North West Rail Link – Stage 2
Construction and operation of stations and rail infrastructure and systems

State Significant Infrastructure Application Report

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Contents

1 Background

This Section provides the strategic context, justification and objectives of the NWRL project.

1.1 This report

This State Significant Infrastructure Application Report has been prepared by Transport for New South Wales (TfNSW). It is for Stage 2 of the North West Rail Link (NWRL) project, which comprises the construction and operation of stations and rail infrastructure and systems.

The purpose of this report is to provide the Department of Planning and Infrastructure (DP&I) with adequate information on this stage of the project, so that Director General's Requirements for the necessary Environmental Impact Statement can be prepared and issued.

A State Significant Infrastructure Application Report was lodged in December 2011 for Stage 1 of the project (major civil construction works). Director General's Requirements for the Stage 1 Environmental Impact Statement were subsequently issued in February 2012. The Stage 1 Environmental Impact Statement was placed on public exhibition on 4 April 2012.

1.2 Strategic context

The NWRL is a critical project for the future of Sydney. The NSW Government is committed to delivering it.

Currently, *NSW 2021: A Plan to Make NSW Number One* is the primary document guiding the direction of development in NSW and Sydney. The plan identifies the NWRL as a key project to help deliver the NSW Government's policy priorities. This plan and the metropolitan planning context are summarised in the following sections and the role of the NWRL project in meeting the objectives of the strategies is also discussed.

In addition, the *NSW Long Term Transport Master Plan Discussion Paper* released in February 2012 identifies the NWRL as a project to extend the reach of the rail network. This paper also identifies the NWRL route as part of a strategic transport corridor from Rouse Hill through Norwest, Castle Hill, Macquarie Park and on to Chatswood as being a corridor with significant constraints. Building the NWRL will reduce these constraints.

Sydney's Rail Future (June 2012) is an integral part of the *NSW Long Term Transport Master Plan*. *Sydney's Rail Future* identifies a plan to transform and modernise Sydney's rail network so that it can grow with our population and meet the needs of customers into the future. Sydney's North West is a major component of Sydney's Rail Future – a new rail plan for Sydney with the customer at its focus.

As part of Sydney's Rail Future, single deck, rapid transit trains will run on the North West Rail Link.

The objectives of the NWRL project were developed based on the strategic need for the project which is established through the key plans identified above. These objectives are presented in Section 1.4.

1.2.1 NSW 2021 – State Plan

NSW 2021: A Plan to Make NSW Number One (NSW Government, 2011) (NSW State Plan 2021) presents the NSW Government's strategy to move the State forward over the next ten years and is based on five principal strategies with underlying goals. The five strategies are to:

- Rebuild the economy – restore economic growth and establish NSW as the 'first place in Australia to do business'.
- Return quality services – provide the best transport, health, education, policing, justice and family services, with a focus on the customer.
- Renovate infrastructure – build the infrastructure that makes a difference to both our economy and people's lives.
- Strengthen our local environment and communities – improve people's lives by protecting natural environments and building a strong sense of community.
- Restore accountability to Government – talk honestly with the community, return planning powers to the community and give people a say on decisions that affect them.

There are a number of goals specifically aimed at improving access and transport across the State. Common aims and themes across these goals are maximising the efficiency and effectiveness of public transport, and for active transport systems – including increasing utilisation, enhancing customer experience, integration across modes and desired origin/destination points and improving the frequency and reliability of services. Overall these combine as a general intent to raise the attractiveness and utilisation of the public transport system.

The NWRL would support these strategies and goals by providing a significant expansion to Sydney's rail network in an area of current and future population and employment growth, providing transport customers with real choice and contributing to the competitiveness of the region.

The NWRL is specifically referenced in the plan as an initiative to achieve goals related to growing patronage on public transport (Goal 8) and renovation of infrastructure. Goal 8 of the plan aims to increase patronage on public transport resulting in reduced traffic congestion, improved travel times and significant environmental benefits. In order to increase patronage, public transport needs to deliver an attractive, convenient and efficient choice for commuters. To achieve this, the frequency and reliability of public transport services would be increased along with improved integration between transportation services. As part of Goal 8, TfNSW would expand public transport networks to support population growth in metropolitan centres, allowing communities to access jobs and services closer to home. The NWRL is identified as a key part of this expansion.

1.2.2 Metropolitan Planning Context

Long-term planning for Sydney aims to sustainably manage growth over the next 25 years by providing for a more compact, networked city with improved accessibility, capable of supporting more jobs, homes and lifestyle opportunities within the existing urban footprint.

To achieve this, Sydney faces a number of key growth challenges centring on population issues (including employment and housing needs); sustainability; productivity (competition and resources); and efficiencies of infrastructure delivery (particularly transport infrastructure and as part of the wider network of infrastructure across Sydney).

The rail system in Sydney is the foundation of the city's public transport system, and has been a key impetus to the growth of the city, shaping land use and human activities. Recognising this fundamental role of the transport system, metropolitan planning for the future will aim to:

- Enhance our transport system through implementation of the Long Term Transport Master Plan including rail extension projects and integration of rail and bus services.
- Build on Sydney's strengths by further integrating transport and land use planning and decision making to support increased public transport mode-share.
- Ensure a transport system that supports productivity through access to jobs, the efficient movement of freight and effective economic gateways.
- Ensure that our key centres are accessible and connected.
- Improve the passenger experience of public transport and promote active transport opportunities.
- Ensure transport corridors are preserved for future growth.

The NWRL would support metropolitan planning objectives by putting in place a key transport project which extends the connectivity of the existing rail network and supports growth centres in the north west.

1.2.3 Long Term Transport Master Plan and Sydney's Rail Future

On 20 June 2012 the NSW Government announced Sydney's Rail Future. Key elements of the announcement are provided below.

In line with the approach of focusing specifically on the different needs of customers, Sydney's Rail Future will deliver a three-tiered system to respond to changing customer needs.

TIER 1: Rapid Transit:

Frequent 'turn up and go' services without the need for consulting a timetable.

Fast single deck trains with plenty of seats and more doors, designed for easy boarding and alighting.

TIER 2: Suburban:

Timetabled services.

Double deck trains with more seats per train.

TIER 3: Intercity:

Timetabled services.

Double deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services.

Comfortable services for long distance commuting and leisure travel with on-board facilities for improved customer convenience.

Under the new three tier system, the NWRL would operate as a Tier 1 rapid transit single deck train system, initially operating between the North West and Chatswood, with a cross-platform interchange at Chatswood to suburban services for those customers travelling to the CBD. In line with the NWRL, an upgrade of the Epping to Chatswood Rail Link to a high capacity rapid transit system would be required as a separate project to the NWRL.

The rapid transport network would not result in any substantial changes to Stage 1 of the NWRL project as described within EIS 1.

The introduction of the Rapid Transit System may result in the need for additional environmental assessments to be undertaken as Tier 1 develops beyond the scope of the NWRL project.

1.3 Project justification

The NWRL project is needed for:

- Servicing a growing population.
- Meeting employment needs.
- Providing public transport services.
- Reducing congestion and travel times.

These are discussed in detail in the following sections.

Servicing a growing population
More than 300,000 people currently live in North West Sydney and this population is rapidly growing.

Population projections indicate that an additional 1.7 million people would need to be accommodated in the Sydney region by 2036. The North West Subregion (which includes The Hills, Blacktown, Blue Mountains, Hawkesbury and Penrith Local Government Areas (LGAs)) has become the fastest growing area in Sydney and is expected to continue to grow, with an additional 394,500 people living, or living and working in the area by 2036.

The North West Growth Centre comprises 16 precincts of which 11 have been released for development. The released precincts provide capacity for around 50,000 dwellings and an estimated population of about 140,000.

Meeting employment needs
Rail services have a role in supporting economic activities and investment by virtue of increased exposure of businesses to potential customers in the area surrounding a station. The permanence of rail infrastructure also provides a level of certainty to businesses seeking to locate/relocate to an area and could direct private investment in businesses and residential uses in the region.

The North West Subregion of Sydney will also play an important role in accommodating Sydney's employment growth. The subregion currently has the third largest concentration of employment behind Sydney City and West Central (Parramatta). About 145,000 new jobs are expected in the North West between 2006 and 2036. Growth is also expected to occur through urban renewal of existing centres in the Hills District and significant employment growth in the strategic centres of Castle Hill, Norwest Business Park and Rouse Hill.

The successful development of the North West Subregion has resulted in demand for transport increasing beyond the rate at which it can sustainably be provided on the existing road and bus networks. The ability of the road and bus network to accommodate this future mass transit demand is limited because of physical capacity and major infrastructure constraints.

Providing public transport services
There is very strong demand for a reliable public transport solution along the NWRL corridor. The road based system is currently at capacity, and without improvements in public transport service provision, the deficiencies in the transport network would impact negatively on the ability of North West Sydney, and the city as a whole, to achieve its economic potential.

The NWRL would generate significant potential environmental, social and economic benefits to the wider community. Public transport is important in a large urban area to enable access by the population to the various regions, and associated employment, services, commercial, lifestyle and other opportunities. Rail transport in particular enables efficient movement of large numbers of people over long distances and avoids much of the congestion experienced on roads and the associated negative implications of cars (eg. noise, fumes, safety, car parking needs and cost).

North West Sydney currently relies on road-based public transport services (buses), has one of the highest car ownership levels in NSW and has the largest daily distance travelled by motor vehicle per household in Sydney. Without improvements in public transport, road congestion would increase and result in slower speeds and longer travel times. Furthermore for a proportion of the population private vehicles are not available as an option. If not addressed properly, this transport problem has the potential to undermine the productivity, sustainability and liveability of the North West Subregion and the wider Sydney metropolitan region.

Reducing congestion and travel times

Buses are affected by road congestion and other traffic issues in a similar way to cars, and trips can be of long duration owing to this congestion, stops for other passengers, and distances involved.

Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. These constraints mean that growth in bus services, particularly those that connect to the CBD, cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth.

Without improvements in public transport, it is predicted that by 2021 road congestion would increase travel times from the North West Subregion of Sydney by more than 50 per cent (and in some cases more than 70 per cent).The NWRL is in the public interest, as it would provide reliable and regular services which would result in reduced travel times for many users and also reduced travel times on the road network as a result of transport mode shift from road onto rail.

The project need also supports, and conversely is supported by, various Government policies and strategic plans. These policies and plans have included a future rail service to the northwest for several years although the details of the service have changed over that time.

1.4 Project objectives

The NWRL will provide an efficient and effective public transport service capable of moving significant numbers of people. This public transport service aims to address the current and likely future access requirements of residents and visitors within the emerging North West Region of Sydney. It will link this region internally. By connecting with existing transport networks, access is also more readily available to the wider metropolitan area and its attributes including employment centres, the Sydney CBD (eg. retail and services), universities / tertiary institutions and the airport.

The new rail service has the potential to reduce private transport and bus movements, with flow-on effects to road systems, by reducing congestion, movement numbers, safety incidents and other road-related issues. The NWRL would deliver on the NSW Government's commitment to provide Sydney's commuters with a public transport system that is affordable and integrated with the existing transit network.

The objectives of the NWRL project are to:

- Ensure customer needs are met through provision of a safe, high quality, integrated and affordable transport service.
- Link existing communities and new growth areas in North West Sydney with jobs and services in the Global Economic Corridor (Macquarie Park –Chatswood – North Sydney – CBD).
- Deliver a transport service that has been informed by engagement with communities and stakeholders and represents value for money.
- Improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus and road congestion and improve amenity in the Sydney CBD.

- Contribute to the environmental and social sustainability by improving liveability and minimising impacts on the environment, stakeholders and the community.
- Support the Government's challenge to accommodate population growth by opening up the north west to a range of housing and employment opportunities.

2 Statutory Planning and Assessment Framework

This Section sets out the NSW and Commonwealth approval and assessment processes as they apply to the NWRL project.

2.1 Commonwealth legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment for controlled actions which trigger an approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

A controlled action is an action which is likely to have a significant impact on one of the matters of National Environmental Significance.

Actions that could have a significant impact on one of the matters of National Environmental Significance need to be referred to the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

The NWRL project is divided into two sections for the purposes of a referral under the EPBC Act.

2.1.1 NWRL within the Sydney Growth Centres - North West Growth Centre Area 20

The section of the NWRL located within the North West Growth Centre boundary was subject to a strategic assessment under the EPBC Act.

On 28 February 2012, the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities approved all actions associated with development of the Sydney Growth Centres hence the need for site by site approvals under the EPBC Act for the Sydney Growth Centres is no longer required, as long as the actions are consistent with the endorsed Program Report (the Program Report is available at the Sydney Growth Centres' website www.gcc.nsw.gov.au/strategicassessment-94.html). The NWRL is identified in the Program Report as an element of the North West Growth Centre.

2.1.2 NWRL outside the Sydney Growth Centres - North West Growth Centre Area 20

A referral was submitted to the Department of Sustainability, Environment, Water, Population and Communities in April 2012 for the section of the project located outside the North West Growth Centre. The Department of Sustainability, Environment, Water, Population and Communities has reviewed the referral and supporting documentation and advised that the proposed action is a controlled action, to be assessed through preliminary documentation, as it is likely to have a significant impact on Listed threatened species and communities (section 18 and 18A). Discussions with the Department of Sustainability, Environment, Water, Population and Communities to develop the scope of assessment indicate that additional details regarding the proposed offset arrangements for the action are required.

2.2 NSW Environmental Planning Approvals

The overarching statutory framework for environmental planning approval in NSW is provided by the *Environmental Planning and Assessment Act 1979* (EP&A Act). Supporting this primary piece of legislation are the *Environmental Planning and Assessment Regulation 1980* (the regulation) and a

suite of environmental planning instruments, including State Environmental Planning Policies (SEPPs) and Local Environmental Plans.

2.2.1 Project definition and permissibility of the North West Rail Link

The NWRL project is defined as a rail infrastructure facility under the provisions of clause 78 of SEPP (Infrastructure) 2007 (Infrastructure SEPP). As a rail infrastructure facility to be carried out by or on behalf of a public authority, it is identified as development that is permissible without consent under the provisions of clause 79 of the Infrastructure SEPP. Clause 16(a) of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) also specifies that development in Schedule 5 may be carried out without development consent. The project is not proposed to be undertaken on land reserved under the *National Parks and Wildlife Act 1974* (NPW Act).

2.2.2 State Significant Infrastructure

The NWRL project has been declared to be State Significant Infrastructure under Part 5.1 of the EP&A Act through the following mechanisms:

- Clause 16(b) of the SRD SEPP declares the NWRL project as described in Schedule 5 of the SRD SEPP as State Significant Infrastructure.
- Section 115U(4) of the EP&A Act allows specified development on specified land to be declared as State Significant Infrastructure. One of the mechanisms through which this has been done is clause 15 and Part 1, Schedule 4 of SRD SEPP. Under Schedule 4 of the SRD SEPP, development that was the subject of a major project application (in this case MP 06_0157 which sought concept approval under Part 3A for the NWRL project) was declared to be State Significant Infrastructure.

The NWRL project is therefore State Significant Infrastructure and will be assessed and determined by the Minister for Planning and Infrastructure under Part 5.1 of the EP&A Act.

2.2.3 Critical State Significant Infrastructure

Section 115V of the EP&A Act allows State Significant Infrastructure to be declared to be Critical State Significant Infrastructure in certain circumstances. Under clause 16 and Schedule 5 (clause 2) of the SRD SEPP, the NWRL project has been declared to be Critical State Significant Infrastructure. The declaration recognises the importance of the NWRL as a project that is essential to the State for economic, environmental or social reasons.

2.2.4 Concept Plan approval / Staged Infrastructure approval

On 6 May 2008, a Concept Plan Approval (MP 06_0157) was granted for the NWRL project under Part 3A of the EP&A Act. With the repeal and replacement of Part 3A, clause 5 of Schedule 6A of the EP&A Act sets out savings and transitional provisions in respect of Part 3A and operates to make the Concept Plan Approval issued under Part 3A an approval for Staged Infrastructure under Part 5.1 of the EP&A Act. The Staged Infrastructure Approval, however, does not permit the carrying out of works and a separate detailed environmental assessment and approval is required for the project, or each part of the project, before construction can commence.

Since the Concept Plan Approval was issued in 2008, further strategic planning and project development has occurred. The NWRL project is now proposed to be integrated with the rail network and, as a consequence, the existing Concept Plan Approval/ Staged Infrastructure Approval is proposed to be modified under section 115ZI of the EP&A Act to align, in broad terms and at a strategic planning level, that approval with the updated design and configuration of the project.

2.2.5 Application to modify Staged Infrastructure approval

An application to modify the Staged Infrastructure approval was submitted to the Department of Planning and Infrastructure (DP&I) on 14 December 2011. An assessment of the modification was incorporated into the Stage 1 EIS for the project, which was placed on public exhibition on 4 April 2012. The modification application seeks to:

- Change the NWRL project definition as a result of the proposed modifications.
- Relocate Kellyville Station from Burns Road, Kellyville to Samantha Riley Drive, Kellyville.
- Provide for additional stations at Bella Vista and Cudgegong Road, Rouse Hill.
- Make minor changes to the location of the Hills Centre Station.
- Change the NWRL alignment within Area 20 (part of the North West Growth Centre) to a route parallel to Schofields Road as shown in the Area 20 Precinct Planning Package (DP&I, August 2011).
- Incorporate the Skytrain viaduct between Bella Vista and Rouse Hill.
- Locate a train Stabling Facility in the vicinity of Tallawong Road in the North West Growth Centre.

In February 2012, the DP&I issued supplementary assessment requirements for the modification. These requirements are addressed in Chapter 6 of the NWRL Stage 1 EIS.

2.2.6 Other NSW approvals and licenses

Section 115ZH of the EP&A Act provides that certain authorisations which are required to carry out State Significant Infrastructure cannot be refused and must be consistent with the terms of any approval under Part 5.1 of the EP&A Act. In the context of the NWRL project, these include:

- An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997*.
- A consent under section 138 of *the Roads Act 1993* to connect a road to a classified road and carry out a work in, on or over a public road.

Section 115ZG of the EP&A Act provides that certain environmental planning approvals do not apply to or in respect of approved State Significant Infrastructure. In the context of the NWRL project these include:

- A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*.
- An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*.
- A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.

3 About the North West Rail Link

This section provides a description of the NWRL project, the staged EIS process responding to the way in which the project is being developed and assessed and provides details about the proponent (Transport for NSW (TfNSW)).

3.1 Project overview

The NWRL comprises the provision of an electrified passenger railway between Chatswood and Tallawong Road, Rouse Hill extending the rail network to north west Sydney. It would include the construction of a two track rail alignment from Epping to Rouse Hill, 23km in length, comprising the following main components:

- A direct underground connection into the existing Epping to Chatswood Rail Line at Epping, with trains operating between the north west and Chatswood.
- A service facility at Epping.
- An intermediate service facility between Epping and Cherrybrook.
- Eight new stations located at Cherrybrook, Castle Hill, Hills Centre, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road.
- An underground section of alignment comprising of 15.5km of two track railway in a twin tunnel configuration with cross passages at regular intervals between Epping and Bella Vista.
- A 7.5km above ground section of alignment from Bella Vista to Tallawong Stabling Facility, Rouse Hill, which would be a combination of viaduct, embankment, at grade and cutting.
- A Stabling Facility at Tallawong Road.

The proposed NWRL alignment is shown in Figure 3-1.

Figure 3-1: Route overview

The NWRL alignment is described in the following sections. The description is provided from east to west.

From Chatswood Station to Epping Station

NWRL trains would operate between Chatswood and Epping using the existing Epping to Chatswood Rail Link (ECRL). A required upgrade of the Epping to Chatswood Rail Link to facilitate the high capacity rapid transit system will be considered and assessed separately.

From Epping Station to Pennant Hills Road

The NWRL would continue from the existing tunnel stubs located immediately north of the underground ECRL Epping Station platform. From this connection the alignment would turn north west onto a long straight section and descend to pass beneath Devlins Creek and the M2 Motorway before rising on a long and comparatively steep grade beneath Pennant Hills Road and towards Cherrybrook Station. This section of the alignment would also include:

- The site of the Epping Services Facility at Beecroft Road, approximately 350m from the Epping to Chatswood Rail Link connection.
- An alignment that would allow for any future Parramatta to Epping Rail Link to join the tunnels approximately 800m north of Epping.
- The site of the Cheltenham Services Facility near Cheltenham Oval, approximately 1.8km from the Epping to Chatswood Rail Link connection.
- Provision for a cross over cavern in the vicinity of the Epping Services Facility.

From Pennant Hills Road to Castle Hill Station

Continuing under Pennant Hills Road, the alignment would rise towards Cherrybrook Station. Beyond Cherrybrook the alignment would run to the west beneath Castle Hill Road descending on a long moderate grade before turning to the south west at the location of Castle Hill Station beneath Arthur Whitling Park. A cross over cavern would be provided for on the city side of Castle Hill Station.

Castle Hill Station to Hills Centre Station and Norwest Station

West of Castle Hill Station the alignment would descend and curve north westerly onto a straight section of route located below Showground Road before turning due west on the approaches to Hills Centre Station which would be located to the south of the showground and adjacent to Carrington Road.

Leaving the station and moving west, the alignment would pass below Cattai Creek before traversing to the south and falling gradually as it passes under the Castle Hill trading estate precinct on a long straight section in a south westerly direction. Just beyond Windsor Road the alignment would curve to bring the corridor directly below the southern edge of Norwest Boulevard. Norwest Station would be located here between Strangers Creek and Brookhollow Avenue directly below Norwest Boulevard.

