

## 11. Planning and Land Use



# Northern Link

## Detailed Feasibility Study

### CHAPTER 11

#### PLANNING AND LAND USE

- September 2008



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## 11. Planning and Land Use

*This chapter addresses Part B, Section 5.6, Land Use and Planning of the Terms of Reference (ToR), which require the EIS to describe the existing land uses and development patterns within the study corridor, land use zonings and designations within and adjacent to the study corridor, and the implications for the Project of all local, regional and State planning instruments, policies and strategies.*

*The ToR also require that the EIS define and describe the potential planning and land use benefits and impacts of the Project, and propose measures to optimise the benefits and to avoid or mitigate any negative impacts.*

### 11.1 Existing Environment - Planning Framework

There are three levels of planning that guide and control land use and development with regard to the Project's locality.

- State Planning Policies and other legislation at a State level.
- The South East Queensland Regional Plan, at a regional level.
- Brisbane City Council planning instruments at the local level.

#### 11.1.1 State Planning Policies

The provisions of the *Integrated Planning Act 1997* enable the State Government to implement State Planning Policies (SPPs). SPPs have effect throughout the State, except where specified, and establish the State Government's position in regard to planning and development matters of State significance. SPPs are applicable to development assessment, the designation of community infrastructure and the making and amending of planning schemes.

The SPPs relevant to the Project are the:

- SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide; and
- SPP 2/02 Planning and Managing Development involving Acid Sulphate Soils.

#### SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

This SPP aims to minimise the potential adverse impacts of flood, bushfire and landslide on people, property, economic activity and the environment. It is supported by 'SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide', which provides advice on interpreting and implementing SPP 1/03 in development assessment and when making and amending planning schemes.

#### SPP 2/02 Planning and Managing Development involving Acid Sulphate Soils

Acid sulphate soils are found in low-lying coastal areas. SPP 2/02 sets out the State's interests involving development that could disturb acid sulphate soil areas. The SPP applies to all land, soil and sediment at or below 5m Australian Height Datum (AHD) and where the natural ground level is less than 20m AHD. Within these areas, the SPP is triggered for development involving any of the following activities:

- Excavating or otherwise removing 100m<sup>3</sup> or more of soil or sediment; or
- Filling of land involving 500m<sup>3</sup> or more of material with an average depth of 0.5m or greater.



The SPP requires that development involving acid sulphate soils or potential acid sulphate soils be managed to avoid environmental impacts.

### 11.1.2 Smart Cities: Rethinking the City Centre

The State Government has prepared a report entitled *The Smart Cities: Rethinking the City Centre*. This report identifies more than 30 urban renewal and transport projects within the inner suburbs of Brisbane that have been prepared independently of each other. It further identifies the need to assess future opportunities in this area as a whole, taking into account the intent and impact of the various proposed projects. The report also identifies high order strategies to develop a city that is well connected, integrated and innovative using key centres as listed below.

- The Australia Trade Coast
- Educational Facilities – University of Queensland, Queensland University of Technology and Griffith University
- Health Facilities – Princess Alexandra Hospital and the Royal Brisbane and Womens Hospital; and
- Residential, cultural and entertainment facilities –at South Bank, City West, Woolloongabba, Bowen Hills/Albion and Newstead/Teneriffe.

Further work is yet to be undertaken by the State Government to develop these concepts.

### 11.1.3 City West

Collaboration between the State Government and Brisbane City Council has resulted in production of the City West Strategy, which identifies a number of urban renewal projects including the Kelvin Grove Urban Village, the north-west CBD quarter, Milton and the Normanby area.

In order to achieve these goals, the City West Strategy report recognises a number of challenges that need to be overcome. One challenge of particular relevance to the Project, is the presence of through - traffic utilising the City West Area for access to the western and northern suburbs and the CBD.

### 11.1.4 Regional Planning Framework

At the regional level, the planning framework applicable to the Project is comprised of the:

- South East Queensland Regional Plan (SEQRP) which includes the South East Queensland Infrastructure Plan and Program 2006-2026 (SEQIPP);
- Integrated Regional Transport Plan for South East Queensland;
- Transport 2007; and
- Integrated Regional Cycle Network for South East Queensland.

It is also a requirement of the Terms of Reference to consider the Western Brisbane Transport Network Investigation (see **Section 11.1.4** below, and chapter 21).

### South East Queensland Regional Plan

The SEQRP is a statutory document prepared and implemented in accordance with the provisions of the *Integrated Planning Act 1997*. The SEQRP provides a planning framework for the sustainable management of population growth and land development in the SEQ region to 2026 and beyond.

The SEQRP articulates a regional vision, supported by nine strategic directions to achieve the preferred form for future development. The strategic directions include:

- creating a more sustainable future;
- protecting and support regional landscapes and rural production values;
- identifying land to accommodate future growth;
- promoting land use efficiency;
- enhancing the identities of regional communities;
- facilitating growth in the Western Corridor;
- supporting rural futures;
- providing infrastructure and services; and
- integrating land use, transport and economic activity.

To support the regional vision, the SEQRP also identifies a regional land use pattern, which allocates land in SEQ into one of four categories. This provides a spatial context for both the strategic directions and the regulatory provisions. The regional land use pattern is depicted in **Figure 11-1**.

The SEQRP contains regulatory provisions to ensure that the strategic directions (as listed above) are implemented through planning and decisions making processes. The regulatory provisions for the SEQRP primarily relate to controlling development outside the identified Urban Footprint and within Major Development Areas. With regard to the Rural Living Areas and Investigation Areas, it is a requirement for local governments to incorporate appropriate development control measures in their planning schemes to reflect the SEQRP strategies.

The SEQRP requires that local governments must also prepare a Local Growth Management Strategy, which outlines how the projected population within each local government area will be accommodated in line with the SEQRP's strategies.

### *Regional Policies*

The SEQRP is framed to achieve a range of desired regional outcomes, principles and policies that respond to both the region's values and the imperatives of growth management. These are shown in **Table 11-1**.

■ **Table 11-1 SEQRP's Desired Regional Outcomes**

Regional Policy	Desired Regional Outcome
Sustainability	The region grows and changes in the most sustainable way, generating prosperity, maintaining and enhancing quality of life, and providing high levels of environmental protection.
Natural Environment	A healthy natural environment supports the region's rich biodiversity, clean air and water, and is sustainably managed to support economic development, outdoor lifestyles and community needs.
Regional landscape	The key environmental, economic, social and cultural resources of the regional landscape are identified and secured to meet community needs and achieve ecological sustainability.
Natural resources	The key environmental, economic, social and cultural resources of the regional landscape are identified and secured to meet community needs and achieve ecological sustainability. Rural futures Rural communities are strong and viable with sustainable economies, contributing to the health, character and liveability of the region.



Strong communities	Cohesive, inclusive and healthy communities with a strong sense of identity and place, and access to a full range of services and facilities that meet diverse community needs
Engaging Aboriginal and Torres Strait Islander peoples	Aboriginal and Torres Strait Islander people are actively involved in community planning and decision-making processes and Aboriginal Traditional Owners are engaged in business about their community.
Urban development	A compact and sustainable urban pattern of well-planned communities and convenient centres close to residential areas, employment locations and transport.
Economic development	A strong, resilient and diversified economy. Growing prosperity in the region by utilising its competitive advantages to deliver exports, investment and sustainable and accessible jobs.
Infrastructure	Regional infrastructure and services are planned, coordinated and delivered in a timely manner to support existing and future settlement patterns and desired community outcomes.
Water management	Water in the region is managed on a sustainable and integrated basis to provide adequate supplies for human and environmental uses.
Integrated transport	A connected and accessible region based on an integrated transport system that supports more compact urban growth and efficient travel by connecting people, places, goods and services and promotes public transport use, walking and cycling.

Of the eleven Regional Policies listed in **Table 11-1**, the following are particularly pertinent to the Project.

- Sustainability
- Natural Environment
- Urban Development
- Integrated Transport

These are described in further detail in **Table 11-2** below.

■ **Table 11-2 Desired Regional Outcomes pertinent to the Project**

Regional Policy	Desired Regional Outcome
Sustainability	The overriding intent of the SEQRP is to ensure the region grows and changes in a sustainable way. In order for sustainable development to occur, there needs to be a balance of management between the protection of ecological process and natural systems, economic development and the cultural and social wellbeing of people and communities.
Natural Environment	<p>The SEQRP seeks to manage the impact of population on the natural environment through the following measures:</p> <ul style="list-style-type: none"> <li>■ conserving biodiversity;</li> <li>■ supporting ecological processes;</li> <li>■ protecting koala habitat;</li> <li>■ minimising the adverse impacts on the atmosphere;</li> <li>■ protecting the coast line; and</li> <li>■ protecting the natural functions of the region's waterways.</li> </ul>
Urban Development	<p><b>Urban Form</b></p> <p>The SEQRP requires local governments to make the most efficient use of land allocated for urban development. In order to provide for growth within the Urban Footprint, the Regional Plan has established guidelines for achieving a more compact form of development. These guidelines have provided Brisbane City Council with the direction for managing growth through encouraging higher density living around transport nodes or business centres.</p> <p>The Project would need to provide opportunities for redevelopment of urban areas that reflect the policies outlined in the SEQRP.</p>

Regional Policy	Desired Regional Outcome
	<p><b>Regional Activity Centres</b></p> <p>The SEQRP establishes the location of employment and community services in a hierarchy of regional centres. There a number of Regional Activity Centres situated around the study corridor and would potentially benefit from the Project. These Regional Activity Centres are shown in <b>Figure 11-1</b>.</p> <p>Toowong is identified as a Major Activity Centre within close proximity to the study corridor. Major Activity Centres serve a regional catchment and contain concentrations of employment. These Centres also provide a focus for residential intensification, with residential densities of 30 to 80 dwellings per hectare (net) being targeted in their proximity.</p> <p>The Royal Brisbane Hospital (RBH), located within close proximity to the study corridor, is identified as a Specialist Activity Centre, which is to contain specialised economic activity, employment and/or education uses of regional economic significance, rather than a retail focus.</p> <p>Indooroopilly, located within close proximity of the study corridor, is identified as a Principle Activity Centre, that services catchments of regional significance and accommodating key concentrations of employment. It also provides business, service, limited comparison and major convenience retail functions. These Centres also provide a secondary administrative focus, accommodating regional offices of government and regionally significant health, education, cultural and entertainment facilities.</p> <p>As major trip generators, these Centres need to be serviced by an efficient road network to allow them to develop to their desired potential.</p> <p>The Brisbane CBD, located within close proximity to the study corridor, accommodates the largest and most diverse concentration of activities and land uses. It provides a broad range of services and facilities including government administration, retail, commercial, specialised personal, professional services, cultural, entertainment, health and education. The CBD generates and attracts a large number of transport trips and is the focus of the region's radial public transport system.</p>
Integrated Transport	<p>The SEQRP anticipates that community needs, quality of life and economic development opportunities can be enhanced by easy access to a good transport system. Land use and transport infrastructure are to be planned and delivered in an integrated way so that future urban growth will be focussed around transport. Transport infrastructure and service investment across all transport modes will lead and support the desired future urban form.</p> <p>The SEQRP seeks to provide a sustainable transport system in SEQ through integrating land use and transport as this will play a key role in shaping growth in SEQ and achieving social, economic and environmental sustainability in the region.</p> <p>The SEQRP strongly supports alternative forms of transport such as public transport, walking and cycling. According to the SEQRP, quality orbital road systems are required within the greater Brisbane area to support connectivity of urban centres and to bypass major road congestion points.</p>



## LEGEND

- Urban Footprint
- Rural Living Area
- Regional Landscape

- Study Area Corridor
- Freeways
- Highways

### Regional Activity Centres Network

- Primary (CBD)

- Principal
- Major
- Specialist

0 5 10  
kilometers

Scale 1:250,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 1

Regional Landuse Patterns

## South East Queensland Infrastructure Plan and Program

The SEQRP is supported by the South East Queensland Infrastructure Plan and Program (SEQIPP), which was most recently amended in May 2007. The SEQIPP identifies the planning, design and construction of necessary infrastructure over the next 20 years in order to implement the SEQRP. It is a statement of the Queensland Government's proposed investment commitments and timing for major infrastructure.

Investment in transport infrastructure is one component of the SEQIPP. The key principles of SEQIPP that underpin regional transport investment listed are:

- ensuring public transport and roads support the preferred pattern of development;
- increasing public transport infrastructure to encourage greater public transport usage; and
- supporting economic development, including improved freight links and a greater emphasis on freight rail.

A number of transport infrastructure projects are included in the SEQIPP. The SEQIPP recognises that Brisbane City Council has commenced a prefeasibility study on the Project.

## Integrated Regional Transport Plan for South East Queensland

The State Government released the *Integrated Regional Transport Plan for South East Queensland (IRTP)* in 1997. While it remains Government policy, the IRTP has been superseded by the SEQRP, which provides regional strategic transport planning direction for SEQ.

## Transport 2007

The Queensland Government's *Transport 2007* is a detailed short term action plan for the implementation of the IRTP from 2001 through to 2008.

*Transport 2007* does not identify new ring roads or tunnels within Brisbane by 2007. However, it does note that any future tunnel or ring roads proposed beyond 2007 would need to provide an effective alternative for cross-CBD traffic, thereby reducing congestion, trip time and emissions.

Although infrastructure provision is an important element of *Transport 2007*, the action plan also places emphasis on solutions that change demand for travel. Hence, *Transport 2007* promotes planning for better land use and transport integration, including higher density and mixed use development in proximity to transport nodes and centres.

## Regional Cycle Strategies

### *Cycle South East*

The Queensland Government's *Cycle South East* (1999), is an implementation document for the IRTP. *Cycle South East* details strategies to promote alternative modes of transport to cars over the next 25 years. A key strategy is to increase the number of cycling trips in SEQ over this period through integrating cycle networks with road networks and major infrastructure to provide an integrated cycle network in SEQ.

### *South East Queensland Principal Cycle Network Plan*

The *South East Queensland Principal Cycle Network Plan* (SEQPCNP) replaced the 2003 *Integrated Regional Cycle Network for SEQ* and guides the development of the cycle network across the region by mapping existing and preferred principal cycle network routes.

The purpose of the SEQPCNP is to identify and guide the delivery of a connected and cohesive cycle network within South East Queensland. The plan will be used to inform:

- the planning and construction of cycle routes controlled by state and local councils;
- the prioritisation and allocation of \$235 million in funding for cycle network planning and infrastructure committed by the SEQ Infrastructure Plan and Program 2007-2026; and
- assessment of development applications to ensure cycle infrastructure is delivered in a consistent manner.

The Study Corridor includes existing and proposed cycle network infrastructure components that are part of the SEQPCNP. There is existing bicycle infrastructure linking the Western Freeway bikeway with the Riverside bikeway via Sylvan Road, and also at Latrobe Terrace and Given Terrace. Proposed cycle network infrastructure is identified for the network on Frederick Street, Milton Road, Musgrave Road and Kelvin Grove Road.

### Western Brisbane Transport Network Investigation

The WBTNI project has the objective of producing a transport strategy that would guide transport development in western area of greater Brisbane. This strategy would encompass all modes of transport and would incorporate other transport initiatives addressed in the SEQ Regional Plan.

The WBTNI project includes a number of transport network options, one of which is Northern Link. No decision has been made by the State Government as to whether or when any of these corridor options, or combinations of options, might proceed.

#### 11.1.5 Brisbane City Council Planning Instruments

There are several documents which outline the Brisbane City Council's planning intentions. These include:

- Living in Brisbane 2026;
- City Shape Implementation Strategy – Brisbane City Council's Local Growth Management Strategy; and
- Brisbane City Council City Plan 2000.

### Living in Brisbane 2026

*Living in Brisbane 2026* is a statement about Brisbane City Council's aspirations for the City as a liveable city, and describes the city-wide outcomes necessary to achieve the vision. This vision is supported by Brisbane City Council's corporate plan and organisational strategy.

'Accessible, Connected City' is a theme which focuses on transport issues and is of particular relevance to the Project. City Wide Outcomes that are associated with the *Accessible, Connected City* theme, are summarised below.

- 'Green and Active Transport' - In 2026 there will be a network of safe laneways, walkways and cycleways, while 41% of people travelling in the morning peak will walk, cycle or use public transport.
- 'Effective Road Networks' - In 2026, Brisbane's road network will be safe, timely and efficient for all users and will deliver economic benefits to the community and business.
- 'Effective Growth Management' - In 2026, Brisbane's land use mix will enable more residents to walk and cycle to shops, recreational places and their places of employment.
- 'Connected and Engaged Communities' - In 2026, rapid public transport and high speed information and communication technology will connect places where people work, live and play.
- 'Inclusive and Caring Communities' - In 2026, Brisbane will be an accessible city for those who cannot afford private transport or who do not drive.

- ‘Learning and Informed Communities’ - In 2026, Brisbane residents will have continued to make the change to more frequent use of sustainable forms of transport.

### Draft City Shape Implementation Strategy

The Draft City Shape Implementation Strategy (CSIS) is the draft Local Growth Management Strategy (LGMS) for Brisbane. The purpose of a LGMS is to translate the higher-level policies, targets and spatial directions of the SEQRP into practical strategies that can be implemented at the local government level. It is a requirement for all local governments within SEQ to prepare a LGMS.

The Draft CSIS outlines Brisbane City Council’s planning vision for the city and identifies the future pattern of development, including growth corridors, new living areas, employment precincts, major industrial areas and major centres. The Draft CSIS identifies the inner western suburbs as a future growth corridor.

The key strategies of the Draft CSIS relevant to the Project include the following.

- Residential Development Strategy – Aims to achieve the residential targets for Brisbane established in the SEQ Regional Plan, particularly through the encouragement of infill development and higher density residential development in selected areas, specifically within growth corridors, near major shopping centres (ie: CBD and Indooroopilly) and in areas with good access to public transport.
- Integrated Transport Strategy – Aims to better integrate transport and land use planning that supports urban infill in centres on the existing public transport network; provide a safe and efficient road network that minimises traffic impact on neighbourhoods and the environment; facilitates economic growth by minimising commuter travel and preventing congestion delays for high value freight and commercial vehicle; and promote public transport use, walking and cycling.
- Strong Communities Strategy – Aims to ensure reliable and affordable transport is provided to regional activity centres, and ensure employment opportunities are located in areas convenient to residential population and to proposed growth areas.
- Infrastructure Strategy – Aims to encourage public transport travel to major centres and activity nodes; improve the attractiveness of active transport trips to reduce private motor vehicle usage; coordinate land use and transport to ensure increased accessibility to urban activities and supports sustainable travel; provide an efficient and safe freight network; and provide a safe and efficient road network that protects the environment.

