work on Kentwell Avenue for about 15 metres including the extension of new kerb and gutter, pavement and line marking.

- Tie-in work on Cheriton Avenue for about 20 metres including the extension of new kerb and gutter, pavement and line marking.

The proposed intersection arrangement is illustrated in Figure 3.5.

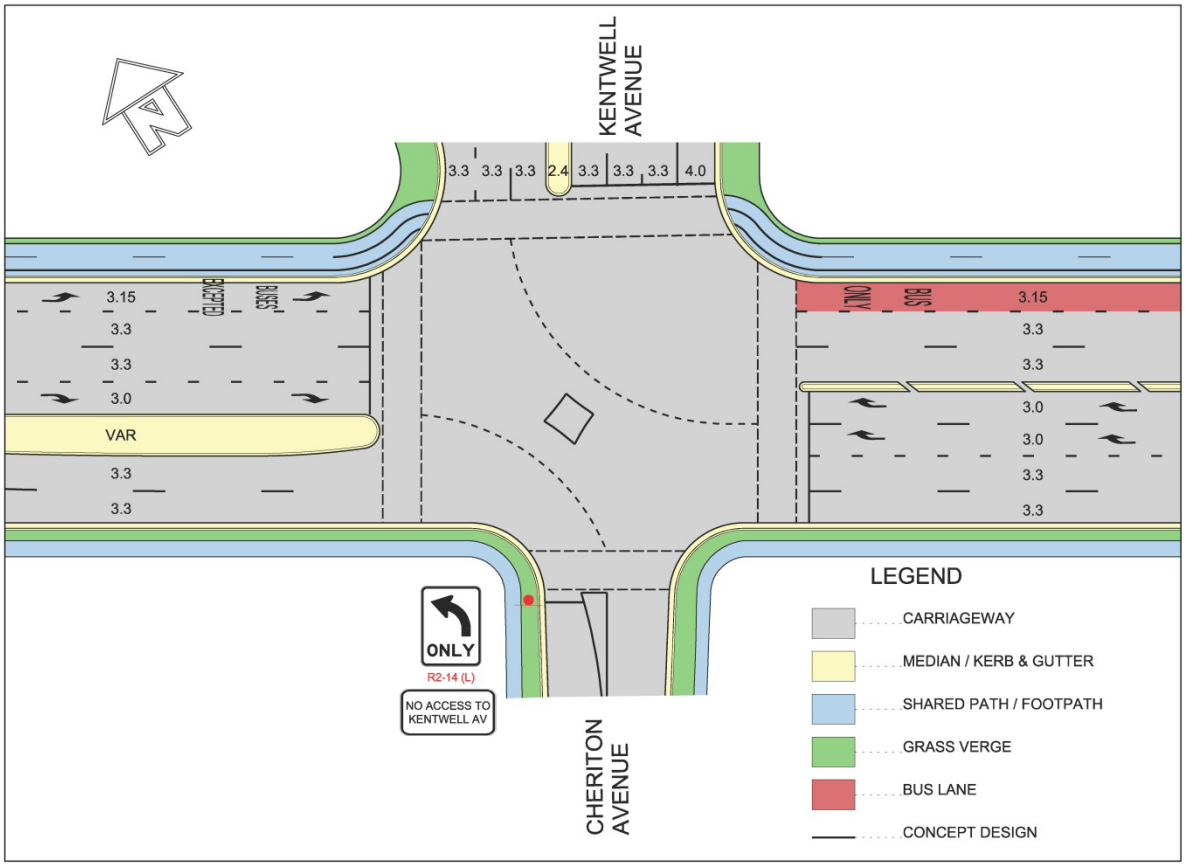

Figure 3.5 Kentwell Avenue intersection

Pennant Street intersection

Modifying the existing signalised intersection including:

- Single left turn slip lane from Kentwell Avenue widening to dual lanes in the eastbound direction providing access to Pennant Street.
- Tie-in work on Pennant Street for about 40 metres including the extension of new kerb and gutter, pavement and line marking.
- Provide an additional right turn bay from Showground Road into Pennant Street.

The proposed intersection arrangement is illustrated in Figure 3.6 and Figure 3.7.