Norwest Station to Bella Vista Station and Kellyville Station

Leaving Norwest Station the alignment would continue to follow Norwest Boulevard in a south westerly direction up to the intersection with Solent Circuit. Past this point of the alignment it would begin to diverge from Norwest Boulevard taking a more westerly route on a long curved section which would eventually turn the alignment around to the north west and parallel to Old Windsor Road.
The alignment would continue in tunnel to a portal located immediately north of Celebration Drive and beyond this Bella Vista Station would be located a little further to the north.

The alignment would continue to follow a route located roughly parallel to the eastern side of Old Windsor Road and would begin to climb to become elevated immediately south of Balmoral Road. This elevated section of alignment would at first be located on an earthwork embankment but this would soon become an elevated rail viaduct as the route passes over an area of local floodplain in the vicinity of Samantha Riley Drive with Kellyville Station located immediately to the south of this road.

Kellyville Station and Area 20 to Tallawong Stabling Facility

The twin track viaduct structure would continue to the north west, crossing and then following the eastern side of Windsor Road with Rouse Hill Station located on a straight section of elevated track between Rouse Hill Town Centre and Windsor Road, above the existing North-West T-way interchange.

From here the alignment would curve westwards to pass over Windsor Road to run towards the south west, parallel and to the north of Schofields Road. The alignment would cross Second Ponds Creek and pass beneath Cudgegong Road which would be located on a new bridge and the terminus station, Cudgegong Road, would be sited just beyond in a shallow cutting. On the far side of the platforms, beyond a new bridge carrying Tallawong Road, the alignment would broaden into the Stabling Facility at Tallawong Road. Provision would be made for a possible future extension of the line further to the west.

3.2 NWRL customer experience

Customer experience is a fundamental driver for the NWRL. The desired passenger experience incorporates all aspects of travel associated with a transport network, service or project, including:

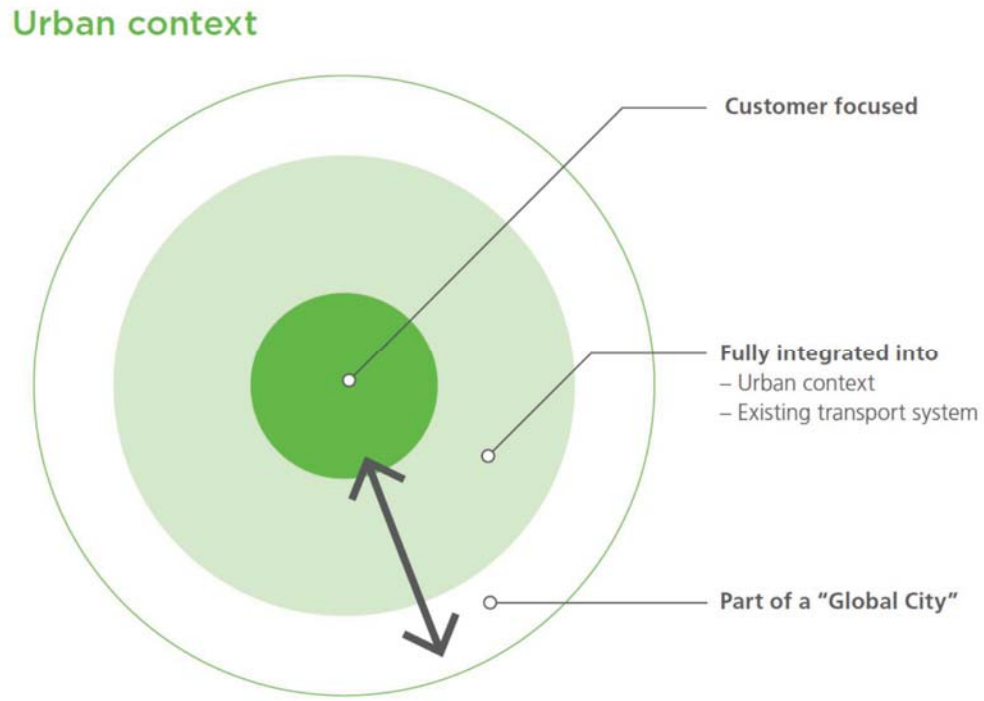
- The decision how to travel.
- The travel information available.
- The speed and comfort of the journey.
- The range and quality of services available at stations, interchanges and the “urban experience” within station precincts.

A high quality ‘door to door’ transport product is critical to attracting and retaining customers and also to meeting broader transport and land use goals.

As illustrated in Figure 3-2, the NWRL has influences at three levels:

- Customer focused, providing high quality transport experience for all users, including reliability and safety of service and high quality station facilities.
- Fully integrated into the existing transport network as well as the surrounding urban context (both current and future).
- Part of a global city, supporting the long term competitiveness and attractiveness of the north west region as well as Sydney itself.

Figure 3-2: NWRL urban context as presented in the *NWRL Product Strategy Route Overview*



The NWRL will be part of an integrated transport network for Sydney as described in Sydney's Rail Future. Development of the broader network via the Long Term Transport Master Plan is continuing. This plan takes into account the NWRL as well as the approach for operating the rail network once the new line is in place.

The NWRL will be integrated with both land use and others forms of transport. Stations and their precincts will integrate with the current and future urban context and will encourage walking, cycling and bus travel through good access for all customers.

The customer journey needs to be seamless and intuitive from the origin of the trip to the final destination. The influence of the NWRL also extends beyond the rail corridor with the potential to connect with schools, community facilities, jobs, shopping and other facilities around Sydney.

3.3 NWRL environmental impact assessment

The detailed environmental impact assessment of the NWRL project is being delivered in major parts being:

- Stage 1: State Significant Infrastructure Application and EIS for Major Civil Construction Works (referred to as EIS 1).
- Stage 2: State Significant Infrastructure Application and EIS for Stations, Rail Infrastructure and Systems (referred to as EIS 2 and the subject of this State Significant Infrastructure Application Report).

As noted earlier, the introduction of the Rapid Transit Network may result in the need for additional environmental assessments to be undertaken as Tier 1 develops beyond the scope of the NWRL project.

3.3.1 Stage 1

The Stage 1 State Significant Infrastructure application and EIS covers significant construction activities for the NWRL as follows:

- Land take for major civil construction works.
- Enabling works including power, water and telecommunications supply, site establishment, road modifications and public transport modifications.
- Tunnels and underground stations excavation.
- Elevated stations structure construction.
- Fill embankment and cutting earthworks.
- Viaduct and bridge construction works.

The State Significant Infrastructure application report for Stage 1 was lodged with DP&I on 14 December 2011 and the DGRs were issued by DP&I on 3 February 2012. The Stage 1 EIS was placed on public exhibition from 4 April 2012 to 21 May 2012. Major civil construction works that are the subject of the NWRL Stage 1 EIS are not part of Stage 2.

3.3.2 Stage 2

The Stage 2 State Significant Infrastructure application relates to the operation of the railway as well as the construction of those elements of NWRL not addressed by Stage 1. The Stage 2 application will be followed by an EIS that will present the environmental impacts and mitigation measures related to:

- Any additional land take for station precinct works (such as road works, pedestrian/cycle facilities, landscaping)
- Operation and construction of:
  - Stations.
  - Station precincts.
  - Services facilities.
  - Stabling Facility at Tallawong Road.
  - Rail infrastructure and systems.

This State Significant Infrastructure Application Report relates to the State Significant Infrastructure application for Stage 2.

3.4 About the proponent

The proponent is Transport for New South Wales (TfNSW), which is the lead agency of the NSW transport portfolio. TfNSW takes the lead on all policy and planning functions of the former Transport NSW, State Transit Authority, RailCorp, Roads and Maritime Services, Sydney Ferries and the Public Transport Ticketing Corporation.

A specialised Project Team has been established within TfNSW to coordinate and expedite work on the project.

4 Scope of this application

This Section describes the scope of the NWRL Stage 2.

4.1 Components of the Stage 2 Application

Stage 2 of the North West Rail Link includes:

- Operation and construction of:
  - Stations.
  - Station precincts.
  - Services facilities.
  - Stabling Facility at Tallawong Road.
  - Rail infrastructure and systems.

Major civil construction works that are the subject of the NWRL Stage 1 EIS are not part of the Stage 2 application.

The following sections provide a general description of the Stage 2 components, as well as the proposed operational regime. A detailed description will be provided in the EIS.

4.2 Stations

4.2.1 Overview

NWRL Stage 2 comprises the operation and construction of:

- Open cut stations at Cherrybrook, Bella Vista and Cudgegong Road.
- Underground stations at Castle Hill, Hills Centre and Norwest.
- Elevated stations at Kellyville and Rouse Hill.

The proposed construction works footprint for stations would be within the construction footprint already identified in the NWRL Stage 1 EIS. A summary of the main station features is presented in Table 4-1. Drawings showing the approximate extent of works at stations are provided in Appendix B.

Table 4-1: NWRL Station Main Features

Station	Typology	Approximate platform location	Approximate Concourse location
Cherrybrook	Open cut	Less than 8 metres below street level (island platform)	Street level
Castle Hill	Underground	Approximately 25 metres below street level (island platform)	Approximately 6 metres below street level
Hills Centre[1]	Underground	Between 20 and 25 metres below street level (island platform)	8 to 13 metres below street level
Norwest	Underground	16 to 20 metres below street level (island platform)	8 to 13 metres below street level
Bella Vista	Open cut	11 metres below street level (island platform)	Street level
Kellyville	Elevated	12 metres above street level (side platforms)	Street level
Rouse Hill	Elevated	12 metres above street level (side platforms)	Street level
Cudgegong Road	Open cut	6 metres below street level (side platforms, with allowance for second island platform)	Street level

[1] The depth and alignment of Hills Centre station is being reviewed to better meet the place making principles for the station precinct (refer to section 4.3.1)

Illustrative drawings for each of the generic station types – open cut, underground, and elevated – are provided in Appendix B.

4.2.2 Major elements

The major elements of the stations are:

- Platform level.
- Station mezzanine and/or concourse level.
- Station entrances.
- Emergency egress and access.
- Station ventilation.

Platform level

At each station, facilities for customers would include seats and lean bars on the platform, help points to enable customers to obtain emergency assistance, real-time passenger information display screens and public address systems.

Safety at stations could be enhanced through features such as well-designed and efficiently controlled lighting systems, visible closed-circuit television surveillance and the presence of staff within concourse areas during operational hours. Emergency egress and ventilation facilities would be

provided at each station. Urban design of stations would also consider passive means to promote safety, such as by enabling clear visibility lines and using natural daylight.

Station mezzanine and concourse level
The station mezzanine and/or concourse levels would provide access to and from the platform from street level via escalators, stairs and lifts. Ticket barriers would also be provided at either of these levels.

For underground stations, a mezzanine level would be the first level above the platform. The concourse level would be the first level below street level. At some station locations the concourse may provide secondary subsurface pedestrian links and retail space.

For open cut and elevated stations, direct access from street level to the concourse would be provided.

Station Entrances
Entrances to the stations would be provided at street level. At some locations the entrances would comprise a lobby area and ticketing hall with ticket vending machines. At underground stations the entrance would provide escalator or stair and lift access to the concourse or mezzanine levels, where ticket vending machines would be located.

Some services and plant structures would also be accommodated at street level. These would include emergency exit points, tunnel ventilation, inlet and outlet structures and traction power substations.

Emergency egress and access
Emergency egress would be provided at each station site. The stations would also allow for access by emergency services personnel and provide for emergency egress from tunnel sections. They would consist of sub-surface escalator and scissor configuration stairway facilities with minimal surface-level access structures. The stations would provide the following features:

- Entry facilities consisting of lifts, stairs, escalators and separate fire stairs at the end of station and platforms to allow for passenger evacuation.
- Main entry and fire stairs at the end of station platforms would serve as emergency egress points to be used by emergency services to access the tunnels or viaduct.

Station ventilation
Ventilation shafts would be provided within underground stations and tunnels to allow for effective natural ventilation and supplementary mechanical ventilation. Within the service building at the end of each station there would be two tunnel ventilation shafts and one trackway ventilation shaft, each with louvred faces. Air vent shafts would typically be incorporated into the station design and there would also be ventilation fans at each station. These facilities would supply fresh air to stations and tunnels and discharge air from the tunnels and station environment.

The ventilation systems would be designed to meet the criteria for normal, congested and emergency operating scenarios. The systems would also provide ventilation in the event of fire to ensure suitable conditions in the tunnel for safe egress of passengers and safe access for the emergency service personnel. In the event of fire, smoke-laden air would be discharged to the atmosphere.

4.3 Station precincts

The precincts for each of the proposed stations would include:

- Station transport interchanges (eg. park and ride, kiss and ride, bus stops and Transit Way interfaces, taxi ranks and cycle storage areas).

- Station access walkways, access roads, road modifications and intersection treatments, stormwater infrastructure, and other ancillary facilities.
- Provision for retail and community activities to activate each station precinct.
- Landscaping and urban design features and land use interfaces.

Drawings describing the approximate extent of works for stations are provided in Appendix B.

4.3.1 Overall precinct master planning principles

An objective of the NWRL is to support the Government's challenge to accommodate population growth by opening up the north west to a range of housing and employment opportunities. The people of Sydney wish to live close to work and walk to places of leisure and entertainment, to move conveniently across the city and comfortably navigate multiple modes of transport and enjoy beautiful public spaces which are grounded in the essence of each place. They wish to live in connected communities which foster interaction, which retain a vibrant street life, and which celebrate a unique Sydney landscape.

4.3.2 Station precinct place making principles

The project team has set up the following place making principles for the station precincts. Stakeholders and the community would be involved in helping further develop these principles.

Cherrybrook

- Protect and celebrate the Blue Gum High Forest, located to the north west of the station precinct.
- Create a strong "place" at the station entry, providing retail and community activities and a strong sense of identity.
- Create attractive, effective pedestrian and cycling connections to the north along the creek and to the south across Castle Hill Road and down the steep topography.
- Minimise the impact of the power transmission line by directing views away from the stanchion and using buildings and landscape to screen views.
- Create a highly visible station and station precinct which is easily seen from Castle Hill Road with active uses to create a safe environment.

Castle Hill

- Use the station design to create a series of pavilions within the park that reinforce the safety, access and attractiveness of this central open space.
- Create a gateway into the town that reinforces a sense of identity and place.
- Create attractive, effective pedestrian and cycling connections to the east along Old Northern Road, to the north and to the south and down the steep topography.
- Create a highly visible station and station precinct which is easily seen from surrounding streets to create a safe environment.

Hills Centre

- Minimise impact on the Showground, its cultural identity, landscape and built landscape.
- Create a clear sense of place at the station.

- Encourage a safer environment around the station with retail and/or community facilities.
- Improve access around the station with an additional street network that accommodates high quality pedestrian and cycling access.
- Encourage an activated place with seamless pedestrian and cycle access.
- Create attractive, effective pedestrian and cycling connections to the north and to the south along the riparian corridor.
- Retain significant trees where possible and extend the forest canopy across the car parks.
- Create a safe highly visible station and station precinct by locating it where it can be easily seen on a public road and as close as possible to existing roads such as Carrington Road.

Norwest

- Improve access around the station with an additional street network that accommodates high quality pedestrian and cycling access.
- Encourage an activated place with seamless pedestrian and cycle access through pedestrian priority across busy streets, traffic calming and pedestrian focused street design.
- Create new attractive, effective pedestrian and cycling connections to the north and to the south east to the adjoining residential area.
- Create a safe highly visible station and station precinct by locating it where it can be easily seen from public roads.

Bella Vista

- Improve access around the station with an additional street network that accommodates high quality pedestrian and cycling access.
- Encourage an activated place with seamless pedestrian and cycle access through pedestrian priority across busy streets, traffic calming and pedestrian focused street design.
- Create new attractive, effective pedestrian and cycling connections to the west across Old Windsor Road, south to Bella Vista, east to the adjoining residential area.
- Create a safe highly visible station and station precinct by locating it where it can be easily seen from public roads.

Kellyville

- Improve access around the station with an additional street network that accommodates high quality pedestrian and cycling access.
- Encourage an activated place with seamless pedestrian and cycle access through pedestrian priority across busy streets, traffic calming and pedestrian focused street design.
- Create new attractive, effective pedestrian and cycling connections to the west across Old Windsor Road, north to Kellyville, east to the adjoining residential area and south along the riparian zone.
- Create a safe highly visible station and station precinct by locating it where it can be easily seen from public roads.

Rouse Hill

- Create a high quality public and civic space to help provide and reinforce the sense of place.

- Recognise and respond to the significance of views of the station from Windsor Road.
- Provide high quality pedestrian and cycling overpass across Windsor Road and Schofields Road.
- Encourage an activated place with seamless pedestrian and cycle access through pedestrian priority across busy streets, traffic calming and pedestrian focused street design.
- Develop a street focused interchange environment with buses and cars sharing the street network.

Cudgegong Road

- Encourage a safer environment around the station with retail and/or community facilities and built form frontages to the streets.
- Improve access around the station with an additional street network that accommodates high quality pedestrian and cycling access.
- Create attractive, effective pedestrian and cycling access connecting the town centre and adjacent development areas.
- Provide shade to car parking with trees and use water sensitive urban design principles.
- Retain significant trees where possible and extend the forest canopy across the car parks and along green links.
- Create consistent built form frontages to the proposed street network for passive surveillance and streetscape definition.
- Create a safe, highly visible station and station precinct by locating it where it can be easily seen from a public road and close to existing roads such as Commercial Road.

4.3.3 Transport integration and interchange

Key objectives of the NWRL are convenient access, integration and interchange with other transport modes as part of the broader strategy to provide an integrated transport network for Sydney.

NWRL would interface with Sydney's existing public transport network, including trains (direct interchange with the CityRail stations at Epping and Chatswood), buses at all stations, and T-Ways at Rouse Hill and Kellyville stations.

At some stations bus stops would need to be upgraded and, in some cases, relocated closer to NWRL station entrances to improve passenger interchange.

These measures would ensure timely connectivity to outlying destinations not served by the NWRL network. This interface would require development and agreement of service plans between CityRail and other public transport operators to ensure full integration of services.

Each precinct would be designed to allow easy access for pedestrians with efficient interchange to rail, bus, footpaths and/or cycleways as appropriate, and with adequate bicycle storage for cyclists. Stations would be designed to provide full access for customers with specific accessibility needs.

4.4 Services facilities

The project requires services facilities at Epping and Cheltenham. The design and architectural treatment of service facilities is being developed and will be presented and assessed as part of the NWRL Stage 2 EIS. Stakeholders and the community would be involved in the development of the design.

Epping Services Facility
The proposed location of the Epping Service Facility is located on property located on Beecroft Road to the north of Carlingford Road and south of Devlins Creek.

The Epping Services Facility would include a traction power substation and a ventilation and equipment building (within one facility). The facility would be fenced and not publicly accessible. The facility would require maintenance access and would also be used for persons (not heavy equipment) to access the tunnel during track/tunnel maintenance periods.

Cheltenham Services Facility
The Cheltenham Service Facility would be located adjacent to Cheltenham Oval between Castle Howard Road and the M2 Motorway. The existing oval is set in a bushland setting and is accessed from Castle Howard Road.

The Services Facility at Cheltenham would include emergency intervention and egress, plant rooms, a sectioning hut and access for maintenance personnel.

4.5 Rail infrastructure and systems

4.5.1 Track form (tunnel, above ground and stabling area)

NWRL Stage 2 comprises the construction of the track system (rail and its supports) for the tunnel and above ground sections of the alignment.

The track form in the underground section would be of a fixed concrete slab (ballastless) form. The track form would incorporate proprietary design features to mitigate the effects of vibration and ground borne noise.

Both ballasted and fixed track forms are currently being assessed for above ground sections of the alignment. EIS 2 would identify which of these is proposed.

4.5.2 Rail signalling and control systems

The signalling system would support the safe operation of single deck, rapid transit trains.

The signalling system would be required to support the safe operation of up to 20 trains per hour.

Communication based train control is a continuous, automatic train control system.

Under normal operations, the NWRL and all of the rapid transit train lines would use advanced signalling technology, including Automatic Train Protection (ATP) and Automatic Train Operation (ATO). ATO is a technique to improve the way trains accelerate and brake at stations to enable more trains on the line. The ATP system would keep each train within a safe braking distance of the train ahead.

The advanced signalling technology operating system would control the train stopping at stations, ensure trains stop in line with platforms, control speed between stations, ensure that only the doors on the correct side can be opened at each station, and initiate door closing.

The train lines would be bi-directionally signalled to allow for the continued operation of train services during disrupted operations.

All operating and control systems would be integrated with rail systems to provide consistent performance including high levels of safety.

The integrated information control system would allow communication with passengers or any staff member via audio and visual links at the station or on a train.

4.5.3 Traction power supply, sub-stations and overhead wiring

The ongoing design work has identified the need for eight new traction substations near or integrated within new train stations at: Cherrybrook, Castle Hill, Hills Centre, Norwest and Kellyville. The remaining would be located at or near Epping station, near Rouse Hill and Tallawong Road. The NWRL electrical distribution network would provide:

- 1500 Volts Direct Current (V DC) overhead wire traction power to the rolling stock via a 33kV reticulation system.
- Low voltage power for electrical services at stations and Stabling Facility, signalling and communications systems via an 11kV reticulation system.

The 33kV reticulation system would be independent of the external energy authority and would be designed with suitable redundancy to continue rail operations under fault conditions. The 33kV feeder system would be internal to the rail corridor and would connect the NWRL traction substations with the existing high voltage network.