### Brisbane City Plan 2000

The Brisbane City Council - *City Plan 2000* (City Plan) contains the statutory planning components as required by the *Integrated Planning Act 1997* (IPA), as well as other supporting material such as the Strategic Plan and Vision Statement, which are extrinsic to the Planning Scheme.

Brisbane City Council’s vision for Brisbane is ‘the Liveable City’ with Brisbane being the most liveable and progressive city in the Asia-Pacific Region.

Key parts of this vision that should be considered in transport infrastructure planning (ie: Northern Link) include the following.

- Enhancing the City’s quality of life
- Ecological sustainability



- The living environment is to be human in scale, with a sense of place based on the city's subtropical character. This environment is to blend traditional 'timber and tin' buildings with vibrant and exciting new developments, and have a strong relationship to the Brisbane river.
- Each of Brisbane's local communities is to have a clear sense of identity and have ready access to a range of services. Use of public transport, cycling and walking is to be easy and popular.
- Infrastructure, including communication, community facilities, pedestrian ways, bikeways and transport, is to be coordinated, integrated, efficient and equitably distributed.

The Vision underpins the principles used in drafting the City Plan and is the foundation for the Desired Environmental Outcomes (DEOs) for the City, which in turn guide all other provisions of the City Plan, such as Area provisions and Local Area Plans.

### *Desired Environmental Outcomes and Strategies*

The DEOs are used as a basis for deriving specific policies and measures, which when implemented, contribute to the achievement of the DEOs.

Discussion of the likely outcomes of the Project with respect to the City Plan's DEOs is relevant in determining whether the Project accords or conflicts with the City Plan. DEOs of interest relate to:

- access and mobility;
- natural environment and waterways; and
- liveability, health and safety.

The 'access and mobility' DEO is of fundamental relevance to the assessment of the Project. This DEO states that:

*"Brisbane has an efficient transport system that promotes a compact urban structure and less reliance on private motor vehicles, and enables people and goods to move safely, economically, equitably, comfortably and conveniently."*

Achievement of this DEO is encouraged by integrating the movement system with the land use pattern to maximise efficient use and enhance accessibility through:

- closer location of employment and housing;
- matching the location and type of development with the capacity of the movement system and avoiding increased pedestrian traffic conflicts and vehicle turning movements on major roads;
- integrating the city's movement system with that of South East Queensland;
- promoting centre development to avoid ribbon development and protect the capacity of major roads;
- discouraging the use of neighbourhood and local access roads by through traffic, but allowing for interconnectivity between neighbourhoods;
- preventing development near the major movement network that would restrict their continued operation and expansion; and
- opportunities for alternatives to road freight movement.

Promotion of a development pattern that reduces private motor vehicle dependency and increases potential for use of public transport and walking is also important to achieving this DEO. This is achieved through:

- encouraging development in locations that support the accessibility, convenience and efficiency of public transport, including higher density housing, and mixed use development in Centres and other locations well served by public transport;
- transit lanes, bus lanes and busways in strategic locations throughout the City;
- development to provide effectively for public transport usage, cycling and walking, incorporate easy and convenient access to these modes and avoid safety hazards;
- development to provide for safe and convenient access for cyclists and pedestrians along the shortest, most direct and flattest path to achieve maximum benefit; and
- managing the supply of on-site car parking to discourage reliance on private motor vehicle usage, while minimising negative impacts of on-street parking.

Other more broadly related DEOs include the following.

- Natural Environment and Waterways – Brisbane’s environmental quality and natural assets are protected and restored and contribute effectively to no net loss of biodiversity, the management of public health and the social and cultural wellbeing of the community.
- Liveability, health and safety – Brisbane is a safe, healthy and vibrant place to live, offering a wide range of local and regional services, facilities and activities and diverse housing, community, cultural and recreational choices. Brisbane’s land use pattern and built environment promotes its unique environment, such as its ‘timber and tin’ architecture, topography and urban layout, and features a sustainable network of residential areas, employment areas and transport links. Brisbane has a vibrant, dynamic and sustainable economy that consolidates and promotes the City’s central location in South East Queensland, the State and the Asia-Pacific Region.

### *Strategic Plan*

The Strategic Plan is extrinsic to the planning scheme and identifies broad spatial land use allocations to the planning horizon of 2011 through seven structural elements, including the Green Space System, Residential Neighbourhoods, Industrial Locations, Centres, Movement System, Native Title and Heritage. The Strategic Plan is particularly relevant to development that may result in major or cumulative impacts, especially development that is not envisaged or anticipated by the Plan.

Of particular relevance to Northern Link, the Movement System reference in the Strategic Plan acknowledges that Brisbane’s transport infrastructure has become outdated due to changes in travel patterns and the continued dispersal of activity. The hierarchy of roads is intended to ensure that roads are designed to meet their intended function. The movement system is seen as a key element in maintaining the City’s liveability by ensuring it is equitable, safe, economic and comfortable.

Also of relevance, the Strategic Plan recognises that movement of road freight is intended to be achieved primarily via the motorways and arterial roads linking activity centres, including the air and sea ports. The road transport network also recognises the intra-regional relationships with other growth areas in the SEQ Region, including Ipswich, Logan and the Gold Coast to the west and south, and Pine Rivers and Caboolture to the north. The absence of a northern connecting motorway from the Ipswich Motorway to the Gateway Motorway is readily apparent.

### *Area Designations*

The City Plan sets out development intentions and Desired Environmental Outcomes (DEOs) for each Area. This Area classification is identified on the Planning Scheme Maps.

Area provisions are not directly relevant to Northern Link, as the Project is too extensive to be assessed against the relatively detailed Area provisions. However, it is necessary to consider the Area classifications to understand the Project's implications for future land use and redevelopment opportunities.

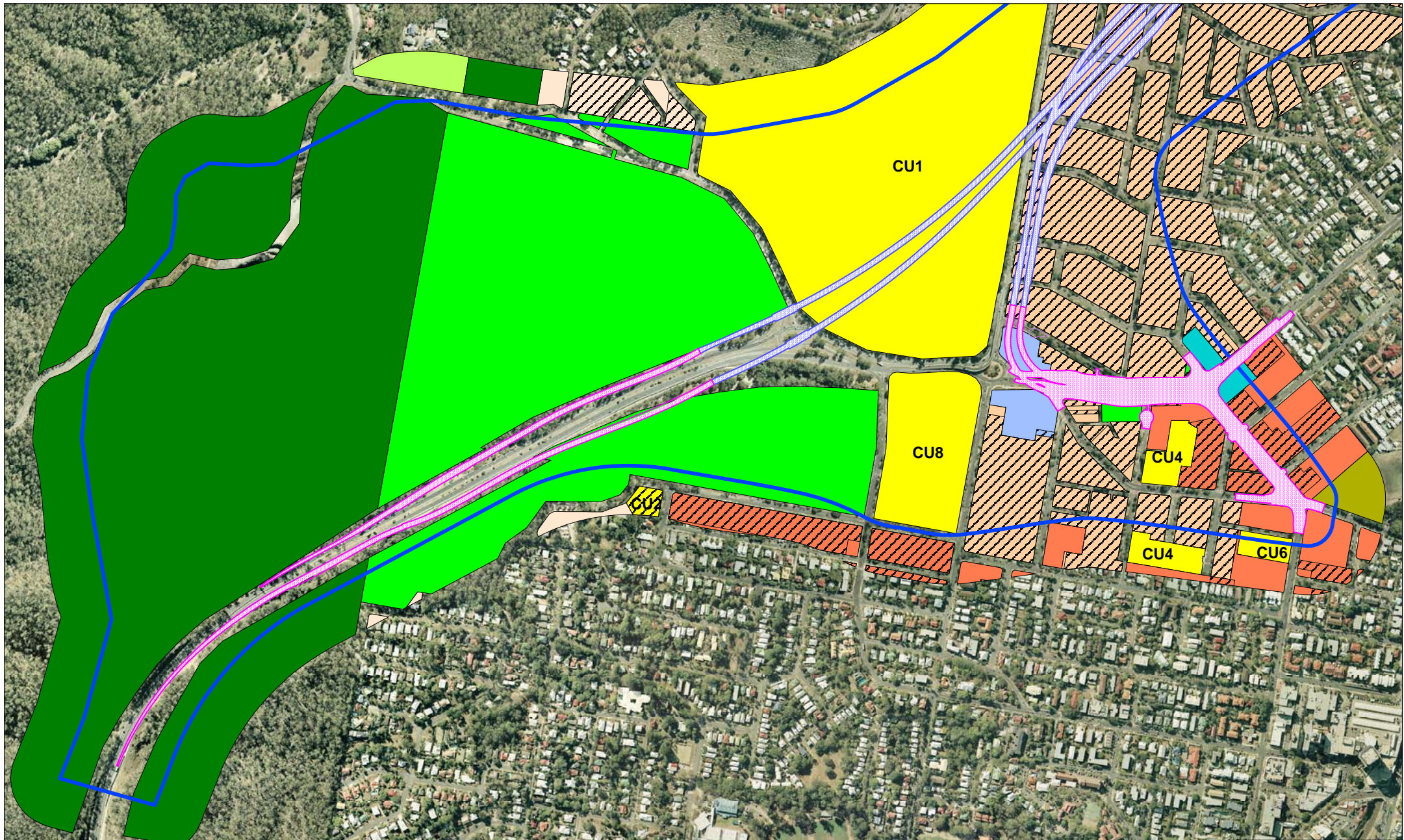
Planning Scheme Area classifications for the study corridor are shown on **Figure 11-2**, **Figure 11-3** and **Figure 11-4** and the classifications are outlined in **Table 11-3**.

■ **Table 11-3 City Plan Area Classifications and Intent**

Area	Purpose/Intent
Character Residential	Character Residential will primarily accommodate pre-1946 houses and new development will reflect pre-1946 architectural themes. These areas are included within the Demolition Control Precinct.
Low Density Residential	Low Density Residential will consist predominantly of detached houses up to two storeys in height.
Low-Medium Density Residential	Low-Medium Density Residential will contain a mix of houses up to two storeys and two and three storey multi-unit dwellings and single unit dwellings. Land in this Area is located in those parts of the City that are close to public transport networks or centres.
Medium Density Residential	Medium Density Residential is located near City locations with good access to public transport and centres. This area will accommodate single unit dwellings and multi-unit development up to five storeys.
Special Purpose Centre	Special Purpose Centres provide for particular major activities. The study corridor contains one special purpose centre – 'SP1 - Major Hospital and Medical Facility'. Development in each Special Purpose Centre area should contribute to the primary focus specified for that Centre.
Parkland	Parkland is for use by the public for informal outdoor recreational, cultural and educational activities. Small areas may accommodate permanent facilities for limited small-scale organised activities, such as youth clubs, and may be used in some circumstances for infrequent special events. Parkland is often publicly owned.
Sport and Recreation	Sport and Recreation is used for formally organised recreational and sporting activities. It accommodates associated facilities such as clubhouses and car-parking. Sport and Recreation land is often privately owned or leased, and access may be restricted by physical means such as fencing, or through other measures such as membership.
Multi-purpose Centre MP1 City Centre	The political, administrative, economic and social heart of Brisbane. The City Centre continues to provide the highest order and intensity of shop, office, entertainment, cultural, tourist and residential accommodation in the City.
Multi-purpose Centre MP3 Suburban Centre	Multi-purpose Centres allow for a wide range of activities to be clustered together. They are to be well serviced by all modes of transport, particularly public, bike and pedestrian. Suburban Centres (MP3) provide a variety of services. They may be characterised by small tenancies within a limited area or lower density larger tenancies over a broader area. They generally contain more than 6,000m <sup>2</sup> of gross floor area
Multi-purpose Centre MP4 Convenience Centre	Multi-purpose Centres allow for a wide range of activities to be clustered together. They are to be well serviced by all modes of transport, particularly public, bike and pedestrian Convenience Centres (MP4) are smaller centres providing local services within walking distance of residents. They generally contain less than 6,000m <sup>2</sup> of gross floor area.

Area	Purpose/Intent
Community Use Area	<p>Land in the Community Use Area may be either privately or publicly owned and accommodates a range of community uses. These uses are shown individually on the Scheme Maps and include the following.</p> <ul style="list-style-type: none"> <li>■ CU1 - Cemetery</li> <li>■ CU2 - Community facilities</li> <li>■ CU3 - Crematorium</li> <li>■ CU4 - Education purposes (denotes the use of premises for systematic training and instruction designed to impart knowledge and develop skill)</li> <li>■ CU5 - Emergency services</li> <li>■ CU6 - Health care purposes</li> <li>■ CU7 - Railway activities (use of premises for activities and associated facilities that support the effective functioning of the railway system)</li> <li>■ CU8 - Utility installation.</li> </ul>
Light Industry	<p>The Light Industry Area features a range of light industries and warehousing with low environmental impact.</p>





## LEGEND

### Residential

- Low Density
- Low-Medium Density
- Medium Density
- Character Residential

### Industrial

- Light Industry
- ### Centres
- City Centre
  - Convenience Centre
  - Suburban Centre
  - Special Purpose Centre

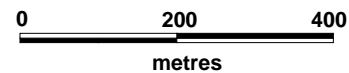
### Community

- Community Use
- Park Land
- Sport And Recreation
- Environmental Protection
- Conservation

- Demolition Control Precincts
- Study Area Corridor

### Proposed Alignment

- Surface Works
- Tunnel Underground



Scale 1: 10,000 (A4)



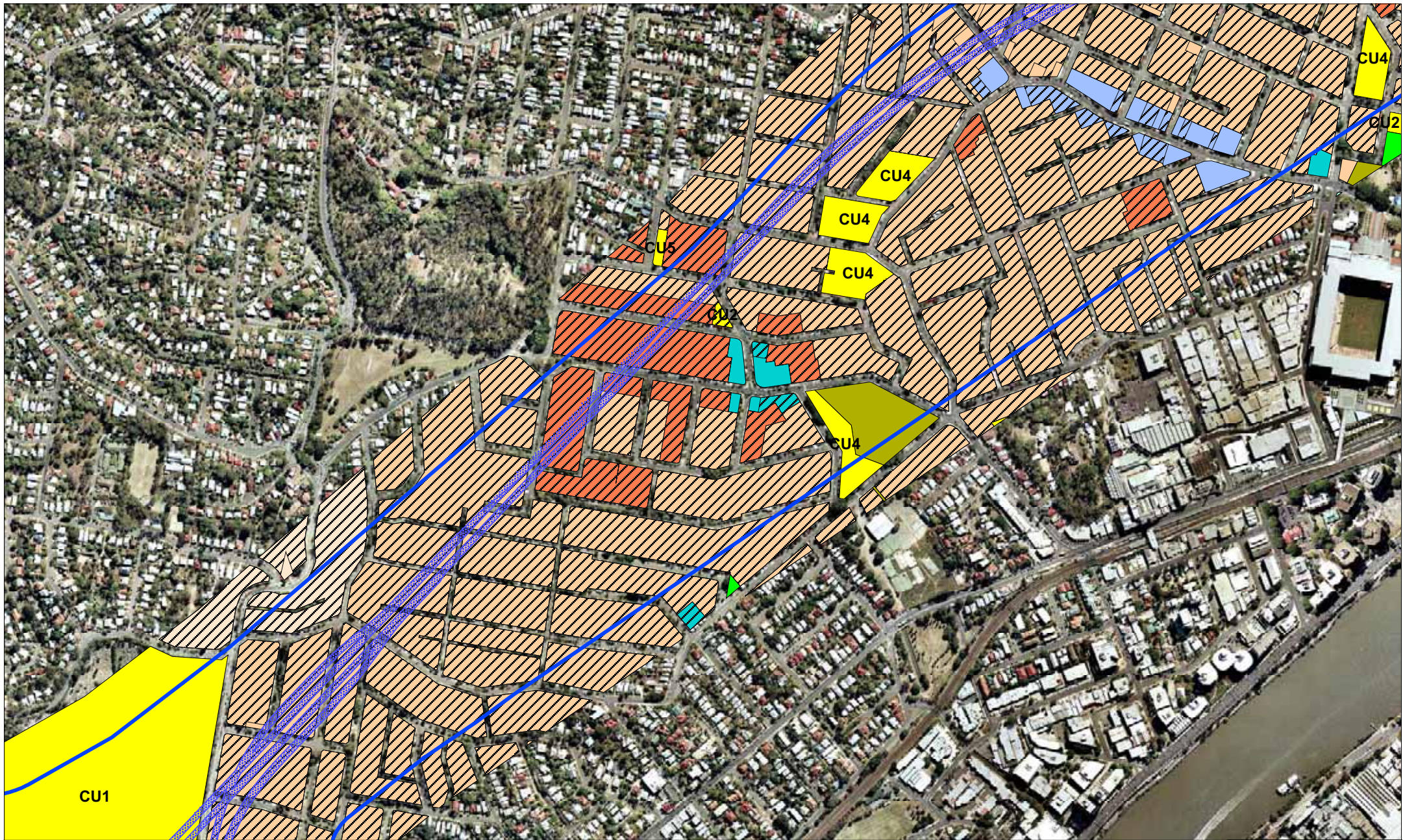
NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 2

City Plan Area Designations  
Study Corridor West







## LEGEND

### Residential

- Low Density
- Low-Medium Density
- Medium Density
- Character Residential

### Industrial

- Light Industry
- City Centre
- Convenience Centre
- Suburban Centre
- Special Purpose Centre

### Community

- Community Use
- Park Land
- Sport And Recreation
- Environmental Protection
- Conservation

Demolition Control Precincts

Study Area Corridor

### Proposed Alignment

- Surface Works
- Tunnel Underground

0 200 400  
metres

Scale 1: 10,000 (A4)