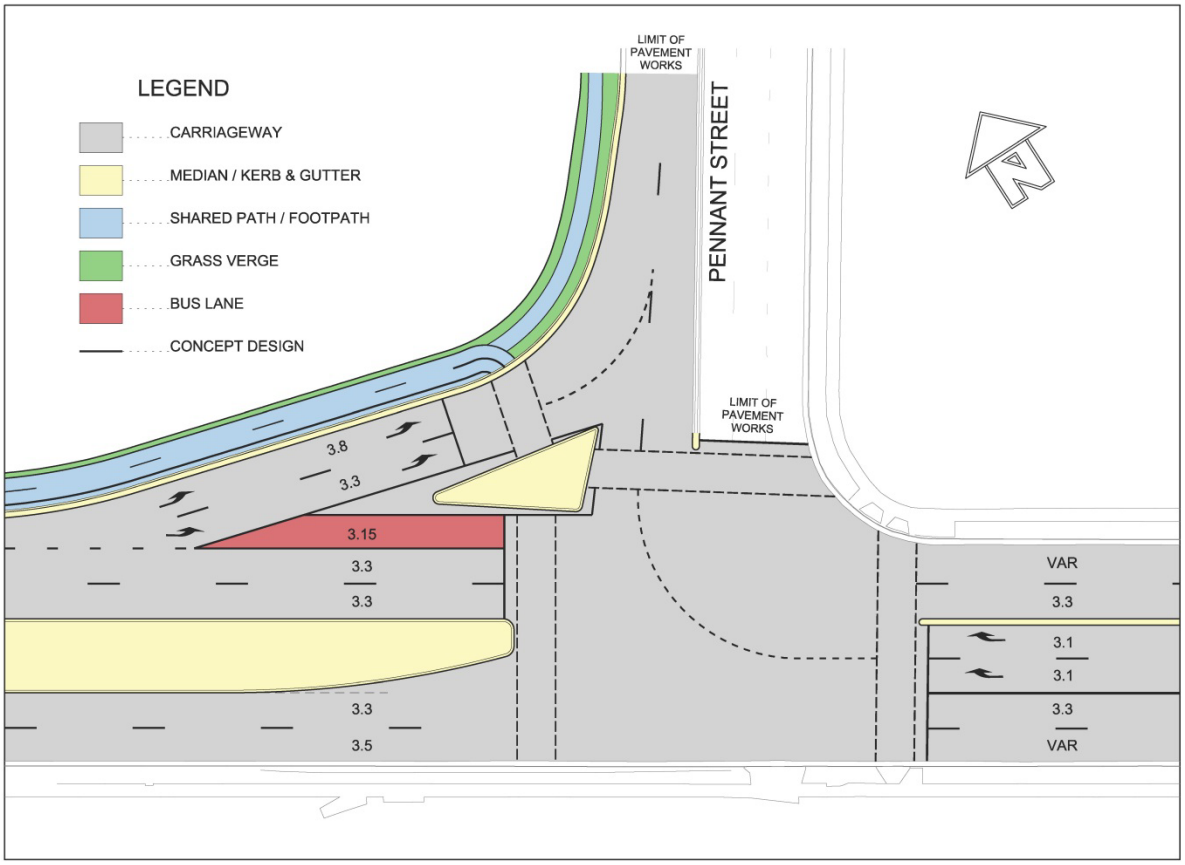

Figure 3.6 Pennant Street intersection

Barwell Avenue intersection

The existing T-intersection would be restricted to a left-in and left-out only intersection by introducing a physical separation on Showground Road (opposite the Barwell Avenue intersection) to separate the through lanes from the right turn lanes into Pennant Street. The modification is required for road safety to prevent vehicles from Barwell Avenue cutting across two through lanes to enter the right turn lanes to Pennant Street.

The proposed intersection arrangement is illustrated in Figure 3.7.

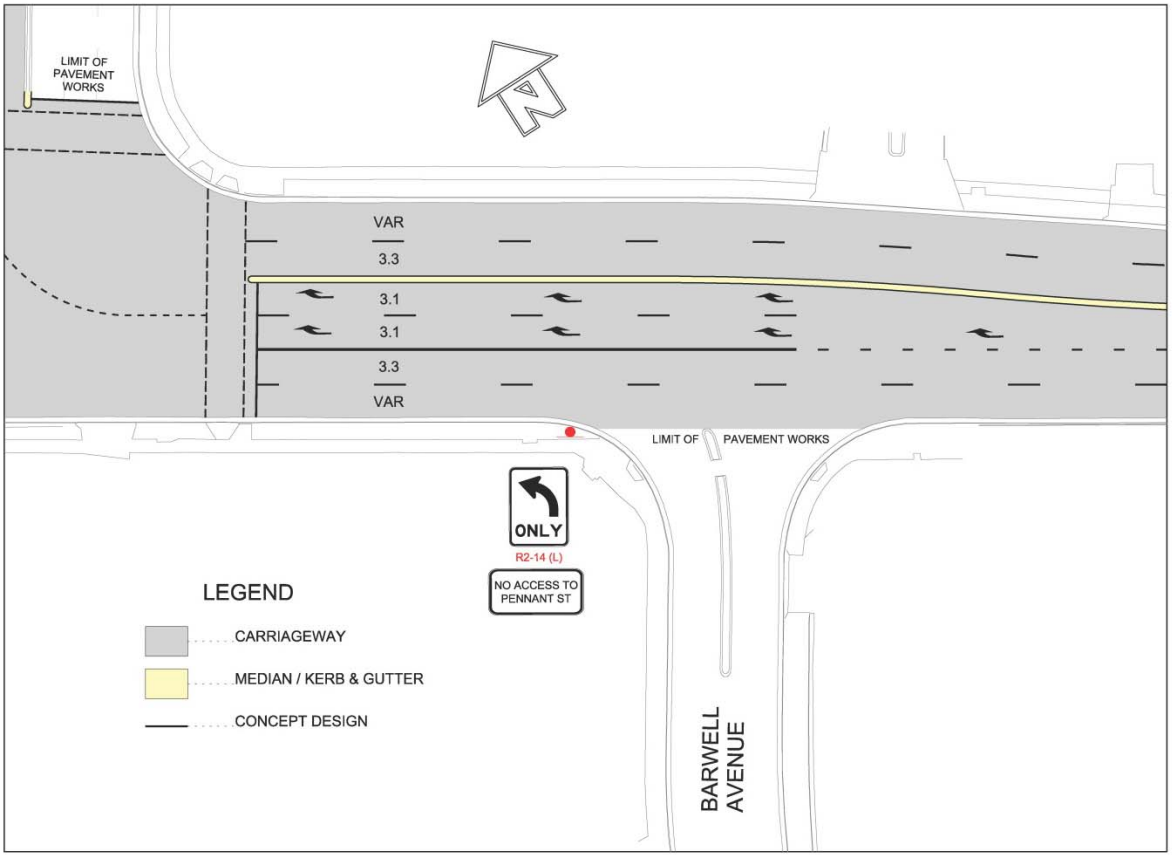

Figure 3.7 Barwell Avenue intersection and right turn arrangement to Pennant Street

3.2.5 Drainage

The proposal would involve upgrading the existing stormwater drainage system to manage the increase in pavement drainage flows along Showground Road. This would include:

- Removing about 688 metres of redundant pipes from within the proposal site and 45 existing stormwater pits.
- Installing about 2714 metres of new pipelines and 159 new stormwater pits including the following two pipelines outside the Showground Road corridor:
  - A 216 metre long, 600 millimetre diameter pipeline beneath the western kerb line of Rowallan Avenue. The new drainage pipe would discharge into an existing pipe on the western side of Rowallan Avenue where it runs in the form of a stormwater channel adjacent to the southern side of Castle Street.
  - A 28 metre long, 600 millimetre diameter pipe north from the road corridor through the existing townhouse complex at No. 59A Castle Street.