The 1500V DC overhead wire system configuration would be based on a fixed tension wiring for the tunnel section with variable weight tensioned wiring for the open route sections.

The 11kV reticulation system would be independent of the external energy authority and the NWRL 33kV reticulation system, and would be designed with suitable redundancy to continue rail and station operations under fault conditions. The 11kV network would be internal to the rail corridor and connect NWRL stations, services facilities and the Stabling Facility.

4.5.4 Tunnel ventilation system

A tunnel and track way ventilation system would be established to:

- Provide smoke control in the event of a fire.
- Provide environmental control in the below ground stations.

The ventilation systems and equipment would be constructed at the ends of each of the below ground stations and tunnel portals (Cherrybrook, Castle Hill, Hills Centre, Norwest and Bella Vista). At each station/tunnel portal this means there would be:

- Two draught relief shafts at either end of a station for natural ventilation.
- Tunnel ventilation fans at each end of a station with nozzles to provide directionality to tunnel flows.
- Track way and station exhaust fans at either end of a station connected to the over track, under platform and station exhaust systems.

The Epping services facility would also incorporate ventilation equipment to service the adjacent crossover.

4.6 NWRL Operational regime

4.6.1 NWRL testing and commissioning

4.6.2 Train Types

All trains operating on the NWRL would be single deck, rapid transit trains. These trains would feature high performance standards and good customer amenity features to ensure efficient and reliable operations are achieved. Each train could provide transverse seating and standing room for around 1,200 people. Each train would comprise eight carriages.

4.6.3 Train Frequency

During the morning and evening peak periods, it is proposed that initially up to twelve trains per hour (every five minutes) would operate on NWRL, supporting anticipated demand for travel. During other times, there may be around a 10 minute frequency in each direction (ie. six trains per hour).

It is expected that train services on NWRL would generally operate between approximately 4.30am and midnight each day. Late night services would operate until 1am on Friday and Saturday nights.

Based on initial operational assessments, trains would take approximately 37 minutes to travel between Cudgegong Road and Chatswood, including stopping at stations.

4.6.4 Train Stabling

The Stabling Facility at Tallawong Road would be located north of Schofields Road and west of Tallawong Road. This is within the North West Growth Centre, an area of land which has been identified for future urban development.

As the rail system would be closed from about midnight to 4.30am, trains would need to be stored off the running lines in the Stabling Facility. Trains that are not required during off-peak periods would also be stored within the Stabling Facility. The Stabling Facility would assist in maintaining operational reliability by allowing train services to commence on time from Cudgegong Road station. Stabling the majority of trains required to operate the NWRL at or near the end of the line eliminates the need for extended sections of out-of-service or empty train operations.

The Tallawong Stabling Facility would comprise the following elements:

- Overnight and between-peak stabling of trains.
- Internal train cleaning performed by train presentation staff (includes internal graffiti removal).
- Cleaning on train exteriors.
- Shunting of trains in preparation for departure or to accommodate arriving trains.
- Train preparation (powering up) performed by train crew.
- Division/amalgamation of trains by train crew.
- Rolling stock repairs performed by train technicians.

The Stabling Facility would also accommodate the needs of emergency services.

Trains would normally be shut down once they have been stabled and would need to be powered up about 30 minutes prior to their scheduled departure time.

Daily internal cleaning of the trains would take place when trains return to the depot after the morning and evening peak periods and also at the end of each day. The water used for spot cleaning would be collected and treated onsite for reuse. The services building is expected to have a roof area of approximately 800m^2 and a rainwater harvesting tank is to be installed onsite to enable collection, storage and use of rainwater at the facility.

Other infrastructure and services in the facility would include:

- Access roads.
- Facilities for cleaning and minor maintenance.
- Administration offices and amenities.
- Administration building.
- Car park.
- Landscaping.
- Lighting and CCTV.
- Fencing.

4.7 NWRL Stage 2 program

Subject to obtaining the required planning approval, construction activities assessed in the Stage 1 EIS are scheduled to commence in 2013 and completed at the end of year 2016. Construction activities for Stage 2 of the NWRL are expected to commence in late 2015 and completed in 2018. The total period of Stage 2 Construction Works is expected to be approximately four years.

The indicative construction program shows stations excavation works and viaduct station structural works would be complete by Q3 2015. Tunnel excavation works and above ground linear works would continue for another year and would be complete by Q3 2016.

Completion of station works by Q3 2015 would allow mechanical and electrical works for stations to commence immediately after, in Q4 2015, with a scheduled completion date of Q1 2018. Station fit out works would commence shortly after, in Q1 2016, with a scheduled completion date of Q3 2018.

Other works that would be undertaken during this period include track work and service facility fit out and mechanical and electrical work for above ground and tunnel sections.

4.8 Capital investment value

Building on over 10 years of work, a detailed capital cost for the NWRL project is being prepared based on detailed cost planning by specialist cost advisers. The indicative project budget estimate for the overall NWRL project (incorporating the construction works for NWRL Stage 2 which are the subject of this report) is in the order of $7.5-8.5 billion and subject to ongoing input.

5 Consultation

This section describes consultation undertaken to date for the NWRL.

5.1 Consultation activities prior 2008

Consultations during the preparation of the North West Rail Link Environmental Assessment and Concept Plan (TIDC, 2006) commenced in November 2005 with:

- Residents within 250 metres of the proposed alignment.
- Statutory agencies.
- Other key stakeholders such as environmental, community and business groups.

A total of 61 submissions were received from the public and the issues raised were addressed in the Environmental Assessment when it was lodged with the then Department of Planning (DoP). The government agency and local government consultations were similarly reported.

Following lodgement, the DoP placed the Environmental Assessment on public exhibition. Over 1,600 submissions were received during and immediately following public exhibition.

In February 2007, the *North West Rail Link Preferred Project Report* (TIDC, 2007) was prepared, which provided responses to issues raised in submissions received during the public exhibition of the Environmental Assessment. It also included information about additional studies undertaken in response to submissions, and provided details on proposed modifications to the concept plan.

The *Preferred Project Report* was then placed on public exhibition with submissions received including in excess of 3,000 form letters and 338 other individual submissions up to August 2007. This resulted in the publication of a *North West Rail Link Supplementary Submissions Report* in March 2008 in which the issues raised were addressed.

5.2 Consultation activities related to the North West Growth Centre (2008-2011)

Extensive community, landowner and government agency consultation was undertaken by the DP&I as part of the planning process for Area 20 within the North West Growth Centre. A change to the NWRL corridor was identified in documentation prepared as part of the process and following exhibition in 2008, eight of the 53 submissions related to the NWRL project. The Area 20 Precinct was rezoned for urban development in October 2011 by the Minister for Planning and Infrastructure. Further detail regarding Area 20 can be found at Sydney's Growth Centres website (http://www.gcc.nsw.gov.au/area20-55.html).

5.3 Consultation activities since 2011

Following the Government's announcement to proceed with the NWRL, the Community Information Centre was officially opened by the Minister for Transport on 29 June 2011. It is staffed five and a half days per week.

In July 2011 a newsletter was distributed to more than 45,000 residents and businesses along the corridor introducing the *North West Rail Link Project Overview*. This report described the proposal in some detail and canvassed the idea of two additional stations and an alternative location for the Stabling Facility at Tallawong Road, the result of Precinct Planning work associated with Area 20. The newsletter marked the beginning of a public consultation process in which stakeholders received further information about the NWRL from a number of sources including:

- The project's website http://northwestrail.com.au.
- The Community Information Centre (located at 299 Old Northern Road, Castle Hill).
- Community information sessions (eight in total).
- Telephone information line (1800 019 989).
- Email address for inquiries - info@northwestrail.com.au.

A total of 184 submissions were received in response to exhibition of the *North West Rail Link Project Overview*. The main categories of issues raised were:

- Alternative considerations: Community feedback about alternatives to the proposed project scope.
- Traffic, parking and public transport issues: Topics related to commuter facilities such as car parking and general responses in relation to station/network accessibility and planning for other transport connections.
- Route alignment: Topics raised about the proposed route alignment, including comments regarding stations, location and rail corridor (tunnel).
- Project justification: Topics and questions raised in relation to project funding and/or expenditure as well as requests for investment in other transport alternatives (outside of the project scope).
- Land use planning: Comments about future land use planning in relation to the project.
- Construction practices and timing: Comments with regard to construction staging and timing and property/business access during construction.
- Communication and consultation issues: Future communication material and consultation activities.

TfNSW in its *Project Overview Issues Report* (November, 2011) responded to the issues raised in the submissions.

5.3.1 Consultation during the environmental impact assessment process

The consultation process for the environmental impact assessment commenced in December 2011 and aimed to:

- Meet and exceed the obligations described in the Director-General's Requirements, the Conditions of the Concept Plan Approval and the Statement of Commitments.
- Provide quality information about the plans for the NWRL and likely impacts of construction activities.
- Record all issues raised and suggestions made.
- Take account of issues and suggestions during the preparation of the EIS.

Stakeholder consultation

TfNSW has established a number of working groups in order to facilitate cross agency consultation about project impacts and how they should be managed. The working groups established are as follows:

- Roads and Maritime Services Working Group - Hillsbus, Busways, TfNSW NWRL Project Team, TfNSW Planning & Programs Division, Roads and Maritime Services (RMS) / Transport Management Centre (TMC).
- Planning Reference Group - Department of Planning and Infrastructure (DP&I) Major Assessments (Chair), TfNSW NWRL Project Team, TfNSW Planning & Programs Division, Office of Environment and Heritage (OEH), NSW Office of Water (NOW), Department of Industry and Investment, Environment Protection Authority (EPA).
- Departmental Precinct Land Use Group - DP&I Urban Renewal & Major Sites (Chair), Hornsby Shire Council, The Hills Shire Council, Blacktown City Council, Parramatta City Council, DP&I Major Assessments and TfNSW NWRL Project Team.
- Local Council and Councillor updates. Hornsby Shire Council, The Hills Shire Council and Blacktown City Council.
- Station /precinct meetings: Targeted meetings with Hornsby Shire Council, The Hills Shire Council, Blacktown City Council and DP&I Growth Centres.
- RailCorp Environmental and Sustainability Technical Working Group. TfNSW NWRL Project Team and RailCorp.
- Utility and service provider meetings - Ausgrid, Endeavour Energy, National Broadband Network (NBN) and Sydney Water.
- Department of Sustainability, Environment, Water, Population and Communities.

Community consultation

A number of contact and feedback mechanisms have been available to the community during the planning process, and proactive measures taken to disseminate information about the plans and their impacts. These are described in Table 5-1 below. The project has also maintained a contact database that records each contact made, the issues raised, and the response given. This will be maintained for the duration of the project.

Table 5-1: Community contact and feedback mechanisms.

Mechanism/event	Details
Information and feedback line	1800 019 989
Email	info@northwestrailcom.au
Community Information Centre	Staffed five and a half days a week, this centre has the most up-to-date NWRL information and presentations.
Website	www.northwestrail.com.au. This site is continuously updated to include latest project information and offers visitors the opportunity to leave comments, participate in on-line discussions and register their interest in being kept up to date with latest NWRL developments.

Place Managers/door-knocking	Place Managers have door knocked residences and businesses adjacent to construction sites, or areas where above ground infrastructure will be constructed. Each Place Manager has an allocated area and is proactive in making contact with potentially affected individuals, businesses and community groups. Each has an introductory newsletter with personal contact details that can be left if during door-knocking there is no one at home.
December 2011 newsletter	In December 2011 a newsletter was distributed to 11,700 residents and businesses along the corridor describing the modified project and announcing the start of the planning process.
Key stakeholder briefings	Over 50 briefings have been arranged with a number of community based organisations whose operations will be directly impacted during consultation. These have included primary and secondary schools, sport clubs, community groups and services, business and their representatives.

Key community consultation activities undertaken during and after the public exhibition of Stage 1 EIS comprised a range of written material that describes the plans and their impacts, customised to each location. These included:

- Environmental Impact Statement 1: An Overview:
  - EIS 1 major works (overview).
  - Each construction site.
  - Major construction works.
  - Ecology, environment and heritage.
  - Management of traffic impacts.
  - Sustainability.
  - How to make a submission on EIS 1.
  - A brief overview of EIS 2.
- A submissions and 'have your say' guide to assist people, groups and agencies that wish to make a submission to the DP&I.
- Key stakeholder briefings:
  - Government agency and council staff.
  - Councillors – Hornsby Shire, The Hills Shire and Blacktown City Councils.
  - SEWPaC.
  - Key land owners.
  - Community organisations/interest groups.
- An EIS exhibition newsletter delivered to approximately 45,000 residents and businesses along the alignment.

- Place Managers.
- Community information and feedback sessions including access to fact sheets, information display boards and technical specialists. These sessions were advertised in the local press, by hand-out information at key locations, and through letters of invitation to key community and government stakeholders. Over 500 people attended. Each session displayed information that describes project proposals for the area. Information and feedback sessions were held at:
  - Epping.
  - Cherrybrook.
  - Castle Hill.
  - Norwest.
  - Rouse Hill.
- 'Meet the experts' information sessions

As part of development of the project description for EIS 2 design meetings were undertaken in May 2012 with Hornsby Shire and The Hills Shire Councils. The purpose of the meetings was to present draft precinct plans, interchange designs and principles. Further meetings would be held to discuss and develop station and interchange precinct designs to:

- Identify issues for further discussion.
- Integrate active uses and development opportunities.
- Ensure connections with existing and proposed access networks.
- Input into the broader precinct planning process led by DP&I.

5.4 Proposed Consultation activities for EIS 2

NWRL Stage 2 EIS will maintain the existing level of consultation and engagement with the community and stakeholders. Community contact and feedback mechanisms listed in Table 5-1 will continue. Community and stakeholder consultation activities will be undertaken as per Stage 1 EIS.

TfNSW is committed to ongoing engagement with all stakeholder groups during the development of the North West Rail Link project.

TfNSW will commit significant resources to continuing a structured program of broad based community and stakeholder engagement during the preparation for and exhibition of EIS 2.

Key elements will include:

- Place Managers have developed relationships with directly affected members of the community and will continue to play a key role as the single, identifiable point of contact between the project and these people.
- The NWRL Information Centre at Castle Hill will remain open and will include information, displays and other information associated with EIS 2.
- There will be ongoing maintenance and updating of the North West Rail Link project website, including interactive forums.

- There will be ongoing maintenance and updating of stakeholder databases including email contact lists.
- Information material including newsletters and brochures that describe the EIS 2 process and the design options being considered for stations, as well as along the Skytrain viaduct will be prepared.
- An EIS 2 summary booklet.
- All meetings in relation to EIS 2 and other contacts with stakeholders will continue to be logged on the project's consultation manager software which will also 'tag' issues as they are raised.
- A series of community information and feedback sessions are planned during the EIS 2 Exhibition period. Detailed information materials will be developed, including an EIS 2 summary booklet.
- These community information sessions will be advertised in the local press and by media releases for local newspapers.
- Cross-agency consultation will continue through meetings with key stakeholders and the following groups:
  - EIS Interagency Reference Group.
  - Roads and Maritime Services Working Group.
  - Departmental Precinct Land Use Group.
  - RailCorp Environmental and Sustainability Technical Working Group.
  - Utility and service provider meetings.
  - Local Councils and Councillor updates will continue regularly.
  - SEWPaC meetings and liaison.
- Design workshops will be held with directly affected community stakeholder groups and Councils.

6 Environmental issues

The following sections identify the main environmental issues associated with the NWRL Stage 2. The main issues identified were:

- Soils and groundwater.
- Traffic and access.
- Noise and vibration.
- European and Indigenous heritage.
- Land use, community facilities and business impacts.
- Ecology.
- Visual amenity.
- Climate change and greenhouse gas emissions.
- Surface water and hydrology.
- Air quality.
- Waste management.
- Cumulative impacts.

6.1 Soils and groundwater

6.1.1 Conditions of Approval and Statement of Commitments

Table 6-1 lists the NWRL Conditions of Approval and Statement of Commitments related to soils and groundwater, and where in the project these have been addressed.

Table 6-1: Soils and groundwater - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
3.7	Geotechnical The Proponent shall identify risks to groundwater quality and/ or risks to surface water quality from contaminated groundwater during construction and operation, including measures to avoid, manage, mitigate and monitor impacts	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Groundwater addressed in Section 8.4 and Section 8.5. • Surface water quality addressed in Chapter 18. Impacts relating to operations would be addressed in EIS 2.
3.8	Geotechnical	Responses to these issues have

	The Proponent shall identify the following matters in relation to the bored tunnel components of the project: (a) existing groundwater conditions (level and quality), taking into consideration seasonal variability; (b) local and regional drawdown impacts, including any groundwater users impacted by the project and measures to offset impacts; (c) options for the sustainable use and/or disposal of tunnel inflow; (d) measures to minimise the risk of bed cracking and loss of surface flow when tunnelling below creek lines and contingency measures for restoring affected waterways consistent with pre-construction conditions, including monitoring procedures and performance criteria; (e) impacts to groundwater dependent ecological communities (affected by groundwater drawdown) and to riparian and in stream ecology (affected by surface cracking and water flow impacts); and (f) surface locations (and associated infrastructure) above the tunnel alignment that are likely to be at risk to land subsidence or settlement impacts, including relevant settlement design criteria and measures to minimise, monitor and offset impacts.	been incorporated into the NWRL Stage 1 EIS as follows: • Section 8.3.6 with additional data on existing groundwater conditions to be available for EIS 2. • Section 8.4.2, Section 8.5. • Section 8.5. • Section8.5, measures for restoring water quality in Chapter 18. • Chapter 15, Chapter 18, • Section 8.4.1. Impacts relating to operations would be addressed in EIS 2.
SoC reference[2]	**Description**	**Assessment approach**
35	Detailed geotechnical and groundwater investigations would be undertaken involving site investigations to inform future design development.	• Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: Section 8.2.2 and Section 8.5. Further detail as a result of ongoing modelling / testing of geotechnical conditions and groundwater to be included in EIS 2.

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2]Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.1.2 Summary of issues

Operational stage

- Management of groundwater seepage and flood water entering the underground components of the project.
- Management/disposal from tunnel and station boxes inflow.
- Impact on groundwater dependent ecological communities.
- Operational erosion and sediment controls.
- Groundwater monitoring.

Construction stage
Issues expected to be encountered during the construction of the NWRL Stage 2 are similar to the issues encountered in NWRL Stage 1 EIS (Refer to Chapter 8 of the NWRL Stage 1 EIS):

- Potential to encounter contaminated or acid sulfate soils.
- Risk to groundwater quality from contaminated groundwater.
- Local and regional drawdown impacts.

6.1.3 Proposed further assessment

Operational stage
NWRL Stage 2 EIS will:

- Identify and assess soil erosion, soil salinity and water course impacts during the operation of stations (as per DGR listed in Table 6-1).
- Identify and assess risks to groundwater quality and/ or risks to surface water quality from contaminated groundwater during the operational stage of the project (as per CoA 3.7 and SoC 35 listed in Table 6-1).
- Provide details at a conceptual level of the proposed groundwater management system for the below ground stations and tunnels.
- Provide details of the proposed groundwater water monitoring procedures and performance criteria.

Construction stage
Mitigation measures identified in the NWRL Stage 1 EIS would apply for the construction of Stage 2. NWRL Stage 2 EIS will:

- Assess impacts of spoil from Stage 2 construction works.

6.2 Traffic and access

6.2.1 Conditions of Approval and Statement of Commitments

Table 6-2 lists the Conditions of Approval and Statement of Commitments related to traffic and access, and where in the project these have been addressed. Unless otherwise stated, references are to chapters of the NWRL Stage 1 EIS.