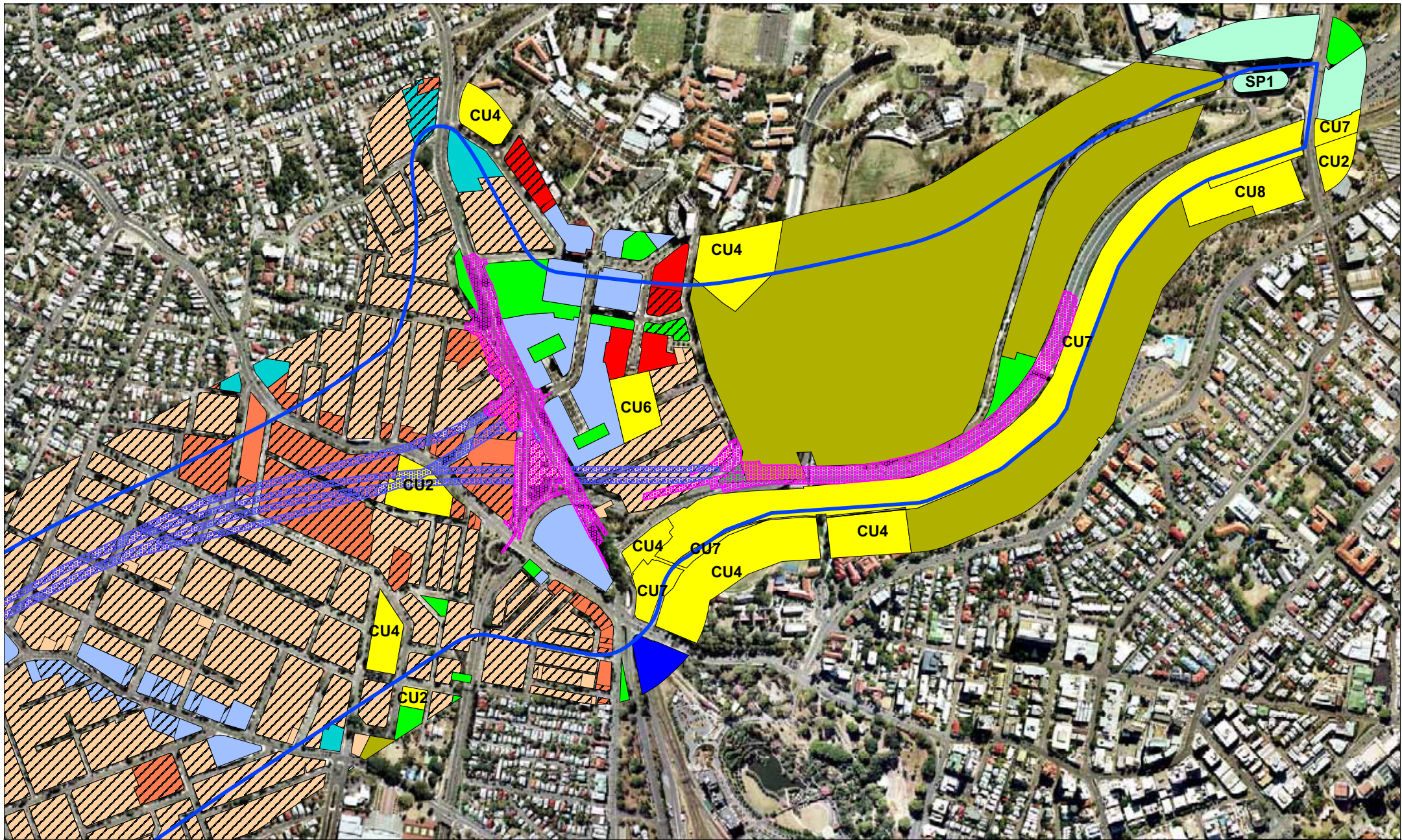
NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 3

City Plan Area Designations  
Study Corridor Central







#### LEGEND

##### Residential

- Low Density
- Low-Medium Density
- Medium Density
- Character Residential

##### Industrial

- Light Industry
- City Centre
- Convenience Centre
- Suburban Centre
- Special Purpose Centre

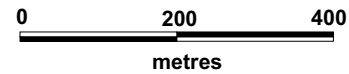
##### Community

- Community Use
- Park Land
- Sport And Recreation
- Environmental Protection
- Conservation

- Demolition Control Precincts
- Study Area Corridor

##### Proposed Alignment

- Surface Works
- Tunnel Underground



Scale 1: 10,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 4

City Plan Area Designations  
Study Corridor East





Most of the residential land within the study corridor is within the Demolition Control Precinct (**Figure 11-2**, **Figure 11-3** and **Figure 11-4**). The Demolition Control Precinct is an overlay on the Area classification and triggers development assessment codes for particular types of development. For example, demolition or removal of a building within the Demolition Control Precinct is defined as assessable development and would require a development permit.

### *Local Area Plans*

The *Brisbane City Plan* includes Local Area Plans, which provide detailed planning for specific localities and these plans take precedence over the City Plan Area provisions. The study corridor contains several Local Area Plan boundaries as shown in **Figure 11-5**.

#### *Ithaca District Local Area Plan*

The Ithaca District Local Area Plan occupies a large portion in the middle of the study corridor. The Local Area Plan's development principles, of relevance to the Project, are to:

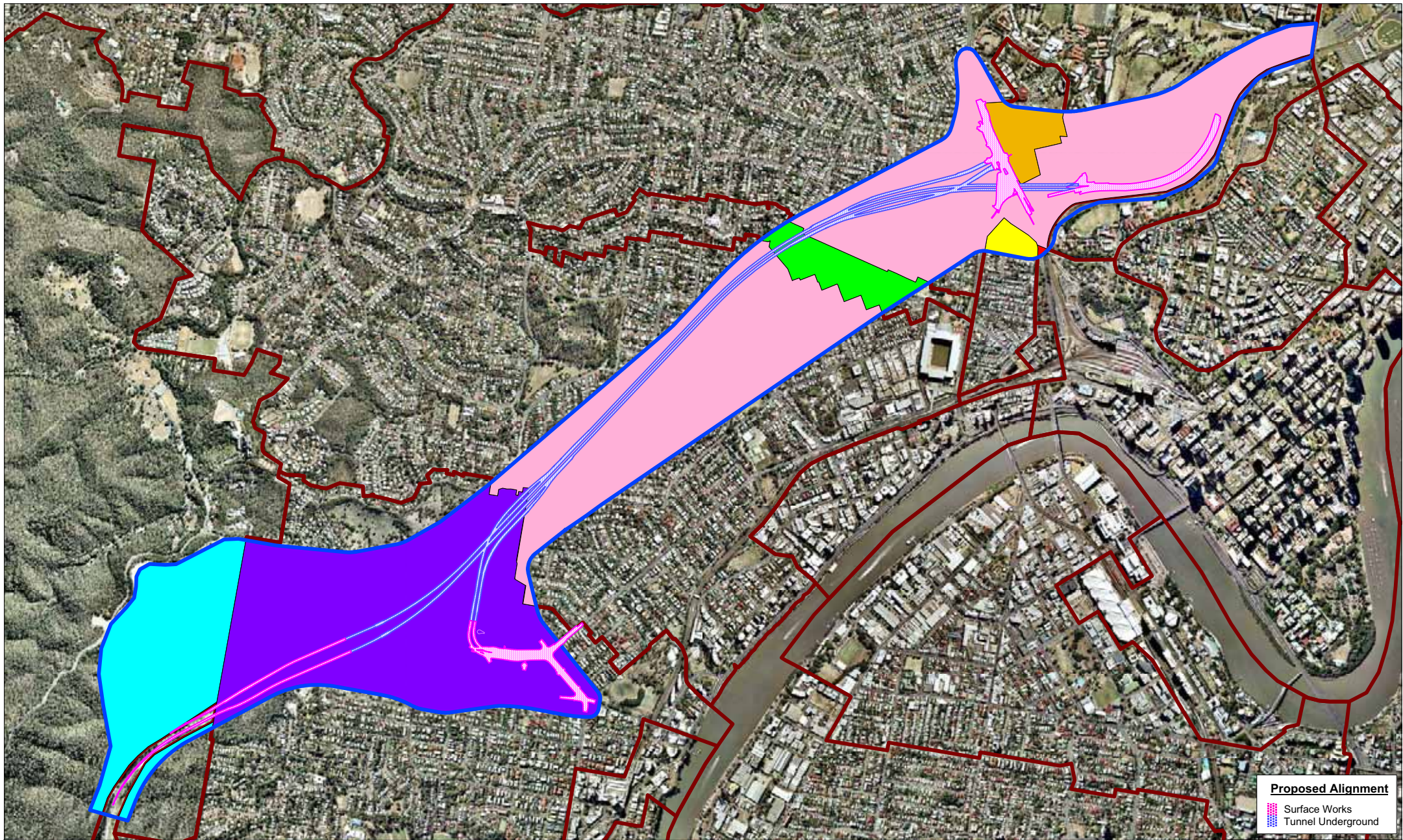
- provide a range of housing types that serve the needs of the community, while also maintaining the area's predominant 'timber and tin' style character housing;
- protect important local heritage places, including areas recognised as significant character streetscapes, such as Enoggera Terrace; and
- protect Enoggera and Ithaca Creeks for their ecological and recreational values.

#### *Toowong-Indooroopilly District Local Area Plan*

The Toowong-Indooroopilly District Local Area Plan applies to the western end of the study corridor. The Toowong-Indooroopilly District Local Area Plan includes the suburbs of Toowong and Indooroopilly and provides planning direction for the key commercial and residential developments within the Local Plan Area. The Local Area Plan's development principles, of relevance to the Project, are as follows.

- Maintain the diverse mix of housing and the 'green and leafy' character will be maintained. Groupings of pre-1946 character housing will be protected and higher density living near major centres, public transport and the University of Queensland will be encouraged.
- The amount of parkland available to the public will be increased and redevelopment of existing parks must aim to improve accessibility to park space.
- Pedestrian and cycle paths will be enhanced.





# LEGEND

- |  |  |  |
|--|--|--|
| <span style="color: red;">■</span> City Centre                   | <span style="color: green;">■</span> Latrobe/Given Terrace | <span style="color: purple;">■</span> Toowong Indooroopilly  |
| <span style="color: pink;">■</span> Ithaca                       | <span style="color: cyan;">■</span> Mt Coot-Tha            | <span style="color: blue;">■</span> Study Area Corridor      |
| <span style="color: yellow;">■</span> Kelvin Grove Urban Village | <span style="color: yellow;">■</span> Petrie Terrace       | <span style="color: red;">■</span> LocalArea Plan Boundaries |

0 500 1000  
metres

Scale 1: 25,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 5  
Local Area Plan Boundaries

## Proposed Alignment

- Surface Works
- Tunnel Underground





### *Mt Coot-tha Local Area Plan*

The Mt Coot-tha Local Area Plan is also applicable to the western end of the study corridor. The Local Area Plan's development principles, of relevance to the Project, are to:

- preserve the natural landscape and environment, which are an integral aspect Brisbane's history and an important visual backdrop and contrast to the built up areas of the City; and
- maintain and enhance recreational opportunities and facilities that are in a natural setting close to the City while being consistent with appropriate conservation measures.

### *Latrobe and Given Terraces Local Area Plan*

The Latrobe and Given Terraces Local Area Plan focuses on the commercial and residential precincts centred around Latrobe and Given Terraces. In particular, the Local Area Plan focuses on the heritage components of the buildings located in the area. The Local Area Plan's development principles, of relevance to the Project, are to:

- ensure that development in the area contributes to the high visual quality landscape and compliment the already existing 'timber and tin' hillside character housing;
- ensure that Latrobe and Given Terraces continue to perform a multi-purpose transport role, catering for pedestrians, cyclists and through traffic; and
- ensure that development will not increase the use of residential streets for car parking and should minimise the intrusion of non-residential traffic into these streets.

### *Kelvin Grove Urban Village Local Area Plan*

Kelvin Grove Urban Village Local Area Plan is applicable to the northern end of the study corridor. The Local Area Plan's development principles, of relevance to the Project, are to:

- develop the Kelvin Grove Urban Village as an integrated and master-planned urban village within a mixed use and highly urban environment;
- embrace the urban design 'main street' principles for buildings within the Village, which, in conjunction with the proposed uses, will contribute to and assist in establishing a vibrant and active main-street centred urban neighbourhood; and
- reflect and express key sustainable development principles within the Village. Planning and design are to deliver, for example, reductions in demand for water and energy and in the generation of waste and greenhouse gases.

### *Toowong Major Centre Local Area Plan*

The intent for the Toowong Centre is to provide the full range of Centre services such as shops, offices, residential, community, recreation and entertainment uses to serve the needs of the inner western suburbs. Sherwood Road and High Street are to be the focus of activity and be pedestrian friendly. The Centre core is to be 'intense urban' surrounded by a less intense mix of business and residential uses. Variety of residential densities support the Centre all linked by safe pedestrian access. The Centre is to contain a network of public spaces.

### *Toowong Centre Local Area Plan*

The intent for the Toowong Centre, as per the Toowong Major Centre Local Area Plan, is to provide the full range of Centre services such as shops, offices, residential, community, recreation and entertainment uses to

serve the needs of the inner western suburbs. Sherwood Road and High Street are to be the focus of activity and be pedestrian friendly. The Centre core is to be 'intense urban' surrounded by less intense mix of business and residential uses. Variety of residential densities support the centre all linked by safe pedestrian access. The Centre is to contain a network of public spaces.

### **Brisbane Long Term infrastructure Plan 2007**

The *Brisbane Long Term Infrastructure Plan* (BLTIP) was released in 2007 and provides the integrated planning guidelines for the next 20 years for a range of infrastructure required to sustain Brisbane's liveability and assist in economic development during periods of unprecedented growth.

The transportation elements of BLTIP are drawn from the *Transport Plan for Brisbane 2002-2016*. However, future editions will reflect the *Transport Plan for Brisbane 2006-2026*. In order to provide infrastructure, it is necessary to develop an understanding of expected population growth. The outcomes of the *Local Growth Management Strategy* will provide key inputs to the BLTIP when complete.

The BLTIP has established a number of priorities and strategies for addressing the transport implications faced by Brisbane. The Plan has recognised the *TransApex* Projects, including Northern Link, as a strategy for reducing cross-city traffic congestion within the CBD and inner and middle suburbs. A priority for *TransApex* projects has also been to address freight implications within suburban Brisbane. The BLTIP's freight strategy has a number of goals that could be potentially achieved for the study area as a result of the Project. These goals are listed below.

- Protecting residential areas from impacts of inappropriate intrusion of freight.
- Providing more efficient road freight movement through better inter-modal and distribution facilities, and an appropriate network of arterial roads.
- The quality and extent of the public domain are critical. While the area is regionally accessible by rail, bus and road, this major transport infrastructure creates barriers to easy, safe and efficient local movement within the area.
- The character, identity and 'sense of place' of City West's localities are critical. City West has places with significant character and identity, derived from significant heritage buildings, 19th century residential neighbourhoods, unique topography and iconic 'landmarks.'
- Harnessing economic resources is a critical issue for prosperity and vitality for the whole city. City West incorporates and is close to State and nationally significant learning, research and health institutions, the State's economic and administrative centre, important 'creative' industry places and the major arts and cultural precinct.
- Ensure major projects enhance the local environment, contribute to a shared place vision and provide local environmental, social and economic benefits.

### **Draft Milton Railway Station Precinct Plan**

Urban Renewal Brisbane released the draft Milton Rail Station Precinct Plan in May 2008. Once completed, the plan will guide the assessment of development applications and the statutory review of the Milton Local Plan.

The draft was prepared within the policy framework of the *South East Queensland Regional Plan 2005-2026* and the draft *Brisbane CityShape 2026*, both of which promote the area as a location for higher density mixed use development.

The Draft Milton Railway Station Precinct Plan envisages a high-density urban area that includes:

- high and medium-density residential dwellings;
- commercial and recreational precincts that are easily accessed from the surrounding residential areas;
- easy access in and out of the precinct, including access to Brisbane's Central Business District;
- public transport focused development with easy access to Milton Railway Station, a proposed Milton Ferry Terminal and efficient bus networks; and
- recognition and management of the precinct's current cultural heritage developments.

The Draft Plan recognises that most significant challenge that might prevent Milton from realising its potential as a transit oriented development is the lack of connectivity and quality in the public realm, and the poor standard of access to the station from the immediately surrounding area.

## 11.2 Planning Impact Assessment

This section considers the Projects implications within the State planning framework, the regional planning framework and the local planning framework.

### 11.2.1 State Planning Implications

Some elements of the Project may require a development application under Schedule 8 of IPA. These development applications may trigger one or more of the SPPs discussed below. Additionally, the Terms of Reference require the identification of the State Planning Policies (SPP) requirements relevant to the Project.

#### SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

The SPP is relevant to the Project on the basis that the whole of the Brisbane City Council local government area is listed as a natural hazard management area. This means that development must meet Outcomes 1 and 2 of the policy, as addressed in **Table 11-4**.

#### ■ Table 11-4 SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

State Planning Policy Outcomes	Comment
<b>Outcome 1:</b> Within the natural hazard management areas, development to which the SPP applies is compatible with the nature of the natural hazard, except where: <ul style="list-style-type: none"> <li>■ The development proposal is a development commitment; or</li> <li>■ There is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal.</li> </ul>	<p>The Brisbane City Council area is listed as an area with potential for landslides, bushfires and flooding. Landslides and bushfires are unlikely to be risks in the study corridor and the reference project is not likely to increase the extent or severity of hazards of this nature.</p> <p>Some areas of the study corridor have been determined as being susceptible to localised flood impacts. Flooding impacts have been assessed in a separate technical report.</p> <p>The Project design is able to achieve flood immunity during a 1:10000 year flood event and therefore is considered compatible with the nature of the potential flood hazard in the project locality.</p>

#### SPP 2/02 Planning and Managing Development involving Acid Sulphate Soils

Review of topographical and geological mapping information has concluded that acid sulphate soils are not prevalent within the study area. However, three locations have been identified as having a low risk of acid sulphate soils:



- in the vicinity of Toowong Memorial Park on Sylvan Road;
- the eastern end of Barooka Road; and
- the south-east end of Given Terrace in Neal Macrossan Park.

However, none of these locations is presently designated for excavation and it is expected that the Project would not expose acid sulphate soils. Should acid sulphate soils be encountered during construction, they would need to be treated accordingly.

It is expected that the Project is able to comply with SPP 2/02.