A detailed description of the proposed drainage upgrades is provided in Appendix E. A summary of the proposed new drainage pipes is provided in Table 3.2 and shown in Figure 3.1.

Table 3.2 Proposed drainage pipelines

Proposed pipe diameter (mm)	Approximate length (m)
375	2189
525	92

Proposed pipe diameter (mm)	Approximate length (m)
600	367
675	45

3.2.6 Pedestrian and cyclist facilities

The pedestrian and cyclist facilities would generally consist of:

- A 2.5 metre wide shared pedestrian footpath and cycleway along the northern side of Showground Road, connecting with an existing shared path near the intersection of Showground Road and Carrington Road. The shared footpath and cycleway would extend to the eastern extent of the proposal, terminating at the Showground Road and Pennant Street intersection.
- A 1.5 metre wide concrete pedestrian footpath on the southern side of Showground Road, connecting with an existing path at the intersection of Showground Road and Carrington Road. The path would extend to the eastern extent of the proposal, terminating at the Showground Road and Pennant Street intersection.
- Signal controlled pedestrian crossings at each approach to the proposed Showground Road and Rowallan Avenue signal controlled intersection.
- Signal controlled pedestrian crossings at each approach to the proposed Showground Road/Kentwell Avenue/Cheriton Avenue signal controlled intersection.
- Removal of the existing signal controlled pedestrian crossing on Showground Road to the east of Cecil Avenue.

3.2.7 Bus facilities

The proposal would include bus priority measures in the eastbound direction at Rowallan Avenue, Kentwell Avenue and Pennant Street. In addition, bus stop 215419 in the eastbound direction (refer Figure 6.1) would be relocated about 50 metres west towards the intersection of Showground Road and Rowallan Avenue. All other bus stops would be retained in the same locations.

3.2.8 Property access

The proposal would maintain driveway access to all existing properties along Showground Road. As a result of the proposed concrete central median, access to properties would be limited to left-in and left-out.

3.2.9 Other design features

Lighting

All lighting for the proposal would be in accordance with *Australian Standard 1158: Lighting for roads and public spaces*. The street lighting design would be undertaken during the detailed design phase.

Parking restrictions

Informal on-street parking will no longer be permitted on Showground Road.

Retaining walls

Retaining walls to a maximum height of one metre would be required at the following locations:

- Six properties adjacent to the eastbound carriageway to the east of the intersection of Showground Road and Rowallan Avenue.
- Wesley Church adjacent to the east bound carriageway to the west of the intersection of Showground Road and Kentwell Avenue.

The locations of the proposed retaining walls are shown on Figure 3.1.

Urban and landscape design

An urban design report and landscape character and visual impact assessment was prepared by GHD to inform the concept design (refer Appendix I). The following urban design objectives and principles were developed for the proposal:

- Maintain the fundamental elements which define the character of the local area and the experience of the road user.
- Enable the sensitive integration of the proposal into the landscape context.
- Maximise safety of road and path users.

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

- Construction activity and storage.
- Retention of visually important vegetation.
- Tree planting opportunities along path.
- Lighting and signage.
- Emphasising land use and character zones.
- Shared path safety.

These principles and design features have been integrated into the concept design and would be considered further in the detailed design phase of the proposal.

3.3 Construction activities

3.3.1 Work methodology

General methodology

It is anticipated that construction would start in 2015 and would take about 18 months to complete (weather permitting). Construction activities would be guided by a construction environmental management plan to ensure work is carried out to Roads and Maritime specifications within the specified work area. Detailed work methodologies would be determined during detailed design and construction planning. The proposed work methodologies are described below.

Road upgrade between Carrington Road and Rowallan Avenue

Construction within this section would involve drainage amplification and pavement strengthening work within the existing carriageway, as follows:

- Identify sensitive areas as defined by the REF and the construction environmental management plan.
- Surveys, investigations and setting out work in accordance with design plans.
- Install traffic management measures including temporary traffic signs, barricades etc.
- Install temporary erosion, sediment and water quality controls, including silt fences, and protection around existing stormwater drainage pits.
- Mark trees that would need to be removed or trimmed, and mark any 'no-go' areas. Significant trees to be retained are shown in Figure 6.15.
- Clear and grub vegetation to construct a 2.5 metre wide concrete shared path along the northern side of the proposal and a 1.5 metre wide concrete footpath along the southern side of the proposal. This would require the removal and/or trimming of planted/exotic vegetation, including boundary hedges, along the northern side of the proposal.
- Relocate the overhead power lines from the existing shoulder area to the new footpath reservation along the southern side of the proposal.
- Excavate down to the road and footpath formation level for road and footpath reconstruction.
- Dispose of unsuitable and/or surplus material from the proposal site.
- Install new drainage lines, pits and subsoil drains to connect into the existing drainage lines.
- Construct the carriageway, including placing and compacting select fill, sub base, and asphalt wearing surface.
- Construct the 2.5 metre wide concrete shared path along the northern side of the proposal and the 1.5 metre wide concrete footpath along the southern side of the proposal through box excavations.
- Install new street lights.
- Rehabilitate disturbed areas and landscape in accordance with the landscaping plan.
- Line marking and sign posting.
- Final site clean-up.

Road widening between Rowallan Avenue and Pennant Street

Construction within this section would include drainage amplification and pavement widening on both sides of the existing carriageway, as follows:

- Identify sensitive areas as defined by the REF and the construction environmental management plan.
- Surveys, investigations and setting out work in accordance with design plans.
- Install traffic management measures including temporary traffic signs, barricades etc.
- Install temporary erosion, sediment and water quality controls, including silt fences, and stormwater diversion drains.