Table 6-2: Traffic and access - Director-General's Requirements, Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
3.3	The Proponent shall review mode-of-access demand and peak traffic predictions at Epping Station taking into account the impact of ECRL operations on patronage distribution; and identify any required changes to mode-of-access arrangements at Epping.	To be addressed in EIS 2.
3.4	The Proponent shall confirm mode-of-access arrangement at each new station, with consideration to (but not limited	To be addressed in EIS 2.

	to) the following matters: • at Cherrybrook Station – details of park and ride provisions, road access arrangements (including the feasibility of a signalised intersection between Castle Hill, Glenhope and Franklin Roads); and pedestrian and cycle linkages to the surrounding pedestrian catchments of Cherrybrook and West Pennant Hills; • at Castle Hill Station – investigation of options for shared use parking; bus access arrangements; and pedestrian and cycle linkages between the station and residential areas surrounding the Castle Hill town centre, retail areas within the town centre and Castle Towers shopping centre; • at Hills Centre Station – details of park and ride provisions; road access arrangements; and pedestrian linkages to the Castle Hill industrial estate; • at Norwest Station – investigation of options for shared use parking, access for buses, kiss and ride and taxis; and pedestrian and bus linkages to the Norwest Business park and surrounding residential catchments; • at Kellyville Station – details of park and ride provisions; bus interchange arrangements which are integrated to the Parramatta to Rouse Hill Transitway; and road, pedestrian and cycle access that are integrated with the planned provisions for the Balmoral Road Release Area; and • at Rouse Hill Station – bus interchange arrangements which are integrated to the Parramatta to Rouse Hill Transitway; and road, pedestrian and cycle access that are integrated with the planned provisions for the Rouse Hill Regional Centre.	
3.5	The Proponent shall confirm the construction traffic impacts associated with the project, identifying: • haulage routes; • peak congestion and intersection performance impacts at local and arterial roads considering cumulative impacts from surrounding development and from concurrent construction sites; • reasonable and feasible construction options at road crossings to avoid and / or minimise traffic disruptions; and • requirements for road and / or lane closure and alternative travel arrangements.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Chapter 9. Construction traffic relating to rail systems and stations to be addressed in EIS 2.
SoC reference[2]	**Description**	**Assessment approach**
11	At each station, further studies would be undertaken to consider the integration of the station with the local area to ensure that predicted patronage and mode access are catered for during operation. Studies would consider local connectivity requirements; pedestrian modelling (including emergency access); bicycle facilities; the potential impacts of traffic accessing the station from the surrounding road network; parking requirements and the integration of the Transitway and other bus services with the new rail	To be addressed in EIS 2.

	stations. These investigations would be undertaken in consultation with Councils, RailCorp, Ministry of Transport and the Roads and Traffic Authority.	
12	The location, scale, design and quantum of park-and-ride facilities at the Franklin Road, Hills Centre and Burns Road Station would be reviewed during further design. This is to be undertaken with reference to relevant parking policies and in consultation with Councils, RailCorp and the Ministry of Transport.	To be addressed in EIS 2.
13	In consultation with Councils, RailCorp, the Ministry of Transport and surrounding landowners, investigate opportunities for 'shared use' or complementary parking facilities adjacent to Norwest Station.	To be addressed in EIS 2.
14	In consultation with the RTA and Councils, investigate the feasibility of providing a direct access point to the Franklin Road site from Castle Hill Road and the potential for a signalised intersection at the intersection of Glenhope Road with Castle Hill Road.	Permanent operational access to be addressed in EIS 2.
15	In consultation with the RTA and Councils investigate potential access improvements to Franklin Road Station from areas to the north.	Permanent operational access to be addressed in EIS 2.
16	The design of construction activities would consider access points, surrounding intersections, bus routes and pedestrian flows.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Discussion of access points, impacts on surrounding intersections, bus routes and pedestrians for each site in Section 9.4.
17	Traffic modelling and traffic management analysis would be undertaken for the roads and intersections impacted by the project during the project construction and operation. This analysis would consider existing and planned road upgrades.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Traffic modelling and analysis in Section 9.4. Traffic modelling and analysis for rail systems and stations construction, and operations to be addressed in EIS 2.
18	A detailed construction methodology for the construction over and/or under roads would be developed in consultation with the RTA and Councils with the aim of minimising traffic disruptions (including construction of the bridge over Windsor Road at Kellyville and cut and cover construction under Norwest Boulevard, Windsor Road and Burns Road).	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Construction methodologies at existing roadways in Chapter 7 and Section 9.4.
19	Maintenance access points would be identified and planned in consultation with RailCorp and Councils.	Maintenance of access points relating to rail systems and stations construction, and operations to be addressed in EIS 2.

[1] Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.2.2 Summary of issues

Operational stage

- Proposed station access arrangements for all modes-of-access (ie. private vehicles, public buses, pedestrians and cyclists) and how proposed access responds to the forecasted station patronage.
- Forecasted traffic movements
- Impacts on the use of existing and planned transport modes (eg. car, public buses, bicycles, walking) particularly during peak hour periods.
- Impacts of the NWRL rail traffic and forecasted patronage on the rail network including connecting stations, particularly on peak hour periods.
- Integration between pedestrian, bus and cycle movements and between land uses and the transport interchange.
- Consequential rail network changes associated with the new rapid transit system, particularly at Chatswood to facilitate efficient interchange.

Construction stage

Construction traffic and access issues for NWRL Stage 2 are largely the same issues identified in the NWRL Stage 1 EIS:

- Intersection performance during construction.
- Increased traffic volumes during construction.
- Required road network modifications.

6.2.3 Proposed further assessment

Operational stage

NWRL Stage 2 EIS will:

- Undertake pedestrian and traffic modelling and analysis for the operation of stations and rail systems and assess impacts of traffic accessing the stations from the surrounding road network (as per SoC 17 listed in Table 6-2).
- Review and (if required) update mode-of-access demand and peak traffic predictions for Epping station. Also, confirm mode-of-access arrangement at each new station including any required traffic management measures, road upgrades and intersection treatments (as per CoA 3.3 and 3.4 listed in Table 6-2).
- Undertake traffic and access investigations aiming to integrate the NWRL stations with the local area to ensure that predicted patronage and mode access are catered for during operation (as per SoC 11 listed in Table 6-2).
- Investigate location, scale, design and quantum of park-and-ride facilities, station access points and road intersection treatments in consultation with relevant government authorities and stakeholders (as per SoC 12, 13 and 15 listed in Table 6-2).
- Identify and plan maintenance access points for the operational stage of the NWRL (as per SoC 19 listed in Table 6-2).

Construction stage
NWRL Stage 2 EIS will build upon the assessment work undertaken for NWRL Stage 1 EIS. TfNSW will:

- Undertake traffic modelling and analysis for the construction of NWRL Stage 2 based on the model built for Stage 1 construction stage (as per SoC 17 listed in Table 6-2).
- Identify and assess traffic and access impacts from the construction if the NWRL Stage 2 (as per CoA 3.5 listed in Table 6-2).
- Assess traffic disruptions and cumulative traffic issues at the construction sites during the NWRL Stage 2 construction.
- Review traffic management measures for NWRL Stage 1 construction and (if required) update and develop additional traffic management measures for NWRL Stage 2 construction.

6.3 Noise and vibration

6.3.1 Conditions of Approval and Statement of Commitments

Table 6-3 lists the NWRL Conditions of Approval and Statement of Commitments related to noise and vibration, and where in the project these have been addressed.

Table 6-3: Noise and vibration - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
2.6	In relation to operational noise and vibration, the Proponent shall ensure that: • the project rail corridor is designed consistent with the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (DECC, 2007); • the project stabling facilities are designed consistent with the *Industrial Noise Policy* (EPA, 2000); and • the project is designed to consistent with *Assessing Vibration: A Technical Guideline* (DECC, 2006).	Operational noise and vibration to be addressed in EIS 2.
3.6	The Proponent shall review the noise and vibration impacts of the project during construction (including construction traffic) and operation, considering all reasonable and feasible mitigation options at existing and planned future receivers.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Construction noise and vibration assessment relating to major civil construction in Section 10.7 and 10.8. Construction noise and vibration assessment relating to rail systems and stations construction, and operations to be addressed in EIS 2.

SoC reference[2]	Description	Assessment approach
20	A detailed noise and vibration assessment of the proposed construction activities, including blasting if required, would be undertaken as part of design development and would include the investigation of the potential need for reasonable and feasible mitigation in accordance with relevant policies and guidelines.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Construction noise and vibration assessment relating to major civil construction in Section 10.7 and 10.8. Construction noise and vibration assessment relating to rail systems and stations construction to be addressed in EIS 2.
21	Consult with local Councils, Growth Centres Commission and RailCorp in relation to land use planning and development controls to minimise the need for physical noise mitigation.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Consultation in relation to the design of the rail line and noise mitigation in relation to land use planning is detailed in Chapter 5. As part of this consultation, has been undertaken with the Departmental Precinct Landuse Group. Consultation would be ongoing with this group and with local Councils, Growth Centres Commission and RailCorp during the development of EIS 2.
22	In regard to operational noise, the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (Department of Planning, 2007) would be used to implement the following activities: • Modelling of operational noise impacts (including ground borne noise) in more detail as part of the design development; • Identification of acoustic mitigation measures to meet, where reasonable and feasible, the design goals; and • Select representative locations for the project at which it is appropriate to later assess compliance.	Operational noise to be addressed in EIS 2.
23	In regard to train stabling operational noise, the following would be undertaken: • Determine the extent of any physical noise mitigation measures in consultation with Department of Environment and Climate Change, RailCorp and Growth Centres Commission; and • Review the results of RailCorp's investigations into addressing horn noise and consider the feasibility in consultation with RailCorp of implementing a low volume horn test.	Operational noise to be addressed in EIS 2.
24	Investigate feasible and reasonable mitigation measures to manage operational vibration in consultation with Councils, the Department of Environment and Climate	Operational noise to be addressed in EIS 2.

	Change and RailCorp.	

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2]Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.3.2 Summary of issues

Operational stage

- Operational airborne rail noise. Some relatively minor exceedances of the criteria for a few properties along the above-ground section of the alignment are predicted.
- Operational airborne noise from stations and precincts. Stations (including transport interchanges) and tunnel ventilation equipment needs to comply with the noise design criteria.
- Ground-borne rail noise and vibration. Need to comply with the noise criteria at all locations with the installation of appropriate track attenuation.
- Stabling Facility at Tallawong Road. Noise from a number of discrete activities proposed to be undertaken must comply with relevant noise criteria, especially during the early morning period (4.00am to 7.00am).

Construction stage

Construction noise and vibration issues for NWRL Stage 2 are largely the same issues identified in the NWRL Stage 1 EIS. These include:

- Construction airborne noise. Certain construction activities at discrete sites are predicted to exceed construction noise management levels, with the largest exceedances predicted for the construction of the car parks at Cherrybrook Station and Cudgegong Road Station.
- Construction airborne noise associated with ballast and track placement for above ground sections of alignment.
- Noise and vibration sensitive receivers in proximity to the construction sites.
- Ground borne vibration (no blasting would be required for the construction of NWRL Stage 2).
- Construction traffic noise.

6.3.3 Proposed further assessment

Operational stage

- Undertake operational noise assessment for the operation of the NWRL. This task will include modelling of operational noise (including ground borne noise) and vibration (as per CoA 2.6 and 3.6 and SoC 22 listed in Table 6-3).
- Assess stabling noise and determine the extent of any physical noise mitigation measures in consultation with relevant government authorities (as per SoC 23 listed in Table 6-3).
- Identify feasible and reasonable mitigation measures to manage operational noise and vibration in consultation with relevant government authorities. Mitigation measures will be considered, including noise walls (where feasible and reasonable), depending on the severity of the predicted impacts and (as per CoA 3.6 and SoC 24 listed in Table 6-3).

- Continue consultation with relevant government authorities in relation to land use planning and development controls to minimise the need for physical noise mitigation (as per SoC 21 listed in Table 6-3).

Construction stage
Construction of noise and vibration modelling and assessment have been undertaken for the NWRL Stage 1(Refer to Chapter 10 of the NWRL EIS Stage 1) and mitigation measures have been proposed to manage identified impacts.

- NWRL Stage 2 EIS will build upon the work undertaken for Stage 1 EIS. Further assessment will include:
- Review and update (if required) of identified sensitive receivers and noise and vibration management levels. Undertake the construction and traffic noise and vibration modelling update and assessment (as per DGR 'noise' and SoC 20 listed in Table 6-3).
- Identification of reasonable and feasible mitigation measures, which may include temporary noise barriers, respite periods, etc (as per CoA 3.6 listed in Table 6-3).

6.4 European Heritage

6.4.1 Conditions of Approval and Statement of Commitments

Table 6-4 lists the NWRL Conditions of Approval and Statement of Commitments related to European heritage, and where in the project these have been addressed.

Table 6-4: European heritage - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
3.15	The Proponent shall review the European Heritage impacts of the project, describing measures to minimise and / or appropriately manage impacts.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Sections 11.5 and 11.6.
SoC reference[2]	**Description**	**Assessment approach**
30	Additional research would be undertaken to determine the history and potential heritage significance of the sites identified in Castle Hill. Site-specific archaeological assessments would be undertaken in the event that they are found to have heritage significance.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Sections 11.5.4 and 11.6.
31	Site-specific archaeological assessments would be undertaken for the two archaeological sites identified along Old Windsor Road and Windsor Road.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 11.6.
32	A view analysis would be undertaken to and from Rouse Hill House and its estate and the Glenhope property. If required appropriate mitigation measures would be identified	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows:

		• Section 11.6.

[1] Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.4.2 Summary of issues

The NWRL Stage 1 EIS identified European heritage issues related to the NWRL Stage 1 and Stage 2 including construction and operational stages.

Operational stage
- Potential impact on heritage items in proximity to the NWRL structures, including impact on heritage curtilages.

Construction stage
- Potential impacts on European heritage items in areas of moderate to high archaeological potential.

6.4.3 Proposed further assessment

Chapter 11 of the NWRL Stage 1 EIS assessed European heritage impacts and identified European heritage management and mitigation measures. The assessment already undertaken covers the proposed NWRL Stage 2 construction and operational stages and addresses the Director-General Requirements, Conditions of Approval and Statement of Commitments listed in Table 6-4.

6.5 Indigenous Heritage

6.5.1 Conditions of Approval and Statement of Commitments

Table 6-5 lists the NWRL Conditions of Approval and Statement of Commitments related to Indigenous heritage, and where in the project these have been addressed.

Table 6-5: Indigenous heritage - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
3.14	The Proponent shall review the indigenous heritage impacts of the project considering cumulative impacts from surrounding development, consistent with: (a) Steps 1 to 4 of the *Protocol for Aboriginal Stakeholder Involvement in the Assessment of Aboriginal Cultural Heritage in the Sydney Growth Centres* (Context Pty Ltd, 2006a) and the *Precinct Assessment Method for Aboriginal Cultural Heritage in the Sydney Growth Centres* (Context Pty Ltd, 2006a), for land within the North West Growth Centre; and (b) *Guideline for Aboriginal Cultural Heritage Impacts Assessment and Community Consultation* (DECC July 2005), for all other areas. The Proponent shall identify mitigation priorities with consideration to the regional significance of impacts.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 12.3 and 12.6.

SoC reference[2]	Description	Assessment approach
33	The Indigenous Heritage protocol and methodology developed for the Growth Centres would continue to be applied as the project progresses, in consultation with DECC and relevant Indigenous groups.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 12.3 and 12.6.
34	A detailed assessment would be undertaken in the vicinity of Aboriginal sites identified to have moderate to high archaeological potential. The assessment would identify areas to be avoided, construction related impacts and how these can be managed; and, where required, salvage excavation prior to any subsurface impact on the deposit. Advertising for interested parties would need to be undertaken prior to any subsurface investigation, in accordance with DECC requirements.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 12.5 and 12.6.

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.5.2 Summary of issues

The NWRL Stage 1 EIS identified Indigenous heritage issues related to the NWRL Stage 1 and Stage 2 including construction and operational stages.

Operational stage

- Impact on the Aboriginal cultural heritage values.
- Continue consultation with the Aboriginal community.

Construction stage

- Impacts on known Aboriginal heritage sites and areas with moderate to high potential for archaeological deposits.
- Potential impact on Aboriginal cultural heritage values.
- Consultation with the Aboriginal community.

6.5.3 Proposed further assessment

Chapter 12 of the NWRL Stage 1 EIS assessed Indigenous heritage impacts and identified mitigation measures to manage such impacts. The assessment presented in NWRL Stage 1 EIS covers the proposed NWRL Stage 2 construction and operational stages and addresses the Director-General Requirements, Conditions of Approval and Statement of Commitments listed in Table 6-5.

6.6 Land use, community facilities and business impacts

6.6.1 Conditions of Approval and Statement of Commitments

Table 6-6 lists the NWRL Conditions of Approval and Statement of Commitments related to land use, community facilities and business impacts, and where in the project these have been addressed.

Table 6-6: Land use, community facilities and business impacts - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
Project design	2.1 The Proponent shall in consultation with relevant Government agencies, relevant Councils and relevant stakeholders, ensure that underground components of the project are designed with regard to existing and/or planned future underground utilities and infrastructure including the planned extension of the M2 Motorway.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Consultation in Chapter 5. • Utility adjustments and protection in Section 7.10.2. • Traffic Management in Section 7.10.4. • Major road modifications in Section 7.10.5. • Public transport modifications in Section 7.10.6.
	2.2 The Proponent shall in consultation with relevant Councils and relevant Government agencies including (but not necessarily limited to) the GCC, MoT, the Department, Landcom, ensure that surface components of the project are integrated with surrounding landuse (existing and planned future, as relevant) as far as reasonable and feasible, consistent with the objectives of *Integrated Land Use and Transport* (DUAP 2001 or as updated), to minimise the potential for landuse conflicts. In particular: • design of Castle Hill station shall consider the Castle • Hill Draft Master Plan (or as updated); and • Kellyville and Rouse Hill Stations and stabling facilities are to be integrated with the precinct planning for the Burns Road Release Area, Rouse Hill Regional Centre and the Area 20 precinct of the North West Growth Centre, as relevant.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Consultation in Chapter 5. • Planned future development in Section 14.4. • Long term integration and compatibility of land use surrounding each station will be considered in EIS 2.
	2.4 The Proponent shall ensure that station precincts across the project provide a high degree of accessibility to all modes-of-access, consistent with the objectives of Integrated Land Use and Transport (DUAP 2001 or as updated).	Accessibility to stations will be considered in EIS 2.
Property and land use	3.2 The Proponent shall confirm the footprint of the project with respect to alignment, station precincts and ancillary infrastructure as far as reasonable and feasible, and describe the landuse impacts on existing and planned future use associated with any additional	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Construction footprint of major civil construction

	land take.	works in Chapter 7. • Land use impacts in Sections 14.4 and 14.5 and EIS 2
SoC reference[2]	**Description**	**Assessment approach**
Land use, property and infrastructure planning	6. Consultation with Councils, the Growth Centres Commission, RailCorp and other relevant stakeholders would be undertaken to ensure environmental planning instruments reflect planning, construction and operation of the project and include integrated planning provisions for appropriate development controls within the vicinity of the rail line and stabling facility.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Consultation in Chapter 5. Ongoing for EIS 2
	7. Land use and property impacts of the project, including construction sites and all ancillary facilities, would be further assessed in consultation with Councils and surrounding landowners.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Land use and property impacts in Sections 14.4 and 14.5. • Consultation in Chapter 5. Ongoing for EIS 2
	8. A Land Asset Management Strategy to address 'land surplus to use', post construction would be developed jointly with the Department of Planning (Land Management Branch) in consultation with Councils, Growth Centres Commission and RailCorp. This strategy would investigate opportunities for land amalgamation of parcels severed by the project and identify opportunities for development that is consistent with surrounding land use planning.	Details of the strategy would be presented in EIS 2
	9. Consultation with relevant Councils, government agencies, utility providers, land owners and communities involved in the planning of precincts in the vicinity of each station would be undertaken with the aim of encouraging transit-orientated development around each station. The role of each station within the context of provision of public transport services would be established, including the need and capacity of park and ride facilities, establishing connections with other transport modes (including the potential for integrated ticketing), and integrating pedestrian and cyclist facilities.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Consultation in Chapter 5. Details of consultation proposed in the planning of precincts would be presented in EIS 2
	10. Further investigations would be undertaken with respect to the planned expansion of the Castle Hill Shopping Centre and integration of the project with the Castle Hill Draft Master Plan.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Expansion of Castle Hill shopping centre in Section 14.4.2. • Consultation in Chapter 5. • Cumulative impacts in Chapter 20. Further details regarding project

		integration would be presented in EIS 2.

[1] Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.6.2 Summary of issues

Operational stage

- Land severance. The corridor has the potential to physically divide a community and create physical barriers interrupting established social linkages, connections and travel patterns.
- Potential for permanent land fragmentation between the proposed Area 20 Precinct alignment and Schofields Road by the addition of an additional physical barrier.
- Changes to business activity as a result of increased visitation to areas in the vicinity of stations by commuters and development triggered by the presence of a station and transit service.
- Introduction of transit oriented land uses at the stations and the potential to complement existing and future land uses in the area.
- Likely changes on land uses around station precincts.
- Land use opportunities for excess land followed the completion of the construction stage.

Construction stage

The NWRL Stage 1 EIS identifies land use, community and local business impacts (positive and negative) related to the construction activities of Stage 1 (Refer to Chapter 13 and Chapter 14 of the NWRL Stage 1 EIS). These issues are also relevant to the construction of NWRL Stage 2:

- Increase in business activity as a result of demand for goods and services by the construction workforce in vicinity to the construction sites.
- Temporary disruptions to community facilities and businesses in the vicinity of the construction sites due to alterations to access arrangements.
- Impact on planned future developments including Epping Town Centre, Castle Towers Expansion, Balmoral Road Release Area, Rouse Hill Town Centre Northern Frame and Area 20.
- Direct land use changes at construction sites and the above ground alignment.
- Land use change at the construction sites. The land would change in use from a residential, commercial, open space and/or rural setting to a construction site.
- Acquisition and demolition of buildings within the footprint of the construction sites.
- Land severance during construction.
- Loss of community facilities located within the construction footprint.
- Disruption to the access, use and amenity (noise and vibration, changes to traffic and parking, visual, and air quality) of community facilities in the immediate vicinity of the construction sites.
- Modifications and / or relocation of existing public utility infrastructure such as roads, pedestrian ways, bus stops, car parking and other transport access points would have implications for commuter traffic.

6.6.3 Proposed further assessment

Operational stage

- Provide details of the accessibility to stations (as per CoA 2.4 listed in Table 6-6).
- Provide details of the long term integration and compatibility of land use surrounding each station (as per CoA 2.2 and SoC 6 listed in Table 6-6). Stage 2 EIS will identify management strategies to maximise the integration of the project with existing and future land uses around the station precincts and along the corridor.
- Continue consultation with relevant government authorities and stakeholders to ensure environmental planning instruments reflect planning, construction and operation of the project and include integrated planning provisions for appropriate development controls within the vicinity of the rail line and the Tallawong Stabling Facility (as per SoC 6 listed in Table 6-6).
- Prepare a Land Asset Management Strategy Land identifying opportunities for excess land. The strategy will be prepared in consultation with relevant government authorities (as per SoC 8 listed in Table 6-6).
- Prepare and document the precinct planning for each station in consultation with the relevant government authorities and stakeholders (as per SoC 9 listed in Table 6-6).
- Based on the business surveys already carried out for the project and further consultation with business owners and community service providers, assess the potential impacts and benefits of the NWRL operation on businesses and community facilities adjacent to the corridor and the station precincts.