### **Smart Cities: Rethinking the City Centre**

The Project forms one of many inner suburban urban renewal or infrastructure projects in the City which are outlined by the Smart Cities report and as such contributes to the revised vision of the City. The Project should be considered in any future studies undertaken as part of the Smart Cities initiative.

### **City West**

High traffic volumes (including unnecessary through-traffic) are one of the contributing factors to the perceived poor amenity in the City West area. The Project provides the opportunity to improve amenity in the City West area by reducing through-traffic.

The Project would reduce traffic on Milton Road, Countess Street, Petrie Terrace and some other local roads. This in turn may reduce the amount of 'rat-running' generated within the City West area, which might normally occur under congested traffic conditions.

As a result of reduced surface traffic, the Project would aid the implementation of one of the key City West Strategies, which is to improve safety and amenity of the City West area's local streets. Strategies that would be supported by the Project include:

- Restoring streets as social and economic places as well as places for mobility and access;
- Knitting the central area and inner suburbs together with high quality pedestrian and cycle links through the public domain; and
- Acknowledging the economic importance of lifestyle amenity and infrastructure.

### **11.2.2 Regional Planning Implications**

This section considers the Projects implications within the regional planning framework.

#### **SEQRP Implications**

This section considers whether the Project is able contribute to the achievement of the SEQRP Regional Policy objectives and regional Desired Environmental Outcomes.

The potential impacts and opportunities associated with The Project in regard to the regional policies are described in **Table 11-5**.

■ **Table 11-5 Project Assessment against SEQRP Regional Policies**

Regional Policy	Comment
Sustainability	<ul style="list-style-type: none"> <li>■ The Project would contribute to sustainability through improving accessibility to activities and services at both local and regional level.</li> <li>■ The Project would provide a regional link from the western corridor to the east and in particular to the ATC.</li> <li>■ Locally, through traffic would be reduced and local roads would have less traffic allowing for amenity improvement and improved public transport.</li> <li>■ Improved capacity of the transport network would be particularly important given the anticipated continued high population growth predicted for Brisbane and the SEQ region.</li> <li>■ The Project has been prepared within a sustainability framework as outlined in Chapter 2 of the EIS.</li> </ul>
Natural Environment	<ul style="list-style-type: none"> <li>■ The western end of the Project where it traverses Brisbane Forest Park and the Botanic Gardens are included in the Regional Landscape or Rural Production Area.</li> <li>■ Brisbane Forest Park and the Botanic Gardens are also defined as an area of regional biodiversity significance (SEQRP Map 4) and a Koala Sustainability Area (SEQRP Map 5).</li> <li>■ The proposed works would result in widening of the Western Freeway which is already a significant barrier to connectivity in the area. The additional impacts of the Project would be minimal given the existing situation.</li> <li>■ The values of the area are recognised and an environmental management plan is proposed to mitigate any adverse impacts and to limit the extent of the impact.</li> </ul>
Regional landscape	<ul style="list-style-type: none"> <li>■ The Brisbane Forest Park and the Botanic Gardens are integral components of Brisbane's natural green spaces. The values of the area are recognised and an environment management plan is proposed to mitigate any adverse visual or natural landscape impacts.</li> </ul>
Natural resources	<ul style="list-style-type: none"> <li>■ The Project is not expected to impact the region's natural resources.</li> <li>■ Tunnel construction spoil would be recycled through Mt Coot-tha Quarry to supply the road construction industry in Brisbane.</li> </ul>
Rural futures	The Project is not within a rural area.
Strong communities	<ul style="list-style-type: none"> <li>■ Construction impacts would be managed so as to reduce access and amenity impacts.</li> <li>■ Design of the Project has taken into account the need to maintain local connectivity and improve amenity for pedestrian and cyclists.</li> </ul>
Engaging Aboriginal and Torres Strait Islander peoples	<ul style="list-style-type: none"> <li>■ The traditional owners for the area, the Turrbal and Jagera People are actively involved in the cultural heritage assessment of the Project (see chapter 12).</li> </ul>
Urban development	<ul style="list-style-type: none"> <li>■ There would be opportunities for land use change as a result of reduced surface traffic on some roads within the inner northern suburbs.</li> <li>■ With an improved transport network, the Project may facilitate higher density infill development in some locations.</li> </ul>
Economic development	<ul style="list-style-type: none"> <li>■ The Project would have a positive impact on the economic development of the SEQ region by improving the movement of people and goods.</li> <li>■ The Project would provide additional road network capacity and would improve the orbital road system in the greater Brisbane area. This would improve access to places of business and employment including the Brisbane CBD, Toowong and the Brisbane Airport.</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>■ The Project would complete an orbital road link around the Brisbane CBD by linking the Western Freeway with the ICB, and would assist in the reduction of through traffic in the CBD.</li> </ul>
Water management	<ul style="list-style-type: none"> <li>■ The Environmental Management Plan for the Project would seek to minimise water use associated with the Project and manage potential runoff.</li> </ul>

Regional Policy	Comment
Integrated transport	<ul style="list-style-type: none"> <li>■ The Project would improve accessibility between the Western Corridor and the Brisbane Airport and therefore improve land use synergies between these two areas.</li> <li>■ The Project would provide for reductions of traffic on Milton Road, Coronation Drive as well as local roads within Brisbane's inner northern suburbs.</li> <li>■ The Project, through reductions in surface traffic, would provide opportunities for urban redevelopment in the inner northern suburbs, including infill development as envisaged by the SEQRP (see chapter 19).</li> </ul>

## SEQRP Regulatory Provisions

The Project does not trigger the regulatory provisions of the SEQRP, as the Project is not an Urban Activity.

## SEQIPP Implications.

While the Project is recognised by SEQIPP as being a 'project under investigation', the State Government has not (at the time of writing) allocated funding to Northern Link under SEQIPP.

## Integrated Regional Transport Plan (IRTP) for South East Queensland

The IRTP has now been superseded by the SEQRP, to the extent that there are inconsistencies between the two, with regard to the establishment of a pattern of development and the delivery of major infrastructure. The Project, while not identified in the IRTP, is identified in the SEQRP as a project under consideration for establishing a link in the orbital road system around the Brisbane CBD.

The Project responds to the issue of increasing congestion (as a result of population growth and economic development) through seeking to provide for the continued efficient movement of people and goods through an alternate transport route that bypasses the Brisbane CBD.

## Transport 2007

The Project would augment the existing road network and provide a new, high quality road corridor that would improve accessibility and connectivity to goods, services and places of employment to regionally significant locations including the Western Corridor, the Brisbane CBD and the Brisbane Airport.

## Regional Cycle Strategies – Cycle South East and the Integrated Regional Cycle Network Plan for South East Queensland

The proposed works on Milton Road, Frederick Street and Kelvin Grove Road are likely to impact upon cycling routes. Project design and construction arrangements would need to ensure that cycle networks are not compromised.

The anticipated reduction in general surface vehicular traffic is likely to create an environment that is more conducive to cycling and there would be opportunities to improve cycle infrastructure networks on roads that are currently unsafe for cycle travel due to high volumes of traffic (eg Milton Road).

## Western Brisbane Transport Network Investigation

The Project is one of many transport network options currently being considered by the Western Brisbane Transport Network Investigation (WBTNI). The WBTNI recognises the importance of the Project for not only providing an inner city motorway link between the Western Freeway and the ICB, but also as an opportunity for developing public transport and active transport routes in Brisbane's inner west through surface traffic reduction.

### 11.2.3 Local Planning Implications

This section assesses the Project in the context of the local planning framework.

## Living in Brisbane 2026

The 'Accessible, Connected City' strategy outlined in *Living in Brisbane 2026* identifies the need for effective road networks in conjunction with opportunities for access to green and active transport. While the strategy aims for 41% of peak trips to be undertaken by walking, cycling or public transport by 2026, it also recognises the need for private transport around the city.

The Project would provide additional road network capacity in Brisbane and therefore responds directly to the need for effective road networks. However, given predicted reductions in surface traffic on Milton Road and Coronation Drive (see chapter 5), the Project offers opportunities to improve green and active transport. Opportunities include transit priority on Milton Road, as well as a safer and more attractive environment for pedestrians and cyclists.

## Draft City Shape Implementation Strategy Implications

The Draft CSIS identifies an Urban Growth Corridor between Toowong and the CBD, including Milton Road and Coronation Drive.

It is considered that the Project, by reducing traffic on Milton Road and Coronation Drive, could encourage development in the Urban Growth Corridor as envisaged by the Draft CSIS. Because of reduced congestion there would be opportunities to improve public transport and active transport, both of which would improve accessibility and connectivity in the corridor, which in turn may encourage urban redevelopment.

In particular, there is potential for the Project to encourage redevelopment at Kelvin Grove and at Milton. This is consistent with various strategic planning instruments for the area including Kelvin Grove Urban Village Local Area Plan, the draft CSIS, the draft Milton Station Precinct Plan and the SEQRP.

## Brisbane City Plan 2000 – Strategic Plan

Overall the City Plan's strategic visions are focused on developing a city that is economically diverse and easily accessible while also encouraging a strong sense of community, quality of life and ecological sustainability.

Without mitigation measures the Project could potentially conflict with a number of the strategies and Desired Environmental Outcomes for development within Brisbane.

As a stand-alone piece of infrastructure, the Project itself conflicts with the Access and Mobility DEO. The provision of a road tunnel that is used primarily by private and commercial motor vehicles would not be consistent with the Access and Mobility DEO's strategy for promoting development that reduces private motor vehicle dependency.

However, as the Project would reduce surface traffic on Milton Road and Coronation Drive, there are opportunities to improve public and active transport on these road networks. Should these opportunities be realised by Brisbane City Council, then it is considered that the Project would help to achieve the Access and Mobility DEO.

The Project would potentially result in a small net loss of public open space, and therefore conflict with the Natural Environment and Waterways DEO. The proposed construction sites, ventilation outlets and transition structures, particularly at the western connection, would encroach on green space in Anzac Park, the Mt Coot-tha Botanic Gardens and Brisbane Forest Park. The Project would need to ensure that impacts on green space are minimised and where possible, public open space impacted during construction should be either compensated for, or rehabilitated as open space.

## Brisbane City Plan 2000 - Areas

The Project's implications for the future land use scenario, based upon the current City Plan 2000 Area designations, are summarised below.

### *Character Residential and Low Density Residential Areas*

The Character Residential and Low Density Residential Areas are unlikely to be redeveloped at significantly higher densities. This is due to the planning provisions that seek to retain the traditional housing stock and character and to maintain the low density urban form. Consequently, these areas are unlikely to place increased pressure on travel demand.

The desired residential character of these areas may suffer if through-traffic is not appropriately managed in local streets. The Project, by reducing traffic on Milton Road and Coronation Drive and other local roads and streets, would alleviate through-traffic in local streets.

### *Low-Medium Density Areas*

It is envisaged that the Low-Medium Density Areas will be progressively redeveloped at higher than current densities, depending on consolidation of land holdings and accessibility to public transport and arterial roads.

### *Medium Density Areas and High Density Areas*

The Medium Density and High Density Areas are located adjacent to the Toowong centre, and close to rail stations at Milton and Auchenflower. While the increased population in these areas will be encouraged to use public transport, it is assumed that they will also create additional travel demand on the local and regional road network. Given their proximity to activity centres, the High Density Areas will also require good quality active transport linkages to realise the full benefit of their location.

### *Community Use Areas*

Community Use Areas are scattered throughout the inner western suburbs. These areas provide for the community's essential services (eg schools) and must be easily accessible. Private schools (which are contained within the Community Use Area) with catchments beyond their respective local areas are expected to attract private vehicle trips during peak times.

### *Industrial Areas*

Industrial areas, located mostly in Milton, will continue to be used for industrial uses and require good access to freight routes. Congested routes lead to an increase in freight costs, impacting on economic development and the viability of industrial land uses.

By reducing surface traffic along Milton Road and Coronation Drive, the Project would have a positive impact on industrial uses.

### *Multi Purpose Centres/Special Purpose Centres*

There are numerous premises designated as 'Centres', each with land use specifications and travel demand implications:

- Suncorp Stadium has unique travel demand implications. Travel demand is very high during sporting and entertainment events and is usually managed by local road closures and increased public transport provision. At other times, travel demand for Lang Park is low.
- The Milton Office Park is likely to create a high level of traffic demand particularly in peak times, given activities in these areas will be focused around general business hours.
- The City Centre will continue to have a very high travel demand, particularly at peak travel times.

- Suburban Centres will attract shopping trips from local communities and need to be easily accessible to maintain the viability of businesses within them.

### *Open space areas*

Open space areas, including Parkland and Sport and Recreation Areas are located throughout the Study Corridor. The open space areas provide green space, visual amenity and informal and organised recreational spaces. The travel demands associated with these areas are varied.

- Parkland Areas do not generate high travel demand. However, parkland needs to be easily accessible for motorists, pedestrians and cyclists so that the recreational opportunities offered by these areas are realised.
- Sport and Recreation areas may create significant travel demand from both local and broader communities during organised sporting events. Sport and recreation areas need to be easily accessible for motorists, pedestrians and cyclists so that the recreational opportunities offered by these areas are realised.

The Project's impacts on open space are discussed below in Sections 11.3 and 11.4.

### **Brisbane City Plan 2000 - Local Area Plans.**

The Project, by reducing surface traffic on Milton Road, Coronation Drive and some other local roads and streets, would assist in the implementation of the relevant Brisbane City Plan 2000 – Local Area Plans.

#### *Toowong-Indooroopilly District Local Area Plan*

The Project would need to ensure pedestrian and cycle accessibility is maintained between key land uses and where possible, should aim to improve existing networks. The project provides the opportunity to improve pedestrian and cycle connectivity in the Toowong area, particularly within the area surrounding the roundabout adjacent to the Toowong Cemetery.

Although some properties would be acquired, character housing located in the Toowong area would be maintained throughout the construction and operational phases of the Project. The Project would not materially diminish the character housing stocks situated in the Toowong area.

#### *Mt Coot-tha Local Area Plan*

The Project would encroach into the Brisbane Forest Park and Anzac Park, and would therefore impact on the amenity and value of the local environment. The impact would be limited however to the narrow strips of land required either side of the existing Western Freeway, and the overall loss of these spaces would not materially affect their environmental or recreational value.

#### *Ithaca Local Area Plan*

The Project would not be inconsistent with the Ithaca Local Area Plan's development principles. There are a small number of residential and commercial properties required for resumption in the vicinity of the proposed Kelvin Grove Road connection. However, none of these properties is heritage listed or recognised as significant to the heritage values of the Ithaca area.

The Project would not impact on Enoggera and Ithaca Creeks as they are both located outside the study corridor.

#### *Kelvin Grove Urban Village Local Area Plan*

The Project would need to ensure that pedestrian and cycle accessibility is maintained between the surrounding residential properties, public transport nodes and the Urban Village. The Project would make allowance for



pedestrian and cycle connectivity in Kelvin Grove Road, through integration of pedestrian and cycle paths in the proposed new infrastructure.

No properties within the Urban Village would be acquired for the Project. The Project would not be inconsistent or incompatible with the development principles of the Local Area Plan.

#### *Milton Local Area Plan*

The Project would reduce surface traffic in the Milton Local Area and by improving the regional road network and public transport can help to improve local amenity. Consequently, the Project provides the opportunity for mixed use redevelopment and an intensification of residential uses in Milton, both of which are consistent with the intent of the Milton Local Area Plan.

#### *Toowong Centre Local Area Plan*

The Project is not inconsistent or incompatible with the aims and objectives the Toowong Centre Local Area Plan.

#### **Brisbane Long Term Infrastructure Plan 2007**

The Project would assist in achieving the objectives of the Brisbane Long Term Infrastructure Plan 2007 (BLTIP). One of the Project's primary objectives, which is to improve freight networks within Brisbane's inner west, is consistent with BLTIP's goals to protect residential areas from freight movement and to provide more efficient road freight networks.

#### **Draft Milton Railway Station Precinct Plan**

The Project's study corridor does not include land subject to the draft Milton Railway Station Precinct Plan. However, as the Project is predicted to reduce traffic on Milton Road and Coronation Drive, the Project may facilitate the achievement of the Plan's objectives.

### **11.3 Existing Environment - Land Use**

For the purposes of this EIS, the study corridor has been split into three sections to describe land use:

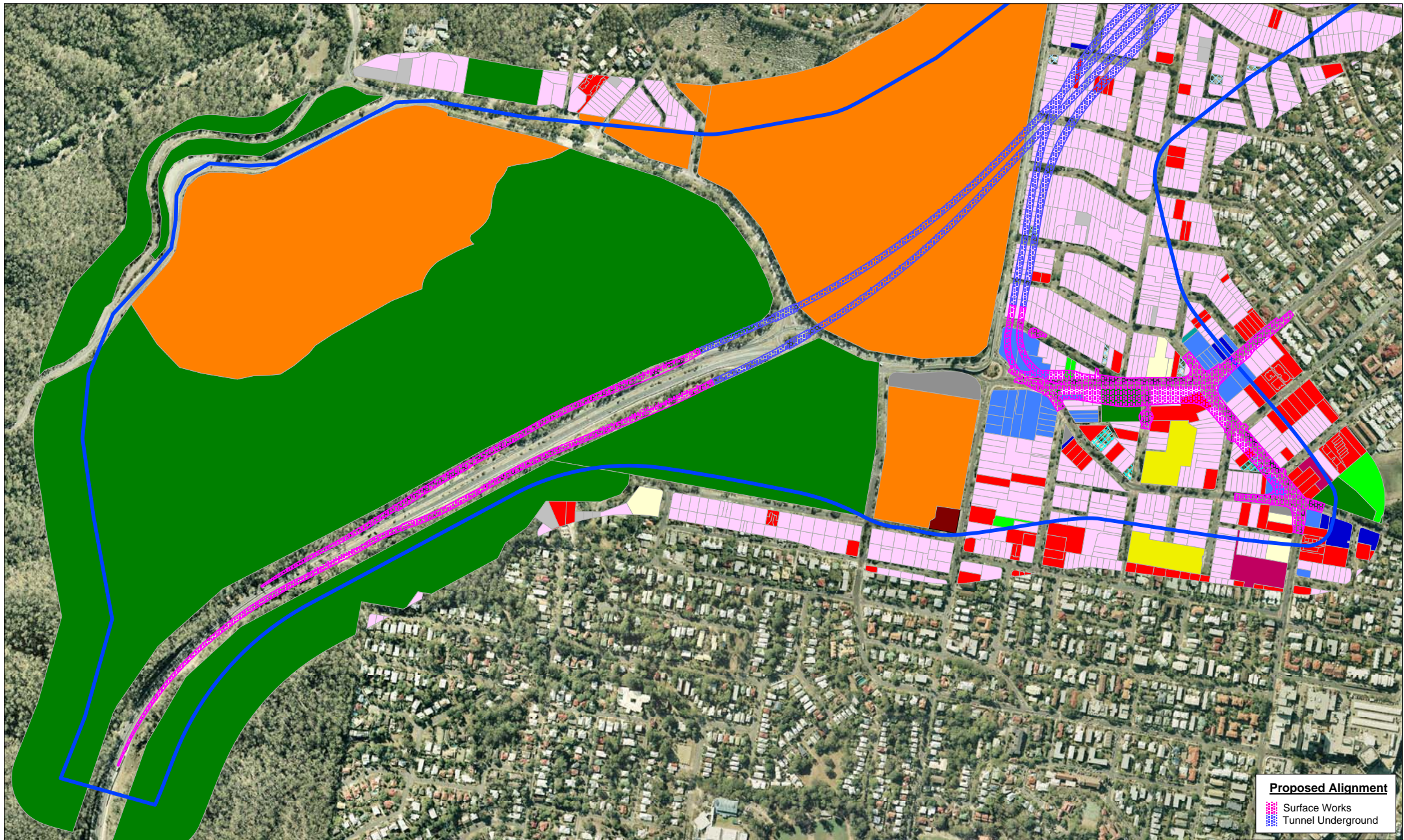
- Western Freeway Connection and Toowong Connection (western extremes of study corridor to the northern end of Frederick Street as far as Sleath Street, Sleath Street, Gregory Street between Sleath Street and Shaw Street, and Shaw Street, Toowong).
- Central section.
- Northern Connection and Kelvin Grove Road Connection (Cairns Terrace and Moreton Street, Paddington to northern extremes of study corridor).