- Mark trees that would need to be removed or trimmed, and mark any 'no-go' areas. Significant trees to be retained are shown in Figure 6.15.
- Clear and grub vegetation to construct the 2.5 metre wide concrete shared path along the northern side of the proposal; the 1.5 metre wide concrete footpath along the southern side; and the drainage pipe along Rowallan Avenue. This would require removal and/or trimming of planted/exotic vegetation; one hollow bearing tree and three remnant Blue Gums along the northern side of the proposal; and three planted juvenile Blue Gums and one planted Turpentine along Rowallan Avenue.
- Relocate the overhead power lines from the existing shoulder area to the new footpath reservation along the southern side of the proposal.
- Adjust and/or relocate Telstra cables and pits along the northern side of the proposal to suit the new road and footpath levels.
- Excavate and fill to the road formation levels, including boxing out for new pavement.
- Undertake property adjustment works including driveway adjustments (on both sides of the proposal) and construction of retaining walls (between Rowallan Avenue and Kentwell Avenue) to suit new footpath levels.
- Dispose of unsuitable and/or surplus material from the proposal site.
- Install new drainage lines, pits and subsoil drains to connect into the existing drainage lines within the road formation.
- Install new drainage outlets from the proposal site to connect with the existing drainage line at Rowallan Avenue near its intersection with Castle Street; and the existing drainage line east of Rowallan Avenue near the existing townhouses.
- Install new kerb and gutter including driveway crossings to dwellings.
- Construct the carriageway, including placing and compacting select fill, sub base, and asphalt wearing surface.
- Construct a 2.5 metre wide concrete shared path along the northern side of the proposal and a 1.5 metre wide concrete footpath along the southern side.
- Remove the existing pedestrian control traffic lights at the intersection of Showground Road and Cecil Avenue.
- Install traffic signals at Rowallan Avenue, Kentwell Avenue/Cheriton Avenue.
- Adjust the existing traffic lights at the intersection of Showground Road and Pennant Street.
- Install new street lights.
- Rehabilitate disturbed areas and landscape in accordance with the landscaping plan.
- Line marking and sign posting.
- Final site clean-up.

Road upgrade between Pennant Street and Old Northern Road

Construction within this section would include minor pavement re-surfacing work, line marking and signposting, as follows:

- Identify sensitive areas as defined by the REF and the construction environmental management plan.

- Install traffic management measures as required.
- Install temporary erosion, sediment and water quality controls, including silt fences, and stormwater diversion drains, as required.
- Pavement resurfacing, as required.
- Line marking and sign posting.
- Final site clean-up.

3.3.2 Workforce

The construction workforce is expected to fluctuate, depending on the stage of construction and associated activities. The workforce would be expected to peak at about 100 personnel per day. On either side of this peak period, daily workforce numbers would fluctuate between about 40 and 60 personnel at any given time during the construction period. The final number of construction workers would be determined by the construction contractor.

3.3.3 Working hours

It is anticipated that construction would be largely carried out during standard construction working hours in accordance with the *Interim Construction Noise Guideline* (DECC, 2009):

- Monday to Friday: 7am to 6pm.
- Saturday: 8am to 1pm.
- Sundays and public holidays: no work.

To minimise disruption to daily traffic and disturbance to surrounding land owners and businesses, it will be necessary to carry out some work outside of these hours. The following activities are likely to be undertaken outside standard construction working hours:

- Placement of asphalt.
- Intersection and tie-in activities.
- Line marking.

Any work undertaken outside of standard working hours would be in accordance with the *Interim Construction Noise Guideline* and the *Environmental Noise Management Manual (RTA, 2001a): Practice Note vii – Road works outside normal working hours*.

Prior advice would be given to the community if any work is planned to be undertaken outside standard construction hours.

3.3.4 Staging

An indicative strategy for construction staging has been developed that aims to provide at least one trafficable lane in each direction during construction. The construction staging also aims to minimise the number of traffic switches required, and maximise the amount of construction achievable under the existing traffic layout. To achieve these aims, a minimum of three construction stages are envisaged. Construction stages are described in the sections below and illustrated in Figure 3.8.

The final staging methodology for the proposal would be refined and determined during the detailed design and construction planning phases.

Stage 1

While maintaining traffic on the existing carriageway, the southern part of the proposal would be constructed. The work would involve:

- Relocating and/or adjusting services.
- Adjusting property boundaries.
- Installing additional drainage pits and lines including connecting the proposed drainage line along Rowallan Avenue to the downstream drainage structure.
- Constructing the new road pavement and concrete footpath.

Stage 2

During Stage 2, traffic would be switched onto the newly constructed westbound carriageway of the proposal, before reconstruction work starts on the northern side of the road corridor (the eastbound carriageway). Stage 2 construction work would involve:

- Relocating and/or adjusting services.
- Constructing additional drainage pipes and pits.
- Adjusting property boundaries including the installation of retaining walls where required.
- Constructing the new road pavement and concrete shared pathway.

Stage 3

Stage 3 would involve:

- Constructing central medians and traffic islands along the entire extent of the proposal site.
- Installing traffic signals and street lighting.
- Constructing the shared and pedestrian pathways.
- Landscaping.
- Line marking and sign posting.
- Decommissioning of construction compound and stockpile areas.
- Cleaning up the site.