Construction stage

NWRL EIS 2 will:

- Assess land use impacts on existing and planned future land uses during the construction of Stage 2 (as per CoA 3.2 listed in Table 6-6).
- Based on the business surveys already carried out for the project and further consultation with business owners and community service providers, identify community and business impacts during the Stage 2 construction period.
- Identification of additional mitigation measures that would assist in alleviating potential negative impacts associated with the Stage 2 construction works.

6.7 Ecology (Terrestrial and aquatic)

6.7.1 Conditions of Approval and Statement of Commitments

Table 6-7 lists the NWRL Conditions of Approval and Statement of Commitments related to ecology, and where in the project these have been addressed. Unless otherwise stated, references are to chapters of the NWRL Stage 1 EIS.

Table 6-7: Ecology - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach
2.8	Performance Standards The Proponent shall ensure that the biodiversity impacts associated with the project are offset consistent with the "improve and maintain" principles of the Growth Centre Commission Biodiversity Certification process, in consultation with the DECC.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.6.1.
3.1 (d)	Project Applications and Specific Requirements Pursuant to section 75P(1)(a) of the *Environmental Planning and Assessment Act 1979*, the following environmental assessment requirements apply with respect to any projects related to this concept plan approval. d) an assessment of Matters of National Environmental Significance, as relevant.	An EPBC referral has been submitted to SEWPaC.
3.8 (e)	Geotechnical The Proponent shall identify the following matters in relation to the bored tunnel components of the project: • impacts to groundwater dependent ecological communities (GDE) (affected by groundwater drawdown) and to riparian and in stream ecology (affected by surface cracking and water flow impacts).	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5.
3.12	Surface Water and Hydrology The Proponent shall identify impacts to riparian and instream ecology from any direct disturbances to waterways and to flora and fauna from changes to creek flow or flood behaviours, during construction or operation.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5.
3.13	Flora and Fauna The Proponent shall confirm the ecological impacts associated with the project with consideration to Condition 3.8 e) and 3.12, and identify measures to offset impacts, clearly distinguishing between measures to be provided as part of the Growth Centres Commission Biodiversity Certification process and other measures. The Proponent shall describe how the effectiveness of the offset measure will be monitored, what actions shall be taken if measures are identified to be ineffective, the maintenance responsibilities, and timing of implementation of offset measures.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5 and 15.6.1.
SoC reference[2]	**Description**	**Assessment approach**
1	Sustainability strategies Core sustainability principles would be developed for the	Responses to these issues have been incorporated into the NWRL

	design and construction of the project covering the following themes: • Energy • Greenhouse emissions • Water • Community and stakeholder involvement • Biodiversity • Resource recycling/minimisation To develop the principles a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.	Stage 1 EIS as follows: • Chapter 4.
25	Flora and Fauna Design of waterway crossings and structures would be undertaken with reference to the Guidelines for Design of Fish and Fauna Friendly Waterway Crossings (Fairfull and Witheridge 2003) and Fish Passage Requirements for Waterway Crossings (2003) and considering the quality of riparian habitat present, in consultation with the Department of Primary Industries (NSW Fisheries) and other relevant Government agencies.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5.
26	The location of structures associated with the rail tunnel, such as ventilation shafts, emergency egress/access points and discharge/runoff outlines, will be assessed with respect to the potential application of SEPP 19.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5.2.
27	A detailed ecological assessment will be undertaken at all construction sites and along above-ground sections of the project corridor. The assessment will identify areas to be avoided (where practicable), construction related impacts and how these can be managed; and, where required, describe measures to offset significant impacts on threatened species and/or endangered ecological communities (EEC). This assessment will be undertaken in consultation with the DECC, the Growth Centres Commission, RailCorp, and the Commonwealth Department of Environment and Water Resources, as appropriate.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5 and 15.6.
28	'Improve and Maintain' assessment on biodiversity values will be undertaken to identify the potential impacts of the project and benefits from protection measures to be implemented. The methodology adopted for all parts of the project will be consistent with the *draft Growth Centres Conservation Plan* (GCC, 2007) and DEC's *draft Guidelines for Biodiversity Certification of Environmental Planning Instruments* (2007).	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.5 and 15.6
37	Hydrology and Surface Water Investigations into the construction and operational impacts on the Elizabeth Macarthur Creek would be undertaken in accordance with relevant NSW Government guidelines.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Section 15.3 and 15.5

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.7.2 Summary of issues

Operational stage

- Habitat fragmentation.
- Fauna fatalities.
- Increased noise and light.
- Sediment, erosion and pollution.
- Proliferation of weeds and noxious species.

Construction stage

The NWRL Stage 1 EIS identified terrestrial and aquatic ecology issues related to the NWRL Stage 1 and Stage 2 construction stage. These issues are listed below.

- Potential impacts on threatened flora species (*Epacris purpurascens var. Purpurascens* (TSC Act)) vegetation communities (including threatened vegetation communities) and terrestrial fauna located in close proximity to the construction sites.
- Potential impact on riparian and aquatic environment located in close proximity or downstream the construction sites.
- Potential impact on groundwater dependent ecosystems.
- Indirect construction impacts such as weed invasion, habitat loss and fragmentation, hydrological changes, sediment, erosion and pollution and increased noise and light.

6.7.3 Proposed further assessment

Operational stage

NWRL EIS 2 will:

- Develop management measures to manage habitat fragmentation, fauna fatalities, increased noise and light, sediment, erosion and pollution and the proliferation of weeds and noxious species.

Construction stage

NWRL Stage 1 EIS provided an assessment of the terrestrial and aquatic ecology directly and indirectly impacted by the construction of NWRL Stage 1 and Stage 2 (Refer to Chapter 15 of Stage 1 EIS). The assessment addresses the Director-General Requirements, Conditions of Approval and Statement of Commitments listed in Table 6-7.

Therefore no further ecology assessment will be required for the NWRL Stage 2 construction stage.

6.8 Visual amenity

6.8.1 Conditions of Approval and Statement of Commitments

Table 6-8 lists the NWRL Conditions of Approval and Statement of Commitments related to visual amenity, and where in the project these have been addressed.

Table 6-8: Visual amenity - Conditions of Approval and Statement of Commitments

CoA reference[1]	**Description**	**Assessment approach**
3.16	The Proponent shall review the visual and urban design impacts and mitigation requirements for the project in accordance with Statement of Commitment 40 to 44; identifying the timing of implementation of urban design and landscaping measures, how the effectiveness of landscaping measures would be monitored, and maintenance responsibilities for relevant urban design and landscape measures.	This condition would predominantly be addressed in EIS 2. Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Sections 16.5 and 16.6 (see discussion below).
SoC reference[2]	**Description**	**Assessment approach**
40	The following architectural, landscape and urban design principles would be used to guide the design of the new stations and transport interchanges, civil works (such as noise walls, embankments and the viaduct section) and/or the stabling facility concepts: • Reinforce the role of the station and transport interchange within its surrounding neighbourhood as the principal transport and community facility within the locality. • Stations and the stabling facility would be designed in the context of the scale, character and image of the surrounding area and enhance the presentation of the area to visitors, residents and travellers. • Maintain or improve the links across the project and to surrounding areas and activities. Where a connection between adjacent areas is desirable, pedestrian bridges or underpasses would be considered. • Easy access facilities would be incorporated into the station designs and integrated with the associated transport interchanges. • Movement networks should improve existing, or establish new comfortable and inviting pedestrian environments, including equitable access within the railway station and adjoining areas. • A design theme would be established for bridges/viaduct to link the overall rail design together. The design would ensure that the structures are simple, integrated with the surrounding area and finished to a high quality. Fencing, parapets and any railing on the bridges would also be integrated with	This commitment refers to the integration of urban design into the overall design of the project. EIS 2 will include an urban design framework for subsequent design stages, that builds on these principles, as well as an indication as to how urban design principles have been incorporated in the design process to date.

	the overall design. • Establish a hierarchy of access to stations consistent with NSW Government policy package "Integrating land –use and transport" ie. prioritise public transport and other non car-based access to the rail stations and adjoining areas where possible. • Station precinct design should facilitate new development that reflects the highest standards and quality of design.	
41	Visual impact assessment of the project would be undertaken as part of design development. This would consider both the existing and future urban environment to identify impacts and potential mitigation measures, such as architectural, landscape and/or urban design treatments. Additional assessments would apply to pedestrian and cycle facilities; proposed bridging structures; cutting and embankment treatments; landscape treatment projects; design of the stations and stabling facility; proposed acoustic treatments; and any visual buffer areas as required.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Chapter 16 addresses this commitment in terms of project elements associated with major civil construction works. All permanent features will be subject to a detailed visual impact assessment in EIS 2.
42	Measures to mitigate visual impacts and deliver high quality design outcomes would include: • Where noise walls are proposed, potential visual impacts would be minimised by implementation of urban design measures, developed in consultation with adjacent property owners (mitigation measures might include plantings and high quality facings near residential areas). • Earth mounding would be considered where space allows and where significant vegetation would not be lost. • The design of any civil works, such as noise walls, retaining walls, the viaduct and underpasses would adopt CPTED [Crime Prevention Through Environmental Design] principles, including the need for unobstructed views into and outside of the underpass, effective drainage and ventilation, wide corridors and good lighting. • Light spill would be minimised as much as possible to reduce impacts on surrounding existing and future residents in accordance with relevant standards.	These measures (and others) to visually integrate the project into the surrounding landscape are a fundamental component of the developing design of the project and will be detailed in the project description section of EIS 2. This will include identifying consultation that has occurred with adjoining landowners.
43	TIDC's Design Review Panel would guide the application of architectural, landscape and urban design principles throughout the design development.	The TIDC no longer exists. TfNSW urban design staff have an ongoing role in ensuring the application of architectural, landscape and urban design principles throughout design development. This has included input into construction site location and configurations and will continue to occur through the design and procurement process. The NWRL Design Review Panel would be used throughout design development.

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.8.2 Summary of issues

Operational stage
Issues associated with the operational phase of the NWRL include:

- Changes to the landscape associated with:
  - Stations and station precincts, including station buildings, transport interchanges, access roads, landscape and urban design features.
  - Epping and Cheltenham services facilities above ground component.
  - Above ground rail track infrastructure and systems including viaduct, bridges, traction power supply lines and poles, signalling and control equipment, rail track barriers and architectural fixtures.
  - Lighting.
  - Stabling Facility at Tallawong Road.
- The sensitivity of viewers to landscape changes (in terms of numbers of viewers, importance of views, and duration of views).

Construction stage
Issues associated with visual impacts for the construction of NWRL Stage 2 have been already identified in the NWRL Stage 1 EIS and include:

- Change to the landscape occurring as a result of construction activities.
- The sensitivity of viewers to landscape changes (in terms of numbers of viewers, importance of views, and duration of views).
- Night time visual impacts associated with lighting of construction sites.

6.8.3 Proposed further assessment

Operational stage
NWRL Stage 2 EIS will:

- Assess the visual modification, visual sensitivity and visual impact (including night time impacts) of the permanent visible structures of the NWRL (as per CoA 3.16 and SoC 40 to 44 listed in Table 6-8).
- Provide photomontages of permanent visible structures such as station precincts, sections of the above ground route alignment (including the sky train), service facilities and the Stabling Facility at Tallawong Road. Also, provide photomontages of permanent visible structures at night time.
- Identify urban design measures to manage impacts on surrounding landscape and population.
- Identify light spill management measures to reduce impact in existing and future residents and fauna species.

Construction stage
The visual assessment carried out for in the NWRL Stage 1 EIS covers the construction activities associated with Stage 2 of the project. The assessment addresses the Director-General Requirements, Conditions of Approval and Statement of Commitments relevant to construction listed in Table 6-8.

A review of current assessment is proposed for the construction elements of the NWRL Stage 2.

6.9 Climate change and greenhouse gas emissions

6.9.1 Conditions of Approval and Statement of Commitments

Table 6-9 lists the NWRL the Conditions of Approval and Statement of Commitments related to climate change and greenhouse gas emissions, and where in the project these have been addressed.

Table 6-9: Climate change and greenhouse gas emissions - Conditions of Approval and Statement of Commitments

CoA reference[1]	**Description**	**Assessment approach**
N/A	CoA require compliance with DGRs and SoC.	N/A
SoC reference[2]	**Description**	**Assessment approach**
1	Core sustainability principles would be developed for the design and construction of the project covering the following themes: • Energy • Greenhouse emissions • Water • Community and stakeholder involvement • Biodiversity • Resource recycling/minimisation To develop the principles a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Chapter 17 Updated in EIS 2

[1] Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.9.2 Summary of issues

Operational stage
- Potential impacts of climate change on the operation of the NWRL.
- Resilience to the rail infrastructure to climate change.
- GHG emissions from the operational stage of the project.

Construction stage
NWRL Stage 1 EIS identified the following issues (Refer to Chapter 17 of the NWRL Stage 1 EIS):
- Flooding damage to infrastructure.
- Extreme rainfall events causing failure of embankment
- GHG emissions from construction activities.

These issues are common to the construction of the NWRL Stage 2.

6.9.3 Proposed further assessment

Operational stage
NWRL Stage 2 EIS will:
- Identify climate change risks on the operation of the NWRL.
- Assess the level of climate related risks for the operational stage of the project and identify climate change risks adaptation measures.
- Identify the sources of GHG emissions associated with the operation of the NWRL project.
- Quantify the GHG emissions associated with each GHG source and present the Scope 1, 2 and 3 GHG emissions.
- Identify opportunities which may be implemented to reduce the GHG emissions associated with the operation of the NWRL project.

Construction stage
The NWRL Stage 1 EIS identified adaptation options to respond to the climate risks associated with construction works. These adaptation options are also applicable to Stage 2 construction stage.

In addition, the NWRL Stage 2 EIS will:
- Review and update (if required) the climate change risk assessment and adaptation options already identified.
- Quantify GHG emissions from the NWRL Stage 2 construction activities and present the Scope 1, 2 and 3 GHG emissions.
- Identify reasonable and feasible opportunities to be implemented to reduce the GHG emissions associated with the construction of the NWRL Stage 2. Opportunities will have regard to the core sustainability principles developed for the project (refer to SoC 1 listed in Table 6-9).

6.10 Surface water and hydrology

6.10.1 Conditions of Approval and Statement of Commitments

Table 6-10 lists the NWRL the Conditions of Approval and Statement of Commitments related to surface water and hydrology, and where in the project these have been addressed.

Table 6-10: Surface water and hydrology - Conditions of Approval and Statement of Commitments

CoA reference[1]	Description	Assessment approach

3.9	For surface components of the project located on floodplains, the Proponent shall identify flood design criteria in accordance with the *Floodplain Development Manual* (2005), describing risks to existing and planned future receivers and infrastructure based on the modelling of a full range of flood sizes up to and including the probable maximum flood.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Flood related criteria to manage impacts and risks associated with the major Civil Works in Section 18.2.2. • Flood related risks and impacts are discussed in Section18.5. Operational flood design criteria relating to the rail infrastructure, stations and ancillary facilities will be addressed in EIS 2.
3.10	For temporary construction sites located on floodplains, the Proponent shall identify feasible and reasonable mitigation measures for mitigating flood risk, including procedures for restoring and monitoring any temporary creek diversions consistent with pre-construction conditions.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Mitigation measures for flood risks during construction are outlined in Section 18.6. • The need for temporary creek diversions has been reduced through the removal of cut and cover tunnel previously proposed at Cattai Creek (Hills Station) and Caddies Creek Tributary 3 (Rouse Hill).
3.11	For cut and cover tunnel components which cross creek lines, the Proponent shall describe the proposed construction methodology, identifying measures to minimise the risk of bed cracking and loss of surface flow and contingency measures for restoring and monitoring waterways, consistent with pre-construction conditions.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Cut and cover tunnel components across creek lines have been engineered out of the design. The cut and cover tunnel crossing previously proposed at Cattai Creek has been removed by shifting the track alignment. The need for a cut and cover tunnel crossing at Caddies Creek Tributary 3 has been removed by the viaduct design • Refer to Chapter 7 for further details.
3.12	The Proponent shall identify impacts to riparian and instream ecology from any direct disturbances to waterways and to flora and fauna from changes to creek flow or flood behaviour, during construction or operation.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Water quality impacts in Chapter 18.5.

		• Impacts on riparian vegetation and stream ecology relating to changes in flow regimes in Chapter 15.
SoC reference[2]	**Description**	**Assessment approach**
36	A detailed flood assessment would be undertaken in accordance with appropriate NSW Government guidelines and in consultation with Councils and relevant Government agencies. This would include a two dimensional model of the Caddies Creek confluence to facilitate a better understanding of the discharges at the confluence of the creeks and associated design requirements.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • A detailed flood assessment has been carried out, including 2 dimensional hydraulic modelling of the Caddies Creek confluence. • The flood assessment carried out has been tailored to the nature of extent of the project. Refer to Stage 1 EIS, Technical Paper 6 for details of the flood (hydrologic and hydraulic) modelling undertaken.
37	Investigations into the construction and operational impacts on Elizabeth Macarthur Creek would be undertaken in accordance with relevant NSW Government guidelines.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Investigations have been undertaken to assess flood and water quality related impacts of the project on Elizabeth Macarthur Creek. Relevant guidelines used in the assessment are listed in Section 18.2.2. Flood and water quality related impacts in Section 18.5. Operational impacts would be presented in EIS 2.
38	The floodplain storage impacts would be defined during design development in accordance with the relevant NSW Government guidelines.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Flood related impacts and associated management measures are discussed in Chapter 18.5 and 18.6 respectively.
39	Further investigations into the location, size and treatment levels of a water treatment plant(s) would be undertaken in consultation with DECC, Councils and RailCorp. Investigations would include identifying discharge points, determining the receiving water quality and water	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Water generated from tunnelling during construction is discussed in

	re-use/recycling opportunities.	Section 18.5. Operational water treatment plant requirements to collect, treat and discharge groundwater and other water from the tunnels and below ground stations will be addressed in EIS 2.

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

[2] Source: *North West Rail Link Supplementary Submissions Report*, Transport Infrastructure Development Corporation, March 2008 (See Appendix D).

6.10.2 Summary of issues

Operational stage

- Flood risks and impacts relating to above ground permanent structures.
- Management of surface water (eg. stormwater runoff and flooding) on the land occupies by the station precincts, the Stabling Facility at Tallawong Road and the above ground alignment.
- Management of groundwater seepage and flood water entering the underground components of the project.
- Surface and groundwater monitoring.

Construction stage

Potential surface water and hydrology issues identified in the NWRL Stage 1 EIS (Refer to Chapter 18 of the NWRL Stage 1 EIS) are the same issues expected to be encountered during the construction of the NWRL Stage 2. These include:

- Flood risks and impacts relating to construction works.
- Floodplain storage.
- Impact on water quality from erosion and sedimentation, spoil handling and stockpiling, work in proximity to riparian areas, contamination and spills and waste water generated.

6.10.3 Proposed further assessment

Operational stage

NWRL Stage 2 EIS will:

- Assess impacts of waste generation from stations and the NWRL operation (as per DGR listed in Table 6-10).
- Build the hydrologic modelling for the above ground components of the NWRL (ie. station precincts, Stabling Facility at Tallawong Road, service facilities and above ground alignment), identify flood risks and determine flood design criteria (as per CoA 3.9 listed in Table 6-10).
- Provide details at a conceptual level of the proposed groundwater treatment system (as per SoC 39 listed in Table 6-10).
- Provide details at a conceptual level of the proposed stormwater management system for the station precincts, the Tallawong stabling facility, the service facilities and the above ground alignment.

- Describe how water sensitive urban design principles have been incorporated into the surface and ground water management systems design.
- Identify the surface water monitoring procedures and performance criteria during the operation of the NWRL.

Construction stage
The assessment undertaken in Stage 1 EIS (Chapter 18) covers the construction activities proposed for Stage 2. Surface water and hydrology Director-General Requirements, Conditions of Approval and Statement of Commitments relevant to construction activities for Stage 1 and Stage 2 have been addressed in the NWRL Stage 1 EIS. Mitigation measures and statement of commitments already identified in the NWRL Stage 1 EIS would carry over for the construction of Stage 2.

A review of the current assessment is proposed for the construction of the NWRL Stage 2.

6.11 Air quality

6.11.1 Conditions of Approval and Statement of Commitments

There are no Conditions of Approval and Statement of Commitments related to air quality.

6.11.2 Summary of issues

Operational stage
- Emissions from stations, service facilities and the Stabling Facility at Tallawong Road.

Construction stage
The temporary emission sources and issues associated with the construction of the NWRL Stage 2 are the same sources identified in NWRL Stage 1 EIS for major civil construction works (Refer to Section 19.1 of the NWRL Stage 1 EIS). These include:

- Air quality sensitive receivers in close proximity to the worksites.
- Dust generation and vehicular and plant emissions.

6.11.3 Proposed further assessment

Operational stage
NWRL EIS 2 will:
- Identify operational project components that would potentially impact the quality of the air and set up the ambient air quality assessment criteria for such components.
- Identify and assess the impact of emissions arising from the operation of the NWRL on sensitive receivers.
- Identify mitigation measures to manage identified operational air quality impacts.