A land use survey for the Study Corridor was undertaken by Brisbane City Council in 2007. The existing land uses within the study corridor are generally representative of the area classifications defined by the Brisbane City Plan, as described in **Section 11.1.5**. Land use data was identified under the categories defined in **Table 11-6** and is shown in **Figure 11-6**, **Figure 11-7** and **Figure 11-8**.

■ Table 11-6 Land Use Categories

Land Use Type	Description
Detached Dwelling	Individual domestic residences on a premises generally identified by a single letterbox.
Multiple Unit Dwelling	Premises that provide for individual accommodation for more than one group of people/household (eg units, town houses or duplex). Presence of multiple residents verified by several letterboxes and/or additional unit numbers (eg 1A and 1B or 1/37, 2/37 etc) or signage.
Accommodation	Boarding houses, guest houses, private hotels and motels where temporary accommodation is provided for short-term periods. These were identified through signage.
Industry	Premises used for industrial activity.
Commercial/Retail	Premises used for commercial activity (eg retail shopping and restaurants).
Office	Premises used for a business or office purpose (eg professional office, real estate office, bank, building society or surgery), where the principal activity provides: <ul style="list-style-type: none"> <li>■ business or professional advice;</li> <li>■ services or goods that are not physically on the premises; or</li> <li>■ the office based administrative functions of an organisation.</li> </ul>
Health Care	Premises that provide medical care and treatment.
Child Care Centre	Premises that provide the minding or care, but not residence, of children.
Education	Facilities used for educational purposes, (eg preschool, primary school, secondary school, college, university or technical and further education institution).
Park	Public open space for free recreation and enjoyment (eg playing field, playground). Facilities for park users may include kiosks, shelters, play equipment, and car parking facilities.
Sport and Recreation	Sporting clubs and facilities (eg bowls club, football clubs with playing fields).
Retirement Village/Aged Care	Use of premises for residential accommodation that meets the particular needs of persons who are retired or elderly persons with special care needs.
Community Facility	Community facilities such as a library, church, halls and emergency services
Mixed Use	Premises with commercial or retail uses in the ground floor/podium of the building and office uses or residential uses on upper levels of the building.
Utilities	Premises that contain facilities used for providing the public with a service (eg telecommunications tower, electricity substation or infrastructure).
Car Park	Locations used generally for parking motor vehicles
Vacant Land	Premises with no current recognised land-use.
Other/Special Use	Unique land uses that cannot be categorised into any of the above land use types.





# LEGEND

Multiple Unit	Office	Sport and Recreation	Mixed Use	Utility
Detached Dwelling	Health Care	Education	Car Park	Industry
Commercial/Retail	Child Care Centre	Community Facility	Other/special use	
Accommodation	Park	Retirement Village	Vacant Land	Study Area Corridor

0 200 400  
metres

Scale 1: 10,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

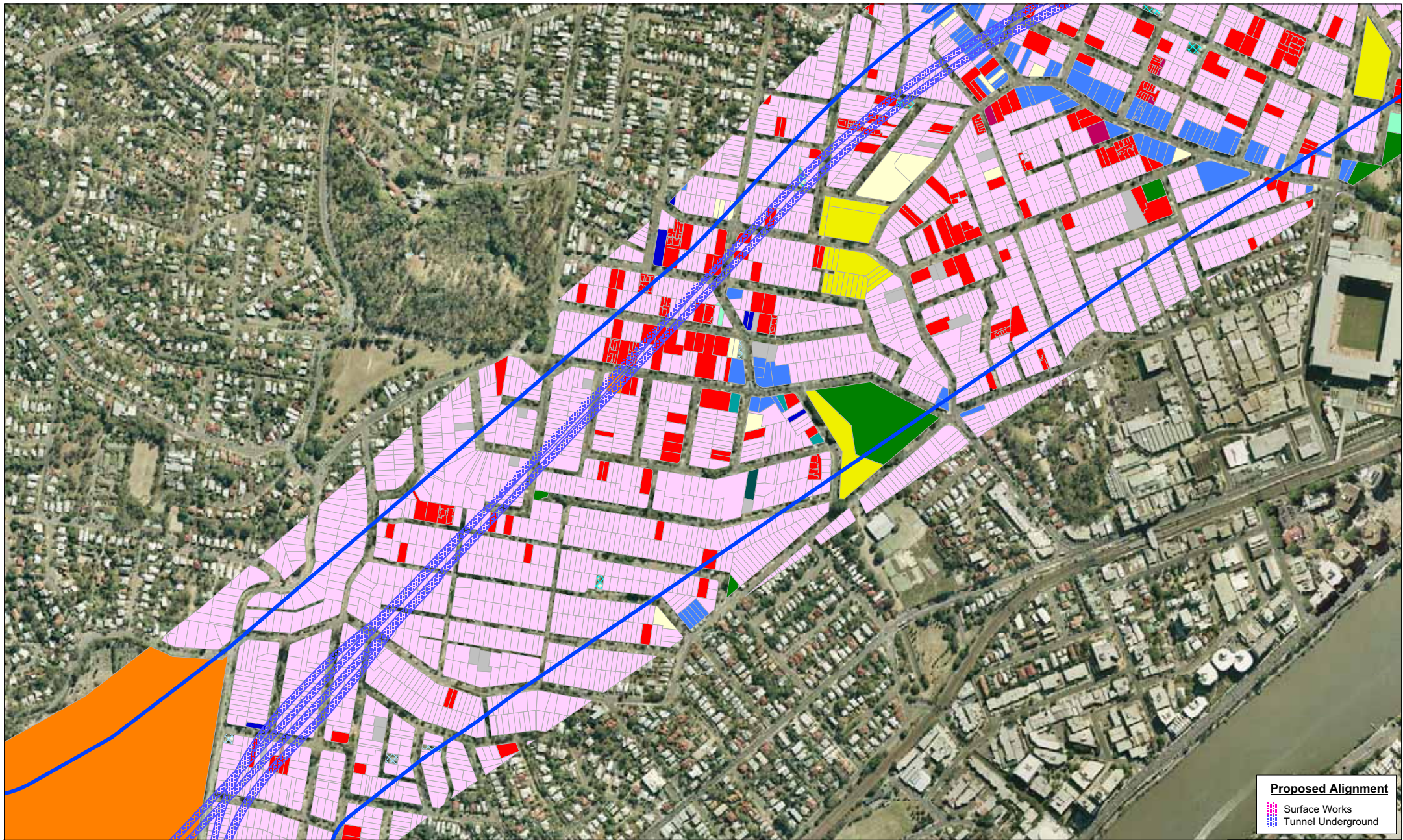
Figure 11 - 6  
Landuse  
Study Corridor West

## Proposed Alignment

- Surface Works
- Tunnel Underground







# LEGEND

Multiple Unit	Office	Sport and Recreation	Mixed Use	Utility
Detached Dwelling	Health Care	Education	Car Park	Industry
Commercial/Retail	Child Care Centre	Community Facility	Other/special use	Study Area Corridor
Accommodation	Park	Retirement Village	Vacant Land	

0 200 400  
metres  
Scale 1: 10,000 (A4)



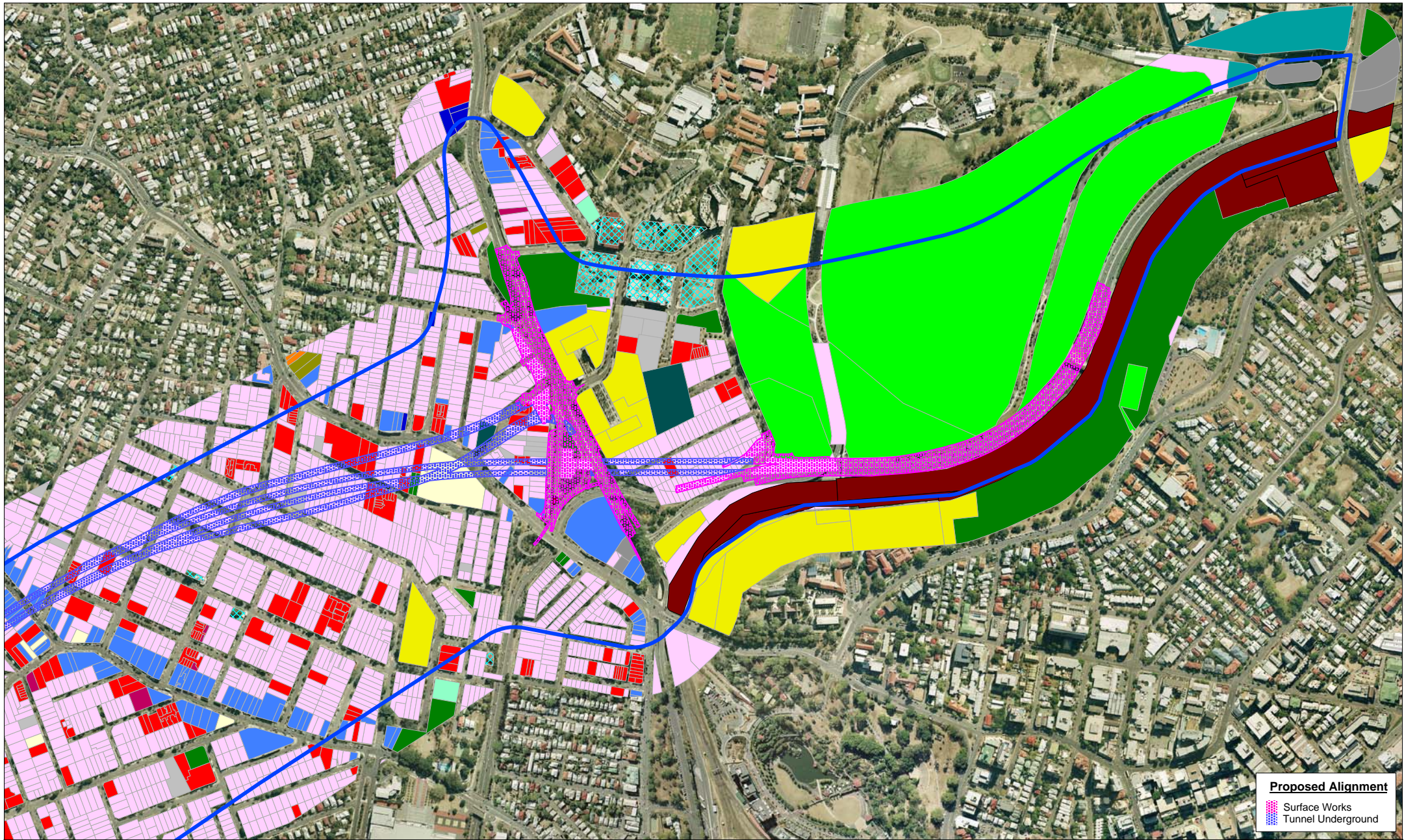
NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT  
Figure 11 - 7  
Landuse  
Study Corridor Central

## Proposed Alignment

- Surface Works
- Tunnel Underground







# LEGEND

- |  |   |   |   |  |
|--|---|---|---|--|
| <span style="color: red;">■</span> Multiple Unit           | <span style="color: blue;">■</span> Office                  | <span style="color: green;">■</span> Sport and Recreation     | <span style="color: lightblue;">■</span> Mixed Use      | <span style="color: brown;">■</span> Utility         |
| <span style="color: pink;">■</span> Detached Dwelling      | <span style="color: teal;">■</span> Health Care             | <span style="color: yellow;">■</span> Education               | <span style="color: grey;">■</span> Car Park            | <span style="color: olive;">■</span> Industry        |
| <span style="color: lightblue;">■</span> Commercial/Retail | <span style="color: lightgreen;">■</span> Child Care Centre | <span style="color: lightyellow;">■</span> Community Facility | <span style="color: orange;">■</span> Other/Special Use | <span style="color: lightgrey;">■</span> Vacant Land |
| <span style="color: magenta;">■</span> Accommodation       | <span style="color: darkgreen;">■</span> Park               | <span style="color: darkblue;">■</span> Retirement Village    | <span style="color: blue;">■</span> Study Area Corridor |  |

0 200 400  
metres

Scale 1: 10,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 8  
Landuse  
Study Corridor East

## Proposed Alignment

- Surface Works
- Tunnel Underground





Generally, the land use survey results matched the City Plan Area designations. In this regard, the tin and timber housing stock was generally contained within the 'Character Residential Area', multiple unit dwellings were generally found within the 'Low-Medium Residential Area', and the commercial and retail land uses were generally found within the 'Convenience Centre' or 'Suburban Centre' area designations.

### 11.3.1 Existing Land Uses - Western Connection and Toowong Connection

The predominant land uses at the western end of the corridor, in terms of size, are the Toowong Cemetery, the Botanical Gardens, Mt Coot-tha Park/Brisbane Forest Park, Anzac Park and the Brisbane City Council's Toowong bus depot. Apart from commercial uses along Milton Road, 'tin and timber' character housing is the predominant land use type in this vicinity.

Toowong Cemetery occupies an elevated position adjacent to Milton Road and Frederick Street. It is of both State and local heritage significance. The heritage values are described in Chapter 12 of this EIS.

The Mt Coot-tha Botanical Gardens, Anzac Park and Mt Coot-tha Park/Brisbane Forest Park comprise a large, contiguous area of green space that comprises ecological values but also significant landscape and recreational values, in close proximity to the inner suburbs of Brisbane.

Anzac Park is a large informal recreational park with picnic tables, play equipment, bicycle paths and public toilets.

Quinn Park is located at the intersection of Milton Road and Quinn Street. It provides recreational services to the local residents and includes playground equipment and picnic tables.

Brisbane City Council's Toowong bus depot is located on Dean Street, adjacent to Anzac Park. This depot houses over 160 buses and is the largest in Brisbane. As well as providing buses for the western suburbs, the Toowong depot is also occupied by the Brisbane Transport Workshop. The workshop is responsible for undertaking major mechanical, electrical and body repairs and also for assembly of Brisbane's bus fleet.

There are some commercial land uses located on Milton Road. There is a cluster of commercial land uses located to the east of the Toowong Cemetery and the Toowong bus depot, including a car dealership and a service station. There is another cluster of commercial uses on the intersection of Milton Road, Croydon Street and Morley Street, providing a range of services including health facilities, food and convenience outlets.

There is one school located within the western end of the study corridor, the Toowong State Primary School in St Osyth Street. Sporting grounds associated with the Toowong State Primary School are located on the corner of Sylvan Road and Quinn Street.

There are a number of multiple unit dwellings located in the western end of the study corridor, predominantly along Milton Road and Croydon Street. These dwellings vary widely in quality, size and age.

Land uses at the Western Connection are shown in **Figure 11-6**.

### Area Classifications

The existing land uses at the Western Connection are generally consistent with the City Plan Area classifications as shown the City Plan 2000 mapping.

There are three prominent land uses, Park Land, Community Use and Character Housing, at the western end of the study corridor. Land either side of the Western Freeway is designated as Park Land. This land includes the Botanic Gardens, Anzac Park and Mt Coot-tha Park/Brisbane Forest Park. The other dominant area



classifications include the Toowong Cemetery and the Brisbane City Council bus depot as Community Uses and almost all residential properties being designated as Character Housing within Demolition Control Precincts.

Other area classifications include land east of the Toowong roundabout along Milton Road designated as Suburban Centre, commercial land at the Milton Road / Croydon Street intersection designated as Convenience Centre, and land south of Milton Road and east of Quinn Street designated as Low-Medium Density Residential.

### 11.3.2 Existing Land Uses - Central Section

Detached residential dwellings are the dominant land use within the central section of the study corridor. Although many of these properties do represent the 'tin and timber' housing style, the area is also well represented by modern, recently developed properties. Another common land use within this central section is multiple-unit dwellings, which are situated in various locations throughout the Study Corridor.

There are two major commercial precincts located within the central section of the Study Corridor, one surrounding the intersection of Baroona Road and Nash Street and the other either side of Given Terrace and Latrobe Terrace. These commercial uses provide mostly convenience services to the local community, including banks, general medical practitioners, health services, speciality shops and restaurants and cafes.

Gregory Park, abutting Milton Primary School, is the largest park within the central section of the study corridor. Gregory Park is in a central location within Milton and is easily accessed from the surrounding land uses, including Milton Primary School.