Figure 3.8 (a) Construction staging - stage 1

720.000
740.000
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ADJOINS BELOW

CECIL AVENUE

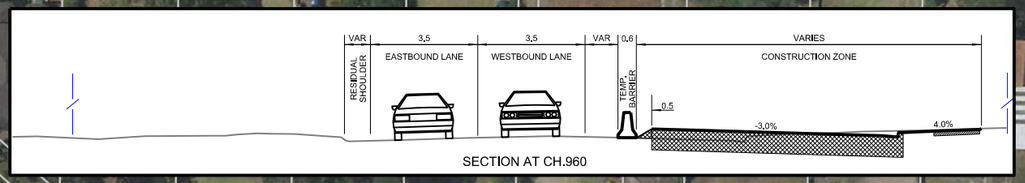
LEGEND

CONSTRUCTION ZONE

TEMPORARY ACCESS TO PRIVATE PROPERTIES & SIDE ROADS

TEMPORARY TRAFFIC BARRIER

TEMPORARY LINEMARKING



SECTION AT CH.960

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1433.224 TP
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1462.614 TP
1471.543 TP

ADJOINS ABOVE

KENTWELL AVENUE

PENNANT STREET

BARWELL AVENUE

OLD NORTHERN ROAD

CHERITON AVENUE

LEGEND

CONSTRUCTION ZONE

TEMPORARY ACCESS TO PRIVATE PROPERTIES & SIDE ROADS

TEMPORARY TRAFFIC BARRIER

TEMPORARY LINEMARKING

Figure 3.8 (b) Construction staging - stage 1

Figure 3.8 (c) Construction staging - stage 2

720.000
740.000
760.000
780.000
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ADJOINS BELOW

CECIL AVENUE

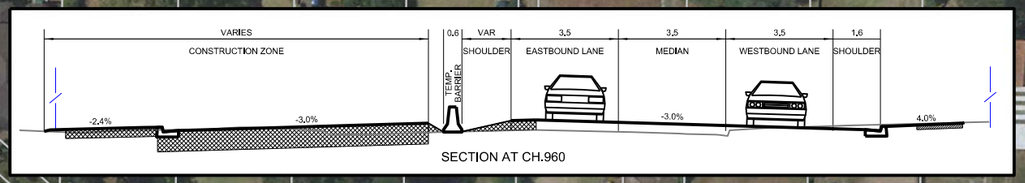
LEGEND

CONSTRUCTION ZONE

TEMPORARY ACCESS TO PRIVATE PROPERTIES & SIDE ROADS

TEMPORARY TRAFFIC BARRIER

TEMPORARY LINEMARKING



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1462.614 TP
1471.543 TP

KENTWELL AVENUE

PENNANT STREET

ADJOINS ABOVE

CHERITON AVENUE

BARWELL AVENUE

OLD NORTHERN ROAD

LEGEND

CONSTRUCTION ZONE

TEMPORARY ACCESS TO PRIVATE PROPERTIES & SIDE ROADS

ASPHALT MILL & OVERLAY

TEMPORARY TRAFFIC BARRIER

TEMPORARY LINEMARKING

Figure 3.8 (d) Construction staging - stage 2

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40.000
44.524 TP
60.000
80.000
100.000
117.415 TP
120.000
134.870 TP
140.000
160.000
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200.000
220.000
240.000
251.318 TF
260.000
280.000
300.000
320.000
340.000
BRITANNIA ROAD
ADJOINS BELOW
CARRINGTON ROAD

LEGEND

RAISED MEDIAN

ULTIMATE DESIGN

340.000
360.000
BRITANNIA ROAD
380.000
400.000
420.000
440.000
460.000
480.000
500.000
520.000
540.000
560.000
580.000
600.000
620.000
640.000
660.000
680.000
ROWALLAN AVENUE
700.000
720.000
ADJOINS ABOVE
CHERITON AVENUE

LEGEND

RAISED MEDIAN

ULTIMATE DESIGN

Figure 3.8 (e) Construction staging - stage 3

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1100.000
ADJOINS BELOW
CECIL AVENUE
LEGEND
RAISED MEDIAN
ULTIMATE DESIGN
1100.000
KENTWELL AVENUE
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1420.000
1428.139 TP
1433.224 TP
1440.000
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1462.614 TP
1471.543 TP
ADJOINS ABOVE
CHERITON AVENUE
BARWELL AVENUE
OLD NORTHERN ROAD
LEGEND
RAISED MEDIAN
ULTIMATE DESIGN

Figure 3.8 (f) Construction staging - stage 3

3.3.5 Plant and equipment

A range of plant and equipment would be used during construction. The final equipment and plant requirements would be determined by the construction contractor. An indicative list of plant and equipment is provided below:

- Front end loaders.
- Bulldozers.
- Backhoes.
- Dump trucks.
- Road trucks.
- Excavators.
- Road sweepers.
- Water trucks.
- Cherry pickers.
- Concrete saws.
- Two tonne road roller.
- Asphalt/concrete pavers.
- Compacters.
- Graders.
- Scrapers.
- Concrete trucks.
- Generators.

3.3.6 Source and quantity of materials

The proposal would involve earthworks along the proposal site. The estimated quantities of materials associated with earthworks are provided in Table 3.3.

Table 3.3 Indicative earthwork quantities

Material	m^3
Top soil (removal)	1000
Box out for road pavement for off-site disposal	10,000
Imported select fill	5000

Earthwork requirements would be confirmed during detailed design.

The road pavement would be sourced from appropriately licensed facilities. About 12,000 cubic metres of pavement, gravel and select materials would be required to be imported.

The materials would be sourced from commercial suppliers in nearby areas, wherever possible. None of the materials proposed to be used are considered to be in short supply.

Surplus material that cannot be used on-site would be classified in accordance with the *Waste Classification Guidelines* (DECCW, 2009) and disposed of at an approved materials recycling or waste disposal facility.

The amount of water that would be required during construction is unknown at this stage. The amount would depend on material sources and methodologies applied by the contractor. It is proposed that water would be obtained from Sydney Water's water supply network.

3.3.7 Traffic management and access

Construction of the proposal would generate heavy vehicle movements. These heavy vehicle movements would mainly be associated with:

- Delivery of construction materials.
- Spoil removal.
- Delivery and removal of construction equipment and machinery.

Light vehicle movements would be required for the movement of construction personnel, including contractors, site labour force and specialist supervisory personnel.

Construction vehicles would access the site via arterial roads wherever possible. 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. In addition, small vehicles would be required to transport staff, resulting in up to 60 small vehicle movements in and out of the site per day.

Small vehicles used to transport staff to and from the site would park at the main site compound facility.