Construction stage
Air quality impacts and emissions and mitigation measures identified in Section 19.1 of the NWRL Stage 1 EIS apply to both Stage 1 and Stage 2 construction works.

A review of the current assessment is proposed for the construction on Stage 2.

6.12 Waste management

6.12.1 Statement of Commitments

There are no Conditions of Approval related to waste management. Table 6-11 lists the NWRL Statement of Commitments related to waste management, and where in the project these have been addressed.

Table 6-11: Waste management - Statement of Commitments

SoC reference[1]	Description	Assessment approach
Spoil	Opportunities for beneficial reuse of soil identified. Further investigations would be undertaken as part of the design development into the opportunities for beneficial reuse of spoil. As a result of these investigations further assessment of transport options and routes for spoil movement would be undertaken.	Responses to these issues have been incorporated into the NWRL Stage 1 EIS as follows: • Spoil Management in Section 19.2. • Transportation of spoil in Chapter 9.

[1]Source: *Concept Plan Approval*, Department of Planning and Infrastructure on 6 May 2008 (See Appendix C).

6.12.2 Summary of issues

Operational stage

- Management of general waste and waste water generated from station precincts, service facilities and Stabling Facility at Tallawong Road.
- Management of waste and waste water generated from train cleaning, repair and maintenance at Tallawong Road.

Construction stage

Issues identified in Section 19.2 of the NWRL Stage 1 EIS are the same issues expected to be encountered during the construction of Stage 2. These include:

- Management and disposal of spoil.
- Management and disposal of other solid waste including waste from demolition, general construction, office and crib rooms, operation and maintenance of construction vehicles, plant and equipment and green waste.
- Management and disposal of waste water generated from construction.
- Dust generation.
- Contamination of soil, surface and/or groundwater from the inappropriate storage, transport and disposal of waste.
- Potential increase in vermin from the incorrect storage, handling and disposal of putrescible waste from construction compounds.

6.12.3 Proposed further assessment

Operational stage

- Provide details at a concept design level of the waste management strategies for the operational stage of the NWRL. The strategies would cover solid waste and wastewater management at each of the station precincts, service facilities and Stabling Facility at Tallawong Road.

Construction stage

The impact assessment and waste management strategy described in Section 19.2 of the NWRL Stage 1 EIS will apply to the construction of the NWRL Stage 2. In addition, the NWRL Stage 2 EIS will:

- Assess impacts of spoil and quantify the volume and type of construction waste for each construction site from Stage 2 construction works (as per DGR listed in Table 6-11).
- Assess potential waste management impacts additional to the impacts assessed in Stage 1 EIS.
- Develop a spoil management strategy (built upon the strategy developed for Stage 1 construction works) that identify opportunities to reuse spoil generated and reduce the volume of spoil going to landfill (as per SoC 'Spoil' listed in Table 6-11).

6.13 Cumulative impacts

6.13.1 Conditions of Approval and Statement of Commitments

There are no Conditions of Approval and Statement of Commitments related to cumulative impacts.

6.13.2 Summary of issues

Chapter 20 of the NWRL Stage 1 EIS identified the following issues:

- Interaction between impacts and activities associated with the construction of the NWRL Stage 2 and other projects in the vicinity of NWRL.
- Interaction between impacts and activities associated with the operation of the trains, station precincts, services facilities, Stabling Facility at Tallawong Road, rail infrastructure, signalling and systems (internal cumulative impacts).

These issues will form the basis of the assessment of cumulative impacts in the NWRL Stage 2 EIS.

6.13.3 Proposed further assessment

NWRL Stage 2 EIS (Refer to Chapter 20 of the NWRL Stage 1 EIS) undertake a cumulative environmental assessment of the two construction stages and the operation of the NWRL.

NWRL Stage 2 EIS will review and update (if required) this assessment as follows:

- Environmental issues relevant to the construction of the NWRL Stage 2 and the operation of the NWRL.
- List of projects with potential cumulative impacts with the construction of the NWRL Stage 2 and the operation of the NWRL.
- Assessment of the potential cumulative impact by geographic area.

- Identified mitigation and management measures.

7 Next steps

Following the submission of this application the Director-General may issue additional environmental assessment requirements, if any, for the NWRL Stage 2 EIS.

Transport for NSW will prepare the environmental impact statement in accordance with the environmental assessment requirements issued by the Director-General and with the existing relevant conditions of approval and statement of commitments for the approved Staged Infrastructure.

The environmental impact statement would be publicly available for at least 30 days. During that period, any person (including a public authority) may make a written submission to the Director-General concerning the matter.

8 References

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Appendix A Approximate extent of works at stations

Parcels LPMA 2011

Extent of works

Corridor for rail tunnels (60 m)

Suburb boundary

Nominal NWRL alignment

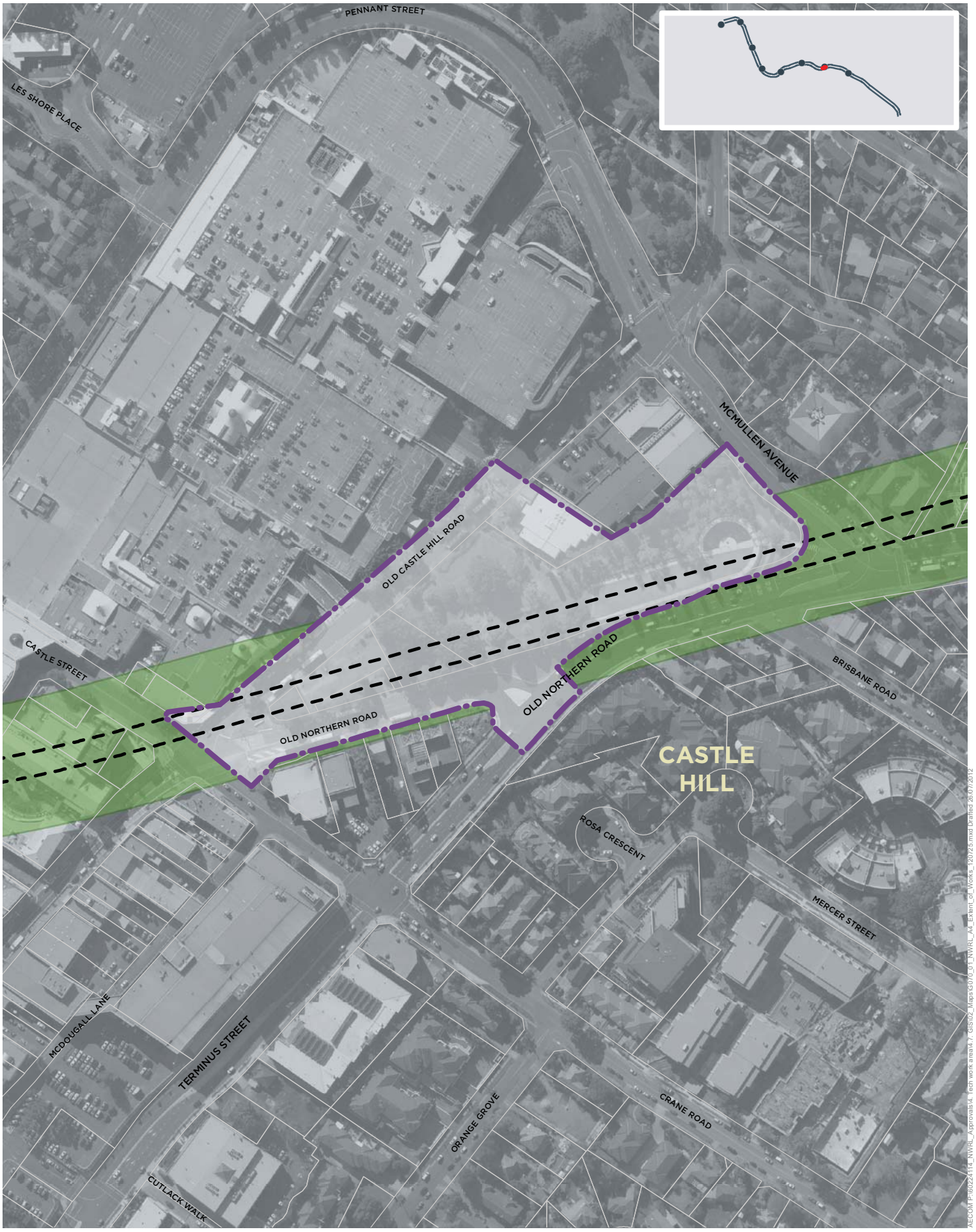
Below ground

Above ground

Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Cherrybrook Station



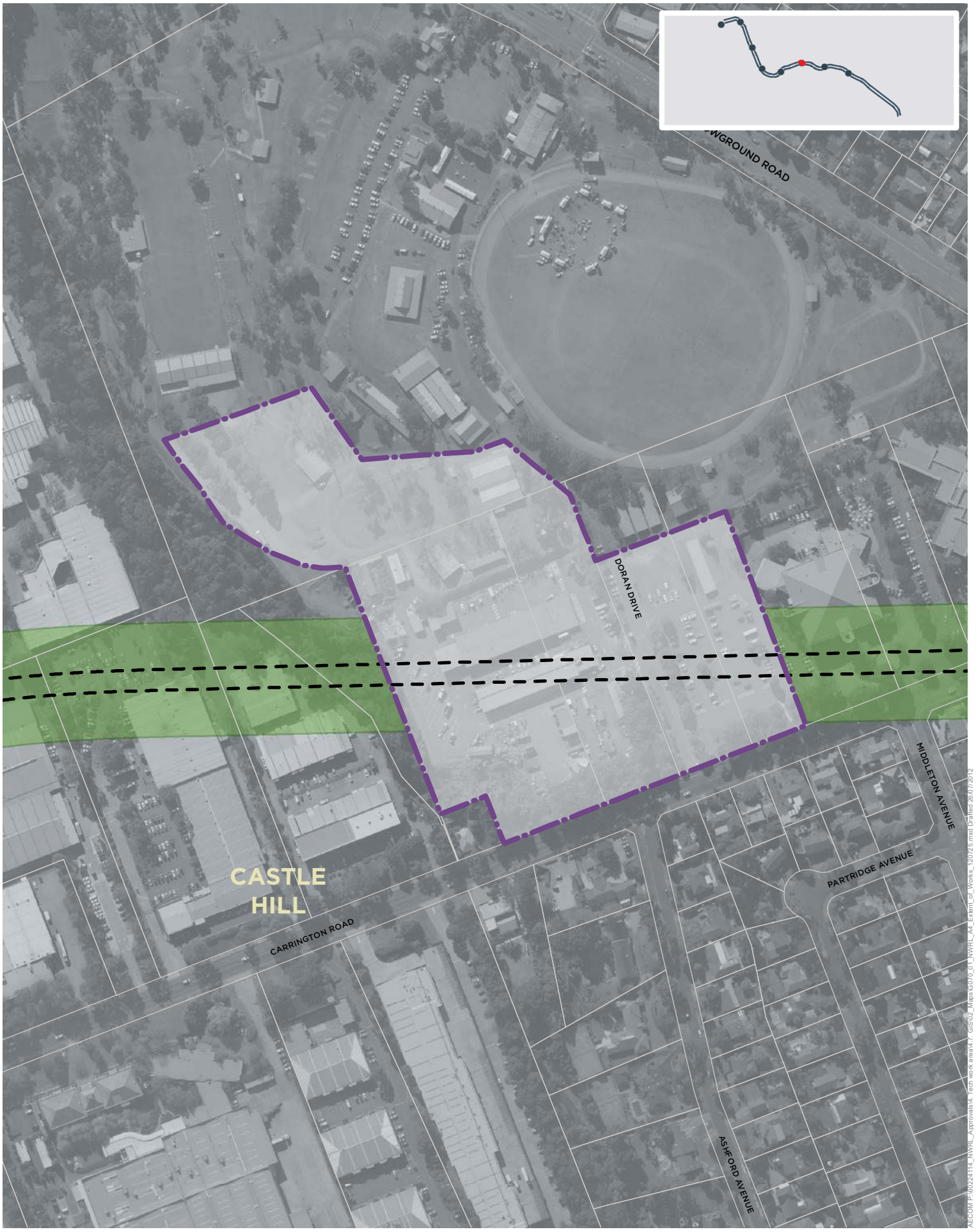
Parcels LPMA 2011
Extent of works
Corridor for rail tunnels (60 m)
Suburb boundary

Nominal NWRL alignment
Below ground
Above ground
Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Castle Hill Station

AECOM_P160922414_NWRL_Approvals\4_Tech work area\4.7_GIS\02_Maps\GIS\02_01_NWRL_A4_Extent_of_Works_120725.mxd Drafted 28/07/2012



Parcels LPMA 2011

Extent of works

Corridor for rail tunnels (60 m)

Suburb boundary

Nominal NWRL alignment

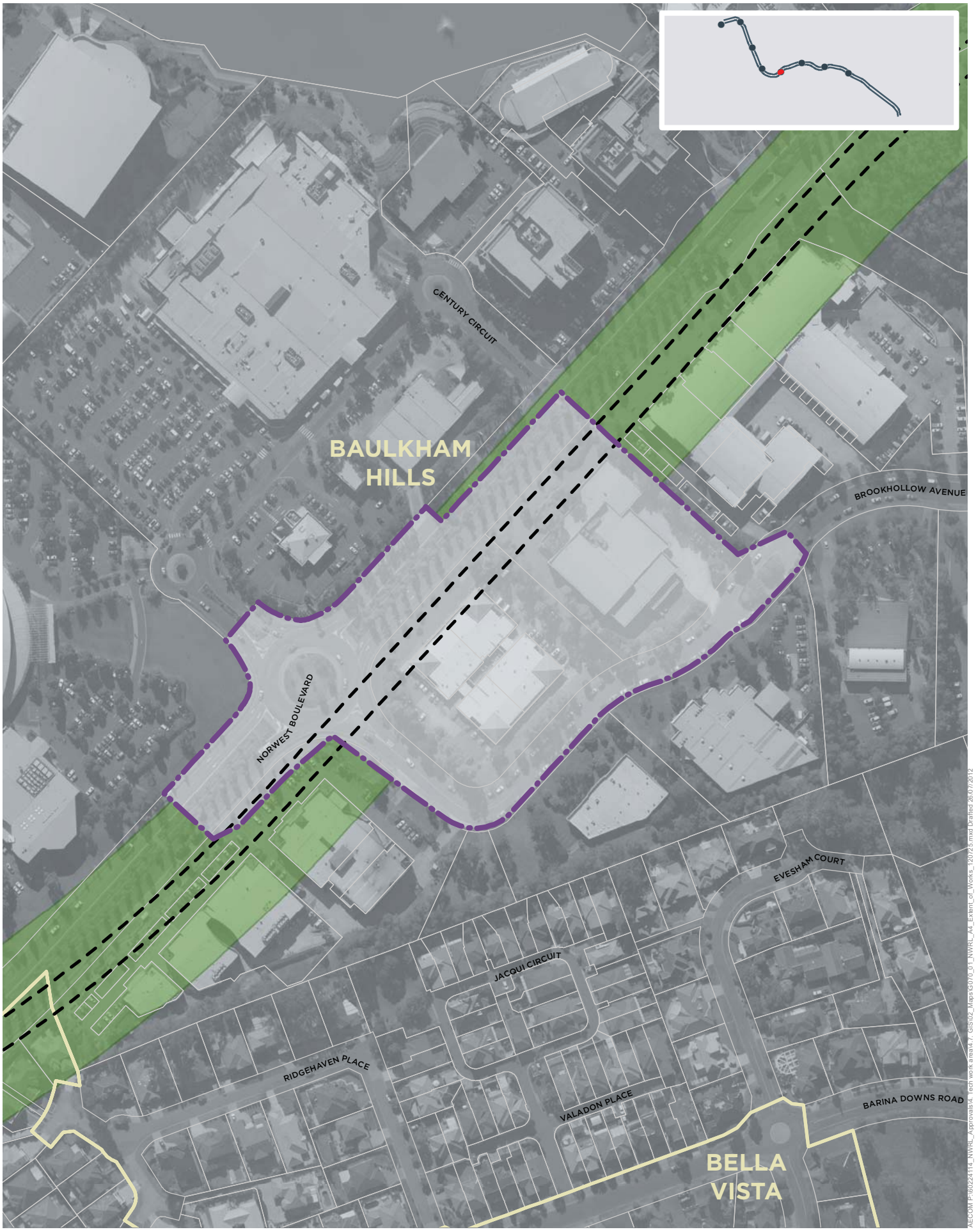
Below ground

Above ground

Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Hills Centre Station

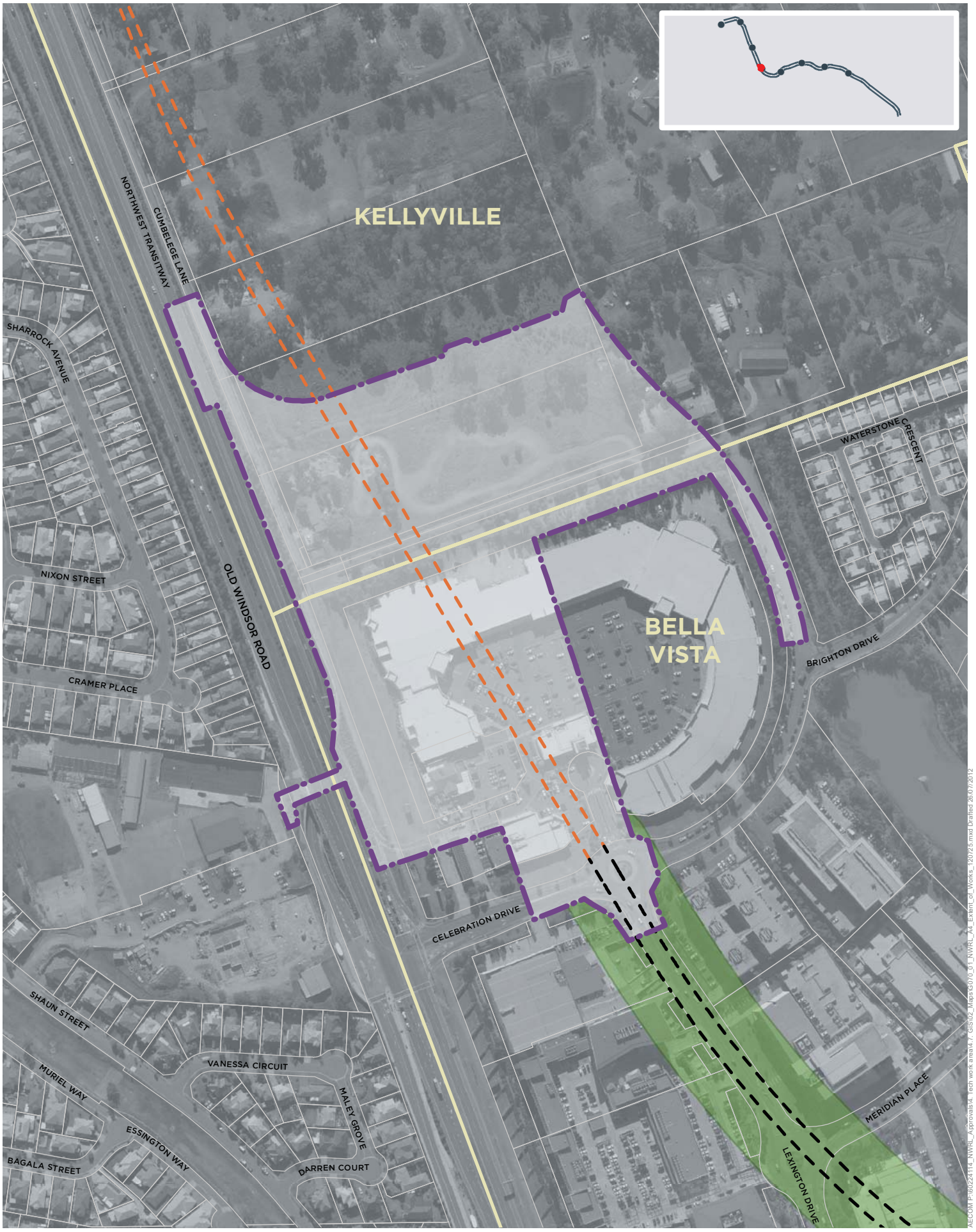


Parcels LPMA 2011
Extent of works
Corridor for rail tunnels (60 m)
Suburb boundary

Nominal NWRL alignment
Below ground
Above ground
Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Norwest Station



Parcels LPMA 2011

Extent of works

Corridor for rail tunnels (60 m)