There are three schools present within this section of the study corridor, Milton Primary, Petrie Terrace Primary and Marist Brothers Rosalie. The only secondary school within this section of the study corridor, Marist Brothers Rosalie is scheduled to close at end of 2008. Presently, no future use has been decided for the site.

Other prominent land uses located within this section of the study corridor are the Paddington Meals on Wheels on Herbert Street, and the Sacred Heart Church and Convent on Given Terrace. The Sacred Heart Church and the Sacred Heart Convent have been used from time to time by the adjacent Marist Brothers School. For more information on land uses in the central section of study corridor refer to **Figure 11-7**.

### Area Classifications

The dominant land use within the central section of the study corridor is Character Residential. Almost all of this Character Residential and all of the Low-Medium Residential areas within this section of the study corridor are also designated as being in a Demolition Control Precinct. The Low-Medium Residential is predominantly concentrated around the Convenience Centre area at the Baroona Road / Nash Street intersection.

Land either side Given Terrace is classified as Suburban Central. This land includes a wide range of shops and facilities that service the local community.

The three schools located within this section of the study corridor are all classified as Community Use. The Community Use classification also encompasses the Paddington Meals on Wheels facility on Herbert Street, the Sacred Heart Church and Sacred Heart Convent.

### 11.3.3 Existing Land Uses by Location- Northern Connection and Kelvin Grove

The predominant land uses at the northern connection are Victoria Park and Victoria Park Golf Course. These open spaces, combined with the two Grammar Schools and the BGS playing fields, dominate the landscape on either side of the Inner City Bypass.

Near the Kelvin Grove connection, between Kelvin Grove Road and Victoria Park, the Kelvin Grove Urban Village is the predominant single land use in terms of size. However, land uses within the Kelvin Grove Urban Village are diverse and include multiple unit dwellings, food and convenience shops, speciality shops, restaurants and cafes, entertainment facilities and some basic health services. Also situated between Kelvin Grove Road and Victoria Park are a number of residential dwellings and the Hilltop Gardens Retirement Home.

Other significant land uses within this section of the Study Corridor include Brisbane Grammar and Brisbane Girls Grammar Schools on Gregory Terrace, St Brigid's Church on Musgrave Road, commercial buildings around the Normanby five-ways intersection and on Kelvin Grove Road, and a number of green spaces such as Marshall and McCaskie Parks.

Residential dwellings within the northern section of the study corridor are diverse in style and structural quality. They include a number of multiple unit dwellings and some 'tin and timber' character housing.

There is vacant land on Lower Clifton Terrace, Upper Clifton Terrace and within the Kelvin Grove Urban Village. At present, only the vacant land within the Kelvin Grove Urban Village has any significant development applications pending, which are for mixed use multi storey developments up to 13 storeys in height. No development is currently proposed for the vacant land in Lower Clifton Terrace or Upper Clifton Terrace. For more information on the land uses in the eastern section of study corridor refer to **Figure 11-8**.

### Area Classifications

The land occupied by Victoria Park, the Brisbane Grammar Playing Fields and Victoria Park Golf Course is classified as Sport and Recreation. This land is bordered by the Inner City Bypass and Victoria Park Road and dominates the study corridor at the northern end.

Residential dwellings within the area are classified as either Character Residential or Low-Medium Density Residential and are mostly within Demolition Control Precincts. Low-Medium Density Residential classifications are located predominantly around Musgrave Road and Kelvin Grove Road.

The Kelvin Grove Urban Village, the Normanby Hotel on Musgrave Road and the adjacent commercial land are all classified as Suburban Centre. Other land within the Urban Village is designated as either Medium Density Residential or Park Land.

Land designated as Community Use includes the St Brigid's Church on Musgrave Road and Hilltop Gardens Retirement Home on Rochester Terrace.

### Current Development Applications Pending Council Decision

There are three development applications pending Council decision near the Kelvin Grove Connection:

- 1) 7 and 11 Musk Avenue, 26 Gona Parade Lot 2, 3, 5 SP151277

This application for a mixed use development includes two commercial towers, one 10-storey building and one 12-storey building. It includes a six-storey educational facility. It also includes a proposal to re-use five heritage buildings (ie Gona Barracks) for creative industries, educational purposes and a child care centre. The application also includes 869 car spaces within four basement levels and 321 bicycle parking spaces.

This property would be subject to a volumetric acquisition (see **Section 11.4.3** below), as the proposed (eastbound) mainline tunnel would pass beneath the extremity of the south west corner of the subject land. However, no new buildings or structures are proposed in this location, as the existing buildings are proposed to be re-used as outlined above, and the proposed basement car park would not extend into this

part of the site. The proposed development of 7-11 Musk Avenue would therefore not be affected or compromised by the Project in any significant way.

2) 16 Ramsgate Avenue, 63 Blamey Street (lots 15, 16 SP181238)

This is a mixed use, retail, commercial and residential development proposal. The application seeks approval for a number of buildings ranging in height from six-storey buildings to 12-storey buildings. It is proposed that the buildings would contain retail/mixed uses at ground level with residential uses above. The proposal also includes a child care facility.

3) 23 Robinson Place (Lot 29 SP160395)

This is a residential development proposal. The application seeks approval for 65 residential units contained within an eight-storey building. The proposal includes 91 onsite parking spaces contained primarily within three basement levels.

The Project would have no impact on any of the above development proposals other than as described in (1), as the properties that are the subject of those applications would not be directly affected.

### 11.3.4 Significant land uses within the vicinity of the Study Corridor

There are a number of key sites located outside the Study Corridor that should be considered in the assessment of the Project. These sites require good accessibility to efficient transport networks and have the potential to increase demand on local and regional transport networks through land use intensification. Key development sites are listed below.

- **Milton Brewery** – this site is anticipated to continue current operations and relies upon good access to local and regional road network to link to major centres including the Australia Trade Coast.
- **Former Milton Tennis Courts** – approval for 174 residential units, increasing demand on the local road network.
- **Milton Office park** – currently has 35,000m<sup>2</sup> of office space, with potential for 63,276m<sup>2</sup> on the four-hectare site. Further development of the office park would increase demand on the local and regional road network and public transport.
- **Kelvin Grove Urban Village/QUT** – this 16.7 hectare site has been substantially developed with mixed use residential, creative industries, research and technology precinct. This area would benefit significantly from improved transport connections.
- **Former Sunny Queen Eggs site** – given its inner city location, it is considered that this site is not currently developed to its potential. Based upon the City West Strategy, this site could be developed for mixed use to take advantage of its inner city location.
- **Former Police Barracks, Petrie Terrace** – approval has been granted for a mixed use development including offices, supermarket, cinema, specialty retail and car parking. A pedestrian walkway is being constructed through the site to connect Caxton Street with Roma Street, as part of the infrastructure requirement for the redevelopment of Lang Park.
- **Wesley Hospital** – approval has been granted for Stage 1 of master plan including 24 medical suites and 483 car parks. Stage 2 includes a new east building of 11,985m<sup>2</sup>. Continued expansion would increase demand on transport services, including road and public transport.
- **Toowong Bus Depot** – to operate effectively the depot requires efficient access to established public transport routes. Any future decommissioning of the depot would require changes to access arrangements.

- **Long Pocket Research Centres** – the CSIRO and QDPIF operate well-established research facilities on these sites. Further expansion of operations by QDPIF on the site has been curtailed which has led to possible relocation to Boggo Road. Improved accessibility may improve opportunities for redevelopment or expansion on the sites.

## 11.4 Land Use Impact Assessment

This section addresses the Project's potential construction and operational impacts on existing land uses within the study corridor. Land acquisition required for the Project and the temporary construction worksites, as well as changes to access and traffic movements, are considered in this section.

### 11.4.1 Land Use Impacts - Western Connection

#### Land Acquisitions and Land Use Implications

The Western Freeway Connection would require, for the Project, allocation of land that is currently owned by Brisbane City Council. Most of the Council owned land to the north of the Western Freeway is occupied by the Mt Coot-tha Botanic Gardens, the Mt Coot-tha Quarry and the Brisbane Forest Park. Most of the land to the south of the Western Freeway is occupied by the Brisbane Forest Park and Anzac Park. The Council owned land along the alignment of the Western Freeway is also mostly occupied by the Western Freeway apart from a small section of QDMR road reserve.

The proposed Western Freeway worksite is entirely within land owned by the Council, with the area to the north of the worksite occupied by the Mt Coot-tha Botanic Gardens. A chain wire fence currently delineates the boundary of the Botanic Gardens, therefore no part of the proposed worksite would be located within the Botanic Gardens.

The construction and operation of the tunnel entry and exit ramps requires the allocation by Council of a 20m wide (approximately) strip of land on the northern and southern side of the Western Freeway. A similar 20m allocation would be required from the State Government, for land on either side of the Western Freeway that lies within the State-owned designated road reserve (approximately 375m west of the tunnel portal location).

During construction, the worksite and construction areas would be licensed by Council to the Public-Private Partnership Company (PPP Co) for the duration of construction. Permanent works required for the operation and maintenance of the toll road, such as the tunnel ramps, ventilation station, tunnel control centre and associated infrastructure would be leased to the PPP Co for the life of the toll road concession period. Land not required for the operation and maintenance of the Project, including surface road connections, pedestrian and cycle paths and the unoccupied areas of the construction worksites would be returned to the Council, or in the case of the Western Freeway surface connection, to the QDMR. Consequently, there would be some change to the current land use to include the toll road infrastructure. The land returned to the Council would be rehabilitated in order to continue with its existing use prior to construction works.

It is also proposed to install a temporary spoil conveyor during construction between the worksite and the Mt Coot-tha Quarry. The conveyor would require a strip of land between 5-8m wide through land occupied by the Mt Coot-tha Botanic Gardens. The conveyor would be elevated in places and while it would provide for vehicle and gardens access underneath it would have an impact on the amenity and function of the gardens within its immediate vicinity. In order to minimise its impacts, the conveyor would be configured to satisfy a number of requirements including:

- For safety and security, the conveyor itself would be enclosed to mitigate potential impacts from noise or dust, and the area of the conveyor fenced, with access underneath the conveyor controlled, where topography permits. The conveyor may result in some constraints on access, but this would be temporary



and clear signage would be installed to ensure that Botanic Gardens users are directed to safe crossing points.

- The conveyor would be lit at night for safety and security, and the facility would be under permanent remote surveillance by construction staff.
- The conveyor would be designed so as to present the minimum visual and landscape impact practical, having regard for its scale, character of construction and construction materials, and the likely duration of its use (see Chapter 14).
- On completion of the spoil handling and transport task, the conveyor system would be decommissioned and dismantled as soon as practicable, and the conveyor corridor would be rehabilitated in consultation with the Botanic Gardens management in accordance with their future land use requirements.

The permanent occupation of a strip of land along the northern edge of Anzac Park would not significantly impact upon the recreational values of the park. The land required is adjacent to the Western Freeway and heavily vegetated, and currently holds little recreational utility or value. Sufficient land within the park, also heavily vegetated, would remain for the purpose of providing a buffer zone between the road infrastructure and the more useable areas of Anzac Park. Land not required for the tunnel ramps would be suitably landscaped, including along the shared pedestrian and cycle path, and returned to Council.

#### 11.4.2 Land Use Impacts - Toowong Connection

##### Land Acquisitions and Land Use Implications

The establishment of the Toowong connection would require the acquisition of 57 residential properties and eight commercial properties (which accommodate 21 individual businesses).

All properties located within the triangle bounded by Frederick Street, Milton Road and Valentine Street would be resumed for the establishment of the Toowong worksite, to allow the construction of the ramps connecting the mainline tunnel to Milton Road. Also included in the above number are properties at the western end of Valentine Street and Morley Street, which would be acquired for construction of the proposed tunnel portal for the Toowong Connection.

Existing commercial uses currently operating on this land include a car dealership and a service station. Although the convenience shopping services of the service station would be lost, the loss of these commercial uses would not significantly affect the overall land use balance of the Toowong area because the Toowong Village centre is within close vicinity as is the 'Cat and Fiddle' commercial and retail complex, which provides convenience shopping services. However, the current service station is the only one in this vicinity. Other service stations located in nearby suburbs are found at the following locations:

- corner of Granzella Street and Milton Road, Milton.
- Gailey Road, Taringa.
- Benson Street, Toowong.

Residential properties to the north of Milton Road, including those to be acquired, are predominantly 'timber and tin' character housing common to the Toowong area, in various states of repair. Despite the acquisitions, the land use balance of the locality would not be significantly affected by the reduction in residential land area.

Partial acquisition of one residential property on the corner of Valentine Street and Gregory Street would be required. A three-storey unit building comprising six units is located on these premises, and is in good repair. Only a portion of land at the corner of the property would be required to accommodate the proposed road widening and it is expected that the building would be retained.

A number of properties would be acquired on the southern side of Milton Road. These include Quinn Park, a public green space with playground and picnic facilities. Approximately half of the park would be resumed for the widening of Milton Road in this location. There are also 10 detached residential dwellings in this location that would be acquired to accommodate the Project. These properties are also predominantly ‘timber and tin’ character housing, common to Toowong, and are generally in good repair.

Partial acquisition of a townhouse complex with frontages to Quinn Street, Milton Road and Croydon Street, would be required. The existing vehicular access to this property, from Quinn Street, would be maintained, but as Quinn Street would become a cul-de-sac, there would no longer be access from Milton Road into Quinn Street. Despite the acquisitions, the land use balance of the locality would not be significantly affected by this reduction in residential land area.

The commercial properties on the southern side of Milton Road include the Subaru car dealership on the corner of Miskin Street, Hutchinson Builders on the corner of Sylvan road, and a cluster of small businesses within the commercial precinct on the corner of Milton Road and Croydon Street. There is also a small commercial office establishment on Sylvan Road that would be partially affected by the Project. The Project requires only a portion of land from these properties and it is expected that the business operations would be maintained albeit with a loss of some car parking spaces.

Quinn Park would be significantly impacted. Approximately half of the park would be required for the widening of Milton Road and construction of transition structures. The remainder of the park, including most of its facilities, would not be directly affected. However, the utility of Quinn Park is likely to be significantly diminished given the proportion that is to be resumed. Due to the nature of road infrastructure construction, the amenity of Quinn Park would be diminished during Project construction.

The Project would require the acquisition of a mixture of residential and commercial properties along the western side of Croydon Street. These properties are predominantly in the typical character housing style and are well maintained. Apart from the small businesses operated from renovated residences, the only other business required for acquisition would be the liquor store on the corner of Sylvan Road and Croydon Street.

Apart from the removal of one property adjoining the bottle shop, partial acquisition would be required of a small number of properties on Sylvan Road and Jephson Street, including land within the grounds of the Toowong Baptist Church. The acquisition would require only partial frontages of these properties and it is not expected that there would be a significant impact.

## Access and Traffic Movement

Surface road works have the potential to cause significant disruption to property access, during construction and operation, for:

- commercial and residential properties in Milton Road, Sylvan Road and Croydon Street (currently, there are no commercial or residential properties that rely on access from Frederick Street);
- the Mt Coot-tha Botanic Gardens, Brisbane Forest Park and Toowong Cemetery.

In Milton Road, access into and out of the existing car dealership on the corner of Miskin Street would require temporary relocation to enable construction of the tunnel connecting ramp(s). Given the need to maintain through traffic flows on Milton Road during construction (see Chapter 5), it is possible that this property access may require temporary relocation more than once prior to completion.

Similarly, some properties at the western end of Sylvan Road (residential and commercial) would experience temporary changes in their access during surface road works, but permanent access would be reinstated prior to completion of construction.

All of the existing properties on the south side of Milton Road between Sylvan Road and Croydon Street that rely on Milton Road for their access would be acquired. Therefore, during construction there would be no issues for access to these properties, and the remaining properties would retain their existing access from Sylvan Road via either Quinn Street or St Osyth Street.

Similarly, all existing properties that rely on access from the north side of Milton Road, between Frederick Street and Morley Street, would be acquired. Vehicular access to the existing residences fronting Milton Road between Gregory Street and Morley Street, is via a laneway from Gregory Street or from Morley Street. Therefore, access to these properties during construction and operation would be unaffected.

East of Croydon Street, access to properties on the south side of Milton Road would be temporarily relocated to permit the widening of the roadway. This includes the commercial properties on the corner of Croydon Street, the Toowong Private Hospital, and a small number of residential properties. Properties on the north side of Milton Road, east of Croydon Street would not be affected, and their access therefore would remain unchanged during construction and operation. Similarly, properties on the east side of Croydon Street between Milton Road and Sylvan Road would not be affected, and their access would also remain unchanged during construction and operation. On the west side of Croydon Street, all existing properties with access from Croydon Street would be acquired, and therefore there would be no issues in relation to access. The remaining properties in this area are currently accessed either from Sylvan Road or St Osyth Street, and access to these properties would remain unchanged during construction and operation.

A fundamental requirement of the construction staging program would be that no property, residential, commercial or otherwise, would be isolated or compromised in terms of safe vehicular and pedestrian access, for any length of time. Similarly, permanent safe vehicular and pedestrian access would be reinstated where required to all properties on completion of the works.

Access to some local streets would change as a result of the Project, including:

- Quinn Street – closure of Quinn Street at Milton Road would create a cul-de-sac and Quinn Street would be accessible from Sylvan road only; and
- Valentine Street – closure of Valentine Street at Frederick Street and Milton Road would create a cul-de-sac and Valentine Street would be accessible from Gregory Street only.

While these changes may limit access, they would also eliminate through traffic from these streets and therefore potentially improve their residential amenity.

## Amenity

Construction of the proposed tunnel entry and exit ramps from Frederick Street to Milton Road would increase the visual prominence of the existing road infrastructure at the Toowong roundabout (see chapter 14 for discussion of visual impacts). Also, it would be necessary to erect noise barriers along Milton Road and Croydon Street (see chapter 9). Although the noise barriers would limit traffic noise, they would also detract from the visual amenity of the area, and would need to be designed and situated such that they do not create barriers to access. Urban design and landscaping treatments as recommended in chapter 14 would be required to reduce the potential visual amenity impacts.



### 11.4.3 Land Use Impacts - Central Section

Through the central section of the study Corridor, the Project would be constructed underground and therefore would not result in any significant impacts on existing land uses. The Project is likely to provide an overall benefit for existing land uses situated along major roads, as a result of surface traffic reductions detailed in Chapter 5. This reduction in traffic has the potential to improve residential amenity, due to reduced traffic hazards and traffic noise, and also create a more amenable and safe environment for pedestrians and cyclists.