A detailed traffic management plan would be prepared in accordance with the *Traffic Control at Work Sites Manual Version 4* (RTA, 2010) and approved by Roads and Maritime before implementation. The traffic management plan would provide details of the traffic management to be implemented during construction to ensure traffic flow on the surrounding network is maintained where possible.

Access management

All property accesses would be maintained throughout construction and there would be no disruption to bus services.

3.4 Ancillary facilities

3.4.1 Site compound facility and stockpile sites

The main site 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 was not confirmed during preparation of the REF and therefore was not assessed as part of this REF. The location for the main compound site, and locations for any other stockpile areas, would be subject to the site location criteria set out in the *Stockpile Site Management Procedures* (RTA, 2011). 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.

Sites would be securely fenced with temporary fencing. Signage would be erected advising the general public of access restrictions. 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.

Once the compound site and any stockpile areas are confirmed, consultation with the Roads and Maritime Senior Environmental Officer would be undertaken to confirm the suitability of the locations and whether any additional environmental assessment is required.

3.5 Public utility adjustments

A number of services and utilities cross the road and are located along the road verge, in the shoulder, and beneath traffic lanes. The new Endeavour Energy Cheriton Avenue Zone Substation is located at the intersection of Showground Road and Cheriton Avenue. Two 132 kilovolt underground electricity cable feeder lines, which connect to the substation, are located under Showground Road, along the northern shoulder and pavement.

Plans of utilities in the vicinity of the proposal site were obtained during concept design and were supplemented by three dimensional surveys of the proposal site. This information was used as the basis for assessing the utilities likely to be affected by construction of the proposal. The proposed utility adjustments are described below.

Between Carrington Road and Rowallan Avenue

Within this section of Showground Road, the proposal would involve relocating overhead Endeavour Energy electricity poles within the southern shoulder of Showground Road to the new footpath reservation on the southern side of Showground Road.

Between Rowallan Avenue and Pennant Street

Within this section of Showground Road, the proposal would involve:

- Replacing like for like Telstra services underground along the northern side of Showground Road between Rowallan Avenue and Pennant Street within the new footpath reservation. Based on preliminary investigations, the following work would be required:
  - Adjusting one maintenance hole.
  - Constructing 13 maintenance holes.
  - Installing 1470 metres of new conduits.
  - Removing 520 metres of asbestos ducts.
  - Installing 825 metres of main copper cables.
- Relocating overhead Endeavour Energy electricity poles within the southern shoulder of Showground Road to the new footpath reservation on the southern side of Showground Road.

Utility adjustments would be further developed in consultation with affected utility providers during detailed design. Roads and Maritime would consult with relevant service providers to identify possible interactions and develop procedures to be implemented to minimise the potential for service interruptions.

Further utility adjustments, not identified in this REF would require consultation with the Roads and Maritime Senior Environmental Officer to confirm whether any additional environmental assessment is required.

3.6 Property acquisition

All land acquisition for the proposal has been undertaken along both sides of the road corridor to the road boundary identified in *The Hills Local Environmental Plan 2012*. Strip acquisition of land from three properties along the northern side of Showground Road (a width of about five metres each) was undertaken by Roads and Maritime in 2010. Strip acquisition of land from nine properties along the southern side of the road corridor (a width of about five metres each) was undertaken by Transport for NSW in early 2013 for work associated with the North West Rail Link project.

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 road corridor for road widening purposes.

No additional acquisition is required.

4. Statutory and planning framework

4.1 Overview

The EP&A Act provides the statutory basis for planning and environmental assessment in NSW. The Act provides the framework for environmental planning and development approvals, and includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision making process. As noted below, the proposal is subject to assessment under Part 5 of the EP&A Act. The planning and assessment framework for the proposal is outlined in the following sections.

4.2 State environmental planning policies

The only state environmental planning policy that applies to the proposal is *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP), as outlined below.

4.2.1 State Environmental Planning Policy (Infrastructure) 2007

ISEPP aims to facilitate the effective delivery of infrastructure across the State. ISEPP clarifies the consent arrangements for certain infrastructure projects.

Clause 94(1) of ISEPP permits development for the purpose of a road or road infrastructure facilities to be carried out by (or on behalf of) a public authority, without consent on any land (except for land reserved under the *National Parks and Wildlife Act 1974* where it can only be carried out if it meets certain requirements).

As the proposal meets the definitions of 'road infrastructure facilities' provided for by clauses 93 and 94(2), and is being carried out by Roads and Maritime, it is permissible without consent under ISEPP. As a result, it can be assessed under Part 5 of the EP&A Act. Development consent from The Hills Shire Council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by *State Environmental Planning Policy No. 14 - Coastal Wetlands, State Environmental Planning Policy No. 26 - Littoral Rainforests*, *State Environmental Planning Policy (State and Regional Development) 2011* or *State Environmental Planning Policy (Transitional Major Projects) 2005.*

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities before the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in section 5 of this REF.

4.3 Local environmental plans

4.3.1 The Hills Local Environmental Plan 2012

The Hills Local Environmental Plan 2012 (the LEP) applies to land within The Hills Shire local government area. The proposal site is located within or in the immediate vicinity of land with a number of different zonings (refer Table 4.1). Table 4.1 also lists the objectives that apply to each zone, and summarises the consistency of the proposal with these objectives.

The zone provisions provide that the proposal would be permitted with consent or would be prohibited, depending on the zone. Clause 5.12 of the LEP states that '…this Plan does not restrict

or prohibit, or enable the restriction or prohibition of, the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent, or that is exempt development, under *State Environmental Planning Policy (Infrastructure) 2007'*.

As the proposal is permitted without consent under ISEPP (refer section 4.2), the consent requirements of the LEP do not apply.