Suburb boundary

Nominal NWRL alignment

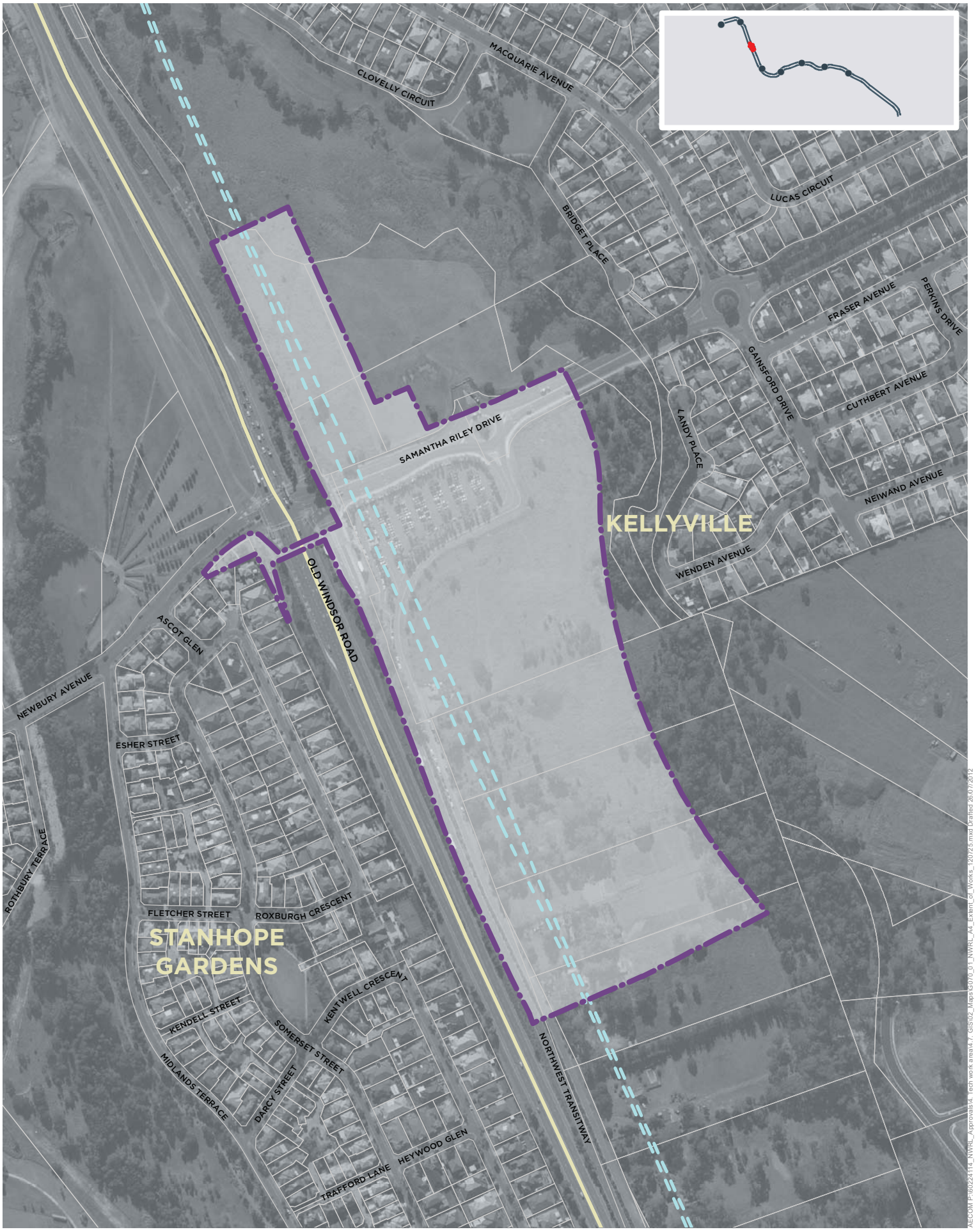
Below ground

Above ground

Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Bella Vista Station



Parcels LPMA 2011

Extent of works

Corridor for rail tunnels (60 m)

Suburb boundary

Nominal NWRL alignment

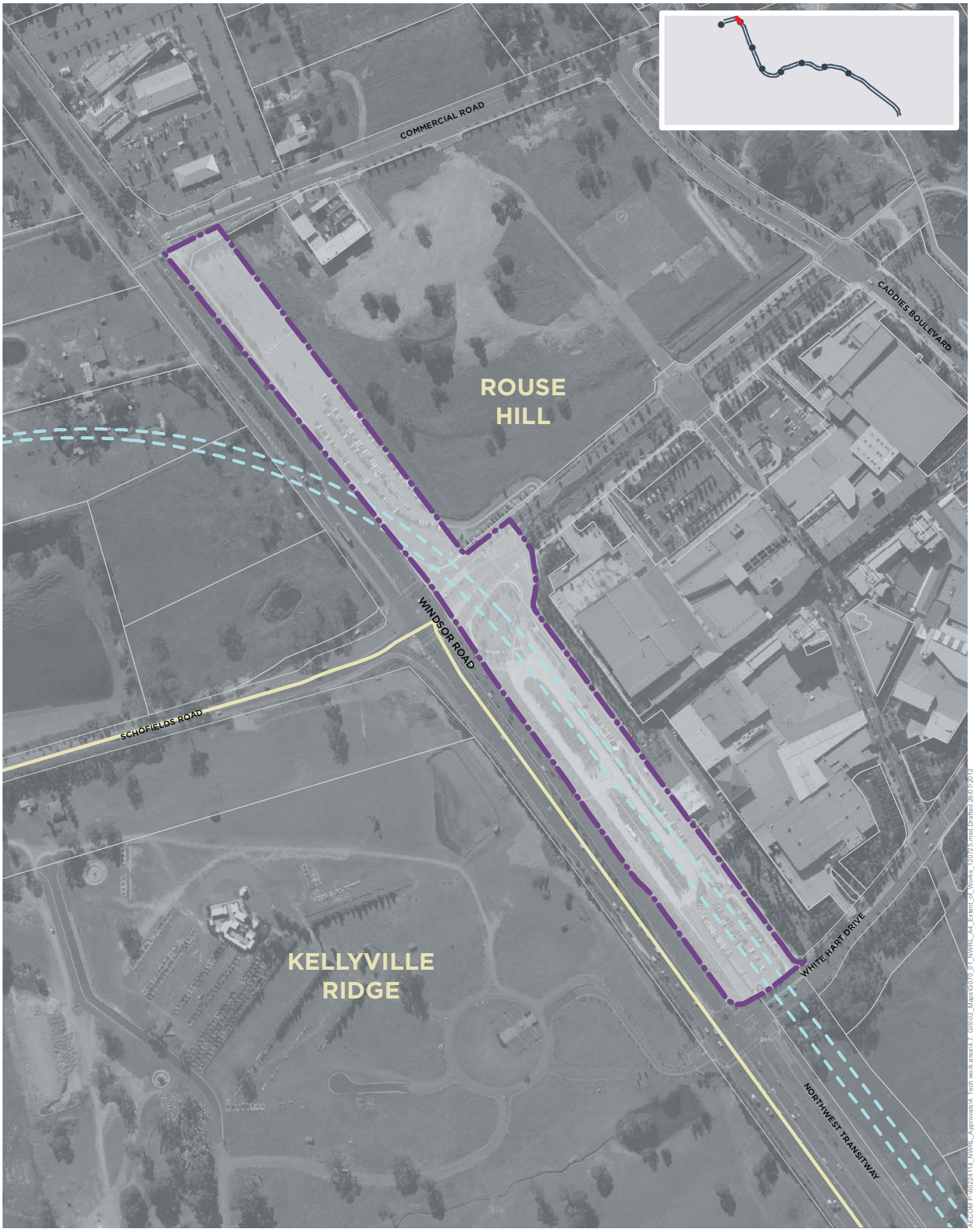
Below ground

Above ground

Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Kellyville Station



Parcels LPMA 2011
Extent of works
Corridor for rail tunnels (60 m)
Suburb boundary

Nominal NWRL alignment
Below ground
Above ground
Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Rouse Hill Station

Parcels LPMA 2011

Extent of works

Corridor for rail tunnels (60 m)

Suburb boundary

Nominal NWRL alignment

Below ground

Above ground

Above ground (bridge / viaduct)

0 50 100 200 m

APPROXIMATE EXTENT OF WORKS
Cudgegong Station

Appendix B Generic station types

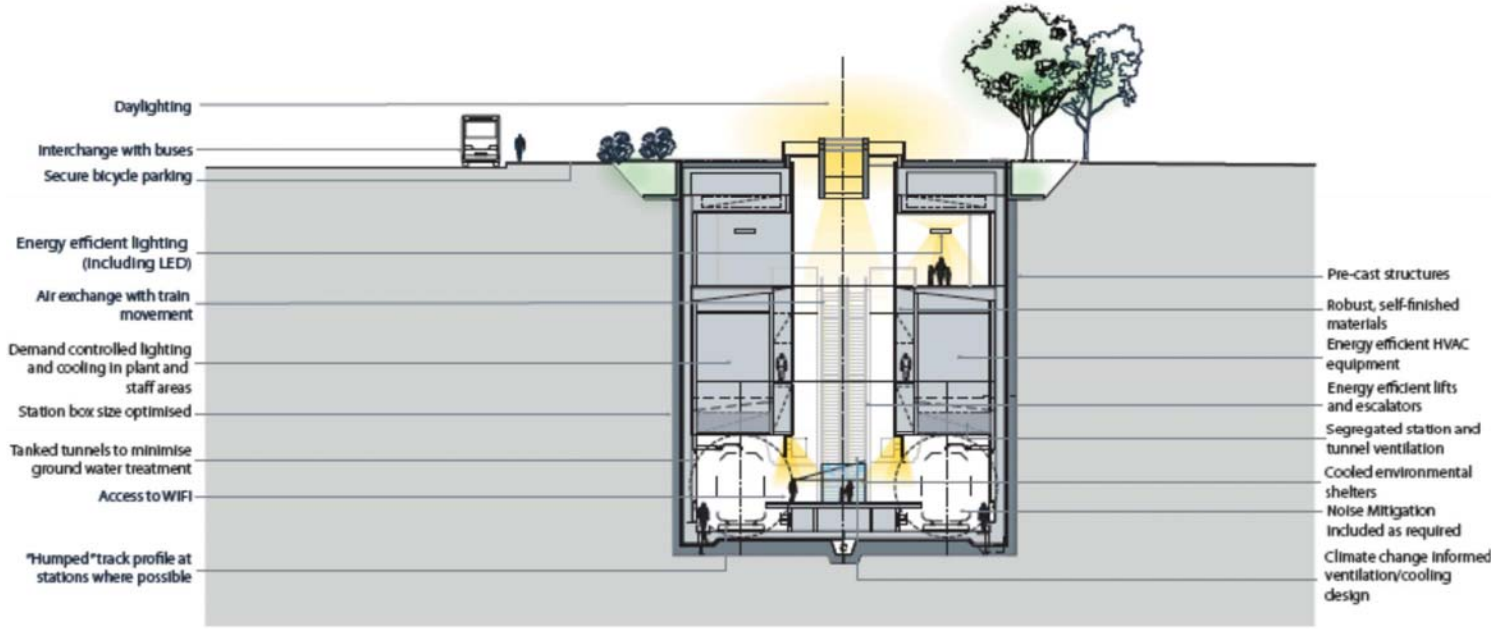


Figure B-1: A generic underground station showing typical features considered during design development

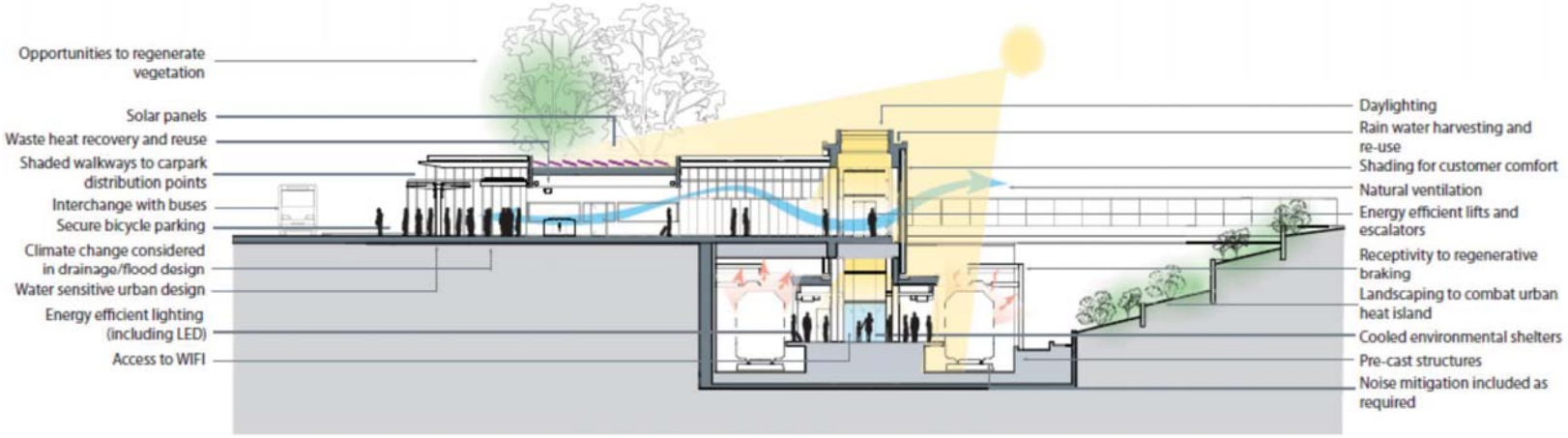


Figure B-2: A generic station in a cutting showing typical features considered during design development

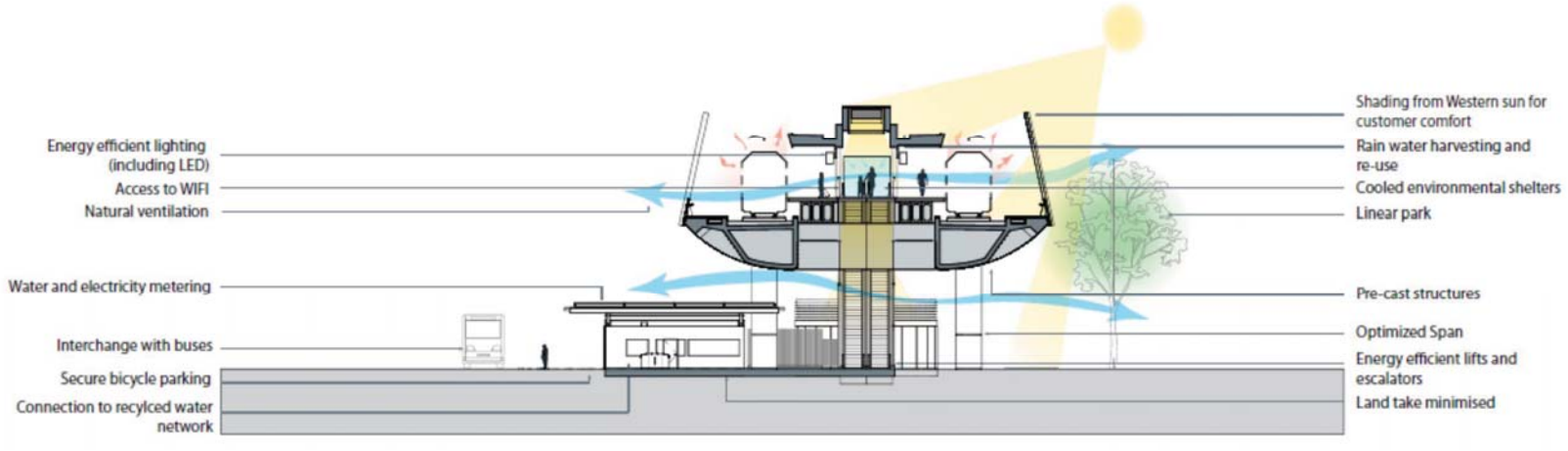


Figure B-3: A generic elevated station showing typical features considered during design development

Appendix C Approved Staged Infrastructure conditions of approval

Concept Plan Approval

Section 75O of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Planning, under the *Environmental Planning and Assessment Act 1979* determine:

a) pursuant to section 75O of the *Environmental Planning and Assessment Act 1979,* to grant concept plan approval for the proposal referred to in Schedule 1, subject to the modifications in Schedule 2; and

b) pursuant to section 75P(1)(a) of the *Environmental Planning and Assessment Act 1979*, the further environmental assessment requirements for the proposal, referred to in Schedule 1, under Part 3A of the *Environmental Planning and Assessment Act 1979.*

Frank Sartor MP
Minister for Planning

Sydney 6 May 2008 File No: 9040496

SCHEDULE 1

Application No:	06_0157
Proponent:	Transport Infrastructure Development Corporation
Approval Authority:	Minister for Planning
Land:	Land required for the construction and operation of the proposal, generally between Epping and Rouse Hill.
Proposal:	The western portion of the North West Metro, being the construction and operation of a new electrified passenger rail line between Epping and Rouse Hill, including: • six new stations at Cherrybrook, Castle Hill, Hills Centre Norwest, Kellyville and Rouse Hill; • stabling facilities; and • associated ancillary infrastructure.
Part 3A Project:	On 7 April 2006, the Minister for Planning formed the opinion that the proposal is of State and regional environmental planning significance and declared that Part 3A of the *Environmental Planning and Assessment Act 1979* applies to the proposal.
Concept Plan Authorisation:	On 12 July 2006, the Minister for Planning authorised the submission of a concept plan for the proposal.

KEY TO CONDITIONS

SCHEDULE 2

DEFINITIONS

Ancillary Infrastructure	Permanent or temporary infrastructure required for the construction and operation of the proposal, including tunnel support facilities such as emergency ventilation and egress facilities and temporary construction sites.
Concept Plan	The proposal described in Schedule 1.
Conditions of Approval	The conditions of approval detailed in this, the Minister of Planning's concept plan approval for the proposal.
Construction	All pre-operation activities associated with any project related to the concept plan approval **other than** survey, acquisitions, fencing, investigative drilling or excavation, building/ road dilapidation surveys or other activities determined by the Proponent to have minimal environmental impact including (but not limited to) minor clearing (except where threatened species, populations or ecological communities would be affected), establishing temporary construction sites (in accordance with the requirements of any project approvals related to this concept plan approval), establishing minor access roads and minor adjustments to services/ utilities.
DECC	NSW Department of Environment and Climate Change.
Department, the	NSW Department of Planning.
Director-General, the	Director-General of the NSW Department of Planning (or delegate).
DWE	NSW Department of Water and Energy.
DPI	NSW Department of Primary Industries.
ECRL	Epping to Chatswood Rail Link formerly known as the Parramatta Rail Link, comprising a new underground passenger rail line from Epping to Chatswood.
GCC	NSW Growth Centres Commission.
MoT	NSW Ministry of Transport.
Operation	When trains commence operating on any project related to this concept plan approval but excluding commissioning activities.
Project, the	Any project(s) related to this concept plan approval.
Proponent	Transport Infrastructure Development Corporation.
Reasonable and Feasible	Consideration of best practise taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. **Feasible** relates to engineering considerations and what is practical to build. **Reasonable** relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
Relevant Council(s)	Hornsby Shire Council, Baulkham Hills Shire Council, Blacktown City Council.
Relevant Government Agencies	Any Commonwealth or State agency that has a statutory or other interest in the Project.
Relevant Stakeholders	A party that would be directly affected by the project or would otherwise have a reasonable interest in the project (excluding relevant Government agencies and relevant Councils) such as affected landowners, utility and service providers, businesses, bus companies and community members.
RTA	NSW Roads and Traffic Authority.

1. ADMINISTRATIVE CONDITIONS

Terms of Concept Approval

1.1 The Proponent shall carry out the concept plan and all related projects generally in accordance with the:
   a) Major Project Application 06_0157;
   b) *North West Rail Link Environmental Assessment and Concept Plan*, dated November 2006, and prepared by GHD Pty Ltd;
   c) *North West Rail Link Preferred Project Report*, dated May 2007, and prepared by GHD Pty Ltd;
   d) *North West Rail Link Supplementary Submissions Report*, dated March 2008, and prepared by the Transport Infrastructure Development Corporation; and
   e) the conditions of approval.

1.2 In the event of an inconsistency between:
   a) any documents listed in condition 1.1a) to 1.1d) inclusive, the most recent document shall prevail to the extent of the inconsistency; and
   b) the conditions of approval and any document listed in condition 1.1a) to 1.1d) inclusive, the conditions of approval shall prevail to the extent of the inconsistency.

Limits of Approval

1.3 To avoid any doubt, this concept plan approval does not permit the construction of any part of the proposal described in Schedule 1, unless and until a project approval is granted with respect to those works.

Provision of Information

1.4 Within 6 weeks of the date of this concept plan approval the Proponent shall place an electronic copy of the documents referred to under condition 1.1 a) to e) of this approval (or details of where hard copies of this information may be accessed by members of the public) on a new website established for the proposal, or dedicated pages within its existing website.

2. PROJECT DESIGN CRITERIA AND PERFORMANCE STANDARDS

Project Design

2.1 The Proponent shall in consultation with relevant Government agencies, relevant Councils and relevant stakeholders, ensure that underground components of the project are designed with regard to existing and/ or planned future underground utilities and infrastructure including the planned extension of the M2 Motorway.

2.2 The Proponent shall in consultation with relevant Councils and relevant Government agencies including (but not necessarily limited to) the GCC, MoT, the Department, Landcom, ensure that surface components of the project are integrated with surrounding landuse (existing and planned future, as relevant) as far as reasonable and feasible, consistent with the objectives of *Integrated Land Use and Transport* (DUAP 2001 or as updated), to minimise the potential for landuse conflicts. In particular:
   a) design of Castle Hill station shall consider the *Castle Hill Draft Master Plan* (or as updated); and
   b) Kellyville and Rouse Hill Stations and stabling facilities are to be integrated with the precinct planning for the Burns Road Release Area, Rouse Hill Regional Centre and the Area 20 precinct of the North West Growth Centre, as relevant.

2.3 The Proponent shall in consultation with relevant Government agencies, relevant Councils and relevant stakeholders ensure that ancillary infrastructure are located and designed to minimise biophysical and/ or amenity impacts, as far as reasonable and feasible.

2.4 The Proponent shall ensure that station precincts across the project provide a high degree of accessibility to all modes-of-access, consistent with the objectives of *Integrated Land Use and Transport* (DUAP 2001 or as updated).