The construction phase of the Project would result in minimal impact on the land uses within this section of the study corridor because no surface land resumptions would be required.

#### Volumetric acquisition

The Reference Project anticipates 614 parcels of land across the Study Corridor would be affected by volumetric title reconfiguration (subdivision) and acquisition to provide separate tenure for the underground tunnels. Volumetric acquisition would not affect the surface title rights of existing owners, and would have no impact on surface land use or land use planning. Compensation would be provided to owners of the properties, including for the loss of the volumetric lot.

Owners of properties potentially affected by volumetric acquisition from the Reference Project design have been notified of their properties' affected status. On completion of the final detailed design, Brisbane City Council would enter negotiations with landowners regarding compensation, and acquisitions would be finalised in accordance with legal requirements under the *Acquisition of Land Act 1967* and regular property transaction protocols.

### 11.4.4 Land Use Impacts - Northern Connection

The Northern Connection would require, for the Project, allocation of a narrow strip of land along the edge of Victoria Park, which is currently owned by Brisbane City Council. A further allocation of Council-owned land would be required for construction of the eastbound tunnel exit portal, within the embankment between the ICB and Normanby Terrace. The Northern Connection would also require a small resumption of land on the edge of the Brisbane Grammar School Playing Fields. The land required is currently utilised for pedestrian and cycle access, and is part of the network connecting Victoria Park to Kelvin Grove Road parallel to the Inner City Bypass. Detailed design would maintain the current pedestrian and cycle linkages.

The ventilation fan station and outlet are proposed to be constructed within Victoria Park, however this land, which in terms of its use is part of the park and the golf course, is currently owned by the Queensland Department of Main Roads (QDMR). The required land would therefore be acquired from QDMR for construction of these facilities. The ventilation station would not impact on the playing area of the golf course, while the proposed ventilation outlet would be situated on existing 7<sup>th</sup> tee location. While this may necessitate alteration of the tee-off point, it would not affect the use of the golf course. Similarly, the ventilation station would not have a significant impact on the recreational value or use of Victoria Park, as it would be set into a steep embankment adjacent to the Inner City Bypass and the Inner Northern Busway.

During construction, the existing pedestrian / cycleway along the northern side of the ICB would be realigned to allow the widening of the ICB road formation, without any loss of the pathway's amenity or functionality. The pathway would be permanently reinstated with a similar alignment to the existing, prior to the completion of construction works.

The Northern Connection would not require the resumption or acquisition of any residential or commercial properties, and would have no other impacts on land use.

#### 11.4.5 Land Use Impacts - Kelvin Grove Road Connection

To establish the Kelvin Grove Road Connection, and to allow for the proposed worksite, the full or partial acquisition of 28 residential properties and three commercial properties would be required. The properties required are generally located on the western side of Kelvin Grove Road between Victoria Street and Lower Clifton Terrace.

All properties located on the eastern or lower side of Lower Clifton Terrace, and one property that is accessed from the western side would be acquired for the Project. All of the affected properties on the eastern side are occupied single dwellings, while the property on the west side is a small apartment block. The dwellings on the east side are typically high set, 'tin and timber' character housing. Other existing buildings in Lower Clifton Terrace include multi-storeyed brick dwellings and a telecommunications tower.

The construction of the Kelvin Grove Road Connection would also require the acquisition of a number of residential properties on Kelvin Grove Road and Westbury Street. These properties comprise a mix of older and contemporary dwellings, but not necessarily character housing, which are generally in good repair.

Construction activities for the Kelvin Grove Road Connection would be concentrated along Kelvin Grove Road between Victoria Street and the Inner City Bypass. The focus of the construction activity would be over the proposed location of the eastbound tunnel exit portal, at the eastern end of Upper Clifton Terrace. The tunnel entry portals would be constructed largely within the road corridor of Kelvin Grove Road, and would have little effect on land use. However, a number of residential properties not required for the Project would be in very close proximity to the construction site for the duration of works and this would have an impact on the general amenity of these properties and the character of the streetscape, particularly in Lower Clifton Terrace, Upper Clifton Terrace and Westbury Street. In the longer term however, these streets would experience no substantial change to amenity (see below), or in the nature or intensity of land use.

It is noted that there is a new medium-density residential development under construction on the western (or high) side of Lower Clifton Terrace. While this is not the first medium-density development in the vicinity of the proposed Kelvin Grove Road Connection, any trend towards increased densities in this location reflects Brisbane City Council's planning codes and policies, and cannot be attributed to the Project.

#### Access and Traffic Movement

The Project would involve a change in vehicular access to and from Lower Clifton Terrace, Westbury Street and Victoria Street, to accommodate the proposed Kelvin Grove Road Connection. Kelvin Grove Road would be widened on its western side between Victoria Street and Lower Clifton Terrace. During construction works there would be temporary traffic changes in both directions on Kelvin Grove Road (see Chapter 5), in order to maintain normal traffic flows until construction is complete. Also during construction, the existing direct access to Westbury Street from Kelvin Grove Road would be removed, and Westbury Street would be accessed from Victoria Street. Victoria Street would also lose its existing direct access to Kelvin Grove Road, and would then be accessible only from Windsor Road and adjoining local roads. Lower Clifton Terrace would become a cul-de-sac, accessible only from Musgrave Road. These changes would be permanent, and are part of the EIS Reference Design.

Through these changes to access, particularly for Westbury Street and Victoria Street, access for residents would become safer through the removal of two existing intersections of local streets with a major arterial road (Kelvin Grove Road). Apart from the required property acquisitions along the western side of Kelvin Grove Road, Westbury Street and Upper and Lower Clifton Terrace, the Project would not result in any changes to land use in the vicinity of the Kelvin Grove Road connection.

The existing pedestrian connectivity and amenity in Kelvin Grove Road could generally be described as poor. It is understood that pedestrians currently use Upper Clifton Terrace as a route between bus stops on Musgrave Road and the Kelvin Grove Urban Village. The Project would maintain or improve the current pedestrian linkages in this area, and also provide improved connectivity in a north-south direction. A pedestrian connection is proposed along the west side of Kelvin Grove Road between Marshall Park/Victoria Street and Musgrave Road via Lower Clifton Terrace, traversing the top of the proposed tunnel portal and thereby separating pedestrian and vehicle traffic. This would include a new, safe connection from Upper and Lower Clifton Terrace to the existing signalised crossing of Kelvin Grove Road at Musk Avenue, which would be retained.

## Amenity

Land uses around the Kelvin Grove Road Connection are unlikely to change significantly in the long-term as a result of the Project. Notwithstanding the removal of some existing residential properties, the overall nature and intensity of existing land use is unlikely to be affected, with the exception of Lower Clifton Terrace, where the existing properties on the eastern (lower) side would be demolished and the land proposed to be given over for landscaped open space (see chapter 14).

Amenity around the Kelvin Grove Road Connection would potentially be affected by noise impacts during construction (see chapter 9). However, the works to excavate and construct the tunnel portal would be enclosed within an acoustically insulated temporary shed structure, to mitigate noise, dust and visual impacts. The work site in its entirety would be enclosed by hoardings. In the longer term, noise barriers would be erected along the west side of Kelvin Grove Road between Dalley Street and the southern end of Lower Clifton Terrace, including straddling the roof of the tunnel portal structure.

Operational noise barriers are proposed to be erected along the west side of Kelvin Grove Road between Dalley Street and the southern end of Lower Clifton Terrace. While these barriers are designed to improve amenity through reducing road traffic noise, they also have the potential to create a visual impact, and a barrier to (pedestrian) movement. Therefore, it would be necessary to ensure that the design of the noise barriers takes access into account, without compromising acoustic performance. Similarly, the selection of materials for use in noise wall construction would require consideration of visual effects, to ensure that views are not lost and that the walls themselves are integrated into the overall urban landscape.

With the inclusion of noise barriers and the removal of through traffic, the amenity of Lower Clifton Terrace is likely to improve as a result of the Project. Residents on the western side would overlook a green, landscaped buffer instead of the rooftops of the existing houses, while the street would become safer for pedestrians and cyclists.

## 11.5 Land Tenure

Land tenure for the study corridor is shown in **Figure 11-9**, **Figure 11-10** and **Figure 11-11**. Land tenure has been broadly described under the Digital Cadastral Data Base (DCDB) Tenure Codes within the study corridor and includes the following land types.

- Freehold – Land held in Fee Simple (freehold title).
- Council Land – land held by Brisbane City Council under various tenure, including freehold.
- State Leasehold – Leasehold land administered by the Department of Natural Resources and Water.
- Railway – State land vested for railway purposes in Queensland Transport and Queensland Rail.
- Reserve – State land reserved by the Department of Natural Resources and Water for community or public purposes, which may be administered by various Government Departments or agencies.



- State Land – land held by the State of Queensland as Unallocated State Land and other areas vested in the State (or Crown) but not held in Fee Simple or as a lease issued under the *Land Act 1994*. It includes land that has been surrendered back to the State.

Other tenures not described above include Road Reserve, which is State land dedicated as roads under the control of either the Department of Main Roads (State-controlled Roads) or Brisbane City Council.

With regard to State Controlled Roads, the Project would have direct surface impacts on State Controlled Road Reserves where the Project connects with the Western Freeway at Mt Coot-tha.

The majority of land within the study corridor is held in freehold title. Freehold land required for the Project would either be acquired by private treaty or resumed. State land (including Lands Lease) would require agreement from the State or party entitled to tenure. A volumetric title would be necessary for the subsurface land requirements. Tenure for surface facilities associated with the tunnel and its associated infrastructure has not been finally determined, but would be held as either freehold or leasehold.

## 11.6 Native Title

There are two registered native title claims under the Commonwealth *Native Title Act 1993* (NTA) in the Study Corridor. These claims have been made by the Jagera People and the Turrbal People. Each claim covers areas of Crown Land across large areas of the City of Brisbane, including the EIS study corridor and beyond. The claims are shown on **Figure 11-12**.

Depending on the process chosen to grant the necessary interests in Crown lands required to construct the Project, native title may either be extinguished or suppressed for the duration of the Project. Either of these processes would require compliance with the NTA. The Jagera and Turrbal People would be consulted and/or negotiations carried out to ensure clearance is obtained.

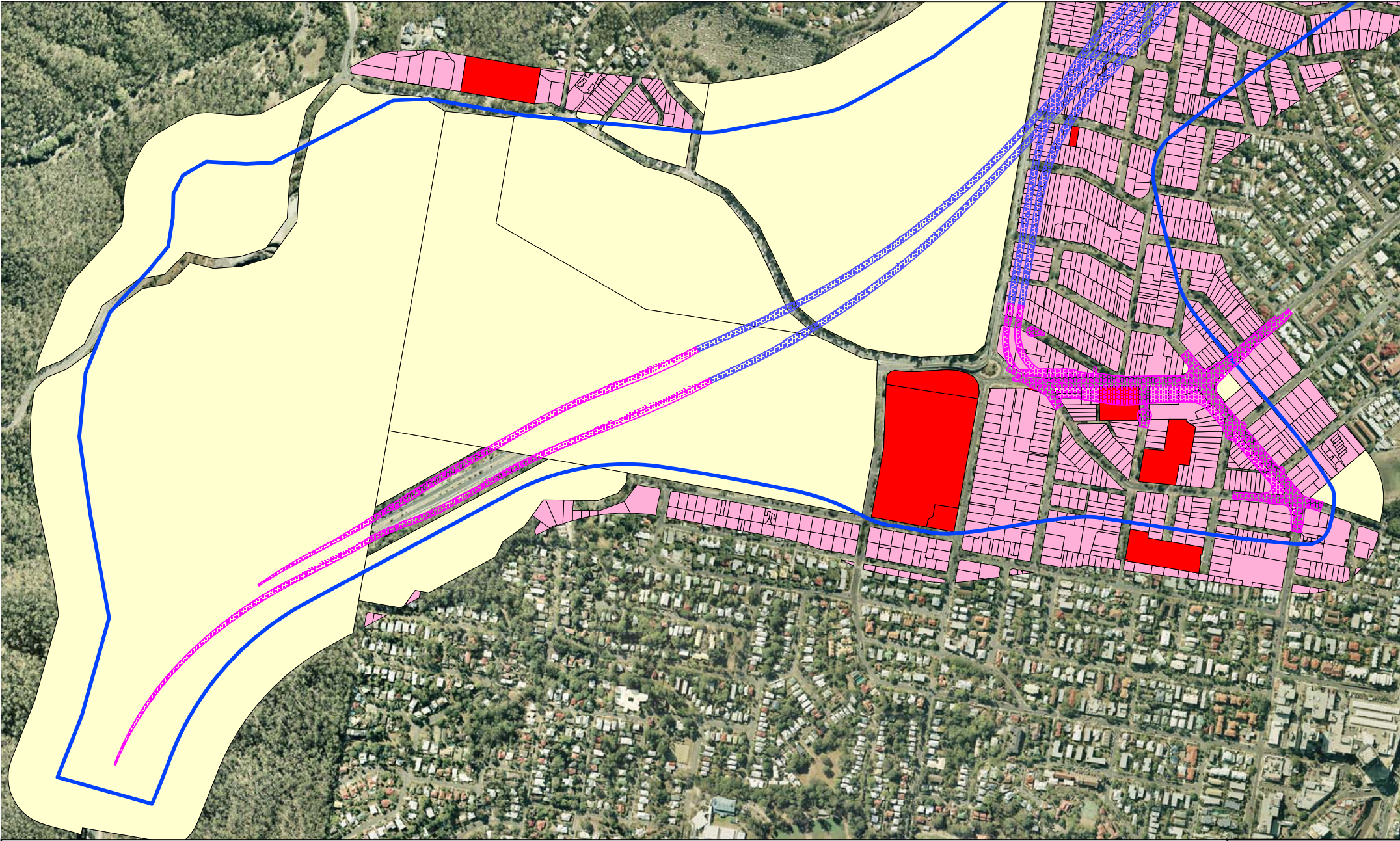
The NTA contains alternative procedures for dealing with native title. Section 24KA of the NTA allows acts to be done in connection with the construction and operation of infrastructure facilities operated for the general public. The Project would provide the required notification and opportunity to comment to Jagera People, Turrbal People and Queensland South Native Title Services<sup>1</sup>. The NTA also allows for negotiation and registration of a voluntary indigenous land use agreement, which would suppress native title for the life of the Project.

If extinguishment of native title is necessary, the Project will take the required steps to afford native title claimants their procedural rights pursuant to Section 24MD of the NTA, which allows for compulsory acquisition of native title on the same basis as the compulsory acquisition of other (non native-title) property.


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<sup>1</sup> Queensland South Native Title Services is the Native Title Representative Body for native title claimant groups in the Queensland South Region.










**LEGEND**



 Study Area Corridor

**Tenure**

 Council Land  
 Freehold  
 Lands Lease

 Reserve  
 State Land

**Proposed Alignment**

 Surface Works  
 Tunnel Underground

0 200 400  
metres

Scale 1: 10,000 (A4)

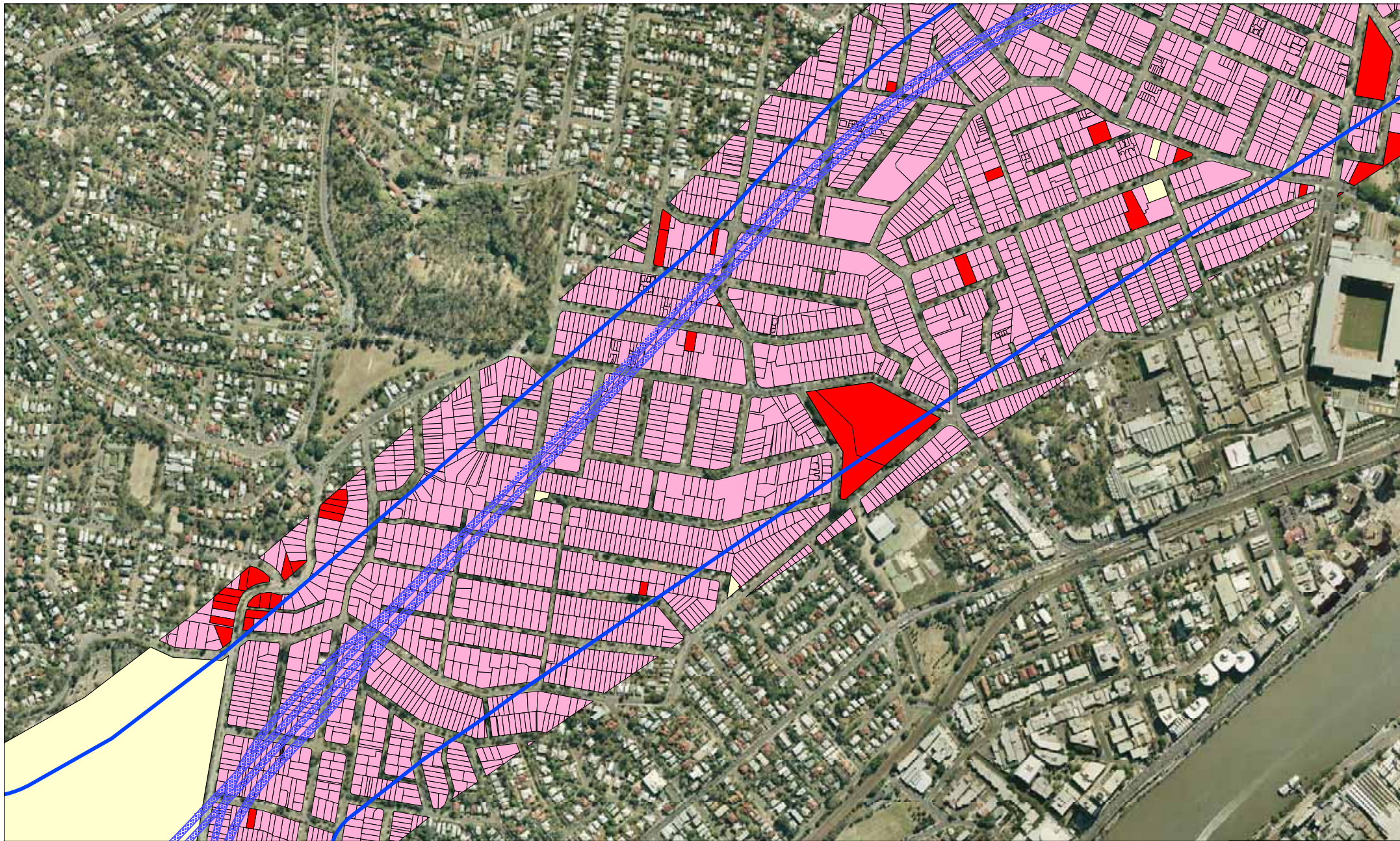


NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 9  
Land Tenure - West








## LEGEND

 Study Area Corridor

## Tenure

 Council Land

 Freehold


 Lands Lease

 Reserve

 State Land

## Proposed Alignment

 Surface Works

 Tunnel Underground

0 200 400  
metres

Scale 1: 10,000 (A4)