Table 4.1 LEP zone objectives

Zone	Objectives	Consistency with objectives
R2 Low Density Residential	To provide for the housing needs of the community within a low density residential environment.	The proposal involves the upgrade of an existing land use, which meets the access and transport needs of residents. The proposal is consistent with the objectives of this zone.
	To enable other land uses that provide facilities or services to meet the day to day needs of residents.	
	To maintain the existing low density residential character of the area.	
R3 Medium Density Residential	To provide for the housing needs of the community within a medium density residential environment.	The proposal involves the upgrade of an existing land use, which meets the access and transport needs of residents. It provides an important route for public transport (buses) and will provide access to stations on the North West Rail Link. The proposal is consistent with the objectives of this zone.
	To provide a variety of housing types within a medium density residential environment.	
	To enable other land uses that provide facilities or services to meet the day to day needs of residents.	
	To encourage medium density residential development in locations that are close to population centres and public transport routes.	
R4 High Density Residential	To provide for the housing needs of the community within a high density residential environment.	The proposal involves the upgrade of an existing land use, which meets the access and transport needs of residents. It provides an important route for public transport (buses) and will provide access to stations on the North West Rail Link. The proposal is consistent with the objectives of this zone.
	To provide a variety of housing types within a high density residential environment.	
	To enable other land uses that provide facilities or services to meet the day to day needs of residents.	
	To encourage high density residential development in locations that are close to population centres and public transport routes.	
B4 Mixed Use	To provide a mixture of compatible land uses.	The proposal involves the upgrade of an existing land use, which meets the access and transport needs of residents. The proposal is consistent with the objectives of this zone.
	To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.	
	To encourage leisure and entertainment facilities in the major centres that generate activity throughout the day and evening.	
	To provide for high density housing that is integrated with civic spaces.	
SP2 Infrastructure (Classified Road)	To provide for infrastructure and related uses.	The proposal involves the upgrade of existing infrastructure, and is consistent with the objectives of this zone.
	To prevent development that is not compatible with or that may detract from the provision of infrastructure.	

4.4 Other relevant NSW legislation

Other NSW environmental legislation that is relevant to the approval and/or assessment of the proposal is considered below.

4.4.1 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) establishes, amongst other things, the procedures for issuing licences for environmental protection in relation to aspects such as waste, air, water and noise pollution control. The owner or occupier of premises engaged in scheduled activities is required to hold an environment protection licence and comply with the conditions of that licence.

Under Part 3.2 of the Act, the carrying out of scheduled development work as defined in Schedule 1 requires an environmental protection licence. Schedule 1, Clause 35 (road construction) is potentially relevant to the proposal. Road construction is defined by Clause 35(1) as '…the construction, widening or re-routing of roads, but does not apply to the maintenance or operation of any such road.' Clause 35(2) specifies that road construction is declared to be a scheduled activity if it results in four or more traffic lanes (not including bicycle lanes or lanes used for entry or exit), where the road is classified or proposed to be classified as a main road (but not a freeway or tollway) under the *Roads Act 1993,* for at least three kilometres of its length in the metropolitan area.

As the proposal involves the widening of less than three kilometres of Showground Road, it would not fall under Schedule 1, and an environmental protection licence would not be required.

4.4.2 Threatened Species Conservation Act 1995

The TSC Act lists a number of threatened species, populations or ecological communities to be considered in deciding whether there is likely to be a significant impact on threatened biota, or their habitats. If any of these could be impacted by the proposal, an assessment of significance that addresses the requirements of Section 5A of the EP&A Act must be completed to determine the significance of the impact.

Vegetation within the proposal site was not considered to constitute an endangered ecological community and no threatened flora species were considered likely to occur in the proposal site or immediate surrounds. Eight threatened fauna species were considered to have potential low condition foraging habitat within the study area.

This is further discussed in section 6.6.

4.4.3 Noxious Weeds Act 1993

The *Noxious Weeds Act 1993* (NW Act) provides for the declaration of noxious weeds by the Minister for Primary Industries. Noxious weeds may be considered noxious on a national, state, regional or local scale. All private landowners, occupiers, public authorities and councils are required to control noxious weeds on their land under Part 3 Division 1 of the NW Act. As such, if present, noxious weeds on the site should be assessed and controlled.

Five species declared as noxious weeds in The Hills Shire local government area were recorded within the study area.

4.5 Commonwealth legislation

4.5.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land.

Matters of national environmental significance are defined as: World heritage properties; National heritage properties; Ramsar wetlands; nationally threatened species and communities; migratory species protected under international agreements; Commonwealth marine environment; the Great Barrier Reef Marine Park; nuclear actions; and a water resource in relation to coal seam gas development and large coal mining development.

Several nationally threatened species and communities are listed as potentially occurring within the study area. The biodiversity assessment undertaken as part of the REF identified that no significant impact was likely on any matters of national environmental significance (refer section 6.3 and Appendix E). No other matters of national environmental significance would be impacted by the proposal. No Commonwealth land would be affected by the proposal.

Accordingly, the proposal has not been referred to the Australian Government Department of Environment.

4.6 Confirmation of statutory position

The proponent and determining authority for the proposal is Roads and Maritime. Clause 94 of the ISEPP provides that the proposal may be carried out without the need for development consent. The proposal is therefore subject to assessment and determination under Part 5 of the EP&A Act.

5. Stakeholder and community consultation

5.1 Consultation strategy

Consultation with potentially affected property owners, relevant government agencies and other stakeholders has been undertaken during the proposal development phase. The purpose of consultation has been to:

- Inform the community of the proposal to upgrade the road.
- Canvas comments and issues about the proposal and concept design from those who may be affected.
- Advise potentially directly affected stakeholders of the proposed upgrade and its possible property impacts.
- Advise stakeholders on how they may obtain further information or communicate concerns, complaints or suggestions.

A summary of consultation undertaken to date is provided in section 5.2 to section 5.6. Roads and Maritime will continue to consult with the community and relevant stakeholders during the detailed design and construction of the proposal. In particular, the REF will be placed on public display and comments invited. Submissions received from the public display and those already received throughout the proposal development will be considered during the detailed design phase.