2.5 The Proponent shall ensure that the surface components of the project affecting roads are designed to minimise traffic disruptions as far as reasonable and feasible, in consultation with the RTA and/ or relevant Councils.

Performance Standards

2.6 In relation to operational noise and vibration, the Proponent shall ensure that:
- a) the project rail corridor is designed consistent with the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (DECC, 2007);
- b) the project stabling facilities are designed consistent with the *Industrial Noise Policy* (EPA, 2000); and
- c) the project is designed to consistent with *Assessing Vibration: A Technical Guideline* (DECC, 2006).

2.7 The Proponent shall ensure that any floodplain topography and/ or waterway affected by cut-and-cover construction methodology is re-instated and/ or rehabilitated consistent with pre-construction conditions.

2.8 The Proponent shall ensure that the biodiversity impacts associated with the project are offset consistent with the 'improve and maintain' principles of the *Growth Centres Commission Biodiversity Certification* process, in consultation with the DECC.

3. PROJECT APPLICATIONS AND SPECIFIC REQUIREMENTS

3.1 Pursuant to section 75P(1)(a) of the *Environmental Planning and Assessment Act 1979,* the following environmental assessment requirements apply with respect to any projects related to this concept plan approval:
- a) a detailed project description including:
  - i) confirmation of the alignment, station locations (including feasibility of any additional stations) and stabling arrangements; and
  - ii) the design and location of ancillary infrastructure;
- b) a detailed project-specific statement of commitments, with regard to the statement of commitments prepared for the concept plan, clearly identifying any new or amended commitments relating to the project;
- c) an updated assessment of statutory matters, where the project affects land that has not already been identified in the documents referred to in conditions 1.1 (a) to (d);
- d) an assessment of Matters of National Environmental Significance, as relevant;
- e) an appropriate and justified level of consultation with relevant Councils and relevant Government agencies including (but not limited to) RailCorp, MoT, GCC, Landcom, DECC, DPI (Fisheries), DWE, RTA, including a description of how agency and Council input has been considered in decisions on design and/ or mitigation;
- f) an appropriate and justified level of consultation with relevant stakeholders including a description of how stakeholder input has been considered in decisions on design and/ or mitigation;
- g) assessment of the key issues identified in conditions 3.2 to 3.16 of this approval, including of relevant ancillary infrastructure; and
- h) assessment at an appropriate level of detail of the impacts and mitigation measures associated with any additional key issues of relevance to the project, identified during further design development, that are not specifically identified in this concept plan approval.

Property and Landuse

3.2 The Proponent shall confirm the footprint of the project with respect to alignment, station precincts and ancillary infrastructure as far as reasonable and feasible, and describe the landuse impacts on existing and planned future use associated with any additional land take.

Traffic and Transport

3.3 The Proponent shall review mode-of-access demand and peak traffic predictions at Epping Station taking into account the impact of ECRL operations on patronage distribution; and identify any required changes to mode-of-access arrangements at Epping.

3.4 The Proponent shall confirm mode-of-access arrangements at each new station, with consideration to (but not necessarily limited to) the following matters:

a) at Cherrybrook Station – details of park and ride provisions, road access arrangements (including the feasibility of a signalised intersection between Castle Hill, Glenhope and Franklin Roads); and pedestrian and cycle linkages to the surrounding pedestrian catchments of Cherrybrook and West Pennant Hills;
b) at Castle Hill Station – investigation of options for shared use parking; bus access arrangements; and pedestrian and cycle linkages between the station and residential areas surrounding the Castle Hill town centre, retail areas within the town centre and the Castle Towers shopping centre;
c) at Hills Centre Station - details of park and ride provisions; road access arrangements; and pedestrian linkages to the Castle Hill industrial estate;
d) at Norwest Station - investigation of options for shared use parking; access for buses, kiss and ride and taxis; and pedestrian and bus linkages to the Norwest Business Park and surrounding residential catchments;
e) at Kellyville Station – details of park and ride provisions; bus interchange arrangements which are integrated to the Parramatta to Rouse Hill Transitway; and road, pedestrian and cycle access that are integrated with the planned provisions for the Balmoral Road Release Area; and
f) at Rouse Hill Station - bus interchange arrangements which are integrated to the Parramatta to Rouse Hill Transit way; and road, pedestrian and cycle access that are integrated with the planned provisions for the Rouse Hill Regional Centre.

3.5 The Proponent shall confirm the construction traffic impacts associated with the project, identifying:

a) haulage routes;
b) peak congestion and intersection performance impacts at local and arterial roads considering cumulative impacts from surrounding development and from concurrent construction sites;
c) reasonable and feasible construction options at road crossings to avoid and/ or minimise traffic disruptions; and
d) requirements for road and/ or lane closure and alternative travel arrangements.

Noise and Vibration

3.6 The Proponent shall review the noise and vibration impacts of the project during construction (including construction traffic) and operation, considering all reasonable and feasible mitigation options at existing and planned future receivers.

Geotechnical

3.7 The Proponent shall identify risks to groundwater quality and/ or risks to surface water quality from contaminated groundwater during construction and operation, including measures to avoid, manage, mitigate and monitor impacts.

3.8 The Proponent shall identify the following matters in relation to the bored tunnel components of the project:

a) existing groundwater conditions (level and quality), taking into consideration seasonal variability;

b) local and regional drawdown impacts, including any groundwater users impacted by the project and measures to offset impacts;
c) options for the sustainable use and/or disposal of tunnel inflow;
d) measures to minimise the risk of bed cracking and loss of surface flow when tunnelling below creek lines and contingency measures for restoring affected waterways consistent with pre-construction conditions, including monitoring procedures and performance criteria;
e) impacts to groundwater dependent ecological communities (affected by groundwater drawdown) and to riparian and instream ecology (affected by surface cracking and water flow impacts); and
f) surface locations (and associated infrastructure) above the tunnel alignment that are likely to be at risk to land subsidence or settlement impacts, including relevant settlement design criteria and measures to minimise, monitor and offset impacts.

Surface Water and Hydrology

3.9 For surface components of the project located on floodplains, the Proponent shall identify flood design criteria in accordance with the *Floodplain Development Manual* (2005), describing risks to existing and planned future receivers and infrastructure based on the modelling of a full range of flood sizes up to and including the probable maximum flood.

3.10 For temporary construction sites located on floodplains, the Proponent shall identify reasonable and feasible mitigation measures for mitigating flood risk, including procedures for restoring and monitoring any temporary creek diversions consistent with pre-construction conditions.

3.11 For cut and cover tunnel components which cross creek lines, the Proponent shall describe the proposed construction methodology, identifying measures to minimise the risk of bed cracking and loss of surface flow and contingency measures for restoring and monitoring waterways, consistent with pre-construction conditions.

3.12 The Proponent shall identify impacts to riparian and instream ecology from any direct disturbances to waterways and to flora and fauna from changes to creek flow or flood behaviour, during construction or operation.

Flora and Fauna

3.13 The Proponent shall confirm the ecological impacts associated with the project with consideration to conditions 3.8 e) and 3.12, and identify measures to offset impacts, clearly distinguishing between measures to be provided as part of the *Growth Centres Commission Biodiversity Certification* process and other measures.

The Proponent shall describe how the effectiveness of the offset measures would be monitored, what actions shall be taken if measures are identified to be ineffective, the maintenance responsibilities, and timing of implementation of offset measures.

Indigenous Heritage

3.14 The Proponent shall review the indigenous heritage impacts of the project considering cumulative impacts from surrounding development, consistent with:
a) Steps 1 to 4 of the *Protocol for Aboriginal Stakeholder Involvement in the assessment of Aboriginal cultural heritage in the Sydney Growth Centres* (Context Pty Ltd, 2006a) and the *Precinct Assessment Method for Aboriginal Cultural Heritage in the Sydney Growth Centres* (Context Pty Ltd, 2006a), for land within the North West Growth Centre; and
b) *Guideline for Aboriginal Cultural Heritage Impacts Assessment and Community Consultation* (DECC July 2005), for all other areas.

The Proponent shall identify mitigation priorities with consideration to the regional significance of impacts.

European Heritage

3.15 The Proponent shall review the European Heritage impacts of the project, describing measures to minimise and/ or appropriately manage impacts.

Visual and Urban Design

3.16 The Proponent shall review the visual and urban design impacts and mitigation requirements for the project in accordance with Statement of Commitment 40 to 44; identifying the timing of implementation of urban design and landscaping measures, how the effectiveness of landscaping measures would be monitored, and maintenance responsibilities for relevant urban design and landscape measures.

Appendix D Approved Staged Infrastructure statement of commitments

4. Statement of commitments

The environmental assessment included a draft statement of commitments prepared to outline the investigations and mitigation measures that would be undertaken to ensure that the future planning, assessment and design of the project minimises the potential for environmental impacts.

The preferred project report included an amended statement of commitments taking into account investigations done following public exhibition and the issues raised in submissions. The final statement of commitments for the project, which is unchanged from that presented in the preferred project report, is provided in Table 4.1.

The statement of commitments would be informed by the future design development and assessment and the recommendations and mitigation measures outlined within the environmental assessment and the preferred project report.

Table 4.1 Final statement of commitments

Desired outcome	Action
Sustainability strategies	
Project development and delivery based around core sustainability principles.	1. Core sustainability principles would be developed for the design and construction of the project covering the following themes: ◗ Energy ◗ Greenhouse emissions ◗ Water ◗ Community and stakeholder involvement ◗ Biodiversity ◗ Resource recycling/minimisation To develop the principles a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.
Communication processes	
A framework for community and stakeholder involvement is developed.	2. Communications processes would be developed and implemented throughout delivery of the project. These would include: – Opportunities to input into the design process such as at station precincts and structures and proposed mitigation measures (e.g noise barriers) for construction and operations; – Methods to inform the community of the progress and performance of the project and issues of interest to the community; – Processes to receive and manage complaints; and – Consultation with affected property owners. 3. Ongoing consultation would occur with Government agencies regarding issues raised during previous consultation and as identified within the Environmental Assessment and Concept Plan and the Preferred Project

Desired outcome	Action
	Report.
Design and construction strategies	
Potential for environmental impacts minimised by integrating assessment of environmental issues with development of design and construction strategies.	4. A construction strategy would be developed confirming detailed construction activities and methodologies at each construction site for the construction of the tunnel. 5. Detailed construction methodologies at each construction site would be developed, including spoil management, with the aim of minimising environmental impacts and informing future impact assessment.
Land use, property and infrastructure planning	
The project is integrated with land use planning of surrounding areas.	6. Consultation with Councils, the Growth Centres Commission, RailCorp and other relevant stakeholders would be undertaken to ensure environmental planning instruments reflect planning, construction and operation of the project and include integrated planning provisions for appropriate development controls within the vicinity of the rail line and stabling facility. 7. Land use and property impacts of the project, including construction sites and all ancillary facilities, would be further assessed in consultation with Councils and surrounding landowners. 8. A Land Asset Management Strategy to address 'land surplus to use', post construction would be developed jointly with the Department of Planning (Land Management Branch) in consultation with Councils, Growth Centres Commission and RailCorp. This strategy would investigate opportunities for land amalgamation of parcels severed by the project and identify opportunities for development that is consistent with surrounding land use planning. 9. Consultation with relevant Councils, government agencies, utility providers, land owners and communities involved in the planning of precincts in the vicinity of each station would be undertaken with the aim of encouraging transit-orientated development around each station. The role of each station within the context of provision of public transport services would be established, including the need and capacity of park and ride facilities, establishing connections with other transport modes (including the potential for integrated ticketing), and integrating pedestrian and cyclist facilities. 10. Further investigations would be undertaken with respect to the planned expansion of the Castle Hill Shopping Centre and integration of the project with the Castle Hill Draft Master Plan.
Traffic, transport, parking and access	
(i) Stations (including interchanges, commuter parking and other facilities) are planned and delivered in recognition of current and future traffic, transport and access requirements. (ii) Potential for traffic and transport impacts minimised during construction and operation.	11. At each station, further studies would be undertaken to consider the integration of the station with the local area to ensure that predicted patronage and mode access are catered for during operation. Studies would consider local connectivity requirements; pedestrian modelling (including emergency access); bicycle facilities; the potential impacts of traffic accessing the station from the surrounding road network; parking requirements and the integration of the Transitway and other bus services with the new rail stations. These investigations would be undertaken in consultation with Councils, RailCorp, Ministry of Transport and the Roads and Traffic Authority. 12. The location, scale, design and quantum of park-and-ride facilities at the Franklin Road, Hills Centre and Burns Road Station would be reviewed during further design. This is to be undertaken with reference to relevant

Desired outcome	Action
	parking policies and in consultation with Councils, RailCorp and the Ministry of Transport. 13. In consultation with Councils, RailCorp, the Ministry of Transport and surrounding landowners, investigate opportunities for 'shared use' or complementary parking facilities adjacent to Norwest Station. 14. In consultation with the RTA and Councils, investigate the feasibility of providing a direct access point to the Franklin Road site from Castle Hill Road and the potential for a signalised intersection at the intersection of Glenhope Road with Castle Hill Road. 15. In consultation with the RTA and Councils investigate potential access improvements to Franklin Road Station from areas to the north. 16. The design of construction activities would consider access points, surrounding intersections, bus routes and pedestrian flows. 17. Traffic modelling and traffic management analysis would be undertaken for the roads and intersections impacted by the project during the project construction and operation. This analysis would consider existing and planned road upgrades. 18. A detailed construction methodology for the construction over and/or under roads would be developed in consultation with the RTA and Councils with the aim of minimising traffic disruptions (including construction of the bridge over Windsor Road at Kellyville and cut and cover construction under Norwest Boulevard, Windsor Road and Burns Road). 19. Maintenance access points would be identified and planned in consultation with RailCorp and Councils.
Noise and vibration	
Design development and assessment adopts best practise measures to minimise construction and operational noise and vibration impacts.	20. A detailed noise and vibration assessment of the proposed construction activities, including blasting if required, would be undertaken as part of design development and would include the investigation of the potential need for reasonable and feasible mitigation in accordance with relevant policies and guidelines. 21. Consult with local Councils, Growth Centres Commission and RailCorp in relation to land use planning and development controls to minimise the need for physical noise mitigation. 22. In regard to operational noise, the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (Department of Planning, 2007) would be used to implement the following activities: – Modelling of operational noise impacts (including ground borne noise) in more detail as part of the design development; – Identification of acoustic mitigation measures to meet, where reasonable and feasible, the design goals; and – Select representative locations for the project at which it is appropriate to later assess compliance. 23. In regard to train stabling operational noise, the following would be undertaken: – Determine the extent of any physical noise mitigation measures in consultation with Department of Environment and Climate Change, RailCorp and Growth Centres Commission; and – Review the results of RailCorp's investigations into addressing horn noise and consider the feasibility in consultation with RailCorp of

Desired outcome	Action
	implementing a low volume horn test. 24. Investigate feasible and reasonable mitigation measures to manage operational vibration in consultation with Councils, the Department of Environment and Climate Change and RailCorp.
Flora and fauna	
Assessment and management of biodiversity impacts is consistent with the regional approach to biodiversity management within the North West Growth Centre i.e. maintain or improve biodiversity values.	25. Design of waterway crossings and structures would be undertaken with reference to the Guidelines for Design of Fish and Fauna Friendly Waterway Crossings (Fairfull and Witheridge 2003) and Fish Passage Requirements for Waterway Crossings (2003) and considering the quality of riparian habitat present, in consultation with the Department of Primary Industries (NSW Fisheries) and other relevant Government agencies. 26. The location of structures associated with the rail tunnel, such as ventilation shafts, emergency egress/access points and discharge/runoff outlets, would be assessed with respect to the potential application of SEPP 19. 27. A detailed ecological assessment would be undertaken at all construction sites and along above ground sections of the project corridor. The assessment would identify areas to be avoided (where practicable), construction related impacts and how these can be managed; and, where required, describe measures to offset significant impacts on threatened species and/or endangered ecological communities. This assessment would be undertaken in consultation with the DECC, the Growth Centres Commissions, RailCorp and the Commonwealth Department of Environment and Water Resources as appropriate. 28. 'Improve and Maintain' assessments on biodiversity values would be undertaken to identify the potential impacts of the project and benefits from protection measures to be implemented. The methodology adopted for all parts of the project would be consistent with the draft Growth Centres Conservation Plan (GCC, 2007) and DEC's draft Guidelines for biodiversity certification of environmental planning instruments (2007).
Spoil	
Opportunities for beneficial reuse of spoil identified.	29. Further investigations would be undertaken as part of the design development into opportunities for beneficial reuse of spoil. As a result of these investigations further assessment of transport options and routes for spoil movement would be undertaken.
Heritage	
Potential for environmental impacts on indigenous and non indigenous heritage minimised through management measures that are consistent with established protocols and guidelines.	30. Additional research would be undertaken to determine the history and potential heritage significance of the sites identified in Castle Hill. Site-specific archaeological assessments would be undertaken in the event that they are found to have heritage significance. 31. Site-specific archaeological assessments would be undertaken for the two archaeological sites identified along Old Windsor Road and Windsor Road. 32. A view analysis would be undertaken to and from Rouse Hill House and its estate and the Glenhope property. If required appropriate mitigation measures would be identified. 33. The Indigenous Heritage protocol and methodology developed for the Growth Centres would continue to be applied as the project progresses, in consultation with DECC and relevant Indigenous groups. 34. A detailed assessment would be undertaken in the vicinity of sites

Desired outcome	Action
	identified to have moderate to high archaeological potential. The assessment would identify areas to be avoided, construction related impacts and how these can be managed; and, where required, salvage excavation prior to any subsurface impact on the deposit. Advertising for interested parties would need to be undertaken prior to any subsurface investigation, in accordance with DECC requirements.
Geology, geotechnical and groundwater	
The project design minimises potential risks associated with geotechnical issues and groundwater.	35. Detailed geotechnical and groundwater investigations would be undertaken involving site investigations to inform future design development.
Hydrology and surface water	
The project design minimises potential risks associated with hydrology and surface water.	36. A detailed flood assessment would be undertaken in accordance with appropriate NSW Government guidelines and in consultation with Councils and relevant Government agencies. This would include a two dimensional model of the Caddies Creek confluence to facilitate a better understanding of the discharges at the confluence of the creeks and associated design requirements. 37. Investigations into the construction and operational impacts on the Elizabeth Macarthur Creek would be undertaken in accordance with relevant NSW Government guidelines. 38. The floodplain storage impacts would be defined during design development in accordance with the relevant NSW Government guidelines. 39. Further investigations into the location, size and treatment levels of a water treatment plant(s) would be undertaken in consultation with DECC, Councils and RailCorp. Investigations would include identifying discharge points, determining the receiving water quality and water re-use/recycling opportunities.
Visual impacts, landscape and urban design	
The project design is informed by best practise landscape and urban design principles and minimises visual impacts.	40. The following architectural, landscape and urban design principles would be used to guide the design of the new stations and transport interchanges, civil works (such as noise walls, embankments and the viaduct section) and/or the stabling facility concepts: – Reinforce the role of the station and transport interchange within its surrounding neighbourhood as the principal transport and community facility within the locality. – Stations and the stabling facility would be designed in the context of the scale, character and image of the surrounding area and enhance the presentation of the area to visitors, residents and travellers. – Maintain or improve the links across the project and to surrounding areas and activities. Where a connection between adjacent areas is desirable, pedestrian bridges or underpasses would be considered. – Easy access facilities would be incorporated into the station designs and integrated with the associated transport interchanges. – Movement networks should improve existing, or establish new comfortable and inviting pedestrian environments, including equitable access within the railway station and adjoining areas. – A design theme would be established for bridges/viaduct to link the overall rail design together. The design would ensure that the

Desired outcome	Action
	structures are simple, integrated with the surrounding area and finished to a high quality. Fencing, parapets and any railing on the bridges would also be integrated with the overall design. – Establish a hierarchy of access to stations consistent with NSW Govt policy package *"Integrating land –use and transport"* i.e prioritise public transport and other non-car based access to the rail stations and adjoining areas where possible. – Station precinct design should facilitate new development that reflects the highest standards and quality of design. 41. Visual impact assessment of the project would be undertaken as part of design development. This would consider both the existing and future urban environment to identify impacts and potential mitigation measures, such as architectural, landscape and/or urban design treatments. Additional assessments would apply to pedestrian and cycle facilities; proposed bridging structures; cutting and embankment treatments; landscape treatment projects; design of the stations and stabling facility; proposed acoustic treatments; and any visual buffer areas as required. 42. Measures to mitigate visual impacts and deliver high quality design outcomes would include: – Where noise walls are proposed, potential visual impacts would be minimised by implementation of urban design measures, developed in consultation with adjacent property owners (mitigation measures might include plantings and high quality facings near residential areas). – Earth mounding would be considered where space allows and where significant vegetation would not be lost. – The design of any civil works, such as noise walls, retaining walls, the viaduct and underpasses would adopt CPTED principles, including the need for unobstructed views into and outside of the underpass, effective drainage and ventilation, wide corridors and good lighting. – Light spill would be minimised as much as possible to reduce impacts on surrounding existing and future residents in accordance with relevant standards. 43. TIDC's Design Review Panel would guide the application of architectural, landscape and urban design principles throughout the design development. 44. Public art and interpretation would be incorporated into architectural elements or urban design treatments and would be assessed and implemented with design themes and urban design criteria (eg. graffiti management).
Economic impacts	
Potential business impacts identified and considered as part of design development.	45. An assessment of the potential impacts and benefits of construction and operation on adjacent businesses would be undertaken in consultation with business owners during the design phase.