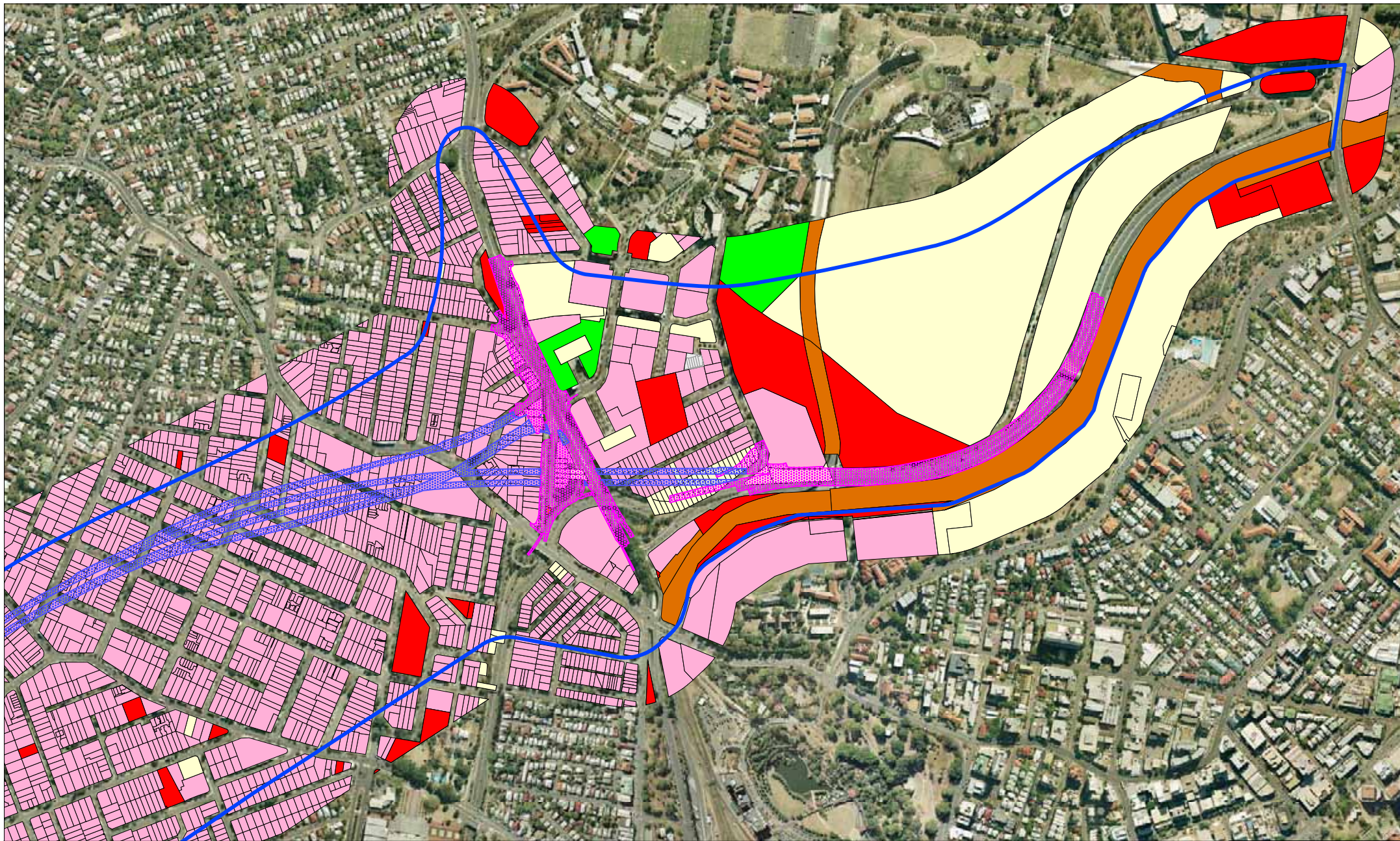


NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 10  
Land Tenure - Central







# LEGEND

Study Area Corridor

## Tenure

Council Land  
Freehold  
Lands Lease  
Reserve  
State Land

## Proposed Alignment

Surface Works  
Tunnel Underground

0 200 400  
metres

Scale 1: 10,000 (A4)

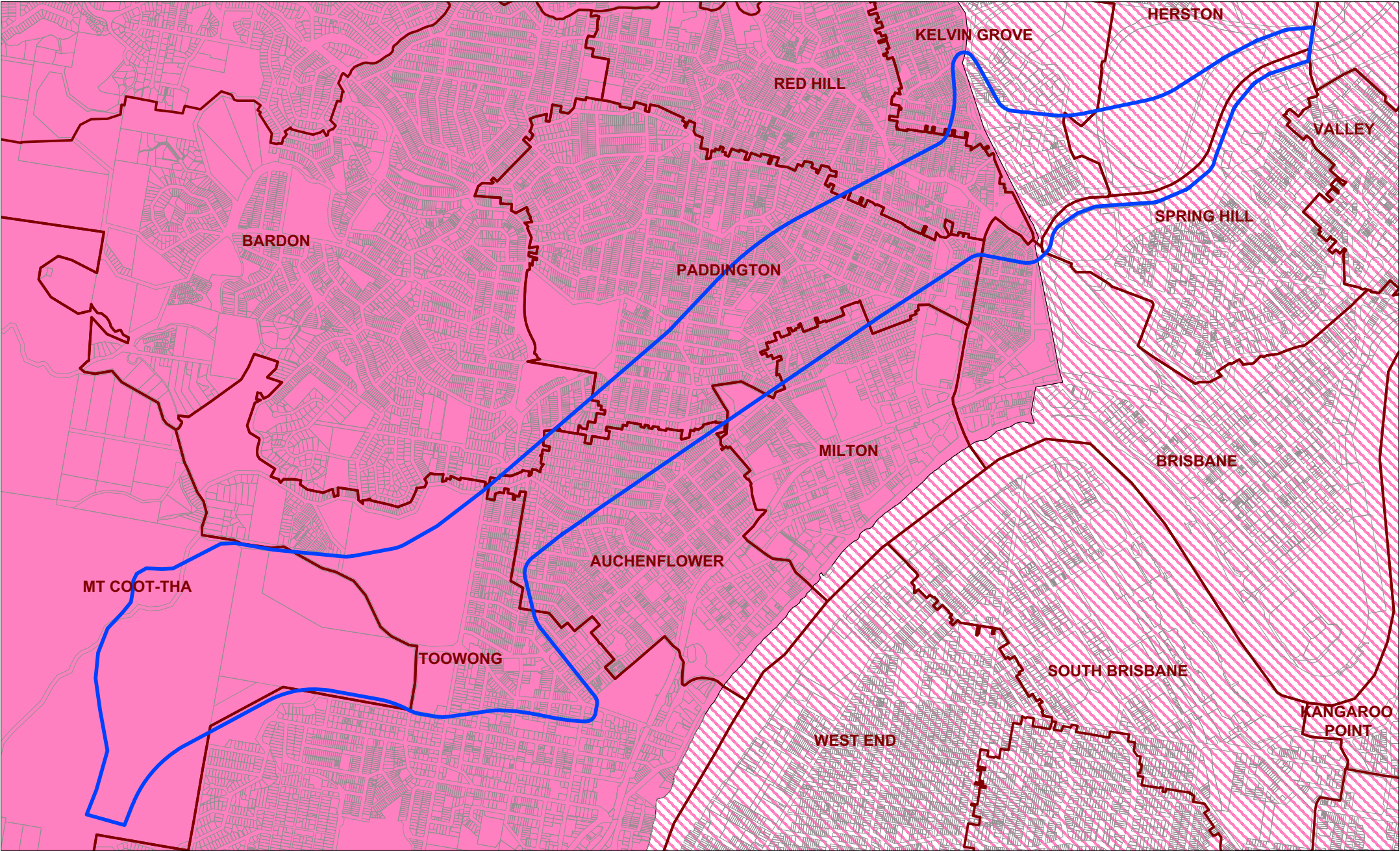


NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11 - 11  
Land Tenure - East









**LEGEND**

 Study Area Corridor

**Native Title Claimants**

 Turrbal People

 Jagera People and Turrbal People

0 500 1000

metres

Scale 1: 25,000 (A4)



NORTHERN LINK  
ENVIRONMENTAL IMPACT STATEMENT

Figure 11-12  
Native Title





## 11.7 Conclusions

### 11.7.1 Regional Planning and Land Use Implications

The regional planning strategies (of relevance to the Project) paint a clear picture of the desired future land use pattern. In summary, this desired land use pattern proposes significant residential, employment and economic growth in the Western Corridor and significant employment and economic growth in the ATC. In addition, the inner western suburbs of Brisbane are intended to accommodate a proportion of the region's predicted population growth through infill development.

The Project would complete a transport route connecting the Western Corridor, the Brisbane CBD and the ATC. The route would comprise the Centenary Motorway, Western Freeway, the Project, Inner City Bypass, Airport Link and the East-West Arterial to the Gateway Motorway.

The Project supports the regional strategic planning direction. By providing enhanced connectivity and accessibility between the Western Corridor and the ATC, the Project supports the regional planning objectives for these areas to become key places of residential, employment and economic growth. Furthermore, the Project would provide enhanced connectivity between activity centres in the SEQ region, in particular the Brisbane CBD, Toowong and Indooroopilly.

With regard to the existing regional land use pattern, the Project would become an integral piece of urban transport infrastructure, which would improve existing land use synergies between the emerging residential and economic growth areas across the Brisbane region. The corridor provides a connection between emerging residential and economic growth areas in the region's west and south-west, with the Brisbane CBD and the Australia TradeCoast.

### 11.7.2 Local Planning and Land Use Implications

The Project would support redevelopment and renewal within the inner western suburbs, and the implementation of the planning strategies within and adjacent to the Study Corridor, by reducing through traffic and improving local accessibility. This would in turn assist in the delivery of:

- improvements to local residential amenity on land adjoining major roads (ie: Milton Road) and also in nearby areas currently experiencing 'rat running' as drivers seek to avoid congested roads;
- improvements in local accessibility and connectivity for vehicles, pedestrians and cyclists between residential neighbourhoods and to local centres and major activity centres within the inner western suburbs;
- opportunities for improvements to public transport, including opportunities for the development of transit orientated development (TOD) adjacent to key transport nodes; and
- opportunities for redevelopment and renewal in the inner suburbs, as constraints to development resulting from traffic congestion are eased and local amenity is improved.

However, there is potential for construction works to impact on the amenity of residential areas, if temporarily. In particular, there is potential for noise, vibration and air quality impacts on residential areas if not managed properly. Chapters 9 and 8 of this EIS address these issues, respectively.



## 11.8 Mitigation Measures

Mitigating the impacts of the Project on surrounding land holdings and land uses would be focussed on maintaining the future desired land use outcomes for particular land parcels as per the Brisbane City Council's *City Plan 2000* mapping. Also, mitigation measures would focus on the opportunities presented by the Project for urban regeneration as the overarching strategy of possible land use and zoning changes (see chapter 19).

Environmental Management Plans would be prepared by the Contractor for the construction and operation phases of the Project, to identify measures to ensure that environmental objectives and performance criteria are addressed, that potential impacts of the Project are minimised, and environmental values of the study corridor are protected and enhanced where possible.

The following section outlines environmental objectives, performance criteria and mitigation measures for managing potential land use and planning impacts during detailed design and construction stages for Northern Link.

Suggested Project objectives, performance criteria and mitigation measures are described in Table 11-7, Table 11-8, Table 11-9 and Table 11-10. In these tables, Residential Areas include Low Density Residential, Character Residential, Low-Medium Density Residential and Medium Density Residential Areas as per the *City Plan 2000* mapping. Open Space Areas include Sport and Recreation, Park and Conservation Areas as per the *City Plan 2000* mapping.

■ **Table 11-7 Residential Areas**

Objectives	<ul style="list-style-type: none"> <li>■ To minimise the impacts on residential land availability.</li> <li>■ To preserve the residential character of residential neighbourhoods.</li> <li>■ To protect and enhance the amenity of residential neighbourhoods during the construction and operation phases.</li> </ul>
Performance Criteria	<ul style="list-style-type: none"> <li>■ Minimise the loss of land included in the Residential Area under the City Plan and identify potential new residential development sites as a result of redevelopment sites created by the reference project.</li> <li>■ Incorporate new residential sites in appropriate locations which arise from the reference project.</li> <li>■ Minimise the loss of pre-1946 character housing stock from the study corridor.</li> <li>■ Manage the visual impacts of structures and landform changes through design and use of materials that are sensitive to the context of the locality.</li> </ul>
Mitigation Measures	<p>The Project requires land acquisition which, once the Project is constructed and operational, could result in areas of land remaining surplus to the Project. Based on the concept design, these areas are located at:</p> <ul style="list-style-type: none"> <li>■ Toowong, to the south of Milton Road and west of Croydon Street;</li> <li>■ Toowong, in the area bound by Valentine Street and Milton Road;</li> <li>■ Red Hill, to the west of Kelvin Grove Road on land adjacent to Lower Clifton Terrace, Upper Clifton Terrace and Westbury Street.</li> </ul> <p>It is proposed that the worksites at Milton Road / Valentine Street and Lower Clifton Terrace would become landscaped buffer between the road infrastructure and adjoining residential areas. The remaining residual parcels of land would become available (as appropriate) for development in accordance with City Plan 2000 and the appropriate local area plans. They are all currently included in the Character Residential Area or the Low Medium Density Residential Area. Based upon the City Plan 2000 strategic intent for these Areas, possible development opportunities may be limited to low-medium density (ie: typically townhouses or 3 storey multi unit complexes). However, more intense residential redevelopment could find support in the Draft SCIS and Local Area Plans, whose strategic planning intentions envisage residential development at densities greater than the current land uses.</p> <p>It is also recommended that pedestrian linkages between Musgrave Road and</p>

	the Kelvin Grove Urban Village be investigated. Following construction, there is opportunity to enhance pedestrian linkages through Upper Clifton Terrace to allow for greater accessibility to Kelvin Grove Urban Village.
Responsibility	Contractor

#### ■ Table 11-8 Multi Purpose Centres (Commercial)

Objectives	<ul style="list-style-type: none"> <li>■ To maintain the function of Multi-Purpose Centres and protect the potential for the centres to develop in accordance with the City Plan.</li> <li>■ To maintain and enhance accessibility of Multi-Purpose Centres from the surrounding suburbs.</li> </ul>
Performance Criteria	<ul style="list-style-type: none"> <li>■ Maintain existing access points to Multi Purpose Centres.</li> <li>■ Reflect land use changes to the Multi-Purpose Centres resulting from the reference project in the City Plan, and CityShape planning process.</li> </ul>
Mitigation Measures	<p>The Project does not present any redevelopment opportunities as a result of direct property impacts. However, there may be opportunities for growth or renewal in existing Multi Purpose Centres, particularly with surface traffic improvements as a result of the Project.</p> <p>To ensure that multi purpose centres not only remain viable, but also to provide opportunities for those centres to grow, the Project must ensure that centres are easily accessible during construction (and operation), such that they remain attractive to patrons.</p>
Responsibility	Contractor

#### ■ Table 11-9 Community Use Areas

Objectives	To minimise impacts that would constrain the functioning of Community Use Areas.
Performance Criteria	<ul style="list-style-type: none"> <li>■ There is no net loss of Community Use Areas.</li> <li>■ Safe and equitable access to all Community Use Areas is maintained during construction and operation.</li> </ul>
Mitigation Measures	<ul style="list-style-type: none"> <li>■ Maintaining safe and convenient pedestrian and cycle access to community use areas, particularly in the vicinity of worksites and surface works at Toowong and Kelvin Grove.</li> <li>■ Connections between residential areas and schools (ie Toowong Primary School, Brisbane Grammar School and Brisbane Girls Grammar School) are maintained. As these connections would cater for children, active transport connections need to consider CPTED principles.</li> </ul>
Responsibility	Contractor

#### ■ Table 11-10 Open Space Areas

Objectives	<p>To preserve and enhance green space as a regional public open space resource.</p> <p>To maintain accessibility to green space from surrounding areas.</p>
Performance Criteria	The reference project would not create a net loss of open space in the study corridor upon completion of construction works.
Mitigation Measures	<ul style="list-style-type: none"> <li>■ Take reasonable and practicable measures to avoid, or mitigate and manage the potential construction impacts on Brisbane Forest Park.</li> <li>■ Following construction, rehabilitation of the area of the Mt Coot-tha Botanic Gardens disturbed by construction activities would be undertaken. Works would be consistent with the Botanic Gardens Master Plan.</li> <li>■ Maintain safe access points to Brisbane Forest Park, Anzac Park, Quinn Park and Victoria Park and provide alternative, safe access points during the construction phase.</li> <li>■ Minimise the footprint of surface connections Anzac Park, Quinn Park and Victoria Park to ensure that the useable open space within the park is maximised.</li> <li>■ Where construction works adjoin open space areas, erect physical barriers</li> </ul>



	<p>around construction areas and worksites during the construction phase.</p> <ul style="list-style-type: none"> <li>■ Rehabilitate areas impacted by construction works, to enable re-use for parkland and sport and recreation purposes consistent with City Plan designations.</li> <li>■ Identify opportunities for new Green Space areas from other redevelopment sites created by the reference project (see Chapter 20).</li> <li>■ New pedestrian and cyclist paths shall connect to the existing path system wherever possible.</li> </ul>
Responsibility	Contractor