5.2 Community involvement

Consultation with the community has involved the following activities:

- Consultation with affected property owners commenced in 2010 and included face to face meetings with property owners as part of the land acquisition process.
- In June 2013, the Voluntary Planning Agreement (refer section 2.1.2) was placed on public display for four weeks.
- Following the adoption of the Voluntary Planning Agreement, a community update was released in November 2013 informing the community about commencement of design and the REF.
- Information on the proposal has been placed on the Roads and Maritime website, including background information and the latest news on the proposal. The REF will be displayed via this website, and submissions will be invited.
- Consultation with individual members of the community was undertaken during the concept design process.

Two community information sessions will be held during the display of the REF.

Key issues raised by community members are summarised in Table 5.1. One letter was received from the Taxi Council in December 2013, following the November community update. The Taxi Council provided positive feedback on the proposal noting that combined with the North West Rail Link project, the project would deliver enhanced safety for all road users.

Table 5.1 Summary of issues raised by the local community

Issue	Response
Concerns regarding the trimming of hedge on the boundary of a property fronting Showground Road	The shared footpath and cycleway has been adjusted to minimise impacts on vegetation, however, minor trimming and/or removal of vegetation would still be required to construct the 2.5 footpath and cycleway on the northern side of Showground Road and the 1.5 metre footpath along the southern side. Vegetation trimming and/or disturbance would be minimised as far as practicable and consultation would be undertaken with potentially affected property owners regarding any property impacts prior to construction commencing. Section 6.6 summarises the findings of the biodiversity assessment undertaken for the proposal.
Concerns regarding impacts to property during utility surveys	Utility surveys undertaken during concept design required marking positions of underground services on the road verge, footpath, road pavement, driveways and crossovers. The results were used to evaluate the potential impacts to underground services as a result of the proposal. All paint marks on private property would be removed following the completion of preliminary investigations.
Concerns about not being able to turn right in to Britannia Road to access Castle Hill once the median is installed along Showground Road	The proposed arrangement at the Britannia Road intersection is shown in Figure 3.3 and was selected to address queuing and safety concerns at the intersection. Vehicles that currently make a right turn into Britannia Road from Showground Road would be required to take alternate routes such as via Carrington Road or Gilbert Avenue to access areas to the north of Showground Road which would add an additional 2 kilometres to the journey. This is discussed further in section 6.2.
Questioned why new signals could not be installed as part of the proposal	A signalised intersection at Britannia Road was not considered to be feasible during the development of the concept design as it would not address current or predicted traffic issues within the road network.
Concerns regarding the proposed traffic signals at the intersection of Showground Road and Rowallan Avenue and noise generated by vehicles stopping and starting at the new signal site.	A new set of signals is required at this intersection to cater for the current and future traffic demand. It should be noted that there are a number major traffic generating developments such as Castle Hill RSL and Castle Hill Public School north of the proposal site that rely on this intersection for access. A new set of signals is required to cater for safe and controlled turning movements at this intersection.

5.3 Aboriginal community involvement

A preliminary assessment was undertaken by Roads and Maritime based on Stage 1 of the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*. A summary of the preliminary assessment is provided in section 6.7. The assessment concluded that the Aboriginal cultural heritage potential of the study area is low due to past disturbance and therefore consultation with the Aboriginal community was not deemed necessary.

5.4 ISEPP consultation

Consultation with councils and other public authorities is provided for by Clauses 13 to 17 of the ISEPP, which apply to development carried out by or on behalf of a public authority that the ISEPP provides may be carried out without consent. Consultation is required in relation to specified development (Clause 16) or development that impacts on:

- Council related infrastructure or services (Clause 13).
- Local heritage (Clause 14).
- Flood liable land (Clause 15).

As the proposal has the potential to impact on stormwater management services provided by The Hills Shire Council and local heritage, consultation in accordance with the ISEPP was undertaken with Council. A letter was sent to Council's representative on 11 September 2013 providing information on the proposal and requesting input in terms of the identification of any issues or concerns. No response was received.

Copies of the heritage assessment and statement of heritage impacts (refer Appendix H) and drainage investigation (refer Appendix E) undertaken for the proposal were provided to The Hills Shire Council on 4 February 2014 in accordance with Clauses 13 and 14 of ISEPP. Council raised no comments or objections regarding potential impacts on local heritage. Council's responses regarding the proposed drainage upgrades are yet to be received and would be taken into consideration as the design progresses.

As discussed in section 2.1.2, the proposal is subject to a Voluntary Planning Agreement between QIC, Roads and Maritime and The Hills Shire Council, and therefore Council has been a key stakeholder in the development of the concept design. A meeting was held with Council to identify drainage constraints and design requirements. Council also provided the local drainage model of which was used in drainage assessment undertaken as part of this REF.

5.5 Government agency and stakeholder involvement

As noted above, Roads and Maritime has consulted with The Hills Shire Council during the development of the proposal.

A Value Engineering and Risk Management Workshop was held on 16 October 2013. The purpose of the workshop was to provide an opportunity for key stakeholders to provide an input to the design and assessment of the proposal. The workshop included a risk assessment with actions to be carried through the development of the design.

Representatives of relevant government agencies and key stakeholders were invited to participate. The following agencies were represented at the workshop:

- The Hills Shire Council.
- Transport for NSW.
- Endeavour Energy.
- Gale Projects Group, representing QIC.
- Telstra.
- Roads and Maritime.

5.6 Ongoing or future consultation

This REF will be placed on public display to provide the community with the opportunity to comment.

Following public display, submissions will be collated and a submissions report prepared to address any issues raised by stakeholders. The submissions report will be made available to the public via the Roads and Maritime website. The community will be informed of any major design changes that are required to address community concerns. In addition, the following consultation activities will be undertaken as required:

- Meetings with The Hills Shire Council and other relevant stakeholders, including government agencies, utility providers, bus operators, adjacent landowners and community stakeholders.
- Providing project updates to the local community during the construction planning phase and construction period.
- Updating the Roads and Maritime project webpage.